UNIVERSITY OF GHANA

VOLUME 4

HANDBOOK FOR THE BACHELOR'S DEGREE

COURSE DESCRIPTIONS FOR PROGRAMMES IN THE HEALTH SCIENCES

September, 2012

A publication of the Academic Affairs Directorate: compiled and typeset by the Academic Affairs Directorate of the Registrar's Offices, University of Ghana, Legon.

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NOTE TO THE UNDERGRADUATE HANDBOOKS
The current edition of the Undergraduate Handbooks of the University of Ghana is published in four volumes as follows:

VOLUME 1: REGULATIONS GOVERNING UNDERGRADUATE STUDY AND UNIVERSITY EXAMINATIONS
VOLUME 2: COURSE DESCRIPTIONS OF PROGRAMMES IN THE HUMANITIES
VOLUME 3: COURSE DESCRIPTIONS OF PROGRAMMES IN THE SCIENCES
VOLUME 4: COURSE DESCRIPTIONS AND REGULATIONS FOR PROGRAMMES IN THE HEALTH SCIENCES

Undergraduate students should therefore have Volume 1 and either Volume 2, 3 or 4 of the Handbooks, depending on the programme they have been offered.

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ESTABLISHMENT OF THE UNIVERSITY

THE UNIVERSITY OF GHANA was founded in 1948 as the University College of the Gold Coast on the recommendation of the Asquith Commission on Higher Education in the then British colonies. The Asquith Commission, which was set up in 1943 to investigate Higher Education, recommended among other things, the setting up of University Colleges in association with the University of London. This was followed up by a number of separate Commissions in different regions. The West Africa Commission was under the Chairmanship of the Rt. Hon. Walter Elliot. The Elliot Commission published a majority report which recommended the establishment of two University Colleges in the Gold Coast (Ghana) and Nigeria, and a minority report which held that only one University College for the whole of British West Africa was feasible. The British Government at first accepted the minority report of the Elliot Commission and decided that a University College for the whole of British West Africa should be established at Ibadan in Nigeria. But the people of the Gold Coast could not accept this recommendation. Led by the scholar and politician, the late Dr. J.B. Danquah, they urged the Gold Coast Government to inform the British Government that the Gold Coast could support a University College. The British Government accordingly reviewed its decision and agreed to the establishment of the University College of the Gold Coast.

The University College of the Gold Coast was founded by Ordinance on August 11, 1948 ***for the purpose of providing for and promoting university education, learning and research***. Its first Principal was the late Mr. David Mowbray Balme. Mr. Balme was farsighted, courageous and dedicated to the promotion of scholarship. By his vision, industry and single-mindedness of purpose, he built a college and laid the foundations for a sound University which is now a source of pride. In his ten years of principalship, he created an institution whose key-note was orderly living with dignity in a community of scholars. One of the recommendations of the Asquith Commission was that the British Government should set up an Inter-Universities Council to advise on all matters relating to Higher Education in the new British Colonies. The Inter-Universities Council served the new University College of the Gold Coast in an advisory capacity, but it approved all academic appointments. This arrangement helped the College to maintain the high academic standards associated with the Universities in Britain. Also, it enabled the College to seek the support of the Council in obtaining funds from the United Kingdom Government sources.

From its inception, the University College of the Gold Coast was admitted to the Scheme of Special Relationship extended by the University of London to certain English and overseas University Colleges. Under this scheme, the University College was allowed to teach for the external degree examinations of London University. It also allowed the College to modify the London syllabuses to suit local conditions and to take part in the setting and marking of examinations. But London University gave final approval for courses and examinations since the degrees given were those of the University of London. For thirteen years, therefore, the University College looked up to two separate institutions in Great Britain: to the Inter-Universities Council for guidance on its broad policy, and to the University of London for approval and control of details of degree regulations. The University College benefitted greatly from this arrangement which certainly helped to maintain its high academic standards.

In the 1960-61 academic year, the College Council made a request to the Government of Ghana for legislation to constitute the University College into a University with the power to award its own degrees. The Government appointed an International Commission to examine the problem. On the recommendations of that Commission, the University of Ghana was set up by an Act of Parliament on October 1, 1961 (Act 79). The then President of the Republic of Ghana, Dr. Kwame Nkrumah, became the first Chancellor of the University, with Nana Kobina Nketsia IV, Omanhene of Essikado, as the (Interim) Vice Chancellor.

VISITATION OF THE UNIVERSITY: The University Council, in 2007, appointed a Visitation Panel to review the University's academic programmes, infrastructure, resources, administrative and governance structures. The Panel submitted a comprehensive report with recommendations on ways in which the structures of the University can be improved, with a view to enhancing efficiency. It is expected that the far-reaching changes in the undergraduate programmes, course credit and grading systems, which were introduced in the 2010/2011 academic year, and which are the outcome of the recommendations of the Visitation Panel, will go a long way towards improving the quality of graduates produced by the University. Recommendations on infrastructural resources, administrative and governance structures are at various stages of implementation.

ENROLMENT STATISTICS: With a current student population of 35,683 (representing a male/female ratio of about 3:2) the University of Ghana is the oldest and largest of the six public Universities in Ghana. The total number of students includes 4,437 at the Accra City Campus and 4,532 undertaking their studies by the Distance Mode. Also included in this number are 3,196 post-graduate students and 3,596 students on modular or sandwich programmes.

ASSOCIATIONS AND LINKS: The University of Ghana is a member of the International Association of Universities **(IAU)**, the Association of Commonwealth Universities **(ACU)** and the Association of African

Universities **(AAU)**. The University is also a member the **League of World Universities** (which comprises 47 renowned research universities all over the world). The University has also established academic and research links with several Universities and Research Institutions worldwide. In addition, the University has been linked to the Norwegian Universities' Committee for Development Research and Education **(NUFU)**, the Council for International Educational Exchange **(CIEE)** based in New York, International Student Exchange Programmes **(ISEP)** and the Commonwealth Universities Student Exchange Consortium **(CUSAC)**, among others.

INSTITUTIONAL AFFILIATIONS: There are currently a number of institutes/colleges locally which hold affiliations with the University of Ghana for the purpose of enrolment, teaching and award of degrees and diplomas of the University. These affiliations cover non-degree, Bachelor's degree and post-graduate degree programmes. Institutes/Colleges which currently hold affiliation status with the University are as follows:

1. St. Peter's Seminary - Diploma/Bachelor of Arts
2. St. Paul's Seminary - Bachelor of Arts
3. St. Victor's Seminary - Diploma/Bachelor of Arts
4. Christian Service University College - Diploma/Bachelor of Arts
5. National Film and Television Institute - Bachelor of Arts
6. Ghana Institute of Journalism - Bachelor of Arts
7. Regional Maritime University - Master of Arts
8. Ghana Armed Forces Command and Staff College - Master of Arts
9. Ghana Institute of Languages - Bachelor of Arts
10. Islamic University College - Bachelor of Arts/Business Administration
11. Pentecost University College - Diploma/ Bachelor of Arts/Business Administration
12. Catholic University College - Bachelor of Arts/Bachelor of Science
13. Methodist University College - Diploma/Bachelor of Arts/Business Administration
14. Wisconsin University College, Ghana - Bachelor of Arts/Master of Arts
15. Institute of Accountancy Training - Diploma
16. Nursing Training Colleges - Diploma
17. Presbyterian University College - Bachelor of Arts
18. Narh-Bita School of Nursing - Diploma
19. African University College of Communications - Bachelor of Arts
20. Knutsford University College - Bachelor of Arts/Science
21. Catholic Institute of Business and Technology - Bachelor of Arts/Science

PRECINCTS

The campus of the University lies about 13 kilometres north-east of Accra, the capital of Ghana, at an altitude of between 90and 100 metres. From the Main University Gate on the Dodowa Road, the University Avenue extends to Commonwealth Hall on Legon Hill.

Along it are grouped other Halls of Residence, Departments, lecture theatres and laboratories. Mid-way, an open space - the University Square - with an ornamental pool is over-looked by the Balme Library (named after David Mowbray Balme, the first Principal of the University College). Across from the University Square are sports fields, a Central Cafeteria and halls of residence. Behind Commonwealth Hall is an open-air theatre with a Grecian style auditorium built into the slope of Legon Hill. On the summit of Legon Hill is the Convocation Group of Buildings which houses the University's administration offices, the Great Hall, with a seating capacity of 1,500 and a Tower donated by the Government of Ghana in 1959 to commemorate Ghana's Independence. On the southern side of the campus are residential accommodation for staff, the University Basic Schools, the Noguchi Memorial Institute for Medical Research, School of Public Health, the Sports Stadium, a night market, supermarket and student hostels; while on the Northern side are more teaching departments, lecture theatres and laboratories. Across the Accra-Dodowa road from the Main University Gate is a Police Station, a University Hospital and housing for Junior Staff of the University.

The College of Health Sciences has its administration as well as the Medical/Dental /Allied Health Sciences and Pharmacy Schools located at the Korle-Bu Teaching Hospital, which is about three kilometres west of the centre of Accra, and about 18 kilometres from the main University campus.

The Accra City Campus of the University, located close to the business district of the nation's capital, was established to provide part-time education for mature persons and for persons who prefer not to study full time.

2. COLLEGES, FACULTIES, INSTITUTES, SCHOOLS AND RESEARCH FACILITIES

Academic life of the University of Ghana is centered around Colleges, Faculties, Institutes/ Schools and Centres of Research/Learning.

COLLEGES

COLLEGE OF HEALTH SCIENCES

The College of Health Sciences is constituted by seven Schools which are of the status of Faculty, and one research institute. These are:

MEDICAL SCHOOL: Anaesthetics, Anatomy, Medical Biochemistry, Centre for Tropical Clinical Pharmacology and Therapeutics, Chemical Pathology, Child Health, Community Health, Haematology, Medicine and Therapeutics, Microbiology, Obstetrics and Gynaecology, Pathology, Pharmacology, Physiology, Psychiatry, Radiology, Surgery.

DENTAL SCHOOL: Biomaterial Science; Restorative Dentistry; Paedodontics and Orthodontics; Preventive Dentistry; Oral and Maxillofacial Surgery; Oral Pathology and Oral Medicine.

***SCHOOL OF ALLIED HEALTH SCIENCES*:** Medical Laboratory Sciences, Radiography and Physiotheraphy.

***SCHOOL OF PUBLIC HEALTH*:** Health Policy, Planning and Management; Biostatistics, Epidemiology and Disease Control; Population, Family and Reproductive Health; Social and Behavourial Science; Biological, Environmental and Occupational Health Sciences.

***NOGUCHI MEMORIAL INSTITUTE FOR MEDICAL RESEARCH*:** An institute for research into medical and paramedical issues. Nutrition, Clinical Pathology, Immunology, Parasitology, Virology, Electron Microscopy, Bacteriology, Animal Experimentation.

***SCHOOL OF NURSING*:** Community Health, Maternal and Child Health, Mental Health, Adult Health, Research, Education and Administration.

***SCHOOL OF PHARMACY*:** The newest member of the College, the School is organized into the following Departments: Pharmaceutical Chemistry, Pharmaceutics and Microbiology, Pharmacognosy and Herbal Medicine, Pharmacology and Toxicology, Pharmacy Practice and Clinical Pharmacy.

COLLEGE OF AGRICULTURE AND CONSUMER SCIENCES

The College is constituted by two Schools and a Research Institute.

SCHOOL OF AGRICULTURE: Agricultural Economics and Agribusiness, Agricultural Extension, Animal Science, Crop Science, Family and Consumer Sciences and Soil Science.

SCHOOL OF VETERINARY MEDICINE: The School will maintain cutting edge excellence in basic and applied biomedical and veterinary sciences research with emphasis on control of animal diseases and the control of such diseases with the potential for transmission to humans.

INSTITUTE OF AGRICULTURAL RESEARCH*:* The Institute coordinates and supervises the activities of the three Agricultural Research Centres (ARCs):

LIVESTOCK AND POULTRY RESEARCH CENTRE- LEGON: Research into animal breeding, animal nutrition, veterinary medicine, pasture improvement and the development of dairy cattle by crossbreeding.

SOIL AND IRRIGATION RESEARCH CENTRE- KPONG: Researches into crops and merchandized irrigation agriculture on blank soils (vertisols) of the Accra plains.

FOREST AND HORTICULTURAL CROPS RESEARCH CENTRE-KADE: Researches into production of forest zone crops with special interest in agroeconomy of perennial crop plants.

FACULTIES

ARTS: English, Language Centre, Linguistics, Modern Languages (Arabic, Chinese, French, Russian, Spanish, Swahili), Philosophy & Classics, Study of Religions and the School of Performing Arts (with Departments of Dance Studies, Music and Theatre Arts).

LAW: **(non-departmentalized)**.

SCIENCE: Animal Biology and Conservation Sciences, Biochemistry, Cell and Molecular Biology Botany, Chemistry, Computer Science, Earth Science, Fisheries and Oceanography, Geography and Resource Development, Mathematics, Nutrition and Food Science, Psychology, Physics, Statistics.

SOCIAL SCIENCES: Archaeology and Heritage Studies, Economics, Geography and Resource Development, History, Information Studies, Mathematics, Political Science, Psychology, Statistics, Sociology and Social Work.

BUSINESS SCHOOL: Accounting, Public Administration and Health Service Management, Marketing and Consumer Management, Banking and Finance, Organization and Human Resource Management and Management Information Systems.

ENGINEERING SCIENCES: Agricultural, Biomedical, Food Process, Materials Science Engineering and Computer Engineering.

RESEARCH INSTITUTES AND SCHOOLS

BUSINESS SCHOOL: The Business School was originally established by statutory instrument in January 1960 as the College of Administration at Achimota. It had begun as the Department of Commerce in the then Kumasi College of Technology (now Kwame Nkrumah University of Science and Technology); this Department was transferred to the Western Compound of Achimota to form the nucleus of the College of Administration. The main idea behind the transfer was that the new College would serve as a comprehensive institution which would provide various training programmes required to meet the needs of administrative and accounting personnel in the rapidly expanding economy of Ghana. The move was also intended to give the College scope for expansion within the relatively more mature business environment of Accra and to afford both Faculty and students opportunities for close contact with the business community. The College was responsible for organizing courses in Accounting, Secretaryship, Central and Local Government Administration and Hospital Administration. These courses led to the examination of United Kingdom statutory bodies: The Association of Certified and Corporate Accountants (ACCA), The Chartered Institute of Secretaries (CIS), The Corporation of Certified Secretaries (CCS), The Clerical Examinations for Local Government Officers (NALGO) and Institute of Hospital Administration. Though useful, the courses were not fully satisfactory because they were foreign oriented, as they dealt mainly with United Kingdom institutions and were not properly adapted to experience and practice in Ghana. It was therefore decided in 1961 to reshape them and make them more relevant to national needs. In order to give the study of Administration its proper place in the country's higher education system, and to attract the best candidates, it was decided that courses run by the College should be at University level. It was thus agreed that the College of Administration should be associated with the University of Ghana and its main courses developed to the University's degree standard. Hence in October 1962, the College of Administration was integrated into the University of Ghana. The College was given a status comparable to that of a faculty in the University and was redesignated the School of Administration. Its students were gradually moved from Achimota to the University's students' Halls of Residence at Legon, and on February 18, 1967, the new building of the School, centrally situated at Legon, was opened. In 2004, the name was once again changed to the Business School. The School is governed by the Statutes of the University and controlled by the University Council and the Academic Board. It does, however, continue to receive earmarked grants direct from Government, and within the framework of general University-wide policy, maintains a good degree of freedom to develop its own associations and schemes. It has a mandate to organize courses and seminars from time to time either on its own or in association with other bodies, to satisfy identified areas of need in the fields of Business and Public Administration.

MEDICAL SCHOOL: established in 1964 by command of government under the Ministry of Health as an autonomous institution in special relationship with the University of Ghana. The primary objectives of the Ghana Medical School (as it was then known) was to train:

i. a broad-based generalist practitioner with sufficient grounding for subsequent specialization.

ii. a practitioner functionally attuned to and therefore responding aptly to the needs and exigencies of his/her environment. He/she shall attain an internationally accepted standard.

iii. a practitioner who has participated in health care delivery while under instruction and is therefore cognisant of the problems of delivery of health care in the rural/urban settings.

iv. an individual who accepts responsibility for self-learning and is therefore readily responsive to the call for continuing medical education; and
v. an advocate for community health needs.

Arrangements to integrate the medical school formally into the University of Ghana were concluded in 1969 in time to permit the award of the degrees of Bachelor of Medicine and Bachelor of Surgery (MB ChB) of the University of Ghana (Legon) to the first class of 39 medical graduates to be trained in Ghana. The Ghana Medical School thus became the University of Ghana Medical School in October 1969. However, it still retains its financial autonomy and has its own Executive Council and School Board. These arrangements have been given legal backing under the provisions of Schedule D of the Statutes of the University. The curriculum of the School has been revised on three occasions (1972, 1980 and 1991) to further enhance the training of doctors. Currently, the curriculum allows for courses leading to the award of a BSc degree in Medical Science in addition to the MB ChB professional degree. The Medical School is the largest single faculty of the university, presently.

DENTAL SCHOOL: The University of Ghana Dental School was established in 1995, even though basic dental training of dentists locally had been in place as far back as 1972. Before then the clinical training had been pursued outside the country, in the Universities of Manchester, London and Lagos. Candidates who completed their dental training in these universities were awarded University of Ghana degrees. At its establishment, the Academic Board decided that the new Dental School should operate under the umbrella of the University of Ghana Medical School until such time that it could stand on its own feet. The arrangement also provided for a coordinator of Dental Programmes, later on updated to Vice Dean of Dental Studies of the Dental School, who will function under the Dean of the Medical School.

SCHOOL OF ALLIED HEALTH SCIENCES: The Ministry of Health, in 1998, initiated the establishment of a School of Allied Health Sciences to produce medical and dental technical graduates through the Medical School. Programmes for this school included physiotherapy, medical laboratory science, radiography and therapy radiography. The Academic Board and the University Council approved this proposal in 1999. In the year 2001, this School came into being as one of the constituent schools of the newly established (in 2000) College of Health Sciences. An earlier Diploma in Medical Laboratory Technology also sponsored by the Ministry of Health in 1994 was phased out with the birth of the School of Allied Health Sciences**.**

SCHOOL OF NURSING: The School was formerly a Department in the Faculties of Science and Social Studies. In 2003 the University Council approved its conversion into a School. It is currently one of the constituents of the College of Health Sciences. The School has a strong link with the University of Alberta in the running of its MPhil programme. It offers undergraduate and graduate programmes in Community Health Nursing, Maternal and Child Nursing, Mental Health Nursing, Adult Health Nursing and Research, Education and Administration.

SCHOOL OF PUBLIC HEALTH: The School of Public Health was established in October, 1994, through collaboration between the Ministry of Health in Ghana and the University of Ghana, primarily to train public health workers to enable them perform effectively at District, Regional and National levels within governmental, quasi-governmental, non-governmental and private organizations. The programmes are also available to non-health personnel whose activities have an impact on the environment and public health. Properly trained Public Health personnel will be able to offer technical leadership in critical units such as Maternal and Child Health/Family Planning, Environmental Diseases Control, Health Information, Training, Research and Planning and in the running of specific disease control programmes such as AIDS, Tuberculosis, Leprosy and Onchocerciasis Control Programmes. The philosophy of the School is to operate as a "*School without Walls*" with semi-autonomous status, but with a close working relationship with the existing Schools and Faculties of the University. It is one of three Public Health Institutions in Africa that subscribe to the philosophy of school without walls, meaning that attempts are made to achieve an optimum mix of classroom and field work. The School admitted its first batch of students for the MPH programme in October 1994. In addition to its range of academic programmes, the School offers short certificate courses on specific health issues. Effective January 1, 2000, the School of Public Health became one of the health-related institutions grouped under the College of Health Sciences.

INSTITUTE OF AFRICAN STUDIES: Established in 1961, it conducts fundamental research in areas of African Languages, history and culture, and runs interdisciplinary courses leading to MPhil and PhD degrees in African Studies. Orientation courses are available for special admission students from other institutions and agencies. Interdisciplinary seminars and symposia are organized regularly. There is a Visual Arts Section with cultural exhibits for teaching and research. The Institute's library supplements the Africana collection of the Balme Library. Attached to the Institute is the Ghana Dance Ensemble – a resident professional dance company which

was started in 1962 by the then Ghana Institute of Arts and Culture to link the University of Ghana with the national theatre movement.

INSTITUTE OF CONTINUING AND DISTANCE EDUCATION: Established originally as the Department of Extra-Mural Studies in 1948, and later named the Institute of Adult Education, the Institute provides university-based adult education through its branches and workers' colleges throughout the country. It provides both formal and non-formal programmes. The formal programmes consist of Diploma, Bachelor, Masters and Doctoral degree courses in Adult Education and remedial courses for the West Africa Senior Secondary School Certificate Examinations (WASSCE), as well as a preparatory course for the University's mature students' selection examination. The non-formal programmes comprise community education programmes in health, family life education, nutrition, civic education, community initiative and adult literacy. The Institute is directly involved with the organisation of a People's Education Association to support its work. Public lectures, seminars and workshops form a vital part of the Institute's activities. The most popular and national of these is the Annual New Year School which has been held regularly since 1948. The Institute also coordinates the University's distance learning programme.

INSTITUTE OF STATISTICAL, SOCIAL AND ECONOMIC RESEARCH: The Institute was established in 1966 as the Institute of Statistics. In addition to its original concern with problems related to statistics, the Institute has expanded into the field of social and economic studies. The Institute offers Certificate and Diploma courses in Statistics as well as a Master of Arts degree in Development Studies.

NOGUCHI MEMORIAL INSTITUTE FOR MEDICAL RESEARCH: The Institute was established in 1979 in a building funded by the Government of Japan to serve as a monument in memory of Dr. Hideyo Noguchi, a Japanese medical scientist who died in Accra in May, 1928 while investigating yellow fever. The Institute provides a base for medical co-operation programmes between Ghanaian and Japanese scientists and a centre for conducting medical research relevant to Ghana's needs. Research is conducted into problems of communicable diseases while graduate students are trained in medical research. Facilities at the Institute include specialized laboratories and services in support of public programmes. From January 1, 2000, the Institute became one of the health-related institutions grouped under the newly established College of Health Sciences.

REGIONAL INSTITUTE FOR POPULATION STUDIES: Established jointly in 1972 by the United Nations Organisation and the Government of Ghana, it promotes and strengthens research and training in demography for students from English-speaking countries in Africa. The Institute offers MA, MPhil and PhD degree courses. It organizes seminars, work-shops, ad hoc courses of study and in-service training in Demography and related fields at the request of governments and institutions, mainly in English-speaking African countries. Given its regional and international character, a significant number of the Institute's students come from other African countries.

SCHOOL OF COMMUNICATION STUDIES: Established in 1973 as the Institute of Journalism and Mass Communication, the School offers programmes leading to the MA and MPhil degrees in Communication Studies. It provides future journalists and media practitioners with the theoretical understanding and the professional skills and techniques required in the mass media.

SCHOOL OF PERFORMING ARTS: Established in 1962 as the School of Music and Drama under the Institute of African Studies, it comprises the Department of Dance Studies, the Department of Music and the Department of Theatre Arts. These three departments provide core courses for diploma, bachelor's and post-graduate degrees in Music, Theatre Arts and Dance. The School also runs Bachelor of Fine Arts (BFA) and Master of Fine Arts (MFA) degree programmes. Occasionally, the school organizes one-year certificate courses in Theatre Arts for foreign students on special admission. Training programmes for teachers and schools, amateur drama groups, choirmasters and singing groups are also available. The School has a Resident Theatre Company called 'Abibigromma'.

SCHOOL OF GRADUATE STUDIES: The unit responsible for coordinating graduate studies is the ***School of Graduate Studies***. The School is headed by a Dean, and deals with all matters which have to do with registration and records, official correspondence and welfare of graduate students. There is a separate Handbook for Graduate Studies. The School seeks to provide a more effective and efficient governance structure for graduate studies.

OFFICE OF RESEARCH, INNOVATION AND DEVELOPMENT (RID): This office promotes, coordinates and facilitates the University's research enterprise. The Office is headed by a Pro-Vice-Chancellor and seeks to raise the leadership profile of the University's research enterprise. The office also seeks to create an enabling environment for building the portfolio of contract research, to raise the level of research income and to

commercialize the huge intellectual resources available to the University.

ACCRA CITY CAMPUS (Formerly the External Degree Centre): In 2002, the Academic Board of the University approved an arrangement to transform the External Degree Centre into the Accra City Campus of the University of Ghana, to offer part-time degree programmes in Bachelor of Arts (BA) and Bachelor of Science in Administration (BSc Admin). Admission is on fee-paying basis .Time-tabling is made flexible so as to accommodate the needs of workers. Entry requirements remain the same as for admission to the main University.

CENTRES OF RESEARCH/LEARNING

LANGUAGE CENTRE: The Language Centre was founded in 1970 as a Centre for research in Language use in Ghana, with the status of a department in the Faculty of Arts. For the first ten years of its existence, it was supported by a grant from the Carnegie Corporation, which funded the building it occupies. It later received Ford Foundation support, especially for staff development. The British Council supplied its Language Laboratory in 1980 and has provided small sums at various times. The focus of the Centre is on research and teaching related to the improvement of performance in the languages used in Ghana as vectors of education, culture and community interaction - English, the official language, and various Ghanaian languages.

CENTRE FOR TROPICAL CLINICAL PHARMACOLOGY AND THERAPEUTICS: The Centre for Tropical Clinical Pharmacology and Therapeutics was established in the University of Ghana Medical School in 1982 with a grant from the UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases (TDR). The grant was to increase research and training capabilities in Clinical Pharmacology, especially pharmacokinetics of antimalarial, antischistosomal and antifilarial drugs. The grant period was from 1982-1986. The Centre has the status of a department in the Medical School. The principal activities of the Centre are directed towards achieving the institutional objectives of the University of Ghana Medical School.

LEGON CENTRE FOR INTERNATIONAL AFFAIRS AND DIPLOMACY (LECIAD): The Legon Centre for International Affairs and Diplomacy (LECIAD) was established by the University of Ghana in December, 1989. Its central purposes are:

i. the provision of inter-disciplinary postgraduate academic training for qualified applicants and Foreign Service personnel;
ii. the organisation of seminars, workshops and short courses on specified subjects of current international interest;
iii. research and publication in the areas of International Affairs, International Law and Practice.

The Centre runs a 12-month course in International Affairs leading to the award of an MA degree in accordance with the existing University of Ghana Regulations.

THE INTERNATIONAL CENTRE FOR AFRICAN MUSIC AND DANCE: The Inter-national Centre for African Music and Dance was established at the University of Ghana in the 1992-93 academic year to serve as a focus for the development of materials and programmes in African Music and Dance that meet the needs of scholars, research students and creative artists. It is intended:

i. to provide a forum for international meetings, conferences, seminars, workshops and special events in African music and dance;
ii. to serve as an Archival Documentation and study centre for African Music and Dance;
iii. to promote and coordinate research, creative and development projects in music and dance;
iv. to prepare and publish monographs, source materials, bibliographies and an International Journal of African Music and Dance, and to serve as a clearing house for information on events, artists, scholars and institutions concerned with the study and promotion of African music and dance.

The Centre operates as a unit within the School of Performing Arts which offers diploma and degree courses of the University of Ghana in music, dance and drama. In addition to participation in the Centre's programmes, visiting scholars and students affiliated to the Centre will be able to avail themselves of the classes and private lessons in African music and dance given by the traditional musicians and dance instructors of the School as well as the facilities of the reference library of the Institute of African Studies which is adjacent to the School of Performing Arts and which has a valuable collection of Africana.

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LEGON SEISMOLOGICAL OBSERVATORY: The Ghana Geological Survey Department has installed seismological equipment in the University's Department of Geology as part of a Telemetric Seismograph Network. The main station at Legon is served by a number of smaller stations located in the south-eastern part of Ghana (Tema, Shai Hills, Akosombo, Koforidua, Kukurantumi, Weija and Winneba) which transmit signals by radio waves. The network monitors seismic activities in the country.

LEGON BOTANICAL GARDENS: The Legon Botanical Gardens, covering an area of approximately 25 hectares, supports the scientific research of the Department of Botany. It contains plant species of the tropics and semi-tropics, including a large collection of palms from various tropical areas. In addition to the sale of plants and wreaths, landscaping and horticultural services, there are facilities in the gardens for picnics by individuals, families and social groups.

AGRICULTURAL RESEARCH CENTRES: There are three Agricultural Research Centres; at Legon (about 12 kilometres outside the main campus), at Kpong on the Accra plains (about 90 kilometres north-east of Legon), and at Kade in the Forest Zone, in the Eastern Region (approximately 175 kilometres from Legon), under the supervision of the Institute of Agricultural Research of the College of Agriculture and Consumer Sciences. Apart from research, the Centres provide technical and practical experience for students of agriculture, and extension and training facilities for farmers and other interested persons.

- ***Livestock and Poultry Research Centre- Legon:*** The Centre at Legon (established in 1953) covers an area of about 740 hectares. Its main research activities are in animal breeding, animal nutrition, veterinary medicine, pasture improvement and the development of dairy cattle by crossbreeding.
- ***Soil and Irrigation Research Centre- Kpong*** The Kpong Centre (established in 1954) covers an area of about 420 hectares. It conducts research mainly into rice, sugar cane, cowpea, soya bean, sorghum and beef cattle. The Station also conducts research on mechanized irrigation agriculture on black soils (vertisols) of the Accra Plains.
- ***Forest and Horticultural Crops Research Centre- Kade:*** The Centre at Kade (established in 1957) covers an area of 99.3 hectares. It is mainly concerned with research into production of forest zone crops such as citrus, plantain, cocoyam, oil palm and rubber, with a special interest in the agronomy of perennial crop plants.

LIBRARY FACILITIES: The University library system consists of the main library, the Balme Library and libraries of Schools, Colleges and Institutes as well as Departmental and Hall libraries. Together they form the library facilities that support teaching, learning and research in the University. Non-members of the University are allowed use of these volumes but do not have borrowing rights. The University library system has been automated using the Innopac Millennium Library Management System. Resources of the Library System may be accessed online at http://library.ug.edu.gh. Available also are online academic databases covering all the subject disciplines.

CENTRE FOR REMOTE SENSING AND GEOGRAPHIC INFORMATION SERVICES (CERSGIS): The Centre for Remote Sensing and Geographic Information Services was established in 1993 as the Remote Sensing Applications Unit; a self-accounting Unit in the Department of Geography and Resource Development with a mandate to provide Remote Sensing and Geographic Information Systems (GIS) services and to assist research in land and water resources appraisal and monitoring, including rural and urban land use patterns and trends. It also supports the teaching programmes of the environmental and resource based departments, namely Geography and Resource Development, Geology, Botany, Agriculture and Physics. The establishment of the Unit became necessary because of the establishment of a remote sensing applications laboratory and an ecological laboratory in the Department of Geography and Resource Development. The establishment of the laboratories was made possible through the generous assistance of the United Nations Development Programme (UNDP) and the Danish Government through the Institute of Geography under a linkage arrangement between the Universities of Ghana and Copenhagen (Denmark). The Ecological laboratory is equipped with modern facilities to undertake analyses of a large range of subjects, including plant materials, soil conditions, water and sediments. The combination of a remote sensing laboratory and an ecological laboratory provides ideal facilities for multi-disciplinary approaches to resource and environmental problems which are bound to have far reaching implications not only for the quality and relevance of teaching and research in the University but also for the quest for the sustainable development of the resources of Ghana.

ECOLOGY LABORATORY CENTRE: The Ecology Laboratory at the University of Ghana, Legon was initiated in 1993 through a DANIDA financial ENRECA project. During the first project period, 1993–95, the Ecology Laboratory was equipped with instruments for conducting chemical and physical analyses on soil,

water and plant samples. The second project period, 1997–9, was intended to support teaching and interdisciplinary research programmes on nutrient cycling, ecology and biodiversity. This is reflected in the composition of membership of the Centre's Advisory Board and Technical Committee to represent a wide range of Departments. The Centre is aimed, among others, at supporting interdisciplinary research activities to facilitate necessary field research for researchers and PhD students; to encourage exchange of scientists and technicians between Ghana and Denmark; to conduct training courses on topics of interest to activities of the Ecology Laboratory Centre and to organise seminars and workshops. The Ecology Laboratory Centre is located in the building housing the Ecology Laboratory at the Department of Geography and Resource Development.

CENTRE FOR SOCIAL POLICY STUDIES: The Centre for Social Policy Studies was established in December, 1997 primarily to develop and improve social welfare services in Ghana. It is intended to fill a need for social welfare policy research in Ghana. The challenge is to provide a forum that can play a co-ordinating role for the establishment of a social development network and at the same time to involve the general public in the process of social welfare policy development. The Centre aims at creating greater awareness on social welfare policy issues in Ghana and promoting participatory development of policies and social service programmes of action. In this respect, the Centre focuses on interdisciplinary projects that emerge from its own programmes as well as those of cognate departments, agencies, organisations and institutions. Specifically, policy areas to be covered through the Centre's programmes and activities are: the development of the child; poverty, nutrition and household dynamics; family welfare; health; gender issues; ageing; community participation/community welfare; labour issues; environmental issues; population and development. Because of its coordinating role, the Centre serves as a Documentation and Information centre on social welfare policy for students, researchers, policy makers and professionals in the social service field. The centre has a specialised library of reference materials not available elsewhere on campus and produces a Social Policy handbook which covers a wide range of policy issues, carrying both information and programme experiences.

CENTRE FOR GENDER STUDIES AND ADVOCACY (CEGENSA)

Established in 2005 and launched in 2006, the centre's key role is to ensure that gender issues become legitimate business of the university. This role includes academic, policy and service functions over 7 core areas: academic planning and curriculum development; research and documentation; the provision of a resource centre; the provision of a sexual abuse counselling centre; policy planning; the development of mentoring programmes, particularly for junior female faculty and students; and outreach and extension work within the university as well as in the wider society.

CENTRE FOR MIGRATION STUDIES

The Centre for Migration Studies was formally established in October 2006 at the University of Ghana to undertake research, teaching, training, capacity building, policy assessment, development and dissemination in the area of migration. Its mission is to serve as a leading centre for the study of contemporary and future migration dynamics within and outside Ghana through a strategic and integrated approach.

WEST AFRICA CENTRE FOR CROP IMPROVEMENT (WACCI)

The overall purpose of the West Africa Centre for Crop Improvement (WACCI) is to train the next generation of West and Central African plant breeders in an African university, to breed crops in national agricultural research stations for production systems in the two sub-regions towards the improvement of food security in Africa.

The Centre has therefore been established at the University of Ghana to train plant breeders with expertise to improve the indigenous crops that feed the people of the West African sub-region. The WACCI plant breeding training programme will produce skilled, knowledgeable and properly resourced breeders to breed crops to meet local needs and preferences.

INSTITUTE OF ENVIRONMENT AND SANITATION SCIENCES

Government, on the occasion of the University's 60th anniversary, announced a gift of GH¢60 million to the University, part of which was to be used to establish an Institute for the Study of the Environment and Sanitation Sciences. The Institute, which is part of the Faculty of Science, has as its overall goal the establishment of teaching programmes and training to educate and produce post graduates to PhD level and mid-career environmentalists and practitioners in Ghana and Africa; to address the enormity of the implications of development and the environment; and to mitigate the changing and increasing risks to human health caused by poor sanitation. The Institute aims to evolve into a centre of excellence for environmental and developmental issues and to provide training, knowledge and service in Ghana and Africa on issues relating to sanitation and environmental management.

3. ADMISSION REQUIREMENTS

PREAMBLE

The University of Ghana is a co-educational secular institution of higher learning, offering a wide range of academic programmes to which it admits applicants with different academic back-grounds. The University's academic programmes cover sub-degree certificates/diplomas, bachelor's, masters and doctoral degrees. As a policy, the University admits applicants from all races and nationalities, irrespective of their religious, cultural, social or ethnic persuasions. There is no age limit for admission to any of the approved programmes of study in the University of Ghana.

SUB-DEGREE CERTIFICATE/DIPLOMAS

Applicants for admission must have obtained at least passes in Core English, Core Mathematics, Core Social Studies, Core Integrated Science and two electives at the Senior Secondary School Certificate Examination (SSSCE) or West African Senior School Certificate Examination (WASSCE) or the Post-Secondary Teachers Certificate 'A' of the Ministry of Education of Ghana or any relevant professional qualification approved by the Academic Board. Other suitable candidates who pass a special qualifying examination may be admitted. In addition, candidates must have satisfied approved departmental requirements.

BACHELOR'S DEGREES

The general requirements for entry to LeveL 100 of the bachelor's degree programmes are as follows:

i. **Senior Secondary School Certificate/ West African Senior School Certificate Examination:** Passes in the four core subjects, namely, ***English***, ***Mathematics***, ***Integrated Science*** and ***Social Studies*** and ***Three Elective Subjects***, with an aggregate score of 24 or better in the Senior Secondary School Certificate Examinations (SSSCE) or West African Senior School Certificate Examination (WASSCE). This is however subject to review by the Academic Board.

ii. Other Qualifications: Other qualifications include International ***Baccalaurette (IB), IGCSE, GCSE,*** the ***American Grades 12 and 13 examinations*** and other external qualifications which have equivalences to the SSSCE or the WASSCE. Candidates with external qualifications are admitted to Level 100,.

iii Direct entry to the next higher level is possible if a course of approved content has been taken in a recognised institution. Additional Faculty and Departmental (Subject) requirements must be satisfied. Bachelor's degree courses (BA, BSc, BMus, BFA) are of an 8-Semester (4-year) duration for all candidates.

The post-first degree Bachelor of Laws (LLB) degree is of a 4-semester (2-year) duration. The Bachelor's degrees in Medicine and Dentistry normally last 11 semesters (5½ years). Bachelor's degrees in Business, Agriculture, Arts, Law, Science, Social Studies, Pharmacy and Engineering Sciences are classified (**First Class**, **Second Class-Upper Division**, **Second Class-Lower Division**, **Third Class** and **Pass**). Degrees are awarded with **Honours** to candidates who attain Third Class or higher.

MATURE STUDENTS

Mature persons applying for admission, who do not satisfy the approved requirements, must have attained the minimum age of 27 years at the time of submitting their applications. Successful candidates are selected on the basis of a competitive selection examination in English (Essay, Comprehension, Grammar and Usage) and General Paper (Quantitative Methods, Critical and Logical Thinking and Current Affairs). A candidate shall be deemed to have passed the examination for consideration for admission if he/she obtains a minimum of Grade "D" (40%) in each paper. Successful candidates shall be admitted to Level 100.

HIGHER DEGREES

Applicants for admission to higher degrees must hold good bachelor's degrees in the appropriate subjects. All higher degrees are open to graduates of other approved universities. For Master of Philosophy degrees, at least two semesters must be spent studying in the University. For the PhD, at least two semesters for graduates of the University of Ghana and at least four semesters for those of other universities must be spent in this University. Thereafter, subject to approval by the Board of Graduate Studies, candidates may pursue their studies outside the University. Master of Arts programmes are of a two-semester full-time or four-semester part-time duration.

VISITING STUDENTSHIP (SPECIAL ADMISSIONS)

This operates under the principle of Academic Credit Transfer, requiring the recognition by one higher educational institution of courses, study periods and examinations which have been completed in another higher educational institution. Under this scheme, students who have completed two years of higher education at their overseas universities are admitted to spend a third year of study at the University of Ghana under close

supervision of the host institution, after which they return to complete their final year at their home university. Acceptance is normally based on the applicant's previous academic record and his/her proposed programme. Applicants must have an academic record that is above average. Credits earned under this special study programme are transferable. To be eligible for participation in this programme, therefore, one must have obtained a minimum Cumulative Grade Point Average (CGPA) of 3.00 on a 4.00 point scale.

OCCASIONAL STUDENTSHIP

Non-members of the University may be admitted to be part of courses for up to one session/ semester, subject to the approval of the Dean of Faculty and the Head of Department concerned, and upon payment of a fee. Such persons are not eligible to take university examinations.

FOREIGN STUDENTS

The University attaches great importance to the cross-cultural experience that is made possible by the presence of foreign students on campus. The successful participation of international students in our courses has helped us to acquire an excellent reputation for the quality of our teaching and research and of our student care services. We pride ourselves on the attention given to the individual needs of our students, whatever their cultural backgrounds. Foreign students may pursue courses towards the award of University of Ghana degrees, or as visiting students, study for the degrees of their own universities. Foreign students may be admitted if they hold qualifications equivalent to those listed above. Evidence of command of the English Language at the SSCE/WASSCE or its equivalent is required. There is a one-year English proficiency course (without specific entry requirements) for candidates who do not have the requisite English language background.

TRANSFER STUDENTS

The University admits a limited number of students who are already enrolled in other Universities, though local transfers are not usually allowed. Such students transfer from their university to the University of Ghana to complete their course of study for a degree/diploma of the University of Ghana. A student transferring from one university to this university should accumulate a minimum study period of 4 semesters as a full time student in this university before he/she becomes eligible for graduation. The classification of the degree will be based only on the courses taken at this University.

REGISTRATION AND ORIENTATION

The University requires all fresh students to report at least one week before the commencement of the academic year to go through a process of registration and orientation. Orientation is compulsory for all freshmen. All students are required to register fully with the Hall of Residence/Attachment, the Academic Affairs Directorate and the relevant Faculty/ Department(s).

All enquiries about admissions should be addressed to:

The Director (Academic Affairs Directorate),
University of Ghana,
Registrar's Offices,
P. O. Box LG 25,
Legon, GHANA.
Email : academic@ug.edu.gh

4. STUDENT FACILITIES AND SOCIETIES

HALLS OF RESIDENCE/HOSTELS

The University believes in community living as an essential part of student life. It is therefore primarily residential, providing accommodation in Halls of Residence for both under-graduate and post-graduate students as well as flats and guest rooms for senior members and guests. There are a number of halls of residence (available to all students) and several Hostels. The present Halls and Hostels are as follows:

Legon Hall
Akuafo Hall
Commonwealth Hall
Volta Hall
Mensah Sarbah Hall
Postgraduate Hostel
Valco Trust Hostel
International Students' Hostel
African Union Hall [Ghana Hostels Limited]
Jubilee Hall
Hilla Limann Hall
Alexander Adum Kwapong Hall
Elizabeth Frances Sey Hall
Jean Nelson Aka Hall

Each Hall consists of junior members (students) and senior members (academic and senior administrative and professional staff), and is managed by a Council comprising members elected by persons belonging to the Hall. The Master (or Warden in the case of Volta Hall) is the Head of the Hall. Each Hall has Junior and Senior Common Rooms for students and Faculty, respectively. A tutorial system offers an opportunity for counseling students and ensuring their welfare at both academic and social levels. Students maintain interaction with each other and the wider community through recognized clubs and societies. Each Hall has a kitchen and a dining hall to cater for students' feeding. Chapels and a mosque are also available for use by various religious denominations. A Chaplaincy Board co-ordinates the activities of religious groups. Social life on the campus is organised mainly by the Students' Representative Council and the Junior Common Room Committees which provide various kinds of social programmes.

LEGON HALL: Legon Hall was the first to be built on the permanent site of the University of Ghana at Legon and is, therefore, the Premier Hall of the University. Its foundation tablet was laid during the Michaelmas Term of 1951 and, in September 1952, the first undergraduates were accepted into residence. On Trinity Sunday, 31st May 1953, the first service was held in the Chapel and the first meal served in the Dining Hall. From these events, the Hall took Trinity Sunday every year as its birthday, celebrated by a common "Feast" for both its Junior and Senior Members. The Hall's motto, ***Cui Datum*** ("To whom much is given…"), was selected from St. Luke's Gospel, in recognition of the special responsibility attached to the Hall's seniority. Senior Members of the University may be assigned as Fellows of the Hall by the Vice Chancellor and they usually keep their Fellowship for as long as they remain with the University. Persons of academic distinction outside the University may be elected as Honorary Fellows at a General Meeting of Fellows. The rest of the membership of the Hall is made up of persons in ***statu pupillari***. The governing body of the Hall is the Hall Council, members of which are Fellows of the Hall. The principal Hall Officers are: The Master, the Vice-Master, the President of the Senior Common Room, the Senior Tutor, and the Hall Bursar. The Hall was converted into a mixed Hall of Residence in October, 1991.

AKUAFO HALL: Akuafo Hall was established with the appointment of Professor D.A. Taylor, a Master-designate and a Hall Council in 1953. The Hall Council in 1954 decided to name the Hall Akuafo to commemorate the generous gesture of the farmers of Ghana in giving money for the foundation of the University College. A crest which depicts a cocoa tree, an open book and a drum, designed by Professor W.J. McCallien, and a motto, ***laboremus et sapiamus***, suggested by Professor L.H. Ofosu-Appiah, were adopted by the Council. A commemorative plaque with a Latin inscription composed by Professor L.H. Ofosu-Appiah was set up to show the gratitude of the Hall to the farmers of the country and to the British Government who gave the University College funds for the building of the Hall. The Hall was officially opened on 17 February, 1956, but the first students, numbering 131, came into residence on the 5th October, 1955. The Hall has its own statutes governing the election of officers and the administration of its affairs. Once a year, the Master has to convene a meeting of the Fellows, who form the governing body, to receive his annual report. The Senior Common Room is open to all Fellows and their guests, and the Senior Combination Room to all senior members of the University. Senior Members may also invite students to the Combination Room. The Hall was converted into a mixed Hall of Residence in October, 1991.

COMMONWEALTH HALL: The first batch of students was admitted into residence in Commonwealth Hall at the beginning of the 1956-1957 academic year. In the Lent Term of that academic year, Ghana attained its independence from Great Britain, and the Hall, hitherto known as the Third Hall, was officially christened **Commonwealth Hall** to commemorate Ghana's admission into the Commonwealth of Nations. The official opening of the Hall was performed in March, 1957. It is, so far, the only all-male Hall of Residence in the University. The motto of the Hall, **Truth Stands**, was taken from a quotation from ***Satyre*** by John Donne (1572-1631): ***"On a huge hill, cragged, and steep,***

Truth stands and hee that will Reach her,

about must, and about must goe"

This motto combines both the physical situation of the Hall (on a hillside overlooking most of the University and beyond) and the proper pursuit of a University education, the search for truth. It is the only Hall of Residence in the University which has a theatre and amphitheatre for lectures and plays. The Coat of Arms of the Hall depicts the strength and unity of purpose of members of the Hall deriving from the bonds of association enjoyed by the individual members of the Hall. High Commissioners of the Commonwealth countries in Ghana are accorded Honorary Membership of the Hall. There is a Hall Council which administers the affairs of the Hall, assisted by the Tutorial Board and the Senior Common Room Committee.

VOLTA HALL: Volta Hall started as the Fourth Hall in the 1959-60 academic year, on 16th November, 1960. The University College Council, on the recommendation of the Hall Council, named it Volta Hall. The Hall consists of the main hall originally designed to accommodate 82 students, and an annex with an original capacity for accommodating 198 students, the occupation of which began in January 1966. The motto of the Hall, chosen during the Hall's tenth anniversary celebrations, is in the Akan language and it is: ***Akokobere Nso Nyim Adekyee***. This means that the secret or knowledge of life and nature is a gift to women as it is to men. The Hall has a governing Body which comprises all the Fellows assigned to it and those elected by the assigned Fellows. The government of the Hall rests with this body which delegates some of its powers to a Hall Council. The Hall Council consists of ten members, including the Warden, the Deputy Warden, the Senior Tutor and the Bursar who are ex-officio members. The day-to-day administration of the Hall is carried out by the Warden with the help of the Senior Tutor, who deals with all students' affairs, and the Bursar.

MENSAH SARBAH HALL: Mensah Sarbah Hall, the fifth Hall of the University, stands in the southern part of the campus. The Hall consists of a main Hall built around a quadrangle and a number of Annexes standing to the north and east. The last two south annexes are attached to the Hall. Until October 1991, Mensah Sarbah was the only co-ed Hall of Residence in the University, which made it quite unique among the Halls. The governing body of the Hall is the Council, which is responsible to the full body of Fellows who form the Senate. Students' affairs are handled by students' own elected government headed by a President, while the general administration of the Hall is under the Master who is assisted by the Senior Tutor and Tutors on the one hand and the Bursar on the other. Other Hall Officers are the Chaplain, who is responsible for the Roman Catholic Chapel, the Prayer Room Warden, who is responsible for the Protestant Chapel, and the Librarian. Senior Common Room affairs are managed by an elected committee under the President of the Senior Common Room. The Hall is named after the famous Ghanaian jurist, writer and statesman, John Mensah Sarbah of Cape Coast. It has been customary for the Hall to celebrate the birthday anniversary of this great man every year. This anniversary is known as Sarbah Day and is highlighted by a dinner and a get-together. The Hall has a crest designed to bring out the principal features of Mensah Sarbah's life. It consists of three elements: a pair of scales, a stool with a book resting upon it, and a hill surmounted by a castle. The scale signifies the legal profession, the stool and the book symbolise culture while the hill and the castle are intended to depict the familiar landscape of Cape Coast with its many hills and forts. At the same time, the castle is intended to symbolise strength and honour. The Hall's motto is: **Knowledge, Honour**, **Service** - three words which aptly summarise the guiding principles of Mensah Sarbah's life.

VALCO TRUST HOSTELS: The idea to build a graduate hostel was first nurtured when Legon Hall Annex C was prepared exclusively for graduate students of the Hall. The quest for a suitable accommodation for graduate students gained attention when Valco Trust Fund offered to finance the construction of a graduate hostel. As a further boost to this course, Legon Hall Annex C was converted into an Annex of the Hostel. The Valco Trust Hostel, donated to the University by the Valco Trust Fund to ease pressure on student accommodation, is a block of purpose-built, self contained flats for 190 students. The Hostel, which was completed in June 1997, is the University’s first hostel for graduate students. A second block with similar facilities was opened in January 2006. Located behind Mensah Sarbah Hall on the southern part of the campus, the flats are arranged in single and double study bedrooms with en suite shower and toilet. There is a shared kitchen for every twelve rooms. Facilities in the hostels include common rooms, washrooms and a restaurant.

INTERNATIONAL STUDENTS' HOSTELS: The International Student's Hostels are located on the southern part of the campus off the road to the Noguchi Memorial Institute for Medical Research. For a long time, it had been the dream of the University of Ghana to create and strengthen links with other universities in order to enhance the international student presence on campus. The first phase was commissioned in June 1999 and the second in January 2006. The Hostels are co-educational and each has 43 single rooms and 85 double rooms. In addition, there are facilities such as a well-fortified security system, kitchenettes and restaurants.

JUBILEE HALL: Jubilee Hall, located on the southern part of the campus, adjacent to the International Students' Hostel, was built to commemorate the University's Golden Jubilee celebration in 1998. Modeled after Akuafo Hall, one of the traditional Halls of the University, and funded mainly by alumni of the University, the Hall is a group of 4 (four) multi-purpose blocks containing single study bedrooms, self-contained flats and double rooms. Facilities in the Hall include common rooms, libraries and restaurants. There are rooms suitable for disabled students.

HILLA LIMANN, ALEXANDER ADUM KWAPONG, ELIZABETH FRANCES SEY AND JEAN NELSON AKA HALLS: A new hall complex, which houses 7,120 students, was ready for occupancy at the beginning of the 2010/2011 academic year. The project was financed by the University through a loan secured by a consortium of six financial institutions.

OTHER HOSTELS: There are also a number of private hostels situated close to the Legon Campus. A list of these can be obtained from the Office of the Dean of Student Affairs.

STUDENTS' SERVICES AND ASSOCIATIONS

STUDENTS' REPRESENTATIVE COUNCIL (SRC): The Students' Representative Council represents student interests at the university. It co-ordinates the activities of the academic, cultural, religious, political and recreational clubs and societies, provides a link with outside organizations and concerns itself with all aspects of student welfare within the university. Its officers are elected annually by a ballot of all students during the second semester to serve the following academic year. Executives of the Junior Common Room (JCR) also serve on the Council. All students registered at the university are automatically members of the SRC, which levies direct income from its members to finance its programmes and activities. The SRC is a constituent organization of the National Union of Ghana Students, which provides a focal point of all aspects of student activities nationally and internationally. The Union runs a broadcasting service on campus called Radio Univers, which transmits to the campus site and its environs and even as far as to the city of Accra and slightly beyond. These, together with the student newspapers, provide a comprehensive information service on campus. One area of SRC activity is the SRC Women's Commission, which organizes programmes to educate female students on their rights and responsibilities as young women. The Commission runs a number of its own community action projects, and also liaises between student volunteers and voluntary and non-governmental organizations in and around the country.
The SRC has representation on the Council of the University and on University Boards/ Committees which deal with students' welfare.

GRADUATE STUDENTS' ASSOCIATION: The Graduate Students' Association was formed in the early years of the 1990's to cater for the special needs of graduate students. All graduate students registered at the University are automatically members of the Association. The Association levies direct contributions from its members to finance its activities. Members also maintain their membership of the Students' Representative Council, to which appropriate dues are paid. The Association organises seminars, special fora and social mix events, all aimed at enhancing greater interaction among graduate students. The Executive is also responsible for representing the Association on the Council of the University as well as other Boards/Committees of the University which deal with the welfare of students.

JUNIOR COMMON ROOM (JCR): There is a Junior Common Room in each Hall of Residence to which every student attached to the Hall is a member. The JCR has its own constitution. It elects its governing body of officers who seek to protect the interests of junior members of the Hall and provide cultural, social and sporting activities for the Hall. The JCR of a Hall, through its officers, maintains relations with JCRs of other Halls and is a recognised channel of communication between junior members and the Hall authorities. The revenue of the JCR is derived from students' contributions and contributions from the University through the Hall Council.

SPORTS: All sporting activities of the University are conducted by the Sports Directorate. The University has, since 2005, begun a process to better integrate sports into our academic programmes and has also taken steps to

focus more on wellness issues for students and staff. This has involved significant administrative, infrastructural and programme development.The University is working to put in place workable sports programmes on all its campuses, to ensure that all students have a good balance between academic work and other activities integral to the university experience.

HEALTH SERVICES: The University Hospital was opened in October 1959. It consists of an Out-patient Department, an Operating Theatre, an X-Ray Department, a Laboratory and a Ward section, a Paediatric Ward, an Emergency Unit and a Dental Clinic. The Hospital offers medical attention to all members of the University community, namely, students, staff and staff dependants, as well as members of the public. All new students to the University are given a thorough medical examination at the beginning of their first year. Likewise, members of staff go through thorough medical examinations on their first appointment. Students requiring medical treatment are seen daily at the Students' Clinic located within the Central Cafeteria Building.

COUNSELING AND PLACEMENT CENTRE: The Counseling and Placement Centre offers comprehensive, professional counseling as well as a career and placement service to all members of the University. The Centre strives to maintain an independent and congenial environment in which people can freely seek information and professional help on various concerns. Counseling is confidential and is provided only at the request of, or with the concurrence of, the person involved. Students may report for individual counseling on a variety of concerns ranging from short-term academic, social, personal and family concerns to longer-term emotional and psychological problems. Group counseling is provided on specific concerns frequently expressed by students. Preventive counseling lectures and seminars are organised at various times of the year on topics intended to stimulate positive and healthy development and discourage habits which tend to create problems for students. The Centre also offers a basic career and placement service for students and alumni. Under this programme:

i. Students are assisted with self-assessment, career choice, and self-penetration, including writing of applications and resumés, and performance at interviews;

ii. Colloquia between students and representatives of major employing organisations are held yearly at which students learn about the functions and operations of major establishments in the country, the range of jobs offered to university graduates, and the corresponding qualifications and personal attributes required;

iii. Students and alumni are assisted to get placement on jobs through introductory letters, direct canvassing by the Centre and liaison with employers for campus interviews.

The Centre has an information room containing literature on post-graduate and professional courses offered by this University and foreign institutions as well as a modest collection of books and leaflets on a number of careers suitable for graduates in various disciplines.

OFFICE OF THE DEAN OF STUDENTS: The Office of the Dean of Students provides counseling and information services for students, administers the non-academic student disciplinary system and student grievance procedure, and assists in non-academic programme development. The Dean works in close collaboration with the Heads of Halls, the SRC, the Sports Directorate, the Counseling and Placement Centre and the University Public Affairs Directorate. He/she also runs a Host Family Service for foreign students interested in being fostered by local families.

OFFICE OF INTERNATIONAL PROGRAMMES: The Office of International Programmes was established in June, 1997 with the mandate to promote and co-ordinate all the University's external relations, including international students, scholars on various exchange programmes, staff on exchange and external staff training programmes. The Office also acts as the central office to deal with links between this University and other universities. The Office of International Programmes is located in the K.A.B. Jones Quartey Building.

STUDENTS' FINANCIAL AID OFFICE: The Students' Financial Aid Office (SFAO) was established in August 2005, necessitated by the increasing number of applications and requests from students for financial assistance. The University of Ghana sees the operation of the SFAO as strategic and an integral part of its programmes as it enables needy but bright students to access university education. Financial aid is available to Ghanaian students and is intended to remove the cost barriers that may prevent them from pursuing their educational goals. For now, financial aid provided by the University involves financial support towards academic fees only. Other elements will be added as resources become available. Assistance is available from a variety of sources such as funding from Government, the University, and other private sources. Brilliant students who demonstrate significant financial need may qualify for financial aid. Financial Aid at the University is in the form of a full scholarship, partial scholarship and on-campus work-study or part-time job opportunities for students. In order to qualify to apply for and receive financial aid from the University of Ghana, a student must meet all of the following requirements:

- Be a Ghanaian citizen
- Be enrolled as a student in a full-time programme of study
- Be able to demonstrate financial need
- Be brilliant, and
- Be making excellent academic progress as determined by the University.

Clarification on any of the items stated above can be obtained from the Students Financial Aid Office in the Alumni Centre or via email finaid@ug.edu.gh. The application process for financial aid for continuing students commences in December of each year. The awards are made by the end of the second semester, to be utilised in the following academic year. The process is also available to new students during the First Semester of enrolment. Information is available during new student orientation. Application forms for financial aid can be downloaded from the Students' Financial Aid Office website: *www.ug.edu.gh/sfao.php*

OFFICE OF STUDENTS WITH SPECIAL NEEDS: The University of Ghana is committed to a policy of equal opportunity in education and to ensuring that students with disabilities have as complete and equitable access to all facets of University life as can be reasonably provided. The University has taken steps to ensure that no student with any form of disability is disadvantaged in the pursuit of academic laurels. Toward this end, the University has an Office of Students with Special Needs located in the Student Union Building. The Office has a Coordinator who is supported by a number of resource persons. Students with the following categories of disability may register with the office:

- Hearing Impairment/Deafness
- Visual Impairment/Blindness
- Specific Learning Difficulties
- Physical Disability
- Medical Disability
- Mental Health Difficulties

The Office helps identify varied needs of the affected students and provides support services to enable them achieve optimum academic outcomes. The support includes: braillers, readers, interpreters, enlarged prints, note-takers and alternative examination arrangements.

EXTRA-CURRICULAR ACTIVITIES ON CAMPUS

There is always a lot to do and see before and after lectures and students enjoy very active social lives, because of various activities which frequently organised.

Clubs and Societies: There is a wide choice of clubs and societies on campus for students. Religion is catered for by a variety of religious bodies and associations which include the ***Presbyterian Students' Union,*** **the** ***Legon Pentecostal Students' Union***, ***Pax Romana***, the ***Ghana Muslim Students Association***, the ***Ahmaddiya Muslim Students' Union***, ***the Anglican Society***, ***the University Christian Fellowship*** and ***the Nichiren Shoshu,*** to name a few. Students are also able to join in activities organised by their Faculties on campus. ***The Political Science Students' Association, the Law Students' Union***, ***the National Association of Science Students***, ***the Medical School Writers Club, the Ghana Association of Medical Students, the Agricultural Science Students' Association and the Ghana National Association of Teachers (Legon Branch)*** are a few examples of such associations which seek to protect and promote their respective academic and professional interests. A number of international clubs are also very active on campus. Students with special needs also have an association called the ***Disabled Students' Association*** aimed at promoting their interest and welfare on campus. There are also a number of charitable and benevolent societies which operate on campus, for instance, ***the Child Survival Club***, ***the Rotaract Club*** and ***the Student Services Organisation,*** to name a few. Extra-curricular activities do not end with clubs and societies. ***The Students' Representative Council (SRC)***, ***the Graduate Students' Association of Ghana (Legon Branch)*** and the ***Junior Common Rooms*** of the Halls of Residence often generate a lot of activity on campus. Students are encouraged to partake in their annual events.

Events: Hall Weekends are big events on campus. Students' imagination and innovation are put to the test in week-end celebrations. Inter Hall Football Galas are also organised to the delight of sports fans. There is also an annual inter Halls Cross Country race coordinated by the Sports Directorate.

OTHER FACILITIES

University Bookshop: Located at the University Square, the University Bookshop stocks a wide selection of textbooks and other reading material and is open to the general public.

Restaurants: There are restaurants in the various Halls of residence and hostels on the University campus.

University Guest Centre: The Centre comprises a restaurant and a number of bed-sitters, flats and bungalows for the University's guests.

Internet Facilities: Internet facilities are available in the ICT Directorate, halls of residence and faculty and departmental computer laboratories and libraries.

5. ALUMNI ASSOCIATION

A national association of alumni organizes activities which keep alumni in touch with the life and work of the university. Prominent among these activities are the annual Alumni Lectures**.** The Lecturers are alumni of the University who have distinguished themselves in their respective professions and worlds of work.

6. AGGREY-FRASER-GUGGISBERG MEMORIAL LECTURES

The Aggrey-Fraser-Guggisberg Memorial Lectures were instituted in 1957 to commemorate the contribution made to the founding of Achimota College and the advancement of education, particularly higher education, in Ghana. The Lectures, a series of three given on three consecutive days, have become a great event to which the Ghanaian public looks forward. It is, indeed, the most prestigious lecture series and the high-point of the intellectual calendar of the country.

7. REGULATIONS FOR JUNIOR MEMBERS

1. The term "Junior Member" shall apply to a person other than a Senior Member who is enrolled for the time being in the University of Ghana for an approved course of study.

2. Regulations affecting Junior Members shall be made from time to time by the Academic Board in accordance with the Statutes of the University and promulgated by the Vice Chancellor. In addition to these Regulations, each Hall, Department, Institute, School, Library, the Hospital or any other unit of the university may issue its own rules governing the conduct of Junior Members within its precincts, provided that such regulations are not inconsistent with the general regulations made by the Academic Board. Such regulations must be tabled before the Academic Board.

3. These regulations shall apply to all Junior Members.

4. Copies of all regulations shall be deposited with the Registrar, Heads of Halls, the Dean of Students, Deans and Heads of Departments and should be brought to the attention of Junior Members.

5. Ignorance of Regulations or of any Public Notice shall not be accepted as an excuse for any breach of discipline. Accordingly, every student on enrolment shall be required to obtain a copy of such University, Hall and other regulations relating to his condition and which are for the time being in force.

6. Junior Members shall conduct themselves in a quiet and orderly manner and shall pursue their studies with all diligence; they shall observe the statutes and shall conform to all such regulations and orders as may be made for the good government of the University.

7. The operation of these Regulations is without prejudice to the application of the general law of the land which applies to all persons in the University.

8. The officers of the University who have a special responsibility, under the Vice- Chancellor, for the discipline of Junior Members are the Dean of Students, Heads of Halls, Senior Tutors and Tutors. It shall be an offence to disobey these officers in the discharge of their University duties.

9. ADMISSION AND RESIDENCE

9.1 A Junior Member who does not hold an award granted by the Government, or by an institution recognized by the University, shall be required to pay all approved fees on or before registration.

9.2 A Junior Member whose accounts are in arrears and unpaid at the beginning of an academic year or semester shall not normally be allowed to come into residence or attend lectures until his outstanding accounts have been settled.

9.3 Dates of Semesters are announced in University Notices. Junior Members admitted to residence are

required to come into residence following registration and to remain continuously in residence until the last day of semester unless permission is granted for temporary absence. Students who are non-resident are required to register at the Halls to which they have been assigned.

9.4 Procedure regarding exeats is notified in the Hall Regulations. In cases of absence involving non-attendance at Lectures, Tutorials or Practicals, or Examinations, the written permission of the Department concerned must be obtained in addition to that of the Hall authorities.

9.5 Admission of Junior Members to the University shall be subject to their passing a Medical Examination.

9.6 Membership of the Students' Representative Council and respective sporting clubs is compulsory for all Junior Members.

10. NAMES OF JUNIOR MEMBERS

10.1 For the purposes of the University, Junior Members are known only by the names which they have signed in the Application Form/Register of Matriculation and are known by those names only in the sequence in which they were signed (that is, first name, middle name[s] and surname).

10.2 **Change of Name:**

i. As an institutional policy, the University does not accept requests to change or amend names or other records of students.

11. ATTENDANCE AT LECTURES AND EXAMINATIONS

11.1 Junior Members are required to attend lectures, tutorials and practical classes specified for their course of study, and all such examinations as the University or the departments may from time to time require, and to perform all written and practical work prescribed for them.

11.2 Junior Members who absent themselves from lectures, tutorials and practical classes for a cumulative total of 25% in any one semester will be deemed not to have satisfied the attendance requirements for the semester. Such Junior Members shall be asked to withdraw from the University.

12. **USE OF ACADEMIC DRESS**

All Junior Members are required to wear the academic dress appropriate to their status on the following ceremonial occasions:

i. Matriculation
ii. Congregation,

and other occasions as required.

13. **FORMATION OF SOCIETIES AND CLUBS**

13.1 Student Societies and Clubs in the University shall be formed at the request of at least ten interested students. In addition, there must be a Senior Member who will be the Senior Treasurer.

13.2 The request should be submitted for approval by the Residence Board through the Students' Representative Council and shall be accompanied by the recommendation of the Students' Representative Council and the Constitution/Bye-laws of the proposed Society or Club.

13.3 The proposed Society or Club shall be formally promulgated in the University Re-porter after the Residence Board has given its approval.

13.4 Within three months from the date of the promulgation of the Society or Club, the Secretary shall deposit the names of persons holding principal offices of the Society or Club with the Registrar and the Dean of Students. Thereafter, the Registrar and the Dean of Students shall be furnished with the names of their Principal Officers, once a year.

14. PUBLIC FUNCTIONS WITHIN THE UNIVERSITY

14.1 Students who wish to organise any public function within or outside the Hall of Residence shall obtain prior permission from the Head of Hall/Dean of Students as appropriate. The Head of Hall/Dean of Students shall in turn inform the Registrar and the Vice-Chancellor.

14.2 An application for permission to organise a function should provide the following information:

i. date and time of the function;
ii. place where the function is to take place;
iii. names and description of Lecturers, Speakers, or Performers at the function.

14.3 This information together with evidence of fulfillment by the organisers of any requirements imposed by law in relation to the holding of such a function should normally reach the Head of Hall/Dean of Students at least three days before the function takes place. The Head of Hall/Dean of Students may impose such other requirements and conditions as may appear to him to be necessary or desirable.

14.4 For the purpose of this section, a public function is one to which persons other than Senior and Junior Members of the University are invited or entitled to attend.

15. PROCESSIONS AND DEMONSTRATIONS

15.1 Any student or students wishing to organise a procession/demonstration in the University shall notify the Dean of Students in writing with a copy to the Registrar at least three days before the procession/demonstration is due to take place.

15.2 The notification shall state the purpose of the procession/demonstration and the name(s) of the organiser(s).

15.3 The Dean of Students may prescribe special conditions, limitations or restrictions as may be considered appropriate in the circumstances.

15.4 The procession/demonstration will follow an approved route and keep as close as possible to the right side of the road in order to ensure free passage of traffic.

15.5 No procession/demonstration shall be held between the hours of 6.00pm and 6.00am.

15.6 During the procession/demonstration, nothing shall be done or said that may occasion violence or cause a breach of the peace.

15.7 If, in the opinion of the Dean of Students, the procession/demonstration will be likely to lead to a breach of the peace or cause serious interference with the work of the University, he may so advise the Vice-Chancellor who may take appropriate action.

15.8 If any acts of violence and/or breach of University, Hall or other regulations occur during a procession/demonstration or other mass action, the perpetrators as well as the organiser(s) shall be held jointly and severally responsible.

15.9 The fact that a procession/demonstration is not prohibited in no way implies that the University has either approved of or is in sympathy with its objectives.

15.10 For processions/demonstrations outside the University, the organiser(s) should, in addition, notify the Police and follow other requirements under the Public Order Act, 1994 (Act 491).

16. PUBLICATIONS

16.1 The Vice-Chancellor will be informed of any intention to produce a student publication within the University and his approval in writing shall be obtained for such a publication.

16.2 A copy of each issue will be lodged with the Vice-Chancellor, Head of Hall and Dean of Students as appropriate and the University Librarian on the day of publication.

16.3 Each issue shall state the name of the Editor, the Membership of the Editorial Board and the Publisher.

16.4 The members of the Editorial Board will be held jointly responsible for the full contents of each issue of the publication. (See Appendix A).

17. OTHER REGULATIONS

17.1 It shall be an offence for a Junior Member to:

i. Cultivate, possess, use or peddle narcotics and other drugs as listed in the Schedule to the Narcotic Drugs (Control, Enforcement and Sanctions) Act, 1990 (PNDCL 236).
ii. Willfully cause damage to University property or the good name of the University and incite others

to cause such damage.

iii. Publish defamatory material on the campus.
iv. Smoke in a library, lecture theatres or other public places on the campus.
v. Throw any person into ponds in the University.
vi. Possess firearms on campus.
vii. Make undue noise within the University precincts. In particular, the hours between 10.00 p.m. and 6.00 a.m. are to be regarded as hours of quiet, provided that this rule shall not apply where permission to organise a function has been granted by the Head of Hall or Dean of Students.

18. USE OF VEHICLES

18.1 Any Junior Member who wishes to use or keep a vehicle on the campus of the University must obtain permission from the Vice-Chancellor through the Senior Tutor of his Hall.

18.2 The University accepts no responsibility for such vehicles, or for any damage that may occur to them or to their owners, drivers or passengers. The use of such vehicles is a privilege which is enjoyed at the sole risk of the persons concerned and which will be withdrawn if it is abused.

18.3 The University does not provide garages for students' vehicles. Any arrangement for garaging them in the University should be made privately by the owners.

19. COLLECTION OF MONEY

19.1 Permission to make general collections of money other than for club subscriptions and cinema shows or parties must be obtained from the Dean of Students/Senior Tutors of the Halls. Junior Members are advised to ask to see the license or other valid authority of any collector who comes from outside the University.

20. THE DEAN OF STUDENT AFFAIRS

20.1 The Dean of Student Affairs is responsible for the welfare and discipline of students outside their Halls of residence. The Dean works in close collaboration with the Students' Representative Council (SRC), the Halls of Residence, the Counseling and Placement Centre and the Sports Directorate.

20.2 For the efficient running of the office, the Dean shall have the support of a committee comprising:

- All Senior Tutors
- A representative of the Students' Representative Council
- The Director, Public Affairs Directorate or his/her representative

21. DISCIPLINARY PROCEDURE

21.1 **Within Hall of Residence**: If a student violates Hall regulations, disciplinary measures shall be taken by the authorities of the hall to which he/she belongs.

21.2 **Outside Hall of Residence**: If a student violates any University regulations outside the Hall of residence, it shall be reported to the Dean of Student Affairs who will notify the Senior Tutor of the student's Hall for appropriate sanctions. For serious offences involving a group of students, the Committee of the Dean of Student Affairs shall investigate the matter and apply appropriate disciplinary sanctions or make recommendations to the Vice- Chancellor.

21.3 **Disputes between Students of Different Halls**: Where disputes arise between students from different Halls, the Tutors of the students involved shall attempt to resolve the dispute. Should their attempts fail, the matter shall be referred to the Senior Tutors of the Halls involved. Should the dispute persist, the matter shall be referred to the Committee of the Dean of Student Affairs.

22. SANCTIONS

22.1 Any student who does not observe the statutes and regulations, or commits any act subversive of discipline or good order or tending to bring discredit upon the Hall or the University, or neglects his duties, may be punished by a warning, or reprimand, or fine, or gating, or rustication for a period of time, or withholding of results of examinations or outright dismissal.

22.2 Sanctions which involve temporary or permanent removal from the University shall be effected only with the concurrence of the Vice-Chancellor.

23. APPEAL

Any Junior Member who is aggrieved by any disciplinary sanctions may appeal to the Vice Chancellor through the Head of Hall for a review within seven days of the notification to him of the sanctions imposed on him. The Vice-Chancellor, on receipt of a report from the appropriate source, may request a review of the sanctions so imposed. When carrying out a review, the Vice-Chancellor may act on the advice of a committee on which student interests are represented.

APPENDIX A

MEMORANDUM FOR THE GUIDANCE OF STUDENT JOURNALISTS
THE LAW OF GHANA

All student publications, even though they may be circulated only within a Hall or the University, are subject to the law of the land. This memorandum is intended to give them general information about their legal liabilities. It is not a substitute for professional legal advice, and it only deals with those parts of the law which are most likely to concern student publications. Generally, a writer who uses his common sense and the information given here should not run into legal difficulties.

The Civil Law of Libel

Everyone concerned with a publication runs the risk of being sued and made to pay damages if the publication libels anyone. Material published is libellous - for example, if it suggests that the person has committed a crime, or is dishonest, or immoral, or not to be trusted, or has misconducted himself in his office. It does not have to refer to the person by name - it is sufficient if ordinary people would understand what is published as referring to the person who brings the action.

The liability is not confined to the author of the libellous article or picture; everyone on the editorial committee would also be liable, and even those who take part in typing or distributing the publication may be liable as well. So if you take any part in a publication, it is wise to realise that you are legally responsible for what is included in it, and normally it makes no difference whether you troubled to read the copy or not.

You have a complete defence if what is published is true, so long as you can actually prove this in court. But this may be difficult so the safe rule is to be very careful before you publish an attack on a person's character.

You also have a defence (called "fair comment") which allows you to comment upon matters of general public concern, and express opinion and voice criticism upon such matters. To come within this defence, you must confine your opinion to matters which are of concern and interest to the public generally (though, normally, a person's private character is not of public interest). You must also avoid making false factual statements; the law allows you to express your opinions, but not to tell untruths. But there is nothing against your expressing your opinions on matters of public concern in a vigorous way, though if you express them in an indecent way then you must expect a court to doubt your good faith.

The Criminal Law of Libel

If you carelessly publish a libellous material, you can be fined, and if you do so deliberately you can be imprisoned too. The details of the law are set out in the Criminal Offences Act, 1960, (Act 29). The ingredients are broadly the same as those of the Civil Law, with one important difference ***- truth is only a defence "if it was for the public benefit that the matter should be published****". Consequently, even a true statement about, for example, another person's private life might be criminal even though the person him/herself could not sue for damages.*

The Criminal Law of Obscenity

You can be fined or imprisoned if you publish obscene material whether it takes the form of writing or pictures. Common sense is the best guide as to what the court is likely to regard as "obscene".

Comment on Judicial Proceedings

It is possible to commit offences by commenting upon judicial proceedings; it is prudent to seek advice before doing so.

8. UNIVERSITY EXAMINATIONS

INSTRUCTIONS TO CANDIDATES

(Extracts from Regulations Governing University Examinations)

10.1 A candidate for a University Examination must have followed the approved course as a regular student over the required period, and must have registered for the examination.

10.2 Entry to the Examination shall be by registration and which shall be duly endorsed by the Head(s) of Department and submitted to the Director of Academic Affairs not later than six weeks after the commencement of the semester.

10.3 A candidate shall not be admitted to a University Examination if:

i. he/she has not been entered for it as in 10.2;
ii. the subject of the Examination has merely been audited unless the course had been followed previously.
iv. he/she owes fees to the University/Hall;
iv. he/she is under suspension or has been dismissed from the University.

10.4 It shall be the duty of the candidate to consult the daily time-table (to be made available at least 24 hours ahead of time) to ascertain the papers to be written each day and to make himself/herself available at the appointed place at least one-half hour before the examination.

10.5 A candidate shall be refused admission to a University Examination if he/she reports to the Examination more than half an hour after its commencement.

10.6 It shall be the candidate's responsibility to provide for himself/herself a pen, pencil, calculator and an eraser as needed. Programmable calculators are, however, strictly prohibited. It is also his/her responsibility to ensure that he/she is given the right question paper and other material needed for the examination.

10.7 An examination candidate shall not bring to the Examination Centre or to the wash-room of the Examination Centre or in the immediate vicinity of the Examination Centre any book, paper or written information or Cellular/Mobile phones or other unauthorised material. Any such material shall not be deposited at the entrance to the Examination Room or the washroom or in the immediate vicinity of the Examination Centre. No student shall enter the Examination Room until he/she is invited or called and/or requested to enter the Examination Room.

i. Any candidate who is seen with lecture notes or book or Cellular/Mobile phones or any unauthorised material in the Examination Centre or in the immediate vicinity of the Examination Centre before the commencement of the examination shall be deemed to have committed an offence, and shall be banned from the examination and awarded a grade X.

ii. A candidate shall uphold the highest standard of civility and courtesy in an examination centre. A candidate who flouts the instruction(s) of a Chief Invigilator or Invigilator or misconducts himself/herself in any manner to an examination official at an examination centre commits an offence. Such candidate shall be banned from the examination and awarded a grade X.

iii. A candidate who is suspected of hiding unauthorised material on his/her person may be asked by the invigilator to submit to a body search. Refusal to submit to a body search is tantamount to misconduct. It is also an offence to destroy or attempt to destroy evidence of unauthorized material.

iv. An examination candidate shall, for the purpose of identification by the Chief Invigilator/Invigilator, carry on him his valid student identity card which shall be placed on the examination table to enable the Invigilator ascertain the identity of the person writing the examination. The Chief Invigilator shall reserve the right to refuse any candidate without a valid identity card entry to the Examination. A candidate who tries to conceal his/her identity by wilfully writing the wrong index number on the answer booklet as against the one signed on the Attendance Sheet commits an offence.

10.8 No communication between candidates is permitted in the examination hall.

i. A candidate shall not pass or attempt to pass any information or instrument from

one to another during an examination;

ii. A candidate shall not copy or attempt to copy from another candidate or engage in any similar activity.

iii. A candidate shall not disturb or distract any other candidate during an examination.

v. Candidates may attract the attention of the Invigilator by raising their hands.

10.9 Smoking or drinking of alcoholic beverages is not allowed in the Examination Room.

10.10 Candidates may leave the examination room temporarily, and only with the express permission of the Invigilator. In such cases, the Invigilator will be required to satisfy himself that a candidate does not carry on his/her person any unauthorised material. A candidate who is allowed to leave the Examination Room temporarily will be accompanied while outside the examination room by an Attendant designated by the Invigilator.

10.11 A candidate who finishes an examination ahead of time may leave the Examination Room but not earlier than thirty minutes from the commencement of the examination, after surrendering his/her answer books. The candidate shall not be allowed to return to the Examination Room.

10.12 At the end of each examination, candidates should ensure that they do not take away any answer books, whether used or unused, from the Hall.

10.13 Candidates should not in any way mutilate or interfere with the stapling in the answer books. Any complaints about the answer books should be brought to the attention of the Invigilator.

10.14 A candidate who fails to be present at an examination without any satisfactory reason shall be awarded a grade X. The award of grade X in a required paper means **failure in that paper**. The following shall not normally be accepted as reasons for being absent from any paper at a University Examination:

i. mis-reading the time-table;
ii. forgetting the date or time of examination;
iii. inability to locate the examination hall;
iv. inability to rouse oneself from sleep in time for the examination;
v. failure to find transport;
vii. pregnancy.

10.15 A breach of any of the foregoing regulations made for the conduct of University Examinations may attract one or more of the following sanctions:

i. a reprimand;
ii. loss of marks;
iii. Cancellation of a paper (in which case zero shall be substituted for the mark earned);
iv. withholding of results for a period;
v. award of grade X.

10.16 Further to 10.15, a grade Z leading to failure in the entire semester's examination, shall be awarded wherever it is established that candidates had attempted to gain an unfair advantage in an examination be it in a Principal Subject or an Ancillary or any other paper. Further sanctions may include:

i. being barred from a University Examination for a stated period;
ii. being barred from a University Examination indefinitely;
iii. suspension from the University;
iv. expulsion from the University.

10.17 Provisional results of University Examinations shall be posted on the University notice boards and on the MIS web on the University's website www.ug.edu.gh . It shall be the responsibility of the candidate to consult the notice boards and the MIS web portal for the provisional results of any examination taken. Alternatively, the candidate may write to the Director of Academic Affairs to enquire about his/her results, for which purpose he may provide a stamped addressed envelope.

10.18 A candidate who is not satisfied with the results of a University Examination affecting him/her may request a review by submission of an application to the Registrar and payment of a review fee shall be determined at not less than three times the normal Examination Fee.

10.19 An application for a review of examination results shall be submitted to the Registrar not later than 21 days after the release of the said results as approved by the Board of Examiners, and should state the grounds for review.

10.20 An application entered on a candidate's behalf by a person other than the aggrieved candidate himself shall not be entertained.

10.21 No action shall be taken on an application which is submitted outside the time stipulated in 10.19. Review shall not proceed unless the Review Fee is fully paid.

10.22.1 If it emerges that a complaint for review is frivolous or ill-motivated, the Board of Examiners may prescribe further sanctions which may include barring the complainant from taking a University Examination for a stated period or an indefinite period.

10.22.2 The Board of Examiners may authorise the Registrar to amend the results as released in the light of the review.

10.22.3 No application **whatsoever** for review of course or award shall be entertained later than 5 (five) years after completion of programme.

EXAMINATION MALPRACTICE OR OFFENCE

1. Examination offences shall be understood to include any attempt on the part of a candidate to gain an unfair advantage, and any breach of the Examination Regulations and Instructions to candidates including refusal on the part of a candidate to occupy an assigned place in an Examination Room, any form of communication with another candidate, possession of a book, paper or written information of any kind except as required by the rules of a particular examination, smoking, leaving an Examination Room without permission of the Invigilator, or refusal to follow instructions.

2. The Chief Invigilator or any Examiner shall report to the **Registrar** as soon as practicable any instance of a breach of Examination Regulations. On the advice of the Registrar, the Pro-Vice-Chancellor shall constitute an Inter-Faculty Committee on Examination Malpractice to investigate all examination offences that have come to attention. In respect of offences occurring outside the precincts of an Examination Room, the Dean shall cause an enquiry to be made into any reports that reach him and submit his findings to the Registrar.

3. The Joint Board of Examiners shall review all reports received in connection with an examination malpractice or an offence. On the basis of its review, the Board of Examiners may impose a sanction involving loss of marks in a particular paper. A grade of Z shall be awarded wherever it is established that a candidate had attempted to gain an unfair advantage in an examination be it in a Principal Subject or an Ancillary or any other paper or has misconducted himself/herself in an examination. Such a candidate may be debarred from taking a University Examination for a stated period or indefinitely or expelled from the University.

4. In all instances of examination malpractices or offences a formal report from the Joint Board of Examiners shall be made to the Academic Board. The Academic Board may review all such reported cases and may vary the sanctions as it thinks fit.

9. REGULATIONS FOR THE BACHELOR'S DEGREE

1. **ACADEMIC PROGRAMME**

1.1 The University has recast its academic programmes in modular form with effect from September 1992. Under the modular course structure, the University's academic calendar has been organized into a semester system, and instruction takes the form of courses evaluated in terms of credits. Units of courses are examinable at the end of every semester and, if passed, a student shall earn credit(s) for the units. The courses are coded and numbered in progressive order of difficulty, or in levels of academic progression.

1.2 (a) Each Faculty or School (with status of a Faculty) shall provide detailed information about the structure of courses leading to the award of Bachelors' Degrees.

(b) It is the responsibility of each student registered at the University of Ghana to be familiar with the specific requirements of the bachelor's degree which he/she plans to pursue, as well as the rules, regulations and policies of the University and of the Faculties or Departments or Schools concerned.

1.3 Each student is responsible for ensuring that the courses in which registration is effected satisfy the programme requirements of the bachelor's degree sought; advice and/or counseling for all who need assistance is freely available.

1.4 It is also understood that every student, by the act of registering, agrees to abide by all rules, regulations and policies of the University of Ghana and of the Faculties or Departments or Schools in which that student is registered.

1.5 Each student is expected to be familiar with the General Information outlined in this Handbook as well as the information pertaining to the Faculty or Department or School in which he/she is enrolled. Students shall therefore be held liable for any lapses. When in doubt, students may consult their Heads of Department in writing with a copy to the ***Director, Academic Affairs Directorate*** asking that advice be given in writing.

1.6 **The University reserves the right to conduct academic work (especially examinations) on any particular day of the week.**

1.7 **Except with the express written approval of the Vice-Chancellor, no student is permitted to register for two programmes at the same time either within or outside the University. The sanction for such an offence shall be the cancellation of the University registration or loss of studentship.**

1.8 The University reserves the right to change rules, regulations and policies, as well as programme and course requirements in this Handbook without prior notice.

1.9 Exemption from any of these General Regulations may be granted only by the express permission of the Academic Board on the recommendation of the appropriate Faculty Board.

UNIVERSITY REQUIRED COURSES

The University has, beginning from the 2010/2011 academic year, introduced a unique general education programme which is intended to provide a rewarding experience for all students who undertake undergraduate studies in the University. The interdisciplinary courses in the programme, which are intended to foster broad student familiarity with key advances in the humanities, science and technology, are the following:

Course Code	Course Title	Target Group
UGRC 110	Academic Writing I	All students entering the University of Ghana at Level 100
UGRC 120	Numeracy Skills	Students in the Humanities except those offering Economics, Computer Science, Mathematics and Statistics
UGRC 130	Understanding Human Societies	Students in Basic and Applied Sciences
UGRC 140	Science and Technology in our Lives	Students in the Humanities
UGRC 150	Critical Thinking and Practical Reasoning	All First Year Students of the University
UGRC 160	Introduction to Literature	Students in the Humanities offering Economics, Computer Science, Mathematics and Statistics
UGRC 210	Academic Writing II	All students who have completed AcademicWriting I at Level 100
UGRC 220	Introduction to African Studies	All students

It is expected that these compulsory courses will, in combination with students' main areas of study, produce students who are equipped to meet the development needs of Ghana and Africa, and equip graduates of the University of Ghana to be confident, rounded scholars, capable of holding their own with graduates from any part of the world.

NOTE: Details of the semesters in which students of various faculties are expected to take University Required Courses may be found in the programme structure for each Department/Faculty.

UGRC 110: Academic Writing I

The main objective of Academic Writing I is to equip students with the language skills that will enable them to read and write effectively. Students will be taken initially through fundamental issues in grammar and composition in order to consolidate their language skills in these areas. Subsequently, reading and writing skills relevant to university work will be introduced. These will include the structure of the essay, unity, completeness and coherence in essay writing; summarizing as a skill basic to exposition, writing from sources, referencing skills and avoiding plagiarism. The course will be taught in small groups and class activities are characterised by group work, oral presentations and extensive practical assignments.

UGRC 120: Numeracy Skills

This course is designed for students to acquire basic numeracy skills needed for solving real life problems. It involves the following: review of basic algebraic skills; rates (fractions, proportions and percentages); approximating numbers (rounding up of numbers and significant numbers); mathematical reasoning, (deductive and inductive reasoning); statements; truth tables; necessary and sufficient conditions; basic set theory; nature and uses of statistics; sources of data; data types and measurement scales; methods of data manipulation (aggregation and interpretation); basic probability with illustrations from various disciplines; establishing relationships between variables, and the use of basic computer packages such as Excel in analyzing data.

UGRC 130: Understanding Human Societies

The course is designed for students pursuing science-related programmes at the undergraduate level. The aim of the course is to introduce students to the broad array of issues that shape human societies. The course is divided into two main parts. Part I seeks to introduce students to the evolution of human societies, the economic basis of human societies, and governance in societies. It covers the first three weeks of lectures and is compulsory for all students. Part II covers 10 weeks, and aims to ground students' understanding of human societies on six selected areas, each constituting a module: the economy and business; culture and development; governance in the information society; human behaviour and the social environment; religion and societies; and language in

society. Students are expected to select one out of the six modules provided.

Part I
Course Title: Introduction to Human Societies

Part II
Descriptions of Modules:
The Economy and Business in Ghana
This module is designed to offer students the opportunity of understanding the environment within which business operates in Ghana. The module places emphasis on the extent to which geographical, political, socio-cultural, economic and international forces have shaped the growth and practice of business and management in Ghana over time. It is also designed to help students to understand some macroeconomic issues with particular reference to the Ghanaian economy. More specifically, macroeconomic issues such as inflation, unemployment, poverty, exchange rate and economic growth will be discussed.

Culture and Development
This module introduces students to culture-development linkages. It delineates the basic concepts of culture, resources and development and how these concepts holistically constitute the basis of human society. Approaches to understanding human society, both past and present, form the foundation for understanding cultural formations and the diverse resource usages.

Governance in the Information Society
This exposes students to the concepts of good governance and the information society, and the relationship between information and the key elements of good governance such as the rule of law, transparency and accountability. The module further examines the nature, scope and importance of governance and the relationship between the various institutions of governance in a modern society. The way public services ethics promotes good governance is also explored. Finally, the module takes a look at information literacy and sources of official information.

Human Behaviour and the Social Environment
This module is designed to introduce students to human behaviour and the social environment. There are various dimensions to social issues and it is useful for students to get to know a wide range of these issues that concern them and the people around them. It also adds to their existing stock of knowledge.

Religion and Societies
This module aims at introducing students to the on-going debate on the role of religion in human societies. It focuses on religious perspectives on social issues and discusses the way religion impacts social and political structures such as leadership and the family, as well the environment. Students will in the end appreciate the synergy between science and religion in providing the wellbeing of all creation. Topics to be treated will include origins of religion, science and religion, religion in the modern world, religion and health, religion and the environment, gender, religion and cultural values.

Language in Society
This module is aimed at giving students a basic understanding of what language is and how it works in every human society. The course will help students to appreciate how language is used as a tool for doing things in the world. It shows how the study of language is at the intersection of the humanities and the social and natural sciences and how linguists conduct the business of studying language. Some of the topics to be covered are: the nature and functions of language, the language situation in Ghana, language, power and gender, as well as levels of linguistic analysis.

UGRC 140: Science and Technology in our Lives
This course deals with the application of science to everyday life. The course will, therefore, include material to assist students to appreciate the foundations of scientific thought, the application of science and technology and demands of changing societies for scientific and technological advancement. The course is expected to foster broad familiarity with key advances in science and technology. The course will be delivered through lectures, tutorials, class exercises, homework assignments, and examinations.

Course Structure
The course is divided into two modules. All students are required to take both modules. Module I will give a general overview of the application of science and technology to everyday living, and will last for five weeks

(Weeks 1 – 5). In Module II, students will select one out of the six on offer. Module II will last for eight weeks (Weeks 8 – 13). The six areas are: Earth Resources, Geohazards, Chemistry and Life, Food and Nutrition in everyday life, Everyday Physics, and Animals as Friends of Humans.

UGRC 150: Critical Thinking and Practical Reasoning

An essential element in the training of social studies and humanities students is providing a corrective and diagnostic skill set that enables students to discriminate logically between: rhetorical ploys that give *motives* vs. arguments providing *good logical reasons* for believing an assertion. Students need to recognise the contrast between *inductive* and *deductive* reasoning and the different types of support yielded by each, to evaluate the quality of evidence confirming an empirical hypothesis about human conduct, to maintain individual professional and scholarly discretion in the face of peer pressure and mob mentality. Those enrolled in this course will be provided the vocabulary and techniques to employ critical thought and practice within the academic arena and beyond.

UGRC 160: Introduction to Literature

This course will engage students in careful reading and analysis of a challenging selection of literary works from a range of genres including the novel, the short story, poetry and drama. The focus will be on intensive reading and discussion of the literature to inculcate in students the skill of interpretation. Students are expected to be active readers as they analyze and interpret textual detail, establish connections among their observations and draw logical inferences leading toward an interpretive conclusion. They will be introduced to formal features of the selected texts, including plot, character and language, as well as to the links between literature and life, to make them better readers of their world. The course will include a writing component that focuses on expository, analytical and argumentative writing about the literature. In short, students will read, discuss and write about texts while developing skills such as the sophisticated use of literary elements and terminology, close readings of various texts, creating, drafting and editing analytical essays.

At the completion of this course, the students will be able to:

• Make warranted and reasonable assertions about an author's arguments
• Recognize and use literary terms
• Apply literary terminology to fiction, drama, and poetry
• Analyze different genres of literature, particularly short stories, novels, drama and poetry
• Read literary texts closely
• Read, understand and write analytical literary essays
• Recognize and assess the elements of different literary genres

UGRC 210: Academic Writing II

Academic Writing II is a follow-up to Academic Writing I and builds upon the skills acquired in the first year. Students will be required to read and critique a variety of academic essays in their areas of study. Writing activities will derive from these reading tasks and students will be guided to develop their writing through process writing which involves: pre-drafting, drafting, re-writing and revising. In this broad context, students will revise and consolidate their grammar through proof reading and editing activities. The course will also involve training students to write from multiple sources as a preparation for doing research-based writing. Activities will be geared towards getting students to develop the skills of extracting and sorting information from multiple sources and synthesizing them into coherent arguments in an essay. Students will be required to write such a synthesis essay for assessment. Subsequently, students will be introduced to academic presentation skills.

The Language Centre will teach the Academic Writing II course in all the faculties in Level 200, except the following:

- The Faculty of Engineering Science which has opted to offer Technical Report Writing (FAEN 206) in lieu of Academic Writing II.
- The College of Agriculture and Consumer Sciences and some departments in the Faculty of Science which have opted to provide their own courses in the second six weeks of the first semester of Level 200 (Academic Writing II). Faculty-specific lectures in Academic Writing in the second half of the first semester will be run.

The Language Centre will support and coordinate these courses.

UGRC 220: Liberal and African Studies
Course Structure
The Liberal and African Studies course seeks to provide basic background knowledge of Africa, its histories, people and cultures. After a general introduction to African Studies, General Studies and Leadership in Africa, students will be required to take one of these five modules: Gender and Culture, Gender and Development, Leadership in Africa, African Art, its Philosophy and Criticism, and Philosophy in African Cultures.
The general introduction takes two weeks and involves **four** hours of lectures, **one** hour of tutorial and a practical activity – film show. This module is examinable through the electives.

Description of Modules:
General Introduction to African Studies
This introduction aims to provide basic background knowledge of Africa, its histories, peoples and cultures. It serves as the spring board from which to launch the elective courses on African and Liberal Studies.

Introduction to Gender
The main objective of the two week introduction is to help students appreciate the gendered nature of African societies, how this impacts development and state as well as state and civil society responses to gender inequalities. The course will cover topics such as why we deal with gender issues in African studies and key gender concepts and make a case for transforming gender relations on the basis of three justifications - citizenship rights and the constitution, development imperatives and the promotion of gender equitable cultures. Week two will focus on state and civil society responses to gender inequalities focusing on legal and cultural reforms, affirmative action, gender and development and civil society activism. The role of individual and group agency and leadership in changing gender relations will be highlighted.

Introduction to Leadership in Africa
Good leaders are expected to solve new problems which arise in their domain and the changing landscape of business. Leadership is a complex process by which the leader influences others to perform and achieve. Leadership attributes – beliefs, values, ethics, character, knowledge and skills – are all traits which can be learned. This course provides the basis for understanding what leadership is and what leaders do to be successful. The course particularly seeks to make students understand traditional and contemporary concepts and practices of leadership in Africa.

Gender and Culture in Africa
This module examines how culture shapes the positions of women and men in African societies and analyses cultures and cultural practices as dynamic, contested and rooted in socio-economic conditions and power relations. Key concepts in gender studies are analysed in relation to debates about accepted notions of culture. Students will be encouraged to reflect on their own experiences of gender and their role in reinforcing and transforming the nature of gender relations in society.

Gender Issues in Africa's Development
This module will introduce students to key concepts and issues in gender and development with specific reference to Africa. It argues that development is not a neutral process, but impacts men and women differently. Key topics will include men and women's access to resources in Africa such as land, labour, credit, time and social capital, production and reproduction. The module will also examine the gendered implications of natural resource management and sustainable development as well as decision making. It will further examine state and civil society responses to gender issues in Africa. The main objective of this foundation course is to sensitize students to gender issues and enable students recognize and understand the relevance of gender as a development issue and how gender inequalities negatively affect development.

Leadership in Africa
This course encompasses leadership styles and models, leadership in management, a history of chieftaincy and traditional leadership in Africa, African leadership and democracy, as well as challenges confronting African traditional leadership.

African Art, its Philosophy and Criticism
This module is designed to introduce students to an understanding of African art and its conceptual framework as evidence of material culture actively involved in the historical process and life of the African. As a cultural practice, it forms the bedrock of African aesthetic expression. The course argues that the environment, availability of materials for producing art, different histories and external influences have affected African art and its development. The course proposes that African art is reflective and representative of African belief,

philosophy, values and taste, and that it is used in several social, political and religious functions. As a fairly new field, the course introduces students to the forms of art, historical and theoretical enquiries and approaches to the subject such as art as history, history as an art, aesthetics, style, subject and subject matter interpretations and meanings, visual narratives, gender perceptions, roles and representations, art criticism and contemporary discourses on the practice of art on the continent.

Philosophy in African Cultures

This course aims to introduce students to philosophical thought in African cultures emphasizing its relation and relevance to contemporary African cultures and development. Topics will include African cosmologies, concepts of God, deities, ancestors, African communal and individualist values, the concept of the human being, destiny, evil and ethics/morality, gender and race.

COLLEGE OF HEALTH SCIENCES

Medical Sciences became part of the University of Ghana's educational programmes in 1962 when the first batch students was admitted to pursue courses for a degree in medicine. The plan then was to have American government funding for buildings for the Medical School. The proposed medical school was also to be staffed mainly by expatriates. For political and other reasons, this plan was aborted in 1964. The government of Ghana with Dr. Kwame Nkrumah as President, rather decided to have a Medical School fully owned by Ghana and with Ghanaian management and teaching staff. In 1964, Professor C.O. Easmon was appointed first Dean of the Ghana Medical School. The Basic Sciences were located in temporary buildings at the Korle Bu Hospital, which was made a teaching hospital to provide clinical training for medical students. The first batch of 39 doctors graduated from the School in 1969. Their performance, academically and soon thereafter in practice, attracted early recognition of the School by the General Medical Council of Great Britain in 1970.

In 1974, the UGMS initiated the development of a Dental School. The Basic Dental Science courses were offered at the Medical School; the dentistry students pursued clinical programmes at the University of Lagos, Nigeria, the University of Manchester and the University of London, UK. In 1992, the clinical courses became fully localized. The University therefore granted dentistry a faculty status. The first batch of locally produced dental surgeons graduated in 1997.

In 1979, the Noguchi Memorial Institute for Medical Research (NMIMR) was established with sponsor-ship from the Japan government through the Ministry of Finance and Economic Planning. This Research Institute was sited on the plot of the University of Ghana earmarked for the permanent medical school. To date, NMIMR is the permanent structure of the medical complex to have been developed at this site.

In 1994, the University of Ghana, in collaboration with the Ministry of Health, brought into being the School of Public Health for graduate courses leading to the award of MPH, MPhil and PhD degrees. This School is currently located in rooms of the Institute of Statistical, Social and Economic Research and in the Department of Statistics. Permanent building for the School have started with the construction of the Bill Gates Centre for Malaria Research and Control at the site for the medical complex at the main University. The School has six departments and these offer various courses at the postgraduate level.

The Ministry of Health, in 1998, initiated the establishment of a School of Allied Health Sciences to produce medical and dental technical graduates through the Medical School. Programmes for this school included physiotherapy, medical laboratory science, radiography and therapy radiography. Academic Board and the University Council approved this proposal in 1999. In the year 2001, this School came into being. An earlier Diploma in Medical Laboratory Technology also sponsored by the Ministry of Health in 1994 was phased out, with the birth of the School of Allied Health Sciences.

On December 13, 1997, the Academic Board recommended to Council for its approval, the establishment of a College of Health Sciences in the University, to serve as an umbrella organization for all the Schools/Institutes classified under the healing arts of the University. The objectives of the College were clearly stated, as follows:

- *to provide a central administration for the constituent schools/institutes;*
- *to harmonize academic work of the constituent schools/institutes;*
- *to foster active interaction of Faculty, Administration and other Staff of the constituent school/institutes;*
- *to facilitate and promote maximum utilization of human and other resource;*
- *to assist constituent schools/institutes achieve academic excellence in health education by actively supporting the development of their teaching and research programmes leading to the award of higher degree;*
- *to ensure the development of sustainable health education and programmes.*

The College has the following as foundation Schools and Institutions:

- *The University of Ghana Medical School*
- *The University of Ghana Dental School*
- *The School of Public Health*
- *The School of Allied Health Sciences*
- *The School of Nursing*
- *The Noguchi Memorial Institute for Medical Research*
- *The School of Pharmacy*

The College is headed by a Provost who is appointed by the University Council on the recommendation of the Appointments Board. Each School/Institute is also headed by a Dean or Director who is appointed from amongst the professorial Members of Faculty by Council, on the recommendation of the Appointments Board.

COLLEGE ADMINISTRATION

Aaron N.L. Lawson (Prof) *MB.ChB (Ghana), PhD (Leicester)*	-	Provost
Joseph Darkwa Seffah (Prof) *MB ChB (Ghana), FWACS, FGCPS* *Cert. Reprod. Medicine & Biology, Geneva*	-	Deputy Provost
Frank K. Yeboah *BA, MPA (Ghana)*	-	College Registrar
Perry P.K. Ofosu *Dip. (GIJ), Grad. Dip. MA (Ghana), APR (Ghana)*	-	Assistant Registrar
Peter K. Osei-Fosu *BA. Grad.Dip. (Cape Coast), MPA (Ghana)*	-	Assistant Registrar
Kwaku Amponsah *BA, MPA (Ghana)*	-	Assistant Registrar
Yvonne Lartey (Mrs) *BA (Ghana) MPhil. (Trondheim)*	-	Assistant Registrar
Michael Owusu Ansah *BA (Ghana), CA (Ghana)*	-	College Finance Officer

SCHOOL OF ALLIED HEALTH SCIENCES

ADMINISTRATION

Patrick F. Ayeh-Kumi (Rev.) *Dip. (Denmark), BSc., MPhil., PhD. (Ghana)*	-	Dean
George Asare *BSc., MSc. (KNUST) PhD (South Africa)*	-	Vice Dean
Daniel K. Hammond *BA (Ghana), MPhil. (Norway), PhD (UK)*	-	Senior Assistant Registrar

DEPARTMENT OF MEDICAL LABORATORY SCIENCES

C.A. Brown *BSc., MPhil, PhD (Ghana)*	-	Lecturer/Head of Department
Edwin K. Wiredu *MB chB, MRCPath (UK), MIAC FWACP*	-	Associate Professor
George Asare *BSc., MSc. (KNUST) PhD (South Africa)*	-	Lecturer
R.H. Asmah *BSc. MPhil (Gh) PGD (Jap)*	-	Senior Lecturer
A. Martin-Odoom *BSc., MSc. (KNUST)*	-	Lecturer
M.A. Seidu *BSc. (Bristol) MPhil (Gha)*	-	Lecturer
Michael Mark Adddae *Cert in Med. Lab Tech., (Lond), MPhil (Gh)*	-	Lecturer
Isaac Anim-Baidoo *BSc., MPhil (Ghana)*	-	Lecturer
N.I. Nii-Trebi *BSc., MPhil (Ghana)*	-	Lecturer
Enid Owusu *Dip Lab Tech, BSc.(UCC), MPhil (Gh)*	-	Lecturer
S. F. Cudjoe *Dip in MLT MPhil (Gha) MSc (Lond)*	-	Lecturer
George Atenpim Pesewu *BSc. (UG.) MSc.*(KNUST)*, PhD. (Lond)*	-	Lecturer

Samuel S. Antwi-Baffour - Lecturer
BSc., MSc., PhD (Lond)
David Nana Adjei - Assistant Lecturer
BSc. (KNUST), MPhil (Gh)
Ampadu Ewurama Dedea - Assistant Lecturer
BSc., MPhil (Gh)
Nii Koney-Kwaku Koney - Assistant Lecturer
BSc., Mphil (Gh)
Ransford Kyeremeh - Assistant Lecturer
BSc. (KNUST), MPhil (Gh)
Emmanuel Ayittey Tagoe - Assistant Lecturer
BSc (Gh), MPhil (Gh)

DEPARTMENT OF RADIOGRAPHY

W.K. Antwi - Lecturer/ Head of Department
B'Tech (Joburg), MSc. (Wales)
S. Anim-Sampong - Senior Lecturer
BSc, MPhil (Gh), PhD (KNUST)
S.Y.Opoku - Lecturer
BSc (Howard), PhD (Lond)
Eric Ofori - Lecturer
BSc (KNUST), Ph.D, (Liverpool)
L. Arthur - Lecturer
Dip in Rad. (Lond), PGCE (UCC),MSc. (Kingston)
J.N.K. Gawugah - Clinical Tutor
BSc. (Gh), MSc (Kingston)
K.B. Bamfo - Assistant Lecturer
Cert (Rad), MSc (Radiography), PgD (Ultrasound)

DEPARTMENT OF PHYSIOTHERAPY

Anna Hughton - Clinical Tutor/ Ag. Head
MCSP, MScPT(Alberta)
Gifty G. Nyante - Lecturer
BSc. (Armstd), MSc. (Cape Town,)
J.N.A. Quartey - Lecturer
Cert. Med. Lab. Tech.(Gh), BSc (Amsterdam)
MSc. (Ibadan, MHPE (Maas)
A.I. Bello - Assistant Lecturer
BSc., MSc. (Ibadan)
K. Osei Appiah-Kubi - Assistant Lecturer
BSc (Gh), MSc. (Cardiff)
Peter Ndaa - Assistant Lecturer
BSc., MSc(Glasgow)

DEPARTMENT OF DIETETICS

Matilda Asante - Lecturer/ Ag. Head
BSc. (Gh), PhD (Lond)
Laurene Boateng - Assistant Lecturer
BSc.(KNUST), PGDE(UCC), MPhil (Gh)
Anna D. Kuevi - Assistant Lecturer
BSc.,MPhil (Gh)
Freda D. Intiful - Assistant Lecturer
BSc.,MPhil (Gh)
Rebecca Steel-Dadzie - Assistant Lecturer
BSc.,MPhil (Gh)
Joachim Dzidzor Sackey - Assistant Lecturer
BSc.,MPhil (Gh)

INSTITUTIONAL GOAL

The primary goal of the School of Allied Health Sciences is to train and meet the nation's demand for Allied Health Professionals through the provision of academic and professional knowledge.

The secondary goal is to support the mission of the University and College of Health Sciences by producing highly qualified and competent allied health professionals who will provide preventive, promotive, curative and rehabilitative services to meet the health needs of the nation and the global community

To achieve this, the School aims at:

i. Providing an environment in which students develop and attain clinical competence and skills, and develop integrity, ethical relationships and emphatic attitudes that contribute to the welfare and well-being of patients

ii. Helping students to develop a set of information and attitudes that promote intra- and inter-professional understanding and cooperation

iii. Encouraging students to develop the habit of self-education that will foster a life-long practice of continuing self professional development and growth

iv. Engendering and nurturing in each student respect for his/her chosen profession and the desire to serve as needed in hospitals according to professional standards

v. Promoting the allied health professions and fostering close collaboration with allied health professional associations

INSTITUTIONAL OBJECTIVES

The objectives of the School are to produce allied health professionals who will be able to:

a) Demonstrate a high level of competence in the practice of their specialty.
b) Identify the needs of the individual patient through assessment procedure and then determine the objectives of patient management.
c) Critically evaluate their own role and performance within an inter-disciplinary team
d) Demonstrate an appreciation of management strategies within health care.
e) Discuss and evaluate the role of their specialty within the field of preventive health care.
f) Demonstrate an awareness of the economic, psychological, cultural and sociological factors, which may influence the context of contemporary therapeutic practice.
g) Commit to life-long learning and continued personal and professional development, undertake research and read and interpret research papers
h) Analyze and respond appropriately to the changing field of health care

ADMISSION REQUIREMENTS AND REGULATIONS FOR THE BSC. IN DIAGNOSTIC RADIOGRAPHY, BSC. IN THERAPY RADIOGRAPHY, BSC. IN PHYSIOTHERAPY, BSC. IN MEDICAL LABORATORY SCIENCES, BSC. IN DIETETICS AND BSC. IN OCCUPATIONAL THERAPY DEGREE PROGRAMMES

GENERAL REGULATIONS

The University runs a modular course structure. Under this structure, the University's academic programme has been organized into a semester system, and instruction takes the form of courses evaluated in terms of credits. Units of courses are examinable at the end of very semester and, if passed, a student shall earn credit(s) for the Units. The courses are coded and arranged in progressive order of difficulty, or in levels of academic progression.

Each Faculty shall provide detailed information about the structure of courses leading to the award of Bachelors' Degrees.

It is the responsibility of each student registered at the University of Ghana to be familiar with specific requirements of the bachelor's degree, which he/she plans to pursue, as well as the rules, regulations and policies of the University and of the Faculties or Departments or Schools concerned.

Each student is responsible for ensuring that the courses in which registration is effected satisfy the programme requirement of the bachelor's degree sought: advice and/or counselling for all who need assistance is freely available.

It is also understood that every student, by the act of registering, agrees to abide by all rules, regulations and policies of the University of Ghana and of the Faculties or Departments or Schools in which that student is registered.

Each student is expected to be familiar with the General Information outlined in this Handbook as well as the information pertaining to the Faculty or Department or School in which he/she is enrolled. Students shall

therefore, be held liable for any lapses. When in doubt, students may consult their Heads of Departments in writing with a copy to the Executive Secretary of School of Allied Health Sciences, asking that advice be given in writing.

Exemption from any of these General Regulations may be granted only by the express permission of the Academic Board on the recommendation of the appropriate Faculty Board.

The University reserves the right to change rules, regulations and policies, as well as programme and course requirements given in this Handbook without prior notice.

ADMISSION REQUIREMENTS

General Admission

Further to the General Regulations regarding admission into the University of Ghana, admission to the School of Allied Health Sciences for BSc. in Medical Laboratory Sciences, BSc. in Diagnostic Radiography, BSc. in Therapy Radiography, BSc. in Physiotherapy, BSc. in Dietetics, BSc. in Occupational Therapy and such other programmes, shall be as follows:

i. Candidates who have appropriate passes in Core Mathematics, English Language, Chemistry and Physics plus Biology or Mathematics shall be admitted directly into the first year (Level 100) of the 4-year undergraduate degree programmes.

ii. A candidate with Bachelor's degree in Biological or Physical Sciences from a recognized University may be considered for admission on the recommendation of a special committee appointed by the Dean. The special committee shall vet transcript of the candidate as well as course contents of the degrees, with a view to determining suitability of degrees of previous training and make appropriate recommendations that shall include the levels of admission, to the Dean. Admissions under this section may be subject to such conditions as may be approved by the Admissions Board.

Other Admissions

i. Candidates in possession of the Diploma in Medical Laboratory Technology (DMLT) awarded by the University of Ghana with FGPA of 3.25 may be considered for admission to Level 200 of the BSc (Medical Laboratory Science) degree programme. Candidates shall be required to attend a selection interview.
In addition, such candidates **MUST** have appropriate passes in five subjects including English Language, Science and Mathematics at GCE 'O' Level as well as passes in two science subjects at GCE 'A' Level.

OR

a. WASSSCE/SSSCE in the appropriate specialty

ii. Candidates in possession of Higher National Diploma Laboratory Science or Diploma in Laboratory Science with FGPA of 4.0 may be considered for admission to Level 200 in Medical Laboratory Sciences.

iii. Candidates admitted under 2.2 ii and iii above shall be required to sit an entrance examination and pass an interview.

2. COURSES/SUBJECTS FOR LEVELS 100 TO 400

Level 100 Courses (Semesters 1 & 2) shall be used to upgrade the level of Science of the SSSCE candidates to lay A foundation for higher levels of the undergraduate programmes.

Levels 200, 300 and 400 Courses shall be for Semesters 3 & 4, 5 & 6 and 7 & 8 respectively.

BSC. IN RADIOGARPHY
DIAGNOSTIC AND THERAPY RADIOGRAPHY

DEPARTMENTAL OBJECTIVES

Diagnostic Radiography
At the end of training, the diagnostic radiography student should be able to:

1. Accurately demonstrate anatomical structures on a radiograph or other image receptor
2. Determine exposure factors to achieve optimum radiographic techniques with minimum radiation exposure to the patient, self and others
3. Evaluate radiographic images for appropriate positioning and image quality
4. Recognise emergency patient conditions and initiate life-saving first aid and basic life support procedures
5. Exercise independent judgement and discretion in the technical performance of medical imaging procedures
6. Employ quality assurance and quality control procedures in the performance of duty
7. Provide patient care and comfort, show respect for patients' rights and dignity and act in acceptable professional manner at all times
8. Educate patients and the general public on radiographic procedures and radiation protection/safety
9. Participate in continued professional development programmes
10. Manage a radiography department in at least a district hospital and advise hospital management on radiography issues

Therapy Radiography
At the end of training, the diagnostic radiography student should be able to:

1. Assist the radiation oncologist in localizing tumours
2. Simulate treatment parameters
3. Verify and implement computer-generated treatment plans
4. Perform quality assurance procedures
5. Deliver radiation treatment as prescribed by the physician and monitor patient's physical condition and response to treatment
6. Provide patient care and comfort, show respect for patients' rights and dignity and act in acceptable professional manner at all times
7. Educate patients and the general public on radiotherapy procedures and radiation protection/safety
8. Participate in continued professional development programmes
9. Work with colleagues and other health professionals as a member of the health care team
10. Advise hospital management on radiotherapy issues

LEVEL 100
All the courses at level 100 are compulsory

SEMESTER 1

SAHS 101	Introductory Statistics	2
SAHS103	Physical and Inorganic Chemistry	2
SAHS 105	Organic Chemistry	2
SAHS 107	Chemistry Practical	1
SAHS 109	General Physics	2
SAHS 111	Biology	2
SAHS 113	Introduction to Computer Studies	1
SAHS 115	Clinical Reasoning in Health Sciences	3
UGRC110	Academic Writing I	3
		18

SEMESTER 2

SAHS 102	General Anatomy	3
SAHS 104	General Anatomy Practical	1
SAHS 106	General Physiology	3

SAHS 108	General Physiology Practical	1
SAHS 112	Introductory Psychology for Allied Health Sciences	2
SAHS 122	Introductory Biochemistry	2
RDGY102	Introductory Radiography	2
GSPH 214	Writing for Public Health	3
UGRC 220	Liberal and African Studies	3
		20

RDGY 200 Vocational Training I **3 Cr**

This is a 6-week inter-semester clinical training period at the end of Semester 2 (i.e. during the long vacation) to allow students to obtain practical hands-on experience. Students will undertake introductory clinical training in an accredited Diagnostic Imaging Department/Unit. Students shall be evaluated at the end of the vocational training. The course is a pre-requisite for all Level 200 courses in Diagnostic Radiography.

LEVEL 200

All the courses at level 200 are compulsory

SEMESTER 3

RDGY 201	Radiography Physics I	2
RDGY 203	Patient Management I	2
RDGY 205	Radiographic Imaging Processes I	3
RDGY 207	Radiographic Anatomy I	3
SAHS 205	Computer Applications	3
SAHS 211	Statistics	2
SOCI 316	Medical Sociology	3
PSCY 307	Human Growth and Development I	3
		21

SEMESTER 4

SAHS 204	General Pathology	3
PSCY 308	Human Growth & Development II	3
RDGY 202	Radiography Physics II	2
RDGY 204	Patient Management II	3
RDGY 206	Radiographic Anatomy II	3
RDGY 208	Radiographic Imaging Processes II	3
RDGY 212	Equipment for Diagnostic Imaging I	3
RDGY 214	Medical Terminology I	1
		21

RDGY 300 **Vocational Training II** **3 Cr**

This is a 6-week inter-semester clinical training period at the end of semester 4 (i.e. during the long vacation) to allow students to obtain practical hands-on experience. Students will also undertake clinical attachment at a Diagnostic Imaging Department/Unit in an accredited Health Facility. There shall be an evaluation at the end of the clinical attachment. The course is a pre-requisite for all Level 300 courses in Diagnostic and Therapy Radiography.

NB: Level 100 and 200 Courses are common to both Diagnostic and Therapy Radiography students and are prerequisite to progressing to Level 300 for the two (2) Programmes.

DIAGNOSTIC RADIOGRAPHY

LEVEL 300

SEMESTER 5

RDGY 301	Equipment in Diagnostic Imaging II	3
RDGY 303	Radiographic Technique I	3
RDGY 305	Radiobiology and Radiation Protection	3

RDGY 307	Radiation Physics	3
RDGY 309	Medical Terminology II	1
RDGY 310	Clinical Practice I	4
SAHS 301	Research Methodology	2
		19

SEMESTER 6

RDGY 302	Radiographic Technique II	3
RDGY 304	Introduction to Specialized Imaging Modalities	3
RDGY 306	Specialized Imaging Equipment	3
RDGY 308	Introduction to Quality Assurance	2
RDGY 310	Clinical Practice I	5
SAHS 302	Health Law & Ethics	2
		18

RDGY400 Vocational Training III 3Cr

This is a 6-week inter-semester clinical training period at the end of semester 6 (i.e. during the long vacation) to allow students to obtain practical hands-on experience. Students will also undertake clinical attachment at a Diagnostic Imaging Department/Unit in an accredited Health Facility. There shall be an evaluation at the end of the clinical attachment. The course is a pre-requisite for all Level 300 courses in Diagnostic and Therapy Radiography.

LEVEL 400

SEMESTER 7

RDGY 401	Radiographic Technique III	3
RDGY 403	Imaging Pathology and Pattern Recognition I	3
RDGY405	Quality Management in Diagnostic Imaging	2
RDGY 410	Research Project	5
RDGY 420	Clinical Practice II	5
SAHS 401	Principles of Management	3
		21

SEMESTER 8

SAHS 402	Applied Health Sciences Management	3
RDGY 402	Radiographic Technique IV	4
RDGY 404	Imaging Pathology and Pattern Recognition II	3
RDGY 410	Research Project	5
RDGY 420	Clinical Practice II	6
		21

Total Credit Hours = 168

THERAPY RADIOGRAPHY

LEVEL 300

SEMESTER 5

RDGY 309	Medical Terminology II	1
RDGY 311	Radiation Physics I: Radioactivity and Radiotherapy Equipment	3
RDGY 313	Radiation Oncology 1: Principles	2
RDGY 315	Radiotherapy Technique I	4
RDGY 317	Radiobiology	3
RDGY 320	Clinical Practice I	4
SAHS 301	Research Methodology	2
		19

SEMESTER 6

RDGY 314	Radiotherapy Physics II: Radiation Dosimetry and Principles of Treatment Planning	3
RDGY 316	Radiotherapy Technique II	3

RDGY 318	Treatment Planning I	2
RDGY 322	Radiation Oncology II: Treatment of Systems	2
RDGY 308	Introduction to Quality Assurance	3
RDGY 330	Clinical Practice I: Clinical Set Up and Patient Management	3
RDGY 340	Clinical Practice II: Clinical Dosimetry and Treatment Planning	3
SAHS 302	Health Law & Ethics	2
		21

RDGY 400	**Vocational Training III**	**3 Cr**

LEVEL 400

SEMESTER 7

SAHS 401	Principles and Practice of Management	3
RDGY 407	Radiotherapy Physics III: Brachytherapy and Radiation Protection	3
RDGY 409	Treatment Planning II	2
RDGY411	Quality Management in Radiotherapy	2
RDGY 430	Clinical Practice I: Clinical Set Up and Patient Management	3
RDGY 440	Clinical Practice II: Clinical Dosimetry and Treatment Planning	3
RDGY 410	Research Project	5
		21

SEMESTER 8

SAHS 402	Applied Health Sciences Management	3
RDGY 430	Clinical Practice I: Treatment Set Up and Patient Management	6
	Clinical Practice II: Clinical Dosimetry and Treatment Planning	6
RDGY 440	Research Project	5
		20

TOTAL CREDIT HOURS = 170

COURSE DESCRIPTIONS AND CONTENTS

LEVEL 100
SEMESTER 1
RDGY 102 INTRODUCTORY RADIOGRAPHY

This course is designed to provide the basic skills and knowledge that the students will need to prepare them for their first experience of clinical work. It aims to provide them with an overview of the Imaging Department and a basic working knowledge of an X-ray room. Students will be required to take an active part in basic X-ray examinations of the appendicular skeleton.

The course will cover areas such as Introduction to the Imaging department; Image Formation; Radiographic Terminology; Body Surface Markings; Exposure Factors; First Contact with Patients; The Appendicular Skeleton; Radiographic examination: routine projections of the upper and lower limbs and Patient care appropriate to Radiographic examination.

RDGY 200 VOCATIONAL TRAINING I

This period forms the initial introduction of students to the radiology department so that they can familiarize themselves to the administrative and professional activities of the department. This is the first contact with patients and other members of the health care team and is the learning period of their inter- and intra-relationship with the various groups of people they encounter in the department as a preparation towards their professional development. Areas to be covered include Records and recording of patient data and information; Data and information storage and retrieval; Ward management (Nursing care and management) and Darkroom (processing) practice.

LEVEL 200
SEMESTER 3

RDGY 201 RADIOGRAPHY PHYSICS I

This course is aimed at educating students in the physics of medical imaging with both ionising and non-ionising radiation. Areas to be covered include Basic Physics: Structure of matter, atoms, molecules, elements and compounds; Phases of matter; Work, Energy and Power; Types of energy and their source; Mass and Weight, Inertia and Forces; Speed, velocity and acceleration; Dimensional analysis and fundamental units; Concept of energy; Thermal heat insulation; Magnetism; Electrostatics; Capacitors; Atomic Physics; Wave Motion

RDGY 202 RADIOGRAPHY PHYSICS II

This course further introduces the fundamental principles of physics underlying diagnostic X-ray production and radiography. Upon completion, students should be able to demonstrate an understanding of basic principles of physics as they relate to the operation of radiographic equipment. The course will cover Current Electricity; A.C Theory; Electronics; Electricity and Magnetism; Electromagnetic Induction; Electrical energy, power, circuits; Applications to Radiographic Instrumentation.

RDGY 203 PATIENT MANAGEMENT I

Areas to be covered are:

1. Professional attitude of the radiographer; Hygiene, infection and principles of asepsis: Causes of infection, its process, methods of spread and practical implications. Basic hygiene relative to staff, patients and environment infection control, HIV/AIDS. Consideration of specific situations such as an operating theatre, minor operation area, intensive care unit, and other areas where special hygiene precautions are required.
2. Function of Central Sterile Supply Department: including knowledge of methods of sterilization. A visit to C.S.S.D would be arranged. (The aim of this section should be to give an overall understanding of the complete situation so that a student could, for example apply the principles to the procedure for an intravenous injection or the application of a simple sterile dressing.)
3. General care of the patient: The psychology of the sick patient; Temperature, pulse, respiration and blood pressure – normal values and methods of taking and recording them; common clinical abnormalities leading to physiological changes; The administration of bedpans, urinals, vomit bowls, and sputum pots; In-patient-care; Moving and lifting: Procedures related to moving patients of varying abilities, on and off chairs, tables, stretchers, bedpans, and the care and safety of the patients during these procedures. Correct methods and hazards of lifting and manoeuvring patients.

RDGY 204 PATIENT MANAGEMENT II

The courses will provide knowledge about the following:

Drugs: Methods of administration; drug reactions especially to radiological contrast agents, their recognition and appropriate action to be taken; Emergency care of the patient; Nursing accessories: Identification, care and use of equipment and instruments in general use in the department; the resuscitation team and the use of resuscitation equipment; use, care and function of suction apparatus; administration of oxygen; sedation; Design of Radiodiagnostic or Radiotherapy department; Organization of radiodiagnostic or radiotherapy departments: Staff requirements for the practical running of the department for normal working and major incident occurrences; appointments systems; patient records and departmental statistics, including data handling by computers; Stock-taking, and stock-keeping relative to patient care; Economical use of resources; Medico-legal considerations: Ethical considerations; legal responsibilities and liabilities; Appropriate action in the event of accidents to patients or staff or staff on hospital premises, examination or treatment becoming the subject of legal proceedings; Medical ethics relating to the confidential nature of patients' information; Safety legislation.

RDGY 205 RADIOGRAPHIC IMAGING PROCESSES I

Course Aim

To provide the knowledge of the radiographic image characteristics, factors that control image production and diagnostic quality and measures that are required to ensure the preservation of the diagnostic value of the image.

Areas to be covered include Sensitometry; Image quality; Control of secondary radiation; Radiographic image contrast and contrast enhancement; Film materials and storage of film materials; Film processing: principles and practice.

RDGY 207 RADIOGRAPHIC ANATOMY I

The course includes the study of the structure of human body and the normal function of its systems. Special emphasis is placed on radiographic anatomy (how the anatomical structures are presented on conventional and computed or sectional radiographic images)

The course will cover Gross anatomy of the appendicular and axial skeleton; Osteogenesis, Muscles and Joints; Gross anatomy of various organs and glands in the body; Physiology and Pathology of Bones, Joints and muscle groups and attachment; skeletal fractures and some of the systems and organs of the body in relation to conventional radiographic images and cross-sectional images of computer-generated images such as ultrasound, CT, MRI and RNI.

RDGY 206 RADIOGRAPHIC ANATOMY II

This is the continuation of RDGY 207 and treats the digestive system, nervous system, urinary system and special organs of the body (eye, ear, nose and mouth)

Areas to be covered include gross anatomy of the systems, organs and glands; Physiology and Pathology of systems; organs and glands, in relation to conventional radiographic images and cross-sectional images of computer-generated images such as Ultrasound, CT, MRI and RNI.

RDGY 208 RADIOGRAPHIC IMAGING PROCESSES II

The course will provide knowledge about the X-ray darkroom; Automated and daylight film handling systems; Duplication and Subtraction; Principles of special imaging techniques; Identification and presentation of radiographs; Viewing of the radiographic image; Image quality control; Silver conservation and recovery.

RDGY 212 EQUIPMENT FOR DIAGNOSTIC IMAGING I

To provide students with an insight into the main components in an X-ray circuitry and the theoretical background of the design and operation of the circuit elements outlined in the syllabus and the effect of their performance on the quality of the diagnostic imaging. Areas will include mains supply (electrical supply); Stabilizing Equipment: Control of X-ray tube current and tube voltage (filament circuit); The outline of basic X-ray Circuit (High Tension Circuits) Basic principles of the following with a comparison of their radiographic merits and applications - self rectified (one pulse); single phase full – wave rectified (two-pulse); three phase, six and twelve pulse; capacitor smoothed; capacitor discharge; grid control systems; falling load generators; High Tension Cables Construction and design; The X-Ray tube and its electrical connection; Exposure timers and switching; Meters; Safety Devices.

RDGY 214 MEDICAL TERMINOLOGY I

The course will introduce the student to the concepts of disease. It will also equip the student with knowledge in Pathology and disease as they relate to various radiographic procedures are discussed. The topics will include pathology fundamentals; trauma/physical injury; system classification of disease; and medical terminology.

DIAGNOSTIC RADIOGRAPHY

LEVEL 300
SEMESTER 5
RDGY 301 EQUIPMENT FOR DIAGNOSTIC IMAGING II

The course shall provide a basic grounding in the theoretical and practical aspects of the diagnostic imaging equipment listed in the syllabus, principle of operation of the equipment, to management of diagnostic imaging equipment, the necessity for quality assurance, maintenance of hygiene, safe working practices, equipment inspection and servicing; general principles, hygiene, aspects of electrical and mechanical efficiency and safety; importance of equipment upkeep; cleaning routine and inspections; general care in use and recognition of malfunction; special care of mobile X-equipment state; simple tests and checks of equipment in use.

RDGY 303: RADIOGRAPHIC TECHNIQUE I

The course is designed to provide the theoretical basis of imaging the various anatomical areas through lectures and demonstrations so that students will be able to apply correctly such techniques in the practical settings. The course areas to be covered are conventional and other methods of imaging: Axial skeleton: Vertebral column; thoracic cage; skull; sinuses; facial bones; pelvis; chest(for the respiratory system)

RDGY 305 RADIOBIOLOGY AND RADIATION PROTECTION

The course is designed to provide an overview of the principles of the interaction of radiation with living systems. It will cover radiation effects on cells and the human body in general, radiation effects on molecules, cells, tissues and the body as a whole, actors affecting biological response, including acute and chronic effects of radiation. It will also cover personnel monitoring (Dosimetry), control of scattered radiation, general principles; Grids; Collimators and Beam Centering Devices.

RDGY 307 RADIATION PHYSICS

The course is designed to introduce students to the physics of the different radiographic modalities including Ultrasound (US), Magnetic Resonance Imaging (MRI), Computed Tomography (CT), Nuclear Medicine and X-ray Physics. The course will further provide students with the understanding and application of physics principles to these imaging modalities.

Areas to be covered are X-rays Physics and applications in imaging, Electromagnetic Induction; MRI physics and applications to imaging; Introduction to Ultrasound Physics and its applications in imaging; Introduction to CT Physics and its applications in imaging; Introduction to Nuclear Medicine and its applications in imaging, Radiation Measuring Devices.

RDGY 309 MEDICAL TERMINOLOGY II

This is continuation of RDGY 214 as it provides the student with an introduction to the concepts of disease. Pathology and disease as they relate to various radiographic procedures will be discussed. Topics include: pathology fundamentals; trauma/physical injury; system classification of disease; and medical terminology; cardiovascular system; respiratory; urinary system and male reproductive system; female reproductive system; obstetric conditions; breast; blood; endocrine system; skin and subcutaneous tissues; the teeth; nervous system, eye; ear.

Upon successful completion of the course, the student should be able to list examples and sites of : respiratory system diseases, reproduction system diseases, urinary system diseases, circulatory system diseases, endocrine system diseases, and nervous system and sensory organ system diseases. They should be able to also describe the etiology of the disease, describe the radiographic procedures for diagnosis (treatment) of the diseases and discuss the effects of the diseases in terms of effects on radiographic techniques.

RDGY 310 CLINICAL PRACTICE I

This course will introduce students to the practical aspects of techniques after Introductory Radiography and Radiography Technique I. It will cover the following areas:

General radiography: Observation, assistance and performance of clinical practice in casualty, in-patients and out patients for the appendicular and axial skeleton and the thoracic cavity.

Mobile Radiography: Observation, assistance and performance in theatre and wards.
Department Routine: Participation in duties concerned with departmental organization, documentation and appointment systems.

Contrast Studies: Observation, assistance and performance of routine alimentary tract, fluoroscopic examinations and intravenous urography.

Computed Tomography: Observation of anatomical systems in cross section.

SEMESTER 6

RDGY 302 RADIOGRAPHIC TECHNIQUE II

The course will treat conventional and other methods of imaging: Digestive System: Ba swallow/meal and follow through; Ba Enema; Hepato-Biliary System: Liver; radiographic examinations to demonstrate the intra-hepatic and extra hepato-biliary systems; Urinary System; Reproductive System: Female reproductive System; male reproductive System; Nervous system and special senses-dacrocyst, ear, tongue, skin, salivary glands; Abdomen; Geriatric/infirm adaptation; Paediatric radiography-care neonates; Radiation protection of patient's parent/helper; Mobile/Portable examinations: Safe operation of mobile radiographic, fluoroscopic equipment; Ward and Operating theatre radiography; Accident and Emergency Radiographic technique for very ill patients and also trauma patients. Radiation protection for patients and staff

RDGY 304 INTRODUCTION TO SPECIALIZED IMAGING MODALITIES
This course will introduce to students other specialized imaging modalities (both using either ionizing or non-ionising radiation) available and their advantages and advantages in diagnostic medical imaging.

The course will cover Introduction to Imaging techniques and protocols of: Ultrasound; Computed Tomography Scan; Magnetic Resonance Imaging; Nuclear Medical Imaging; Digital Imaging; Computer Radiographic Imaging; PACS; Hospital Information System-Radiology Information System (HIS-RIS).

RDGY 306 SPECIALISED IMAGING EQUIPMENT
This course is designed to introduce students to computerized imaging equipment used for sectional anatomical imaging in diagnostic, therapy and nuclear medical imaging.

It will cover design, principle of operation/functions of the following equipment: CT Scan; ultrasound; MRI; gamma camera and scintigraphy; equipment for neuro-radiography; rapid serial equipment; image storage and transfer computed radiography and filmless imaging department.

RDGY 308 INTRODUCTION TO QUALITY ASSURANCE IN DIAGNOSTIC IMAGING
This course will equip students with knowledge about how to provide improve diagnostic information improving diagnostic information content, reducing radiation dose, reducing medical costs and improving departmental management and the quality of patient care.

At the end of the course, the student will become familiar with the specific requirements related to QA concepts, radiation protection in diagnostic radiology and procedure for reviewing and assessing the overall effectiveness of radiation protection.

It will treat topics such as Quality assurance definition; QA management and responsibilities; Outline of a QA and Radiation Protection programme for diagnostic radiology; QA Planning and organization in diagnostic radiology; Standards of acceptable image quality; Retake Analysis; Image quality and patient dose; Effect of poor quality images.

RDGY 310 CLINICAL PRACTICE I
This course will cover the following areas:

General Radiography: Performing at competency stage. Adapt action of techniques to suit paediatrics; Ward and Theatre patients and for patients in accident and emergency situation; recognition of patterns on radiographs.

Fluoroscopy*:* Undertaking and organization of routine fluoroscopy sessions and at the operating theatre using 'C'– arm image intensifiers.

Specialized Imaging Modalities: Participation in areas such as computed tomography, ultrasound; radionuclide imaging, magnetic resonance imaging and other areas that use digital imaging.

RDGY 400: VOCATIONAL TRAINING III
This training is designed to enable students:

- Recognize life-threatening ECG tracing.
- Apply standard and transmission-based precautions.
- Apply appropriate medical asepsis and sterile technique.
- Demonstrate competency in the principles of radiation protection standards.

LEVEL 400
SEMESTER 7
RDGY 401 RADIOGRAPHIC TECHNIQUE III
This course will cover areas such as dental and maxillofacial radiographic procedures: radiographic baselines and planes used in imaging of the teeth; angulations for dental imaging; intra- and extra-oral imaging: periapicals, bitewings; occlusals and obliques; opg (orthopantomography); cephalometry; mounting of dental films.

RDGY 403 IMAGING PATHOLOGY AND PATTERN RECOGNITION I
This areas to be covered are Radiographic film critique and quality control (Film faults); Identification of common basic pathologies and pattern recognition on radiographs of Appendicular and Axial skeleton and ability to modify or perform necessary additional projections; Basic Ultrasound in Obstetrics and gynaecology

RDGY 405 QUALITY MANAGEMENT IN DIAGNOSTIC IMAGING
This course will provide an understanding of the concept, principles and policies of quality management as it relates to radiation protection in diagnostic and interventional radiology. It will cover the concept of QA and its applications to ensure systematic evaluation and compliance with regulatory requirements; Requirements of patient care related to QA; Essentials of a Quality Control (QC) programme to ensure optimal image quality; The fundamental aspects and differences between QA and QC; The role and responsibilities of Management, staff and other professionals involved in the implementation of a QA programme; Assessment of internal and external quality audits, regular updating, methods of evaluation, reporting and recommendations; QC of general radiography system; QC control test on CT ; QC on dental radiology system including design;QC of the processor; QC protocol of Mammography equipment; QC on viewing boxes (Film illuminator).

RDGY 420 CLINICAL PRACITICE II
Areas to be covered include
General radiography: Adaptation of general techniques to suit paediatrics, geriatrics, ward, theatre patients in accident and emergency.
Fluoroscopy: The undertaking and organization of routine screening sessions and adaptation to the operating theatre.
Other Imaging Modalities: Participation in image evaluation in areas such as computed tomography, ultrasound, radionuclide imaging, MRI and other digital imaging modalities.

SEMESTER 8
RDGY 402 RADIOGRAPHIC TECHNIQUE IV
The aim of this course is to introduce students to the fundamentals of vascular, lymphatic and sectional imaging using contrast media and other imaging modalities. This is to assist students to acquire a knowledge of the basic techniques and protocols for such examinations

The course will cover Techniques And Protocols for: Peripheral angiography, Carotid, abdominal aorta and femoral angiography; Venography; Lymphangiography; Myelography; Sialography; Dacrocystography; Intenventional Radiographic Imaging; Digital Angiographic Subtraction Imaging (DSI); Sectional Imaging (CT, USG and MRI); Dental imaging

RDGY 404 IMAGING PATHOLOGY AND PATTERN RECOGNITION II
This is to introduce the student radiographer to the identification of common pathologies and pattern recognition on radiographs of the visceral organs; Ultrasound of organs other than Obstetrics and Gynaecology.
This course will cover Identification of common pathologies and pattern recognition on radiographs of the visceral organs on conventional radiographs, CT, MRI, Mammography, Dental and Ultrasound of organs other than Obstetrics and Gynaecology

RDGY 420 CLINICAL PRACTICE IV
Students would spend this period rotating through various units to obtain more hands-on experience practical and proficiency.

RDGY 410 RESEARCH PROJECT (Semesters 7 & 8)

THERAPY RADIOGRAPHY

LEVEL 300
RDGY 309 RADIOTHERAPY PHYSICS I
The course is designed to provide the students with the understanding for the physical principles of radioactivity and measuring of ionizing radiation. It will also help students to appreciate the terms used to describe quantity and quality of radiation and identity equipment used in radiotherapy. Also included are principles and functions; as well as the limitation of each equipment and the common cancers treated by each modality and the safety aspects.

RDGY 315 RADIOTHERAPY TECHNIQUE I
The course is designed to provide students with cognitive and evaluative skills necessary to understand and perform the required radiotherapy procedures. It includes mould room procedures, localization of tumours and treatment planning procedures. Other areas covered include verification of treatment plans and introduction to treatment accessories and equipment.

RDGY 316 RADIOTHERAPY TECHNIQUE II
This course is designed to build on the knowledge and skills gained from radiotherapy techniques 1 to enable the students take a greater role with the radiotherapy department through application of their skills to execute complex treatment procedures.

RDGY 308 QUALITY ASSURANCE IN RADIOTHERAPY
This course will deal with definition of Quality Assurance; QA management and responsibilities; Outline of a QA and Radiation Protection programme for diagnostic and therapy radiology; QA Planning and organization in diagnostic and therapy radiology; Standards of acceptable image quality; Treatment Planning and delivery; Image quality and patient dose.

RDGY 320 CLINICAL PRACTICE 1
The clinical practicum has been designed to complement the academic and runs throughout the course. Clinical placements have been designed so that the students will be able to observe the practical application of the theoretical courses wherever possible. Assessment would be linked with the theoretical assessment to demonstrate practical application of knowledge.

RDGY 318 TREATMENT PLANNING I (Theory)
The course is designed to provide the theoretical knowledge on treatment planning which will form the foundation for the practical training in treatment planning. . The course has further been designed to equip the students with the cognitive and evaluative skills necessary to understand and perform the require treatment planning procedures for various anatomical sites.

RDGY 314 RADIOTHERAPY PHYSICS II (DOSIMETRY AN PRINCIPLES OF TREATMENT PLANNING
The course is designed to provide basic knowledge and solid foundation in treatment prescriptions and appropriate definitions. Calculations of treatment dose with the treated volume to include tumour and skin/sub-dermal doses are also included. Other areas covered include manual drawing of simple and routine isodose distribution for single, parallel opposes and multi-field techniques. Interpretation of isodose distribution as well as verification of treatment plans with reference of beam/patient alignment is also covered.

RDGY 313 – RADIATION ONCOLOGY 1: PRINCIPLES
The course is designed to provide an overview of malignant diseases as well as the nature and epidemiology of cancer. It is also designed to provide understanding to students about general principles of cancer management and to provide insight to students about the factors worth considering in choosing various treatment options and advances in oncology and radiotherapy practices.

RDGY 317 RADIOBIOLOGY
The course is designed to provide an overview of the principles of the interaction of radiation with living systems .Radiation effects on molecules, cells, tissues and the body as a whole is presented. Factors affecting biological response are presented, including acute and chronic effects of radiation.

LEVEL 400
SEMESTER 7
RDGY 411 QUALITY MANAGEMENT IN RADIOTHERAPY
This course is to provide an understanding of the concept, principles and policies of quality management as it relates to radiation protection in diagnostic and interventional radiology.

The areas to be covered include the concept of QA and its applications to ensure systematic evaluation and compliance with regulatory requirements; Requirements of patient care related to QA; Essentials of a Quality Control (QC) programme to ensure optimal image quality; The fundamental aspects and differences between QA and QC; The role and responsibilities of Management, staff and other professionals involved in the implementation of a QA programme; Assessment of internal and external quality audits, regular updating, methods of evaluation, reporting and recommendations; QC on the Cobalt 60, Linear Accelerator, Simulator and

Brachytherapy Equipment

RDGY 407 RADIOTHERAPY PHYSICS III (BRACHYTHERAPY AND RADIATION PROTECTION
The course is designed to provide the students with the understanding of the principles of clinical use of radioactive substance in specific disease management. Relevant dose calculation in brachytherapy is also covered. The need for radiation protection measures in brachytherapy to minimize unnecessary radiation exposure to patients and staff is included in the course. The risk-benefit philosophy underpinning therapeutic radiography is also covered.

RDGY 430: CLINICAL PRACTICUM II: TREATMENT SET UP AND PATIENT MANAGEMENT 9 Cr (3 Cr for Semester 7 and 6 Cr for Semester 8)
Clinical practicum has been designed to enable the student to integrate clinical experience with the theoretical knowledge. The course has further been designed to enable the students take a greater role within the radiotherapy department through application of their skills and execute complex localization, verification and treatment procedures.

RDGY 322 RADIATION ONCOLOGY II (TREATMENT OF SYSTEMS)
The course is designed to provide understanding to students about the anatomical structures and physiological functions of the body and the tumours of the haemopoietic and lymphoreticular system, head and neck, ENT, Eye, the endocrine system, digestive and female reproductive system. It is also intended to provide insight to students about the factors worth considering in choosing various treatment options and advances in oncology and radiotherapy practices.

RDGY 340 CLINICAL PRACTICE III: DOSIMETRY AND TREATMENT PLANNING (Practicals) 9 Cr (3Cr for Semester 7 and 6 Cr for Semester 8)
This course is planned to provide opportunities to students to translate into practice the theoretical knowledge on treatment planning. Areas covered include: record keeping; appointment system; equipment calibration and mould room techniques. Other areas covered are the performance of radiotherapy treatment procedures and demonstrating competencies in all aspects of treatment planning procedure.

RDGY 410 RESEARCH PROJECT (Semesters 7 & 8)
For each of the items mentioned in the various modules in this course, there is a task analysis form, which is meant as a guide. The student should use these as an aid during the practical demonstrations and for evaluation procedures. The Clinical Tutors and Staff should refer to these in the Clinical Log Book in order to complete the relevant forms accurately

Case Studies
Students are required to write up a case study on each system as specified in the Clinical Logbook, for presentation at a lecture time. A minimum of ten presentations is required to qualify for award of B. Sc degree.

INTERNSHIP
Candidates on completion of programmes shall proceed to undertake a year's internship at an accredited health facility. Such internship shall be ***compulsory*** and shall be assessed.
Candidate may be requested to repeat the internship for a specified period to be determined by the Examiners' internship Board if not satisfactorily completed.

BSC. IN PHYSIOTHERAPY

DEPARTMENTAL OBJECTIVES

At the end of the training, the physiotherapy graduand should be able to:

1. Promote the health and well being of the individual and the general public/society.
2. Prevent impairments, functional limitations, and disabilities in individuals at risk of altered movement behaviours due to health or medically related factors, socio-economic stressors, and lifestyle factors
3. Provide interventions to restore integrity of body systems essential to movement, maximise function and recuperation, minimise incapacity, and enhance the quality of life in individuals and groups of individuals with altered movement behaviours resulting from impairments, functional limitations, disabilities.
4. Promote research efforts and to share freely the results of such research and evaluation through a range of dissemination routes
5. Demonstrate duty and responsibility to use evidence to inform practice and to ensure that the care of clients, their carers and communities is based on the best available evidence.
6. Demonstrate adequate understanding of the role and function of the other disciplines, appreciating the core differences as well as the common features.
7. Exhibit professional actions and conduct that are always within professional code of Ethics and Conduct
8. Develop effective working relationships with the colleagues and other health professionals through communication and improved understanding.
9. Develop an attitude and responsibility for life-long learning and continuous professional growth and development

LEVEL 100 COURSES

SEMESTER 1

SAHS 101	Introductory Statistics	2
SAHS 103	Physical and Inorganic Chemistry	2
SAHS 105	Organic Chemistry	2
SAHS 107	Chemistry Practical	1
SAHS 109	General Physics	2
SAHS 111	Biology	2
SAHS 113	Introduction to Computer Studies	1
UGRC110	Academic Writing I	3
SAHS 115	Clinical Reasoning in Health Sciences	3
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SEMESTER 2

SAHS 102	General Anatomy	3
SAHS 104	General Anatomy Practical	1
SAHS 106	General Physiology	3
SAHS 108	General Physiology Practical	1
SAHS 122	Introductory Biochemistry	2
PSTR 104	Introduction to Physiotherapy	2
GSPH 214	Writing for Public Health	3
UGRC220	Liberal and African studies	3
SAHS 112	Introductory Psychology for Allied Health Sciences	3
		21

***PSTR 100: Professional Practice Placement: Clinical Attachment I 2**
Introductory Clinical Practice (4 weeks, 120 hours)

LEVEL 200 COURSES

SEMESTER 3

SAHS 201	Computer Application	3
SAHS 205	Introductory Biochemistry II	2
SAHS 203	Statistics	2
PSTR 201	Advanced Anatomy	2
PSTR 203	Advanced Anatomy Practical	1
PSTR 209	Electrophysics	2
PSTR 211	Assessment Skills I	2
PSCY 307	Human Growth & Development I	3
SOCI 316	Medical Sociology	3
		20

SEMESTER 4

SAHS 204	General Pathology	3
PSTR 202	Clinical Measurement & Instrumentation	2
PSTR 204	Neuroscience	2
PSTR 206	Massage	2
PSTR 208	Health Promotion and Disease Prevention	2
PSTR 212	Biomechanics	2
PSTR 214	Assessment Skills II	2
PSCY 308	Human Growth & Development II	3
		18

***PSTR 200: Professional Practice Placement: Clinical Attachment II** **3**
Clinical Practice (6 weeks, 180 hours)

LEVEL 300 COURSES

SEMESTER 5

SAHS 301	Research Methodology	2
PSTR 310	Clinical Rotation I	2
PSTR 301	Kinesiology	2
PSTR 303	Therapeutic Exercise	3
PSTR 305	Electrotherapy I	3
PSTR 307	Neurorehabilitation 1	2
PSTR 309	Rheumatology	2
PSTR 311	Systemic Pathology	2
		18

SEMESTER 6

SAHS 302	Health Law and Ethics	2
PSTR 302	Traumatic and Skeletal Disorders	2
PSTR 304	Neurorehabilitation II	2
PSTR 306	Electrotherapy II	3
PSTR 308	Pathokinesiology``	2
PSTR 310	Clinical Rotation I	2
PSTR 312	Therapeutic Modalities I	2
PSTR 314	Paediatrics	2
OTTR 312	Community Rehabilitation	2
		19

***PSTR 300: Professional Practice Placement: Clinical Attachment III** **3**
Clinical Practice (6 weeks, 240 hours)

LEVEL 400 COURSES

SEMESTER 7

SAHS 401	Principles of management	2
PSTR 410	Clinical Rotation II	2
PSTR 401	Obstetrics and Gynaecology	2
PSTR 403	Dermatology & Burns	2
PSTR 405	Health and Physical Fitness	2
PSTR 409	Therapeutic Modalities II	2
PSTR 411	Cardiopulmonary & Intensive Care	2
PSTR 420	Project (Dissertation)	2
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SEMESTER 8

MLAB 402	Applied Health Sciences Management	2
PSTR 404	Sports Physiotherapy	2
PSTR 406	Ergonomics & Industrial Physiotherapy	2
PSTR 408	Pharmacology in Physiotherapy	2
PSTR 410	Clinical Rotation II	2
PSTR 412	Geriatrics	2
PSTR 420	Project (Dissertation)	2
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COURSE DESCRIPTIONS AND CONTENTS

PSTR 104 INTRODUCTION TO PHYSIOTHERAPY

This course informs students on the historical development and evolution of physiotherapy. It seeks to introduce students to the scope of practice of physiotherapy and create the awareness of the holistic roles of Physiotherapy in rehabilitation and health care delivery; and also the roles and contribution of other professionals within the healthcare team. ie nurses, doctors, dieticians, OT etc.

PSTR 100 CLINICAL ATTACHMENT I

This clinical course is to provide to students, an introduction and orientation to the healthcare environment, expose students to clinical practice in in-patient and out-patient rehabilitation and to expand their knowledge of the role of the physiotherapist and other healthcare workers, in accredited hospitals for observation of physiotherapy procedures.

PSTR 211 ASSESSMENT SKILLS 1

The course introduces to students the theory and practice of basic physiotherapy skills and principles of a patient assessment and handling techniques in order to arrive at a definite impression, plan treatment and/or prescribe assistive devices accordingly

PSTR 202: CLINICAL MEASUREMENTS AND INSTRUMENTATION

This course educates and provides students with the skills, tools and instruments used in the assessment and evaluation of patients' clinical conditions. The course aims to expose students on the use of evidence based evaluation using standardized objective measurement tools.

PSTR 206 MASSAGE

The course focuses on the acquisition of knowledge and skill in massage and myofascial release. It will cover the following areas:

- History of massage therapy.
- Physiological, psychosomatic and therapeutic effects of massage.
- Practice of soft tissue manipulations of muscles and joints for therapeutic purposes and understanding of the effects produced by each manipulation.
- Effects, uses and precautions (indications and contraindications) in massage.
- Myofascial release in management of myofascial pain.

PSTR 208 HEALTH PROMOTION AND DISEASE PREVENTION

This course seeks to develop an understanding of the theory of health promotion and disease prevention. It focuses on strategies including health education which aims at disease prevention, promotion of healthy lifestyles and behaviour change. The following areas will be covered:

Health Promotion:

- Educational theories and models of health behaviour related to patient learning
- Developments of physiotherapy health promotion programmes
- Ethics of health promotion
- Strategies for health promotion and life style changes
- Health promotion programmes in Ghana.
- Role of the physiotherapist and the multidisciplinary team in health education and health promotion
- Preparation of a physiotherapy related health education material for use in a health education context
- Principles of programme management, including assessment, planning, implementation and evaluation

Disease Prevention

- Epidemiology – Definition, objectives and applications.
- Types of epidemiological studies.
- Dynamics of disease transmission – modes of transmission, natural history of disease, levels of disease prevention, definitions (endemic, epidemic, zoonotic, carrier, herd immunity, quarantine, isolation, active immunity, passive immunity, surveillance),
- Principles of disease control, Outbreak investigation.
- Measures of morbidity and mortality (incidence, prevalence, rates).
- Epidemiological methods, screening.

PSTR 214 ASSESSMENT SKILLS II

This is a follow-up course to consolidate the theory and application of physiotherapy skills and principles of a patient assessment and handling techniques in order to arrive at a definite physical diagnosis/impression, plan treatment and set outcome measures.

PSTR 200 CLINICAL ATTACHMENT II

This clinical course is to provide to students, an orientation to the healthcare environment, expose students to clinical practice in in-patient, out-patient and community rehabilitation and to expand their knowledge of the role of the physiotherapist and other healthcare workers, in accredited hospitals for observation on procedures and participation in clinical seminars.

PSTR 301 KINESIOLOGY

The course is to enable the student appreciate the study of analysis of normal human movement as basis for clinical intervention in rehabilitation of abnormal movements.

PSTR 303 THERAPEUTIC EXERCISE

The course focuses on acquisition of knowledge base and skill in prescription, planning, implementation and supervision of therapeutic exercises.

PSTR 305 ELECTROTHERAPY- I

This course aims to impart to the student the basic principles of production and the use of electrical and thermal energy in pain modulation, inflammation and neuromuscular re-education.

PSTR 307 NEUROREHABILITATION 1

The student is equipped to relate basic neuro-anatomical knowledge to problem identification and evaluation of treatment of neurological conditions. Emphasis is placed on upper motor neurone lesions.

PSTR 309 RHEUMATOLOGY

This course is to provide the student with knowledge of the diseases of muscles, bones and joints as well as physiotherapeutic intervention in ameliorating secondary conditions, treating and rehabilitating the sequelae of the disorders.

PSTR 310 CLINICAL ROTATION- I

This clinic based course is to introduce the student to in-patient, out-patient and community contacts and to

transfer the classroom theoretical principles to hands-on skill acquisition.

Course Description

Hands-on skills in all aspects of physiotherapy at a minimum of twelve hours per week in the clinic, covering 30 weeks (15 weeks each in semesters 5 and 6) in the physiotherapy outpatient clinic and the following clinical postings:
Medical (Neurological and cardiopulmonary) Rehabilitation,
Orthopaedics and Surgery (including burns)
Paediatrics/Obstetrics and Gynaealogy

PSTR 302 TRAUMATIC SKELETAL DISORDERS

The course aims to provide the student with knowledge of traumatic disorders and injuries to bones and joints as well as physiotherapeutic intervention in ameliorating secondary conditions, treating and rehabilitating the sequelae of the disorders and injuries.

PSTR 304 NEUROREHABILITATION II

This course is to equip the student to relate the knowledge of neurological deficits to problem-solving approach, evaluation of disabilities and rehabilitation of neurological conditions.

PSTR 306 ELECTROTHERAPY II

The course aims to impart to the student the basic principles of production and the use of electrical and thermal energy in pain modulation, inflammation and neuromuscular re-education.

PSTR 308 PATHOKINESIOLOGY

This course seeks to enable the student acquire the knowledge and skill of the causes, rehabilitation and prevention of abnormal human posture and movements.

PSTR 312 THERAPEUTIC MODALITIES 1

This course is practical based and is to enable the student to demonstrate skills in the selection and the use of physiotherapeutic procedures and techniques. It will cover the following areas:

- ***All practical aspects of massage manipulations, kinesiology*** and therapeutic exercise.
- Hydrotherapy – Practice of exercise in water
- Effects and dosage of hot and cold baths. Techniques of pool therapy and precautions.
- Applications of all electrotherapeutic based modalities in physiotherapy, including thermotherapy, neuromuscular stimulation, sonotherapy, actinotherapy, cryotherapy and hydrotherapy.

The course will be examined as a practical type.

PSTR 314 PAEDIATRICS

The course is to teach about the acquired and congenital problems of children (including neonates and infants) and the role of physiotherapy in the holistic management of paediatric problems.

OTTR 312 COMMUNITY REHABILITATION

The unit examines further in-depth understanding of the influence of the environment on enabling occupation. The unit dwells on earlier knowledge on the concepts of community, societal structure and the importance of meaningful occupation. Emphasis is laid on WHO model of CBR and how the therapist could work with other MDT members to sustain this community rehabilitation model.
The unit is aimed to making therapy services accessible, acceptable, and affordable in the community setting.

PSTR 400 CLINICAL ATTACHMENT-II

This clinical course is to enable the student reinforce the acquired hands-on experience in physiotherapy settings outside the institution of training. It will involve hands-on skills in all aspects of physiotherapy at a minimum of thirty hours per week in the physiotherapy settings, covering 6 weeks, at facilities outside the training institution.

PSTR 401 OBSTETRICS AND GYNAECOLOGY

To enable the student acquire the knowledge and skill in providing safe and effective physiotherapy care to clients throughout pregnancy, labour and puerperium. It will deal with

- Review of pelvic floor anatomy.
- Physiology of Pregnancy
- Prenatal exercises.
- Utero-vaginal prolapse and vesico-vaginal fistula.
- Physiotherapy management of Utero-vaginal prolapse and vesico-vaginal fistula.
- Physiology and conduct of normal labour.
- Management of complications resulting from prolonged or obstructed labour using physiotherapy techniques.
- Common Gynaecological conditions and amenable to physiotherapy.
- Physiotherapeutic management of gynaecological conditions.

PSTR 403 DERMATOLOGY AND BURNS

The course is aimed at exposing students to the identification of various skin disorders and burns; and the role of physiotherapy in preventive, therapeutic and rehabilitative management. The following areas will be covered:

- Review of structure and functions of the Skin
- Introduction to phototherapy (with emphasis on ultra violet radiation)
- Aetiology, pathophysiology, clinical features and treatment of various skin diseases (Psoriasis, Acne Vulgaris, Vitiligo, Buruli Ulcer and Leprosy)
- Aetiology and classification of burns (skin depth, total body surface area)
- First aid in burns
- Clinical features of burns (Shock)
- Complications and diagnosis of burns
- Hospital management of burns (Exposed and closed methods)
- Surgical method of burns
- Physiotherapy management of the burnt patient
- Reconstructive Plastic Surgery (Hand therapy)

PSTR 405 HEALTH AND PHYSICAL FITNESS

The course focuses on the attainment and maintenance of physical fitness level in healthy individuals and the role of physiotherapy in health promotion and illness prevention.

PSTR 407 GERIATRICS

The course seeks to create awareness about the problems of the elderly and the role of physiotherapy in the holistic management of geriatric problems.

PSTR 409 THERAPEUTIC MODALITIES II

This course is practical based, and is to enable the student to demonstrate skills in the selection and the use electrical modalities and physiotherapeutic procedures and techniques.

PSTR 411 CARDIOPULMONARY & INTENSIVE CARE

This course aims to enable the student appreciate the role of physiotherapy in assessing, treating, evaluating and rehabilitating patients with cardio-pulmonary dysfunctions.

PSTR 420 PROJECT (DISSERTATION)

This is to introduce the student to basic concepts of research and its importance in the discovery of newer facts and in the support of evidence based practice in physiotherapy. It affords the student the opportunity of designing and carrying out independent research.

PSTR 404 SPORTS PHYSIOTHERAPY

The course is to enable the student to acquire knowledge and skill in the prevention and management of sports injuries.

PSTR 406 ERGONOMICS AND INDUSTRIAL PHYSIOTHERAPY

The course is to create the awareness about the role of physiotherapy in the prevention and management of work related musculoskeletal disorders. It will cover

Ergonomics

- The concept of ergonomics.

- Work station design and description.
- Occupational health; legal aspects.
- Industrial injuries and safety.
- Psychosomatic factors in WRMDs.
- Role of physiotherapy in prevention and management of work related musculoskeletal disorders and repetitive strain injuries.
- An industrial visit.

Industrial physiotherapy

- Historical evolution and principles of work site health care
- Common task demands in industry/Predisposing factors to injury and health education
- Work injury prevention and safety measures in industry
- Roles of physiotherapy in an industry/Heat injury/Class presentation
- Work related musculo skeletal disorders: Causes, epidemiology, risk factors, stages, clinical features and management
- Local inflammation.
- Compression syndrome
- Pain syndrome
- Use of applied anatomy in identifying structures for manual therapy techniques
- Applications of all electrotherapeutic based modalities in physiotherapy, including thermotherapy, neuromuscular stimulation, sonotherapy, actinotherapy, cryotherapy and hydrotherapy.
- To be examined as a practical course.

PSTR 410 CLINICAL ROTATION- II

This clinical course is to further expose the student to in-patient, out-patient and community contacts and to reinforce the transfer of the classroom theoretical principles to hands-on skill acquisition.

BSC. IN MEDICAL LABORATORY SCIENCES

DEPARTMENTAL OBJECTIVES

At the end of the programme, the students should be able to:

1. Perform laboratory-based diagnosis and prognosis of diseases by providing accurate, precise and timely results
2. Monitor the effectiveness of disease treatment by laboratory methods
3. Apply medical laboratory procedures to research on health related problems and to the development of new technologies
4. Manage a medical laboratory at least at the level of a district hospital
5. Advise hospital management on medical laboratory issues
6. Acquire and apply new knowledge and skills in medical laboratory science on a continual basis
7. Work efficiently as part of a team of health professionals in providing good quality affordable health care
8. Employ quality assurance and quality control procedures in the performance of duty
9. Demonstrate respect for rights and dignity of all persons and maintain acceptable standards of professional conduct and ethical behaviour in dealing with colleagues and other health professionals, patients and the general public.

LEVEL 100 COURSES

SEMESTER 1

UGRC 110	Academic Writing I	3
SAHS 101	Introductory Statistics	2
SAHS 103	Physical and Inorganic Chemistry	2
SAHS 105	Organic Chemistry	2
SAHS 107	Chemistry Practical	1
SAHS 109	General Physics	2

SAHS 111	Biology	2
SAHS 113	Introduction to Computer Studies	1
SAHS 115	Clinical Reasoning in Health Sciences	3
		18

SEMESTER 2

GSPH 214	Writing for Public Health	3
UGRC 220	Liberal and African Studies	3
SAHS 102	General Anatomy	3
SAHS 104	General Anatomy Practical	1
SAHS 106	General Physiology	3
SAHS 108	General Physiology Practical I	1
SAHS 122	Introductory Biochemistry	2
MLAB 102	Analytical Chemistry and Instrumentation	2
MLAB 104	Analytical Chemistry and Instrumentation Practical	1
MLAB 106	Introduction to Medical Laboratory Sciences	2
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LEVEL 200

SEMESTER 3

SOCI 316	Medical Sociology	3
SAHS 201	Basic Computer Application	3
SAHS 203	Statistics	2
MLAB 201	Functional Histology	2
MLAB 203	Functional Histology Practical	1
MLAB 205	Introductory Biochemistry II	2
MLAB 207	Cell Biology	2
MLAB 209	Cell Biology Practical	1
MLAB 211	Introduction to Molecular Biology	2
MLAB 213	Introduction to Molecular Biology Practical	1
		19

SEMESTER 4

SAHS 202	Immunology	2
MLAB 202	Cellular Pathology	3
MLAB 204	Introduction to Haematology and Transfusion Science	3
MLAB 206	Introduction to Molecular Diagnostics	2
MLAB 208	Introduction to Clinical Chemistry	3
MLAB 212	Introduction to Microbiology	3
MLAB 214	Pathology Laboratory Practice and Tissue Processing Procedures	3
		19

SEMESTER 5

SAHS 301	Research Methodology	2
MLAB 301	Cytopreparatory Techniques	2
MLAB 303	Basic Clinical and Laboratory Haematology	2
MLAB 305	Basic Clinical and Laboratory Haematology Practical	2
MLAB 307	Microbiology I	2
MLAB 309	Microbiology Practical I	2
MLAB 311	Clinical Chemistry I	2
MLAB 313	Clinical Chemistry Practical I	2
MLAB 315	Histotechnology I	2
MLAB 317	Histotechnology Practical I	1
MLAB 319	Cytopreparatory Techniques Practical	1
		20

SEMESTER 6

MLAB 302	Gynaecologic Cytology	2
MLAB 304	Gynaecologic Cytology Practical	1
MLAB 306	Basic Blood Transfusion Science	2
MLAB 308	Basic Blood Transfusion Science Practical	2
MLAB 312	Microbiology II	3
MLAB 314	Microbiology Practical II	1
MLAB 316	Clinical Chemistry II	2
MLAB 318	Clinical Chemistry Practical II	2
MLAB 322	Histotechnology II	2
MLAB 324	Histotechnology Practical II	1
		20

SEMESTER 7

SAHS 401	Principles of Management	2
MLAB 401	Non-gynaecologic Cytology	2
MLAB 403	Non-gynaecologic Cytology Practical	1
MLAB 405	Coagulation and Haemostasis	2
MLAB 407	Coagulation and Haemostasis Practical	1
MLAB409	Clinical Chemistry III	2
MLAB411	Clinical Chemistry Practical III	1
MLAB413	Microbiology III	2
MLAB415	Microbiology Practical III	1
MLAB417	Histotechnology III	2
MLAB419	Histotechnology Practical III	1
MLAB 400	Project	4
		21

SEMESTER 8

SAHS 402	Applied Health Sciences Management	2
MLAB 400	Project	4
MLAB 402	Vocational Training in Haematology	3
MLAB 404	Vocational Training in Clinical Chemistry	3
MLAB 406	Vocational Training in Microbiology	3
MLAB 408	Vocational Training in Cytotechnology	3
MLAB 412	Vocational Training in Histotechnology	3
		21

TOTAL = 159 CREDITS

COURSE OUTLINES

Year One
UGRC 110 Academic Writing I
GSPH 214 Writing for Public Health
UGRC 130 Liberal and African Studies

SAHS 101 Introductory Statistics
Types of data, descriptive statistics and plots, theoretical distributions, probability, estimation, hypothesis testing, and one-way analysis of variance. A brief introduction to correlation and univariate linear regression. Basic statistical methods for both continuous and dichotomous data**.**

SAHS 102 General Anatomy
Introduction, Anatomical terminology and nomenclature, Structure and organisation of the cell, Basic tissues, Musculoskeletal system, Digestive System, Renal System, Integumentary System and Appendages, Reproductive System, Endocrine System, Special sensory organs

SAHS 103 Physical and Inorganic Chemistry
Introduction to the principles of chemistry including physical and chemical changes, energetics, atomic structure, bonding, nomenclature, chemical calculations, chemical reactions (including solubility, neutralization, and oxidation-reduction) gas laws, solutions, acids and bases, pH, equilibrium, and nuclear chemistry.

The laboratory sequence will support the above topics including both qualitative and quantitative experiments, and analysis of data.

SAHS 104 General Anatomy Practical
The laboratory sequence will support the above topic.

SAHS 105 Organic Chemistry
Molecular composition and structure of organic compound; Determination and calculation of empirical and molecular formulae; Stereochemistry and isomerism; Hybridization;Nomenclature of polyfunctional organic compounds; Saturated Hydrocarbons (Alkanes and cycloalkanes); Unsaturated Hydrocarbons (Alkenes, Alkynes, Aromatics); Alcohols, Phenols, Ethers, and Thioalcohols; Aldehydes and Ketones; Carboxylic Acids, Esters, and Related Compounds; Amines and Amides; Stereoisomerism; Synthetic polymers Plastics; Natural products (Alkaloids, terpenes, steroids. Pheromones).

SAHS 106 General Physiology I

SAHS 107 Chemistry Practical
Safety in the chemistry laboratory; Errors in the chemistry laboratory; The use of the analytical balance; Calibration of volumetric ware: Pipette, Burette and volumetric flask; Preparation of standard solutions; Acid-base titration (basic); Identification of functional groups in organic compounds; Quantitative determination; Colorimetric determination of concentration of substances in coloured solutions; Experimental determinations with ultraviolet/visible light.

SAHS 108 General Physiology Practical I
The laboratory sequence will support the above topic.

SAHS 109 General Physics
Conceptual view of physics, Newtonian mechanics, wave motion, heat and thermodynamics, fluids, Wave motion, electricity and magnetism, geometrical and physical optics, Introduction to concepts of relativity, quantum theory, atomic and nuclear physics. Application of physical principles to related scientific disciplines including life sciences.

SAHS 111 Biology
This is an introductory biology course with an emphasis on humans. Topics include fundamental concepts of cell biology, histology, microbiology, and genetics.

SAHS 113 Introduction to Computer Studies
What is a computer?; History of computers ; Computer types; Hardware and software; Basic operations; Data sizes and speeds; Inside a computer case (Motherboard, Processor, Memory, Disks); Peripherals (Input Devices, Output Devices , Future Peripherals); System software; Application software; Personal Networks ;Security; Internet; Development; Databases

SAHS 115 Critical Thinking and Reasoning in Health
Health and health management information search and appraisal strategies; Socratic questioning; knowledge construction; reflective thinking; basis of clinical reasoning and scientific inquiry; creative/lateral thinking; models of health and disability; application; academic and professional communication; scholarship/scientific writing; ethics; collaborative models.

SAHS 116 Introductory Biochemistry I
Cell Theory; The Three Domains of Life; Prokaryotes and eukaryotes; subcellular organelles (compartmentalization of cellular processes); pH and buffer solutions; chemistry of water, definition of pH, the pH scale, buffer solutions and buffer capacity; the Henderson-Hasselbach equation in the preparation of buffer solutions. Chemistry and functions of biological molecules (biomolecules: monomers, polymers, macromolecules, Carbohydrates: mono-, di-, oligo- and polysaccharides, stereoisomerism. Lipids: different types (fatty acids, triacylglycerols, phospholipids, steroids, cholesterol). Amino acids and proteins: protein structure, classification. Nucleotides; nucleic acids. Formation of nucleic acids; Secondary, tertiary, and quaternary structures of DNA; Secondary, tertiary, and quaternary structures of RNA. Flow of genetic information. Replication, Transcription, Translation. Other aspects of nucleic acids and protein synthesis. Mutations. Anti-biotics. Vitamins and coenzymes. Enzymes, Properties and classification, cofactors and coenzymes, kinetics (effect of pH, temperature, [S], [E] on enzyme-catalyzed reactions, Michaelis-Menten equation); regulation (activation and inhibition). Membranes and Membrane Protein: General membrane function. Membrane composition. Phospholipid bilayer. Membrane structure. Posttranslational modification. Membrane fluidity. Diffusion in membranes. Movement of ions and molecules across membranes. Transport across membranes.

MLAB 102 Analytical Chemistry and Instrumentation
Introduction to chemical analysis; Introduction to Data Acquisition and Electronics; Introduction to sensors; Data Handling; Volumetric Analysis; Volumetric glassware; Theory and methods of separation; Electrochemistry; Gravimetric Analysis; Basic Optics; Separation techniques; Fundamentals of electrophoresis; Spectroscopic method; Standards (Primary and Secondary); Titration

MLAB 104 Analytical Chemistry and Instrumentation Practical
Distinction between qualitative and quantitative goals of determinations; Choice of experimental designs; Sampling methods for all states of matter; Sample preparation and derivatization procedures; Availability and evaluation of standards; Standardization methodology; Physicochemical methods of measurement; Fundamental characteristics of instruments, including recording devices and data acquisition options; Comparison and critical selection of methods for both elemental and molecular determinations; Optimization techniques for various aspects of analysis; Methods of data evaluation

MLAB 106 Introduction to Medical Laboratory Sciences
Description of SAHS MLS Program; MLS as a Profession, history, education, professional organization;

Medical Terminology; Clinical Laboratory Structure and Departments; Dilutions and Phlebotomy; Health Professional Interview; Professional Ethics; Quality Assurance; Microbiology; Cytogenetics; Blood Bank; Clinical Chemistry; Hematology

Year Two

SOCI 316 Medical Sociology
Current knowledge of health production emphasizes the need to perceive heath as multidimensional in character. This is because of the critical nexus between the health status of an individual and the cultural, political, economic and the physical environment that influence his/her health-seeking behaviour. The multidimensional character of health is even more relevant in view of the fact that the definition of the patient is no longer restricted to an individual; the concept now applies to a whole community. Medical Sociology thus offers a junction where biology and society meet. The pursuit of this course thus gives the student a wider horizon to appreciate the various intermediations in health production. At the end of this course, students should be able to critically assess the outcomes of various interventions in health care processes.

SAHS 201 Basic Computer Application
An introduction to computers and data processing. Historical and current status of data processing and electronic digital computers; a survey of computer applications; foundations of computer programming; survey of programming languages. Survey of World Wide Web applications and use including browsers, search engines, e-mail, news groups, FTP, multimedia, etc. The computing security problem. Advanced features of microcomputer applications packages such as word processors, spreadsheets, graphic presentation software, etc. Creation and use of macros, styles, and scripts etc.

SAHS 202 Immunology
Theory and application of basic concepts in immunology, immunopathology, and immunologic testing methods. Cells, proteins and chemicals involved in the immune system. Immune disorders such as hypersensitivity, autoimmunity, immunodeficiency and protein abnormalities, transplant and tumor immunology, immunologic testing methods and flow cytometry.

SAHS 203 Statistics
This course provides the student with an enduring understanding of, and appreciation for, the statistical processes most used in healthcare research. Emphasis is placed on development of a working knowledge of basic statistical processes sufficient for evaluation and interpretation of the statistical methods and findings in published reports of research.

MLAB 201 Functional Histology
Introduction, Covering and Glandular Epithelia, Connective Tissues, Muscular Tissues, Nervous Tissues, Integument, Respiratory system, Alimentary system, Urinary system, Reproductive system, Endocrine glands.

MLAB 202 Cellular Pathology
Introduction to Pathology (Cellular Response to injury, Tissue response to injury: - Acute and chronic inflammation; Healing and repair, Haemodynamic Disorders); Genetic Disorders; Pathology of Bacterial Infections; Disorders of Growth and Neoplasia

MLAB 203 Functional Histology Practical
The laboratory sequence will support the above topics

MLAB 204 Introduction to Haematology
Introduction (Definition and importance of specimens required and mode of collection, Use of syringes and needles of different sizes, lancets and vacutainer); Glassware (Slides, cover slip, beakers, measuring cylinders and pipettes, different flasks both glass and plastic); Equipment (The light microscope water bath incubators, weighing balances, centrifuges, fridges, colorimeters/spectrophotometers, cell counters (electronic and manual), auto pipettes, uses and maintenance; introduction to flow cytometry); Chemicals and Reagents (anticoagulants and preservatives in haematology, transfusion science; uses and preparation); Stains and staining (Introduction to Romanowsky stains . Thick and thin films); Preparation of solutions (Saline, buffers,metabisulphite solution, stock and working solutions (dilutions from stock) Haemoglobin estimation, sickling test,total WBC counts, ESR, reticulocyte count to be used as basis to elucidate above through demonstration and actual performance; ABO grouping as basis for particle agglutination

MLAB 205 Introductory Biochemistry II

Hormones - General mechanisms of hormone action, Regulation of hormone level, Actions of specific hormones, Clinical correlations. Glycolysis, gluconeogenesis, TCA cycles - Schema of glycolysis -biomedical importance., Hormonal control of glycolysis, Irreversible reactions in glycolysis, Hormonal regulation of blood glucose, Citric acid cycle (schema of Krebs cycle). Metabolism of glycogen, Cori cycle - Glycogen: synthesis, branching enzymes. Glycogenolysis, debranching enzymes. Glycogen in the liver and muscle cells. Cori cycle. Pentose phosphate pathways (PPP) - Schema of PPP – relation between PPP and glycolysis, PPP in protection of erythrocytes. Metabolism of fructose and galactose. Conservation of chemical energy - Physical-chemical principles of cellular energy transformations. The ratio of ATP/ADP as a principal mean of energy storage. Organisation of metabolism. Metabolism of amino acids - Decarboxylation and deamination reactions, metabolism of amino acid (AA), skeleton (coordination with Krebs cycle), Some products of AA metabolism. Congenital AA disease - basic knowledge, Schema of urea cycle and relation to Krebs cycle. Oxidation of fatty acids, ketogenesis - Synthesis of fatty acid (FA) (condensation, reduction, elongation). Beta-oxidation schema. Production of FA, relation to ATP production and Krebs cycle, ketogenesis. Metabolism of cholesterol Metabolism of nucleic acids - Schema of purine and pyrimidine metabolism

MLAB 206 Introduction to Molecular Diagnostics

Principles (Principles of Molecular Biology, Genomes and Nucleic Acid Alterations);.Techniques and Instrumentation (Specimen Collection and Processing, Nucleic Acid Isolation, Nucleic Acid Techniques; Miniaturization: DNA Chips and Devices; Design and Operation of a Molecular Diagnostics Laboratory; Introduction to Evidence-Based Molecular Diagnostics); Applications (Inherited Diseases, Identity Assessment, Molecular Methods in Diagnosis and Monitoring of Infectious Diseases, Pharmacogenetics, Molecular Genetics in Diagnosis of Human Cancers)

MLAB 207 Cell Biology

Introduction, Comparison of Prokaryotic and Eukaryotic cells, Cell differentiation and types of specialisation, Cell structure and cellular organelles, Cell movements and transport, Cytoskeleton, Intercellular communication, Cell cycle and related cancers, Gene cloning and sequencing, Recombinant DNA technology, Oncogenes and Proto-oncogenes, Microscopy other Cell biology Tools.

MLAB 208 Introduction to Clinical Chemistry

To appreciate and prevent hazards in Clinical Chemistry Laboratory; Basic Equipment uses , calibration , units and Calculations in Clinical Chemistry; Function of Clinical Chemistry , study and alteration of steady state of biochemical nature; Body fluids such as water, urine biochemistry; Variation and sources as well as quality control in clinical chemistry; Carbohydrate metabolism and hypo/hyper – glycaemia

MLAB 209 Cell Biology Practical

The laboratory sequence will support the above topics.

MLAB 211 Introduction to Molecular Biology

DNA Replication I; DNA Replication II; Transcription and RNA structure; Exon - intron splicing; tRNA structure and function; Genetic Code; Ribosomes and initiation of translation; Peptide Synthesis; Gene Expression (prokaryotes); Gene Expression (eukaryotes); Gene recombination (prokaryotes); Gene recombination (eukaryotes); Bacteriophages; Phage and plasmid growth; DNA amplification methods; DNA isolation and purification; Restriction enzymes; Recombinant DNA; cDNA cloning; Genomic DNA cloning; DNA sequencing methods; DNA probes; RFLP and linkage analysis; Gene Mapping; Gene Transfer in animals. Introduction to RNAi Technology. SNP analysis

MLAB 212 Introduction to Microbiology

History of Microbiology; Microbiology Laboratory equipment; Laboratory safety measures; Types and preparation of glassware and specimen containers; Principles of specimen collection and documentation; Transportation, receipt and handling of specimen; Normal flora and transmission of microbial agents; Introduction to Parasitology and parasitism; Host-parasite interrelationships; Introduction to microscopy; Colonial morphology; Diagnostic techniques for staining of detection of parasites; Basic Parasitological staining techniques (negative and tissue staining); Introduction to Virology; Viral structure and classification; Replication of viruses; DNA and RNA viruses of medical importance; Ultra-structure of bacteria; classification of bacteria; Anaerobes and facultative anaerobes; Rickettsia and Chlamydia; Aerobic & microaerophilic rods and cocci; Pathogenic factors; Bacterial Genetics; Bacterial physiology, nutrition and biochemical characteristics

MLAB 213 Introduction to Molecular Biology Practical

Extraction and quantitation of DNA and RNA; long term storage of nucleic acid; Restriction enzyme digestion; PCR; Agarose and polyacrylamide gel electrophoresis; Nucleic acid transfer to a membrane with subsequent prehybridization, hybridization, and stringency washes, probe labelling, autoradiography and sequencing. Basic bioinformatics applications. *In silico* analysis. DNA sequencing techniques. Cloning techniques. Introduction Micro array technology.

MLAB 214 Pathology Laboratory Practice and Tissue Processing Procedures

Laboratory Safety including fires and fire extinguishers; Histopathology Laboratory Administration; Cytopathology Laboratory Administration; Quality Assurance Practices in Pathology Laboratories; Principles of fixation and fixatives; Tissues processing for paraffin embedding

Year Three

SAHS 301 Research Methodology

Research principles (the research process, strategies for obtaining facts); Research practice (experiments, ethnographic studies, surveys); Research presentation (critical appraisal of research, the research presentation, the research report); Formats and styles for reports and papers

The Nature of Research; Variety of Research Methods, Finding Research Problems, Literature Review; Ethics in Research; The research proposal; Causation; Internal Validity; Sampling; External Validity; Survey designs (Research, Activity); Descriptive Statistics; Measurement and Construct Validity; Reliability; TBA; Inferential Statistics; Research Designs; Analytic Epidemiological Study; Qualitative Research; Psychographic Techniques; Interviewing, Focus Groups; Action Research; Evaluation Research

MLAB 301 Cytopreparatory Techniques

Techniques for sample collection; Cytopreparatory and processing techniques; Smear preparation techniques; Fixation in cytology; Processing fluid samples; Special Preparatory Techniques: Cell Block Technique; Imprints ; Cytologic Staining Techniques: Pap and Romanowsky stains including Diff Quick; Advanced Staining Techniques: Destaining and Secondary Staining; Types of Slide-Coating Adhesives.

MLAB 302 General and Gynaecologic Cytology

Cytologic screening programmes; The Pap Smear; Cell Structure; Anatomy and histology of female genital tract; Cellular components of normal cervical smear; Hormonal Cytology; Cervical smear reporting; Evaluating the sample; Inflammation and benign reactions of the cervix; Microorganisms seen in the Pap smear; Terminology and nomenclature in cervical smear reporting; Human papilloma virus infection of the cervix; Histology and cytology of cervical pre-cancer; Cervical cancer; Risk factors; Role of HPV; Histology, grading and staging; Cytology; Automated cytology screening;

MLAB 303 Basic Clinical and Laboratory Haematology

Haemopoeitic tissue and stem cells, haemoglobin formation from foetus to adults; Erythropoiesis, myelopoiesis, structure of red cell membrane, metabolism of red cell.; Function of red cells, white cell and platelets; Causes and effects of reduced and increased white cell and red cell count; Abnormalities of haemoglobin synthesis and catabolism.; Diagnosis and investigation of haemolytic anaemias. Parasitic infections in Haematology; The thick and thin peripheral blood film in diagnosis; Blood viscosity and erythrocyte sedimentation rate. Supravital staining; Granulopoiesis and lymphopoiesis, variations in the granulocyte and lymphocyte counts; The immune response; The immunology and biochemistry of phagocytosis; The structure and function of immunoglobulins; Lymphocyte subsets.; Principles of manual cell count and eosinophil count; Cell counting statistical applications SD, CV, Control chart Protein electrophoresis.; Hb electrophoresis and tests of function of red cell membrane. Study of HbS, HbF and Hg A2 Haem pigments. Assay of some red cell enzymes eg G6PD; Principles of assay of iron TIBC, ferritin, Vitamin B12, folic acid and the schilling test;

MLAB 304 Gynaecologic Cytology Practical 1

Study material will include Pap smears, which may be stained by the students. Each student will be required to examine 10 to 15 slides per practical session and be able to identify and mark (for inspection) abnormal cells and write reports using appropriate terminology. Projected photomicrographs will be used to illustrate abnormalities when stained slides are not available

MLAB 305 Basic Clinical and Laboratory Haematology Practical

Sample collection, transportation and storage. Anticoagulants dyes and stains used in Haematology.Preparation of glassware. Buffers. Manual and electronic cell counting techniques. Red cell indices.Basic haematological

investigations eg Thick and thin film ESR reticulocyte count. Calibration of equipment. Investigation of deficiency anaemias eg Serum ferritin iron TIBC vitamin B12, Folic acid assay Schilling test
Investigation of haemolytic anaemias eg Sickling test; Hb electrophoresis, HbS, HbF, HbA2, Kleihauer test, osmotic fragility test, Ham's test, G6PD screen.

MLAB 306 Basic Blood Transfusion
History of blood transfusion. Basic ABO and Rhesus typing. Antigen-antibody reactions and complement. Blood donor and blood donation.Blood collection screening. Liquid phase, solid phase and microplate technology.Labeling, storage and distribution.Blood transfusion and its complications. Antenatal serology. Blood components. Inventory control and safety in the transfusion laboratory. Granulocyte specific antigens. Genetics and immnunology of HLA antigens. Structure of the red cell membrane with reference to the organization of glycolipids, glycoproteins and proteins of known importance. The genetics and immunochemistry of blood group strctures on red cell surfaces. Antigen-antibody reactions including solid phase. Blood component preparation. Investigation of haemolytic transfusion reactions, Haemolytic Disease of the Newborn and other immune haemolytic anaemias. Quality assurance.

MLAB 307 General Microbiology
Microbial pathogenesis; Opportunistic pathogens in health and disease conditions; Source transmission of microbial infections; Pathogenesis of viral, parasitic and bacterial diseases; Collection, transportation and storage of specimens for viral diagnosis; Diagnostic methods id Virology; Principles of Laboratory diagnosis of viral infections; Immunological basis of viral serological diagnosis; Immunological assays for viral diagnosis; Introduction to cell culture techniques; Quantitation of viruses; Arthropods and vectors of medical importance; Parasites oncology; Physiology and Biochemistry of Parasites; Routine urine preparation and examination; Bacterial specimens collection, transportation and storage; Bacterial specimens collection, transportation and storage; Principles and Methods of Diagnosis in Bacteriology; Production of antibodies; Molecular techniques in Microbiology; Viral respiratory & CNS infections and their laboratory diagnosis; Blood-borne viruses and their lab. Diagnosis; Viruses in stool and their detection methods.

MLAB 308 Basic Blood Transfusion Practical
Various methods of blood grouping and screening-liquid phase, solid phase microplate technology.Compatibility Testing, antibody screening. Screening of donor blood; storage and transportation. Blood disposal. Platelet concentrate.

MLAB 309 General Microbiology Practical
Parasites identification techniques; Media preparation for parasites identification; Routine stool examination techniques (emulsification, wet smears, iodine preparations); Concentration techniques (sedimentation, floatation methods) for stool examination; Microscopy and staining; Media preparation for cell, virus culture; Electron micrograph of DNA & RNA viruses; Cell culture techniques and CPE observation; Parasites oncology; Biochemical tests

MLAB 311 Clinical Chemistry I
The concept of homeostasis, hydrogen ions and its disorders, renal function and abnormalities will be taught. Lipid metabolism will be introduced. Biochemical analytes related to dysfuctional organs will be discussed. Nutrition and micronutrients will be examined. HP axis / thyroid hormones will be examined.

MLAB 312 Parasitology and Bacteriology
Review of bacterial structure and classification; Antimicrobial agents and Sensitivity testing; Genetic systems as targets of antimicrobial agents; MIC & MBC; Sterilization and disinfection; Bacterial resistance mechanisms and resistance to antimicrobial agents; Assay of biological substances; Quality control of foods; Immunoprophylaxis; Biotechnology as applied to diagnosis of infections; Structure, morphology & classification of protozoan parasites; Life cycles of parasites (nematodes, cestodes); Parasite ecology (alimentary canal, blood and other tissues); Zoonotic parasitic infections; Vector borne diseases (Protozoa, nematodes); Infections of the gut, GIT; Trematodes, cestodes and other nematodes infections; Larval cestodes infections and Larval migrans.

MLAB 313 Clinical Chemistry Practical I
Demonstration of the effect of laboratory and extra laboratory factors affecting results, such pipetting errors, sampling techniques and handling; including venous stasis, storage of samples and causes of errors. End-point, kinetic and differential methods of spectrophotometry and interpretation of biochemical results. The use of log books to monitor competencies will be emphasized.

MLAB 314 Parasitology and Bacteriology Practical `
Specimens collection and storage (Bacteriological, Parasitological and Virological); Effects of physical and chemical agents on viruses; Immunological assays for viral diagnosis (Rapid tests for HIV, HBV, HCV); Molecular techniques in Microbiology; Urinary tract infections; Blood and CNS infection; Respiratory infections; Diagnosis of bacterial infections; Detection of bacterial pathogens by culture; Calibration, care and handling of Microscopes; Microscopy & Culture of blood, faecal and urine samples; Detection of parasites in blood, faecal and urine samples; Serology /other diagnostic techniques

MLAB 315 Histotechnology I
Special Techniques in Tissue processing; Double embedding; Resin embedding for light microscopy; Decalcification; Frozen sections; Mounting media; Overview of theory of Staining; Routine Haematoxylin and eosin staining; Instrumentation; Basic Microscopy; Microtomy and Paraffin section cutting; Tissue Processors; Embedding centres; Cryostat; Automatic stainers and coverlippers; Floatation baths; Faults and Remedies in Paraffin Wax Sectioning

MLAB 316 Clinical Chemistry II
Further complications of diabetes examinations will be introduced. protein and lipid biochemistry involving non-routine analytes such as plasma proteins, lipo-proteins will be examined. CSF and its biochemistry will be taught. The immune system and some disorders, as well as tumour marker will be introduced.

MLAB 317 Histotechnology Practical I
Preparation of fixatives; Tissue processing: dehydration, clearing, embedding using paraffin wax and alternatives; Microtomy ; Staining: haematoxylin and eosin stain; Mounting

MLAB 318 Clinical Chemistry Practical II
Instrumentation, phlebotomy, demonstration of variations – preanalytical errors, Various tests relating to Plasma Glucose Estimation, Total Protein Estimation (plasma & urine), Biochemical Analysis of CSF, Kidney function, Liver function test, Lipid Profile and trace Trace Elements related to fluid and electrolyte balance will be undertaken to develop the necessary competencies.

MLAB 319 Cytopreparatory Techniques Practical
Papanicolaou stain for gynaecological specimens; Cytopreparation of fluid specimens: Includes sputum, urine, pleural effusion, ascitic fluid, CSF, joint effusions and pericardial effusions; Direct smears for sputum; Centrifugation; Cytocentrifugation; Filter methods; Fixation and pre-fixation; Wet alcohol fixation; Coating fixatives; Air-drying; Lysing fixatives; Papanicolaou and Romanowsky stains for fluid samples;

MLAB 322 Histotechnology II
Carbohydrates; Classification; Special Staining Techniques; Application in Pathology; Connective Tissue Proper, Basement Membrane and Muscle; Types and structure of connective fibres; Skeletal, cardiac and smooth; Techniques for differential demonstration of connective tissue fibres and muscle; Application in Pathology; Lipids; Classification; Staining Methods of identifying lipids; Application of Lipid Histochemistry in Pathology; Protein and Nucleic acids; Principles of methods of demonstration; Tissue Deposits - Pigments, Minerals, and Amyloid; Types of Pigments and Minerals and histochemical demonstration; Structure, classification and composition of amyloid; methods of demonstrating amyloid; Demonstration of Infective Agents in Tissue Sections

MLAB 324 Histotechnology Practical II
This course is intended to give practical knowledge of the demonstration of tissue components involve in diagnostic pathology. Students will acquire knowledge of various special staining techniques and identify factors that may give rise to faulty demonstrations

Year Four
SAHS 401 Principles of Management

SAHS 402 Applied Health Sciences Management

MLAB 400 Project

MLAB 401 Non-gynaecologic Cytology
Cytology of the Urinary Tract; Review Anatomy and histology; Sampling Techniques; Cellular components of

urinary sediment; Pathology and cytology of non-neoplastic conditions; Urinary tract neoplasms – histology and cytology ; Cytology of Serous Cavities (Review Anatomy and histology, Types of effusions, Benign cells in effusions, Cytology of Benign Effusions, Cytology of Malignant Effusions) Cerebrospinal and Synovial Fluids (Anatomy and physiology); Normal cytology of and benign reactive cells in CSF; Cytology of benign reactive conditions and neoplasms in CSF; Normal cytology of and benign reactive cells in synovial fluid; Cytology of benign reactive conditions and neoplasms in synovial fluid; Fine Needle Aspiration; Introduction, equipment, technique of aspiration, laboratory processing techniques including special studies, reporting and interpretation of results; Breast FNA; Normal cytology; Benign pattern; Malignant pattern; Thyroid FNA; Indications, place in diagnostic process, technical considerations including special studies; Normal cytology; Benign conditions; Malignant conditions;

MLAB 402 Vocational Training in Haematology

MLAB 403 Non-gynaecologic Cytology Practical

Study material will include non-gynaecological cytology preparations from samples obtained from various parts of the body and stained by the Papanicolaou and/or Romanowsky method as appropriate by students. Each student will be required to examine 10 to 15 slides per practical session and be able to identify and mark (for inspection) abnormal cells and write appropriate reports. Projected photomicrographs will be used to illustrate abnormalities when stained slides are not available.

MLAB 404 Vocational Training in Clinical Chemistry

MLAB 405 Haemostasis and Coagulation

Thrombopoiesis, thrombocytosis and thrombocytopaenia. Platelet function,role of endothelial cells, platelets,in the haemostastic process; Coagulation factors, inhibitors and fibrinolysis in the haemostatic process.; Acquired and congenital bleeding disorders.; Standardization of thromboplastins.; Investigation of acquired and congenital bleeding disorders, to include screening tests, factor assays.; Control of anticoagulant therapy.; Detection of inhibitors,tests of fibrinolytic activity; Quality control and standardization in the coagulation laboratory;

MLAB 406 Vocational Training in Microbiology

MLAB 407 Haemostasis and Coagulation Practical

Bleeding Time, Whole blood clotting time,(WBCT),Prothrombin Time(PT), Partial Thromboplastin Time with Kaolin (PTTK),Standardization of thromboplastins, Thrombin time (TT). Mixing Tests using Aged and Adsorbed plasma. Reptilase time, Latex screening test for Fibrinogen/Fibrin Degradation Products (FDPs).Preparation of platelet rich plasma (PRP), platelet poor plasma (PPP).

MLAB 408 Vocational Training in Cytotechnology

MLAB409 Clinical Chemistry III

Neonal screening, Pre and post – natal biochemistry; hormones of the reproductive as well as adrenal systems will be examined, Acid / base biochemistry and toxicity of substances including metals will be dealt with.

MLAB411 Clinical Chemistry Practical III

Qualitative and quantitative measurements based on principles of various chemical pathology tests – using dry chemistry/observational methods, dipsticks/stips. Wet chemistry – spectrophotometric (kinetic) techniques using reagents and chemicals and electrophoresis, Elisa and chromatographic techniques. Interpretation of results from practicals. Hormonal assays, peptide hormones and steroid hormones analysis.

MLAB 412 Vocational Training in Histotechnology

MLAB413 Parasitology, Mycology and Virology

Structure and classification of fungi of medical importance; Environmental fungi; Dermatophytes; Fungal structure and classification; Investigation of superficial, subcutaneous and systemic fungal infections; Opportunistic fungi; Antifungal agents; Sensitivity testing of anti-fungal agents; Animal House management/ Cruelty to Animal Act (1986); Diseases and treatment of laboratory animals; Virus cultivation in eggs; Cell and virus culture and applications; Quantitation of viruses; Microscopy and staining methods for virus-infected tissues; Preservation /storage of cells and viruses; Public Health Virology (Viruses in water, sewerage, air and milk); DNA & RNA Viruses causing major diseases in humans; Diagnostic methods for detection of GIT

parasites (Microscopy & Serology); Permanent staining techniques for detection of parasites (Concentration methods for R/E, for GIT parasites, blood parasites, etc); Routine examination of urine samples, expectorated sputum, aspirates and biopsy materials; Diagnosis of parasitic infection in immunocompromised host; Procedures for permanent preparation of arthropods Common problems in organism identification; Maintenance of insectaria.

MLAB415 Parasitology, Mycology and Virology Practical

Basic techniques in Mycology; Preparation/Routine microscopic examination of fungal specimens; Contaminants and opportunistic pathogens in Mycology; Dermatophytes; Identification of yeasts; Systemic dimorphic molds; Investigation of fungal infections; Reagent preparation for parasitological investigations; Routine microscopic examination of faecal specimens; Concentration methods for R/E; Permanent staining – Iron Haematoxylin & Modified Kinyoun's /ZN stains; Direct mount and stained preparations of sputum /aspirates; Giemsa /Leishman /Fields staining techniques; Buffy coat /Knot concentration methods; Permanent preparation of arthropods; Staining for detection of Pneumocystis carnii; Virus/ Cell culture techniques /Preservation of cells and viruses; Cultivation of Polio/ Yellow fever vaccine strains and CPE observation; Cultivation of Polio/ Yellow fever vaccine strains and CPE observation; Vaccine potency testing; Immunofluorescence and immunological techniques in Virology

MLAB417 Histotechnology III

Neurohistochemistry; Cellular Components of Nervous System; Nissl stains. Demonstration of Nerve Fibres; Demonstration of Myelin: Normal Myelin; degeneration products; combination techniques Demonstration of Neuroglial Cells; Demonstration of Nerve Endings; Immunohistochemistry; Definition of IHC; Paraffin sections and IHC; Unmasking Concealed Antigens; Reagents and antibodies for IHC (Labels: Enzymes, metals, radioactive materials); Chromogens and Substrates; Stability of Colour; Immunohistochemical methods; Reaction Product Intensification and Counterstains (Factors Influencing Immunohistochemistry Procedure, Application in Diagnostic Pathology); Immunofluorescence (Introduction, Fluorochromes, Staining Procedures: Direct and Indirect Staining;); Enzyme Histochemistry (Techniques for Demonstration of Enzymes).

MLAB419 Histotechnology Practical III

BSC. IN DIETETICS

DEPARTMENTAL OBJECTIVES:

At the end of the programme, the dietitian will be able, in addition to the specific duties of a dietitian stated in section 2 above, to:

- Demonstrate the ability to confidently work autonomously with individual clients on a one to one basis assessing needs, providing therapeutic advice and facilitating behaviour change based on the clinical and personal information available as well as the evidence base for practice.
- Translate the most up to date public health and scientific research information on food, health and disease into practical advice to facilitate behaviour change and enable people to make appropriate lifestyle and food choices.
- Show awareness of his/her role and sphere of influence within the organisation, and demonstrate the ability to work in a collaborative manner with a range of healthcare professionals and other staff in enabling safe and effective dietetic service delivery.
- Understand the limits of his/her current scope of practice and work within these and demonstrate awareness of the clinical risks associated with any dietetic care plan
- Show familiarity with government policies for the provision of health care as they impinge on the dietetic service and understanding of policy issues concerned with public health nutrition in Ghana
- Demonstrate familiarity with the current systems for the provision of health care, education and social sciences and recognise opportunities to influence health and social policy and practices.
- Demonstrate a systematic understanding of the key aspects of the range of disciplines underpinning dietetics and ability to critically evaluate and synthesize these key aspects into dietetic care.

LEVEL 100 COURSES

All the courses at Level 100 are compulsory

SEMESTER 1

SAHS 101	Introductory Statistics	2
SAHS 103	Physical and Inorganic Chemistry	2
SAHS 105	Organic Chemistry	2
SAHS 107	Chemistry Practical I	1
SAHS 109	General Physics	2
SAHS 111	Biology	2
SAHS 113	Introduction to Computer Studies	1
SAHS 115	Clinical Reasoning in Health Sciences	3
UGRC 110	Academic Writing I	3
		18

SEMESTER 2

DIET 102	Introduction to Professional Studies	2
SAHS 102	General Anatomy	3
SAHS 104	General Anatomy Practical	1
SAHS 106	General Physiology	3
SAHS 108	General Physiology Practical	1
SAHS 122	Introductory Biochemistry	2
MLAB 102	Analytical Chemistry and Instrumentation	2
GSPH 214	Writing for Public Health	3
UGRC 220	Liberal and African Studies	3
		21

DIET 200: Professional Practice Placement: Clinical Attachment I
Introductory Clinical Practice **3**
(6 weeks, 120 hours)

LEVEL 200 COURSES

All the courses at Level 200 are compulsory

SEMESTER 3

DIET 201	Communication Skills & Nutrition Education	3
DIET 203	Basic Concepts in Nutrition	2
SAHS 201	Computer Applications	3
SAHS 203	Statistics	2
SAHS 205	Introductory Biochemistry II	2
PSYC 307	Human Growth and Development I	3
SOCI 316	Medical Sociology	3
		18

SEMESTER 4

SAHS 202	Immunology	2
SAHS 204	General Pathology	3
DIET 202	Nutrition Assessment	2
DIET 204	Nutritional Biochemistry	3
DIET 206	General Anatomy for Dietitians	2
DIET 208	Microbiology	2
DIET 210	Microbiology (Practical)	1
DIET 212	Food Analysis (Practical)	1
PSYC 308	Human Growth and Development II	3
		19

DIET 300: Professional Practice Placement: Clinical Attachment II
Introductory Clinical Practice **2**
(6 weeks, 180 hours)

LEVEL 300 COURSES

All the courses at Level 300 are compulsory

SEMESTER 5

SAHS 301	Research Methodology	2
DIET 303	Food Service and Catering Management (Theory)	2
DIET 305	Food Service and Catering Management (Practical)	1
DIET 307	Nutrition in the Life Cycle	2
DIET 309	Genetics	2
DIET 310	Dietetic Practicum I **(9 hrs x 17 wks: 153 hrs)**	3
DIET 311	Co-ordinated Course in Physiology and Biochemistry	3
DIET 313	Food Safety	2
DIET 315	Pharmacology in Dietherapy	2
		19

SEMESTER 6

SAHS 302	Health Law and Ethics	2
DIET 302	Food Quality, Processing and Preservation	3
DIET 304	Food Quality, Processing and Preservation (Practical)	1
DIET 306	Diet and Diseases I	3
DIET 308	Diet Therapy I	3
DIET 310	Dietetic Practicum (I) **(9 hrs x 17 wks: 153 hours)**	3
DIET 314	Community Nutrition	2
DIET 316	Food Habits	2
		19

DIET 400:	**Professional Practice Placement: Clinical Attachment III Introductory Clinical Practice (6 weeks, 180 hours)**	**2**

LEVEL 400 COURSES

All the courses at Level 400 are compulsory

SEMESTER 7

SAHS 401	Principles of Management	2
DIET 400	Dietetic Practicum II **(12hrs x17wks: 204 hours)**	4
DIET 403	Diet and Disease II	3
DIET 405	Diet Therapy II	3
DIET 407	Nutrition and Health Promotion	2
DIET 410	Project Work	4
		18

SEMESTER 8

SAHS 402	Applied Health Service Management	3
DIET 404	Diet and Disease III	3
DIET 406	Diet Therapy III	3
DIET 408	Special Topics in Nutrition and Dietetics	2
DIET 410	Project Work	4
DIET 412	Dietetic Practicum II **(12hrs x17wks: 153 hours)**	4
		19

TOTAL CLINICAL HOURS 1302

COURSE OUTLINES

DIET 102 INTRODUCTION TO PROFESSIONAL PRACTICE

This course is designed to introduce students to the skills, attitudes and behaviour required of dieticians in the health sector in relation to patients, public and health professionals.

DIET 201 COMMUNICATION SKILLS AND NUTRITION EDUCATION

The work of dieticians involves dealing with groups of people or individual clients. Consequently good communication skill is a vital requirement. This course allows students to develop their knowledge and skills in verbal and written communication and also emphasizes on ethical implications. The course further seeks to provide an understanding of nutrition education and its use in promoting attitudinal changes that result in eating practices and food habits that promote health and well-being.

DIET 202 NUTRITION ASSESSMENT

This course introduces the student to methods of measuring and monitoring of nutritional status of groups and individuals in health and disease. Emphasis is laid on dietary, nutritional, anthropometrical, clinical, biochemical, health and social indicators essential for adequate nutrition intervention.

DIET 203 BASIC CONCEPTS IN NUTRITION

This course deals with the properties and functions of food constituents, including the functions, metabolism, and sources of the main macro- and micro-nutrients, effects of deficiency and toxicity, and the various food commodity groups.

DIET 204 NUTRITIONAL BIOCHEMISTRY

The biochemical basis for mammalian nutritional requirements will be surveyed. Diets will be analyzed for nutritional adequacy and the consequences of nutritional deficiencies will be elaborated. The relationship between energy expenditure, energy uptake, and weight loss or gain will be studied. Recent studies on gene expression and nutrients, free-radicals, leptins and integration of metabolism will be discussed. Selected biomarkers of nutritional status will be discussed.

DIET 206 GENERAL ANATOMY FOR DIETITIANS

This course is designed to give students the grounding in the structural and functional basis of certain systems in the human body. It will build on the knowledge previously acquired in General Anatomy and General Physiology. The course will therefore focus on and study in detail specific organ systems in the body that are of direct relevance and importance for dietitians.

DIET 208 MICROBIOLOGY

This course has been designed to promote food-borne infectious disease control through protective measures primarily within the responsibility of the individual that promote health and limit the spread of food-borne infectious diseases in families and communities.

DIET 210 MICROBIOLOGY PRACTICAL

This course involves laboratory exercises, presenting techniques and fundamental principles of modern microbiology. It is designed to complement the information presented in DIET 313. The practicals cover a variety of microbial techniques, with experiments designed to illustrate basic concepts of parasitology, bacteriology, virology and immunology (with emphasis on food-related microbes).

DIET 212 FOOD ANALYSIS (PRACTICAL)

The aim of this course is to introduce students to analytical techniques for the determination of macronutrient constituents of foods and formulated diets. The course involves laboratory introduction to principles and analytical techniques of nutritional research. It emphasizes on analytical concepts and skills required to determine nutrient function and methods for assessing the composition of foods. Students will gain knowledge on the concept of preparing food samples for analysis and how to operate instruments, which are used to analyze food.

DIET 302 FOOD QUALITY, PROCESSING AND PRESERVATION (THEORY)

The course provides an overview of food processing and preservation techniques. Principles of food preservation and processing by different techniques such as heating, chilling, freezing, dehydration, canning,

salting, etc. for meat, vegetables and dairy products are discussed. Methods used in prolonging the shelf life of foods and their effects on the quality and safety of food., food additives, post harvest technology and management and health risks associated with foods are also covered.

DIET 303 FOOD SERVICE AND CATERING MANAGEMENT (THEORY)

This course aims at equipping students with basic food preparation methods, which is integrated with work on portion size and modification of diet to meet special dietary needs in some clinical conditions. It explores basic food science principles through food preparation, recipe modification, and sensory evaluation (taste testing required). Students are introduced to basic cooking skills, techniques, and recipe modification. Basic menu planning and meeting nutritional requirements while restricted to a budget are also covered.

DIET 304 FOOD QUALITY, PROCESSING AND PRESERVATION (PRACTICAL)

The course provides students some analytical skills for the evaluation of food quality using laboratory exercises to determine some physical, chemical and microbiological characteristics of foods. It covers analysis of foods and food products for chemical components, compliance to standards and detection of adulterants in foods. It equips students with practical skills related to preservation of foods and the use of various techniques and additives for food preservation.

DIET 305 FOOD SERVICE AND CATERING MANAGEMENT (PRACTICAL)

This course aims at equipping students with basic food preparation methods which is integrated with work on portion size and modification of diet to meet special dietary needs in some clinical conditions. The understanding of food ingredients and techniques of food preparation is applied to positive nutritional practices and health promotion goals. Assigned recipes are prepared during each laboratory.

DIET 306 DIET AND DISEASE I

The course covers the basic biochemical, physiological and pathological processes in some diseases that are caused by dietary abnormalities and/or require dietary modifications in their clinical management. The aim is to help students develop an understanding of the causes of disease and an appreciation of the methods used to make an accurate diagnosis and to be able to recognize the clinical signs and symptoms of disease and to communicate this effectively to patients and family in context. It will look at how the diseases covered are medically managed.

DIET 307 NUTRITION IN THE LIFE CYCLE

The course covers the nutrient requirement and special nutrition concerns during various stages of human growth and development. The biology of the life cycle including development, growth, maturation and ageing and its impact on nutritional requirements of humans from the zygote to the elderly is covered. The course emphasizes the critical analyses of beneficial and adverse outcomes of various nutrient intakes and dietary patterns on the nutritional status and well-being through integration of nutrition and other health sciences in understanding nutritional needs during the life cycle.

DIET 308 DIET THERAPY I

The course covers the application of dietary modifications in the treatment, management and prevention of disease conditions discussed in Diet and Disease I. It involves a brief summary of the anatomical physiological, and metabolic abnormalities in acute and chronic illness and the role of medical nutritional therapy in their prevention and care. The course focuses on principles of diet therapy, therapeutic adaptations of normal diet, classification of therapeutic diets and assessment of patients needs. Routine Hospital diets – standard and progressive diet, light diet, clear liquids, full liquids, semi solids, soft solids are also discussed.

DIET 309 GENETICS

This course examines the role of nutrients and other biologically active food components on gene expression. Emphasis will be placed on the understanding of how genes and the environment interact and the metabolic and physiologic consequences of these interactions. Students will be introduced to the pathogenesis of genetic aberrations and how these may affect bioavailability of food nutrients.

DIET 310 DIETETIC PRACTICUM I

This is a clinical course that provides opportunities for the dietetics student to observe and gain experience dietetics practice. It involves application of knowledge gained in theoretical courses to patient management. Students will be introduced to art of history taking and the science of interpreting laboratory results.

DIET 311 CO-ORDINATED COURSE IN PHYSIOLOGY AND BIOCHEMISTRY

The course seeks to develop a critical understanding of the biochemical nature of bio-molecules and their metabolic function and reviews gastro-intestinal physiology and the physiology of metabolism as relates to

energy balance and neuro-endocrine regulation of food intake.

DIET 313 FOOD SAFETY

This course covers the issues of food safety and the methods for prevention and control of food hazards. It covers hazards and toxicity associated with food and their implications for health, the regulations and the monitoring agencies involved food safety and food standards food laws. The role of different food additives in the processing of different foods and their specific functions in improving the shelf life, quality, texture and other physical and sensory characteristics of foods.

DIET 314 COMMUNITY NUTRITION

This course aims to critically evaluate the factors affecting diets of various populations and to provide understanding of community nutrition problems and appropriate intervention methods to address these problems. It defines the scope of community nutrition and the relationship between social stratification and nutritional status. It covers nutrition surveys, surveillance and monitoring of community programmes and schemes and community based nutrition intervention strategies. It equips students to manage the nutritional care of population groups across life cycle.

DIET 315 PHARMACOLOGY IN DIET THERAPY

The course provides a general overview of pharmacology, including kinetics, dynamics, classification and therapeutics of drugs, and principles and mechanisms of drug action. Special emphasis is put on drug-nutrient interactions. The aim is to equip the dietetics student with ability to determine whether medical problems are due to food-drug interactions.

DIET 316 FOOD HABITS

This course is designed to create awareness of the economic, religious, cultural, socio-political and psychological factors that influence the eating habits of individuals and communities. It covers the historical perspective between early food habits and social organization, diversity of food habits and patterns across cultures.

DIET 403 DIET AND DISEASE II

This course continues on DIET AND DISEASE I and covers the basic biochemical, physiological and pathological processes in some diseases that are caused by dietary abnormalities and/or require dietary modifications in their clinical management. It aims at helping students to develop an understanding of the causes and underlying processes and mechanisms of disease and an appreciation of the methods used to effect an accurate diagnosis and to develop an ability to recognize the clinical signs and symptoms of disease and an ability to communicate this effectively in context. Medical management of the diseases described will be covered.

DIET 404 DIET AND DISEASE III

This course is a continuation of DIET AND DISEASE II and covers the basic biochemical, physiological and pathological processes in some diseases that are caused by dietary abnormalities and/or require dietary modifications in their clinical management. It aims at helping students to develop an understanding of the causes and underlying processes and mechanisms of disease and an appreciation of the methods used to effect an accurate diagnosis and to develop an ability to recognize the clinical signs and symptoms of disease and an ability to communicate this effectively in context. Medical management of the diseases described will be covered.

DIET 405 DIET THERAPY II

The course covers the application of dietary modifications in the treatment, management and prevention of disease conditions discussed in Diet and Disease II. It covers principles of diet therapy, therapeutic adaptations of normal diet, classification of therapeutic diets and assessment of patients needs. It involves a brief summary of the anatomical, physiological, and metabolic abnormalities in acute and chronic illness and the role of medical nutritional therapy in their prevention and care.

DIET 406 DIET THERAPY III

The course covers the application of dietary modifications in the treatment, management and prevention of disease conditions discussed in Diet and Disease III. It covers principles of diet therapy, therapeutic adaptations of normal diet, classification of therapeutic diets and assessment of patients needs. It involves a brief summary of the anatomical, physiological, and metabolic abnormalities in acute and chronic illness and the role of medical nutritional therapy in their prevention and care.

DIET 407 NUTRITION AND HEALTH PROMOTION

This course seeks to develop an understanding of the theory of health promotion in relation to nutrition , sports ethics and lifestyle changes. Students learn the theoretical basis of effective health promotion communications and develop effective nutrition communication skills through application in a variety of settings. Provides hands-on experiences in counselling, educational program development, awareness campaigns and oral and written communications.

DIET 408: SPECIAL TOPICS IN NUTRITION AND DIETETICS

This course is designed to provide students with insight into current issues in nutrition and dietetics through critical review of literature and concise and organised presentation of facts. It provides students with an understanding of selective current nutrition issues and prepares students to render evidence-based conclusions about topics of interest to the public, government and industry using a framework that is founded in the analysis of research. The course affords students the opportunity to acquire knowledge and skills in understanding nutritional science literature and the implications of interpreting data and formulating conclusions about nutrition issues.

DIET 410 PROJECT WORK

The course is designed to teach students how to gather information, analyze, present and discuss data and address current issues in dietetics. Students are given the opportunity to conduct an individual investigation of a diet- related problem.

DIET 412 DIETETIC PRACTICUM III

The course provides practical experience for dietetic students to work with practicing dieticians in Hospitals and elsewhere. It builds on the experiences obtained in the vocational training periods and practicum I.

PROFESSIONAL PRACTICE PLACEMENT

DIET 200 CLINICAL ATTACHMENT I

This is a 4-week, whole day, inter-semester clinical training period at the end of semester 4 (i.e. during the long vacation). Students will undertake introductory clinical training involving directed observation and clinical experience to allow them to obtain practical hands-on experience. The attachment will be undertaken in Korle-Bu Teaching Hospital, Ridge Hospital, 37 Military Hospital, Princess Marie Loiuse Hospital and Tema General Hospital. It will be extended to Komfo Anokye Teaching Hospital, Efia Nkwanta Hospital, Ho Regional Hospital, Cape Coast Regional Hospital and Koforidua Regional Hospital as and when students' numbers increases.

Students shall be evaluated at the end of the vocational training. The course is a pre-requisite for level 300 courses in Dietetics.

Students will complete a logbook and will be assessed at the end of the course using the logbook and an oral examination.

DIET 300 CLINICAL ATTACHMENT II

This is a 6-week, whole day, inter-semester clinical training period at the end of semester 6 (i.e. during the long vacation) during which students work independently but under supervision of faculty and/or experienced dieticians to obtain practical hands-on experience in patient assessment, diagnosis, counselling and dietary management. The vocational training will be undertaken in Korle-Bu Teaching Hospital, Ridge Hospital, 37 Military Hospital, Princess Marie Loius Hospital, and Tema General Hospital. It will be extended to Komfo Anokye Teaching Hospital, Efia Nkwanta Hospital, Ho Regional Hospital, Cape Coast Regional Hospital and Koforidua Regional Hospital as and when students' numbers increases.

Students shall be evaluated at the end of the vocational training. The course is a pre-requisite for level 400 courses in Dietetics.

Students will complete a logbook and will be assessed at the end of the course using the logbook and an oral examination.

DIET 400 CLINICAL ATTACHMENT III

This is a 6-week, whole day, inter-semester clinical training period at the end of semester 6 (i.e. during the long vacation) during which students work independently but under supervision of faculty and/or experienced dieticians to obtain practical hands-on experience in patient assessment, diagnosis, counselling and dietary management. The vocational training will be undertaken in Korle-Bu Teaching Hospital, Ridge Hospital, 37 Military Hospital, Princess Marie Loius Hospital, and Tema General Hospital. It will be extended to Komfo Anokye Teaching Hospital, Efia Nkwanta Hospital, Ho Regional Hospital, Cape Coast Regional Hospital and Koforidua Regional Hospital as and when students' numbers increases.

Students will complete a logbook and will be assessed at the end of the course using the logbook and an oral examination.

BSC. IN OCCUPATIONAL THERAPY

DEPARTMENTAL OBJECTIVES

The programme is to:

1. Equip students with the specific knowledge based and skills that are required for competent practice of occupational therapy at the beginning level;
2. Develop students' understanding of the holistic nature of a person's health status and its implications on the delivery of health care service with emphasis on rehabilitation;
3. Develop students' analytical thinking, problem solving, interpersonal and communication skills;
4. Develop students' ability to integrate knowledge, skills and attitudes to practice competently in occupational therapy;
5. Develop students' skills in self-directed learning and positive attitudes towards continuing professional and personal development.
6. Synthesize current biological, behavioural and clinical sciences for occupational therapy practice with due reference to the holistic approach to health care issues;
7. Plan, implement and evaluate programmes of therapy which help patients/clients acquire adaptive skills, social effectiveness and physical abilities essential for participation in own life roles;
8. Contribute to the planning, organising, staffing, leading and assuring the quality of service of an occupational therapy unit;
9. Apply knowledge and interpersonal skills learned to work co-operatively as a member of the health care team which aims at reintegrating the disabled back to their families and into the community; and,

LEVEL 100 COURSES

All the courses at Level 100 are compulsory

SEMESTER 1

SAHS 101	Introductory Statistics	2
SAHS 103	Physical and inorganic Chemistry	2
SAHS 105	Organic Chemistry	2
SAHS 107	Chemistry Practical	1
SAHS 109	General Physics	2
SAHS 111	Biology	2
UGRC 110	Academic Writing I	3
SAHS 113	Introduction to Computer studies	1
SAHS 115	Clinical Reasoning in Health Sciences	3
		18

SEMESTER 2

SAHS 102	General Anatomy	3
SAHS 104	General Anatomy Practical	1
SAHS 106	General Physiology	3
SAHS 108	General Physiology Practical	1
OTTR 102	Introductory to Occupational Therapy	2
SAHS 112	Introductory Psychology for Allied Health Sciences	2
SAHS 122	Introductory Biochemistry	2

UGRC 220	Liberal and African Studies	3
GSPH 214	Writing for Public Health	3
		20

OTTR 100 Vocational Practice Placement 3

This is a 6-week inter semester clinical training period at the end of semester 2 (i.e. during the long vacation) to allow students to obtain practical hands-on experience. Students will undertake introductory clinical training in an accredited Hospital Ward/Unit. Students shall be evaluated at the end of the clinical affiliation. The course is a pre-requisite for Level 200 in Occupational Therapy.

LEVEL 200 COURSES

All the courses at Level 200 are compulsory

SEMESTER 3

OTTR 203	Occupational Therapy Theory and Practice	2
PSTR 201	Advanced Anatomy	2
PSTR 203	Advanced Anatomy Practical	1
SAHS 205	Basic Computer Application	3
PSCY 307	Human Growth & Development I	3
SAHS 207	General Biochemistry	2
SAHS 211	Statistics	2
SAHS 209	Medical Sociology for Allied Health Sciences	2
		17

SEMESTER 4

PSTR 206	Neuroscience	2
OTTR 202	Occupational Therapy for Physical Dysfunction	3
OTTR 204	Individuals, Institutions and Change	2
PSTR 208	Health Promotions and Disease Prevention	2
PSCY 308	Human Growth & Development II	3
PSTR 212	Biomechanics	2
SAHS 204	General Pathology	3
SAHS 202	Immunology	2
		19

OTTR 200 Vocational Practice Placement 3

This is a 6-week inter semester clinical training period at the end of semester 4 (i.e. during the long vacation) to allow students to obtain practical hands-on experience. Students will undertake introductory clinical training in an accredited Hospital Ward/Unit. Students shall be evaluated at the end of the clinical affiliation. The course is a pre-requisite for all Level 300 courses in Occupational Therapy.

LEVEL 300 COURSES

All the courses at level 300 are compulsory

SEMESTER 5

OTTR 301	Enabling Expression of Needs	2
PSTR 301	Kinesiology	2
PSTR 307	Neuro-rehabilitation I	2
OTTR 303	Environmental Planning I	3
OTTR 305	Orthotics/Seating	3
OTTR 307	Occupational Therapy Practice Skills I (Practical)	2
SAHS 301	Research Methodology	2
PSTR 309	Rheumatology	2
PSTR 311	Systemic Pathology	2
		20

SEMESTER 6

OTTR 302	Designing for Clients Needs	(+ Practical)	3
PSTR 302	Traumatic Skeletal Disorders		2
PSTR 304	Neuro-Rehabilitation II		2
SAHS 302	Health Law and Ethics		2
OTTR 304	Environmental Planning II (Building design)		2
OTTR 306	OT for Psychosocial Dysfunction		3
OTTR 308	Management of Practice and Change		2
OTTR 312	Community Therapy Services		3
			19

OTTR 300 Vocational Practice Placement 3

This is a 6-week inter-semester clinical training period at the end of semester 6 (i.e. during the long vacation) to allow students to obtain practical hands-on experience. Students will undertake clinical attachment at a Hospital ward/Unit in an accredited health facility. There shall be an evaluation at the end of the clinical attachment. The course is a pre-requisite for all Level 400 courses in Occupational Therapy.

LEVEL 400 COURSES

All the courses at level 400 are compulsory

SEMESTER 7

OTTR 401	Occupational Therapy Practice Skills II	2
OTTR403	Inter-professional Assessment	2
PSTR 403	Dermatology & Burns	2
OTTR 405	OT for Developmental Dysfunction (Pediatrics)	2
OTTR 407	Geriatrics OT	2
SAHS 401	Principles of Management	3
OTTR 400	Practice Placements I (intra sem.) 3days/week	3
OTTR 410	Project (Dissertation)	3
		19

SEMESTER 8

SAHS 402	Applied Health Sciences Management	3
OTTR 402	Vocational Rehabilitation for OT	2
OTTR 404	Evidencing Practice & Debate on OT current Issues	2
PSTR 402	Health, Fitness and Physical Activity	2
OTTR 400	Practice Placement II (Intra-sem.) 2dys/wk	2
PSTR 406	Ergonomics and Industrial Therapy	3
OTTR 410	Project (Dissertation)	3
		17

COURSE DESCRIPTIONS AND CONTENTS

OTTR 201 INTRODUCTION TO OCCUPATIOAL THERAPY

This unit is focused on ensuring clear understanding of the profession of Occupational therapy and the historical development. The unit examines the ability to confidently discuss Occupational Therapy in the areas of philosophy, models, and scope of practice, prospects, associated limitations and the role of the occupational therapist in the health care system.

OTTR 203 OCCUPATIONAL THERAPY THEORY AND PRACTICE

The unit is to assist students to gain understanding of disability in the socio- cultural context. The unit will further inform on OT theoretical frameworks and approaches used for different disabling conditions and situations. Students will be expected to appreciate information gathering, synthesizing and importance of confidentiality in Occupational Therapy practice.

OTTR 202 OCCUPATIONAL THERAPY FOR PHYSICAL DYSFUNCTION

This course will examine areas to develop students understanding of the impact of altered physical function on occupational performance. Students will be introduced to skills of assessment and recording. It will also

examine in-depth knowledge and demonstration of understanding in evaluating neuromuscular and motor skills, somatic sensory function, special senses, cognitive and perceptual skills in relation to occupational performance.

OTTR 204 INDIVIDUALS, INSTITUTIONS AND CHANGE

The course will assist the student to develop awareness of the needs of persons who have been, are, or could be affected by institutional living. The course will enhance students understanding on how to integrate knowledge on healthcare services with the study of effects of institutional living and the application of theory and concepts of change and its management.

OTTR 301 ENABLING EXPRESSION OF NEEDS

This unit will examine the development of different forms of communications and consider the occupational performance needs of people with related communication difficulty. The unit will also examine the normal development of communication skills associated with communication problems and the impact on occupational performance. Students will appreciate and evaluate a range of tools and techniques associated with assessment and treatment of persons with communication disorders. The unit will again assist the student to develop an understanding of the function of the variety of supporting services and agencies relevant to communication and inter agency working with the OT.

OTTR 303 ENVIRONMENTAL PLANNING I

This unit will examine areas to gaining understanding of the influence of the environment on enabling occupation. This will explore the concept of disability and its associated legal issues. Students will also be guided through the exploration of the concept of community.

OTTR 305 ORTHOTICS & SEATING

This unit will examine occupational performance components deficits with a variety of conditions/injuries. The nit will explore the analysis and assessment on how orthotic interventions may address and facilitate different levels of occupational performances. The unit will further examine appropriate use of wheel chair by w/chair dependants and their carers to mitigate affected occupational performance areas.

OTTR 307 OCCUPATIONAL THERAPY PRACTICE SKILLS I (PRACTICAL)

The unit will examine skills and techniques in the assessment of performance components of occupational performance areas of self-care, productivity and leisure with consideration to physical and social/ cultural environment. The student would be able to interpret and record a full assessment of patients with physical dysfunction.

OTTR 302 DESIGNING FOR CLIENTS' NEEDS (PRACTICAL DEMONSTRATION)

This unit is based on problem solving and practical workshop activity. Students will work in groups and will have the opportunity to make a prototype, or adapt a piece of domestic or therapeutic equipment to meet the needs of an identified client or client group. The unit will guide students to explore and describe materials which are locally available, and their potential usage in construction of adaptive equipment.

OTTR 304 ENVIRONMENTAL PLANNING II

This unit will examine the need to enable students to be fully aware of how the environment can be physically adapted to facilitate independence in all areas of activity of daily living. Students will demonstrate basic technical drawing techniques in order to be able to understand building plans and to draw adaptations**.** The unit will also examine areas of communicating knowledgeably with others responsible for providing accessible and suitable work environments for disabled persons and domestic settings for disabled and elderly people.

There will also be the need to examine relevant legislative factors affecting environmental design and provision of work place and domestic fixtures and fittings.

OTTR 306 OCCUPATIONAL THERAPY FOR PSYCHOSOCIAL DYSFUNCTION

The unit will enlighten students to gain understanding of mental illness in relation to occupational performance. The unit also examines how OT improves functional capacity and quality of life for people with mental illness in the areas of employment, education, community living, and home and personal care through the use of real life activities in therapy treatments.

OTTR 308 MANAGEMENT OF PRACTICE AND CHANGE

This unit will assist students to develop skills of self efficacy, applying personal and organisational theory to the effective management of professional practice. The unit will also examine the theory and practice of personal

management and organisational skills to evaluate opportunities and constraints upon the development of professional practice within changing health service systems.

OTTR 312 COMMUNITY THERAPY SERVICES

The unit examines further in-depth understanding of the influence of the environment on enabling occupation. The unit dwells on earlier knowledge on the concepts of community, societal structure and the importance of meaningful occupation. Emphasis is laid on WHO model of CBR and how the therapist could work with other MDT members to sustain this community rehabilitation model.

The unit is aimed to making therapy services accessible, acceptable, and affordable in the community setting. The course will deal with

OTTR 401 OCCUPATIONAL THERAPY PRACTICE SKILLS II (PRACTICAL)

The unit will examine areas to assist students to have a thorough understanding of the occupational therapy process and its application.

The area of study will lead to demonstrate a good understanding of each stage of the occupational therapy process.

OTTR 403 INTER-PROFESSIONAL ASSESSMENT

The unit will provide students with an opportunity to explore areas of professional assessment of individuals and family care needs while working with other professional team members. The unit will compare and contrast professional roles and boundaries within the inter-disciplinary team and analyse the concept of effective team work to provide holistic care.

OTTR 405 OCCUPATIONAL THERAPY FOR DEVELOPMENTAL DYSFUNCTION

To enable students to have knowledge and skills to plan and carry out assessment and treatment of children with common conditions as seen in OT practice. The unit will assess occupational performance areas of self care, play, productivity and leisure. The unit will ensure students appreciation to various developmental disabilities in the areas of identification and management.

OTTR 407 OCCUPATIONAL THERAPY AND GERIATRICS

This area will examine knowledge and skills to plan and carry out OT assessment and treatment with elderly patients with common physical conditions as seen in OT practice. The unit will enable the ability to construct OT assessment and treatment plans.

OTTR 402 VOCATIONAL REHABILITATION

The unit will explore the philosophy and purpose of vocational rehabilitation/ training. This area of study will enable students to acknowledge how healthy working life continually provides working age people with the opportunity, ability, support and encouragement to work in ways which allows them to sustain and improve their health and wellbeing. The unit takes into consideration sense of identity, social structure and routine, social networks, skills and meaning to the concept of leisure.

OTTR 404 EVIDENCING PRACTICE & DEBATE ON CURRENT OCCUPATIONAL THERAPY ISSUES

This unit aims to develop a basic understanding of the methods used to provide evidence to underpin professional practice in occupational therapy. It examines the ability to understand how the academic knowledge base of the profession is developed and applied.

The unit also examine current socio-political issues and their effect on OT practice and development.

Students will also be introduced to process management of transition from students to qualified practitioners.

OTTR 400 PRACTICE PLACEMENT (ROTATION)

This course is a two semester-long practice placement during level 400 in 3 different settings (Physical Health, Mental Health, and Rehabilitation Centre) to develop students' identification with the occupational therapy profession through observation and practice under supervision.

Students will be doing three days per week in semester 7 and two days per week during semester 8 when they will be assessed.

The placement will be scheduled as 10 weeks in physical health, 10 weeks in mental health and 14 weeks at a CBR centre. Students will be expected to manage a case load of three to four clients or groups under supervision Students will be provided with detailed information on specific objectives for each skill area in a logbook and they shall complete each area in relation to experiences obtained on the field,

Each student is expected to write a journal with details of the facility, write up three case studies and reflection on learning.

Students will be assessed using the logbook and an oral examination.

INTER- SEMESTER VOCATIONAL PRACTICE COURSES

These courses are taken during the inter-semester breaks and so run in three segments, each lasting 6 weeks. Students are required to spend a minimum of 4 hours each day.

OTTR 100

This is a whole day clinical training at the end of semester 2. Students will undertake introductory clinical training involving direct observation and clinical experience to allow them to become familiar with Departmental routine and to experience patient care in the clinical reception. The students will learn about appointment system, initial referral clinic appointments, review clinic/appointment and follow-up clinic/appointment and the organization of occupational therapy service in the country.

The attachment will be undertaken in Korle-Bu Teaching Hospital and the Pantang Mental Hospital and any other suitable hospital as determined by the Department and approved by the SAHS Board.

Students will complete a logbook and will be assessed at the end of the training using the logbook and an oral examination.

OTTR 200

This is the second segment is an 8-week, whole day clinical training period at the end of semester 4. Students will begin to apply theoretical knowledge and develop the range of skills needed to work as an occupational therapist with specified clients/care groups in a range of work settings.

The attachment will be undertaken in Korle-Bu Teaching Hospital and Pantang Mental Hospital and any other suitable hospital as determined by the Department and approved by the SA

Students will complete a logbook and will be assessed at the end of the training using the logbook and an oral examination.

OTTR 300

This is the third and last segment and takes place at the end of semester 6. It is a clinical posting that offers students experiences in a range of settings which include acute hospital wards and out patients' centres and community rehabilitation centres. Students are expected to further develop their practices which will include devising, monitoring and review of care plans for various disabling conditions.
Students will complete a logbook and will be assessed at the end of the training using the logbook and an oral examination.

GRADUATION REQUIREMENTS

i. Candidates shall have satisfied ALL University and Faculty Requirements
ii. Candidates shall have taken and passed all courses at Levels 200 (36 credits) 300 (40 credits)
iii. Candidates shall be required to specialize in one of the four subject areas at Level 400 as follows:

Microbiology

For specialization in Microbiology, candidates shall have taken and passed all Level 400 courses (36 credits) in Microbiology plus Project Work in an approved area of Microbiology: as well as all the courses in Laboratory Organization and Applied Health Service Management. A total of 125 credits shall have been accumulated.

Histotechnology/Cytotechnology

For specialization in Histotechnology/Cytotechnology, candidates shall have taken and passed all Level 400

courses (38 credits) in Pathology plus Project Work in either Histotechnology or Cytotechnology and all the courses in Laboratory Organization and Applied Health Service Management. A total of 128 credits shall have been accumulated.

Chemical Pathology
For specialization in Chemical Pathology, candidates shall have taken and passed all level 400 courses (37 credits) in Chemical Pathology plus Project Work in an approved area of Chemical Pathology: as well as all the courses in Laboratory Organization and Applied Health Service Management. A total of 129 credits shall have been accumulated.

Haematology
For specialization in Haematology, candidates shall have taken and passed all Level 400 courses (37 credits) in Haematology plus Project work in an approved area of haematology; as well as all the courses in Laboratory Organization and Applied Health Service Management. A total of 128 credits shall have been accumulated.

The courses in Liberal and African Studies are compulsory.

ACADEMIC YEAR
The Academic Session shall comprise two semesters.

STRUCTURE OF SEMESTER
A semester shall be of 20 weeks duration, which shall be structured as follows:

17 weeks of Teaching
1 week of Revision
2 weeks of Examinations

DURATION OF PROGRAMME

1. The minimum period for completing the Bachelor's degree programmes shall be 8 semesters and the maximum period shall be 12 semesters.
2. A student who is unable to complete his/her programme within the maximum period allowed shall lose all credits accumulated, and his/her studentship cancelled. Such a student may, however, be allowed to re-apply for admission into the University.
3. The minimum and maximum periods are calculated from the date of first registration.

INTERRUPTION OF STUDY PROGRAMME

1. A student may break his/her study programme but may not break for more than 4 continuous semesters, so however that the maximum period allowable for the completion of the programme is not exceeded.
2. A student who wishes to interrupt his/her course of study shall apply in advance to the Dean of the School, stating reasons why he/she wants to interrupt his/her study programme, and permission duty granted before he/she leaves the University. The Executive Secretary/Senior Assistant Registrar shall communicate the decision of the Dean to the applicant before he/she leaves the University.
3. A student who interrupts his/her studies for more than 4 continuous semesters shall be deemed to have lost any accumulated credits. Consequently, his/her studentship shall be cancelled. Such a student may, however, be allowed to re-apply for admission into the University.

COURSE CREDIT
One (1) course credit shall be defined as follows:

i. One-hour tutorial, or
ii. One practical session (of two or three hours), or
iii. Six hours of field work.
per week for a semester

WRITTEN EXAMINATIONS
These may take the form of a combination of the following:

i. Written essays lasting not more than 30 minutes per question each
ii. Short essays not lasting more than 15 minutes per question each
iii. Multiple choice questions

PRACTICAL/CLINICAL EXAMINATION REQUIREMENTS
Candidates are required to pass practical/clinical examinations, which shall include an oral component, at levels 300 and 400. Candidates shall obtain a minimum mark of 50% in order to pass.

PROJECTS
All candidates shall be required to undertake an oral defence of their project work. A minimum of 50% shall be required to pass.

GRADING SYSTEM
Student performance in a course shall be graded as follows:

Letter Grade	**Marks**	**Grade Point**	**Interpretation**
A	80 – 100	4.0	Outstanding
B+	75 – 79	3.5	Very Good
B	70 – 74	3.0	Good
C+	65 – 69	2.5	Fairly Good
C	60 – 64	2.0	Average
D+	55 – 59	1.5	Below Average
D	50 – 54	1.0	Marginal Pass
*E	45-49	0.5	**Unsatisfactory**
F	0 – 44	0	Fail

Note: ***Although this is a failure grade, it may still be accepted as fulfilling prerequisite for other courses.**

Other Grades

Grade	**Interpretation**	**Grade Point**
X	Fail	0
Z	Disqualification	0
I	Incomplete	0
Y	Continuing	0
AUDI	Audit	0

Grade Point (GP): Each Grade is assigned an equivalent grade point as indicated above. The number of (grade) points earned by a student, for each course completed, is computed as the product of the number of credits for the course and the grade point equivalent letter of the grade obtained in that course.

Cumulative Grade Point Average (CGPA): The student's cumulative grade point average is calculated by dividing the total number of grade points obtained, up to any specified time, by the total number for credits of **all** courses for which the student has registered up to that time.

Final Grade Point Average (FGPA): The FGPA is the CGPA for all courses under consideration calculated up to the end of a student's academic programme.

DEFINITION OF GRADES
Pass Grades: Grades A to D constitute **Pass** grades.

Failure Grades: Grades E, F, X, Z constitute **Failure** grades.

Continuing: A grade Y (for **Continuing**) shall be awarded at the end of a semester to any student who is taking a course which continues into the next semester.

Audit: A grade AUDI shall be awarded for attendance at lectures where no examination is taken, or where an examination is taken, but no mark can be returned, for good reasons. The Grade AUDI is not taken into account in the calculation of the FGPA.

Non-Completion of Course:

1. A grade I (for **Incomplete**) shall be awarded to a student who is unable to complete a course for reasons adjudged by the Board of Examiners as satisfactory. Such a student shall be expected to complete the course the very next time the course is available.
2. A grade X shall be awarded to a student who is unable to complete a course for reasons adjudged by the Board of Examiners as unsatisfactory.

Disqualification:

1. A grade Z denotes **Disqualification** from an examination as a result of an examination malpractice or offence, and shall be awarded whenever it is established that a candidate had attempted to gain an unfair advantage in an examination, be it in a Principal subject or an Ancillary or any other paper.
2. A candidate awarded a grade Z may be debarred from taking a University Examination for a stated period, or indefinitely, or may be expelled from the University altogether.
3. A grade Z may be awarded only by the Board of Examiners.

ELIGIBILITY FOR EXAMINATIONS

A student shall attend all such lectures, tutorials, seminars and practicals and undertake all other activities and assignments as are approved by the University in addition to those prescribed for the courses for which he/she has registered.

Each Department shall, with the approval of the Academic Board, determine the requirements for the courses they offer. A student who does not fulfil the requirements for any course shall not be allowed to take the examination for that course.

A student who is absent for **a cumulative period of 25%** from all lectures, tutorials, practicals and other activities prescribed for any course in any semester shall be deemed to have withdrawn from the course. Such a student shall not be permitted to sit the semester examination.

REGISTRATION FOR EXAMINATIONS

Registration for a University examination shall require endorsement of the Registration List by the Head of department to the effect that the candidate has pursued satisfactorily the approved course(s) of study in each subject being offered over the prescribed period and has attended at least 85 per cent of lectures, tutorials, practicals and other activities prescribed for course(s) of study in the subject. A candidate's registration shall not be valid unless it is so endorsed.

Endorsement shall be withheld if a candidate is deemed not to have followed satisfactorily the approved course of study. In any event of the withholding of an endorsement, the Head of Department shall request the confirmation by the Board of the School of Allied Health Sciences.

Where applicable, candidates shall have up to 3 weeks (21 days) from the commencement of the semester within which to **ADD** or **DROP** courses.

After 21 days of the semester, departments shall publish for verification by students, lists of registered candidates for all the courses offered by the department. The lists of registered candidates shall be forwarded to the Academic Affairs Office before the end of the sixth week of the semester. **These lists shall be deemed as constituting final registration for end-of-semester examination**. This means that by the end of the sixth week, students whose names do not appear in any course list shall not be allowed into the end-of-semester examination for that particular course. Similarly, students who are duly registered for a course but who fail to take the end-of-semester examination for that course shall be deemed to have absented themselves from the examination of that particular course, for which grade X shall be awarded.

SEMESTER EXAMINATIONS

Each course, with the exception of a project work shall normally be completed in one semester.

A final (end-of-semester) examination shall normally be required as a part of every course. An examination schedule showing time and place of examination for each course shall be published each semester.

The marks obtained in the end-of-semester examination shall constitute 70% of the grade for the course while continuous assessment constitutes the remaining 30%, except for practicals or other courses which are assessed entirely by continuous assessment.

Time allotted to examination papers shall be as follows:

i. 1- Credit Course - 1 hour
ii. 2- Credit Course - 2 hours
iii. 3 or 4- Credit Course - 2 to 3 hours

EXTERNAL EXAMINERS

External examiners shall be required for level 300 and 400 of the programmes.

All External examiners shall be required to submit a written report on all aspects of the examination in which they took part.

STUDENT IN GOOD STANDING

A student in good standing shall be one whose Cumulative Grade Point Average (CGPA) is at least 1.00 (Grade D).

PASSING AND WITHDRAWAL REGULATIONS FOR PROGRESSION

General Regulations

1. A candidate shall be deemed to have satisfied the requirements for progression if he/she has obtained a CGPA of 1.00 or better overall in all examinations.

2. In addition to the above, the candidate shall have satisfied Faculty/Departmental requirements for entry to subjects at the next level.

3. There shall be no probation.

4. A candidate who does not qualify to progress to the next level on the basis of 1 and 2 above shall be asked by the Registrar to withdraw from the University.

DEFERMENT OF EXAMINATION

On Grounds of Ill-Health: A student who has satisfied all the requirements as prescribed in Section 22 but is unable to take the main (end-of-semester) examination on grounds of ill-health, shall, on application to the Registrar, and on provision of a Medical Certificate issued by the Director of University Health Services, be allowed to defer the semester examination and take the examination at the next offering. Subsequent applications for deferment on grounds of ill-health shall be subject to a Medical Certificate issued by a properly constituted Medical Board.

On Grounds Other than Ill-Health: In cases of requests for deferment on grounds other than ill-health, the appropriate Dean shall invite the applicant for an interview and advise the University accordingly. It shall be the student's responsibility to satisfy the University beyond reasonable doubt why he/she wishes to defer the examinations.

In all cases of requests for deferment of examinations, the applicant(s) shall obtain written responses from the Registrar before leaving the University.

DECLARATION OF RESULTS

Results of semester examinations taken at the end of each semester shall normally be published by the Executive Secretary before the commencement of the next semester.

A result slip indicating the student’s performance in the examination shall be made available to the student.

SUPPLEMENTARY EXAMINATION

i. A student who fails in any course shall be allowed to re-write the examination in the failed course at a Supplementary Examination to be held in the Long Vacation. If he/she passes the Supplementary Examination he/she shall be awarded a mark not exceeding 50%.
ii. A student shall be allowed to take not more than 5 courses in all subject areas at any one time as Supplementary Examinations.
iii. Supplementary Examinations shall not include continuous assessment marks.
iv. Supplementary Examination shall be held in the long vacation.

EXAMINERS' BOARD

There shall be an Examiners Board for the Main and Supplementary Examination in respect of BSc. in Medical Laboratory Sciences, BSc. in Diagnostic Radiography, BSc. in Therapy Radiography, BSc. in Physiotherapy, BSc. in Dietetics and BSc. in Occupational Therapy and all other programmes and at all levels.

The Examiners Board for the BSc. in Diagnostic Radiography and Therapy Radiography shall comprise the following:

i.	Dean	-	Chairperson
ii.	Vice-Dean		
iii.	Head of Department of Diagnostic Radiography		
iv.	Head of Department Therapy Radiography		
v.	Internal Examiners from the Departments in (iii and iv)		
vi.	External Examiners		
vii.	Executive secretary		
viii.	Senior Assistant Registrar (Academic)	-	Secretary

The examiners Board for the BSc. in Physiotherapy shall comprise the following:

i.	Dean	-	Chairperson
ii.	Vice-Dean		
iii.	Head of Department of Physiotherapy		
iv.	Internal Examiners from the Department		
v.	External Examiners		
vi.	Executive Secretary		
vii.	Senior Assistant Registrar (Academic)	-	Secretary

The Examiners Board for the BSc. in Medical Laboratory Sciences shall comprise the following:

i.	Dean	-	Chairperson
ii.	Vice-Dean		
iii.	Head of Department of Medical Laboratory Sciences		
iv.	Internal Examiners from the Department		
v.	External Examiners		
vi.	Executive Secretary		
vii.	Senior Assistant Registrar (Academic)	-	Secretary

The examiners Board for the BSc. in Dietetics shall comprise the following:

i.	Dean	-	Chairperson
ii.	Vice-Dean		
iii.	Head of Department of Physiotherapy		
iv.	Internal Examiners from the Department		
v.	External Examiners		
vi.	Executive Secretary		
vii.	Senior Assistant Registrar (Academic)	-	Secretary

The Examiners Board for the BSc. in Occupational Therapy shall comprise the following:

i.	Dean	-	Chairperson
ii.	Vice-Dean		
iii.	Head of Occupational Therapy		
iv.	Internal Examiners from the Department		
v.	External Examiners		
vi.	Executive Secretary		
vii.	Senior Assistant Registrar (Academic)	-	Secretary

The Examiners Board shall receive, consider and determine the results of the BSc. programmes at all levels

The Examiners Board shall be required to make appropriate recommendations on any candidates based on his/her performance and also on any aspect of the examination as it deems fit.

ELIGIBILITY FOR THE BACHELOR'S DEGREE

A Bachelor's degree appropriately designated shall be awarded to a candidate who has been properly admitted to the University, has followed the approved courses* of study over the prescribed period and has satisfied the

following conditions:

**** For the avoidance of doubt, a student may be denied graduation if he/she does not follow subjects assigned to him/her at either Level 100 or 200***

University Requirements:

a. evidence of regular enrolment in the degree programme;
b. discharge of all obligations owed to the University;
c. a pass in all University Required Courses;
d. satisfactory performance in the appropriate University examinations.

Faculty/School/Departmental Requirements:

Satisfactory discharge of such requirements as may be prescribed by the faculty/school/department for the degree.

REQUIREMENTS FOR BACHELOR'S GRADUATION

A student shall be deemed to have satisfied the requirements for graduation if:

1. he/she has fulfilled all General University and Faculty/School requirements;
2. Obtained passes in all courses and subjects;
3. he/she has accumulated the minimum number of credits required by the Faculty/School.

Project Work:

This shall be submitted for assessment before the date of the last paper in the second semester examination. In default, the candidate shall be asked to submit the project work the following semester and it shall be treated as a repeat examination, with all its implications.

CLASSIFICATION OF DEGREE

a. All end-of-semester examination results from Level 100, including University and Faculty/School required courses, shall be taken into account in the computation of the Final Grade Point Averages (FGPA) for the classification of the Bachelor's degree.

b. The GPAs from Levels 100 to 400 shall have equal weighting.

c. In the determination of the FGPA, a weighted average of all repeat courses shall be used.

The BSc. in Allied Health Sciences degrees shall not be classified. However, based the University's classification the FGPA interpretations are as follows:

3.75 - 4.0	-	First Class
3.25 - 3.74	-	Second Class (Upper Division)
2.51- 3.24	-	Second Class (Lower Division)
2.0 – 2.50	-	Third Class
1.00 - 2.00	-	Pass
0 - 0.99 -	Fail	

CONFIRMATION OF AWARD OF DEGREE

A list of candidates who are deemed eligible as in shall be laid before the Academic Board for approval. No award shall be confirmed unless the Academic Board is satisfied that the candidate has met all the conditions for the award of a degree.

PRESENTATION OF AWARD

Following confirmation of an award of a degree as, the candidate shall be entitled to be awarded degree of Bachelor of Science under the seal of the University at a Congregation of the University assembled for that purpose. The degree shall indicate the principal subject or subjects offered and the class awarded.

CANCELLATION OF AWARD

Notwithstanding previous confirmation of an award of a degree and presentation of a certificate, the Academic Board may at any time cancel an award, even with retrospective effect, if it becomes known that:

i. a candidate had entered the University with false qualifications, or

iii. a candidate had impersonated someone else, or a candidate had been guilty of an examination malpractice for which a grade Z would have been awarded, or that there are other reasons that would have led to the withholding of confirmation of the award in the first place.

In any such event, the decision of the Academic Board shall be published on the University Notice Board and the candidate notified. Such cancellation and the reasons for it shall be entered on the candidate's transcript.

DATING OF BACHELOR'S DEGREE

The Bachelor's degree of the University of Ghana shall be dated with reference to the last day of the Semester during which the final examination is taken. This provision shall, however, not apply to the Medical and Dental Schools.

However, in the case of students who face disciplinary action, the dating of the certificate shall be the date on which the sanction is fully served.

TRANSCRIPT OF ACADEMIC RECORD

At the end of a student's programme, the University shall, on the payment of an appropriate fee, issue to the particular student a complete transcript of his/her academic record. This transcript shall be marked ***Student Copy*** and shall record all courses attempted and all results obtained.

In writing the Bachelor's degree certificate or in writing a student's transcript, programme/specialisation shall be clearly indicated.

TRANSFER STUDENTS

A student transferring from one university to this university shall take courses over a study period of at least 4 semesters as a full-time student, and satisfy all University and Faculty/School/Departmental required courses.

The classification of the degree shall be based only on the courses taken at this University.

REPEAT EXAMINATION

A student may decide to re-register for, and repeat, **a failed course only** on a future occasion upon payment of the appropriate fee. If he/she repeats the course and passes its examination, he/she shall be awarded the full grade earned on that occasion. The student's transcript will show the number of occasions the candidate took the examination for that particular course and the grades earned on all such occasions.

INTERNSHIP

Candidates on completion of programmes shall proceed to undertake a year's internship at an accredited health facility. Such internship shall be ***compulsory***.

UNIVERSITY OF GHANA DENTAL SCHOOL

ADMINISTRATION

Parkins, Grace *BDS FDS RCPS (Glas), FWACS, FGCS*	-	Associate Professor (Dean)
Nyako, Ebenezer Anno *BDS (Cairo) FWACS MDent Sci (Leeds), FGCS*	-	Associate Professor (Vice-Dean)
Poku-Sarkodee, Emmanuel *BA (Hons) MPH (Thesis Option) CIAMC-GH, IPMA-UK*	-	Assistant Registrar

DEPARTMENTS

ORAL PATHOLOGY & ORAL MEDICINE

Kwamin, Francis *MD, BDS, FACP*	-	Lecturer **(Head of Department)**
= **Nartey, Nii Otu**. *BDS (Ghana), MSc (West Ont.), MRCD(C,) FAAOP, FWACS, FGCS*	-	Associate Professor

RESTORATIVE DENTISTRY

Ampofo, Patrick *BDS, MClinDent*	-	Lecturer **(Head of Department)**
Nyako, Ebenezer Anno, *BDS (Cairo), FWACS, MDentSci. (Leeds), FGCS*	-	Associate Professor
Hewlett, Sandra Ama *BDS, MClin Dent*	-	Lecturer
Asante-Appiah, Kwame	-	Lecturer
Djaba, Samuel Tetteh	-	Lecturer
Otoo, Godfried	-	Lecturer
Acheampong, Kofi	-	Clinical Tutor

PREVENTIVE & COMMUNITY DENTISTRY

Sackeyfio, Josephine *DDS, MSc., FGCS*	-	Lecturer **(Head of Department)**
Ndanu, Thomas Akuetteh *BSc, MPhil*	-	Research Fellow
Akl, Joseph Jihad	-	Lecturer
Acquah, Samuel K.	-	Lecturer
= **F. Adu-Ababio** *BDS (Ghana), MSc (Lon.), DDPHRCS, FDSRCS (Eng.), FGCS*	-	Lecturer
Dai-Kosi, A. D. *BA, M Phil(Ghana)*	-	Assistant Lecturer

ORTHODONTICS & PAEDODONTICS

Newman-Nartey Merley, *BDS (Ghana), MS (West Onario), FGCS*	-	Senior Lecturer **(Head of Department)**
Amoah, Kwabena Gyaami *MD, MSc*	-	Lecturer

BIOMATERIALS SCIENCES

Quartey-Papafio, Neils Johannes, *BSc(Kumasi), MPhil (Legon) PhD.*	-	Lecturer **(Head of Department)**
Ampofo, Patrick *BDS, MClinDent*	-	Lecturer

ORAL AND MAXILLOFACIAL SURGERY

Parkins,Grace *BDS FDS RCPS (Glas), FWACS, FGCS*	-	Associate Professor (Oversight Responsibility)
Emil Al-hassan Abdulai *BDS (Ghana), FWACS*	-	Senior Lecturer
Nuamah, Isaac Kwasi	-	Lecturer

ORAL BIOLOGY

Amoah, Kwabena Gyaami - Lecturer
MD, MSc

KEY
= Leave of Absence

REGULATIONS FOR THE CLINICAL PART OF THE BACHELOR OF DENTAL SURGERY (BDS) DEGREE PROGRAMME

1. ADMISSION

1.1 Further to the General Regulations regarding admission into the University of Ghana, a candidate for admission to the Clinical Part of the BDS Degree programme must have obtained the BSc (Med. Sci) degree of the University of Ghana.
The following provisions may be followed for admission into the BSc. (Med. Sci) programme (which runs in the Medical School)

i. The admission would be based on Senior High School results in Science (WASSCE results). However, all GCE 'A' Level Science, International Baccalaureate and its equivalent applicants would be considered, and admitted to Level 100.

ii. There would be Quotas Committees in each of the two Schools to determine the number of students to be admitted, as well as the Senior High School and other examinations cut-off aggregate for admissions from time to time.

Meanwhile for 2011/2012 admissions, the Committee recommends an intake of 150 students, for Medical School and 30 for Dental School.

iii. Applicants would be shortlisted for a structured interview.

iv. Each School would constitute its own Admissions Committee to interview and admit students.

v. Applicants would be required to select only one School that is UGMS or UGDS. Where applicants have multiple School choices, the application would be sent to the first choice only.

vi. Applicants from less endowed Schools as listed by Ministry of Education (MOE), should be given plus 3 aggregate after the cut-off aggregate is determined.

vii. Ten percent (10%) of admissions would be reserved for students from less endowed Schools after the interview.

viii. The University's recommendations on gender (gender ratio) would be taken into consideration during admissions.

ix. To progress from Level 100 to Level 200, a student should make a minimum of Cumulative Grade Point Aggregate (CGPA) of 2.0 that is Grade C, which is equivalent to mark of 60-64%. It is interpreted as Average by the new Students Handbook for Faculty of Science.

1.2 Candidates with the Bachelor's degree in Medical/Biological and Physical Sciences as well as those who may have completed part of the BDS (or its equivalent) in a recognised University may be considered for admission on the recommendation of a Special Committee appointed by the Dean. The Special Committee of not less than five (5) persons, shall vet the transcripts of the candidate as well as the course content of the degree, with a view to determining the suitability of the degree of previous training and make appropriate recommendations to the Dean.

2. **DURATION AND STRUCTURE**

2.1 The Clinical Part of the BDS Degree programme shall be of 3 years duration, structured as follows:

(a)	First Clinical Year (BDS Final Part I)	-	48 weeks
(b)	Second Clinical Year (BDS Final Part II)	-	42 weeks
(c)	Third Clinical Year (BDS Final Part III)	-	45 weeks

3. **ACADEMIC YEAR**

The Academic Year shall comprise two Semesters.

4. **STRUCTURE OF SEMESTER**

4.1 **First Clinical Year (BDS Final Part I) 48 Teaching Weeks**

(a)	Semester 7	-	27 weeks
(b)	Inter-Semester Break	-	2 weeks
(c)	Semester 8	-	21 weeks
(d)	Revision for BDS Final Part I	-	1 weeks
(e)	Examination	-	1 weeks
(f)	Long Vacation	-	4 weeks
(g)	Supplementary Exam	-	1 week (after 6 weeks)

4.2 **Second Clinical Year (BDS Final Part II) 42 Teaching Weeks**

(a)	Semester 9	-	18 weeks
(b)	Revision	-	1 weeks
(c)	End of Semester Examination	-	2 weeks
(d)	Inter-Semester Break	-	6 weeks
(e)	Semester 10	-	24 weeks
(f)	Revision	-	1 weeks
(g)	End of Semester Examination	-	1 weeks
(h)	Long Vacation	-	6 weeks
(i)	Supplementary Exams	-	1 week (after 6 weeks)

4.3 **Third Clinical Year (BDS Final Part III) 45 Teaching Weeks**

(a)	Semester 11	-	23 weeks
(b)	Inter-Semester Break	-	2 weeks
(c)	Semester 12	-	22 weeks
(d)	Revision for BDS Final Part III	-	2 weeks
(e)	Final Part II Examination	-	3 weeks
(f)	Supplementary Exams	-	1 week (after 15 weeks)

5. **COURSES FOR YEARS 1, 2 & 3**

5.1 **First Clinical Year (BDS Final Part I): Semesters 7& 8**

5.1.1 **Duration - 48 weeks:** The period shall be devoted to the following courses:

5.1.2 **Semester 7: 27 weeks**

The first 10 weeks shall be devoted to the following courses to be run concurrently:

(i) Oral Biology I
(ii) Dental Material Science I
(iii) Dental Morphology I
(iv) Behavioural Science I
(v) Biostatistics and Research Methodology I
(vi) Introduction to Clinical Dentistry I

The rest of the semester shall be divided as follows:

(vii)	Introduction to Nursing Skills	-	1 week

(viii)	Introduction to Clinical Skills	-	4 weeks
(ix)	Human Disease I	-	12 Weeks

5.1.3 **Semester 8: 21 weeks**

(i)	Co-ordinated Course II (Human Disease)**	-	12 Weeks
(ii)	Specialty Rotations (including Trauma/Accident Center, ENT/Ophthalmology, Dermatology & General Anaesthesia Haematology)	-	8 Weeks

5.2 **Second Clinical Year: BDS Final Part II, Semesters 9 & 10**

5.2.1 **Duration - 42 weeks:** This period shall be devoted to the following courses:

5.2.2 **Semester 9: 18 weeks**

(i) Operative Technique and Endodontics
(ii) Prosthetics Dentistry
(iii) Local Anaesthesia and Surgical Anatomy
(iv) Community Dentistry, Ethics and Jurisprudence I
(v) Oral Pathology I
(vi) Oral Radiology I
(vii) Oral Biology II
(viii) Dental Material Science II
(ix) Dental Morphology II
(x) Behavioural Science II
(xi) Biostatistics and Research Methodology II
(xii) Introduction to Clinical Dentistry II

5.2.3 **Semester 10: 24 weeks**

(i) Advance Operative Technique & Endodontics
(ii) Oral Diagnosis
(iii) Local Anaesthesia and Exodontia
(iv) Restorative Dentistry I
(v) Orthodontics & Pedodontics I
(vi) Periodontics I
(vii) Oral Pathology II
(viii) Oral Radiology II
(ix) Community Dentistry, Ethics and Jurisprudence II

5.3 **Third Clinical Year: BDS Final Part III, Semester 11 & 12**

5.3.1 **Duration - 40 weeks:** This period shall be devoted to the following Courses:

5.3.2 **Semester 11: 23 weeks**

(i) Community Dentistry
(ii) Oral Medicine and Dental Therapeutics I
(iii) Oral & Maxillofacial Surgery I
(iv) Dental Practice Management I
(v) Restorative Dentistry II
(vi) Periodontics II
(vii) Orthodontics & Pedodontics II

5.3.3 **Semester 12: 22 weeks**

(i) Oral Medicine and Dental Therapeutics II
(ii) Oral & Maxillofacial Surgery II
(iii) Dental Practice Management II
(iv) Restorative Dentistry III

(v) Periodontics III
(vi) Orthodontics & Pedodontics III

6. SCHEME OF EXAMINATION

6.1 The Clinical part of the BDS degree programme shall be examined as indicated in section 6.2 to 6.7 below:

6.2 **First Clinical Year (BDS Final Part I)**

At the end of the First Clinical Year, candidates shall be required to take the BDS Final Part I Examinations in Human Disease (including General Medicine, General Surgery, ENT, Ophthalmology, Dermatology and Trauma and General Anesthesia).

6.3 **Second Clinical Year (BDS Final Part II)**

a. At the end of the First Semester of the Second Clinical Year, candidates shall be required to take the BDS Final Part II End-of-Semester Examinations in Biomaterial Science, Oral Biology, Prosthetic Dentistry, Operative Technique, Behavioural Science, Oral Surgery I, Oral Pathology I and Biostatistics & Research Methodology.

b. At the end of the Second Semester of the Second Clinical Year, candidates shall be required to take the BDS Final Part II End-of-Semester Examinations in Diagnostic Dental Sciences (including Oral Pathology II, Oral Diagnosis and Oral Radiology), Community Dentistry, Ethics & Jurisprudence and Oral Surgery II etc. All other courses will be evaluated by Continuous Assessment.

6.4 **Third Clinical Year (BDS Final Part III) -**

At the end of the Third Clinical Year, candidates shall be required to take the BDS Final Part III Examinations in Oral Medicine & Dental Therapeutics, Oral & Maxillo-Facial Surgery, Restorative Dentistry (including Conservative, Endodontics & Prosthetics), Periodontics, Orthodontics & Pedodontics and Community Dentistry (Long Essay).

6.5 A candidate shall not proceed to the Second Clinical Year (i.e. BDS Final Part II) until he/she has completed the courses and passed the BDS Final Part I examinations.

6.6 A candidate shall not proceed to BDS Final Part III until he/she has completed the courses and passed both end-of-semester examinations at BDS Final Part II.

6.7 The pass mark for all subjects at the BDS Final Parts I, II & III is 50%, provided that the candidate shall have passed the clinical and/or practical examinations.

7. MINIMUM/MAXIMUM PERIOD FOR COMPLETING THE BDS PROGRAMME

7.1 The minimum period for completing the Clinical BDS programme shall be six semesters or three Academic Years.

7.2 The maximum period for completing the Clinical BDS programme shall be twelve semesters or six Academic Years.

7.3 A candidate who is unable to complete his or her programme within the maximum period allowed, shall lose all credits accumulated. Such a candidate shall not be allowed to re-apply for admission into the BDS degree programme.

7.4 Subject to the provision under Section 7.5, candidates shall be required to take the first examination immediately following the completion of the relevant courses/subjects and may not postpone their entry without special written permission of the Dean.

7.5 A candidate who has not complied with the prescribed requirements for any course/subject or who has not performed satisfactorily in other duties prescribed or associated with a course/subject of instruction may, on the recommendation of the relevant Department, be refused admission to the examination of the year concerned and be required to repeat part or the whole of the course/subject of instruction leading to the particular examination.

7.6 A candidate who fails in only one course/subject of an examination at the first examination shall be referred in that course/subject and shall be required to take the examination in the referred course/subject at the supplementary examination following the main examination.

7.7 A candidate who fails in more than one subject at the first examination shall be deemed to have failed the whole examination and may on the recommendation of the Board of Examiners be required to:
Either

(i) repeat the whole of the examination at the supplementary examination immediately following the main examination; or,

(ii) repeat only those course(s)/subjects in which he/she failed, provided he/she attains at least 55% in the course(s)/subject(s) in which he/she passed, and not less than 45% in the course(s)/subject(s) in which he/she failed (pass mark is 50%); or,

(iii) repeat the year without the option of the supplementary examination.

7.8 A candidate who fails to complete an examination at the supplementary examination may, on the recommendation of the Board of Examiners, be required to withdraw from the Dental School or to repeat the whole or part of the course of instruction leading to that examination, before presenting himself/herself for re-examination.

7.9 Notwithstanding the provisions of Section 7.2 above, a candidate shall not present himself/herself for the whole or any part of the same examination on more than 3 (three) occasions.

7.10 A candidate who passes an examination as a whole at the first attempt and reaches the requisite high standard in a subject(s) may, on the recommendation of the Board of Examiners be awarded (a) Distinction; or (b) Credit; in such subject(s) in accordance with such rules as may be approved by the Academic Board.

7.11 Further to Section 1.3 above, the Board of the Dental School is empowered to determine whether a course of study pursued in the examinations passed in other recognized institutions by any candidate wishing to enter the professional courses at the Dental School may be accepted for the purpose of exemption from part or all of the Basic and Para-Clinical Sciences (the BSc. - Med.Sci. programme).

7.12 No exemption shall be granted from any part of the Clinical BDS courses/subjects and examinations.

8. INTERRUPTION OF STUDY PROGRAMME

8.1 A student may break his/her study programme but not break not break for more than 4 continuous semesters, so however that the maximum period allowable for the completion of the programme is not exceeded. Such a student shall be allowed to continue the programme from where he/she had left off.

8.2 A student who wishes to interrupt his/her course of study shall apply in advance to the Dean of the Dental School, starting reasons why he/she wants to interrupt his/her study programme, and permission duly granted before he/she leaves the University. The decision of the Dean shall be communicate to the applicant by the Executive Secretary/Registrar before he/she leaves the University.

8.3 A student who breaks his/her studies for more than 4 continuous semesters shall be deemed to have lost any accumulated credits. Such a student may be allowed to re-apply for admission.

8.4 Where the ground for interruption of studies is medical, the Director of University Health Services shall be required to advise the Registrar on the propriety and length of period of interruption. The Registrar shall cause the Director of University Health Service to investigate any medical Report reaching his office from any health delivery facility outside the University Hospital and advise accordingly.

9. ELIGIBILITY FOR EXAMINATIONS

9.1 A candidate shall attend all such lectures, tutorials, seminars, satisfy the clinical and laboratory requirements and undertake all other assignments as approved by the University

9.2 Each department shall, with the approval of the Academic Board, determine the requirements for the subjects they offer.

9.3 Further to Section 9.1 above, a candidate shall attend lectures, tutorials, practical and other activities prescribed for the courses/subjects for which he/she has registered and execute all assignments given.

9.4 A candidate who does not fulfill the requirements for any course/subject shall not be allowed to take the examination in that course/subject.

9.5 In any case, a student who is absent for a cumulative period of 21 days from all lectures, tutorials, ward rounds, clerkships and other activities prescribed for any course/subject in any semester shall be deemed to have withdrawn from the course/subject. Such a student shall not be permitted to sit for the semester examination.

10. REGISTRATION FOR EXAMINATIONS

10.1 Registration for a Dental School examination shall require endorsement of the Registration Form by the Head of Department to the effect that the candidate has pursued satisfactorily the approved course(s) of study being offered over the prescribed period and has attended at least 85% of lectures, tutorials, clinical, laboratory assignment and other activities prescribed for the course(s)/subject(s). A candidate's registration shall not be valid unless it is so endorsed.

10.2 Endorsement as in (Section 10.1) above, shall be withheld if a candidate is not deemed to have followed satisfactorily the approved course of study as in Section 10 above.

10.3 In any event of the withholding of an endorsement, the Head of Department shall request the confirmation by the Dean, subject to subsequent approval by the Board of the Dental School.

11. SUPPLEMENTARY EXAMINATIONS

11.1 Supplementary Examinations for BDS Final Parts I and II shall be held within six weeks after the main examinations.

11.2 Supplementary Examinations for BDS Final Part III Examinations shall be held within 15 weeks after the main examinations.

11.3 The provisions of Section 7.8 above shall apply to all Supplementary Examinations.

11.4 Supplementary Examinations shall not include continuous assessment marks.

12. EXTERNAL EXAMINERS

12.1 External Examiners shall be required for both the main and supplementary examinations for the BDS Final Parts I, II and III.

12.2 All External Examiners shall be required to submit a written report on all aspects of the examination in which they took part.

13. **DEFERMENT OF EXAMINATION**

13.1 ***On Grounds of Ill-Health****: A student who has satisfied all the requirements as specified in Section 9, but is unable to take the main examination on grounds of ill health, shall, on application to the Executive Secretary/Registrar, and on provision of a Medical Certification issued or endorsed by the Director of University Health Services/Head of Department of Medicine, University of Ghana Medical School, be allowed to take supplementary examination as his/her main examination. He/she shall be credited with the grade obtained in the supplementary examination. Subsequent application for deferment, on grounds of ill-health, shall be subject to a Medical Certificate issued by a properly constituted Medical Board.*

13.2 **On Grounds other than Ill-Health:** In cases of deferment on grounds other than ill-health, the Dean of the Dental School shall invite the applicant for an interview and advise the University as appropriate. It shall be the student's responsibility to satisfy the University beyond reasonable doubt why he/she wishes to defer the examinations.

13.3 In all cases of deferment of examinations, the applicant(s) shall obtain written responses from the Executive Secretary/Registrar before leaving the University.

14. **EXAMINERS BOARD**

14.1 There shall be an Examiners Board for the main and supplementary examinations, in respect of the BDSFinal Parts I, II and III.

14.2 The Examiners Board for the BDS Final Part I shall comprise the following:

(i) Dean - Chairman
(ii) Vice-Dean
(iii) Head of Department of Oral Pathology and Oral Medicine
(iv) Head of Department of Medicine and Therapeutics
(v) Head of Department of Surgery
(vi) Internal Examiners from the Departments concerned
(vii) External Examiners (optional)
(viii) Executive Secretary
(ix) Assistant Registrar (Academic) - Secretary

14.3 The Examiners Board for the BDS Final Part II shall comprise the following:

(i) Dean - Chairman
(ii) Vice-Dean
(iii) Head of Department of Oral Pathology and Oral Medicine
(iv) Head of Department of Oral & Maxillofacial Surgery
(v) Head of Department of Restorative Dentistry
(vi) Head of Department of Biomaterials Science
(vii) Head of Department of Anaesthesia
(viii) Internal Examiners from the Departments concerned
(ix) External Examiners (optional)
(x) Executive Secretary
(xi) Assistant Registrar (Academic) - Secretary

14.4 The Examiners Board for the BDS Final Part III shall comprise the following:

(i) Dean - Chairman
(ii) Vice-Dean
(iii) Head of Department of Oral & Maxillofacial Surgery

(iv) Head of Department of Oral Pathology and Oral Medicine
(v) Head of Department of Community & Preventive Dentistry
(vi) Head of Department of Restorative Dentistry
(vii) Head of Department of Orthodontics & Pedodontics
(viii) Internal Examiners from the Departments concerned
(ix) External Examiners (optional)
(x) Executive Secretary
(xi) Assistant Registrar (Academic) - Secretary

14.5 The Examiners Board shall receive, consider and determine the results of the BDS Final Parts I, II and III examinations.

14.6 The Examiners Board shall be required to make appropriate recommendations on any candidate based on his/her performance and also on any aspect of the examination as it deems fit.

15. DECLARATION OF RESULTS

15.1 Results of the BDS Final Parts I, II and III Examination shall normally be published by the Executive Secretary/Registrar on the School Notice Board after the Examiners' Board has determined the results.

15.2 The results as published shall be subject to the approval of the Board of the Dental School and the Academic Board.

15.3 A results indicating the student's performance shall be made available to him/her.

16. ELIGIBILITY FOR THE BDS DEGREE

16.1 The BDS degree shall be awarded to a candidate who has been properly admitted to the University, has followed the approved courses of study over the prescribed period and has satisfied the following conditions.

16.2 **University Requirements**

(i) evidence of regular enrolment in the degree programme;
(ii) discharge of all obligations owed to the University;
(iii) a pass in all University required courses; and,
(iv) satisfactory performance in the appropriate University Examinations.

16.3 **Faculty/Departmental Requirements**

Satisfactory discharge of such requirements as may be prescribed for the degree.

17. REQUIREMENTS FOR GRADUATION

17.1 A candidate shall be deemed to have:

(i) satisfied all General University and Faculty requirements; and,
(ii) Obtained at least 50% in each subject featured in the BDS Final Parts I, II and III examinations.

17.2 In addition to the above all candidates shall be required to attend the Swearing-in Ceremony and take the Hippocratic Oath.

18. CONFIRMATION OF AWARD OF DEGREE

18.1 A list of candidates who are deemed eligible as in Sections 16 and 17 shall be laid before the Academic Board of the University for approval as soon as practicable.

18.2 No award shall be confirmed unless the Academic Board of the University is satisfied that the candidate has satisfied all the conditions for the award of a degree.

19. **CANCELLATION OF AWARD**

19.1 Notwithstanding previous confirmation of an award of a degree as in Section 18, the Academic Board of the University may at any time cancel an award even with retrospective effect, if it becomes known that:

(i) a candidate has entered the University with false qualifications;

(ii) a candidate has impersonated someone else;

(iii) a candidate has been guilty of an examination malpractice for which a grade Z would have been awarded; or,

(iv) there are other reasons that would have led to the withholding of confirmation of the award in the first place.

19.2 In any such event, the decision of the Academic Board of the University shall be published on the University Notice Boards and the candidate notified. Such cancellation and the reasons for it shall be entered on the candidate's transcript.

20. **TRANSCRIPT OF ACADEMIC RECORD**

20.1 At the end of a student's programme, the University shall, on the payment of an appropriate fee, issue to the particular student a complete transcript of his/her academic record. This transcript shall be marked ***Student's Copy*** and shall record all courses attempted and all results obtained.

21. **CLASSIFICATION OF DEGREE**

21.1 The BDS degree shall not be classified.

UNIVERSITY OF GHANA MEDICAL SCHOOL
FACULTY

CENTRAL ADMINISTRATION

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Rex Herman Alorbi *BSc (Admin.); MBA Finance*	-	Senior Accountant
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Susan Fosua Okan *BSc. (Agric.); MPhil. (Agric. Admin.)*	-	Jnr. Asst. Registrar (P)
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Adwoa Agyei-Nkansah *MB ChB; FWACP*	-	Lecturer
Joan Agama *MB ChB*	-	Clinical Tutor
Brig. (Dr.) Albert B. Gyening *MBChB, FWACP*	-	Lecturer
Jacob Asare-Brobbey *MB ChB, FWACP*	-	Lecturer
Fred Asiedu-Frimpong *MB ChB, FWACP*	-	Lecturer
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Timothy N. A. Archampong MB ChB (Leics) MRCP	-	Lecturer
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Patrik Adjei MB ChB, PhD, FWAP	-	Lecturer
Yacoba Atiase *MB ChB*	-	Clinical Tutor
Ida Dzifa Dey *MB ChB*	-	Clinical Tutor

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Nicholas Dzifa Dayie *BSc (Hons.) M.Phil.*	-	Assistant Lecturer
Dr. Simon K. Attah *BSc. MSc, PhD*	-	Lecturer
Elizabeth S. Bannerman *BSc. PhD*	-	Senior Lecturer

DEPARTMENT OF OBSTETRICS & GYNAECOLOGY

Samuel A. Obed *MB ChB (Gh), FWACS*	-	Associate Professor/HOD
Enyonam Yao Kwawukume *MB ChB (Gh), FWACS*	-	Professor
Cecil Adjei Klufio ***MB ChB (Glasg), FRCS (Edin), MRCOG,*** *FWACS, FRCOG*	-	Assoc Professor/Contract

Josiah Oloboye Armah *MD (Gottingen), FWACS*	-	Senior Lecturer/Contract
John Baptist Wilson *MB BS (Lond), MRCOG, FRCOG (UK), FWACS*	-	Senior Lecturer/Contract
Anyetei Tonyeli Lassey *MB ChB (Gh), MRCOG,FWACS,FRCOG (UK)*	-	Associate Professor
Joseph Darkwa Seffah *MB ChB (Gh), FWACS*	-	Associate Professor
Kobinah Nkyekyer *MB ChB (Gh), MRCOG*	-	Associate Professor
Benjamin Daniel Robert Tei Annan *MB ChB (Gh), MRCOG, FWACS*	-	Senior Lecturer
Nelson Ricky Kwame Damale *MB ChB (Gh), MRCOG, MFFP(ROCG)*	-	Lecturer
Kwesi Akyem Apea-Kubi *MB ChB (UK), MRCOG, FWACS*	-	Senior Lecturer
Robert Kwame-Aryee *MB ChB (Gh), FWACS*	-	Senior Lecturer
Ali Samba *MB ChB, (Gh.) FWACS*	-	Lecturer
H.N.O. Laryea *MB ChB (Gh.)*	-	Lecturer
Ernest Crosby Saka Jnr *MB ChB FWACP*	-	Lecturer
Christopher K. Agbeka *MB ChB FWACP*	-	Lecturer
Adjei Sowah *MB ChB, FWACP*	-	Lecturer
Richard Banful *MB ChB, FWACP*	-	Lecturer
Emmanuel Srofenyoh *MB ChB, FWACP*	-	Lecturer
Ernest Maya *MB ChB, FWACP*	-	Lecturer

DEPARTMENT OF PATHOLOGY

Richard Kwasi Gyasi *MB ChB (Gh), DCP, FWACP*	-	Associate Professor/HOD
Yao Tettey *MB ChB (Gh), DCP (London), FWACP*	-	Associate Professor/ Dean
Andrew Anthony Adjei *MSc (Japan), PhD (Japan)*	-	Professor
Edwin Kwame Wiredu *MB ChB (Gh), MRCPath, MIAC, FWACP*	-	Assoc. Professor
J.T. Anim *MB ChB; FWACP*	-	Associate Professor/Contract
Solomon Quayson *MB ChB, MSc, FWACP*	-	Lecturer
A.O. Darkwa-Abrahams *MB ChB, FWACP*	-	Lecturer
Cecilia Smith *BSc, M.Phil*	-	Assistant Lecturer

DEPARTMENT OF PHARMACOLOGY

Kwesi Agyei Bugyei *BVSc VMD, MSc PhD (Guelph)*	-	Senior Lecturer/HOD
Abeyie Boakye Atonsah Prempeh *BSc (Lond), MB ChB (Gh), PhD (Lond)*	-	Senior Lecturer/Contract
Arthur Commey Sackeyfio *BSc (Pharmacy) (UK), PhD (Pharmacology) (UK)*	-	Assoc Professor/Part-Time
Isaac Asiedu-Gyekye *MSc. Ph.D (Pyatigorsk, Russia)*	-	Senior Lecturer
Prof. George Lutterodt *BSc., MSc. PhD*	-	Associate Professor/Part-Time
Seth Kwabena Amponsah *BSc M..Phil. (Gh)*	-	Assistant Lecturer

DEPARTMENT OF PHYSIOLOGY

Daniel Ansong Antwi *BSc Dip Ed(UCC) PhD (USC)*	-	Senior Lecturer/HOD
Festus Komla Adzaku *MB ChB (Gh.), PhD (London)*	-	Associate Professor/Contract
Charles Antwi-Boasiako *BSc. (Hons.) (Zoology) M.phil.*	-	Lecturer
IFA Hesse *BSc. MB ChB, PhD, MRCP, FGCP*	-	Associate Professor/Part-Time

DEPARTMENT OF PSYCHIATRY

Sammy Kwame Ohene *MB ChB (Gh), FWACS*	-	Senior Lecturer/HOD
Araba Sefa-Dede (Mrs) *BA (Gh), PhD (Wash)*	-	Senior Lecturer
Angela Lamensdorf Ofori-Atta (Mrs) *BSc (Gh), PhD (Brit. Columbia)*	-	Senior Lecturer
Victor Doku *MB ChB (Gh.) MRCPsych.*	-	Lecturer/Part-Time
Diana Baah-Odoom *BA (Nursing) (Gh.), M.Phil (Gh.)*	-	Lecturer/Part-Time
Ama Serwah Addo *MB BS (Glasgow,; DCH, MRCP (Glasgow), MRCP, MRCPsyc***.**	-	Lecturer/Part-Time
Christian Charles Adomako *MB ChB; MRCP; DPM, Dip. In Psyc.*	-	Associate Professor/Part-Time
Abayomi Joel Fashola *MBBS (Nigeria); MRCPsych.;CCST*	-	Lecturer
Dr. Ebenezer Okyere *MB ChB, MRCPsych. FRCPsych.*	-	Lecturer (Part-Time)
Alphonse F.K. Tenteh *BSc. (Hons.); MPhil.*	-	Clinical Tutor
Olive Okraku *BSc (Hons.); MPhil.*	-	Clinical Tutor

DEPARTMENT OF RADIOLOGY

Alex Akoto Yeboah *MD (Hun) PMUBC (Hun)*	-	Senior Lecturer/HOD
William Ofori Brakohiapa *MD (Leipzig), Ph.D (Giessen)*	-	Senior Lecturer (Part-Time)
Edmund Brakohiapa *MB ChB., FWACS*	-	Lecturer
Edwin Morgan Ogoe *MB ChB, FWACS*	-	Lecturer (Part-Time)
Klenam Dzefi-Tettey *MB ChB, FWACS*	-	Lecturer (Part-Time)

DEPARTMENT OF SURGERY

Joe Nat Clegg-Lamptey *MB ChB (Gh), FRCS (Edin), FWACS, FGCS*	-	Assoc. Professor/HOD
Simon Beinakpaa Naaeder *MB ChB (Gh), FRCS (Eng), FWACS*	-	Professor
Kwabena Frimpong-Boateng *MB ChB; Fach Arzt Chirurgie; Arzt. Thorax & Kardiovasc. Chirurgie; Arzt. Gefäßchirurge MD (DR. MED.)*	-	Professor/Contract
Edward Donkoh Yeboah *MB Bchir MD (Camb) FRCS (Eng), FWACS, FAC*	-	Professor/Contract
George Oko Klufio *MB ChB (Gh), FRCS (Eng), FWACS*	-	Associate Professor//Contract
Rudolph Darko *MB ChB, FRCS(Ed). FRCS(Eng.) FWACS, FICS, FGCS, Cert Stats, FGMA, OV*	-	Associate Professor
Afua Jecty Hesse (Mrs) *MB ChB (Gh), FRCS (Edin) FWACS*	-	Associate Professor

Winfred Mensah Hodasi *MD (Heidelberg), F.Chir (Munster), FWACS*	-	Senior Lecturer/Contract
Reginald John Nicholas *MBBS (Durham), MD (Newcasdtle), FRCS (Edin.)*	-	Senior Lecturer/Part-Time
Joseph Felix Kwadwo Tandoh *BA (Cantab.) MA (Cantab.) MB B Chir,* *FRCS (Edin.) FRCS (Eng.)*	-	Senior Lecturer/Contract
Benjamin Baako *MB ChB (Gh), FRCS (Edin) FRCS (Eng)*	-	Senior Lecturer
Abednego Ofori Addo *MB ChB (Gh), FRCS, FWACS*	-	Senior Lecturer
Stephen Korku Akafo *MB ChB (Gh), FRCOph, FWACP*	-	Senior Lecturer
James Danso-Adams *MD (Noi/sad), MDOtorhinolaryngology* *(Yugoslavia), FWACS*	-	Lecturer/Part-Time
Ibn Mutawukilu Iddrisu *MD (Halle) FWACS*	-	Senior Lecturer/Contract
Lawrence Agyeman Sereboe *MB BS (Nig), FWACS*	-	Lecturer
Edith Mawuse Dogbe *MB ChB (Gh), Dip.Oph (Glasg), FWACS*	-	Senior Lecturer
Nii Armah Adu-Aryee *MB ChB (Gh), FWACS*	-	Senior Lecturer
Emmanuel Dornu Kitcher *MB ChB (Gh), FRCS (Edin), FWACS*	-	Senior Lecturer
Martin Kyere *MB ChB (Gh), FWACS*	-	Lecturer
Albert Bedford Painstil *MB ChB (Gh), FRCS (Edin)*	-	Lecturer
Thomas Kofi Dakurah *MB ChB (Gh), FWACS*	-	Lecturer
William Appeadu-Mensah *BSc (KNUST), MB ChB (KNUST), FWACS*	-	Lecturer
Samuel Gepi-Atee *MB ChB (Gh.),FRCSI (Lond.)*	-	Senior Lecturer
Benhardt Ago Kuma *MB BS (Eng), MRCS, FWACS, FRCS*	-	Lecturer/Part-Time
Anthony George Laing *MB ChB (St. Andrews), FRCS*	-	Lecturer/Part-Time
Vera Adobea Essuman (Mrs.) *MB Ch.B (Gh.); FWACS (Ophth.); WAPMC.*	-	Lecturer
Edward Asumanu *MB ChB, FWACS*	-	Lecturer
Jonathan C.B. Dakubo *BSc., MB ChB, FWACS*	-	Lecturer
Balea J.C.B. Dakubo *MB ChB, FWACS*	-	Lecturer
Florence Dedey *MB ChB, FWACS*	-	Lecturer
Lily Pincho Wu *MB ChB*	-	Asst. Lecturer
Michael A.K. Segbefia *MB ChB, FWACS*	-	Lecturer
Agbeko Kwasi Ocloo *MB ChB, FWACS*	-	Lecturer
Mathew K.Y. Kyei *MB ChB, FWACS*	-	Lecturer
Emmanuel K. Osei *MB ChB; FWACS*	-	Lecturer/Part-Time
A.G Bugri *MB ChB, FWACS*	-	Lecturer/Part-Time
Sunny Doodu Mante *MB ChB, FWACS*	-	Lecturer/Part-Time
Wisdom Yevudza *MB ChB, FWACS*	-	Lecturer/Part-Time

James E. Mensah *MB ChB, FWACS*	-	Lecturer
Innocent K. Adzamli *MB ChB*	-	Clinical Tutor
Mark Mawutor Tettey *MB ChB, FWACS*	-	Lecturer
Imoro Zeiba Braimah *MB ChB, FGCPS*	-	Lecturer

PROFESSORES EMERITI

Emmanuel Augustus Badoe *MB ChB (Sheff), LRCS, MRCS, FRCS (Eng), Ch.M (Sheff), DTM&H (Eng), FWACS, FGAAS*	-	Emeritus Professor of Surgery
Emmanuel Quaye Archampong *BSc, MB MS (Lond), FRCS (Edin & Eng), MS (Lond), FWACS, FGAAS*	-	Emeritus Professor of Surgery

LIBRARY

Sitsofe Dzansi *BA,Grad Dip Lib Stud (Gh)*	-	Assistant Librarian/Ag. HOD
Samuel Bentil Aggrey *BA, MA (Gh.)*	-	Assistant Librarian
Solomon Bayugo Sulemani *BA (Hons.), MA (Gh.)*	-	Assistant Librarian

ADMISSION REQUIREMENTS AND REGULATIONS FOR THE BSC (MED. SCI.) AND BACHELOR OF MEDICINE AND BACHELOR OF SURGERY (MB CHB) DEGREE PROGRAMMES

1.0 GENERAL REGULATIONS

1.1 The University runs a modular course structure. Under this structure, the University's academic programme has been organized into a semester system, and instruction takes the form of courses evaluated in terms of credits. Units of courses are examinable at the end of every semester and, if passed, a student shall earn credit(s) for the Units. The courses are coded and arranged in progressive order of difficulty, or in levels of academic progression.

1.2 Each faculty shall provide detailed information about the structure of course leading to the award of Bachelors' degree.

1.3 It is the responsibility of each student admitted to the University of Ghana, to be familiar with the specific requirements of the degree as well as the rules, regulations and policies of the University.

1.4 Each student is responsible for ensuring that the courses in which registration is effected satisfy the programme requirements of the Bachelor's degree sought; advice and/or counseling for all who need assistance is freely available.

1.5 It is also understood that every student, by the act of registering, agrees to abide by all rules, regulations and policies of the University of Ghana and of the Faculties or Departments in which that student is registered.

1.6 Each student is expected to be familiar with the General Information outlined in this Handbook as well as the information pertaining to the Medical School. Students shall therefore be held liable for any lapses. When in doubt, students may consult their Heads of Department in writing with a copy to the Executive Secretary asking that advice be given in writing.

1.7 Exemption from any of these General Regulations may be granted only by the express permission of the Academic Board on the recommendation of the appropriate Faculty Board.

1.8 The University reserves the right to change rules, regulations and policies, as well as programme and course requirements given in this Handbook without prior notice.

2.0 ADMISSION TO THE MEDICAL SCHOOL

2.1 Further to the General Regulations regarding admission into the University of Ghana, admission to the

Medical School for the BSc (Med. Sci.) and MB ChB Programmes shall follow an interview of eligible candidates to be based on Senior High School performance (WASSCE results). However all GCE A' Level, International Baccalaureate and its equivalent applicants would be considered, and admitted to Level 100.

3.0 **Bachelor of Science (Medical Sciences)**
(Bsc (Med. Sci.)) Programme

3.1 **ACADEMIC YEAR/ STRUCTURE**
The Academic Session shall comprise two semesters**.**

3.2 Semesters 1 & 2 (in the Faculty of Science) shall be used to upgrade the level of science of the SSSCE candidates to levels currently prevailing at the GCE Advanced Level in the Sciences. During this first year of the programme a semester shall be of 16 weeks duration, which will be structured as follows:

13 weeks of Teaching
1 week of Revision
2 weeks of Examinations.

3.1 All the courses in Level 100 are compulsory.

4.0 Courses/Subjects for Levels 100
Biological Sciences Option:
First Semester
Core

COURSE CODE	TITLE	CREDITS
UGRC 150	*Critical Thinking and Practical Reasoning **	*3*
ABCS 101	Introductory to Animal Biology	3
CHEM 111	General Chemistry I	3
CHEM 110	Practical Chemistry	1
PHYS 101	Practical Physics I	1
PHYS 113	Mechanics and Thermal Physics	2
MATH 101	General Mathematics	3
UGRC 110	Academic Writing I*	*3*
	TOTAL CREDITS	**19**
***University required courses**		

Second Semester
Core

COURSE CODE	TITLE	CREDITS
UGRC 110	Academic Writing II *	*3*
UGRC 130	Understanding Human Societies *	*3*
BOTN 104	Growth of Flowering Plants	3
CHEM 112	General Chemistry II	3
CHEM 110	Practical Chemistry	1
PHYS 102	Practical Physics II	1
PHYS 114	Electricity and Magnetism	2
UGRC 220	Introduction to African Studies *	3
	TOTAL CREDITS	**19**
***University required courses**		

4.1 **Progression to Level 200**:

To progress to Level 200 a candidate shall be required to make a minimum **Cumulative Grade Point Average (CGPA) of 2.0**. **Failure to obtain this shall disqualify a candidate as a Medical/Dental student.**

4.2 **Semesters 3, 4, 5 & 6 (Basic Sciences and Para-Clinical Sciences)**

A semester shall be of 18 weeks duration and be structured as follows:

15 weeks of Teaching
2 weeks of Revision
1 week of Examinations.

4.3 **Level 200 Courses, Semesters 3 and 4**

Students shall study the following subjects: Medical Sociology, History of Western Medicine, Psychology, Anatomy, Medical Biochemistry, and Physiology. All the courses are compulsory. A candidate shall be required to pass all courses before progressing to Level 300.

4.4 **Level 300 Courses: Semesters 5 & 6**

Semester 5 & 6 shall be devoted to courses in the Para-Clinical Sciences (Chemical Pathology, Haematology, Microbiology, Pathology, and Pharmacology). A candidate shall be deemed to have passed all courses in order to be eligible for the award of a BSc (Med. Sci.) degree.

Students, after Semester 6, may opt for a year's Intercalated BSc (Hons) Degree programme in the Basic Sciences and Para-Clinical Sciences subjects. Such students shall have attained at least a credit in the relevant subject. The final decision on admission to a particular Intercalated BSc Degree will be made by the relevant department.

5.0 Definition of Course Unit

A course unit shall be defined as follows:

i. One-hour lecture = 1 Unit
ii. One-hour tutorial = 1 Unit
iii. One, two/three-hour practical session = 1 Unit

6.0 DEFINITION OF COURSE CREDIT

A credit shall be defined as follows:

i. One-hour lecture or tutorial/week/semester
ii. One two/three-hour practical/week/semester.

7.0 Grading System for Courses & Subjects

7.1 Student performance in a subject/course shall be graded as follows:

GRADE	NUMERICAL MARKS%	GRADE POINT	INTERPRETATION
A	80 - 100	4.0	Outstanding
B+	75 - 79	3.5	Very Good
B	70 - 74	3.0	Good
C+	65 – 69	2.5	Fairly Good
C	60 – 64	2.0	Average
D+	55 – 59	1.5	Below Average
D	50 – 54	1.0	Marginal Pass
*E	45 – 49	0.5	Unsatisfactory
F	0 - 44	0	Fail

Note: *Although this is a failure grade, it may still be accepted as fulfilling prerequisite for other courses.

Other Grades

GRADE	INTERPRETATION	GRADE POINT
X	Fail	0
Z	Disqualification	0
I	Incomplete	0
Y	Continuing	0
AUDI	Audit	0

7.2 **Grade Point (GP):** Each Grade is assigned an equivalent grade point as indicated above. The number of (grade) points earned by a student, for each course completed, is computed as the produce of the number of credits for the course and the grade point equivalent letter of the grade obtained in that course.

7.3 **Cumulative Grade Point Average (CGPA**): The student's cumulative grade point average is calculated by dividing the total number of grade points obtained, up to any specified time, by the total number for credits of all courses for which the student has registered up to that time.

7.4 **Final Grade Point Average (FGPA**): the **FGPA** is the **CGPA** for all courses under consideration calculated up to the end of a student's academic programme.

7.5 **Definition of Grades**
Pass Grades: Grades A - D constitute Pass grades.

7.6 **Failure Grades**: Grades E, F, X, Z constitute Failure grades.

7.7 **Continuing**: A grade Y (for Continuing) shall be awarded at the end of a semester to any student who is taking a course which continues into the next semester.

7.8 **Audit**: A grade AUDI shall be awarded for attendance at lectures but where no examination is taken, or where an examination is taken, but no mark can be returned, for good reasons. The grade AUDI is not taken into account in the calculation of the FGPA.

7.9 **Non-Completion of Course**:
i. A grade I (for Incomplete) shall be awarded to a student who is unable to complete a course for reasons adjudged by the Board of Examiners as satisfactory such a student shall be expected to complete the course the very next time the course if available.
Ii A grade X shall be awarded to a student who is unable to complete a course for reasons adjudged by the Board of Examiners as unsatisfactory.

8.0 **Disqualification**
i A grade Z denotes Disqualification from an examination as a result of an examination malpractice or offence, and shall be awarded whenever it is established that a candidate had attempted to gain an unfair advantage in an examination, be it in a Principal subject or an Ancillary or any other paper.
ii A candidate awarded a grade Z may be debarre3d form taking a University Examination for a stated period, or indefinitely, or may be expelled from the University altogether.
iii A grade Z may be awarded only by the Board of Examiners.

8.1 **Honours:**
For Basic Sciences and Para-Clinical Sciences, Honours shall be awarded as follows:

Distinction	-	80-100%
Credit	-	70-79%

9.0 STUDENT IN GOOD STANDING
A student in good standing shall be one whose mark is at least 50% in each course.

10.0 PROBATION AND WITHDRAWAL
10.1 A student who fails to obtain a 50% mark in a course shall be eligible for the Supplementary Examinations**.**

10.2 A student who fails to obtain the requisite pass in a course after the Supplementary Examinations shall be asked by the Executive Secretary to repeat the year and the course.

10.3 A student who fails to obtain the requisite pass in the course after repeating the year shall be asked by the Executive Secretary to withdraw from the Medical School.

10.4 A student can proceed to the next stage of the programme if and only if he/she has passed all the

courses of the preceding level.

11.0 DURATION OF PROGRAMME

11.1 The minimum period for the Basic Sciences and the Para-Clinical Sciences shall be 4 semesters and the maximum period shall be 8 semesters.

11.2 A candidate who is unable to complete his/her programme within the maximum period allowed shall lose all credits accumulated. Such a candidate shall not be allowed to re-apply for admission into the BSc (Med. Sci.) degree programme.

12.0. INTERRUPTION OF STUDY PROGRAMME

12.1 A student may break his/her study programme but may not break for more than 4 continuous semesters, so however that the maximum period allowable for the completion of the programme is not exceeded. Such a student shall be allowed to continue the programme from where he/she had left off.

12.2 A student who wishes to interrupt his/her course of study shall apply in advance to the Dean of the Medical School, stating reasons why he/she wants to interrupt his/her study programme, and permission duly granted before he/she leaves the University. The decision of the Dean shall be communicated to the applicant by the Executive Secretary before he/she leaves the University.

12.3 A student who breaks his/her studies for more than 4 continuous semesters shall be deemed to have lost any accumulated credits. Such a student may be allowed to re-apply for admission Medical School.

12.4 Where the ground for interruption of studies is medical, the Head of the Medical School Clinic shall be required to advise the Dean on the propriety and length of period of interruption. The Dean shall cause the Head of the Medical School Clinic to investigate any medical report reaching his office from any health delivery facility outside the Medical School Clinic and advice accordingly.

13.0 SCHEME OF EXAMINATION FOR BSC (MED. SCI.) DEGREE

13.1 A final (end-of-semester) examination shall normally be required as a part of every course. An examination schedule showing time and place of examination for each course shall be published each semester.

13.2 The marks obtained in the end-of-semester examination shall contribute 70% of the grade for the course while continuous assessment shall contribute the remaining 30% (except for practicals or other courses which may be assessed entirely by continuous assessment).

13.3 Time allotted to examination papers shall be as follows:

1-Credit Course	-	1 hour
2-Credit Course	-	2 hours
3-or more Credit Course	-	2 to 3 hours.

14.0 ELIGIBILITY FOR EXAMINATIONS

14.1 A student shall attend all such lectures, tutorials, seminars and practicals and undertake all other assignments as approved by the University.

14.2 Each Department shall, with the approval of the Academic Board, determine the requirements for the subjects they offer.

14.3 Further to 14.1 above, a student shall attend lectures, tutorials, practicals and other activities prescribed for the courses/subjects for which he/she has registered, and to execute all assignments given.

14.4 A student who does not fulfill the requirements for any course/subject shall not be allowed to take the examination for that course/subject.

14.5 In any case, a student who is absent for a cumulative period of 21 days from all lectures, tutorials, ward rounds, clerkships and other activities prescribed for any subject in any semester shall be deemed to

have withdrawn from the course/subject. Such a student shall not be permitted to sit for the semester examination.

15.0 REGISTRATION FOR EXAMINATIONS

15.1 Registration for a Medical School Examination shall require endorsement of the Registration Form by the Head of Department to the effect that the candidate has pursued satisfactorily the approved course(s) of study being offered over the prescribed period, and has attended at least 85% of lectures, tutorials, practicals and other activities prescribed for the course(s)/subjects. A candidate's registration shall not be valid unless it is so endorsed.

15.2 Endorsement as in (15.1) above shall be withheld if a candidate is not deemed to have followed satisfactorily the approved course of study (as in Section 14).

15.3 In any event of the withholding of an endorsement, the Head of Department shall request the confirmation by the Board of the Medical School.

16.0 SUPPLEMENTARY EXAMINATIONS

16.1 BSc (Med. Sci.) Subjects

16.1.1 The Examiners' Board shall decide whether a student who fails in any course shall be allowed to re-write the examination in the failed course as a Supplementary Examination (to be held in the Long Vacation). If he/she passes the Supplementary Examination he/she shall be awarded a grade not higher than B- or a Grade Point of 2.50 (i.e. 50 – 54 marks).

16.1.2 Supplementary Examinations shall not include continuous assessment marks.

16.1.3 Supplementary Examinations shall be held six weeks after the main examination.

16.1.4 A student shall be allowed to take not more than 6 courses in all subject areas at any one time as the Supplementary Examinations.

16.1.5 A student who at any time would be required to re-write Supplementary Examinations in more than 6 courses in all the subject areas shall repeat the year.

17.0 DEFERMENT OF EXAMINATION

17.1 **On Grounds of Ill-Health:** A student who has satisfied all the requirements as specified in Section 14, but is unable to take the main (end of semester) examination on grounds of ill health, shall, on application to the Executive Secretary, and on provision of a Medical Certificate issued or endorsed by the Head of the Medical School Clinic be allowed to take supplementary examination as his/her main examination. He/she shall be credited with the grade obtained in the supplementary examination.

17.2 Subsequent application for deferment, on grounds of ill-health, shall be subject to a Medical Certificate issued by a properly constituted Medical Board.

17.3 **On Grounds other than Ill-Health**: In cases of deferment on grounds other than ill-health, the Dean of the Medical School shall invite the applicant for interview. It shall be the student's responsibility to satisfy the Medical School beyond reasonable doubt why he/she wishes to defer the examinations.

17.4 In all cases of deferment of examinations, the applicant(s) shall obtain written responses from the Executive Secretary before leaving the Medical School.

18.0 **EXAMINERS' BOARD**

18.1 There shall be Examiners' Board for the main and supplementary examinations in respect of:
(i) Basic Sciences
(ii) Para-Clinical Sciences

18.2 For (i), the Examiners' Board for Basic Sciences shall comprise the following:
Dean - Chairman
Vice Dean
Heads of Departments of Anatomy, Medical Biochemistry, Physiology

Internal Examiners for the various courses
Executive Secretary
Senior Assistant Registrar (AA) - Secretary

18.3 The Examiners' Board for Para-Clinical Sciences shall comprise the following:
Dean - Chairman
Vice Dean
Heads of Departments of Chemical Pathology, Haematology, Microbiology, Pathology and Pharmacology
Internal Examiners for the various courses
Executive Secretary
Senior Assistant Registrar (AA) - Secretary

18.4 Examiners' Board(s) shall receive, consider and determine the results of the respective examinations.

18.5 Each Board shall be required to make appropriate recommendations on any candidate based on his/her performance and also on any aspect of the examination as it deems fit.

19.0 DECLARATION OF RESULTS

19.1 Results of semester examinations, taken at the end of each semester shall normally be published by the Executive Secretary on the School Notice Board before the commencement of the next semester.

19.2 A result slip indicating the student's performance in the examination shall be made available to the student.

20.0 ELIGIBILITY FOR THE BSC (MED. SCI.) DEGREE

20.1 The BSc (Med. Sci.) degree shall be awarded to a candidate who has been properly admitted to the University, has followed the approved courses of study over the prescribed period and has satisfied the conditions as stated in Regulations 20.2 and 20.3 below.

20.2 University Requirements:
i. evidence of regular enrollment in the degree programme
ii. discharge of all obligations owed to the University
i. a pass in all University required courses
ii. satisfactory performance in the appropriate University Examinations.

20.3 Faculty/Departmental Requirements
Satisfactory discharge of such requirements as may be prescribed for the degree.

21.0 **REQUIREMENTS FOR GRADUATION**

21.1 A candidate shall be deemed to have:
i) satisfied all General University and Faculty requirements;
ii) obtained at least 50% in each subject featured in the Level 200, Level 300 and MBChB Final Part I and II examinations;

21.2 In addition to the above, all candidates are required to attend the Swearing-in-Ceremony and take the Hippocratic Oath.

22.0 CONFIRMATION OF AWARD OF DEGREE

22.1 A list of candidates who are deemed eligible as in Regulations 20 and 21 shall be laid before the Academic Board of the University for approval as soon as practicable.

22.2 No award shall be confirmed unless the Academic Board of the University is satisfied that the candidate has satisfied all the conditions for the award of a degree.

23.0 CANCELLATION OF AWARD

23.1 Notwithstanding previous confirmation of an award of a degree as in Regulation 22 the Academic Board of the University may at any time cancel an award even with retrospective effect if it becomes known that:
(i) a candidate has entered the University with false qualifications

(ii) a candidate has impersonated someone else
(iii) a candidate has been guilty of examination malpractice for which a grade Z would have been awarded
(iv) there are other reasons that would have led to the withholding of confirmation of the award in the first place.

In any such event, the decision of the Academic Board of the University shall be published on the University Notice Boards and the candidate notified. Such cancellation and the reasons for it shall be entered on the candidate's transcript.

24.0 **TRANSCRIPT OF ACADEMIC RECORD**

At the end of a student's programme, the University shall, on the payment of an appropriate fee, issue to the particular student a complete transcript of his/her academic record. This transcript shall be marked Student's Copy and shall record all courses attempted and all results obtained.

25.0 **CLASSIFICATION OF DEGREE**

The BSc (Med. Sci.) and MB ChB degree shall not be classified. The Intercalated BSc (Hons) degree shall be classified in accordance with general University regulations.

OUTLINE OF COURSES IN THE BSC (MED. SCI.) DEGREE PROGRAMME

FACULTY REQUIRED COURSES

i) Psychology
ii) Medical Sociology
iii) History of Western Medicine
iv) Medical Computer Literacy

Students are required to take the following courses in the Departments of Sociology, History and Psychology at the University of Ghana.

PSYC 201	Introduction to General Psychology	(3 Credits)
SOCI 316	Medical Sociology	(3 Credits)
HIST 205	History of Western Medicine in Ghana	(3 Credits)

The course in the Medical Computer Literacy is run by the Medical School Library.

MEDS 301	Medical Computer literacy	(2 Credits)

Objectives

The main objective of the course is to equip students with the requisite skills and knowledge to reflect the rapid changes in technology and the increasing availability of electronic sources that are changing library services. The course also would equip the student with skills that will enable them to be in a better position to be more independent in information seeking. At the end of the course the student will:

1) be able to appreciate the various strategies of information retrieval and the wide range of information sources available.
2) be knowledgeable in the use of the computer as an electronic resource.

THE BASIC MEDICAL SCIENCES

All the courses available under the Basic Sciences programme in the Medical School are compulsory.

DEPARTMENT OF ANATOMY

Objectives

The aims of the Anatomy course are that students should gain sufficient knowledge and understanding of human anatomy to function competently as a clinical student and to provide a solid foundation for more advanced anatomical and medical studies throughout a career in medicine.

ANAT 205	Embryology	(2 Credits)
ANAT 201	Gross Anatomy	(7 Credits)

ANAT 203	Histology	(4 Credits)
ANAT 202	Neuroscience	(4 Credits)

ANAT 205 - Human Embryology (2 Credits)

Course Information

Course Objectives: At the end of this course the student should be able to do the following:

1. Demonstrate comprehension of the intricate influence on normal conception of various factors that determine fertility, successful coitus, fertilization, and immediate post-zygotic events.
2. Utilize information on pre-zygotic events of human development to respond appropriately to problem-based learning case studies in Assisted Reproductive Technology (ART) and Contraception.
3. Explain how twins and other multiple births occur, and how knowledge of the processes involved is utilized to effect cloning in animals.
4. Demonstrate understanding of the anatomical facts (illogicalities and asymmetries in organ positions, innervations, and blood supply) in the adult on an embryological basis.
5. Correlate the different congenital malformations possible in neonates or later in life with events in development of different systems of the body.
6. Demonstrate understanding of the development of the major organ systems, namely; Respiratory, Cardiovascular, Central Nervous, Digestive, Urinary, and Reproductive.
7. Describe normal developmental processes involved in formation of the head/neck and orofacial structures with reference to the pharyngeal apparatus and derivatives.

Course Description:

This course is taught to level 200 medical and dental students who are introduced to basic concepts in human embryology. In the early part of the course students are introduced to ethical and social issues of human reproductive biology with respect to contraception, ART, and cloning. This is followed by general embryology focussed on pre-zygotic and immediate post-zygotic events including development of the foetal membranes and establishment of body form. Students are then taught systemic embryology involving, cardiovascular, central nervous, respiratory, digestive, urinary, and genito-urinary systems. Throughout the course there is brief discussion of the origin of major human malformation and birth defects. Students are impressed upon to correlate what they learn with the gross anatomy and histology lectures.

Assessments:

There are three 2-hour assessments that test factual recall, comprehension, and application of knowledge in problem-based case scenarios. The questions include a variety of objectives (single best answer, True or False, & Matching), as well as short answers that fill in gaps, and diagrams to be labelled.

Two of the assessments are in-course; with the first assessment being conducted about mid-way in the semester and covering principally general embryology. The second in-course assessment takes place towards the end of the semester and covers mainly systemic embryology. Questions in the in-course examinations are relatively more detailed than in the end of semester examination. The marks for the two in-course assessments are pooled and a mean found for each student. The average in-c
ourse mark constitutes thirty percent (30%) of the final mark in the course.

There is an end of semester examination that covers all of the material covered in the entire course. This examination includes more general questions and case-based questions that could not be asked until all of the systems have been taught. The mark obtained by each student in the end of semester examination constitutes seventy percent (70%) of the mark in the course. A student requires forty percent (40%) total mark (in-course plus end of semester) to pass in the course.

Course Content:

1.	INTRODUCTION TO EMBRYOLOGY	RELEVANCE/GAMETOGENESIS, FERTILIZATION, CLEAVAGE DIVISION & BLATOCYST FORMATION.
2.	CONTEMPORARY ASPECTS OF EMBRYOLOGY	ONTRACEPTION,ASSISTED REPRODUCTIVE TECHNOLOGY CLONING, PRE-NATAL DIAGNOSTIC PROCEDURES.
3.	PRE-EMBRYONIC DEVELOPMENT	2ND WEEK OF DEVELOPMENT, IMPLANTATION BILAMINAR DISC, CHORIONIC SAC FORMATION

4.	TWIN FORMATION AND ANOMALIES	TYPES OF TWINS AND THEIR CHORIONIC SACS, TYPES OF CONJOINED TWINS.
5.	FORMATION OF FOETAL MEMBRANES	PLACENTA, UMBILICAL CORD, AMNIOCHORION, AMNION, ALLANTOIS, THEIR FUNCTIONS &.ANOMALIES
6.	DEVELOPMENT OF BRAIN & SPINAL CORD	GASTRULATION, NEURULATION, & ANOMALIES.
7.	HEART DEVELOPMENT & ANOMALIES	HEART TUBE FORMATION, FOLDING, PARTITIONING, & ANOMALIES.
8.	DEVELOPMENT OF BLOOD VESSELS	ARTERIAL SYSTEM, VENOUS SYSTEM, VALVES IN FOETAL CIRCULATION, FOETAL CIRCULATION & ANOMALIES
9.	1ST IN COURSE ASSESSMENT	WEEKS 1-1-9
10.	DEVELOPMENT OF THE FACE	NOSE & MOUTH, PALATE, AND PHARYNGEAL APPARATUS
11.	DEVELOPMENT OF DIGESTIVE SYSTEM	OESOPHAGUS, STOMACH, LIVER, PANCREAS, SMALL & LARGE INTESTINES, ANUS, & ANOMALIES
12.	DEVELOPMENT OF RESPIRATORY SYSTEM	TRACHEA, LUNGS, AND ANOMALIES.
13.	DEVELOPMENT OF URINARY SYSTEM	KIDNEYS, URETERS, URINARY BLADDER, & ANOMALIES
14.	DEVELOPMENT OF GENITAL SYSTEM	GONADS, GENITAL DUCTS, EXTERNAL GENITALIA & ANOMALIES
15.	PRENATAL DIAGNOSTIC PROCEDURES	AMNIOCENTESIS, CHORIOCNIC VILUS SAMPLING, CORDOCENTESIS, FOETOSCOPY, FOETAL CELLS IN MATERNAL CIRCULATION, ULTRASONOGRAPHY
16.	2ND IN-COURSE ASSESSMENT	WEEKS 10 -16
17.	REVISION	
18.	END OF SEMESTER EXAMINATIONS.	

ANATOMY 201 Human Gross Anatomy 7 Credits

Course Description:

This course is taught to level 200 Medical/Dental students, and postgraduate Anatomy (M.Phil & Ph.D) students. The students are introduced to the history and evolution of Anatomy as a basic medical science, and then students are instructed on the whole human body through five regional presentations. The regions are Upper limb, Thorax, Head and Neck, Abdomen/Pelvis/Perineum, and lower limb. Anatomy is concerned with the structure and function of the body. Human Gross Anatomy is the basic course in which students learn the morphological setting upon which human clinical knowledge and experiences are built. The course emphasizes the correlation between anatomical structure and function, clinical application, and usage of correct anatomical terminology. Thus, great stress is placed on learning normal structural-functional relationships in the human body. Hence ANAT. 201 offers a study of the fundamental structure and organization of the organs and systems of the human body. Students acquire information through lectures, tutorials, and cadaver dissections (*hic locus ubi mors gaudet succurrere vitae – "here is the place where death enjoys helping life"*). Dissection is supplemented by the study of surface projections, organ models, osteologic specimens, radiographs and

transverse sections, small group tutorials, and table-side quizzes. Clinically-related presentations and problem sets are used to emphasize the clinical relevance of learning anatomical structure and how it relates to function. Students are encouraged to adopt self-learning, and group learning techniques using various aids including compact discs, DVDs, anatomical websites, and interactive software. At the end of the course, students should have sufficient knowledge to form hypothetical diagnoses based on presentations of lost or impaired function.

Objectives:

1. To acquire a precise and accurate structural knowledge of the basic organs and organ systems of the human body and describe concisely their functions.
2. To develop an appreciation and understanding of the 3-dimensional complexity of the human body through a detailed knowledge of the relational positions of major organs.
3. To become fluent in the terminology of the major regions and cavities, directions and planes of section of the human body in order to communicate this 3-dimensional complexity to others accurately and succinctly.
4. To be able to identify gross anatomical details of the major organs and organ systems from dissections, prosections, organ models, radiographs, and diagrams.
5. To gain sufficient knowledge and understanding of the morphology of the human body to function copetently as a clinical student.
6. To acquire adequate foundation for more advanced anatomical and medical/dental studies throughout a professional career.

Examinations: There are four (regional) in-course assessments and one (global) end of semester examination. The in-course assessments cover (i) Upper limb and Thorax, (ii) Head and Neck, (iii) Abdomen, Pelvis and Perineum, and (iv) Lower limb. Each of continuous assessment has both a theory and practical component, except the last (lower limb) which is practical examinations only. The end of semester examination is theory only. The practical examinations are confined to questions that ask you to identify or recognize organs or parts of organs in cadavers, models, and radiographs. More complex questions about material covered in practical are included in the theory examination, reflecting the fact that the laboratory and lecture material really cannot be separated from each other. The philosophy of the practical test is that the student should be able to recognize and identify all major bones (their parts, foramena, protuberances, surface markings, muscle attachments, etc.) in the body either in articulated or disarticulated skeleton; as well as in situ (in cadavers). Students are also required in practical examinations to identify all major named muscles in the body, the nerves and blood vessels that supply them. The parts of all major organs and viscera in the body are pinned for students to identify in the practical exams in both cadavers and on radiographs. This is often easy for students who have worked diligently during the practical sessions and done some modest reviewing before the examinations.

Examination format: All in-course assessment theory examinations are two-hour papers of various objective-type questions (single best answer or 1 in 5; True or False, Matching, and diagrams to be labelled); as well as short answer or fill-in-the- gap questions and clinical or problem-based case deductions. Each practical exam involves identifying 120-200 pinned structures at sixty to seventy spots. Students are given two minutes to identify 2-3 structures at every spot in a “steeple chase” fashion. There is no end of semester practical examination, therefore the average of the four in-course practical assessments constitute the final practical mark for the course.

End of semester examination: This is "somewhat" cumulative, which means that, in addition to the ‘new’ material taught in the last two weeks (Lower limb) before the fourth (last) in-course assessment, cumulative questions will focus on functions of the whole body and organ systems that could not be asked until all the organ systems have been covered. For that matter, more problem-based or clinical questions are presented in this examination than in continuous assessments.

Exam percentage values: The total of the four in-course theory assessments is worth thirty percent (30%). The end of semester examination is worth 70% of the theory marks in this course. The combined theory (in-course plus end of semester) mark that adds up to one hundred percent (100%) is scaled down to sixty percent (60%). The average of the four practical assessment marks, which adds up to one hundred percent (100%) is scaled down to forty percent (40%), representing the contribution of the practical assessments to the final mark in this course. Finally, the addition of the theory mark scaled to 60% and the practical mark scaled to 40% gives the final mark in this course. A student requires forty percent as final mark to pass in this course.

Course Content

1. Introduction to Anatomy

- History of Anatomy

- Terminologies
- Circulatory System & Lymphatic System
- Nervous System
- Musculo–Skeletal System

2. Upper Limb

- Pectoral Region & Breast
- Brachial Plexus
- Axilla
- The Hand
- Joints of Upperlimb
- Surface Anatomy & Radiology
- Tutorial: Peripheral Nerve Injuries

3. Thorax

- The Thoracic Cage
- Pleurae & Lungs
- The Heart
- Mediastinum
- Tutorial: Clinical Problems of The Thorax
- Surface Anatomy & Radiology

4. Head & Neck

- Introduction to Head & Neck
- Cranial Nerves
- Triangles of The
- Meninges & Intracranial Venous Sinuses
- Temporal & Infratemporal Regions
- Tutorial: Clinical Problems of Head & Neck I
- The Orbit
- The Larynx
- Tutorial: Head & Neck
- Clinical Problems of Head & Neck
- Lymphatic Drainage of Head & Neck
- Surface Anatomy & Radiology

5. Abdomen, Pelvis, & Perineum

- Anterior Abdominal Wall & Inguinoscrotal Region
- Abdominal Cavity
- Tutorial : Clinical Problem of Abdomen
- Kidney & Ureters
- Pelvic Organs
- Perineum
- Male Genital System I
- Tutorial: Clinical Problems Of Pelvis
- Surface Anatomy & Radiology
- Pelvis & Perineum

6. Lower Limb

- Overview of Lower Limbs
- Gluteal Region
- Venous & Lymphatic Drainage of Lower Limbs
- Joint of the Lower Limbs
- Tutorial : Clinical Problems Lower Limb
- Surface Anatomy & Radiology

ANAT. 203 Medical Histology 4 Credits

Course Information

Course Description:

This course is taught to level 200 Medical/Dental students, and postgraduate Anatomy (M.Phil & Ph.D) students. The students are introduced to the history and evolution of histology as an anatomical science, particularly the central role played by inventions of the microscope and microtome. They are taught the

structural organisation of cells and the distinguishing morphological characteristics of the four basic tissues, namely; epithelium, connective tissue, muscular tissue, and nervous tissue. After acquiring this basic knowledge, students are taught how the four types of tissues combine to form organs and organ systems. This portion of the course focuses on the normal microscopic features of the major organ systems of the body, providing a framework for understanding their normal physiological functions; as well as pathological changes in diseases/trauma of these systems. Histological study of the systems is done mindful of regional/systemic coordination with the Gross Anatomy and Medical Embryology courses.

Throughout the histology course it is impressed upon students to look for correlations with Physiology, and links with biochemical composition of tissue structures that provide correlation with Medical Biochemistry. Students are always reminded that the knowledge acquired in this course prepares them to examine the basic pathologic abnormalities that affect tissue and organ function, including mechanisms of cell injury and inflammation in histopathology course at level 300.

Each class period begins with a one-hour lecture; followed by three hours spent in the laboratory. Practical (laboratory) work entails examining slides with the light microscope, and/or examining micrographs of histological sections of relevant organs.

Course Objectives: At the end of the course the student should be able to do the following.

1. Demonstrate knowledge of the evolution of histology as an anatomical discipline with reference to key terminologies, persons, inventions, and techniques that have pushed it (histology) into a central place in clinical medicine.

2. Demonstrate a clear understanding of how recurring patterns in the organisation of cells are used to distinguish microscopic structures of animal tissues.

3. Show competence in the use of the light microscope and other related laboratory techniques, to identify/distinguish histological slides and/or photomicrographs of tissue sections.
4. Make useful three-dimensional deductions from two-dimensional images seen under the light microscope or in printed micrographs that relate structure to function.

5. Demonstrate understanding of the processes necessary to make tissues useful for microscopic study, the limitations imposed by histological processing, and why most medical histology slides are prepared from non-human mammals.

6. Utilize knowledge gained to respond appropriately to problem-based case studies.

Role of Practical Sessions: Laboratory (practical) sessions have many purposes in this course. The practicals are designed to provide students with an active learning experience that reinforces the major points described in lectures. Practicals also provide students with more specifics than can be covered in lectures. The primary goal of this course being to equip students with requisite know-how to identify/distinguish microscopic sections of tissues, demands that they acquire visual familiarity with slides. The act of examining prepared slides of tissues and organs drives home the points/features that characterize and/or distinguish histological sections more thoroughly than is possible in the more passive experience of sitting in class and listening to a description of the same features. Furthermore, the process of having to find specific features in a larger field of tissue under the microscope confers proficiency in light microscopy and provides students with an understanding of tissue structure that cannot be gained from hours of examining perfect pictures of that tissue. Hence, the lectures and practical sessions complement each other and really are not separate components in this course. The practicals are therefore in total tandem with the lecture material.

Laboratory Guidenotes and Workbook: This laboratory manual was written specifically for slides that students may no longer have in their slide boxes. However, adequate generalized information has been given in it to facilitate its use for studying histological sections of most mammalian tissue/organs. The manual takes students on a guided tour through the relevant features for typical light microscopic sections of tissues/organs relevant to each lecture topic. Under “Work To Be Done” subheadings, the manual contains detailed descriptions that guide students through what to look for in each of the specific slides of each tissue. There are also briefing notes on some basic points necessary for independent study of the slides. “Workbook Exercises” at the end of each session challenge students to integrate lectures with the practicals and extend their knowledge into the wider context of science in general and basic/clinical medicine in particular. The workbook exercises

would be marked and constitute ten per cent (10%) of the final practical mark in the course.

Examinations: There are two in-course assessments and one end of semester examination. Each of the continuous assessments has both a theory and practical component. The practical examination is confined to questions that ask you to identify or recognize the major tissue/organ sections and/or their main components. More complex questions about material covered in practical are included in the theory examination, reflecting the fact that the laboratory and lecture material really cannot be separated from each other. The philosophy of the practical test is that the student should be able to recognize and identify all slides or micrographs presented in the practical examination. This is often easy for students who have worked diligently during the practical sessions and done some modest reviewing before the examination.

Examination format: All in-course assessment theory examinations are two-hour papers of various objective-type questions (single best answer or 1 in 4; True or False, Matching, and diagram to be labelled); as well as short answer or fill-in-the- gap questions and clinical or problem-based case deductions. Each practical exam will involve identifying forty to fifty slides and micrographs. Students are given two minutes to focus and identify histological slides, or printed micrographs in a "steeple chase" fashion. There is no end of semester practical examination, therefore the average of the two in-course practical assessments plus the mark obtained from the workbook exercises will constitute the final practical mark for the course.

End of semester examination: This is "somewhat" cumulative, which means that, in addition to the 'new' material taught in the last week before the second in-course assessment, cumulative questions will focus on comparisons between different tissues or organ systems that could not be asked until all the organ systems have been covered. For that matter, more problem-based questions are presented in this examination than in continuous assessments.

Exam percentage values: Each of the two in-course theory assessments is worth fifteen percent (15%); making thirty percent (30%) in total. The end of semester examination is worth 70% of the theory marks in this course. The combined theory (in-course plus end of semester) mark that adds up to one hundred percent (100%) is scaled down to sixty percent (60%). The average of the two practical assessment marks, which adds up to one hundred percent (100%) is first scaled to ninety percent (90%) to allow for addition of the 10% mark given for the practical workbook exercises. The new practical total (adding up to 100%) in secondarily scaled down to forty percent (40%), representing the contribution of the practical assessments to the final mark in this course. Finally, the addition of the theory mark scaled to 60% and the practical mark scaled to 40% gives the final mark in this course. A student requires forty percent as final mark to pass in this course.

Course Content:

Lecture Topic	**Practical Session Topic**
1. INTRODUCTION	INTRODUCTION TO HISTOLOGY
2. ROUTINE HISTOLOGICAL TECHNIQUES	HISTOLOGICAL PROCESSING METHODS
3. INTRODUCTION TO MICROSCOPY	HOW TO USE THE MICROSCOPE
4. COVERING EPITHELIA	TYPES OF EPITHELIA
5. GLANDULAR EPITHELIA	EXOCRINE GLANDS
6. CONNECTIVE TISSUES	TYPES OF CONNECTIVE TISSUES
7. CARTILAGE AND BONE	CARTILAGE AND BONE TISSUES
8. MUSCLE TISSUE	TYPES OF MUSCLE
9. NERVOUS TISSUE	TYPES OF NERVOUS

	TISSUES
10. CENTRAL NERVOUS SYSTEM	BRAIN AND SPINAL CORD
11. THE HEART	REVIEW/HEART
12. BLOOD/LYMPH VESSELS	BLOOD AND LYMPH VESSELS
13. BLOOD	BLOOD
14. RESPIRATORY SYSTEM	TRACHEA AND LUNG
15. GASTROINTESTINAL TRACT - I.	OROPHARYNGEAL STRUCTURES
16. GASTROINTESTINAL TRACT - II.	POSTPHARYNGEAL GUT
17. IN-COURSE ASSESSMENT I	**WEEKS 1-8 ASSESSMENT**
18. ACCESSORY GLANDS OF G.I.T.	LIVER, GALL BLADDER AND PANCREAS
19. ENDOCRINE GLANDS I	THYROID/PARATHYROID & PINEAL GLANDS
20. ENDOCRINE GLANDS II	HYPOPHYSIS & SUPRA-RENAL GLANDS
21. LYMPHOID TISSUES I.	THYMUS AND LYMPH NODE
22. LYMPHOID TISSUES II	SPLEEN & TONSILS
23. INTEGUMENT	SKIN & APPENDAGES
24. URINARY SYSTEM	URINARY SYSTEM
25. MALE GENITAL SYSTEM I	TESTIS/SPERMATOGENESIS
26. MALE GENITAL SYSTEM II.	GENITAL DUCTS & GLANDS, PENIS
27. FEMALE GENITAL SYSTEM I.	OVARY/OOGENEIS & OVIDUCTS
28. FEMALE GENITAL SYSTEM II.	UTERUS/ENDOMETRIAL CYCLE, PLACENTA & VAGINA.
29. IN-COURSE ASSESSMENT II	**WEEKS 9-14 ASSESSMENT**
30. SPECIAL SENSE ORGANS	EYE & EAR
31. REVISION	
32. END OF SEMESTER EXAMINATION	

ANAT. 202 Neuroscience 4 Credits

Course Information

Outline:

Taught to level 200 medical and dental students in the second semester, this course introduces students to the anatomical and physiological principles of neuroscience important to practicing health professionals. The course utilizes an integrated approach to provide insight into the fundamental concepts of anatomy and physiology as they relate to the nervous system. In the early part of the course a regional approach is used to study the surface landmarks, internal anatomy, and blood supply of the spinal cord, brainstem, and forebrain. This provides the framework and terminology to be used in the later part of the course, which adopts a systems approach to the study of the central nervous system. The middle to later part of the course focuses on the sensory systems, the motor system, limbic system, and higher cortical function in that order. Throughout the course, basic anatomy and physiology are coordinately presented in tandem fashion to emphasize normal functions and neurologic disorders that involve the particular system being studied. Case studies and problem-based learning methods are utilized to emphasize the correlation of basic and clinical material. Both written and practical examinations are used to assess students' progress in the course.

Course Content:

1. ANAT: Introduction to the Central Nervous System
2. PHYG: Functional development of the System
3. ANAT: Internal features of the spinal cord I
4. ANAT: Internal features of the spinal cord II
5. PHYG: Basic Neurophysiology I & II
6. PHYG: Functional transmission I & II
7. ANAT: Internal & External features of the medulla I & II
8. ANAT: External & Internal features of the midbrain
9. ANAT: Thalamus, subthalamus, epithalamus
10. PHYS: Sensory Physiology:- Principles of receptor function
11. PHYS: Somatic sensation
12. PHYS: Physiology of pain I & II
13. PHYS: Function of the reticular formation
14. ANAT: Ventricles, CSF — Structure of the Ventricular
15. PHYS: CSF Function — System. Function of CSF
16. ANAT: Anatomy of the cerebral cortex I & II
17. ANAT: Review of descending and ascending pathways I & II
18. PHYS: Function of cerebral cortex I & II
19. PHYS: Physiology of motor system I, II, III
20. ANAT: Anatomy of cerebellum
21. PHYS: Physiology of the cerebellum
22. ANAT: Basal ganglia and its function
23. PHYS:
24. ANAT: Autonomic nervous system
25. PHYS: Physiology of autonomic nervous system
26. ANAT: Anatomy of hypothalamus
27. PHYS: Functions of the hypothalamus
28. PHYS: Temperature regulation
29. ANAT: Visual and olfactory pathways
30. PHYS: Physiology of vision I & II
31. PHYS: Physiology of olfaction
32. ANAT: Auditory and vestibular pathways
33. PHYS: Physiology of the auditory system
34. PHYS: Physiology of posture
35. ANAT: Blood supply of the central nervous system
36. PHYS: Cerebral circulation

DEPARTMENT OF MEDICAL BIOCHEMISTRY

Objectives
The prime objective of teaching of medical biochemistry is to illustrate the biochemical basis of human function and disease.

BIOC 201	Molecular Cell Biology	(3 Credits)
BIOC 202	Intermediary Metabolism	(5 Credits)
BIOC 204	Medical Genetics	(4 Credits)

Molecular Cell Biology: Bioc 201 (3 Credits)
Overview: The program outlines the molecular components of the cells, cell function with regards to selected tissues, introduction of macromolecules, Protein structure and function.

Molecular Components of Cells: principal chemical constituents and main metabolic activities. Characteristics of and differences between eukaryotes, prokaryotes and viruses.
Functional role of the sub-cellular orgenelles; nucleus, ribosomes, Golgi complexes, endoplasmic reticulum, mitochondrium, peroxisomes and lysosomes. Structure and role of the cytoskeleton, extra-cellular matrix, cell movement. *Membranes*: occurrence and function; lipid and protein composition. Membrane transport. Lipid rafts and caveolin, cell/cell interaction and adhesion. Body osmolality, transport across cell membranes and membrane potentials, calcium and calcium-binding proteins. Erythrocyte membrane as a model: morphology, formation and destruction; rh factors, blood antigens, clinical correlation-hemoglobinopathies.

Carbohydrates, lipids, nucleic acid and proteins: structure and function. Glyco-biology and cell surface; sorting of molecules into sub-cellular compartments, diseases of sorting. Cellular fractionation. Biochemical techniques for investigating cell structure and function.
Amino acids: structures and properties, stereoisomers, side chain characteristics. Acids and bases. Buffers.
Protein structure: Peptide bond, levels of structure of proteins. Protein stability and protein folding and misfolding and disease; prion disease. Eg. Amyloidosis. Molecular chaperons. Protein purification and techniques for investigating their structure and function. Protein function related to their structure: *myoglobin*; structure, function and properties. *Hemoglobin*; structure, function, properties and abnormalities. Carbon monoxide poisoning.
Immunoglobulin*;* structure, functions and properties. *Fibrous structural proteins*; collagen structure, function and diversity biosynthesis of collagen and elastin secretion and aggregation. Bone formation. Glycosylation of proteins: intra-cellular and extra-cellular modification of proteins after translation. The collagen gene; disturbances in collagen synthesis.
Enzyme catalysis: classification, structure, and properties. Kinetics. Coenzymes and vitamins. Inhibition. Drugs and their effects on enzymes. Allosteric control of enzyme activity. Mechanisms of enzyme action. Clinical applications of enzymes: isoenzymes,
Regulation of enzyme activity. Biochemical markers of disease: the role of serine protease family in health and disease.
Signal transduction; Surface-acting hormones; Catecholamines, polypeptide hormones and growth factors. Receptors and G-Protein transducers, second messengers, intra cellular-acting hormones, steroids, thyroid hormones and retinoids**.**

Intermediary Metabolism BIOC 202 5 Credits
Overview: Biochemical pathways in the metabolism of macromolecules and selected clinical correlates. Also included is a section on elements of nutrition
Bioenergetics: Chemical energy and concepts of energy transfer within cells; free energy change. Reaction coupling equilibrium constants and their significance.
"High energy" compounds as "energy currency": Inter-conversion of high-energy phosphate via 'equilibrium' kinases. Principles of energy abstraction. Energy source and utilization: NADH and NADPH; Caloric value of fuels; Respiration Quotient. Energy balance; Basal Metabolic Rate. Diseases associated with changes in NAD

and NADP levels.
Macronutrients: nutritional requirements; recommendations for a healthy diet. Importance of dietary protein and maintenance of nitrogen balance. Caloric intake and energy status. **Micronutrients**: vitamins; water-soluble and lipid-soluble. Minerals. Antioxidants, Assessment of nutritional status. Current dietary trends.

Causes of malnutrition. *Overview of energy metabolism. Factors influencing metabolic rate, calorimetry. Energy balance, obesity. Special diets for treatment of specific clinical conditions.*
Carbohydrate: structures and properties of monosaccharide, epimers and cyclic structures. Dietary disaccharides and higher polymers. Hetero-polysaccharides: proteoglycans and glyco-proteins. Synthesis of oligosaccharide on the lipid carrier dolicol. Linkage with proteins. Degradation of proteoglycans**.** Digestion and absorption of carbohydrate; hydrosis of dietary carbohydrates; transport of dietary carbohydrates; disaccharide intolerance. Liver and muscle glycogen, role of liver glycogen in the maintenance of blood sugar. Glycogenolysis and glycogenesis. Glycogen storage diseases. Glycolysis and gluconeogenesis; glycolytic ability of various tissues, hexoses monophosphate shunt, metabolism of galactose and fructose; glactosemia, fructosuria and fructose intolerance. Role of glycolysis in cancerous tissues and limiting oxygen environments. Aerobic metabolism of pyruvate, starvation, obesity. The coenzyme role of B vitamins. TCA cycle; central role of TCA cycle in metabolism. Changes in nutritional requirement and metabolic rate in injury and disease. Alcohol metabolism.
Lipids: Physical and chemical characteristics of fats; structure and properties, nomenclature and roles of fatty acid.
Lipid Metabolism:. Intestinal absorption, transport and storage of fat. Mobilizing lipase. Fatty acids and beta-oxidation, ketone bodies and ketosis. Brief details of the fatty acid biosynthetic pathways and triacylglycerol formation. Elongation and desaturation of fatty acids.
Lipid transport: structure of plasma lipoproteins. Conversion of fatty acids and cholesterol from the diet to lipoproteins in intestine (chylomicron). Glucose from the diet to lipoprotein in the liver; VLDL. Metabolism of triacylglycerol-rich lipoproteins by lipoprotein lipase. Role of HDL and LCAT in the formation of LDL by receptor-mediated endocytosis. Cholosterol, bile acids and steroid hormones metabolism. Synthesis of cholesteryl esters by LCAT in plasma and ACAT in endoplasmic reticulum. Metabolism of cholesterol to steroid hormones. Biochemistry of atherosclerosis and thrombosis, metabolism of special lipids, phospholipids, sphingolipids, prostaglandins, and thromboxanes.
Electron transport and oxidative phosphorylation: oxidations and reductions, electron transfers. Specific enzymes associated with inner and outer mitochondrial membranes, matrix and inter-membrane space. Reversed electron transport, the concept of "high-energy pool". Mitchell's chemiosmotic theory. Mitochondrial transport and decoupling of electron transport and oxidative phosphorylation and inhibitors of mitochondrial function. Brown adipose tissue and thermogenesis. Mutation in mitochondria genes and disease; role of mitochondria in apoptosis.
Nitrogen metabolism: An overview of amino acids metabolism. Essential and non-essential amino acids, catabolic fates of amino acids; roles of glutamate dehydrogenase and some amino transferases. Tryptophan as a precursor nicotinamide in the formation of NAD and NADP. The Harnup disease. Formation of serotonine. Carbamoyl phosphate synthetase and urea cycle. The urea cycle and its role in gluconeogenesis from amino acids. Hyperammonimia and urea cycle defects. Glucogenic and ketogenic amino acids; fate of the amino acid carbon skeletons.
Interplay between muscle and liver during starvation and re-feeding, alanine-glucose cycle. Formation and role of glutamines.
Inborn errors of amino acid metabolism: illustrated by phenylketonuria, methylmalonic- acidurias, maple syrup urine disease, and propionicacidemia. The formation and breakdown of serine and glycine. The catabolism of histidine. Tetrahydrofolate as a one-carbon carrier. The One-carbon metabolism. Discussion of inter-relationships among choline, methionine, S-adenosylmethionine, and derivatives of tetrahydrofolate and cobalamine. Formation of creatine, polyamines and phosphatidylcholine.
Xenobiotic Oxidation: The role of cytochrom P450-dependent monoxygenase system in the metabolism of drugs and other xenobiotics.
Factors affecting foreign compound metabolism. Oxidation of different classes of xenobiotics and induction of cytochrome P450s of different specificity. Role of P450 systems in "normal" metabolism: cholesterol synthesis,

synthesis of prostaglandin, leukotriene and 1, 25-dihydroxy-vitamin D3; synthesis of adrenocorticosteroid hormones.

Porphyrin Metabolism: Heme structure and biosynthesis; its control in bone marrow and liver. Degradation of heme to bilirubin and its excretion. Disease states, the porphyrias: porphyria cutanea tarda, acute intermittent porphyria and erythropoietic protoporphyria. Heme catabolism. Jaundice: neonatal jaundice, hemolytic jaundice, obstructive jaundice, hepatocellular jaundice.

Determining bilirubin concentration using the Van den Bergh reaction. Iron metabolism; transport and storage, disease state resulting from aberrations in these processes.

Integration and Control of Metabolism: Interplay of tissues, pathways and hormones in energy metabolism. Key regulatory enzymes; allosteric control of pyruvate carboxylase, phosphofructokinase, fructose 1,6-phosphatase, pyruvate dehydrogenase. Effects of ATP, AMP, NADH, citrate; relevance of energy status to control. Distribution of enzymes between organs and subcellular compartmentation. Energy metabolism after eating and in short and long term starvation.Insulin-dependent diabetes mellitus. "Futile" cycles and function in thermogenesis and control sensitivity. Convalent modification: beta-adrenergic receptor and cascade processes.

BIOC 204 Medical Genetics 3 Credits

Overview: Gene structure and function/structural and functional genomics

Genes and Heredity: Dominance and recessiveness, central dogma, Mutation and evolution. Genetic disorders, somatic cell mutations and cancer. Structure of nucleic acids, chromosome structure, and organization of human genetic information. Differences between eukaryotic and prokaryotic genes.

Nucleotides and Nucleotide Metabolism: Nitrogen bases, the pentoses of nucleic acids, nucleosides and nucleotides, nucleic acids, classes and hydrolysis. Biosynthesis, degradation and salvage pathways for nucleotides and their regulation. Defects in nucleotide metabolism. One carbon transfers, roles of vitamins. Nucleotide and one-carbon reactions in cancer chemotherapy. Biochemical basis of cancer.

DNA Replication Repair and Recombination: Replication of DNA, proof-reading for errors. Mutation and repair mechanisms, defects in repair and their consequences (xeroderma pigmentosum, etc). Changes in allele frequencies and selection of new alleles in a population.The mechanism of recombination; transposition. Expression of genetic information**.** Genomics, Human Genome Project.

Transcription and RNA processing: differences between eukaryotic and prokaryotic transcription; antibiotics as inhibitors. Gene profiles and quantitative traits.

Protein-coding genes; Primary transcript and processing; introns/exons, 5'-caps, poly (A) tail. Alternative processing e.g. IgM, calcitonin. Processing defects e.g. some thalassaemias.

Translation: The genetic code and translation of RNA (protein biosynthesis). Accuracy of protein biosynthesis. Antibiotics and gene expression, plasmids and drug resistance. Regulation of gene expression by hormones and during differentiation. Defects in gene expression. Gene replication and expression in viruses. Retroviruses (HIV-1). Oncogene cancer. Post-translational modification of proteins and intracellar targeting of proteins**.** Monogenic and polygenic disorders

*Recombinant DNA Technology in Medicine***:** Gene Cloning and Recombinant DNA technology in medicine. Hybridization, oligo probes for diagnosis, Restriction enzymes, Northern, Western and Southern blots. Polymerase chain reaction (PCR) for gene amplification. Strategies for genetic screening illustrated by sickle cell gene; allele-specific probes, direct and indirect RFLPs. (DNA microarray)

*Chromosomal diseases***:** mendellian disorders; inborn errors of metabolism; multifactorial disorder; non-classic Mendelian disorders; laboratory investigations of genetic diseases.

Bioinformatics/systemic approaches in genomics.

DEPARTMENT OF PHYSIOLOGY

Objectives
The objective of this subject is to emphasize the physiological concepts of homeostasis and mechanisms of regulation. Clinical relevance of topics in all systems is given prominence.

PHYG 201	Endocrine and Reproductive Physiology	(4 Credits)
PHYG 202	Cardiopulmonary Physiology	(4 Credits)
PHYG 204	Renal and Gastrointestinal Physiology	(3 Credits

Introduction
The department of physiology currently provides a 2-semester 13-credit undergraduate programme of study which aims to help students to acquire new knowledge and skills, and independent-learning habits and attitudes essential for future medical practice. The following describe organization of the subject, methods of instruction and assessment, credit distribution in the courses, broad objectives of courses, and outlines of lecture topics.

Subject presentation
The subject is taught by systems and emphasizes the physiological concepts of homeostasis and mechanisms of regulation. Clinical relevance of topics in all systems is given prominence.

The following systems are currently taught, essentially in sequence.

1st semester
The cell
General principles of cellular physiology
Excitable tissue
Blood physiology
Endocrine system
Metabolism
Reproduction

2nd semester
Gastrointestinal system
Body Fluids and Renal system
Cardiovascular system
Respiratory system
Neuroscience

Methods of Instruction
- **Lectures** to deliver up-to-date knowledge in a concise form, stimulate interest in topics, and provide a guide to further learning
- **Practicals** to reinforce factual information and develop critical observation and analytical skills. Computer simulation of some experiments is provided, where equipment is unavailable. Interactive computer software is also available in the laboratory for student self-study.
- **Tutorials** to develop problem-solving skills, and the ability of students to integrate knowledge.
- **Seminars** on course-relevant topical issues, presented by students to students and faculty, aims to develop skills in independent knowledge acquisition.
- **Study guides and Reference materials** are provided from recommended textbooks, journals, and the internet.

Methods of Assessment
- In-course assessment (I.A) tests are conducted basically at the end of every system or module, taught within each course. The number of IA's therefore, range from 1 to 3 in each course, depending on the number of systems covered. All I.A.'s count for a total of 30% of the final course mark of 100.

- End-of-semester exams assess material covered in all courses taken in the semester. The end-of-semester paper in each course counts for a total of 70% of the final course mark of 100.
- To obtain a pass in Physiology as a subject, student must have passed with a weighted percentage point of 50 (i.e. 50%), considering all courses and credits taken in both semesters.

Recommended Textbooks
The department recommends the following textbooks for lectures in all courses, for tutorials and for independent study.

i. Textbook of Medical Physiology by Guyton & Hall
ii. Review of Medical Physiology by Ganong
iii. Human Physiology: From cells to Systems by Sherwood

OUTLINE OF PHYSIOLOGY COURSES

Level 200
Semester 4
BIOC. 201 Cell Biology (1 Credits)

The course reviews the functional organization of the cell. The student should know cell organelles and their functions, understand cell membrane structure as it relates to membrane function, and know the types of transport through membranes, as well as, the regulation of transport systems. In this course the student should understand the concept of homeostasis and balance, be aware of the different types of feedback systems and their impact, understand control systems, their effects and regulation, and overall understand the process of signal transduction including intercellular messengers, receptors, their properties and regulation.

- The Cell and its function
- Functional systems of the cell, membranes of the cell, intercellular connections
- Membrane transport
- The cell and its environment: homeostasis and feedback mechanisms

Body Fluids & Physiology of blood

The student should understand that the body may be viewed as a system of fluid compartments separated by membranes, and to appreciate the mechanisms which determine the volume and composition of the various compartments. This course deals with blood. At the end of this course the student will be able to describe the structure, formation and functions of different blood cells in order to understand the causation and pathophysiology of common haematological disorders such as anaemias.

In addition the student will be able to understand the classifications of blood groups and appreciate their roles in blood transfusion. Also, during this course the student will recognize the mechanism of haemostasis and blood coagulation so as to understand the pathophysiology of diseases arising from excessive bleeding or intravascular clotting.

- Composition, size, compartments and function of body fluids
- Function of Blood and lymph
- Inflammatory responses
- Immune mechanisms
- Blood groups, and blood transfusion
- Haemostasis
- The autonomic nervous system: components and function

Laboratory Practicals: Introduction to laboratory work; General instrumentation; Red cell osmometry. Skeletal muscle and compound action potential; Blood composition and blood grouping.

PHYG 204 Renal/Gastrointestinal Physiology 3 Credits

Renal Physiology

By the end of this course, the student should learn sufficient basic renal physiology. He should be able to recognize the importance of renal function in homeostasis through regulation of water and electrolyte balance and acid-base balance; and appreciate the kidney as endocrine organ secreting important regulatory hormones.

- Functional Structure, components of renal function
- Methods used in studying renal function
- The process of glomerular filtration and its measurement
- Renal haemodynamics
- Renal handling of various solutes – reabsorption and secretion
- Renal concentrating mechanisms
- The kidney in homeostasis: renal involvement in total body sodium, potassium, water and acid-base regulation
- Renal hormonal function
- Micturition and its control
- Effects of loss of renal function

- Acid-base balance
- Clinical correlates in acid-base balance

Laboratory practicals: Regulation of urine volume in man. Effect of haemorrhage and replacement fluid infusion on renal function.

Gastrointestinal Physiology

By the end of this course, the student should learn sufficient basic gastrointestinal physiology. Through lectures, practicals and tutorials, he should be able to describe the functions and regulation of the gastrointestinal tract, and understand the pathophysiology and mechanisms of certain gastrointestinal problems e.g. peptic ulcer.

- Organisation of the digestive system
- Gastrointestinal hormones
- Mechanical processes of the digestive system
- Secretions and chemical digestion
- Absorption from the gastrointestinal tract
- Pancreas, liver and gall bladder
- Clinical physiology of peptic ulcer, cholecystectomy, pancreatectomy and malabsorption

Laboratory practicals: Salivary secretions; Gastrointestinal motility in vitro.

PHYG 202 Cardiopulmonary Physiology 4 credits

Cardiovascular System

This course deals with the heart and the circulation system. At the end of this course the student will be able to explain how the heart works as a pump and the role of the chambers, valves and the muscle. Special emphasis will be placed on heart sounds, E.C.G. and introduction to abnormal cardiac function. In the second part of this course, the student will be introduced to the physics of haemodymics and the regulation of circulation. This will enable the student to understand the responses of cardiovascular system to stress, e.g. haemorrhage and exercise, and to develop an awareness of the disturbed physiology underlying some major cardiovascular problems such as heart failure and cardiac ischaemia. In addition, during this course, the student will acquire basic preliminary skills in using laboratory and bed side techniques commonly encountered in clinical cardiology e.g. recording an E.C.G., and measuring blood pressure and pulse.

- Overview, function, components and architecture of the CVS
- The heart as a pump: mechanical and electrical events
- Electrocardiography
- Clinical correlates
- The vascular tree: structural adaptation of the vascular segments and their functions
- Haemodynamics
- Regulatory mechanisms; regulation of cardiac output, systemic blood pressure, general and regional blood flow
- Circulation through special regions: cerebral, renal, coronary, splanchnic and skeletal muscle blood flow.
- Cardiovascular adjustments in health and disease

Laboratory practicals: Physiology of cardiac muscle, factors affecting cardiac output, effect of haemorrhage and replacement transfusion. Blood pressure measurement and ECG in man.

Pulmonary physiology

The course covers the general functions of the respiratory system but concentrates mainly on the role of the system as a gas exchange organ. This involves a consideration of the principles of the mechanics of breathing, ventilation, gas transfer, gas transport in blood, and the regulation of ventilation. The acute changes and the compensatory response of the respiratory system to high altitude.

Students will be expected to relate above principles to the diagnosis, presentation, pathophysiology and management of common clinical respiratory conditions such as acute bronchial asthma, acute airway obstruction, and chest wall injuries etc.

- Organization of the respiratory system
- The physics of breathing
- Gas laws
- Spirometry
- Elastic and none elastic forces
- Surface tension

- Dynamics of ventilation
- Work of breathing
- Transport and exchange of gases
- Clinical problems of gas transport and exchange
- The pulmonary circulation
- Ventilation perfusion relationships and clinical correlates
- Regulation of respiration
- Respiratory adjustments in health and disease
- Pulmonary function tests

Laboratory practicals: Spirometry and respiratory patterns in different states.

- **PHYG 201 Endocrine/Reproduction 3 Credits**

Endocrine /Reproduction

In this course the student should be able to understand the basic principles of endocrine physiology, know the types of hormones and their regulation, and comprehend the concept of hormones as fine control systems. For each of the major endocrine systems, the student should be aware of their functional anatomy, synthesis of hormones, secretion and metabolism of hormones, action of hormones, and pathophysiological changes related to hypo-and hyperfunction.

- General Principles of intercellular communication in a multicellular organism
- Endocrine; pancrine end autocrine mechanisms
- The endocrine and nervous systems compared
- Molecular Basis of Hormone Action.
- Main types of chemical messenger
- Signal transduction across membranes.
- Surface-action hormones; catecholamines, polypeptide hormones and growth factors.
- Receptors and G-protein transducers, second messengers, classes of protein kinases (cyclic nucleotide regulated, Ca2+ regulated, tyrosine protein kinases) cascades and signal amplification
- Relation of oncogenes to signal tranduction molecules.
- Defects in cell signalling.
- Intra cellular-acting hormones, steroids, thyroid hormones and retinoids.
- Steroids as regulators of gene transcription
- Cytoplasmic nuclear receptors for steroid hormones.
- Biochemical aspects of neuro-transmission and neuroactive drugs.
- Characteristics of endocrine glands
- Hormones: definition, synthesis, secretion and transport
- Hormone tissue interaction: receptors, second messengers and “cascade phenomenon”
- Experimental methods in endocrinology
- The hypothalamus and pituitary axis.
- Regulation of hormone secretion: negative and positive feedback control
- Homeostatic role of hormones
- Regulation of blood glucose
- Regulation of body fluid volume and composition
- Regulation of energy balance
- Hormones of the pancreas
- Suprarenal glands
- Thyroid gland
- Parathyroid glands
- Posterior pituitary hormones
- The growth axis
- Prostaglandins and thromboxanes
- Clinical correlates of endocrine hyper – or hypo – function

Laboratory practicals:

Reproduction

At the completion of the course, students are expected to have clear knowledge of the essential elements of male and female reproductive physiology including: sex determination, sex differentiation, spermatogenesis, sperm viability, male sex hormones, ovarian structure and hormonal changes from birth to menopause, female sexual

cycles, ovarian and placental hormones, pregnancy, parturition and lactation, contraception, important clinical/pathophysiological correlations.

- Genetics in relation to reproduction
- Sexual differentiation
- Gametogenesis
- Male and Female reproductive physiology
- The menstrual cycle: ovarian, uterine and vaginal cycles
- Physiology of pregnancy
- Hormones of placenta
- The feto-placental unit
- Hormonal control of parturition
- Physiological changes in lactation and breast development
- Hormonal contraception

Laboratory practicals:

- **ANAT 202 NEUROSCIENCE 4 Credits**

Neuroscience

This course aims to provide basic information on the functions of the central nervous system which enables the body to perform coordinated and accurate voluntary and involuntary movements. The course highlights reflex functions that adapt the body to changing environmental conditions and bring about appropriate responses to a very large variety of stimuli. It also emphasizes the highly integrated nature of neurological mechanisms especially in the performance of such complex processes as memory, learning, judgment and speech. Certain topics of related pathophysiology are included along with the normal neurophysiology to reinforce the concepts of normal function.

- General design of the nervous system
- Sensory system
- Receptor physiology
- Somatic and visceral sensory mechanisms
- Special sensory organs, optics and vision, taste and olfaction, audition.
- Motor system
- Organisation of the spinal cord for motor functions – spinal reflexes, spinal integration
- Lower motor neurone function
- Pyramidal and Extrapyramidal systems
- Disturbances of the pyramidal and extrapyramidal system functions
- Sleep and consciousness – the reticular activating system, the generalized thalamocortical system, the EEG
- Hyperactivity of the nervous system – epilepsy
- Sleep and wakefulness.
- Visceral function of the nervous system
- The medulla oblongata control of vital function (respiration, heart rate and blood pressure)
- Medullary autonomic reflexes, vomiting etc.
- Autonomic nervous system
- The hypothalamus and its function
- Behavioral functions of the central nervous system
- The limbic system, motivation
- Sexual behaviour.
- Higher functions of the central nervous system
- Learning, Memory, Speech, Calculations, Social awareness.

Laboratory practicals: Reflexes in frog and rabbit, vision and audiometry, human cutaneous sensation and reflexes in man.

PHYSIOLOGY CURRICULUM

Introduction

The Department of Physiology currently provides a 2-semester 13-credit undergraduate programme of study which aims to help students to acquire new knowledge and skills, and independent-learning habits and attitudes essential for future medical practice. The following describe organization of the subject, methods of instruction and assessment, credit distribution in the courses, broad objectives of courses, and outlines of lecture topics.

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Reproduction

2nd semester
Gastrointestinal system
Body Fluids and Renal system
Cardiovascular system
Respiratory system
Neuroscience

Methods of Instruction
- **Lectures** to deliver up-to-date knowledge in a concise form, stimulate interest in topics, and provide a guide to further learning

- **Practicals** to reinforce factual information and develop critical observation and analytical skills. Computer simulation of some experiments is provided, where equipment is unavailable. Interactive computer software is also available in the laboratory for student self-study.

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OUTLINE OF PHYSIOLOGY COURSES

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Semester 4
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The course reviews the functional organization of the cell. The student should know cell organelles and their functions, understand cell membrane structure as it relates to membrane function, and know the types of transport through membranes, as well as, the regulation of transport systems. In this course the student should

understand the concept of homeostasis and balance, be aware of the different types of feedback systems and their impact, understand control systems, their effects and regulation, and overall understand the process of signal transduction including intercellular messengers, receptors, their properties and regulation.

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- Immune mechanisms
- Blood groups, and blood transfusion
- Haemostasis
- The autonomic nervous system: components and function

Laboratory Practicals: Introduction to laboratory work; General instrumentation; Red cell osmometry. Skeletal muscle and compound action potential; Blood composition and blood grouping.

PHYG 204 Renal/Gastrointestinal Physiology 3 Credits

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- Absorption from the gastrointestinal tract

- Pancreas, liver and gall bladder
- Clinical physiology of peptic ulcer, cholecystectomy, pancreatectomy and malabsorption

Laboratory practicals: Salivary secretions; gastrointestinal motility in vitro.

PHYG 202: Cardiopulmonary Physiology - (4 Credits)

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- Biochemical aspects of neuro-transmission and neuroactive drugs.
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- Regulation of body fluid volume and composition
- Regulation of energy balance
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- Suprarenal glands
- Thyroid gland
- Parathyroid glands
- Posterior pituitary hormones
- The growth axis
- Prostaglandins and thromboxanes
- Clinical correlates of endocrine hyper – or hypo – function

Laboratory practicals:

Reproduction

At the completion of the course, students are expected to have clear knowledge of the essential elements of male and female reproductive physiology including: sex determination, sex differentiation, spermatogenesis, sperm viability, male sex hormones, ovarian structure and hormonal changes from birth to menopause, female sexual cycles, ovarian and placental hormones, pregnancy, parturition and lactation, contraception, important clinical/pathophysiological correlations.

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- Hormones of placenta
- The feto-placental unit
- Hormonal control of parturition
- Physiological changes in lactation and breast development
- Hormonal contraception

Laboratory practicals:

ANAT 202 Neuroscience 4 Credits

Neuroscience

This course aims to provide basic information on the functions of the central nervous system which enable the body to perform coordinated and accurate voluntary and involuntary movements. The course highlights reflex functions that adapt the body to changing environmental conditions and bring about appropriate responses to a very large variety of stimuli. It also emphasizes the highly integrated nature of neurological mechanisms especially in the performance of such complex processes as memory, learning, judgment and speech. Certain topics of related pathophysiology are included along with the normal neurophysiology to reinforce the concepts of normal function.

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- Disturbances of the pyramidal and extrapyramidal system functions
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- Hyperactivity of the nervous system – epilepsy
- Sleep and wakefulness.
- Visceral function of the nervous system
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- Medullary autonomic reflexes, vomiting etc.
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- The hypothalamus and its function
- Behavioral functions of the central nervous system
- The limbic system, motivation
- Sexual behaviour.
- Higher functions of the central nervous system
- Learning, Memory, Speech, Calculations, Social awareness.

Laboratory practicals: Reflexes in frog and rabbit, vision and audiometry, human cutaneous sensation and reflexes in man.

THE PARA-CLINICAL SCIENCES

All the courses available under the Para-clinical Sciences programme in the Medical School are compulsory

DEPARTMENT OF CHEMICAL PATHOLOGY

Objectives

To introduce students to basic principles and concepts of biochemical bases of diseases and to provide hands – on approach to experimental and investigative procedures.

CPAT 301	General Chemical Pathology (Theory)	(2 Credits)
CPAT 303	General Chemical Pathology (Practical)	(1 Credit)
CPAT 302	Systematic Chemical Pathology (Theory)	(1 Credit)
CPAT 304	Systematic Chemical Pathology (Practical)	(1 Credit)

CPAT 301 General Clinical Chemistry

Introducing Chemical Pathology
Methodology, Standardization, Quality Control
Nutrition 1 –PEM
Nutrition II – Vitamins & Antioxidants
Nutrition III - Trace Elements
CSF

Proteins
Enzymes in Diagnosis
Liver Function
In-born Errors of Metabolism
Biochemical Effects of Malignancy
Tumour Markers
Interpretation of Laboratory Results
Toxicology
Water & Electrolytes
Acid-Base Balance
Renal Function

CPAT 302 **Systematic Chemical Pathology theory**
Carbohydrate Metabolism
Diabetes mellitus
Hypoglycaemia
CaPTH, Vit D
Metabolic Bone Disease
Clinical Laboratory Practice
Quality Assurance
Data Interpretation
Gastric Function
Disorders of Gastro-intestinal
Function: Achlorhydria, Pernicious
Anaemia, Hyperacidity
The Pancreas
Function & Disorders
Disorders of Purine metabolism
Gout
Disorders of Iron Metabolism
Hypothalamic-Pituitary Axis
Pituitary Hormones
Adrenal Function
Sex Hormones Causes & Investigation of Infertility
Disorders of Thyroid Function
Lipid Disorders
The Metabolic Syndrome
Clinical Laboratory Practice
Instrumentation
Insulin Actions & Disorders

CPAT 303 **General Clinical Chemistry Practical**
Cerebro-Spinal Fluid (CSF): Physical and Chemical Examinations
Determination of total serum Proteins & Albumin using the Biuret & Bromocresol green methods
Serum Protein electrophoresis
Liver Function tests
Bilirubin: Total, Direct and Indirect

CPAT 304 **Systemic Clinical Chemical Practical**
Serum glucose estimation
Determination of Urine glucose using
a. glucose oxidase urine strip
Determination of glucose and protein in urine using URS-2P Urine strip
Determination of Serum/Plasma Cholesterol
Determination of serum/plasma triglyceride

DEPARTMENT OF HAEMATOLOGY

Objectives

To train medical students to understand and appreciate the structure, composition and functions of blood and blood forming organs as well as the causes and effects of their diseased states. The student must also know the principles of diagnosis and management of these diseases and the use of blood and blood products.

HAEM 301	Fundamental haematology, the Anaemias and Blood Transfusion (Theory)	(1 Credit)
HAEM 303	Fundamental haematology, the Anaemias and Blood Transfusion (Practical)	(1 Credit)
HAEM 302	Abnormal haemostasis and Haemato-oncology (Theory)	(1 Credit)
HAEM 304	Abnormal haemostasis and Haemato-oncology (Practical)	(1 Credit)

Semester 5
HAEM 301, 303
Cellular Haemopathology

Week 1

Normal Haemopoiesis. Functions of cellular elements
Of blood.
Haemopoietic stem cells and haemopoietins Blood formation, embryonic, foetal and adult.
Hb, RBC, WBC and platelet count in the new born, child and adult.
Practical
Erythropoiesis and myelopoiesis using projected slides.
Blood collection techniques, anticoagulants, Determination of Hb and Hct.

Week 2

Classification and general features of anaemia.
Definition, aetiological and morphological classification of anaemia.
Compensatory physiological changes accompanying anaemia. Signs, symptoms and complications of anaemia.
Practical
Slide projection, normal film, microcytic anaemia, macrocytic anaemia, anisocytosis.
Hb, Hct and Reticulocyte count. Calculation of indices.

Week 3

Iron metabolism, hypochromic anaemias and iron overload. Sources of iron, iron absorption, metabolism, storage excretion.
Causes of iron deficiency anaemia and storages in development of I.D.A
Symptoms and signs of I.D.A. Iron overload. Inherited and acquired.
Organ damage in iron overload.
Practical
Slide projection. Iron deficiency anaemia slide. Compare to elliptocytosis.
Anisochromasia slide and polychromasia slide.
Preparation and staining of thin blood films.
Interpretation of red cell indices.

Week 4

Folic Acid and Vitamin B_{12} metabolism, Megaloblastic anaemias.
Sources of Vitamin B_{12} and folic acid. Absorption, metabolism, storage and excretion of B_{12} and folic acid.
Causes of deficiency: symptoms and signs of macrocytic anaemia due to these deficiencies. Features of megaloblastosis. Other causes of macrocytic anaemia.
Practical
Slide projection of megaloblastic marrow and peripheral blood features of B_{12} and folate deficiency.
Slide work. Macrocytosis, polychromasia, interpretation of red cell indices.

Week 5

Haemolytic anaemia I. General features and classification. Haemoglobin structure, formation and catabolism.
Excessive Catabolism causing haemolysis - intravascular and extravascular.
Definition of haemolytic anaemia.
Compensatory mechanisms in chronic haemolysis.

Practical
Slide projection of sickle cell anaemia, spherocytosis, and polychromasia.
Sickling test, Osmotic fragility test, Recticulocyte count.

Week 6 Haemolytic Anaemia II.
Haemoglobinopathies and Thalassaemias.
Genetic basis of structural haemoglobin variants and Thalassaemias.
Malaria and balance polymorphism. The sickle cell syndromes (AS, SS, SC etc) and other Haemoglobinopathies prevalent in Africa: inheritance, clinical features, diagnosis. Properties of foetal haemoglobin.
The peripheral blood appearance in the alpha and beta thalassaemias.
Clinical features of Beta thalassaemia major.
Practical
Projection: Clinical and peripheral blood features of SCA and thalassaemia major. Slide SCA and thalassaemia major.
Haemoglobin electrophoresis and Kleihauer test
Hb F estimation.

Week 7 Haemolytic Anaemia III
G6PD deficiency, congenital membrane defects and acquired haemolytic anaemia.
Red cell metabolism: Forms of G6PD
Inheritance and clinical effects of acquisition of G6PD enzyme defect.
Hereditary spherocytosis: inheritance, the membrane defect and disease state. Acquired defects – PCH, PNH, bacterial and parasitic causes.
Practical
Test for haematuria and haemoglobinuria.
Examination of thin blood films. Reporting of thin blood films.

Week 8 Aplastic anaemia and other causes of Bone Marrow failure.
Definition of aplasia and bone marrow failure.
Aetiological classification of aplasia, emphasis on environmental pollutants, occupational hazards and drugs.
Congenital causes. Presentation, diagnosis and management.

Week 9 The White Cell.
Stem cell and myelopoiesis; haemopoietic growth factors.
Mononuclear and polymorphonulear cells
Functions of various leucocytes. Morphology and maturation.
Neutrophil kinetics and cytochemistry. Lymphocyte subsets.
Changes in count following disease.
Practical
Slide projection
Total white cell count and differential count.
Demonstration ESR

Week 10 The Acute Leukaemias
Classification: epidemiology, chromosomal abnormalities, presentation, complications, diagnosis and cytochemistry.
Practical
Slide projection:
Differential white cell count. Lymphocytosis, neutrophilia and eosinophilia.

Week 11/12 myeloproliferative disorders.
CML, primary proliferative polycythaemia, myelosclerosis, thrombocythaemia. CML epidemiology, clinical features, changes in peripheral blood and marrow, course and complications.
Primary and secondary polycythaemia, clinical course and complications of primary polycythaemia.
Myeloscrelosis, pathogenesis, bone marrow and peripheral blood changes, clinical course.
Primary thrombocythaemia, nature, clinical features, course and prognosis.

Practical
Slide projection;
Thin film on CML, CLL and Neutrophilia.

Week 13 The Spleen and Lymphoproliferative disorders
Structure and function of the Spleen.
Extramedullary haemopoiesis.
Causes of splenomegaly, effect of splenectomy.
Definition of lymphoproliferative disorders.
Practical
Cytochemical staining;
Differential leucocyte count. CLL.

Week 14 Lymphoproliferative disorders
The lymphomas including Burkitt Lymphoma.
Classification and staging of lymphomas, presentation and clinical course.
Chronic lymphocytic leukaemia. Diagnosis and clinical course.
Practical
Slide projection
Thin blood films.

Week 15 The platelet and vessel wall
Megakaryocyte and formation of platelets. Structure and function of the platelet; adhesion, aggregation and procoagulant function: the vessel wall.
Practical
Platelet count, thin blood film, Hess test, bleeding time.

Week 16 Quantitative and qualitative abnormalities of platelet including ITP.
Tests of platelet function; aggregation tests.

Week 17 Assessment on white cells and platelets

Semester 6
HAEM 302, 304
Clinical Haematology and Transfusion Medicine

Week 1 Principles of Haematologic examination.
Cell counting, red cell indices and their interpretation, interpretation of total and differential cell count, histochemical staining, bone marrow examination, aspiration and trephine, scanning.
Principles of management of the patient with anaemia or agranulocytosis.

Practical
Interpretation of indices

Week 2 The approach to the patient with anaemia.
Manifestations of acute and chronic anaemia. Specific clinical features of iron deficiency, B_{12} and folic acid deficiency. Symptoms and signs to include integumentary, cardiac, respiratory, alimentary, genitourinary and neuromuscular systems. Differential diagnosis.

Laboratory diagnosis of iron deficiency, folic acid and B_{12} deficiency, biochemistry, occult blood, serum and urine chemistry, absorption studies e.g. Schilling test.

Tutorial. Slide projection. Interpretation of data. Clinical case problem.

Week 3 Treatment of Anaemia
Iron deficiency, Vit B12 or folic acid deficiency, simple anaemias.
Treatment of underlying disorder. Indications for blood (Red Blood Cell) transfusion.
Monitoring of therapy.

	Anaemia of chronic disorders. Tutorial. Clinical case problem.
Week 4.	The Haemolytic Aanaemias. Clinical presentation of sickle cell disease, crisis, organ damage, management of crisis, steady state, bone marrow transplantation. Radiological changes Prevention including genetic counselling, prenatal diagnosis. Thalassaemia major and thalassaemia intermedia. Differences in clinical presentation, course and prognosis. Laboratory diagnosis. Hypertransfusion and problems of iron overload. Acute haemolysis in G6PD deficiency. Diagnosis and management. **Practical** G6PD assay, cellulose acetate gel electrophoresis, screening. Sickle cell solubility test Tutorial on haemolytic anaemias.
Week 5	Blood coagulation and inhibitory systems; the fibrinolytic system. Vascular and platelet bleeding disorders and their investigation. **Practical** Assessment on anaemias Theory and Clinical problems. The acute leukaemias. Clinical presentation, diagnosis; preparation of patient for chemotherapy; chemotherapy and bone marrow transplantation, their complications and management.
Week 6	Inherited and acquired deficiency of clotting factors Haemophilia, liver failure. **Practical** P.T., A.P.T.T., T.T. The lymphomas, Clinical staging. Presentation, diagnosis, combination and single drug chemotherapy, radiotherapy.
Week 7	Hypercoagulable state and control of anticoagulant. **Practical** Investigation of patient with a bleeding disorder including platelet disorders. Immune deficiency states Acquired and inherited.
Week 8	The Blood Groups. ABO and Rhesus blood groups. The genetics and biochemistry of ABH blood group substances. Secretors and non secretors. ABO and Rhesus blood grouping, tile and microplate methods. Red cell membrane and metabolism of the red cell.
Week 9	HLA system. Application of blood group in clinical medicine, anthropology, genetics and forensic pathology. Assessment. Bleeding disorders and haematological malignancies. Theory and Clinical case problem. Burkitt's lymphoma compared to Hodgkin's.
Week 10	Antigen – antibody reactions and factors affecting them. Immunoglobulins and complement. The coomb's test. ELISA test. **Practical** Tests for Haemolysins, ELISA tests and coomb's test. Radionucleids. Schilling test and red cell survival. Use of radio isotopes in haematology. Regulations and precautions; scanning.
Week 11	Clinical Blood Transfusion I The blood donor; screening and bleeding. Storage of blood and components. Particle agglutination. Tanned red cells and latex. Tutorial on Chronic Lymphocytic leukaemia.

Week 12	Clinical Blood Transfusion II Blood, blood components and Blood substitutes Compatibility testing **Practical** Compatibility testing. Immune Haemolytic anaemias Cold and warm type. Haemolytic disease of newborn.
Week 13	Complications of blood transfusion, their investigation, prevention and management. Visit to the Blood Bank. Free.
Week 14	Tutorial Clinical Case Problem. Free
Week 15	Assessment. Theory and practical. Blood Transfusion, immune haemolytic anaemia and radionucleids.
Week 16.	Visit to Atomic Energy. Tutorial. Haematological malignancies.
Week 17	Tutorial. Haemolytic anaemias. **Practical** Clinical Case Problem Safe Blood Transfusion

DEPARTMENT OF MICROBIOLOGY

Objectives

The course intends to let the students know the structure of a microorganism, its antigens and pathogenic mechanisms relate to disease causation and the antimicrobial agents, which could be used for treatment. At the end of the course, the student should have a sound theoretical knowledge of specific examples of microorganisms and be able to perform simple tests and interpret them. They should also know the principles underpinning investigation of infectious diseases.

MICB 301	Bacteriology and mycology (Theory)	(4 Credits)
MICB 303	Bacteriology and mycology (Practical)	(1 Credit)
MICB 302	Virology/Parasitology (Theory)	(4 Credits)
MICB 304	Virology/Parasitology (Practical)	(1 Credit)

MICB 301 Introduction to Microbiology (Bacteriology/Mycology) 4 Credits

The course is designed to give initial introduction to microbial agents and their classification
Followed by detailed study of bacteria and fungi of medical importance.

Objectives

The student should be able to:

- Describe the general characteristics of bacteria, fungi, parasites and viruses and their antigenic components.
- Describe growth requirements and methods of identification of bacteria and fungi
- Explain the pathogenic mechanisms of various disease causing organisms
- Demonstrate an understanding of investigation of infectious disease
- State causes of nosocomial infection and principles of control – sterilization and disinfection, isolation etc
- Explain immunological basis of disease causation and prevention.
- State the use of vaccines for prophylaxis

Content

General characteristics and classification of bacteria, parasites, fungi and viruses.
Growth characteristics of bacteria and fungi and their identification.
Innate and acquired immunity, hypersensitivity,
Normal flora of various sites in the body.
Methods of Sterilization and disinfection, Disinfectants
Pathogenesis of diseases caused by various bacteria – Staphylococcus, Streptococcus, Neisseria, Enterobacteria, (especially Salmonella, Shigella) Mycobacteria, Clostridium, Bacillus, Cornynebacteria, Parvobacteria, Vibrio, Spirochaetes Actinomyces & fungi of medical importance.
Antimicrobial & antifungal agents, Nosocomial infection,
Investigation of bacterial and fungal infections.

MICB 303 Practical I (Bacteriology/Mycology) 1 Credit

General

This practical course is designed to teach the student about morphology of microbial agents and simple staining and other techniques for their identification.

Objectives

1. To perform various staining techniques
2. Identify organisms in either stained or unstained specimens by morphological characteristics
3. Demonstrate an understanding of basic principles of investigation of disease

Content

Staining: - Gram, Methylene blue, Ziehl-Neelsen, Nigrosin
Simple tests for identification of bacteria and fungi
Reading of sensitivity plates and interpretation of findings

MICB 302 Virology/Parasitology 4 Credits

General

The course is designed to introduce students to the principles underlying the dynamics of parasitic and viral infections. This will enable them to understand how the interaction between parasites/viruses, humans and the environment promote the occurrence of parasitic and viral infections and human immunological response to their infection.

Objectives

The student should be able to:

- Describe the general characteristics and classification of viruses, chlamydiae, mycoplasma and rickettsiae and how infection caused by these are transmitted
- State principles of immunization and antimicrobial treatment
- Explain the pathogenic mechanisms of viruses, chlamydiae, mycoplasma and rickettsiae
- Explain host parasite relationships.
- Describe the general characteristics of parasitic protozoa, helminthes and their pathogenic mechanisms
- State methods of diagnosis, control and treatment of parasitic infections
- Demonstrate an understanding of investigation of parasitic and viral diseases

Contents

Classification of viruses, chlamydiae, mycoplasma and rickettsiae. Morphology, effect of chemical and physical agents, pathogenesis, clinical features, epidemiology, laboratory diagnosis, treatment, prevention and control of viral, chlamydial, mycoplasma and rickettsial infections. Host parasite relationships. Investigation of infectious diseases. Types of vaccines, methods of production and vaccination against infectious agents. Epidemiology and pathogenesis of common tropical parasitic diseases: Clinical manifestations associated with parasitic infections with emphasis on Malaria, Schistosomiasis, Amoebiasis, Trypanosomiasis, Filariasis and Gastrointestinal infections. Vector borne parasitic diseases. Principles of diagnosis, investigation, treatment and control of parasitic and viral diseases. Immunological basis of parasitic and viral diseases.

MICB 304: Practical II (Virology/Parasitology) (1 Credits)

General

The course is designed to illustrate the experimental principles involved in course MICB 402 and to acquaint students with the laboratory methods applied in clinical diagnosis.

Objectives:

- Describe methods of virus cultivation and identification
- Explain the basic laboratory techniques for identification of viruses and diagnosis of viral

infections.

- Explain the basic laboratory techniques for identification of parasites and diagnosis of parasitic infection of medical importance.

Contents:
Demonstration practicals will be mounted on the following test methods: ELISA, Western blot, Complement fixation test, Immunofluoresence test, Haemagglutination inhibition test and Simple rapid test. Tissues cultures will be mounted for identification of viral CPE (and description of types). Animal and embryonated egg inoculation. Electron micrographs showing morphological characteristics of representative virus groups. Basic laboratory techniques (Microscopy/ELISA/Culture) for identification of parasites. Direct and Iodine wet smears, Preparation of thick/thin blood films, Giemsa staining. Examination of prepared slides of parasites.
Identification of vectors of medical importance, Simple rapid test.

DEPARTMENT OF PATHOLOGY

Curriculum for Level 300

Introduction
The Department of Pathology currently offers the following courses at Level 300:

PATH 305	General Pathology (Practical)	(1 Credit)
PATH 303	Immunology & Immunopathology	(2 Credits)
PATH 304	Systemic Pathology (Practical)	(2 Credits)
PATH 301	General Pathology (Theory)	(3 Credits)
PATH 302	Systemic Pathology (Theory)	(5 Credits)

Objectives
To make the student understand the basic principles of causation, mechanisms and characteristics including manifestations of the major categories of diseases and subsequently, to know the specific diseases as they affect individual organs or multiple organs of causation and processes featuring in general pathology.

1. General Pathology (PATH 301 and PATH 305)
This is the current understanding of the basic principles of causation, mechanisms and characteristics including manifestations of the major categories of diseases. It is the foundations of knowledge that must be laid down before the pathology of the general pathology are understood before attempt is made to teach and study.

2. Immunology and Immunopathology (PATH 303)
This is the current knowledge and understanding of the basic components of the immune system and the principles of the basic immune reactions and how abnormal reactions lead to disease.

3. Systemic Pathology (PATH 302 and PATH 304)
This is the current knowledge of specific diseases as they affect individual organism or systems and their effects on the body as a whole. The operation of one or more categories of causation and processes featuring in general pathology may be responsible for the genesis of each specific disease.

Recommended textbooks include:
Robbins Pathologic Basis of Disease (Cotran, Kumar and Collins) Sixth Edition
Muir's Textbooks of Pathology
General and Systematic Pathology (ed. Underwood) Second Edition
General Pathology (Walter and Israel)
Pathology (Rubin and Faber) Third Edition
The student is expected to learn by a process of gathering information, acquiring and organizing knowledge, gaining understanding, and striving toward wisdom. In this process, participation in and "doing" are, at least, as important as listening and hearing. Students **must** attend all lectures and participate in all laboratories and tutorials. Prior preparation before lectures, practicals and tutorials is **beneficial and essential**. Every student **must** make the effort to contribute to discussions during practical sessions and formal tutorials.
Lectures must be considered as guide to the material to be covered. When reading or written assignments are given, students **must take note and comply.**

PATH 301 General Pathology Theory 3 Credits

Course Objectives

At the end of the course the student shall, when required, be able to:

- Describe and explain in own words the scientific basis of disease causation
- Classify the various causes of disease
- Describe in a logical and sequential fashion the events and explain the mechanisms involved in various process
- Describe and analyze the morphologic and/or functional changes induced by various pathogenetic processes
- Differentiate between processes and mechanisms that produce similar morphologic and/or functional changes
- State and explain clearly all the terminology introduced in the course
- Deduce and predict the outcomes (morphologic, biochemical and/or functional changes/consequences) of a given pathogenetic process
- State and/or explain the underlying pathogenetic process when given a specific scenario
- Write an essay, short or long, on any of the topics treated in the course. Here the emphasis is on the clarity of thought, good usage of language including appropriate terminology and clear understanding of the topic
- Answer multiple-choice including True/False and matching questions on every topic treated in class

Content

A. Introduction to Pathology

- History of pathology
- Techniques available in pathology

B. Characteristics and Nomenclature Of Disease

- Aetiology; Pathogenesis; Manifestation and Presentation; Complications and Sequelae; Prognosis.
- Primary and Secondary; Acute and Chronic; Prefixes and Suffixes; Syndromes.
- Inherited and Acquired; Congenital; Iatrogenic

C. Cellular Basis of Disease

- Cell proliferation; Homeostasis and steady state.
- Cellular response to injury

D. Tissue Response to Injury – Inflammation, Healing and Repair

- Acute inflammation
- Chronic inflammation
- Healing and repair

E. Circulatory Disturbances

- Hyperaemia and congestion
- Oedema
- Thrombosis
- Disseminated intravascular coagulation
- Embolism
- Ischaemia and infarction
- Shock

F. Disorders of Growth and Neoplasia

- Disorders of development
- Dysplasia
- Neoplasia

General Pathology Practical ((PATH 305) – 1 Credit

This course is held in the first semester of level 300 (semester 5 of the B.Sc. program).

There is one session of two hours duration every week. The class is discussions are on **Microscopic and Gross Pathology Practicals.**

Course Objectives

At the end of the course:

Microscopy: Given a histological section the student will be able to:

- Clearly describe the histologic features present
- Identify the pathologic process giving rise to those features

- State and explain the underlying mechanisms
- List/predict and give reasons for likely beneficial and harmful (complications) effects

Gross Pathology: Given a potted gross pathologic specimen the student will be able to:

- Identify all the organs present
- Clearly describe the gross pathologic features present
- Identify the pathologic process giving rise to those features
- State and explain the underlying mechanisms
- List/predict and give reasons for likely beneficial and harmful (complications) effects

Microscopy: The practical or laboratory sessions consist of histological examination of typical examples of the morphologic changes produced by the various processes discussed in lectures and tutorials. Slides for each session are selected according to the pathologic process under discussion. Students must be able to identify and describe either in writing or verbally, the histological features of the various processes and explain the underlying mechanisms. They must be able to state/predict beneficial and harmful (complications) effects of the processes. Demonstration slides may be mounted to show examples of various processes, which may not be in the class sets.

Gross Pathology: Students will be shown formalin-fixed potted specimens in the W. N. Laing Museum, pictures or fresh autopsy specimens in the autopsy room to illustrate various conditions discussed in the course. Students must be able to describe, either in writing or verbally, the gross appearances of the specimens and state and the particular pathologic process (es) and explain the mechanisms of the process (es) involved. They must be able to state/predict beneficial and harmful (complications) effects of the processes. The format of the session shall be in the form of a group discussion and, while it is **instructor-led,** it is **student based**

2. Immunology and Immunopathology

This course is run in the first semester of the level 300 (semester 5 of the B.Sc. program). Lectures will identify and explain the features and functions of key chemical and cellular components of the immune system and how they interact and respond to foreign agents. Tutorials will be organized periodically to further explain key principles.

Course Objectives

At the end of the course the student shall, when required, be able to:

- Describe in own words the chemical and cellular components of the immune system and explain the function(s) of each.
- Classify the various immune responses that result in disease
- Describe in a logical and sequential fashion the events and explain the immunological mechanisms involved in various disease processes
- State and explain clearly all the terminology introduced in the course
- Deduce and predict the outcomes (morphologic, biochemical and/or functional changes/consequences) of a given pathogenetic process
- State and/or explain the underlying pathogenetic process when given a specific scenario.

Content

- Introduction to immunology
- Antigen; antibody
- Cellular basis of immune response
- Humoral immune response
- Regulation of immune response
- Immunological tolerance
- Hypersensitivity reactions
- Transplantation
- Autoimmune diseases

Recommended Textbooks for Immunology include:

Basic and clinical immunology by Daniel P Stiles and Abba I Terr

Immunobiology-the immune system in health and disease br Charles A Jancway. Paul Travers, Mark Walport, J Donald Capra

Essential Immunology by Ivan Riott

Robbins Pathologic Basis of Disease (Cotran, Kumar and Collins) SEVENTH Edition

Systemic Pathology (PATH 302) -5 Credits

Lectures will cover definition, classification and aetiology including associations and risk and predisposing factors, pathogenesis, morphologic manifestations, complications and natural course of the disease as appropriate.

Course Objectives

At the end of the course the student shall, when required, be able to:

- Give the definitions of the diseases covered in the course
- State the aetiology or aetiological factors including predisposing and risk factors, age and sex differences and other epidemiological factors (as appropriate) of the various diseases covered in the cause
- Classify each disease into subtypes where appropriate
- Describe in a logical and sequential fashion the pathogenesis of each disease taught during the course
- Described and analyze the morphologic and/or functional changes seen in the diseases discussed during the course
- State and explain clearly all the terminology introduced in the course
- State and describe with reasons the possible outcomes (morphologic, biochemical and/or functional changes/consequences) of a given disease including effects on other organs or systems.
- Write an essay, short or long, on any of the diseases treated in the course. Here the emphasis is on the clarity of thought, good usage of language including appropriate terminology; clear understanding of the disease and ability to relate to effects on other organs or systems.
- Answer multiple-choice including True/False and matching questions on every topic treated in class.

Content

A. Cardiovascular System

- Vascular diseases
- Systemic hypertension
- Cardiac failure
- Pathophysiological concepts; manifestations; compensatory mechanisms
- Ischaemic heart disease
- Rheumatic fever
- Endocarditis
- Myocarditis
- Pericarditis
- Valvular diseases
- Congenital heart disease

B. Respiratory System

- Nose, nasal sinuses, nasopharynx
- Larynx and trachea
- Bronchial asthma; bronchitis; emphysema; bronchietasis
- Pneumonias
- Interstitial lung diseases
- Pulmonary oedema; uraemic lung
- Pulmonary hypertension and corpulmonale
- Respiratory failure
- The pleura
- Neoplasms: Lung and pleura

C. Lymphoreticular System

- The spleen: Functions; inflammatory conditions; storage diseases; neoplasms
- Lymph nodes: Inflammatory and infectious diseases; lymphomas; metastatic neoplasms

D. Gastrointestinal System

Diseases of:

Salivary glands

- Pharynx
- Oesophagus
- Stomach
- Intestines
- Anus

E. Liver, Biliary Tract, Pancreas

Circulatory disturbances of liver

- Jaundice; liver failure; hepato-renal syndrome
- Infections:
  a. Viral hepatitis: HVA, HVB, HVD, HVC, HVE, HVG infections
  b. Yellow fever and other viral infections
  c. Schistosomiasis; Amoebic abscess
- Chemical-induced liver injury
  a. Alcoholic liver disease
  b. Bile-induced: Intra – and extra-hepatic biliary obstruction
  c. Drug-induced: Predictable and unpredictable; hepatotoxic and cholestatic
- Cirrhosis of liver
- Tumour of liver
- Gall stones and cholecystitis
- Neoplasms of gall bladder
- Acute and chronic pancreatitis
- Neoplasms of pancreas

F. Nervous System

- Congenital abnormalities of nervous system
- Pathology of intra-cranial expanding lesions
- Traumatic lesions of CNS
- Hydrocephalus
- Circulatory disturbances of CNS
- Infections of nervous system
- Demyelinating diseases
- Storage diseases
- Spinal cord degeneration; motor neurone lesions

G. Urinary System

Kidney

- Structure and function
- Congenital diseases
- The glomerular diseases
- Acute and chronic renal failure
- Pyelonephritis: Acute and chronic
- Miscellaneous renal diseases
  a. Cortical necrosis, interstitial nephritis
  b. Neoplasms of kidney

Pelvis, Ureters, Bladder

- Lithiasis
- Obstructive uropathy
- Inflammation
- Neoplasms of urothlium
- Congenital anomalies

H. Male Genital System

- Congenital anomalies
- Inflammations
- Neoplasms of penis and scrotum
- Neoplasms of testis
- Male infertility

I. Female Genital System and Breast

Disease of:

- Vulva and vagina
- Cervix
- Endometrium
- Ovary and fallopian tubes

- Breast

J. Diseases of Bone
- Inflammatory disease of bone: Osteomyelitis (Acute and chronic)
- Metabolic diseases of bone
- Paget's disease of bone
- Neoplasms: Osteogenic sarcoma: Chrondrosarcoma

K. Diseases of Joints
- Arthritis
- Tumours of synovium and tendon sheath

L. Diseases of Skeletal Muscle
- Inflammatory diseases: Bacterial myositis: Viral polymyositis
- Muscular dystrophies
- Drug induced, toxic and endocrine myopathies
- Disorders of neuromuscular transmission: Myasthenia gravis: Eaton-Lambert syndrome.

M. Autoimmune Diseases
- Systemic lupus erythematosus
- Progressive systemic sclerosis
- Others

N. Endocrime System
Diseases of:
- The pituitary
- The adrenals
- The thyroid
- The parathyroids
- The pancreas (endocrine)

Systemic Pathology Practical (PATH 304) 2 Credits
Course Objectives
At the end of the course:
Microscopy: Given a histological section the student will be able to:
- Identify the tissue or organ(s)
- Clearly describe the histological features present
- Make a diagnosis based on the features identified and described
- State the cause (s) of the disease
- Identify the pathologic process giving rise to those features when requested
- State and explain the underlying mechanisms when requested
- List/predict and give reasons for likely complications

Gross Pathology: Given a potted gross pathologic specimen the student will be able to:
- Identity all the organs present
- Clearly describe the gross pathologic features present
- Make a diagnosis based on the features identified and described
- Identify the pathologic process giving rise to those features
- State and explain the underlying mechanisms
- List/predict and give reasons for likely complications

This course is run in the second semester of the level 300 (semester 6 of the B.Sc. program). It is divided into two sessions a week, each of two hours duration. The sessions are devoted to histological examination of typical examples of the morphologic features of the various diseases discussed in lectures and tutorials. Slides for each session are selected according to the pathologic system and disease under discussion and students must be able to identify and describe, either in writing or verbally, the histological features and state the diagnosis. Students must be able to state the aetiology, list and explain complications and discuss pathogenesis and predict the prognosis.
Students will be shown formalin-fixed specimens in the W.N. Laing Museum or fresh autopsy specimens in the autopsy room to illustrate various conditions discussed in the course. Students must be able to describe, either

in writing or verbally, the gross appearances of the specimens, state the particular pathologic process (es) involved and explain their mechanisms, state diagnosis and predict likely complications and prognosis giving reasons.

The format of each session in gross pathology shall be in the form of a group discussion and, while it is **instructor-led,** it is **student based.**
l be a management question

Continuous Assessment
Objective questions shall be used to assess theoretical knowledge during the semester. This will constitute 10-30% of final theory course mark
Practical assessments shall be done by in-course format and will be the final course mark.

Terminal Assessment
The end of semester examination shall comprise a theory paper of objective type questions for 2-3 hours. There will be multiple choice questions and the true or false type objective questions. Marks would be deducted for wrong answers for the true/false type questions. The terminal assessment will form 70-90% of final course mark.

DEPARTMENT OF PHARMACOLOGY

Objectives
In this course students will be trained to know and explain: the general principles that apply to all areas of pharmacology, the pharmacologic role of endogenous substances (autacoids) in inflammation, with the view to interpret the rational use of their antagonists in clinical practice, how synthetic drugs (chemotherapeutic agents) and products of micro-organisms (antibiotics) produce toxic effect on organisms that invade the body and thereby produce therapeutic effect, the action of drugs on organ systems of the body with the view to identifying their effect, therapeutic uses, toxicity and contraindications and the basic principles, occupational and environmental toxicology, recognition of toxicity, and antidotal procedures.

At the end of the entire programme the student should be able to apply the knowledge acquired to drug management of diseases and apply the knowledge and skills acquired to define and explain emerging concepts in drug action.

Revised Curriculum
Undergraduate Syllabus

PHAM	301	General & Autonomic Pharmacology (Theory) (3 Credits)
PHAM	302	Systemic Pharmacology, Endocrines & Toxicology (Theory) (4 Credits)
PHAM	303	General & Autonomic Pharmacology (Practical) (1 Credit)
PHAM	304	Systemic Pharmacology, Endocrines & Toxicology (Practical) (1 Credit)
PHAM	305	Autacoids, Anti-inflammatory & Antimicrobial Agents (Theory) (2 Credits)

DETAILS OF UNDERGRADUATE SYLLABUS

PHAM 301 General & Autonomic Pharmacology (3 Credits)

A. General Pharmacology

Definition of Pharmacology, Definition of a drug, Routes of drug administration, Drug Absorption, Drug Distribution, Drug Biotransformation, Drug Excretion, The Receptor Concept, Drug-Receptor Concept, Receptor Occupancy-Response Coupling, Drug dose (concentration) and response, Interaction between drugs, Individual variation in drug responsiveness, Factors Influencing dosage and drug response, Pharmacognetics, Drug development and Clinical trials.

B. Autonomic Pharmacology

Introduction to Autonomic Nervous System, Cholinergic System, Cholinomimetic drugs, Anticholinergic drugs, Adrenergic System, Direct acting sympathomimetic drugs, Mixed and Indirect acting sympathomimetic drugs, Adrenoceptor-blockers (α-blockers), Adrenoceptor-blockers (β-blockers)

Pham 302 Systems Pharmacology (4 Credits)

A. Cardiovasculo-Renal Pharmacology

Diuretic agents, Antihypertensive drugs, Antianginal drugs, Antidysrrhythmic drugs, Drugs used to treat heart failure, Anticoagulants, Drugs used to treat anaemia, Anti-hyperlipidaemic drugs.

B. Respiratory Pharmacology

Drugs for treatment of Asthma, Anti-allergic agents, Mucolytics, Antitussives, Respiratory Stimulants

C. Pharmacology of the Nervous System

General Anaesthetic Agents, Local Anaesthetic Agents, Sedative-Hypnotic Drugs, Antidepressants drugs, Opiod Analgesics and Antagonists, Antipsychotic Drugs, Drugs used in Parkinsonism, Anticonvulsants, Drugs of Abuse and Addiction

D. Gastro-Intestinal Pharmacology

Antacids, Anti-spasmodics, Laxatives and Costives, H_2-receptor antagonists, Proton Pump Inhibitors, Antiemetics

E. Endocrine Pharmacology

Corticosteroids, Anti-thyroid drugs, Antidiabetic drugs, Sex hormones and Antifertility, Oxytocics and Tocolytics

F. Chemotherapeutics

Principles of Chemotherapy, Antifungal Agents, Anthelmintics, Anti-protozoal drugs, Antituberculous drugs, Drugs used in the treatment of Leprosy, Cancer Chemotherapy, Antiviral Drugs

G. Toxicology

Principles of Toxicology, Environmental and Occupational Toxicology, Snake, Insects & Crustaceans bites etc., Therapeutic drugs of toxicological importance.

PHAM 303 & 304 Practicals (1 Credit Each)

1. Introduction to Laboratory Studies/Practices
2. Routes of drug Administration and variations in drug response
3. Relationship between drug dose and pharmacological response
4. Action of some agonists and antagonists on the isolated guinea-pig ileum
5. Effect of histamine on the microcirculation and its blockade by H_1-receptor antagonists
6. Action of Local anaesthetics – X^2 test
7. Modes of action of neuromuscular blockers
8. Action of drugs on the human eye
9. Rational Pharmacotherapy & P-Drug Concept

PHAM 305 Autacoids, Anti-Inflammatory and Antimicrobial Drugs (2 Credits)

A. Autacoids and Anti-inflammatory Drugs

Histamine and Antihistamines, 5-Hydroxytryptamine, Kinnins, Prostaglandins, Non-Steroidal Anti-Inflammatory Drugs, Drugs used in the treatment of gout

B. Antimicrobial Agents

Quinolones, Sulphonamides and Trimethoprim, Penicillins, Cephalosporins, Tetracyclines, Chloramphenicol, Aminoglycosides, Polymyxins, Antibiotics with Specialized Indications and Urinary antiseptics

REGULATIONS FOR THE CLINICAL PART OF THE BACHELOR OF MEDICINE AND BACHELOR OF SURGERY (MB, ChB) DEGREE PROGRAMME

1.0 ADMISSION

1.1 Further to the General Regulations regarding admission into the University of Ghana, a candidate for admission to the Clinical Part of the MB ChB degree programme shall have obtained the B.Sc. (Med. Sci.) degree of the University of Ghana.

1.2 Candidates with the Bachelor's degree in Basic Medical/Biological Sciences, as well as those who may have completed part of the MB ChB (or its equivalent) in a recognized university, may be considered for admission on the recommendation of a special committee appointed by the Dean. The Special

Committee shall vet the transcript of the candi-date as well as course content of the degree, with a view to determining the suitability of the degree or previous training and make appropriate recommendations to the Dean.

2.0 DURATION AND STRUCTURE

2.1 The Clinical Part of the MB ChB degree programme shall be of 3 years duration and structured as follows:

(a) 1st Clinical Year - 37 weeks
(b) 2nd Clinical Year - 45 weeks
(c) 3rd Clinical Year - 44 weeks

3.0 ACADEMIC YEAR

The Academic Year shall comprise two semesters.

4.0 STRUCTURE OF SEMESTER

4.1	First Clinical Year		- 37 Teaching Weeks
	(i)	Semester 7 Clinical Rotations	- 23 Weeks
	(ii)	Inter-Semester Break	- 2 weeks
	(iii)	Semester 8 Clinical Rotations	- 14 Weeks
4.2	Second Clinical Year		- 45 Teaching Weeks
	(i)	Semester 9 Clinical Rotations	- 24 weeks
	(ii)	Inter-Semester Break	- 2 weeks
	(iii)	Semester 10 Clinical Rotations	- 21 Weeks
4.3	Third Clinical Year		- 44 Teaching Weeks
	(i)	Semester 11 Clinical Rotations	- 24 weeks
	(ii)	Inter-Semester Break	- 2 weeks
	(iii)	Semester 12 Clinical Rotations	- 20 Weeks

5.0 SUBJECTS FOR CLINICAL YEARS 1 - 3

5.1 First Clinical Year - Semesters 7 & 8

5.1.2 Semester 7 shall be devoted to the following:

Junior Clerkship in Community Health*	8 weeks
Medical Psychology*	8 weeks
Introduction to Nursing Skills	1 week
Introduction to Clinical Skills	4 weeks
Coordinated Course I (Medicine & Surgery, Community Health, and Applied Pathology and Inputs from other Clinical Departments)	10 weeks
Medical Ethics	10 weeks

* These courses run concurrently.

This Semester shall last 23 weeks.

5.1.3 Lectures in Medical Ethics shall be given concurrently with Coordinated Course I and examined at the end of the semester.

5.1.4 Semester 8

Semester 8 shall cover the following:

Coordinated Course II (Medicine, Surgery, Community Health and Applied Pathology)

Trauma & Orthopaedics

This Semester shall last 14 weeks.

5.2 Second Clinical Year – Semesters 9 and 10

5.2.1 Semester 9

Semester 9 subjects shall be:
Junior Clerkship in Obstetrics/Gynaecology
Junior Clerkship in Child Health
Junior Clerkship in Psychiatry
Specialties I (Dermatology, Ophthalmology, ENT) Forensic Medicine

This semester shall last 24 weeks.

5.2.2 Semester 10

Semester 10 subjects shall be: -
Senior Clerkship in Obstetrics/Gynaecology
Senior Clerkship in Child Health

This Semester shall last 21 weeks.

5.3 Third Clinical Year – Semesters 11 and 12

5.3.1 Semester 11

Semester 11 subjects shall be: -
Clinical Psychiatry
Senior Clerkship in Medicine & Therapeutics
Senior Clerkship in Surgery
Senior Clerkship in Community Health
Specialties II (Anaesthesia, Urology and Orthopaedics, Radiology

The semester shall last 24 weeks.

5.3.2 Semester 12

In this semester, the subjects taken in Semester 11, except Clinical Psychiatry, shall be continued for another 20 weeks.

6.0 MINIMUM/MAXIMUM PERIOD FOR COMPLETING THE MB CHB PROGRAMME

6.1 The minimum period for completing the Clinical MB ChB programme shall be 6 semesters or three academic years.

6.2 The maximum period for completing the Clinical MB ChB programme shall be 12 semesters or 6 academic years.

6.3 A candidate who is unable to complete his/her programme within the maximum period allowed shall lose all credits accumulated. Such a candidate shall not be allowed to re-apply for admission into the BSc (Med. Sci.) and MB ChB degree programmes.

6.4 Subject to the provision under Regulation 6.5, candidates are required to take the first examination immediately following the completion of the relevant subjects and may not postpone their entry without special written permission of the Board of the Medical School.

6.5 The candidate who has not complied with the prescribed requirement for any subject or who has not performed satisfactorily in other duties prescribed or associated with a course of instruction may, on the recommendations of the relevant department, be refused admission to the examination of the year concerned and be required to repeat part or the whole of the course of instruction leading to the particular examination.

6.6 A candidate who fails in only one subject of an examination at the first examination shall be referred in that course/subject and shall be required to take the examination in the referred course/subject at the supplementary examination following the main examination.
(See Regulation 11.0).

6.7 A candidate who fails in more than one subject at the first examination shall be deemed to have failed the whole examination and may on the recommendation of the Board of Examiners be required to:

(i) Repeat the whole of the examination at the supplementary examination immediately following the main examination, or

(ii) repeat only those subjects in which he/she failed, provided that he/she obtains at least 55% in the subject(s) in which he/she passed and not less than 45% in the subject(s) in which he/she failed (pass mark is 50%), or

(iii) Repeat the year without the option of the supplementary examination.

6.8 A candidate who fails to complete an examination at the Supplementary Examination may, on the recommendation of the Board of Examiners, be required to withdraw from the Medical School or to repeat the whole or part of the course of instruction leading to that examination, before presenting him/herself for re-examination.

6.9 Notwithstanding the provisions of Regulation 6.2 above, a candidate shall not present himself/ herself for the whole or any part of the same examination on more than three occasions.

6.10 A candidate who passes an examination as a whole at the first attempt and reaches the requisite high standard in a subject(s) may, on the recommendation of the Board of Examiners be awarded Honours:
(a) Distinction, or (b) credit in such subject(s), in accordance with such rules as may be approved by the Academic Board.

6.11 Criteria for such Honours are:

Distinction	-	75 – 100%
Credit	-	65 – 74%

6.12. Further to Regulation 1.2 above, the Board of the Medical School is empowered to determine whether a course of study pursued in the examinations passed in other recognized institutions by any candidate wishing to enter the professional courses at the Medical School may be accepted for the purpose of exemption from part or all of the Basic and Para-Clinical Sciences.

6.13 No exemption shall be granted from any part of the MB ChB subjects and examination.

7.0 INTERRUPTION OF STUDY PROGRAMME

7.1 A student may break his/her study programme but may not break for more than 4 continuous semesters, so however that the maximum period allowable for the completion of the programme is not exceeded. Such a student shall be allowed to continue the programme from where he/she had left off.

7.2 A student who wishes to interrupt his/her course of study shall apply in advance to the Dean of the Medical School, stating reasons why he/she wants to interrupt his/her study pro-gramme, and permission duly granted before he/she leaves the University. The decision of the Dean shall be communicated to the applicant by the Executive Secretary before he/she leaves the University.

7.3 A student who breaks his/her studies for more than 4 continuous semesters shall be deemed to have lost any accumulated credits. Such a student may be allowed to re-apply for admission to Medical School.

7.4 Where the ground for interruption of studies is medical, the Head of the Medical School Clinic shall be required to advise the Dean on the propriety and length of period of interruption. The Dean shall cause the Head of the Medical School Clinic to investigate any medical report reaching his office from any health delivery facility outside the Medical School Clinic and advice accordingly.

8.0 **SCHEME OF EXAMINATIONS FOR CLINICAL SUBJECTS**

8.1 The clinical part of the MB ChB degree programme shall be examined as indicated in Sections 8.2 to 8.5 below.

8.2 First Clinical Year - Semesters 7 & 8
In semesters 7 & 8, candidates shall be assessed entirely by continuous assessment and end-of-rotation tests.
Candidate must have performed satisfactorily in the continuous assessment and end-of-rotation tests in order to proceed to the Second Clinical Year.

8.3 Second Clinical Year - Semesters 9 & 10 (MB ChB Final Part I)
At the end of the Second Clinical Year, candidates shall be required to take the MB ChB Final Part I Examinations in Child Health and Obstetrics & Gynaecology.

8.4 Third Clinical Year - Semesters 11 & 12 (MB ChB Final Part II,)
At the end of the Third Clinical Year, candidates shall be required to take the MB ChB Final Part II Examinations in Medicine & Therapeutics, Psychiatry, Surgery and Anaesthesia and Community Health.

8.5 The methods of examination shall be:

8.5.1 Written – MCQ, short essays

8.5.2 Clinical – one long case and two short cases

8.5.3 Orals

8.5.4 Objective Structured Clinical Examination (OSCE) in Anaesthesia and Obstetrics and Gynaecology.

8.6 A candidate shall not proceed to the Third Clinical Year (i.e. MB ChB Final Part II) until he or she has completed the course and passed each subject in the MB ChB Final Part I Examinations.

8.7 The pass mark for all subjects at the MB ChB Final Parts I & II Examinations shall be 50%.

9.0 ELIGIBILITY FOR EXAMINATIONS

9.1 A student shall attend all such lectures, tutorials, seminars, ward rounds and clerkships and undertake all other assignments as approved by the University.

9.2 Each Department shall, with the approval of the Academic Board, determine the requirements for the subjects they offer.

9.3 A student who does not fulfill the requirements for any subject shall not be allowed to take the examination for that subject.

9.4 In any case, a student who is absent for a cumulative period of 21 days from all lectures, tutorials, ward rounds, clerkships and other activities prescribed for any subject in any semester shall be deemed to have withdrawn from the course/subject. Such a student shall not be permitted to sit for the semester examination.

10.0 REGISTRATION FOR EXAMINATIONS

10.1 Registration for a Medical School Examination shall require endorsement of the Registration Form by the Head of Department to the effect that the candidate has pursued satisfactorily the approved course(s) of study being offered over the prescribed period, and has attended at least 85% of lectures, tutorials, ward rounds, clerkships and other activities prescribed for the subjects. A candidate's registration shall not be valid unless it is so endorsed.

10.2 Endorsement as in (10.1) above shall be withheld if a candidate is not deemed to have followed satisfactorily the approved course of study (as in Section 9).

10.3 In any event of the withholding of an endorsement, the Head of Department shall request the confirmation by the Board of the Medical School.

11.0 SUPPLEMENTARY EXAMINATIONS

11.1 Supplementary examinations for Final Part I shall be held in six (6) weeks after the main examinations.

11.2 Supplementary examinations for Final Part II shall be held in three (3) months after the main examinations.

11.3 The provisions of Regulation 6.8 above shall apply to all supplementary examinations.

12.0 **EXTERNAL EXAMINERS**

12.1 External examiners shall be required for both the main and supplementary examinations for the MB ChB Final Parts I & II Examinations.

12.2 All External Examiners shall be required to submit a written report on all aspects of the examination in which they took part.

13.0 **DEFERMENT OF EXAMINATION**

13.1 On Grounds of Ill-Health: A student who has satisfied all the requirements as specified in Section 8, but is unable to take the main (end of semester) examination on grounds of ill health, shall, on application to the Executive Secretary, and on provision of a Medical Certificate issued or endorsed by the Head of the Medical School Clinic be allowed to take supplementary examination as his/her main examination. He/she shall be credited with the grade obtained in the supplementary examination.

13.2 Subsequent application for deferment, on grounds of ill-health, shall be subject to a Medical Certificate issued by a properly constituted Medical Board.

13.3 On Grounds other than Ill-Health: In cases of deferment on grounds other than ill-health, the Dean of the Medical School shall invite the applicant for interview. It shall be the student's responsibility to satisfy the Medical School beyond reasonable doubt why he/ she wishes to defer the examinations.

13.4 In all cases of deferment of examinations, the applicant(s) shall obtain written responses from the Executive Secretary before leaving the Medical School.

14.0 **EXAMINERS' BOARD**

14.1 There shall be Examiners' Board for the main and supplementary examinations in respect of:

i) MB ChB Final Part I

ii) MB ChB Final Part II

14.2 The Examiners' Board for MB ChB Final Part I shall comprise the following:-

Dean - Chairman

Vice Dean

Heads of Departments of Child Health, and Obstetrics and Gynaecology

Internal Examiners

External Examiners (optional)

Executive Secretary
Senior Assistant Registrar (AA) - Secretary

14.3 The Examiners' Board for MB ChB Final Part II shall comprise the following:-
Dean - Chairman
Vice Dean
Heads of Departments of:
Medicine & Therapeutics
Surgery
Community Health
Anaesthesia
Pathology
Psychiatry
Radiology
Internal Examiners
External Examiners (optional)
Executive Secretary
Senior Assistant Registrar (AA) - Secretary

14.4 Examiners' Board(s) shall receive, consider and determine the results of the respective examinations.

14.5 Each Board shall be required to make appropriate recommendations on any candidate based on his/her performance and also on any aspect of the examination as it deems fit.

15.0 DECLARATION OF RESULTS

15.1 Results of end of rotation examinations shall normally be published on the department notice boards with copies to the Executive Secretary.

15.2. Results of the MB ChB Final Part I and II Examinations shall normally be published by the Executive Secretary on the School Notice Board after the Examiners' Board has determined the results.

15.3 The results as published shall be subject to the approval of the Board of the Medical School and the Academic Board.

15.4 A results slip indicating the student's performance shall be made available to him/her.

16.0 ELIGIBILITY FOR THE MB ChB DEGREE

16.1 The MB ChB degree shall be awarded to a candidate who has been properly admitted to the University, has followed the approved courses of study over the prescribed period and has satisfied the conditions as stated in Regulations 16.2 and 16.3 below.

16.2 University Requirements
ii. evidence of regular enrolment in the degree programme
ii. Discharge of all obligations owed to the University
iii. a pass in all University required courses
iv. Satisfactory performance in the appropriate University Examinations.

16.3 Faculty/Departmental Requirements
Satisfactory discharge of such requirements as may be prescribed for the degree.

17.0 **REQUIREMENTS FOR GRADUATION**

17.1 A candidate shall be deemed to have:
i) Satisfied all General University and Faculty requirements;
ii) Obtained at least 50% in each subject featured in the MBChB Final Part I and II examinations;

17.2 In addition to the above, all candidates are required to attend the Swearing-in-Ceremony and take the Hippocratic Oath.

18.0 **CONFIRMATION OF AWARD OF DEGREE**

18.1 A list of candidates who are deemed eligible as in Regulations 16 and 17 shall be laid before the Academic Board of the University for approval as soon as practicable.

18.2 No award shall be confirmed unless the Academic Board of the University is satisfied that the candidate has satisfied all the conditions for the award of a degree.

19.0 CANCELLATION OF AWARD

19.1 Notwithstanding previous confirmation of an award of a degree as in Regulation 18 the Academic Board of the University may at any time cancel an award even with retrospective effect if it becomes known that:
(i) a candidate has entered the University with false qualifications

(ii) a candidate has impersonated someone else
(iii) a candidate has been guilty of examination malpractice for which a grade Z would have been awarded
(iv) There are other reasons that would have led to the withholding of confirmation of the award in the first place.

19.2 In any such event, the decision of the Academic Board of the University shall be published on the University Notice Boards and the candidate notified. Such cancellation and the reasons for it shall be entered on the candidate's transcript.

20.0 **TRANSCRIPT OF ACADEMIC RECORD**

At the end of a student's programme, the University shall, on the payment of an appropriate fee, issue to the particular student a complete transcript of his/her academic record. This transcript shall be marked Student's Copy and shall record all courses attempted and all results obtained.

21.0 **CLASSIFICATION OF DEGREE**

MB ChB degree shall not be classified**.**

COMPETENCIES THAT A STUDENT SHOULD EXHIBIT ON GRADUATION IN RELATION TO THEIR SUBSEQUENT TRAINING AND FUTURE ROLES IN THE HEALTH SYSTEM

Knowledge

At the end of the training the student must be able to demonstrate knowledge and under-standing of the Basic, Para-Clinical, Clinical, Behavioural and Social Sciences including Public Health relevant to the practice of medicine.

Attitude

The student should be able to:

- maintain the highest standard of professional conduct and medical ethics
- demonstrate respect for, and the responsibility for, preserving human life from the time of conception and the need for human beings to live and be treated with dignity and humanity
- Accept and demonstrate the importance of team work in health delivery.

Skills

The students must be able to demonstrate appropriate:

- Communication skills.
- Clinical Skills.
- Promotive, preventive, rehabilitative skills and be able to organise and carry out health programmes in collaboration with other members of the health team to improve health.
- Management skills.

LIFE LONG LEARNING AND CONTINUING PROFESSIONAL DEVELOPMENT

The student should be able to demonstrate the importance of research in the management of patients and the advancement of medical knowledge and cultivate life long learning habits.

Further to the above, it is deemed essential to inculcate into the student a sense of patriotism to serve the motherland.

OBJECTIVES OF THE CLINICAL COURSES OF THE MB CHB DEGREE PROGRAMME

DEPARTMENT OF ANAESTHESIA

Objectives

At the end of the clerkship, the students should be able to: -

- assess patients properly before anaesthesia and surgery for both elective and emergency Operations
- know the types of anaesthesia that can be given for surgery, e.g. General Anaesthesia Regional techniques, different types of anaesthetic drugs, their side-effects and drawbacks
- take care of the critically ill patient peri-operatively
- resuscitate patients (CPR)
- know the various methods of pain relief and the problems associated with them

Lecture Topics

1. Introduction to Anaesthesia
2. Pre-Operative Assessment and Premedication
3. Intravenous General Anaesthesia Agents1-Thiopentone, Ketamine
4. Intravenous General Anaesthesia Agents 2-Propofol Other Agents Including Neuroleptics
5. Inhalational Anaesthetic Agents 1 - General Considerations Ether, Stages of Anaesthesia, Etc
6. Inhalational Anaesthetic Agents 2 - Halothane and Newer Agents
7. Muscle Relaxants 1- General and Deporalizers
8. Muscles Relaxants 2-Non-Deporalizers
9. Local Anaesthesia Agent 1- General Considerations Including Mechanism of Action
10. Local Anaesthesia 2- Clinical Applications and Techniques Including Spinal/Epidural
11. Pain Relief – Acute /Chronic Pain
12. Airway Management Including Endotracheal Intubation
13. Monitoring In Anaesthesia (Peri-Operative, Intensive Care)
14. Obstetric Anaesthesia & Analgesia
15. Emergency Anaesthesia

Tutorial Topics

1. Obstetric Anaesthesia & Analgesia
2. Airway Management Including Endotracheal Intubation
3. ECG
4. Post-Operative Complications
5. Chest X-Ray
6. Head Injuries & Management of the Unconscious Patient
7. Maintenance of Anaesthesia and Reversal
8. Difficult Airway, Assessment and Management
9. Intravenous Injection Techniques, Complications of Common Intravenous Anaesthetic Agents, and Their Management
10. Positioning In Theatre – Supine, Prone, Lateral, Sitting
11. Anaesthetic Machines and Circuits
12. Inadequate Ventilation – Causes, Management
13. Basic Life Support and Advance Cardiac Life Support
14. Local Anaesthetic Agents – Spinal, Epidural and Complications
15. Modes of Pain Relief (Acute and Chronic)
16. Anaesthesia for the Patient with Sickle Cell Disease, Diabetes
17. Anaesthesia for the Patient with Hypertension, Asthma
18. Management of Multiple Trauma Patients

Practicals

CPR1 Theory & Practical, BLS, Acls
CPR Practical Manikin Practices
N/B: Practical Theatre Sessions to Cover all the above and more

DEPARTMENT OF COMMUNITY HEALTH

Objectives

The goal of the department of community health is to train medical students to be able to identify major problems affecting the health of communities and their solutions.

The student should be able to function effectively as a Medical Officer at district level, and should be interested in deepening his/her knowledge and interest in the field of community health after the undergraduate course through medical update courses and research.

SENIOR CLERKSHIP PROGRAM IN COMMUNITY HEALTH

The Senior Clerkship in Community Health is to expose the medical student to the Health and Health Systems of the Country. It investigates whether the health facilities are meeting the health needs of the people in the rural and urban communities. Students get an indepth understanding of how the local government collaborates

with the various sectors of health. The programme relies on a strong understanding of the scientific basis of Community Health topics given during the Junior Clerkship programme and the contents of the Coordinated Course in Medicine and Surgery.

- Students rotate through the department in subgroups and for a period of 10 weeks covering the areas below
- Study of urban health system (Urban Health Programme)
- Ankaful Leprosarium programme
- District Clerkship
- Community Diagnosis at Danfa Rural area
- Field visits to major public health facilities in Accra and
- End of clerkship examinations (10-day programme)

The programme also aims at equipping students with skills in research, data analysis and playing advocacy role for health improvement.

Departmental Objectives of Community Health Training Programme

The goal of the department of community health is to train medical students to identify major problems affecting the health of communities and their solutions. The student should be able to function effectively as a medical officer at the district level, and should be interested in deepening his/her knowledge and interest in the field of community health after the undergraduate course through medical update courses and research.

Specific Objectives

1. Make a diagnosis of the health problems in a community, taking into considerations the major ecological factors, which influence health such as social, physical and biological environment
2. Draw up health programmes feasible for the existing health care system with due consideration of resources and interests of the community
3. Organize and carry out the programmes in collaboration with members of the health team and the community
4. Stimulate the community to modify their behavior with a view of improving their health status.
5. Administer health programmes and personnel, using appropriate management and evaluation techniques
6. Maintain the development of knowledge and skills in Community Health.
7. Carry out scientific investigations/research into the health problems of a community or individuals.

Field Stations:
Danfa Rural Health Centre
District Health Clerkship Hospitals
Akosombo Hospital
Apam Hospital
Nkawkaw Catholic
Nsawam Hospital
Suhum Hospital
Winneba Hospital
Atibie Hospital

Links with the Ministry of Health and other Organisations
Public Health Reference Laboratory
Disease Control Unit
Centre for Health Information Management
University of Westminster
Liverpool School of Tropical Medicine

Urban Health System (Urban Health Clerkship)
Study of urban health system (Mamprobi clerkship) Mamprobi, Kaneshie, Ussher, La, Mamobi Polyclinics

Learning Objectives
By the end of the rotations, the student will be able to:

Demonstrate knowledge of the staffing, functions and problems of the various units of the polyclinic (study the structure and administration of the polyclinic)

Participate in the different Health Services provided by the polyclinics and to assess their impact on the health consciousness and health status of the community.

Urban Health Programme
Students are to work closesly with the heads of the varios units – Senior PHN, Senior Nursing Office I/C of Maternity, Sister I/C of FP, Purchasing Officer, Lab Technician, Pharmacists, I/c Nutrition Rehabilitation Centre, Health Inspector etc. In order to learn how they function and also to observe the day to day problems encountered during the course of their work and how they go about solving them. Students are to participate in other field activities to the clinics.

Students should produce a report of their clerkship at the polyclinic and to provide feedback to the staff of the polyclinic as well as staff.

Pharmacy Unit

- Describe drug procurement
- Explain the need for Book – keeping (entries etc)
- Demonstrate knowledge about storage of drugs in the polyclinic
- Explain how drugs are dispensed including co-ordination with the prescriber

X-ray Unit

- To study types of x'rays usually done at the clinic
- To study protection form x'radiation from both staff and patients
- To study general problems with the x'ray machine
- To study storage and (weather) conditions for films
- Chemical and equipment

Laboratory Unit

- To participate and learn about
  Haemoglobin
  WBCs estimation and chemicals involved
  Sickling Tests
  Blood film for malaria parasites BF
  Urine tests, stools tests chemicals and procedure

Records and Statistics Unit

- to learn about data collection and analyst
- to learn about the various returns in the unit
- to learn about various forms used to collect information

Maternity Unit

- to participate in deliveries
- to observe cord dressing

The School Health Programme

- to learn about the functions of the school clinic
- to learn about the general sanitation of the school compound
- students participate in school hygiene inspection

Visit to 2 private Clinics in the district

- to learn about its organisation and functions

Visit to Environmental Health Department

- to learn about its organisation and functions

Ankaful Hospital Programme, Ankaful
(1 week field visit to leprosarium)

Objective of the Programme

1. To expose medical students to control of leprosy in Ghana
   - (i) Introduction: History of Leprosy, Bacteriology Epidemiology, slit skin smear (practicals)
   - (ii) Immunology, Evolution of lesions, Clinical features, Classification of leprosy, Clinical work in wards (examination of lesions)
   - (iii) Differential diagnosis, complications of leprosy, Reactions in leprosy, Clinical work in wards (assessment of disability)
   - (iv) Chemotherapy in Leprosy, MDT, rationale and administration, disability grade and prevention of disability, (practical orthopaedics and physiotherapy), Health education sessions with patients
   - (v) History of Leprosy in Ghana, Principles of Leprosy control and control measures, Charting of patients (practical) Post test, Video on Leprosy.

THE DISTRICT CLERKSHIP: INSTRUCTION GUIDE

A: **Work in Hospital**

The Objective of the Clerkship is to introduce the students to the types and management of medical problems seen in district hospitals

1. Students are required within the hospital setting to act as clinical clerks in all specialties as are relevant in their institutions for the entire duration of the clerkship.
2. They should examine patients, attend ward rounds, assist in the theatre, laboratory etc. and carry out assignments as are scheduled for them.
3. They are expected to do night duties and behave as if they were part of the staff of the hospital rather than as visitors. They should keep the regulations of the hospital.
4. Students should also learn the administrative problems of the running of the hospital – personnel, supplies, relationship to the community etc. through sessions with the Senior Medical Officer in charge and the Hospital Secretary
5. Students should take part in any outreach programme of the hospital to the district. They should also lean about the sanitation and hygiene of the district in general and of the hospital in particular e.g. water supply, refuse disposal and sanitary measures.
6. They must see some of the common endemic and communicable diseases e.g. Tuberculosis, Measles, Enteric Fever, Diarrhoea Diseases, Pneumonia, Infectious Hepatitis and study their pathogenesis and natural history.
7. They should also how common surgical and obstetrical and gynaecological cases are handled at the district level.

B. Work in the Community

Students should:-

(a) Take part in the programmes being carried out by the health workers in the field.

(b) Observe closely the roles of the various health workers in the team considering their background, training and experience with a view to a critical examination of their appropriateness for their tasks.

(c) Evaluate the effectiveness of the services e.g. is the service reaching all those at risk? Are the time at which the service is rendered convenient to the community? Are the services technically sound and are they achieving the desire objectives?

(d) Participate in the following programs; Health Education to selected target population such as School Health, Home visiting, Communicable disease control and Environment Sanitation. In particular for Environmental Sanitation.

Environmental Sanitation

With Health Inspector and accompany him on at l east three normal duty rounds, and also do special on site inspections with him. Identify sanitation problems in the health institution and the community. Discuss problems

Examine drinking water resources of the community and visit sites of refuse disposal (solid waste) and methods of excreta disposal e.g. wells, ponds, pit latrine construction and sitting. Examine drainage system and determine any health hazards posed.

Food hygiene – slaughtering of animals, food handling, markets, chop bars and drinking places. Examine and discuss vector problems and see what measures of control are used.

Inspect housing in the community, sitting, structures, ventilation, drainage, refuse disposal over crowding, physical planning of community roads, traffic problems, play grounds and other community amenities.

Vital Events (Births and Deaths) Recording
Study procedures and forms used for collecting vital and epidemiological data and how data are dispatched to the centre. Is there a feed-back of information from the centre (e.g. Regional Headquarters, or Ministry of Health, Accra) what are the problems of Maternal Mortality Rate, Crude Death Rate etc) Suggest improvements.

C. Health Administration

Students should familiarize themselves with the administrative set up for health from Regional MOH down to the local level. What are the lines of authority? How is planning done? What is the method for reviewing performance of health staff at the local level? Who forms the health team? Is the work-load evenly shared?

How do the workers reach out to the community? Is there easy communication with higher levels of health administration? Study the relationship of the local health institution to the local administration and to private medical care in the community.

Local Health Committee or District Council or Town Management Town Management Council
Students should find out the structure of local administration of the community (traditional and modern), and determine how this enhances or impedes health progress.
Who are the opinion leaders in the community? The student must attend one meeting at least of a health committee or any such equivalent body. Students must keep a log book of their activities.
Students should also record in the log book some basic statistical information about the hospital and the district. Information should be gathered about the number of hospital beds, numbers and types of personnel; out-patient attendance, in-patient statistics, spectrum of diseases seen; age and sex distribution of patient etc.

A brief district profile should also be included:

Log Book Account of District Clerkship: Summary
The lay out should include: Date, Place of Activity, Description of Activities and comments. The comments should include notes on topics covered as well as lessons learnt.

DANFA DISTRICT CLERKSHIP (TWO WEEKS)
The main activity is the community diagnosis of one of the villages or communities in or around Danfa Project Area 1. Then visits to programmes in other health related sectors such as the Abokobi Rural Bank, Abokobi Agricultural Project, Centre for Plant Medicine and Research, Mampong School for the Deaf and others.

Grand Round
At the end of the rotation, a grand round will be held in the conference room where a report of the community diagnosis will be presented. Almost all the members of staff of the department will be present. Different individuals read out findings in the areas of History of the Village, demographical findings, and source of water, environmental sanitations, and attitudes towards common endemic diseases, immunization status etc. and recommendations. This should be put in a form of a report for the department.

FORMAT OF REPORT
The reports should consist of:
Introduction
Location of the village from Danfa Health Centre
Provide the historical background of the village
Description of the layout of the houses and important landmark,
Eg. Chief's palace.
The type of vegetation, the ethnic composition of the population
The occupation and major economic activity of the people.

Rationale or reason for the survey of the clerkship
1. To study the health situation of the village with the mind to identify any serious endemic diseases and any factor that would militate against achieving a higher health status, be it directly or indirectly.
2. To highlight the felt needs of the community
3. To make recommendations based on the survey findings as to how to improve the health status of the people with emphasis on the use of local resources and feasible economically accessible methods.

Describe the main and specific objectives, for example to determine

a. the demographic indices
b. the level of environmental sanitation
c. the nutritional status of children under 5 years
d. the level of immunization
e. the prevalence of malaria, helminthiasis and schistosomiasis
f. the accessibility and utilization of medical facilities
g. finally the utilization of Maternal Child Health and Family Planning Clinics

METHODOLOGY

Describe all the steps taken from preparation of instruments and the arrangement for the field work. The subject areas of the questionnaire, the samples to be taken form the subjects, any measurements. The laboratory examinations and the nature of the analysis to be done.

limitation of the methodology

Specify any issue which should be taken into consideration in the report of the study.

DATA ANALYSIS AND PRESENTATION OF RESULTS

Demography

Total Population and age-specific population size of interest to health programmes. Migration and mortality rate estimates. Ethnic composition, occupational status, religious and educational status.

Environmental Health

A description of the environmental situation, housing, water supply, refuse disposal facilities, drainage, excreta disposal.

Sources of health care, disease burden, nutritional status, knowledge, attitude and practice regarding health habits and illnesses. Immunization status and use of health services.

Felt needs of the community

Discussion

Discussion of the results of survey and field activities and interpretation of results

Recommendation

Appropriate recommendations based on findings and discussions should be included.

REPORT ON THE FEEDBACK TO THE COMMUNITY

After the community diagnosis in the village, a report of your findings and recommendations must be presented to the community

One Week Programme:
Field visits to major public health facilities in Accra

DAY/DATE	TIME
Monday	1. Students meet with Faculty (8.30 am) 2. Statistics 3. Centre for Health Statistics (3.30 – 5.00 pm)
Tuesday	Occupational Health - Visits and Discussion (8.30 am) - Lecture (1.00 pm)
Wednesday	1. Slaughter House (8.30 am) 2. City MMOH 3. Seminar on Environmental health Problems (2.00pm)
Thursday	1. Waste management department Lecture and Visit (8.30 am) 2. communicable Diseases Hospital (11.00am) 3. Weija Water Works (12.00pm)
Friday	1. Port Health – Tema (8.30 am) 2. epidemiology (2. 00 pm)
Monday	Public Health Advocacy (All staff) (8.30 am) Collection of Log Books
Tuesday	Free
Wednesday	End of Clerkship Examinations
Thursday	1. Oral Examination 2. Evaluation (All staff and students)
Friday	Free

ADVOCACY TOPICS

Public Health Advocacy
The purpose of this is to give students the opportunity to critically examine important issues of the public health concern. It is now well recognized that health development requires intersectoral and multidisciplinary approach although doctors diagnose solutions. The learning objectives, the students should be able to:-

1. write reports, memoranda, position papers
2. present such papers at a plenary of their peers and staff
3. evaluate the work of their peers

Students ballot for topics on issues of public health concern at the beginning of their sub internship. About 8 weeks later, the students make presentation which is criticized by their peers and the faculty. The content, style logic and the scientific basis. Style of presentation and how convincing the arguments are count in the award of marks.

Examples of some of the topics

1. Make a case for male involvement in family planning in Ghana
2. One of the effective strategies identified for the prevention and control of malaria is the use of insecticide-treated mosquito nets (ITNs). Discuss the factors that affect their adoption and appropriate use.
3. Make a case against the Ministry of Health's policy of promoting exclusive breastfeeding for the first six months of an infant's life. Discuss
4. Rural electrification or portable water for all rural communities. Take a stand and defend it.
5. Treatment and counseling of rape victims are both vital for recovery and help create a feeling of safety in addition to providing opportunities to talk about the violent experience. Make a proposal for the exemption policy to cover these two services.
6. The future of Traditional Medicine in Ghana. Discuss
7. Support for extended family members in dwindling because of Interstate Succession Law. Discuss
8. At a Ghana Medical and Dental Council Meeting you were appointed the leader of a committee responsible for looking into the topic "Medical education in Ghana is clinically biased. There is an urgent need to incorporate and strengthen other relevant components." Give an outline of your report and recommendations.
9. Antiretroviral drugs are being introduced on a larger scale in Ghana by December. Is it the solution to

the dilemma of HIV/AIDS? Discuss.

10. Evaluate the DOTS management of TB in Ghana
11. What accounts for the lack of reliable health statistics in Ghana? Give suggestions for improvement
12. Alcohol and Tobacco Industries in Ghana are a necessary evil. Discuss
13. Health is too important to be left in the hands of doctors alone. Discuss
14. You are a principal speaker at a national road safety campaign to be launched on Christmas Eve at Nsawam. Give an outline of your speech
15. Emancipation of the female species in Ghana is only in name. Discuss
16. Make a case for male involvement in family planning in Ghana
17. Make a case for Post Mortems for all deaths.
18. Accra remains filthy. Trace what has been done in the past and suggest what can be done.
19. Discuss the Human Rights Implication of anti-armed robbery campaign by the Police/Military
20. Numbers are increasing daily despite massive public education on measures to stop the spread of HIV. Sex between married couples is a major factor. Discuss
21. Privatization of water. Is it a viable alternative?
22. Make a case against Capital Punishment
23. Maintenance of the Aged in Ghana is becoming a big problem. As a concerned citizen discuss how this problem could be managed
24. Make a case for making HIV counseling and testing during the antenatal period mandatory
25. Discuss the Human Rights implication of selecting some HIV/AIDS patients for subsidized treatment with antiretroviral drugs in Ghana
26. Assess the impact of Oral Re-hydration Therapy (ORT) 35 years after its introduction in 1968
27. The Community Based Health Planning and Services (CHPS) arrangement remains the Key Strategy for expanding health service provision in Ghana. Discuss.
28. Why has the Guinea Worm Eradication Programme experienced mixed fortunes over the years?
29. One of the focal points of the Ghana Poverty Reduction Strategy (SGPRS) is the HIV?AIDS pandemic. Why this emphasis.
30. The introduction of Additional Duty Hours Allowance (ADHA) and the establishment of a Vehicle Revolving Fund for Health Workers are viable measures to retain Ghanaian Health Workers. Discuss
31. Each year, April 7 is celebrated as World Health Day. Describe its significance to Ghana's Public Health Delivery System.
32. Health is both a consequence and a cause of poverty. Discuss
33. Adequate efforts are being made by MOH/GHS to ensure universal access to a range of reproductive health services for eligible Ghanaians. Discuss
34. Make a case against the Donor-pooled Fund popularly known as the common basket. Assess progress being made by the GHS towards the elimination of maternal and neonatal tetanus by 2005
35. Financing Tertiary Education in Ghana: The way forward. Discuss
36. World Rural Women's Day is celebrated every year on October 15. Write a memo to the Minister for Women Affairs on the plight of the rural Ghanaian Women
37. Make a case for allocating resources for SARS
38. The carnage on our roads has become a national concern. Suggest strategies to reduce it.
39. The Government's proposed policy for financing health care is health insurance. Discuss how this policy is being implemented.
40. Majority of Ghanaians do not have safe water. The Government has no money to extend the present system to cover all Ghanaians. Suggest ways to extend services.
41. The environmental Health Unit used to be under Ministry of Health (MOH). It is now under the Ministry of Local Government and Rural Development. Discuss the advantages and disadvantages on this transfer.
42. Write a memo to the Vice President suggesting strategies which should be adopted to make his campaign against indiscipline more successful.
43. The proposed National health Insurance scheme is intended to cover all Ghanaians in the near future. Yet, 70% of the working force is in the non-formal sector and 40%of Ghanaians are living below the poverty line. A good ministerial task force on health care financing explaining how the 100% coverage can be achieved.
44. "It is said that malaria treatment is less expensive than its prevention and we are therefore better of spending the little resource on malaria treatment. Discuss
45. It appears while communicable diseases are being brought under control, non-communicable diseases are on the increase. Discuss the problem and its implications.
46. Water is essential to life and the past large outbreaks of disease and many deaths were water associated. Compare and contrast the Government's recent pronouncement on water supply against the

background of water use as enshrined in the PHC concept.

47. The wide gap between antenatal coverage (98.4% in 2001) and supervised delivery (50.4% in 2001) remains a major challenge to the Ghana Health Service. Suggest feasible ways of closing the gap.
48. Reproductive and Child Health programmes focus more on the client and on quality of care. Discuss
49. Fifteen years after the Safe Motherhood Conference in Nairobi, Kenya, Ghana's institutional maternal mortality rate increased to 2.6/1000 LBS (from 2.14/1000 LBS). Identify effective strategies to reverse this trend.
50. The provision of quality health care to underserved communities depends on partnerships. Discuss. How would you use advocacy as a primary tool to change health policies, laws and programmes.
51. Financing Health Care should it be Cash and Carry or Health Insurance?
52. Accra is being invaded by physically challenged persons. How do we reverse this trend?
53. You have been asked by the Family Health International representative in Ghana to present a paper at one of its programme planning meetings on the topic "Interdisciplinary and interdepartmental approach to HIV prevention among women of reproductive age." Give an outline of your objective(s) strategies and action plan.

EXAMINATION FORMAT

Section A (One Essay – 50 marks)

1. Briefly describe the epidemiology of Guinea worm infection in Ghana. What control measures might be appropriate for a large rural Community.
2. Discuss the management and control of Cerebro Spinal Meningitis in Ghana.

Section B; (10 short essay type questions – 100 marks)

4. Sketch the life cycle of Plastmodium falciparum. Distinguish between stable and unstable malaria
5. What factors account for the resurgence of yaws in Ghana
6. What is "vaccine administration rate?" Briefly outline the importance of this rate in an immunization programme.

Section C: (50 multiple choice questions – 100 marks)

1. All the following are complications of malaria
   (a) Comma without localization of malaria
   (b) Hyperpyrexia with acute mental change
   (c) Decreased intravascular haemolysis
   (d) Hyperplastic intravascular splenomegaly
   (e) Acute renal failure
2. Surveillance of communicable diseases implies
   (a) The continuous scrutiny of all factors related to disease occurrence and control
   (b) Periodic prevalence field surveys
   (c) Ad Hoc study of Laboratory findings
   (d) Study of incidence of notifiable diseases
   (e) Development of trends in incidence of the diseases
3. The signs and symptoms of malaria in young children include all of the Following:
   a) Spleen Enlargement
   b) Anaemia
   c) Convulsion
   d) Diarrhoea
   e) Vomiting

LONG ESSAYS TOPICS

1. A survey of Nutritional Status of under-fives in a village community (ASUBOI) using Anthropometric Assessment
2. A study of the Nutritional Rehabilitation Programme at the Kotobabi Rehabilitation Centre
3. Birthweights and perinatal mortality in Ghana
4. A study of the use of local substitutes in the preparation of Complementary Feeds in the Mamprobi Area, Ablekuma District
5. A study of Morbidity and Mortality Patterns among Low Births Weight Infants in Korle Bu Teaching Hospital
6. Feeding cost and its effects on the health and nutritional status of families at Adabraka – A suburb of Accra

7. A study of knowledge, attitude and practice of men towards contraception at Korle Bu Polyclinic
8. Infant feeding habits amongst hospital staff (doctors and nurses) and nursing mothers at the Korle Bu Teaching Hospital Accra.

CENTRE FOR TROPICAL CLINICAL PHARMACOLOGY AND THERAPEUTICS

Courses in clinical pharmacology are taught during the coordinated course in medicine. During the subintern period a more patient based programme will be followed. The objective of this clinically based programme is to assist the potential doctor in the art of decision making in therapeutics when he or she is confronted with a patient.

Week 19			
	MON	AM	Use and Misuse of Antibiotics
		PM	Commonly used Antibiotics
	TUE	AM	Drug Treatment of Malaria
		PM	Controlled Drugs and Dependence
	WED	AM	Clinical Trials
		PM	**Seminar:** Management of Drug Overdose and Poisoning
	THU	AM	Drug Formulations, Bioavailability and Bioequivalence
		PM	Introductory Clinical Pharmacokinetics
	FRI	AM	Vaccines and Vaccination
		PM	
Week 20			
	MON	AM	Antibiotic Prophylaxis in Surgery
		PM	Prescription writing
	TUE	AM	Drug Management of cardiovascular Disorders
		PM	Prescription Writing
	WED	AM	Drug Treatment of Common Infestations
		PM	Standard Treatment Guidelines & Essential Medicines List
	THU	AM	Adverse Drug Reactions, Principles of Drug Interactions
		PM	Prescription Writing
	FRI	AM	Non-steroidal Anti-inflammatory Drugs
		PM	

DEPARTMENT OF CHILD HEALTH

Objectives

By the end of the programme the student

1. should have been exposed to the socio-economic and cultural factors that influence the health of children in Ghana. (Community Paediatrics)
2. should know about nutrition, growth and development and their abnormal states. This includes children with special needs.
3. should have acquired the relevant knowledge and skills necessary to take care of the more common child health problems in an emergency (emergency paediatrics)
4. should know and be able to manage the common diseases among children in Ghana and the west African sub-region (acute paediatrics)
5. should have been exposed to the health needs of adolescents. (Adolescent paediatrics)

Undergraduate Curriculum for the Department Of Child Health

1.	Course Title	-	Undergraduate Curriculum in Child Health & Paediatrics. UGMS
2.	Target Group	-	2nd Clinical Year UGMS Students
3.	Course Duration	-	24weeks Junior Clerkship 8weeks x 3 groups 16weeks Senior Clerkship 8weeks x 2 groups 2weeks Revision Period 2weeks Final Part I Exam
4.	Concurrent Courses	-	Specials and Obst. & Gynae during the Junior Clerkship Obst. & Gynae during the Senior Clerkship

Programme Rationale

Goal/Aim

At the end of the clerkship the student:

- should be armed with adequate knowledge, skills and attitude to enable him elicit a good history from the patient
- perform a physical examination to formulate a reasonable problem list (differential diagnosis)
- manage the medical problem
- draw up plans to prevent further occurrence and
- promote the healthy growth and development of the patient involved.

Objectives:

By the end of the programme the student:

a. Should have acquired the relevant knowledge, skills and attitudes to take care of common child health emergencies that present to the emergency room (emergency paediatrics).
b. Should know and be able to manage common acute diseases that affect children in Ghana and the West African Subregion (Acute paediatrics).
c. Should know and be able to manage as well as follow up children with chronic childhood diseases. (Chronic paediatric problems)
d. Should know about nutrition, growth and development requirements of children and their abnormal states including the children with special needs.
e. Should know and be able to manage the common conditions that affect the neonate (Neonatal paediatrics)
f. Should have been exposed to the health needs of the adolescent patient (Adolescent paediatrics)
g. Should be knowledgeable of the socio-economic and cultural factors that influence the health of children in Ghana (Community paediatrics).

CRITERIA FOR ADMISSION

Students who have successfully completed the 1st clinical year of the UGMS. Other students with equivalent qualifications may be admitted at the discretion of the UGMS/CHS/UG Admission Board.

Student Progression in the Course – Assessment

The course is divided into junior and senior clerkship sessions of eight weeks duration each. The student will be examined at the end of each session. The examination will be a theory written paper and a practical clinical examination in each session. The exam scores constitute continuous assessment and contribute 30% of the final marks.

Teaching and Learning Methods
The following teaching methods will be used. Their percentage contribution to the total number of teaching contact hours is included in brackets.

1. Didactic lectures (7%)
2. Small group classroom tutorials (7%)
3. Investigative Research Techniques (14%)
4. Bedside Teaching & Practical Hands on experience (72%)

Didactic Lectures
These are teacher – led and teacher – implemented activities. A series of lectures on a range of topics (see curriculum content) are given throughout the year to the whole class. Those one-hour lectures will be held once a week. Lecturers are senior members from the Department of Child Health or other relevant departments. The topics for lecturers are reviewed periodically and changed as necessary to keep them vibrant and relevant to the changing needs of the country.

Tutorials
These are held two times a week for the group of students doing their paediatric clerkship at the time. Tutorials combine student-centred learning and tutor-led activities. They are interactive tools where the students read about the topic to be discussed before hand. The tutorial time is then spent discussing the topic in a tutor-led session.

Bedside Teaching/Practical Hands on Experience
This combines student led and tutor led activities. These are held in small groups several times a week and take various forms viz:

1. The teacher selects a patient or patients with the clinical signs and symptoms he/she wants to teach about. He/she takes the students through that particular session.
2. The student presents the history and examination findings of a patient he has clerked to the teacher and the rest of the students, for discussion.
3. The student joins the general ward round of the consultant. Here he learns mainly from observing the teachers' examination skills and discussion with doctors in training.

Direct hands-on experience
The students act as a sub-intern during the second half of his/her clerkship. He/she is member of the paediatric team attending emergencies and other referred cases during his/her team's duty days. He/she consolidates his history, examination and investigative skills. He/she develops procedural skills such as venepuncture, placing intravenous lines, and lumber puncture, under supervision.

Investigative Research Techniques
The students participate in a Community Paediatric Project in which a topic in community paediatrics is selected and investigated. There are two such topics in the academic year, one in junior and one in senior clerkship. The findings of their research are written up and presented to faculty and invited guests at an open forum.

Teaching Space
For efficient teaching the department needs adequately sized tutorial and lecture halls to meet the student intake needs. We also need one side laboratory for basic investigations.

Other hospitals with part-time lecturers could be used for small group teaching attachments.

Support Services
The department should have a departmental library. In addition the main UGMS library should have paediatric holding, a well-equipped computer room with internet access, LCD projector, CD ROMs for teaching, photocopying facility and other teaching requirements.

Teaching Staff
The teaching staff will be employed by the University of Ghana. The faculty establishment is 18 – 21 for senior members and an unspecified number of part time lecturers and teaching assistants.
Teaching assistants will be holders of the Membership Diploma of West African College of Physicians. Membership of Ghana College of Physician and Surgeons and its equivalent.
Lecturers will be holders of the Fellowship of the West African College of Physicians or of the Ghana College of Physicians and Surgeons, or equivalent qualifications. Equivalence of qualifications will be determined by

the University of Ghana.

Certification

Student Progression in the Course – Assessment will be done by:

a. Continuous Assessment and
b. End of Course Examination

The student will have 3 examination assessments; one at the end of junior clerkship, one at the end of senior clerkship, and the last one at the end of the academic year named the MB ChB Part I Final exam.

The student should have attended a minimum of 80% of the course as assessed by the faculty.

The final examination at the end of the programme consists of 3 parts.

Theory - A written paper consisting of 2 parts; an essay type paper and multiple choice paper.
Clinical Exams - One long case, 3 – 4 short cases
Oral Exams - Viva Voce

The open marking system will be used throughout the examinations with a pass mark of 50%. The candidate must pass the clinical examination to pass the examination. They must also have an overall pass mark of at least 50%.

The unsuccessful candidate will be referred to take the supplementary exam 6 weeks after the finals but where a candidate has failed both Child Health and Obst. & Gynae examinations, he/she may be asked to repeat or redo the whole year.

A candidate who fails the supplementary exam will be required to repeat the year.

Quality Assurance

This will be ensured by:

1. The presence and reports of external examiners at the examination
2. Implementation of external examiners recommendations
3. Employers' appraisal

KNOWLEDGE CONTENT

1. Recognize common child health emergencies, identify their cause and manage appropriately.
   - Dehydration
   - Shock
   - Severe Anaemia
   - Convulsions
   - The Unconscious Child
   - Acute Respiratory Distress
   - Airway Obstruction
   - Acute Abdomen

2. Recognize common acute paediatric infection and their complications and manage appropriately
   - Malaria
   - Meningitis/ Encephalitis
   - Pneumonias
   - Urinary Tract Infection
   - Otitis Media
   - Pharyngotonsillitis
   - Tuberculosis

3. HIV/AIDS

4. Viral Infections

5. Enteric Fever

6. Cardiac Problems
   - Circulatory changes at Birth
   - Congenital Heart Disease (CD)
   - Cyanotic CHD
   - Acyanotic CHD

6.3 Acquired Heart Disease
6.3.1 Rheumatic Heart Disease
6.3.2 Infective Endocarditis
6.4 Cardiomyopathies
6.5 Cardiac Failure

7. Respiratory Problems
7.1 Respiratory Infection
7.1.1 Upper respiratory tract infection
7.1.2 Lower Respiratory Tract Infections
- Pneumonias
Bronchiolitis
Empyema
7.2 Respiratory Tract Obstruction
7.2.1 Upper Respiratory Tract Obstruction
7.2.2 Asthma

8. Renal Problems
Nephrotic Syndrome
Glomerulonephritis
Renal failure
Pyelonephritis/UTI
Renal Anomalies
Renal Masses

9 Gastrointestinal /Liver Problems
Gastroenteritis /Diarrhoea Dehydration
Abdominal Pain
Malabsorption
Inflammatory Bowel Disease
Hepatitis
Acute Liver Failure
Chronic Liver Disease

10. Nutrition
10.1 Normal Nutrition
10.2 Kwashiorkor
10.3 Marasmus
10.4 Micronutrient deficiency

11. Haematologic Problems
11.1 Anaemias
11.2. Sickle cell Disease
11.3. Bleeding Disorders
11.4. Blood Transfusion

12. Oncology Problems
12.1 Leukaemias
12.2 Lymphomas
12.3 Other Solid Tumours
12.4 Principles of Chemotherapy

13. Neonatal Problems
13.1 Neonatal Resuscitation
13.2 Low birth weight Infant
13.3 Birth Asphyxia
13.4 Birth Injuries
13.5 Neonatal Jaundice
13.6 Neonatal Sepsis/Infection
13.7 Neonatal Seizures

13.8 Congenital Anomalies

14. Growth and Developmental Problems
    - 14.1 Normal Growth
    - 14.2. Normal Developmental Milestones
    - 14.3. Abnormalities in Growth
    - 14.4 Abnormalities in Development
    - 14.4. 1. Learning Difficulties

15. Skin Disorders
    - 15.1 Rashes of Infancy
    - 15.2 Viral Exanthems
    - 15.3 Allergic Erruptions
    - 15.4 Skin manifestation of Systemic Disease

16. Endocrine and Metabolic Disorders
    - 16.1 Diabetes Mellitus
    - 16.2 Hypoglycaemia
    - 16.3 Thyroid Disorders
    - 16.4. Other Inborn Errors of Metabolism

17. Genetics
    - 17.1 Common Chromosomal Abnormalities
    - 17.2 Congenital Anomalies

18. Bone and Joint Disorders
    - 18.1. Osteomyelitis
    - 18.2. Septic Arthritis
    - 18.3 Congenital Disorders of Hip, Knee and Feet
    - 18.4 Connective Tissue Disorders

19. Neurological Disorders
    - 19.1. Infections
        - 19.1.1. Bacterial
        - 19.1.2. Viral
        - 19.1.3. Tuberculous
    - 19.2. Seizures
    - 19.3. Cerebral Palsy
    - 19.4. Neurology Abnormalities
        - 19.4.1. Neural Tube Defects
        - 19.4.2. Hydrocephalus etc
    - 19.5. Neuromuscular Disorders
    - 19.6. Neurodegenerative disorders
    - 19.7. Disorders of Vision/Hearing/Speech

20. Behaviour Disorders
    - 20.1 Psychiatric Disorders
    - 20.2 Autism
    - 20.3 ADHD
    - 20.4 Drug Abuse

21. Injuries and Poisonings
    - 21.1. Non Accidental Injuries
    - 21.2. Accidental Ingestion/Inhalation

22. Psycho Social/Community Paediatrics
    - 22.1. Integrated Management of Childhood Illnesses (IMCI)
    - 22.2. Immunization
    - 22.3. Child Survival Strategies
    - 22.4. Communicating with Families

22.5. Child Protection/Child Abuse

23. Paediatric Surgery
    - 23.1. Neonatal Surgical Emergencies
    - 23.2. Other Childhood Emergencies
    - 23.3. Common Surgical Problems
    - 23.4. Burns
    - 23.5. Trauma

24. Childhood Dental Problems
    - 24.1 Dental Problems in the Child
    - 24.2. Dental Developmental Problems
    - 24.3. Oral Manifestation of Systemic Disease

25. The Child and the Law and Society
    The Rights of the Child

CURRENT WHOLE GROUP LECTURE SERIES

1. Overview of the Normal Child and the Sick Child
2. Paediatric Haematology I & II
3. Common Malignancies
4. Endocrine and Metabolic Disorders
5. Paediatric Respiratory Disorders I & II
6. Paediatrics Nephrology I & II
7. Childhood TB
8. Neonatal Paediatrics I & II
9. Paediatric Cardiology I & II
10. Nutrition and Nutritional Disorders
11. Surgical Paediatrics I & II & III
12. Childhood Dental Problems and Service I & II
13. Growth and Development
14. Psychosocial Paediatrics I & II
15. The Child, Society and the Law I & II

CURRENT SMALL GROUP TUTORIAL TOPICS

Junior Clerkship

16. Examination of Newborn/Low Birth Weight
17. Congenital Infections and Neonatal Sepsis
18. Neonatal Asphyxia and Neonatal Resuscitation
19. Neonatal Jaundice
20. Vomiting in 1st week of life
21. Infant feeding and PCM
22. The 8 diseases in Ghana's Childhood Immunization Programme and Rubella
23. Integrated Management of Childhood Illnesses: Overview
24. Diarrhoeal Disease and Fluid Therapy
25. Malaria
26. Meningitis and Ecncephalitis
27. Enteric Fever/PUO
28. Acute Respiratory Distress
29. Sickle Cell Disease

Senior Clerkship

1. Child Survival Strategies
2. Child Abuse
3. Obstructive Respiratory Disorders
4. Anaemia
5. The Floppy Infant
6. Seizure Disorders and Cerebral Palsy
7. Bone and Joint Disorders
8. Accidental Poisoning in Children
9. AIDS in Children

10. Parasitic Infestation
11. Assessment of Vision/Hearing and its Disorders
12. Clinical X-Rays I (Abdominal, Skeletal, Brain CT)
13. Clinical X-Rays (Cardiorespiratory)
14. Communicating with families, Health Education, Bad News

Clinical Skills Development

The student, at the end of the programme, should be familiar with the following procedures, having actually done them (A) or having observed the procedure (B).

A

- Detailed history taking
- Comprehensive clinical examination of new patient
- Follow up examination of patient
- Urinalysis at bedside
- Weighing and measurement of Child (patient) and plotting on charts
- Measurement of blood pressure using the appropriate cuff for size of Child
- Venepuncture – taking samples or getting IV access
- Examination of ear drum
- Examination of throat
- Catheterization of bladder
- Setting up a drip
- Administering oxygen
- Suctioning a patient
- Paediatric Resuscitation
- Neonatal Resuscitation

B

- Lumbar Puncture
- Exchange transfusion
- Blood transfusion
- Suprapubic aspiration
- Fine needle aspiration
- Chest tube insertion
- Simple incision & drainage (I+D)
- Bone marrow aspiration

DEPARTMENT OF MEDICINE AND THERAPEUTICS

The Department of Medicine and Therapeutics is the second largest department in the University of Ghana Medical School comprising the clinical and academic/research sub-specialties units of cardiology, clinical pharmacology, dermatology, endocrinology, gastroenterology, infectious diseases, nephrology, neurology, nuclear medicine, and respiratory medicine. Aside from running undergraduate courses in internal medicine, the Department organizes programmes for other academic and higher professional qualifications at the masters level and for membership and fellowship diplomas for the Ghana College of Physicians and Surgeons and the West African College of Physicians. The department is additionally responsible for the provision of clinical services to the Korle-Bu Teaching Hospital in Accra covering the areas of chest diseases, drug addiction, infectious diseases, kidney dialysis, adult medical emergency, general medical and sub-specialty in-patient and out-patient services.

Mission

The mission of the Department is to produce highly disciplined, scientifically knowledgeable and skilled clinicians capable of functioning effectively in any rural or urban medical set up in Ghana, and working at a standard acceptable in the international community of medicine.

Courses

The Department organizes and runs the following courses:

a. Introduction to Nursing (Level 500): Duration - 1 week

This course introduces pre-clinical students to common nursing procedures and practices.
It is run by senior nursing practitioners and tutors.

b. Introductory Course in Clinical Medicine (Level 500): Duration - 4 weeks

This course is intended to help the 1st clinical year student acquire skills in gathering of clinical information from history taking and physical examination. It consists of clinical demonstrations on the ward and lectures as well as an introduction to medical ethics. The course is evaluated towards the end by a written examination and a feedback session with tutors.

c. Junior Clerkship (Level 500): Duration - 24 weeks

This is a coordinated course undertaken in conjunction with the Department of Surgery. The course consists of daily lectures covering all the internal medicine sub-specialty areas together with bedside teaching and tutorials on the wards for two groups of continuing 1st clinical year students, each spending 12 weeks in medicine or surgery, followed by the other discipline for another 12 weeks. The course emphasizes the application of clinical techniques and laboratory/radiological investigations in making a diagnosis in different clinical scenarios. It is evaluated in the 12th week by both a written and clinical examination as well as a feedback session with tutors.

d. Dermatology Course (Level 600): Duration - 24 weeks

This course for 2nd clinical year students consists of weekly lectures and clinical out-patient sessions for three small groups, each spending 8 weeks in dermatology and two other specialty areas (psychiatry and otolaryngology). The course is evaluated by a written examination.

e. Senior Clerkship (Level 700): Duration - 40 weeks

This course is provided for students in their final year coming to the Department in four separate groups for 10 weeks each. Other rotations during this period include general, orthopaedic and urological surgery and community health. It is a more concentrated and detailed course in internal medicine covering all aspects of diagnosis and patient management. The focus is to prepare the student for the housemanship or internship after graduation. There are no formal lectures, however, numerous teaching and learning opportunities exist at all times during ward rounds, bedside teaching, emergency room and out-patient reviews and at weekly Friday clinical meetings. Students are also required to organize weekly student-led clinical presentations which are supervised by a tutor. Students are additionally encouraged to develop the ability to acquire knowledge and information from recommended reference books, journals, other library material and reliable internet sources. Two weeks of this rotation are spent in a hospital outside Korle Bu Teaching Hospital and another two at the mortuary. At the mortuary students learn to carry out a basic autopsy examination and to appreciate the correlation between ante-mortem diagnosis and post-mortem findings. The course is evaluated by a written and clinical examination which forms part of the continuous assessment for the final MB ChB examination.

Basic Requirements for the Courses

Students must acquire the following for all clinical courses in internal medicine; white coat, approved name tag, wrist watch with a ‘seconds’ hand, stethoscope, pocket torch, tendon hammer, measuring tape and pocket-size diagnostic set.

Expectations

Students would be expected to have mastered the following procedures and/or be certified by a tutor or clinical assistant to have repeatedly performed the following by the end of the sub-internship; veni-puncture for blood samples, insertion of intravenous lines, preparing of thick and thin films for malaria parasites, staining blood film for malaria parasites, Gram's and Zeihl Neilson staining of sputum, urinalysis, blood glucose testing with a glucose meter, lumbar puncture, thoracocentesis, abdominal paracentesis, electrocardiogram lead placement and recording.

They would also be expected to have observed the following; liver and renal biopsy, haemodialysis, pleural biopsy, bronchoscopy, colonoscopy and gastroesophagoduodenoscopy.

DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY

Objectives

The objective of the course is to produce a student

1. who is equipped with the attitude, knowledge and skills he/she will need to develop into a competent doctor after completion of his/her housemanship (internship) training

2. who will have a sound foundation for specialist training in Obstetrics and Gynaecology if he/she so desires.

LEVEL 600 - SENIOR CLERKSHIP
OBSTETRICS AND GYNAECOLOGY WORKSHOP
Tuesdays/Fridays
2.00 - 4.00 p.m.

Student Team	**Subject**
E	The Bony Pelvis. Landmarks and Diameters. Features of Gynaecoid, Android pelves, anthropoid, platypeloid. Value of adult gynaecoid pelvis. Assessment of pelvic capacity; Clinical and radiological. The fetal skull.
D	Fetal Distress in Labour. Clinical Fetal Distress, Bio-chemical Fetal Distress, Diagnosis, monitoring cord presentation and cord prolapse. Resuscitation of the newborn
B	Normal and Abnormal Labour The Partograph
A	Adolescent Pregnancy
C	P.P.H.
E	A.P.H.
C	Face, Brow, Shoulder and Compound Presentations. Incidence, aetiological Factors, diagnosis, Management. Maternal and Fetal Complications.
A	Breech presentation. Incidence; Aetiological factors: Diagnosis. Antenatal Management; External Cephalic Version (ECV) Contra-Indications. Complications: Precautions. Management of Breech Labour; Maternal
B	Post-Menopausal Bleeding (PMH) Definition Aetiology. Investigations Management
C	Recurrent Abortion, Septic
D	Maternal and Perinatal Mortality Rates Definitions. Prevention of Maternal & Perinatal Deaths.
A	Pain Relief in Labour

LEVEL 600 - SENIOR CLERKSHIP
WORKSHOP SCHEDULE

LECTURES:	Tuesdays	8.30 a.m. to 9.30 a.m.
	Thursdays	4.00 p.m. to 5.00 p.m.
CLASS WORKSHOPS:	Tuesdays	2.00 p.m. to 4.00 p.m.
	Fridays	2.00 p.m. to 4.00 p.m.

Guidelines for Class Workshops

The Residents shall prepare a comprehensive outline of the subject. He shall first discuss the outline with his Consultant and then with the students of the Team who are to present the subject.

The Residents shall moderate the presentation and discussion. At the end the Consultant shall summarise, emphasizing the core points of the subject.

Clerkship Hand-Out

You are all welcome into the Department of Obs/Gynae. I will like you to appreciate that in this department you deal with the most personal and intimate parts of the females and hence your approach to the patient should be very tactful and polite.

For the first time in your training you have the opportunity to do a lot for the patient yourself and it is our wish that you take the opportunity to get involved in the work of the Department.

The Clerkships are combined ones and hence you must pay equal attention to both Obstetrics and Gynaecology.

Students in each group starting the Junior Clerkship period will be allocated to one of the 5 firms within the department. Each student should follow the weekly timetable of the firm to which he or she is attached, as far as ward work, clinics and operating sessions are concerned. Such a timetable should be obtained from the Consultant-in-charge working in the firm. Over and above this work, students must devote as much of their time during this Clerking period to the labour suite, and they should follow their Unit Doctors on emergency duty.

The duties in the labour suite should include history taking and admission of patients, routine observations normally carried out in the first stage room eg. fetal heart monitoring, pulse and blood pressure readings, testing of urine, setting up and monitoring intravenous infusion, vaginal examinations to assess progress of labour, normal vaginal deliveries under supervision and repair of episiotomies or perineal tears. Students must try as much as possible to follow up cases from the time of admission into the labour suite to the time of discharge from the postnatal ward, so that they will be able to record their observations.

You will be expected to complete a partograph for each patient that you follow up in the labour suite and deliver.

This must be signed for you by the supervision midwife/Doctor soon after the delivery and submitted at the end of the Clerkship. Students should take every opportunity to examine patients, observe and assist in operative vaginal deliveries, and also Caesarean sections. **Suturing Episiotomies is a Must and All Students Should Learn, Perform and Repair Episiotomies.**

In the labour suite the students must conduct themselves well. They must realise that the Sister or Midwife is in-charge of the patients in the labour suite. They must therefore carry out routine procedures as instructed by her and also not to undertake any other procedures on patients without

her knowledge or that of the doctor. Students, while working in the labour suite, must change into proper labour suite attire, which is obtainable from the Sister.

There will be several routine rounds in the labour suite, both by Junior and Senior member of staff and you are advised to avail yourself for them.

Students must be present in the Department especially the labour suite when on call as much as possible throughout the duty period in order to be present when the cases are being managed.

Needless to say, if a student is unwell, has a sore throat, cold, septic finger and infection, he or she should not attend the labour suite or operating theatres. The student should inform a member of the senior staff in their firm.

The periods spent in the clinic (both antenatal and gynaecological) should be utilized to the full. The student should train himself in taking histories and seize every opportunity of examining patients. Students should attach themselves to Members of the senior Staff. These clinics should give the student a clear idea of the numbers, type of patients and abnormal conditions seen in our community.

In the ante-natal and postnatal wards students are responsible for clerking cases and also in helping the junior staff with the work-up of patients. Students should as much as possible follow up cases that they have witnessed or managed in the labour suite.

Each student will be allocated a certain number of beds and the students will be responsible for clerking the patients that occupy these beds. The students must be prepared to present such cases during ward rounds.

While in postnatal wards students should familiarise themselves with the care of babies especially of the ones they delivered. Such care includes proper examination to exclude congenital abnormalities, bathing, preparation of feeds, observation of weight charts and breast feeding. Students should also try and follow up babies being cared for in the Neonatal Intensive Care Unit.

In Gynaecological wards the students would be allocated a number of beds for which they will be responsible. Duties include clerking and work up of patients and assisting in the operating theatre. They should be ready to present them during ward rounds.

No student will be allowed to appear for the final examination in Obstetrics and Gynaecology without completing the clerkship satisfactorily. Students who fail such an assessment test will have to repeat part or all the clerkship period during the Vacation.

During the period of Junior Clerkship each student must prepare a Case-Record Book. The purpose of this book is to give a clear idea of the work done and cases seen during the Clerkship period. To facilitate the presentation

of this work each student will be supplied with an empty book at the beginning of the Clerkship. In it will be found detailed instructions of the number and type of cases you are expected to see or manage.

In Summary these are:-

For Obstetrics
Details are per heading of 10 witnessed cases of normal deliveries.

Full details of 3 cases delivered personally. Each case must be signed by the Supervising sister or midwife or Medical Officer in the Labour Suite.
Summary of at least 20 more normal cases delivered personally by the student. Signatures of supervising midwife must be obtained in each case.
See as many abnormal cases as you possibly can and write up as described under each section.

Give details about babies as asked.

For Gynaecology
Full details of 10 cases personally clerked and followed up during the period of clerkship. The cases should be as varied as possible.

Details should include:
History
Examination
Laboratory
Diagnosis
Operation findings and procedures
Histological examination
Results and prognosis
Critical appraisal of the management

The empty pages at the end of this book are reserved for the gynaecological cases.
Each patient selected for write up must be certified by the Team's Consultant as having been managed by/with the student.

OBSTETRICS & GYNAECOLOGY CLERKSHIP

Rationale
The Obstetrics and Gynaecology Clerkship should concentrate on the basic sciences as applied to obstetrics and gynaecology and on the common clinical conditions that the student is bound to see during the period of the Clerkship.

Objectives
By the end of the Junior and Senior Clerkships, the student will:
- Have a sound grasp of the basic sciences as applied to obstetrics and gynaecology
- Be able to perform the following clinical activities satisfactorily:
- History taking and history presentation
- Physical examination and presentation of findings
- Be able to describe/discuss with confidence the treatment and management of complications of the common clinical conditions listed below

Although both clerkships will cover all the course objectives, the Junior Clerkship will be more focussed on the first two objectives while the Senior Clerkship will put more emphasis on the discussion of treatment and management of complications.

Teaching Aids
- Bony Pelvis
- Fetal skull
- Surgical Instruments
- Pathology pots

Topics
Bony Pelvis

Bones, joints and ligaments of the pelvis
Pelvic inlet (brim), cavity and outlet

- Pelvic inclination
- Pelvic axis
- Definitions and normal values of the diameters of the adult gynaecoid (female) pelvis at:
  - Brim
  - Mid-pelvis
  - Outlet
- Features of adult gynaecoid pelvis, i.e. the features that make the bony pelvis suitable for parturition
- Major differences between the gynaecoid pelvis and each of the following pelvic types:
  - Anthropoid
  - Android
  - Platypelloid

Fetal Skull

- Description of the following:
  - Bones of the fetal skull
  - Sutures and fontanels
  - Vertex
  - Identification of the vertex presentation on vaginal examination
- Description and normal values of diameters of the fetal skull at term
- Presenting diameters in:
  - Well-flexed OA position
  - Deflexed OA position
  - OP position
- Moulding:
  - Definition and dynamics
  - Grading
  - Benefits and dangers

- Engagement:
  - Determination on abdominal examination and on vaginal examination
  - Prognostic significance

Pelvic Floor

- Levator ani muscles and their covering fasciae
- Functions of the levator ani
- The supports of the pelvic organs
- Blood supply
- Nerve supply

Perineum

- Muscles
- Fasciae
- Vascular supply
- Nerve supply

Maternal Adaptation to Pregnancy / Physiological changes in Pregnancy

- Cardiovascular system
- Haematological system
- Respiratory system
- Renal system
- Gastrointestinal system
- Uterus

PREGNANCY
Diagnosis
Antenatal Care
Estimation of Gestational Age – Pregnancy Dating

- Clinical methods
- Ultrasound scan

The booking scan: The variables reported on in the booking scan

Complications in Early Pregnancy

- Hyperemesis gravidarum
- Vaginal bleeding
  - Miscarriage (spontaneous abortion)
    - Threatened
    - Inevitable
    - Incomplete
    - Complete
    - Septic
    - Missed
  - Ectopic pregnancy
  - Molar pregnancy

Medical Conditions in Pregnancy

- Anaemia
- Malaria
- Haemoglobinopathies (Sickle Cell Disease)
- Hypertensive Diseases in Pregnancy
- Diabetes in pregnancy

Non-medical Pregnancy Complications

Antepartum Haemorrhage

Multiple Pregnancy

Malpresentation (Breech presentation)

Premature rupture of membranes

Labour - Spontaneous

Mechanism of Labour in OA Position (Cardinal Movements)

Management of Labour and the Partograph

- Definitions of the 1st and 2nd Stages
- Historical basis of the partograph
  - Cervical dilatation curve: cervicograph
  - Latent and active phases of labour
  - Derivation of the alert and action lines
- Features of the partograph
- Normal partograph
- Using the partograph to diagnose abnormal labour delayed labour and the cause

3rd Stage of Labour

- Definition
- Physiology
  - Mechanisms responsible for separation of the placenta
  - Mechanisms responsible for haemostasis at the placental site
- Complications of 3rd stage
  - Primary postpartum haemorrhage
  - Retained placenta
- Management of 3rd stage
  - Low-risk patient
  - High-risk patient

Active management of 3rd Stage of labour

Components:

Administration of uterotonic agents (drug of choice is oxytocin 10 units IM)

Controlled cord traction

Uterine massage after delivery of the placenta

Induced Labour

- Indications and contraindications
- Cervical assessment : Bishop's score

- Methods

Episiotomy

- Definitions
- Muscles and nerves involved
- Types
- Advantages and disadvantages of each type
- Repair
- Complications

Perineal Tears

- Degrees: definitions
- Predisposing factors
- Prevention
- Management of 4th degree tear: operative, post-operative, subsequent deliveries

Cephalo-Pelvic Disproportion (CPD)

- Definition
- Causes
- Complications
- Diagnosis: Antenatal, intrapartum

Primary Postpartum Haemorrhage (P.PPH)

- Definition
- Causes in order of their frequencies
- Determining the cause
- Differentiating uterine atony P.PPH from other causes (lower genital tract laceration P.PPH)
- Management of P.PPH from uterine atony
- Management of P.PPH from lower genital tract lacerations (technique of inspecting the lower genital tract)

Secondary Postpartum Haemorrhage

- Definition
- Causes
- Management

Puerperium

- Definition
- Management of the normal puerperium including family planning
- Complications
    - Puerperal pyrexia: Causes and Investigations
    - Factors that predispose to puerperal sepsis (genital tract infection)

Caesarean Section

- Indications
- Preoperative preparation
- Types: classical and lower segment
- Description of steps in lower segment caesarean section
- Advantages of the lower segment section
- Complications

Breastfeeding

- Advantages of breast milk over cow milk
- Definitions of exclusive breastfeeding, replacement feeding, mixed feeding
- Disadvantages and dangers of replacement and mixed feeding
- Physiology of suckling
- Benefits of breastfeeding:
    - Breast milk
    - Suckling

HIV/AIDS in Obstetrics

Obstetric emergencies

Induced Abortion

Unsafe Abortion

- Definition and examples

- Importance
- Prevention

Post-Abortion Care

Activities in post-abortion care

Ectopic Pregnancy

- Definition
- Clinical types: acute and chronic
- Causes
- Diagnosis of ruptured tubal pregnancy: Leading symptoms and signs
- Management

Other gynaecological emergencies

Vaginal Discharges

Differential diagnosis, complications and treatment of:

- Bacterial vaginosis
- Candida albicans
- Trichomonas vaginalis

Pelvic Inflammatory Disease

- Definition
- Causes
- Diagnosis: symptoms, signs, investigations
- Complications
- Management: outpatient and in-patient

Sexually Transmitted Infections

- Syndromic approach to STI management

Infertility

- Definitions: Primary & Secondary subfertility
- Causes
- History taking: To determine if infertility exists and to diagnose cause
- Physical examination: To determine if infertility exists and to diagnose cause
- Investigations
- Management/ Treatment (including assisted reproductive technology)

Uterine Fibroids

- Aetiological risk factors
- Histopathology
- Symptoms and signs
- Investigations
- Diagnosis
- Complications
- Management options

Pelvic Organ prolapse

Urinary Incontinence

- Vesico-vaginal fistula
- Other types of incontinence: Stress incontinence, Urge incontinence, Mixed incontinence

Gynaecological Tumours

- Benign tumours
- Malignant tumours
    - Cervix
    - Endometrial
    - Ovary
    - Vulva
    - Choriocarcinoma

HIV/AIDS in Gynaecology

JUNIOR CLERKSHIP LECTURES

Lecture

1. Overview of Obstetrics & Gynaecology
2. Examination of Obst. & Gynae. Patients

3. Review of anatomy of female pelvic organs and the breast
4. Maternal Mortality and Morbidity
5. Review of embryology of female genital organs and the urinary system
6. Prenatal diagnosis (SCD, sex linked disease etc) and Fetal Surveillance
7. Normal Labour and Partograph
8. Problems of Labour. Disproportion,
   Deep Transverse Arrest occipito-Posterior
   Position Trial of Labour
9. Obstetric analgesia and Anaesthesia
10. Mechanism of Labour - Normal and
    Abnormal Presentation
11. The Puerperium
12. The Third Stage of Labour including Postpartum
    Haemorrhage and Shock in Obstetrics
13. Anaemia in Pregnancy including Sickle cell disease in Pregnancy
14. Psychiatric and Psychosocial Aspects of O&G
15. Pelvic Inflammatory Disease
16. HIV/AIDS and other Sexually Transmitted Diseases
17. Menstruation and Menstrual disorders
18. Multiple Pregnancy
19. Pre-operative management and Post-operative complications in O & G
20. The Infertile Couple
21. Sex Chromosome Abnormalities and Intersex
22. Ante partum haemorrhage
23. Ultrasound in Obstetrics & Gynaecology
24. Obstetric operations
25. PROM & Preterm Labour & Postdate Pregnancy
26. Natural Family Planning. Contraception (Hormonal and Sterilisation)
27. Contraception (Barrier, IUCD) Emergency Contraception
28. Hypertension, Pre-eclampsia and Eclampsia
29. Utero-Vaginal Prolapse
30. Medical Disorders in Pregnancy (1)
31. Medical Disorders in Pregnancy (2)
32. Incontinence of Urine
33. Obstructed labour and Ruptured Uterus
34. Intra Uterine Growth Restriction
35. Endometriosis, Adenomyosis and Uterine fibroids
36. Abortion, Unsafe Abortion, Post-Abortion Care
37. Premalignant Lesions of the Female Genital Tract
38. Benign and Malignant tumours of the Vulva
39. Gestational Trophoblastic Disease
40. Carcinoma of the Cervix
41. Tumours of the corpus uterus (Benign and Malignant)
42. Tumours of the Ovary (Benign and Malignant)
43. Sexual and Reproductive Health and Rights.
    (The Rights of Women and children)
    Gender (Gender Equality, Gender Equity and Gender
    Mainstreaming)
44. Ethical Issues in Obst & Gynae.
45. Course Review

OBS & GYNAE
Required skills
Taking an obstetrics history
Taking a gynaecological history
Abdominal examination
Examination of the pregnant uterus
Bimanual examination
Gaining intravenous access
Setting up a IV line
Performing an episiotomy

Repairing an episiotomy
Suturing and trying of surgical knots
Cardiopulmonary resuscitation
Taking a Pap Smear
BP measurement
Vaginal deliveries
Bathing newborns
Breast feeding
Perform high vaginal and Endocervical Swab
Perform vaginal speculum examination
Required equipments/materials
Mannequins for abdominal, obstetrics and pelvic examinations
Instruments for suturing
Sutures
Pin cushions suturing practice
Mannequins for CPR procedures
Video/CDs on various skills
Sphygmomanometer
Plastic specula
Bony pelvis
Dummy babies
Cytobrushes, Ayre's spatulae

DEPARTMENT OF PSYCHIATRY

Objectives

The Course leading to MB CH.B in Psychiatry consists of Junior and Senior Clerkships.

The students are required to have a basic knowledge in the anatomy of the brain and related structures, Neurophysiology and Biochemistry relevant to Neuropharmacology. During the Junior Clerkship, they are also taught how to interact with the mentally ill, how to examine the mental state of the patients, history taking and basic psychopathology.

Students should at the end of the Junior Clerkship be in a position to formulate the patient's mental or physical problem and plan management of the said patient.

The aim of the Senior Clerkship is to consolidate what the student has already learn in the Junior Clerkship together with common Psychosexual Disorders.

PSYCHIATRY CURRICULUM
(Undergraduates 500 & 700 Level)

1) **INTRODUCTION TO PSYCHIATRY**
   Definitions of Psychiatry, Psychology and the concepts of mental health and mental illness.

   Concept of mental disorders as "diseases" and their importance in the spectrum of diseases affecting human beings. Ref. To WHO (20 1) World Health report on importance of Depression and other mental disorders in worldwide disease prevalence overall using D,ALY concept.

2) **PSYCHIATRY IN RELATION TO MEDICINE AND NEUROLOGY**
   Neurological disorders and psychiatry including Epilepsy and Psychiatric manifestations of seizure disorders.

3) **BASIC PSYCHOPATHOLOGY** - Phenomenology
   e.g. Definition of Delusion, Hallucinations e.t.c. Concept of 'Functional' and 'Organic' Psychoses.

4) **THE BRAIN AND MENTAL DISORDERS**
   Evidence of the brain as centre of mental disorders.

Use of neuroimaging techniques e.g. CT Scan, MRI, PET, SPECT, BEAM, CBF, EEG e.t.c. in diagnosis of mental disorders and as evidence of brain function and dysfunction.

5) **PSYCHIATRIC DISORDERS**

i. **The Schizophrenias**

They are one of a group of psychiatric disorders traditionally called the functional Psychoses. The symptoms are divided into positive symptoms (symptoms or signs) And negative symptoms (loss of a previous function).
Back ground – Historical overview, Pathophysiological hypotheses, and neurotransmitter theories. Diagnosis – symptoms and categories, DSM-IV/ICD-10 criteria. Other clinical presentations. Epidemiology, integrated aetiological theories and differential diagnosis. Physical examination, course and prognosis.

Managing acute psychotic symptoms, treating psychotic symptoms. Considerations in the management of schizophrenia. Parodromal interventions, first schizophrenic episode. Acute and subsequent presentations. Discharge planning. Managing treatment-resistant schizophrenia. Prescribing antipsychotics and side effects – typical, depot, atypical. Schizotypal disorder, Schizophreniform disorder, and Schizoaffective disorder.

ii. **Paranoid Psychoses**

Delusional Disorder – An uncommon condition in which patients present with circumscribed symptoms of non-bizarre delusions, but with the absence of prominent hallucinations and no thought disorder, mood disorder, or significant flattening of affect. Diagnosing pathological delusions, clinical features, Epidemiology, risk factors, course and prognosis. Assessment and management, differentials and aetiology.
DSM-IV subtypes, acute and transient disorder, induced (ICD-10) or shared (DSM-IV) delusional disorder, delusional misidentification syndromes – clinical features, management, course and prognosis.

iii. **Affective or Mood Disorders**

Definition of mood disorders
Classification of mood disorders DSM-IV and ICD-10
Diagnosis of major mood disorders
Mania and Bipolar Disorder
Recurrent Major Depression
Use of Cognitive Behaviour Therapy and other Psychotherapies in management of mood disorders.
Use of treatment including mood stabilizers, antipsychotics and antidepressants
In acute treatment and preventive care the place of mood stabilizers and antidepressants in Bipolar Disorders and prevention of recurrence.
Course and Prognosis

iv. **Organic Mental Disorders**

- Acute and Chronic Organic Mental Disorders 'Delirium' and 'Dementia'
- **Cognitive Disorders -** classification, causes, principles of investigation and management of cognitive dysfunction cerebral lesions – e.g. space occupying lesions infarcts, bleeds and their psychiatric manifestations.
  Systemic diseases e.g. Thyroid disorders, cardiac, liver, respiratory, renal failure e.t.c. and their psychiatric manifestations. Latrogenic mental illness – from treatment with steroids, antihypertensives e.t.c.

v. **The 'Neuroses'**

- Somatoform disorders
  Anxiety spectrum disorders (General Anxiety Disorders, Panic Disorders, Phobias, Post-traumatic Stress disorders, Obsessive – Compulsive Disorders
- Conversion Disorders
- Somatoform disorders

Diagnosis and treatment of the various disorders including Behaviour therapies

and medications.

vii. **The Major Personality Disorders**

A brief discussion about the concept of 'normal' personality. The classification of personality disorders, using DSM-IV and ICD-10. The major personality disorders outlined.

Aetiology, genetics, Neurophysiology, childhood developmente, psychodynamic theories, cognitive behavioural theories, theories synthesizing cognitive-behavioural and psychodynamic aspects.

Epidemiology, relationship between personality disorders and other mental disorders.

Assessment, instruments to assess, and management of personality disorders. Managing co morbid axis I disorders, admission to hospital, managing crises. Medication, therapeutic community, and psychological interventions.

viii. **Common Psychosexual Disorders**

Definition of Psychosexual Disorders
Classification of Psychosexual Disorders
R ecognition and diagnosis of psychosexual disorders in general medical practice
Psychosexual disorders as a consequence of medical and psychiatric illness, as well as side effects of drug therapy
Socio-cultural and political attitudes to sexual orientation. Scientific studies on sexual orientation and controversies.

ix. **Alcohol and Substance Abuse Disorders**

Concepts of Tolerance, dependence (addiction)
Alcohol use disorders
Cannabis, Amphetaines, Heroin Cocaine
And other substances of abuse
Withdrawal syndromes – Recognitive is general medical practice
Treatment of substance abuse
Detoxification and long term management
Alcoholic Anonymous
(AA) principles of treatment

x. **Child And Adolescent Psychiatry**

Recognising Childhood Psychiatric and developmental disorder
Genetic, prenatal, birth and post-natal factors associated with childhood development and disorders
Diagnosis of Childhood Disorders including use of play therapy e.t.c.
Classification, recognition and management of:

- Mental retardation and Learning Disabilities
- Autistic spectrum Disorders
- Attention deficit, Hyperactivity Disorders
- Effect of family, environment and medical illness on psychological development of the child
- Focus on domestic violence, child abuse, poverty, war e.t.c.
- Chronic illnesses e.g. Sickle cell disease, asthma, physical handicap and mental health
- General principles of management of childhood psychiatric disorders

xi **Psychiatric Aspects of Head Injury And Epilepsy**

Improved medical care has made it more likely that individuals that suffer head injuries will survive, and therefore present to psychiatric services with neuropsychiatric sequelae. Presentation may be with:

- Acute effects – Post-traumatic amnesia (PTA), retrograde amnesia (RTA), acute post-traumatic delirium, and factors associated with increased psychiatric morbidity following head injury.
- Chronic effects – cognitive impairment, personal/behavioural changes, psychoses neurotic disorders, post-traumatic syndromes.
- Factors influencing psychiatric disability and prognosis, sequelae in children, and

The ‘punch-drunk syndrome’.

The lifetime prevalence of experiencing a seizure is approx. 5%. The prevalence of recurrent seizures (epilepsy) is approx. 0.5-1.0%. seizures may be generalized or focal. Psychiatric aspects of epilepsy may be related to psychosocial consequences of diagnosis, psychiatric syndromes, and neuropsychiatric effects of medication.

- 5 -

Psychiatric syndromes are best considered in terms of their relationship to seizures – pre-ictal, ictal, post-ictal, and inter-ictal. Other presentations are cognitive deterioration, neuroses, mania, epileptic personality syndrome, and violence.

PRINCIPLES OF PHARMACOLOGY AND THE ADVERSE SIDE EFFECTS OF DRUGS USED IN PSYCHIATRIC PRACTICE

Medication should only be one of the components of treatment used in psychiatric practice. Psychological, behavioural and social therapies also have their place.

Medication Adherence – the importance of adherence, reasons for non-adherence, strategies to improve adherence-education, and sensible prescribing.

The Main Classes of Medications used are:

- Antipsychotics – typical and atypical, also depot preparations
- Anticholinergics
- Antidepressants – Tricyclics, SSRIs, MAOIs, and Others
- Benzodiazepines – Diazepam, and Lorazepam
- Mood Stabilisers – Lithium, Carbamazepine, Valproate, and Lamotrigine
- Anticonvulsants – Carbamazepine, Valproate, Phenytoin, and Phenobarbitone

Discuss the benefits and adverse effects of all the major classes of medication used.

CARE OF PSYCHIATRIC PATIENTS IN THE COMMUNITY

Advantages of community care.
Psychiatry in general medical practice.
Recognition and treatment of psychiatric disorders commonly seen in primary care.
Focus on anxiety and minor depressive disorders, somatoform disorders.
Alcoholism and other substance abuse.

PSYCHIATRIC DISORDERS ASSOCIATED WITH WOMEN

- Pregnancy and post-partum psychiatric disorders and their management.
  Emphasis on need to consider both foctus and mother in treatment.
- Effect of hormonial changes.
- Infertility – psychological effects especially in Ghanaian culture.
- Gender issues in mental health care (lecture).

TRADITIONAL CONCEPTS OF MENTAL ILLNESS

‘Spirit possession’ and other belief systems and their effect on manifestation and treatment of mental disorders.

ECT AND OTHER PHYSICAL FORMS OF TREATMENT IN PSYCHIATRY

Can be a highly effective treatment. It should only be used to achieve rapid and short term improvement of severe symptoms. After an adequate trial of other treatment options
have proven ineffective and/or when the condition is considered to be life threatening.

Mode of action, indications, contraindications, limitations, side-effects, course of ECT,
and maintenance or continuation of ECT. Administration of ECT, effective treatment,
and specific problems and psychiatric drugs and ECT.

PSYCHOLOGICAL AND PSYCHOSOCIAL TREATMENT METHODS

Psychotherapies
Cognitive And Behavioural Therapies
Rehabilitation

CLINICAL PSYCHOLOGY

Medical Psychology

Paradigms In Medical Psychology

The goal of the lecture is to help students to understand the need for a more comprehensive model than exists in

orthodox medicine. Specific topics touch on the importance of paradigm in health care, the strengths and challenges of the bio-medical paradigm, the more inclusive and more comprehensive paradigm of the bio-psychosocial, and relevant psychological and social paradigms. The lecture ends with a new definition of health and the crises in our health care system.

Common Psychological Problems In Communities

Stress And Illness

The goals of this broad topic is to take students on an exploration of the links between stress and illness and to explore psycho-physiological disorders as an example of the stress – illness link. Thus students discuss definitions of stress and its measurements, the body's stress reactions, coping styles and concomitantly how maladaptive forms of coping may lead to illness. Biological, social support, cognitive, behavioural and analytic and theories of etiology of illness are explored and a lens is focused on Essential hypertension and coronary heart disease as examples of psycho-physiological disorders. Psycho-social factors in chronic illness. In 2007, a links will be established between the school of Public Health and Medical Psychology to look at this session more in the light.

How Gender and Unemployment Impact Health

The goal of this topic is to discuss the impact of gender and unemployment on peoples' lives in the community. The class discusses the different problem behaviours typically seen in boys and girls and explores the factors which lead to such problems in children. There is also a focus on how men and women experience mental health difficulties differently and there is a discussion on the psychological factors which give rise to these difficulties. As well, there is a discussion on the effects of domestic violence, rape, powerlessness and poverty on mental health.

Dealing with Special Populations

The goal of these lectures is to help students understand the special needs of vulnerable groups (see below) and skills needed to give them effective services.

a. HIV/AIDS patients
b. The mentally challenged
c. The physically disabled
d. The aged
e. Children and adolescents

Prevention in Community Mental Health

This lecture discusses broadly the application of concepts of primary, secondary and tertiary prevention to mental health. Students are introduced to the possibility of prevention at different levels of society e.g. individual, family, community and the wider society.

Four broad strategies for intervention at these levels are discussed e.g. crises intervention, mental health education, consultation and the use of non-professional in the community to impact mental health. Students are encouraged to consider what they could do in their own communities to prevent mental health problems.

Death and Dying

Issues discussed in this lecture include Kubler Ross' stages, how to break the news of terminal illness to patients and relatives. A debate is held over whether one should tell or not tell a patient about the terminal nature of their illness. Emphasis is laid on the impact of the fear of death and its resolution on physician behaviour.

Stress and Burn Out

This lecture discusses Stress and Burn Out from the student and physician's view point. Triggers to stress and burn out are discussed and the management of work and self to minimize or prevent burn out is highlighted. Simple Stress Management skills are taught including the need for professional support as well as individual cognitive and relaxation skills.

Pain and Pain Management

This lecture discusses theories of pain, psychological factors in pain, pain clinics and psychological methods that are used alone or as an adjunct to medication in pain management.

Doctor/Patient Communication

This lecture highlights communication issues to improve the doctor/patient relationship to improve service provision.

a. Proxemics (rules of personal space, impact of violations of personal space and how to breach personal space without negative impacts).

b. Rules that help with medication compliance.

JUNIOR CLERKSHIP

- Psychological Testing
- Psychotherapy

CLINICAL PSYCHOLOGY SERIES

Mood Disorders

The goal of this one and a half hour lecture is to make students conversant with the psychological assessment of mood disorder, and the psychological treatments of mood disorders, particularly cognitive behaviour therapy for depression. There is an indepth look at the episodic nature of mood disorders, the assessment of cognitive, assumptions underlying the relationship between thought, feeling, and events, patterns and schemas of automatic thoughts and ways of correcting faulty thinking. There is a comparison between effects of cognitive behaviour therapy, and medication.

Schizophrenia

Using real life cases as examples, there is an indepth discussion about the different criteria required for diagnosis of schizophrenia in the DSM IV TR. This continues with an indepth look at the ways of assessing these symptoms. Students are then taught psychological therapies in schizophrenia which are mainly behavioural in nature, and which include the family of patients in order to reduce the strain on family life inflicted by the nature of the illness. Students explore research on behaviour and milieu therapy and their efficacy compared with medication only. The goal of the lecture, apart from teaching assessment and therapy, is to instill empathy for such a debilitating illness as schizophrenia.

Anxiety

Symptoms of anxiety and their cultural contexts. Difficulty in diagnosing anxiety disorder, somatization disorder and depression in Ghana.
Panic attack, Generalized anxiety disorder post traumatic stress disorder, obsessive compulsive disorder etc.
Psychological treatment of anxiety disorder.

Cases Presentation

In this concluding lecture, students present cases they have seen at the Accra Psychiatric Hospital during this rotation and there is a full exclusive discussion on psycho-therapy specifically tailored to each individual case presented.

Psychological Assessment

Broad exposure to psychodignostic testing and concepts of standardization, validity and reliability in testing. Introduction to the tests Ghanaian clinical psychologist use and interpretation of test results.

Problems Associated With The Medical Psychology Course

These topics are treated in truncated fashion typically, in broad strokes because of the shortened time. For instance, with the psycho-physiological disorders, we are able to teach hypertension, and a tiny bit on cancers. However, there are diabetes, dermatitis, asthma, seizure disorders, e.t.c., e.t.c. which have a large psychological component and which are eased significantly by knowledge of appropriate psychological interventions. There is also the chronicity of these illnesses and dealing with terminal illness which we gloss over. What is lacking here are any kind of interventions with plastic surgery, with children, parenting, liaising with schools, adolescent mental health e.t.c., e.t.c.

We used to teach all of these in 12-13 sessions, i.e. a full semester. Now we are allocated only 8. The course is now only two thirds time for the same number of topics.

Community Health says that it does not have more time. It is important that the School realizes that its curriculum in behavioural medicine is deficient with respect to detail. As far as we are concerned, Medical or Health psychology is a separate examinable semester long programme in any curriculum. It is not an addendum to community Health. We would like therefore to take this opportunity to review these issues in detail and to find a solution.

SENIOR CLERKSHIP

- Behavioural Change In Inpatient Settings

Year 3
Introduction to Psychology
Year 5
In conjunction with Community Health
Medical Psychology
Includes:

- Psychopathology In The Community
- Psychophysiological Conditions
- Psychobehavioural Aspects of Illness

There is a Project in Research in Psychiatry in the Senior Clerkship. For four weeks, students master the art of conceptualizing psychological and psychiatric variables and how to measure these. They may for instance plan treatment protocols, cost and run them, and assess their efficacy. They may construct questionnaires, test, standardize, and validated them. They may look at systemic issues in psychiatry such as how the outpatient clinics or wards are run and explore ways of making these more efficient, or they may look at the various uses of the psychiatric hospitals. Students work in teams of up to 8 or 10. At the end of the clerkship, they are required to write these up and present them in a student conference at the Medical School. The department is in the process of editing these for publication.

COURSE OUTLINE FOR INTRODUCTORY PSYCHOLOGY(PSYCH 201)
LEVEL 200

INTRODUCTION

a. Definitions
b. History of Psychology
c. Divisions of Psychology
d. Research Methods in Psychology

HUMAN DEVELOPMENT-

a. Genetics and Environment
b. Physical, Social, Cognitive and Moral Development
    1. Childhood
    2. Adolescence
    3. Adulthood
    4. Old Age
    5. Gender & Sexuality

BRAIN, BIOLOGY & BEHAVIOUR

a. Biology of Behaviour
b. Sensory, World & reality
c. Reception
d. States of Consciousness

LEARNING, MEMORY & THINKING

a. Conditioning, Learning & Application
b. Theories
c. Thinking & Problem Solving, creativity
d. Intelligence

CRITICAL THINKING

INTERIM ASSESSMENT

MOTIVATION & EMOTION

a. Dynamics and Theories
b. Stress and Coping

ABNORMAL BEHAVIOUR & PSYCHOTHERAPY

a. Psychopathology
b. Therapies

PERSONALITY

a. Dynamics & Theories
b. Theories
c. Assessment

DEPARTMENT OF RADIOLOGY

Objectives

Radiological anatomy taught course consists of basic anatomy relevant to all the common radiological examinations with emphasis on cross sectional anatomy in the axial, coronal, sagittal and where appropriate, oblique planes.

Radiology Tutorials & Demonstrations

The Chest X-ray of the Lings and the Heart
The Mediastinum and Pleura
Oesophagus, Stomach and Duodenum
Duodenum and the Biliary System
Intestinal Obstruction and other commoner Lesions of the Small & Large Intestines

Genito-Urinary System
Skeletal System and Joints I
Skeletal System and Joints II

Weeks	Topic
7	Lungs, Heart Mediastinum
8	Genito Urinary Tract
9	trointestinal Tact
10	Bones and Joints

DEPARTMENT OF SURGERY

Objectives

The Department of Surgery is one of the key pillars in medical education. The department hosts students at different levels of their 3 year clinical training.

In addition the Department hosts a number of elective students from different countries who spend differing periods within the Department throughout the year.

The main objective of the Department is to train well rounded medical students in all aspects of surgical disciplines who can hold their own and function as first-line medical professionals with confidence and the right attitude.

This document summarizes the various areas the student passes through in the Department with a summary of the main objectives to be achieved for each segment of the curriculum.

Every student is warmly welcomed to the Department of Surgery.

By the end of the course in Surgery the Medical Student will have consolidated areas of

A. Skills
B. Knowledge
C. Attitude essential for the confident practice of surgery.

Attitudes

The Department places great importance on attainment of the correct attitudes by the end of the various periods in the Department

The Student should be able to demonstrate:

1. The importance of maintaining the highest standards of professional conduct in the practice of medicine.

2. That they accept medicine as a vocation and dedicate their lives to the care of their patients.

3. Respect for and the responsibility for preserving human life from the time of conception and the need for human beings to live and be treated with dignity and humanity (Hippocratic oath).

4. The importance of testifying only to that which he/she has personally verified.

5. The importance of concealing the secrets entrusted to him/her by his/her patients even after their death and only disclose them with the patient's consent.

6. An understanding of unremitting responsibility a doctor has towards a patient until he/she has been discharged or properly handed over to another doctor.

7. The importance of team work in the care of patients.

8. That in the care of a patient, it may be necessary to seek other opinions.

9. The importance of keeping accurate medical records

10. The importance of behaving with respect towards his patients, colleagues (both senior and junior), nursing, paramedical and other staff as he would have them behave towards him

11. A sense of responsibility and initiative

12. The importance of the application of basic sciences in the practice of medicine

13. The importance of research in the management of patients an advancement of medical knowledge.

14. The need for and importance of continuing self-education.

Methods for Achieving the Objectives of the Department

The Department employs several methodologies for achieving its objectives in teaching.
These are:

1. **Lectures:**

It is the aim of the Department to reduce didactic lectures to the barest minimum.

2. **Tutorials:**

The student is encouraged to search for information on tutorial subjects and prepare adequately. Emphasis is placed on the fact that a tutorial is not a mini-lecture but an interaction between the tutor and the student to help reinforce and consolidate the self knowledge acquired by the student.

3. **Bedside Teaching:**

It is the main method by which the student acquires clinical skills and learns how to solve and manage clinical problems. It is essentially problem-solving oriented and every patient is regarded as a clinical. It also teaches team work in medical care.

4. **Outpatient Teaching:**

It also helps students to acquire clinical skills and learn how to solve clinical problems.

5. **Students' Grand Rounds:**

Students present cases to their peers under the observation of their teachers. These take place during the subinternship. They provide a useful interaction between students and help in building self-confidence in presenting cases and thinking and arguing logically.

6. **Case Dissertation:**

Students, after presenting cases to illustrate an assigned topic to their peers, then give a discourse on the topic. This helps students to read widely around topics. They are supervised by a Faculty member.

7. **Operating Sessions:**

The Student assists at or observes operations on his patients. He experiences the most important part of surgical treatment. He is exposed further to team work in surgery.

8. Essay Writing:

This is done during the sub internship and helps students to practice essay writing and read around some selected topics.

9. Examination:

At the end of each rotation, an examination whose format may vary but generally consisting of a theory paper, orals and clinicals is held. The results are discussed individually with the students. Students are also given the opportunity to evaluate their rotation and the teaching in the Department and make suggestions for improvement. Evaluation of the student's performance during the rotation is also done by the teachers of his unit and communicated to the students.

Introductory Course (1st Clinical Year)

This is a 4 weeks introduction to basic Surgery

Course Objective:-

At the end of the course, the student should be able to do the following:

1. Describe anatomical land marks essential to the practice of surgery.
2. Comport themselves on the wards in a manner respectful of patients and other medical staff with whom they will be working.
3. Discuss the steps in the examination of superficial swellings required to make a diagnosis.
4. Diagnosis and differentiate thyroid swellings from other swellings of the neck.
5. Recognize and diagnose an acute abdomen in a presenting patient.
6. Discuss the differences between different causes of inguino-scrotal swellings.
7. Understand the steps required to perform a satisfactory musculo- skeletal examination.
8. Discuss the pathophysiology of breast swellings

LECTURES	DEMONSTRATIONS
Introduction to Surgery/Basic surgical principles	Anatomical landmarks
Superficial swellings	Superficial swellings
Thyroid and neck swellings	Thyroid and neck swellings
Acute abdomen	Acute abdomen
Inguino-scrotal swellings	Inguino-scrotal swellings
Musculo-skeletal examination	Musculoskeletal examination
Breast swellings	Breast swellings

At the Introductory level, the end of rotation assessment comprises 25 questions of 5 stem T/F, are part of MCQ's assessment set in collaboration with the Department of Medicine for the course. The assessment counts towards the overall continuous assessment mark in Surgery for the Final MB ChB examination.

Coordinated – Course (2nd Clinical Years)

This is termed a "***Junior Clerkship***" in Surgery.

Objectives of the course are that by the end of the Course the student should be able do the following:

1. Take a history pertinent to the presenting complaint of a surgical patient.
2. Examine all surgical systems adequately to arrive at logical differential diagnosis for Surgical conditions.
3. Discuss the differential diagnosis of presenting surgical complaints.
4. Present a logical management plan for the diagnosis (es) arrived at.

The syllabus includes the following, which expose the student to all the Specialties of Surgery-in-General

PRINCIPLES OF SURGERY

1. Shock
2. Fluids & Electrolyte Therapy
3. Wound Healing
4. Infection in Surgical Practice

PAEDIATRIC SURGERY
1. Intestinal Obstruction in Childhood
2. Congenital Hypertrophic Pyloric Stenosis
3. Fluids and Electrolyte Balance in Paediatric Surgery
4. Acute Paediatric Surgical Pulmonary Problems
5. Acute Intestinal Obstruction in the Newborn
6. Oesophageal Atresia
7. Other Surgical conditions of Childhood

UROLOGY
1. Genito Urinary Tract
2. Urological Investigations
3. Lithiasis and Colics
4. Lower Urinary Tract
5. Haematuria
1. Symptoms of urological disease
2. Signs of urological disease
3. Urological Investigations
4. Urological Infections
5. Trauma of the Urinary Tract
6. Lower Urinary Tract Obstruction
7. Upper Urinary Tract Obstruction
9. Tumours of the Urinary Tract (Urothelial)
10. Tumours of the Urinary Tract (Non-Urothelial)
11. Renal Transplantation
12. Urolithiasis
13. Renal Failure
14. Erectile dysfunction

ORTHOPAEDIC
1. Bones and Joints

GENERAL SURGERY
1. Surgical Treatment of Peptic Ulcer and Its Complications
2. Acute Intestinal Obstruction
3. Inguinal Canal/Femoral Canal
4. Gastrointestinal Tract
5. Dysphagia
6. Dyspepsia
7. Gastric Outlet Obstruction
8. Abdominal Injuries
9. Pre-and Postoperative Care
10. Post Operative Complications

NEUROSURGERY
1. Head Injuries
2. History taking in the neurological patient
3. Basic neurological examination
4. Knowledge of the anatomy of the brain and Spinal cord.
5. Neurological investigations including imaging studies.
6. Examination, diagnostics and management of the unconscious patient
7. Assessment of head Injuries, including the Glasgow Coma Scale.
8. Cause pathophysiology and management of increased intracranial pressure.
9. Spinal cord injuries and care of the paralysed patient
10. Assessment and management of seizure Disorder.

PLASTIC SURGERY
1. Burns

VASCULAR SURGERY
1. Peripheral Vascular Disease
2. Lymphoedema
3. Gangrene of the Lower Limb
4. Leg Ulcer

CARDIOTHORACIC
1. Chest Injuries
2. Cardiac Arrest

The assessment at the end of the rotation also includes a theory paper, orals and clinical exams and contributes to the CA for the Final examination.

Specials I – (2nd Clinical Year)

During this course, students spend a total 8-week block covering the following Specialties
- Ear, Nose and Throat
- Ophthalmology
- Dermatology
- Psychiatry

Objectives of the course are that by the end of the Course, the student should be able to do the following:
1. Describe the clinical anatomy of the Eye and Ear, Nose and Throat
2. Describe the clinical presentation of common conditions of the Eye, Ear, Nose and Throat
3. Discuss the management of these conditions.

ENT SYLLABUS
1. Basic Applied Anatomy of the Ear
2. Disease of the Auricle (Pinna)
3. Disease of the External Ear
4. Injury of the Tympanic Membrane
5. Acute Otitis Media
6. Chronic Otitis Media
7. Complications of Middle Ear Infection
8. Secretory Otitis Media
9. Causes of Otalgia
10. Causes of Vertigo
11. Otosclerosis
12. Causes of Hearing Impairment
13. Facial Nerve Palsy
14. Disease of the Inner Ear (Menieres Disease, Labyrynthitis, Vestibular Neuronitis
15. Ototoxicity
16. Tinnitus
17. Tumours of the Middle and Inner Ears
18. Adenoids Tissue
19. Tonsils and Pharynx
20. Infections of the Adenoid, Tonsils and Pharynx
21. Complications of Tonsillar and Pharyngeal Infections Indications for Adenoidectomy
22. Foreign Bodies of the Oropharynx
23. Basic Applied Anatomy of Larynx
24. Congenital Anomalies of the Larynx
25. Injury of the Pharynx and Larynx
26. Acute Infections of the Larynx
27. Hoarseness: Causes and Diagnosis
28. Stridor: Causes and Diagnosis
29. Vocal Cord Paralyses
30. Foreign Bodies of the Larynx, Trachea and Bronchi
31. Tumours of the Larynx
32. Indications for Tracheotomy
33. Complications and Post Operative Care
34. Basic Applied Anatomy of Oesophagus

35. Symptoms and Signs of Oesophageal Disease (Dysphagia, Odoynophagia Regurgitation, Haematemesis etc
36. Congenital Malformations of the Oesophagus
37. Injury to Oesophagus
38. Foreign Bodies of the Oesophagus
39. Basic Applied Anatomy of Nose and Paranasal
40. Sinuses Foreign Bodies of the Nose and Paranasal
41. Sinuses Injuries of the Nose and Paranasal Sinuses
42. Epistaxis
43. Maxillary Sinusitis
44. Frontal Sinusitis
45. Etmoidal and Sphenoidal Sinusitis
46. Nasal Allergy
47. Nasal Polypi
48. Choanal Atresia
49. Nasal Infections
50. Tumours of the Nose, Sinuses and Nasopharynx
51. Chronic Conditions of the Larynx

OPHTHALMOLOGY SYLLABUS

1. Cataract
2. Refractive Errors
3. Corneal Ulcers, Keratitis
4. Conjunctivitis
5. Uveitis
6. Glaucoma I
7. Ocular Manifestation of Hypertension
8. Ocular Manifestation of Diabetes and Sickle Cell Disease
9. Common Drugs Used in Ophthalmology
10. Optic Nerve Disease
11. Trauma of Eye
12. Strabismus, Amblyopia
13. Ocular Manifestation of HIV/AIDS, Leprosy
14. Conjunctival Growths and Diseases of the Eyelid
15. Retinoblastoma
16. Proptosis, Orbital Cellulitis
17. Trachoma and Onchocerciasis
18. ARMD, Retinitis Pigmentosa
19. Evaluation of Eye Conditions
20. Basic Anatomy of the Globe, Adnexa and Orbit
21. Red Eye
22. Sudden Loss of Vision
23. Prevention of Blindness

Each subspecialty organizes an end of rotation exam which mark contributes towards the final CA for the Final exam.

SENIOR CLERKSHIP 3RD CLINICIAL YEAR

During this course, the students are expected to perform at the Sub-intern level, consolidating their knowledge and understanding of the surgical principles already learnt as well as learning/discussing in more detail the surgical condition including their management, which they have previously been exposed to.

By the end of this course they student should be able to do the following

1. Function as sub interns or student house officers
2. Be able to perform specified simples ward procedures.
3. Discuss in detail the clinical management of a full range of surgical conditions.
4. Document professionally and competently surgical cases encountered.
5. Discuss the use of a full range of laboratory options in the management of surgical cases.

The details of the syllabus are as below:

1. Surgical instruments – name recognition and description of use.

2. Radiology – Full recognition and interpretation of various radiological tools.
3. Revision of essential surgical anatomy
4. Revision of essential surgical physiology.
5. Basis of Chemotherapy and its clinical uses
6. Basis of Radiotherapy

GENERAL SURGERY
1. Gallstones
2. Acute Pancreatitis
3. Surgical Treatment of Peptic Ulcer
4. Carcinoma of the Large Bowel
5. Tumours of the Thyroid
6. Peripheral Vascular Diseases
7. Carcinoma of the Breast
8. Diabetes and Surgery
9. Deep Vein Thrombosis and Pulmonary Embolism
10. Abdominal Injuries
11. Obstructive Jaundice
12. Anterior Abdominal Wall and Incision
13. Anatomy of Inguinal Canal and Femoral Hernia
14. Anal Canal & Rectum
15. Metabolic Response to Trauma
16. Absorption of Food in the GIT and Various Disease States

PLASTIC SURGERY
1. Burns
2. Lymphoedema
3. Ulcertion of the leg
4. Basics of Radiotherapy

MAXILLOFACIAL
1. Carcinoma of the Tongue and Lip
2. Jaw Swellings

NEUROSURGERY
1. Review of neurological assessment
2. Management of acute head injuries, acute and chronic intracranial haematomas.
3. Recognition and management of spinal cord compression.
4. An understanding of the mechanism of injury and pathogenesis of spinal cord injury.
5. Intracranial infections,/Brain abscess,investigations and management
6. Recognition and management of Congenital Malformation of the brain and Spine.
7. Presentation and management of common brain tumours.
8. Cerebral Abscesses/Cerebral Tumour
9. Head Injuries

PAEDIATRIC SURGERY
1. Oesophgeal Atresia and Tracheo Oesophageal Fistula
2. Congenital Pyloric Stenosis
3. Common Tumours in Childhood
4. Neonatal Intestinal Obstruction
5. Anorectal anomalies
6. Other surgical conditions in Childhood

CARDIOTHORACI SURGERY
1. Chest injuries
2. Fractured ribs
3. Pneumothorax
4. Haemothorax, Pleural effusion

5. Lung Collapse
6. Lung Abscess
7. Secondary Metastases
8. Pneumonia
9. Bronchogenic carcinoma
10. Contusion of lung
11. Ruptured diaphragm
12. Tuberculosis

Specials II – 3rd Clinical Year (Level700)

This comprises a rotation in Anaesthesia, Orthopaedics and Trauma, Urology and Radiology. Eight (8) weeks are spent in Orthopaedics and Urology.

The course objectives are:

1. To enable the students understand the principles of diagnosis and management of conditions in the different sub-specialties
2. To enable students gain confidence in performing simple procedures required in those disciplines.

UROLOGY SYLLABUS

1. Symptoms and signs of urological disease
2. Urological Investigations
3. Pyonephrosis
4. Trauma of the Urinary Tract
5. BPH and Urethral Strictures
6. Upper Urinary Tract Obstruction
7. Haematuria
8. Bladder Tumour
9. Carcinoma of Prostate
10. Testicular Tumours
11. Inguino-scrotal swellings
12. Urolithiasis and colics
13. Renal Failure
14. Erectile dysfunction
15. Renal Function Tests and Renal Failure

III. Uro-radiology Sessions

1. Plain X-rays
2. Intravenous Urograms
3. Retrograde Urograms
4. Ultrasonosgraphy

Orthopaedic And Trauma

1. Principles of Fracture Management
2. Resuscitation of the Severely Injured
3. Hand Injuries/Wrist Injuries
4. Fractures of the Humerus
5. Fractures Shaft of Femur
6. Tibial Condylar Fractures
7. Fractures of Tibia and Fibula
8. Complications/Associated Injuries of Fractures
9. Management of Compound/Open Fractures
10. Fractures of the Forearm
11. Dislocations of the Shoulder
12. Fracture of the Scapula and Clavicle
13. Injuries around the Elbow
14. Supra-condylar
15. Femoral Fractures
16. Fractures of Patella
17. Spinal Injuries
18. Care of the Paralysed

19. Missile Injuries
20. Disaster Triage
21. Internal Derangement of the Knee
22. Management of Backache
23. Amputation
24. Fractures of Ankle, Foot Injuries
25. Septic Arthritis
26. Maxillofacial Injuries
27. Skin Flaps and Grafts in Trauma
28. Poliomyelitis
29. Peripheral Nerve Injuries

At the end of each rotation, each discipline organizes an end –of –rotation examination which may take the form of theory papers, a form of clinical examination including OSCE.
All the assessments count toward the final CA of the Final examination.

THE GRADUATE ENTRY MEDICAL PROGRAMME

1.0 NAME OF PROGRAMME

The designation of the programme is **Graduate Entry Medical Programme (GEMP).** The duration of the programme shall be four (4) years.

The initial phase of one and a half (1½) years of the programme is run on a semester basis and not as course credit system, in an integrated approach.

2.0 ENTRY REQUIREMENTS

This is a **full-time, non-residential, fee- paying** medical programme with the following entry requirements.

Eligible Candidates:

- must hold a good First Degree (Second Class Lower or better) in Basic Medical, Biological, Biomathematical, Physical Sciences, or any relevant science related subject.
- must show evidence of having completed the National Service, where appropriate.
- must pass an Entrance Examination conducted by the UGMS.

The Examination will comprise the following:

- **A written section of:**
  - Scientific Foundation of Medicine covering aspects of Chemistry, Physics, Biology and Molecular Biology.
  - A General Paper of English (Composition and Expression), Logical Reasoning and Quantitative Methods.
- **A selection interview.**

A three (3) week access course is run for prospective candidates. Details of the courses/subjects taught are organized by experienced senior members to prepare prospective candidates for the entrance examination.

3.0 JUSTIFICATION

The University of Ghana Medical School (UGMS) has an institutional mandate to train medical students to graduate as highly qualified and competent medical doctors to take care of health-related issues in Ghana. Furthermore it strives to achieve world class standards to compete internationally.

Over the years, intake of medical students into the four (4) medical schools in the country has been very limited due to the many challenges that restrict access to the various schools.
In the UGMS, training of doctors has been limited to a 5½ year programme due to the inherent challenges including entry qualification, and the level of maturity of applicants into the traditional programme. Additionally, a large number of applicants who apply to do medicine, in the UGMS for example, do not get the opportunity.
In fact, out of about 900 students who apply to do medicine from Level 100 of the Faculty of Science, Legon each year, only 150 are admitted. The University of Ghana Medical School, since its establishment in 1964, has so far produced only 2,154 doctors. The average yearly output of doctors

for the past five years is about 82.

Consequently, otherwise good science students end up in various non-science professions after their first degree. This has contributed to the high patient/doctor ratio in the country. Information from the Ministry of Health "Human Resource Policies and Strategies for the Health Sector, 2007-2011", paints the following picture:-

"In 2005, the doctor population ratio in Ghana was estimated to be 1:10,700, compared to South Africa (1:1,449) in 2001, USA – 1:182 (in 2000) and Cuba – 1:169 (in 2002). The Ministry of Health aims at achieving a ratio of 1:6000 by 2011. National Statistical Service, 2000 report projects that the population of Ghana will increase to about 24.5 million by 2011. It was concluded in the report that, for Ghana to attain a middle-level income status, as envisaged in the government's mission, it is necessary to accelerate the production and retention of critical health staff. The goal is to achieve the World Bank recommendation of 1.8 doctor to 1000 population (World Bank, 2001)"

The situation is even more critical in the districts. Northern Ghana is worse hit by a doctor: patient ratio of 1:95,000. Added to this, the health sector has fallen victim to the brain drain. The recent call on all Provosts, Deans/Directors by the Pro-Vice Chancellor of the University of Ghana to introduce new programmes, taken together with the request by the Ghana Medical and Dental Council to produce more doctors of a high caliber in a shorter period, have encouraged the UGMS to take the bold step to prepare to admit first degree holders to a 4-year graduate entry medical programme. This also conforms with the modern trend in medical education to encourage first degree holders to study medicine.

The traditional medical programme currently being run at the UGMS with intake from Level 100 Biological Sciences has a duration of 5½ years. Of this intake, less than 3% per year are first degree holders who, on entry, also pursue a 5½ - year training. It has been established, by what pertains in several countries including the U.K., the U.S.A., Canada, Europe and Australia, that first degree holders who are more mature can be trained to be competent doctors over a shorter period of 4 years. Recently, a further innovation of a 3-year programme has started in some parts of North America.

The historic model of traditional medical education of the United Kingdom, on which the UGMS was based, has transformed significantly with regards to traditional teaching and is making way for problem-oriented and student-centered learning strategies. Graduate entry medical programmes are now on the increase.

Adopting the 4-year medical programme alongside the traditional 5½ year programme at the UGMS, as currently occurs in some U.K. medical schools, would ensure that more doctors are trained within a shorter time to offset some of the challenges outlined above. Identifying candidates with the right attitude of passion and commitment for the medical profession has not been an easy task. Certainly, this group, after a well-thought out selection process, will present an easier challenge.

It is also hoped that this relatively mature group will have broader experiences with previous university training, work and the community participation to enrich their training. Personal interaction with alumni and students involved in GEMP elsewhere has confirmed that they are more mature and relatively easy to handle and therefore are more likely to take up the challenge of student-centered learning with some facilitation.

Faculty members and external examiners have consistently drawn the UGMS attention to lapses in application of pre-clinical sciences and theory to clinicals and we think integrating the course may rectify this challenge.

Furthermore, the Visitation Review Implementation Committee reports "an expressed preference for further consideration of how the first year could be combined with the final 3-year to provide a 4-year degree programme". The GEMP will be the pilot programme of the UGMS for this transformation which will employ the modern trend of an integrated medical programme. This Pilot Project will be used as a basis to plan further changes in UGMS curriculum to meet modern trends in medical education.

4.0 AIMS AND OBJECTIVES

a. To turn out more doctors to meet the ever-increasing demand.
b. To train graduates to acquire clinical competence to work as medical officers within the shortest possible time.
c. To produce graduates who will have a habit of life-long, self-directed learning, required for a career in a dynamic health service system, postgraduate studies, and scientific research.
d. To offer opportunity to otherwise suitably qualified candidates who could not be admitted into the traditional programme.

5.0 TRAINING OUTCOMES

As with all grandaunts from the UGMS, graduates of the programme should be able to:

a. show a clear understanding of the physical, biological and behavioural mechanisms of health problems
b. identify health problems and exhibit skills in collecting, analyzing and presenting information relevant to the problems, and to manage them at individual, family and community levels
c. develop the clinical skills and methods required to diagnose and manage frequently occurring diseases in the community, including emergencies, and to manage health problems of patients, including their physical, emotional, and social facets, within the context of effective healthcare
d. to apply basic principles in health education to assist and lead planning, implementation and evaluation of health programmes in promoting health, preventing disease, cure and rehabilitation, in line with community needs
e. function as an effective and efficient member of the health team with a sense of responsibility, dependability and accountability
f. recognize, maintain, and develop the personal characteristics and attitudes required for a career in the medical profession, including enhancing their knowledge through recognizing personal educational needs, self-directed learning, selecting appropriate learning resource and evaluating personal progress.

6.0 PHILOSOPHY

The traditional 5½ year medical programme is geared towards training doctors competent enough to eventually function as District Medical Officers of Health. With the establishment of the Ghana College of Physicians and Surgeons, which caters for postgraduate training in the various fields of clinical medicine, family medicine and public health, the focus of medical training needs to change with emphasis on producing competent doctors who can then progress to postgraduate courses to upgrade the manpower and specialist base of the Ghana Health Service.

There is a need to shift focus on **Teaching Students** in the traditional medical education to developing **Student - Centered Learning** approach in modern medical education, a great asset for continuous professional development, postgraduate training and **Research**.

Furthermore, in the traditional 5½-year programme, subjects are taught separately so that there is a lot of overlap due to repetition of information across subjects. These overlaps are inevitable for emphasis for the level of maturity of the younger students in the programme. In the 4-year programme, with more matured students entering the programme, it is possible to integrate the subjects early, with emphasis on student-centered and independent learning, and therefore do away with the overlaps and unnecessary repetitions without compromising standards as the students have greater ability to perform at higher cognitive levels. It also conforms with the modern trend where clinical training is introduced early in the curriculum to be appreciated in the right context.

7.0 INTAKE OF STUDENTS

An initial student intake of 50 GEMP fee - paying students, to rise to 50% of total admissions into the school.

8.0 PROGRAMME CODE

The programme code is GEMP

9.0 PROGRAMME OUTLINE

The entry point is Level 300.

The programme will be run in modules as a highly integrated course both horizontally, in that the disciplines within medicine are learned together, and vertically, in that clinical work and clinical relevance are introduced from the very beginning.

The programme is divided into two phases.

- Phase 1 -1½ years, will comprise three (3) Semesters
- Phase 2 - 2½ years, junior and senior clinical clerkships

10.1 PHASE 1

Phase 1 runs over 3 semesters covering 1½ years. Year one (1), is divided into two semesters (Level 300) and the first half of Year two (2), Level 400, is the third semester.

- Duration of semester - 19 weeks
- 17 weeks of teaching
- One (1) week revision
- One (1) week examination

10.1.1 ORGANIZATION OF MODULES

The programme will be run on a modular basis.

The teaching format to be adopted for semesters one (1) and two(2) are:

- Lectures and tutorials in the morning
- Patient- centered clinical activity)
- Laboratory Practical) in the afternoon
- Self-directed learning)

For semester three (3), the patient-centered clinical activity, self-directed learning and tutorial/practical would be in the morning and lectures would be in the afternoon. Early Clinical training will be carried out using the clinical skills and simulation centre, as well as relevant direct exposure to patients, with emphasis on student self-directed learning.

10.2 MODULE STRUCTURE

Table 1. module structure.

MODULE	TOPIC
	Semester One
GEMP 301	Cell Structure and Function in Health & Disease
GEMP 303	Membranes and Receptors in Health & Disease
GEMP 305	Genetic and Modular Basis of Health & Disease
GEMP 307	Immunity in Health & Disease
GEMP 309	Mechanisms of Disease
	Semester Two
GEMP 302	Gastro-Intestinal and Hepato-billiary System
GEMP 304	Nutrition and Metabolism in Health & Disease
GEMP 306	Musculo-skeletal System in Health & Disease
GEMP 308	Cardiovascular System in Health & Disease
GEMP 312	Respiratory System in Health & Disease
	Semester Three
GEMP 401	Body Fluids, Renal System & Acid-Base Regulation
GEMP 403	Head & Neck & Neuroscience
GEMP 405	Reproductive System in Health & Disease
GEMP 407	Health & Disease in Populations
GEMP 409	Medical Ethics & Behavioural Science

10.2.1 Time Tabling

Morning sessions will be from 8.00am – 1.00pm with a 30 minute break, lunch break from 1:00 to 2:00pm, while the afternoon session will be from 2.00pm – 5.00pm. (See Page 10.)

The time table below (Table 2.) shows the time schedules for the core modules proposed for each day from semester 1 – 3. The scheduling of activities within the sessions for any particular module is the responsibility of the module team, headed by a module co-ordinator.

10.2.2 Module Coordinator

A module coordinator is the person responsible for coordinating all the activities within a module and should be teaching a topic in the module. A module coordinator, in conjunction with members of the team, is responsible for the day to day management of the module within the programme, the design,

teaching and learning approaches. The module coordinator will also ensure the following:

a) that content and learning outcomes for each module, are written
b) that assessment procedures are adhered to
c) that the coordination and monitoring of assignments are done
d) that collation of questions for the module is taken care of
e) that evaluation of the module for subsequent improvement is done

10.3 **ASSESSMENT**

All modules and activities in Phase 1 are core and therefore compulsory.

Students will be assessed in the following forms:

10.3.1 **FORMATIVE ASSESSMENT**

Students will be assessed through:

i) Assignments

Assignments will be given and marked periodically. The module coordinator, together with the team, will determine the number of assignments per module per semester.

ii) **Theory Assessment**

There would be three assessments made up of objective tests and short essays. These assessments will be conducted during week 4, week 9, and week 14.

iii) Clinical Work/Patient-Centered Clinics/Laboratories

Assessment will be by Objective Structured Clinical Examination (OSCE) and Objective Structured Practical Examination (OSPE) – not less than 2 per module per semester.

iv) Attendance

A student must have attended at least 80% of lectures, tutorials, practicals and clinical work during the semester to be eligible to take the end-of-semester examination. An attendance register will be used at all lectures, tutorials and clinics. To be absent for medical reasons for up to a maximum of 5 consecutive days, a medical certificate should be provided.

10.3.2 **Pass Mark For A Module**

The Pass mark for a module is 50%. The Formative Assessment mark would form 50% of the final mark of the End of Semester Examination.

10.3.3 **SUMMATIVE ASSESSMENT FOR 1ST AND 2ND SEMESTERS**

This examination will contribute 50% to the final semester mark.

There will be one theory paper and an oral examination:

Theory Paper comprising of MCQs, long or short essays and oral examination to assess integration of the modules taught. The weighting of the components shall be 50:40:10.

10.3.4 **SUMMATIVE ASSESSMENT FOR SEMESTER 3**

At the end of the third semester, students will be assessed through MCQ's, long or short essays as well as OSCE/OSCPE and oral examination with the weighting of the components being 30:30:30:10.

10.3.5 **RE-SIT EXAMINATIONS**

There will be two re-sit examinations:

i) After End of Semester 2 examinations – to re-sit failed End of Semesters 1 and 2 examinations within 4 weeks.
ii) After Semester 3, to re-sit failed Semester 3 examinations within 4 weeks.

A student who fails in:-

a. more than two modules in the formative assessment is not eligible to write the end-of-semester examination.
b. More than 6 Modules (Semester 1 & 2 Examinations) at the end of Semester 2 will repeat or advised to withdraw.
c. maximum of 2 re-sit attempts of Semester 1 & 2 Examinations shall be advised to withdraw.

10.3.6 **PROGRESSION TO PHASE 2**

To progress to Phase 2, a student must score at least 50% in each module and must have passed all end-of-semester (1 to 3) examinations.

11.0 **PHASE 2**

This phase is predominantly clinical with relevant phase 1 integration and will be exactly as the existing regular programme.

The phase is divided into two:

Part 1 – Junior Clerkship

Part 2 - Senior Clerkship

11.1 Duration and areas to be covered during the Junior and Senior Clerkships will remain as approved for the regular MB, ChB program

11.2 Assessment

Phase 2 Examinations

Final Part 1 – Child Health and Obstetrics & Gynaecology after senior clerkship in O&G and Child Health

Final Part 2 – Internal Medicine, Surgery and Community Health after senior clerkship

Weighting of Part 1 and Part 2 examination marks

Formative – 30% of final mark

Summative – 70% of final mark

To pass the Part 1&/or 2 examinations, a student should have passed the clinical examination and obtained a minimum of 50% mark in the total of the formative and summative assessment.

11.3 **Notes**

- The Nursing week is incorporated in the Phase 1 curriculum
- Community Diagnosis course of the Community Health Department is incorporated in Phase 1
- An introduction to dentistry has been incorporated in Phase 1.

12.0 **GRADUATION**

The degree to be awarded is MB. Ch.B.

Eligibility for the award of MB. Ch.B degree

To graduate, the candidate should have satisfied the examiners in End of Phase 1 examination and obtained at least 50% in the Parts 1 & 2 Examinations.

13.0 Supplementary Examinations

13.1 Supplementary examinations for Part 1 shall be held six weeks after the main examinations.

13.2 Supplementary examinations for Part 2 shall be held 15 weeks after the main examinations or as indicated in the regulations for MB, ChB examination.

SEMESTER 1

GEMP 301 Cell Structure and Function in Health and Disease

Aims and Objectives

The module intends to enable students to:

- understand the concepts of the cell as the basic unit of life for all living organism
- explain the embryological derivations of cells
- know cell and tissue types, their functions and abnormalities
- understand cell transport mechanisms and how that relates to human health
- know the structure of microorganisms; understand their pathogenic mechanisms and how that relates to disease causation.
- know and understand the approach to the patient care
- understand the principles of clinical diagnosis of diseases and the application of appropriate investigation of the patients

Summary of intended learning outcomes

At the end of the module, the student should be able to:

- Recognize and classify human cells, know the main types and explain their functions and roles.

- Describe early embryonic development including the origin of germ layers and tissues.
- Interpret micrographs of organelles of the eukaryotic cell, epithelial, connective, muscle and nervous tissues, and explain structure-function relationships in each case.
- Classify connective tissue types and summarize the function of their cellular and extracellular components.
- Outline how some diseases affect skin (see module workbook for diseases) process of ossification and how some diseases affect bone.
- Recognize the different cells of the blood in micrographs, outlining their origin, and comparing their functions.
- Describe the structure and functional morphology of micro-organisms
- Demonstrate a sound theoretical knowledge of specific examples of microorganisms and be able to perform simple tests and interpret them.
- Show a clear understanding of the principles underpinning investigation of infectious diseases.

COURSE CONTENT

Cell structure, embryonic development, tissue types
Epithelia and glands
Connective tissues including cartilage and bone
Muscle tissue, nerve tissue
Function of organelles
Characteristics and differences between eukaryotes and prokaryotes at the cellular level
Functional role of the sub-cellular organelles, nucleus, ribosomes, Golgi complex, endoplasmic reticulum, mitochondrion, peroxisomes and lysosome
Structure and role of the cytoskeleton, extracellular matrix
Cell transport mechanism
Structure of the cell membrane and the types of transport across cell membrane
Passive transport
Vesicular transport
Differences between a channel protein and a carrier protein
The characteristics of all molecules that cross the cell membrane
Red cell and platelet structure and function
Red cell and platelet structure/function
Red cell shape and size, role of O_2/CO_2 transport; O2 dissociation curve
Composition and structure of red cell membrane; peripheral and integral proteins
Membrane organization- vertical and horizontal interactions
Structure of platelet membrane, platelet organelles (alpha and dense granules)
Role of platelets in primary haemostasis
Introduction to microbiologic agents: bacteria, fungi, parasites, viruses
General characteristics and classification of bacteria, fungi, parasites and viruses.
bacteria isolation and identification.
normal flora of various sites in the body
antimicrobial agents
sensitivity testing and resistant mechanisms
host- parasite relationships
pathogenesis of microbial infections
methods of diagnosis, control and treatment of microbial infections
effect of chemical and physical agents on viruses
Abnormal cell function
Abnormal cell function
Introduction to nursing
Approach to the patient
Introduction to the principles of diagnosis through history taking, examination and appropriate investigation of the patient

GEMP 303 Membranes and Receptors in Health and Disease

Aims

The module aims at making students understand the structure and function of the cell membrane and relate them to receptor function, and how drugs modify the entire cellular functional process. General pharmacological principles and drugs that affect the ANS will also be discussed. Students will also understand and appreciate the

relationship between the already mentioned goals and the clinical management of conditions such as myasthenia gravis and diabetes which are receptor mediated.

Module Objectives

On completion of the course students should be able to:

- Describe the fluid mosaic model of the cell membrane
- Describe the mechanisms associated with transmembrane transport of small molecules, including drugs
- Understand features of membrane electrical excitability, of voltage-gated ion channels and permeability associated with changes in action potential
- Understand communication between hormones, local mediators and neurotransmitters
- Outline variety of receptor mechanisms in relation to cellular function
- Outline the different effector mechanisms involved in cellular signaling pathways i.e. concepts of transducing proteins, second messengers and signal pathway cascades
- Understand the drug-receptor concept and define agonist and antagonist, and also distinguish between different types of antagonism
- Describe the anatomical and pharmacological divisions of the ANS. Understand process of neurotransmission of the cholinergic and adrenergic synapses in the ANS and neuromuscular junction
- Describe the principles of drug action using the ANS as an example of drug target and relate them to their clinical relevance.

Course Content

Membrane ultrastructure

General introduction of the cell membrane, Membrane proteins

Cell surface receptors

Electrical Characteristics, Synapses; ANS

Structure of the cell. Types of transport across cell membrane: Passive transport; simple diffusion, facilitated diffusion

Active transport; primary active transport, secondary active transport. Vesicular transport; Endocytosis (phagocytosis, pinocytosis), Exocytosis.

Channel protein & carrier protein (difference), Characteristics of molecules that cross cell membrane i.e. lipid soluble, polar, ionic, small molecules (urea, water), giant molecules (glucose, hormones).

General arrangement of the ANS., division of ANS., direction of action (organs innervated) of branches of ANS, pathways of ANS (preganglionic & postganglionic).

Neurotransmitters involved in the synapses. Types of receptors involved, effect of each branch of the ANS on each organ (excitatory & inhibitory) when stimulated.

Signal Transduction

Importance of Cell Communication in Eucaryotes, Nature of Signal molecules, Peptides/protein, Signal transduction at cell membrane

Receptor tyrosine activation, Receptor Serine/Threonine kinases, SMAD proteins and gene transcription.

Structure of G-protein coupled receptors, Phosphoinositide system, Ion Channel receptors, Perception of light, Signal transduction via intracellular receptors.

General Pharmacology; ANS

Drug definition, names, synonyms, nomenclature, classification, nature, etc.

Pharmacokinetics:

Drug absorption, distribution.

Drug biotransformation, excretion.

Routes of drug administration. Advantages, disadvantages. Drug formulations etc.

Pharmacodynamics

Drug receptor concept, Drug-receptor interaction (transduction process), Drug dose (concentration) and response.

Drug-drug interaction, Factors influencing dosage and drug response.

Autonomic Pharmacology

Introduction to ANS, cholinergic system.

Cholinomimetic drugs, anticholinergic drugs I, anticholinergic drugs II

Adrenergic system, sympathomimetic drugs I, sympathomimetic drugs II

Adrenoceptor blockers I, adrenoceptor blockers II, adrenergic neuron blockers.

Membrane and Receptor Abnormalities: Clinical Application

Introduction to clinical aspects of insulin resistance and myasthenia gravis

Common clinical symptoms and signs associated with insulin resistance and myasthenia gravis.

GEMP 305 Genetic and Molecular Basis of Health and Disease

Aim:

The aim of this module is for students to understand basic concepts of chromosome architecture, mechanism of gene expression and variation in gene expression in relation to cellular response. Students should appreciate the variety of protein structures necessary to carry out the range of cellular processes and be able to relate genes to nucleic acids and proteins in the overall process of gene expression including protein biosynthesis. Awareness of students to some ethical issues associated with the use of molecular biology shall also be stressed.

Pre-requisites:

At the beginning of this module the student should be able to:

i) Describe the various classes of molecules in cells and relate them to cell structure and function

ii) Outline the fundamental principles of chemistry including atomic structure and chemical bonding, equilibria and thermodynamics.

Intended Learning objectives/outcomes:

At the end of the module, the student should be able to:

- Know the relationship between genes, protein structure and function
- Describe the relationship between chromosome structure and gene expression
- Describe the effect of gene mutation on protein function
- Describe the fundamental process of inheritance and mutations and how these are related disease and patterns of disease
- Appreciate the environmental interactions that affect gene expression
- Relate the abnormalities in the basic mechanisms of replication, transcription, pre-mRNA processing and translation to diseases.
- Know the models of molecular disease (single gene, sex linked and chromosomal disorders)
- Know the ethical issues associated with molecular techniques in disease analysis management and treatment.

Course Content

Structure and function of proteins. Correlating protein structure to function
Electrophoresis of hemoglobin. the correlation between protein structure and function, protein misfolding and disease, and protein dysfunction and disease.
Enzyme catalysis, kinetics and inhibition. pH, acid base titration and meaning of *Pk*. enzymes, drugs as inhibitors and use of enzymes in clinical diagnosis.
Regulation of enzyme activity. Use of enzymes in medicine. Use if enzymes in diagnosis and treatmen.
Nucleotides and nucleic acid structure. DNA as the genetic material and the central dogma of molecular biology. the genetic code, effect of antimicrobials on replication and transcription
Mechanism of mRNA transcription in Prokaryotes and eukaryotes
Eukaryotic mRNA processing. Inhibitors of transcription and diseases associated with RNA processing in eukaryotes.
Translation Mechanism. rRNA, tRNA and Genetic code in Translation. RNA processing. Application of antibiotics based on differences between translation in bacteria and eukaryotes
Stem cells and disease management
Organism and Therapeutic cloning and the ethical issues of deriving stem cells from human embryosand eggs.
Embryonic and adult Stem cells, mechanism of stem cells generation, potential application of Pluripotent stem cells in regenerative medicine
Importance of restriction endonucleases in Recombinant DNA technology
Molecular cloning. Technique and factors required in molecular cloning
Uses of molecular cloning in medicine.
Basic mechanism of PCR amplification. Use of PCR in early detection and diagnosis of human diseases. Types of DNA polymorphism and their application in karyotyping, DNA Fingerprinting, prenatal diagnosis, etc.
Applications of PCR in medicine
Production of therapeutic proteins from cloned cDNA. Gene therapy

Protein structure and function. The use of enzymes in medicine
Biological information storage, copying, expression and its associated diseases.
Molecular basis of microbial disease (entry, multiplication, spread, colonization, virulence factors). Processes that facilitate acquisition of microbial diseases
Molecular mechanisms in viral and bacterial pathogenesis and their clinical significance
Cell cycle, Mitosis and meiosis, genotypes & Phenotypes, Oncogenes
Mendelian inheritance, pedigrees, genetic counseling.Disease models (genetic diseases).
Gross structure and classification of chromosomes.Detecting mutations and their effect on case studies; Gene testing and tracking; chromosomal analysis. Genome disorders, Downs syndrome,Chromosomal disorders, Y chromosomes and infertility
Mutations and diseases
Chromosomal abnormalities. Models of genetic diseases: Mendelian- autosomal recessive and dominant,Sex-linked disorders and chromosome disorders Chromosomal aberrations. Genes and Chromosomes. Chromosomal translocation
Bone marrow structure and stem cell maturation.
Slide projection on maturation of myeloblasts and erythroblasts, sickling test, solubility test, Hb F estimation, Kleihauer-Betke test. Examination of normal blood film.
Environmental factors affecting the maturation of bone marrow stem cells
Genetic basis of structural haemoglobin variants and thalassemias
Blood features of sickle-cell anaemia and thalassemia Mendelian diseases, Haemoglobinopathies

GEMP 307 Immunity in Health and Disease

Aim

To provide students with a thorough grounding in basic and applied immunology at theoretical level.

Learning Objectives

On completion of the course students should be able to:

- Demonstrate understanding of basic concepts of modern molecular immunology and immunity to infection.
- Understand and explain the basic features of non-specific (innate) and specific (adaptive) immune systems.
- Translate innate and adaptive mechanisms into immune protection, immunodeficiency and autoimmunity.
- Apply immunological concepts to the understanding of other relevant related subjects.
- Recognize the significance of the immune system in combating infection and disease.
- Understand the mechanisms combating infection/disease (killing pathogens).

Summary of Intended Learning Outcomes

At the end of the module, the student should be able to:

- Distinguish between non-specific **(innate)** and specific **(adaptive)** immune systems.
- Know the humoral and cellular components of the non-specific immunity.
- Comprehend the mechanism of action of the humoral and cellular components of non-specific immunity.
- Discuss the basic structure and general properties of all IMMUNOGLOBULINS (Igs) and outline their role to in the elimination of extracellular pathogens.
- Provide an overview of the types of cells, cell interactions and molecules required for specific immunity.
- Outline the role of T cells in immunity, contrast how T cells recognize immunogens, and discuss the consequences of T cell stimulation.
- Outline the major distinctive patterns by which host-microbe interactions lead to clinical disease and give a few examples of the underlying mechanisms.
- Outline the basic approaches to immunization, immunosuupressive and immunostimulant agents.
- Understand how MHC gene products were identified and their role in transplantation.
- Define Cytokines, their properties and functions, cytokine-related diseases, and therapeutic uses.
- Understand the classification of hypersensitivity reactions, and know the diseases associated with hypersensitivity reactions.
- Understand the concepts of autoimmunity and disease, the theories and aetiology of autoimmune disease, and the features of major autoimmune diseases.
- Know the primary and secondary immunodeficiencies (ID), particularly know ID in HIV/AIDS and other conditions, the major primary ID and their features and the diagnostic tests for different ID.

Course Content

Introduction to Immunology

Innate (Non-specific) and Specific Immunity
Antigens and Antibodies
Classes and Characteristics including haptens and role of adjuvants

Cellular Basis of Immune response-B, T and Antigen Presenting Cells including role of macrophages

Humoral Immunity
Antibody production, Primary and Secondary Immune responses, Development of specificity and Diversity by B cells, Regulation of B cell responses
Cell Mediated immune Response
Role of T cells in Antigen recognition, HLA and MHC Restriction, T cell activation: Role of accessory molecules including CD3, CD4, CD8, Regulation of T cell responses, B-T cell interaction, Negative Control of Immune response, Idiotypes, Suppressor T cells, T cell education
Immunological tolerance
Factors affecting induction of tolerance, Mechanism of tolerance
Immunopathology
Hypersensitivity
Type 1
Atopy
Mechanism and Predisposition
Clinical examples-Localized- Hay fever, Extrinsic asthma, eczema, food allergies,, urticaria, Systemic- Anaphylactic reaction/shock, Diagnosis- History, Skin Prick Test Management- Drug therapy, Desensitization
Type II (Antibody – Dependent Cytotoxic)
Mechanism
Clinical examples, Autoantibodies (to blood antigens including autoimmune haemolytic anaemia, idiopathic thrombocytopaenic purpura, and antigens in extracellular tissues, myasthenia gravis and systemic Lupus erythematosus, Isoantibodies (Alloantibodies), Diagnosis- History, Antibody localization
Type III (Systemic (Circulating) Immune-complex disease, Mechanisms,
Clinical examples- Localized- Farmer's lung
Systemic- Glomerulonephritis, SLE I-C mediated arterides
Type IV (Cell-mediated/Delayed) hypersensitivity
Mechanisms, Clinical examples- Mantoux test, TB, Leprosy, Syphilis, Viral infections, Contact dermatitis
Transplantation
Basic Concepts, HLA typing, Allograft Rejection. Mechanism (Cell-mediated, humoral immunity), Immunosuppressive therapy and associated problems, Graft-vrs-Host disease
Autoimmune diseases
Classification (Organ and Non-organ specific), Aetiology and Pathogenesis, Clinical examples.
Immunodeficiency
Basic Concepts, Aetiology and Pathogenesis, Clinical Examples
Primary immunodeficiencies, B-cell (Humoral), X-linked agammablobulinemia, Common Variable hypogammaglobulinema, Selective IgA deficiency
T cell (Secondary), DiGeorge/Nezelof Syndromes
Bare Lymphocyte Syndrome, Ataxiatelenangiectazia, Wiskott-Aldrech syndrome
Severe Combined Immunodeficiency, ADA SCID, PNP.
Immunomodulator
Overview of the immune response as background for understanding the mechanisms of action of immunomodulatory agents
Immunosuppressive Agents
General principles of pharmacological immunosuppression, Classes of immunosuppressive drugs: glucocorticoids, calcineurin inhibitors, antiproliferative, antimetabolic agents and antibodies, Risks of infections and tumors with immunosuppression: costimulatory blockade, donor-cell chimerism, soluble human leukocyte antigents(HLA) and antigen-based therapies.
Immunostimulant Agents
General principles of immunostimulation, Immunostimulants- Examples and pharmacologic profiles, Overview of active and passive immunization., New immunotherapeutic approaches
Immunity to Microbial Infections
Immunity to intracellular and extracelluar bacteria, fungi, viruses and parasites;

infections in immunosuppressed patients, Clinical examples-immunity to *Mycobacterium tuberculosis*, immunity to processing viruses, evasion of immune system by parasites.

Benign Diseases of the White Cell; Lymphoreticular System

Stem cell and myelopoiesis

Structure and function of phagocytic cells-neutrophils, monocytes, eosinophils and basophils, Structure and function of lymphocytes, Macrophage/lymphocyte interaction in immune response, The differential count in disease states, The spleen-Structure and function, Extra medullary haemopoiesis, Causes of splenomegaly and effects of splenectomy and hyposplenism.

Applications: Immunisations, Hiv/Aids

GEMP 309 Mechanisms of Disease

Aim

The aim of this module is to introduce the scientific basis of disease causation and help students understand the mechanisms and basic pathological processes underlying the diseases they will study in other modules. An appreciation of these mechanisms will facilitate an understanding of the symptoms, signs and abnormal investigation results in a patient and how various therapeutic interventions affect disease processes.

Course Objectives and Learning Outcomes

On completion of the module students should be able to:

- Classify, describe, differentiate and explain the mechanisms and key features of
  - normal and disease processes
  - cell injury, adaptation and cell death
  - acute and chronic inflammation
  - healing and repair
  - congestion, haemorrhage and edema
  - haemostasis, thrombosis, embolism and, infarction
  - disorders of growth and neoplasia
  - haemolytic anaemias, haematological malignancies
  - bone marrow failure
- Classify, describe, differentiate and explain the mechanisms of action and effects of agents used in/as
  - anticoagulation
  - antimicrobial agents
  - chemotherapy, immunomodulation and as anti hormonal agents
- Describe, explain and analyze the morphologic, biochemical and clinical effects induced by various pathogenetic processes in
  Burns, deep vein thrombosis, gangrene, myocardial and cerebral infarcts, cancers of breast and prostate, lymphomas and leukemias.

Course Content

Characteristics and Nomenclature of Disease: Aetiology; Pathogenesis; Manifestation and Presentation; Complications and Sequelae; Prognosis. Primary and Secondary; Acute and Chronic; Prefixes and Suffixes; Syndromes. Inherited and Acquired; Congenital;Iatrogenic.

Cellular Basis of Disease: Cell proliferation; Cellular response to injury.

Tissue Response to Injury - Inflammation, Healing and Repair

Acute inflammation, Chronic inflammation, Healing and repair.

Circulatory Disturbances: Hyperaemia and congestion, Oedema, Thrombosis, Disseminated intravascular coagulation, Embolism, Ischaemia and infarction, Shock.

Disorders of Growth And Neoplasia: Disorders of development, Dysplasia, Neoplasia

Anti-Coagulation, Chemotherapy, Anti-Hormonal Agents, Immune Modulation, Antimicrobials.- anticoagulants, anticancer drugs, antiviral anti fungal agents, antihelminthics, anti malarials, anti amoebiasis, anti-tuberculosis, antileprosy, antimicrobial angents. Antibiotics.

Haemostasis, Haemostatic response; Primary and secondary haemostasis.

Coagulation pathways, fibrinolysis and limitations of blood coagulation.

Inherited bleeding disorders – DIC, vitamin K deficiency, liver disease

Thrombosis Arterial and venous thrombosis Virchow's triad,

Risk factors for thrombosis, Hereditary and acquired Prethrombotic states

DVT, Heparin induced thrombocytopenia, antiphospholipid syndrome

Haemolytic Anaemias- General features and classification

Haemoglobin cataibolism, Intravascular and extravascular haemolysis

Congenital disorders of red cell membrane (Hereditary Spherocytosis and Ellitocytosis)
Inherited red cell enzymopathies (G6PD deficiency, Pyruvate kinase deficiency)
Acquired hemolytic anaemias
Autiommune/alloimmune haemolytic anaemia, Paroxysmal nocturnal haemoglobinuria, Paroxysmal cold haemoglobinuria, infection/infestations
Haematological Malignancies- oncogenesis and oncogenes. Classification of haematological malignancies
Chronic Leukaemias – CGL and CLL. Pathology, Clinical features and Laboratory diagnosis.
Acute Leukaemias – Classification, Pathology, Clinical features and Laboratory diagnosis.
Myeloproliferative Disorders. Classification, Pathology, Clinical features and Laboratory diagnosis.
Lymphomas – Classification, Pathology, Clinical features, Staging and Laboratory diagnosis.
Monoclonal gammopathies – Classification, Pathology, Clinical features, Staging and Laboratory diagnosis (Emphasis on Multiple Myeloma).
Bone Marrow Failure – Classification.
Aplastic Anaemia – Etiology, Pathology, Clinical features and Laboratory diagnosis.
Red Cell Aplasia – Etiology, Pathology, Clinical features and Laboratory diagnosis.
Bone Marrow Transplantation – Indications, donor selection, patient preparation, complications and management.
Clinical Applications: History taking and physical examination in patients with Burns, myocardial and cerebral infarction; deep vein thrombosis and pulmonary embolism.

SEMESTER TWO
GEMP 302 Gastrointestinal and Heaptobilliary System
Aims
The aims of this module are that the student should understand the normal structure and variations, function, and development of the human gastrointestinal and hepatobiliary systems, how their condition is assessed, how their functions are altered in common diseases, and understand the basic principle of management of gastrointestinal illness including surgical interventions.

Summary of intended Learning Outcomes
On completion of this module, the students should be able to:

- Describe the gastro-intestinal tract in terms of its gross and histological structure (including its blood and lymphatic supply and innervations) and its radiological and endoscopic appearance
- Describe the structure and function of the salivary glands, liver, gall bladder and pancreas, the mechanism and control of their secretion and their role in digestion
- Describe the structures and processes involved in mastication and swallowing food and outline the causes of dysphasia and common oesophageal disorders such as achalasia and gastro-oesophageal reflux
- Describe the movements of the stomach and regulation of the pyloric sphincter in the passage of the contents of the stomach to the duodenum
- Describe the main effects of peptic and gastric ulcer disease on the structure and function of the stomach, duodenum and associated structures
- Describe common liver and gall bladder disorders (e.g. ascites and portal hypertension, jaundice, cirrhosis, gallstones, bile & pancreatic duct blockage and pancreatitis) and their consequences
- Describe the structural adaptations of the intestines in relation to absorption of water, electrolytes, carbohydrates, proteins, lipids and vitamins and explain the principal methods and mechanisms relating to processes of absorption and in elimination of undigested and unabsorbed materials.
- Explain, in general terms, the basis of disorders such as malabsorption, diarrhoea, steatorrhoea, constipation & inflammatory bowel disease and their consequences.
- Explain the neurological basis of abdominal visceral and somatic pain
- Explain the embryology of the gastrointestinal tract in the adult and have knowledge of common congenital disorders (hiatus hernia, Meckel's diverticulum, diverticulosis and common sites of atresia and fistulae of the gastro-intestinal tube)
- Describe the structure of the abdominal wall, inguinal canal and the structural basis of the common congenital defects (e.g. inguinal, umbilical and other hernias)
- Describe the natural history of the common benign and malignant tumours of the gastrointestinal tract and its associated structures.

Course Content

Embryology

Formation of body cavities and body wall

Development of the oesophagus, stomach, small and large intestines.

Development of the liver, gall bladder, pancreas, and spleen.

Congenital anomalies of GIT.

Histology

General pattern of GIT and special segmental features.

Oesophagus, stomach, duodenum, jejunum, ileum, colon, caecum, and appendix.

Liver, gall bladder, and pancreas.

Gross Anatomy

Coeliac trunk, stomach, spleen, liver, gall bladder.

Superior mesenteric artery, small intestine

Inferior mesenteric artery, large intestine.

Duodenum, pancreas, and hepatic portal vein

Radiological Anatomy of the GIT, hepatobiliary system.

Living anatomy of the GIT and hepatobiliary system.

Salivary glands

Components of primary and secondary salivary secretion and secretion rates. Digestive function of saliva. Saliva and oral hygiene.

Oesophagus

Pressure, tone, and innervations along the oesophageal tube, including the UES and LES. The sequence of deglutition-voluntary and involuntary phases. Motility defects and role in heartburn and achalasia.

Stomach

Origin and progression of electrical and mechanical activity along the stomach wall and its role in stomach function. Mechanism of secretion of HCI and the role of H+-K+ ATPase and Na+-K+ ATPase. Hormonal control of stomach secretions. Mechanisms for damage to the gastric mucosal barrier.

Pancreas

Components of exocrine pancreatic secretions. Effects of autonomic nerves and vago-vagal reflexes on pancreatic secretions. Functions of ductal and acinar secretions on role of pancreas in digestion. Pancreatic function and CFTR gene mutations.

Bile

Cellular mechanisms for the hepatic uptake, conjugation, and secretion of bile salts and bilirubin. Role of GI hormones in the production and release of bile. The amphipathic properties of bile and its promotion of fat digestion. The enterohepatic circulation. Consequences of blockage of bile flow and formation of gallstones.

Small intestine

Influence of neuroendocrine factors on intestinal secretions in relation to motility, and the digestion and absorption of nutrients-carbohydrates, proteins and fats, fluids and electrolytes. Tight junctions, apical and basolateral membrane transport mechanisms. Consequences of deficiencies of carbohydrate and fat absorption along the gut.

Large intestine

Hormonal regulation of absorption of sodium, potassium, and bicarbonate along the colon.

Anatacids, Antispasmodics, Laxatives and Costives, H2-receptoor antagonists, proton-pump inhibitors, Antiemetics.

Diseases of salivary glands, Pharynx, Oesophagus, Stomach, Intestines, and Anus.

Circulatory sdisturbances of liver, Jaundice, Liver failure, hepato-renal syndrome.

Infections: Viral hepatitis, HVA, HVB, HVC, HVD, HVE, HVG infections. Yellow fever and toher viral infections,; Schistosomiasis, Amoebic abscess, chemical-induced liver injury, alcoholic liver disease, Bile-induced intra- and extra-hepatic biliary obstructuion.

Drug-induced pathology: Predictable and Unpredictable; hepatotoxic and cholestatic . Cirrhosis of liver, Tumours of liver, Gall stones and Cholecystitis. Neoplasms of gall bladder, Acute and Chronic pancreatitis, Neoplasms of pancreas.

Mechanisms and Management of intestinal obstruction

Understanding Surgical Jaundice

Cause of Dyspepsia and its Management (including peptic ulcer disease, gall bladder disease, and pancreatic disease).

Food absorption in the GIT and various disease states.

Examination of abdomen and surface markings.

Common symptoms and signs of gastrointestinal and hepatobiliary disease.

Demonstration of history taking relevant to GIT diseases, and physical examination of the abdomen.

GEMP 304 Nutrition & Metabolism in Health and Disease

Aim

The aim of this module is to let students understand and appreciate food utilization, tissue metabolism and energy balance and the endocrine control of these complex biochemical and physiological processes, giving them an understanding of the basis of metabolic/endocrine diseases like diabetes and obesity.

Summary of intended Learning Outcomes

On completion of this Section students should be able to:

- list the essential components of the diet and explain why they are essential
- calculate their own Body Mass Index and describe the factors involved in the long-term regulation of body weight
- explain how the energy required for cellular activity is derived from the food eaten.
- describe the general features and any clinical relevance of the metabolic pathways by which carbohydrates, lipids, amino acids and alcohol are degraded and are synthesized from appropriate precursors.
- describe the metabolic problems of anaerobic conditions and their clinical consequences.
- describe in outline how glucose and lipids are transported and stored in the body and explain the clinical consequences of defects in these pathways.
- describe how ketone bodies are produced and explain their clinical importance.
- describe how ammonia is produced, why it is toxic and how it is detoxified.
- analyse simple clinical case histories involving disturbances to metabolism such as marasmus, kwashiorkor, obesity, galactosaemia, lactose intolerance, glucose 6-phosphate dehydrogenase deficiency, hypercholesterolaemia, phenylketonuria, and hypoglycaemia.
- describe in outline the metabolic changes that occur during feeding, fasting, starvation, pregnancy and exercise and explain how they are controlled.
- explain why the blood glucose concentration is normally held relatively constant and explain the metabolic and clinical consequences of untreated type 1 and 2 diabetes mellitus.

Course Content

Bioenegetics

Chemical energy and concepts of energy transfer within cells; free energy change. Reaction coupling equilibrium constants and their significance.

"High energy" compounds as "energy currency". Inter-conversion of high-energy phosphate via 'equilibrium' kinases. Principles of energy abstraction. Energy source and utilization: NADH and NADPH; Caloric value of fuels; Respiration Quotient. Energy balance; Basal Metabolic Rate. Diseases associated with changes in NAD and NADP levels.

Basic and applied Nutrition

Macronutrients: nutritional requirements; recommendations for a healthy diet. Importance of dietary protein and maintenance of nitrogen balance. Assessment of nutritional status. Current dietary trends. Causes of malnutrition. Overview of energy metabolism. Factors influencing metabolic rate and energy balance Energy balance, Protein-energy malnutrition. Biochemical changes and Metabolic adaptation to PEM. Causes and effect. Kwashiorkor and Marasmus

Obesity: aetiological factors. Epidemeology. Role of leptin and its receptor Associated medical conditions eg Type II diabetes, Cardiovascular diseases. Diagnosis: Body Mass Index, Waist:hip ratios, waist circumference. Association of body shapes and morbidity and mortality. Principles of management.

Vitamins. Fat-soluble and water-soluble vitamins. Deficiency diseases. Hypervitaminoses

Trace elements: Sources and biochemical effects. Diseases of deficiencies and excesses.

Anti-oxidants: Dietary and non-dietary sources. Biochemical role. Biological effects of free radicals. Beneficial effects of anti-oxidants. . Special diets for treatment of specific clinical conditions.

Clinical Correlation: Prenatal and childhood nutrition

Carbohydrate and lipid structure
Carbohydrate: structures and properties of monosaccharide, epimers and cyclic structures. Dietary disaccharides and higher polymers. Hetero-polysaccharides: proteoglycans and glyco-proteins. Synthesis of oligosaccharide on the lipid carrier dolicol. Linkage with proteins. Degradation of proteoglycans**.** Lipids: structure and properties, nomenclature and roles of fatty acids.

Carbohydrate metabolism
Digestion and absorption of carbohydrate; hydrolysis of dietary carbohydrates; transport of dietary carbohydrates; disaccharide intolerance. Liver and muscle glycogen, role of liver glycogen in the maintenance of blood sugar. Glycogenolysis and glycogenesis. Glycogen storage diseases. Glycolysis and gluconeogenesis; glycolytic ability of various tissues, hexoses monophosphate shunt, metabolism of galactose and fructose; glactosemia, fructosuria and fructose intolerance. Aerobic metabolism of pyruvate, starvation, obesity. The coenzyme role of B vitamins. TCA cycle; central role of TCA cycle in metabolism. Changes in nutritional requirement and metabolic rate in injury and disease. Alcohol metabolism. Role of glycolysis in cancerous tissues and limiting oxygen environments. Aerobic metabolism of pyruvate, starvation, obesity. The coenzyme role of B vitamins. TCA cycle; central role of TCA cycle in metabolism. Changes in nutritional requirement and metabolic rate in injury and disease. Alcohol metabolism.
Clinical Correlation: Diabetes Mellitus.

Lipid metabolism
Physical and chemical characteristics of fats. Intestinal absorption, transport and storage of fat. Mobilizing lipase. Fatty acids and beta-oxidation, ketone bodies and ketosis. . Brief details of the fatty acid biosynthetic pathways and triacylglycerol formation . Elongation and desaturation of fatty acids.
Lipid transport: structure of plasma lipoproteins. Conversion of fatty acids and cholesterol from the diet to lipoproteins in intestine (chylomicron). Glucose from the diet to lipoprotein in the liver; VLDL. Metabolism of triacylglycerol-rich lipoproteins by lipoprotein lipase. Role of HDL and LCAT in the formation of LDL by receptor-mediated endocytosis. Cholosterol, bile acids and steroid hormones metabolism. Synthesis of cholesteryl esters by LCAT in plasma and ACAT in endoplasmic reticulum. Metabolism of cholesterol to steroid hormones. Biochemistry of atherosclerosis and thrombosis, metabolism of special lipids, phospholipids, sphingolipids, prostaglandins, and thromboxanes. ***Clinical Correlation: Atherosclerosis. Approaches to its treatment and prevention. Genetics and heart disease***

Electron transport chain and oxidative phosphorylation
Electron transport and oxidative phosphorylation, oxidations and reductions, electron transfers.
Specific enzymes associated with inner and outer mitochondrial membranes, matrix and inter-membrane space. Reversed electron transport, the concept of "high-energy pool". Mitchell's chemiosmotic theory. Mitochondrial transport and decoupling of electron transport and oxidative phosphorylation and inhibitors of mitochondrial function. Brown adipose tissue and thermogenesis. Mutation in mitochondria genes and disease; role of mitochondria in apoptosis.

Amino acid metabolism
An overview of amino acids metabolism. Essential and non-essential amino acids, Catabolic fates of amino acids; roles of glutamate dehydrogenase and some amino transferases. Tryptophan as a precursor nicotinamide in the formation of NAD and NADP. The Harnup disease. Formation of serotonine. Carbamoyl phosphate synthetase and urea cycle. The urea cycle and its role in gluconeogenesis from amino acids. Hyperammonimia and urea cycle defects. Glucogenic and ketogenic amino acids; fate of the amino acid carbon skeletons.
Interplay between muscle and liver during starvation and re-feeding, alanine-glucose cycle. Formation and role of glutamines.

The formation and breakdown of serine and glycine. The catabolism of histidine. Tetrahydrofolate as a one-carbon carrier. The One-carbon metabolism. Discussion of inter-relationships among choline, methionine, S-adenosylmethionine, and derivatives of tetrahydrofolate and cobalamine. Formation of creatine, polyamines and phosphatidylcholine.

Inborn errors of amino acid metabolism, illustrated by phenylketonuria, methylmalonic- acidurias, maple syrup urine disease, and propionicacidemia. Biochemical and clinical consequences of a metabolic block Detection and recognition of in born errors of metabolism; prenatal diagnosis; adminocentensis, fetal blood sampling, maternal screening; disorders for which prenatal diagnosis is possible;
Clinical Correlation: Inborn errors of Urea synthesis

Integration and control of metabolism
Interplay of tissues, pathways and hormones in energy metabolism. Key regulatory enzymes; allosteric control of pyruvate carboxylase, phosphofructokinase, fructose 1,6-phosphatase, pyruvate dehydrogenase. Effects of ATP, AMP, NADH, citrate; relevance of energy status to control. Distribution of enzymes between organs and subcellular compartmentation. Energy metabolism after eating and in short and long term starvation.Insulin-dependent diabetes mellitus. "Futile" cycles and function in thermogenesis and control sensitivity. Convalent modification: beta-adrenergic receptor and cascade processes.

Endocrine Regulation: Pituitary, thyroid, pancreas, adrenals, and calcium homeostasis

Summary of intended Learning Outcomes
On completion of this Section students should be able to:

- Explain the principle of negative feedback control of hormone secretion.
- Explain the principles of positive feedback and feed forward control of hormone secretion.
- Define hormone, target cell, and receptor.
- Explain the effects of secretion, excretion, degradation, and volume of distribution on the concentration of a hormone in blood plasma.
- List the target organs or cell types for oxytocin and describe its effects on each.
- Describe the stimuli and mechanisms that control vasopressin secretion.
- Identify disease states caused by a) over-secretion, and b) under-secretion of vasopressin and list the principle symptoms of each.
- Describe the biosynthesis, structure, and actions of the POMC hormone family.
- Describe the factors involved in short-loop and long-loop negative feedback control of anterior pituitary hormone secretion.
- Identify the steps in the biosynthesis, storage, and secretion of tri-iodothyronine (T3) and thyroxine (T4) and their regulation.
- Describe factors that control the synthesis, storage, and release of thyroid hormones TH), and the effect of serum binding on TH levels.
- Describe the biosynthesis of the adrenal steroid hormones (glucocorticoids, mineralocorticoids, and androgens) and the key structural features that distinguish each class.
- list the major actions of glucocorticoids hormones in injury and stress.
- List the causes and consequences of a) over-secretion and b) under-secretion of glucocorticoids and adrenal androgens.
- Relate mineralocorticoid secretion to the regulation of sodium and potassium excretion.
- List the physiological effects of insulin on its major targets.
- Describe disease states caused by insulin deficiency, oversecretion of insulin and insulin resistance.

General principles of endocrinology
General principles of endocrinology. Feedback concepts in endocrinology-negative, positive, feedforward regulation. Hormone target cells and receptors. Effects of secretion, metabolism, and excretion on hormone levels.

Pituitary hormones
Hormones of posterior pituitary. Stimuli for release of posterior pituitary hormones. Diseases of vasopressin under-secretion and over-secretion. Origin and actions of POMC hormone family. Feedback between hypothalamus and anterior pituitary. Deficits due to abnormal secretion of anterior pituitary hormones.

The thyroid
Control of synthesis, storage and release of thyroid hormones (TH). Effects of TH and consequences of abnormal secretion of thyroid hormones.

Hormones of the adrenal cortex
Major actions of glucocorticoids on metabolism, and during stress and injury. The effects of abnormal secretion of glucorticoids and adrenal androgens. Stimuli that affect mineralocorticoid secretion and their regulation of sodium and potassium excretion. Consequences of abnormal mineralocorticoid secretion.

Hormones of the adrenal medulla
Catecholamines and receptor subtypes mediating their actions.

The endocrine pancreas.
Control of glucagon secretion. Major effects of insulin. Role of neural and GI hormones on insulin secretion. Disease states that are caused by insulin deficiency and excess. Insulin resistance.
Clinical presentation of metabolic and endocrine diseases: symptoms and signs. Diabetes mellitus, hyperlipdaemias, hyperthyroidism, hypothyroidsm, Cushing,s disease etc.
Introduction to the metabolic syndrome

Principles of Investigation; metabolic and endocrine response to injury; disorders of lipid metabolism, hyperlipidaemias

Summary of intended Learning Outcomes
On completion of this Section students should be able to:
- describe in outline the principles underlying hormone assays
- explain the biochemical basis for assaying metabolites
- describe the role of cytokines, acute phase proteins and lipid mediators in stress
- Explain the differences between metabolic responses to starvation and trauma
- Explain the effect of trauma on metabolic rate and substrate utilization
- Determine calorie and protein requirements during metabolic stress
- Calculate calorie and protein requirements for hospitalized and surgical patients
- describe the clinical consequences and principles of management of high blood lipids
- explain the Frederickson's classification of dyslipidaemias

Investigation of endocrine and metabolic disease
Investigation of metabolic and endocrine diseases: hormonal assays, assay of metabolites eg VMA; Lipid level, uric acid, C-reactive protein, Serum protein etc. Stress and deprivation tests for diagnosis of endocrine malfunction.

Disorders of lipid metabolism and hyperlidaemias
Relative importance of different lipoproteins in the atherogenic process. Principles of pharmacological and non-pharmacological management. Reversible and non-reversible risk-factors of coronary artery disease.
Current concepts; Tangier disease, and other rare disorders;
Familial hyperlipoproteinaemia
Phenotypes; Frederickson's classification

Metabolic and endocrine response to stress
Metabolism of substrates in starvation and trauma. Changes in demand for protein, energy and micronutrients during stress. Adaptation of specific tissues such as the brain. Role of arginine and glutamine in metabolic response. Phases of the metabolic response. Hormonal changes in response to stress: catecholamines, glucocorticoids, glucagons etc. Other mediators of stress – cytokines, lipid mediators, acute phase proteins. Metabolic response to surgical trauma. Determining protein and calorie requirements for hospitalized patients.

Deficiency Anaemias
Summary of intended Learning Outcomes
On completion of this Section students should be able to:
- list the causes and clinical features of iron and vitamin deficiency anaemias
- list the microscopic features of deficiency anaemias
- explain the causes, pathology and laboratory features of iron overload
- explain the underlying causes and principles of management of deficiency anaemias

Iron deficiency and overload
Iron metabolism – dietary sources, absorption, distribution, metabolism and storage Clinical and laboratory features of Iron deficiency. Iron overload – causes, pathology and laboratory features.
Macrocytic and sideroblastic anaemias
Folate and B_{12} metabolism-dietary sources, absorption, distribution and storage. Biochemistry, clinical and laboratory features of Folate and B_{12} deficiency. Sideroblastic anaemia – causes, pathology and laboratory features.

GEMP 306 Musculoskeletal Module in Health and Disease

Aim

The aim of this module is to equip students with a sound foundation in the basis of musculoskeletal function and an excellent appreciation of the clinico-pathological manifestation of musculoskeletal disorders.

Background knowledge: At the start of the module, it is expected that students would know about:

1. the structure and function of cell organelles, and basics of energy metabolism
2. nerve structure and function
3. basic structure and function of bone, cartilage, tendons, ligaments, connective tissue and skeletal muscle tissue.

Learning Outcomes: At the end of the module, students should be able to:

- state the functions and the composition of the skeletal system
- briefly enumerate major bones in the axial and appendicular skeleton
- define and describe special features of types of muscles, bones and joints.
- describe the role of hormones on bone
- describe the diseases of bone and joints
- distinguish thick and thin myofilaments as contractile components of the sarcomere
- describe the endocrine actions on skeletal muscle, including the control of Ca^2
- list the steps in excitation-contraction coupling in skeletal muscle, and describe the roles of the sarcolemma, transverse tubules, sarcoplasmic reticulum, thin filaments, and calcium ions.
- describe the roles of ATP in skeletal muscle contraction and relaxation
- distinguish between an isometric and isotonic contraction
- explain the interaction of the length-force and the force-velocity relationships
- construct a table of structural, enzymatic, and functional features of fast-glycolytic, fast-oxidative, and slow oxidative fibre types from skeletal muscle
- define a motor unit and describe the order of recruitment of motor units during skeletal muscle contraction of varying strengths.
- list the major drugs used in the treatment of acute and chronic muscle spasticity and describe their mechanism (in CNS and skeletal muscle)
- describe and distinguish inflammatory diseases of muscle
- describe and distinguish types of muscular dystrophies
- distinguish types of myopathies
- identify and describe myoneural junction
- list in sequence the steps involved in neuromuscular transmission in SM and point out the location of each step at the neuromuscular junction
- review the transmission process at the neuromuscular endplate and points at which drugs can modify the process.
- distinguish depolarizing and non-depolarizing neuromuscular blockers and compare their pharmacokinetics
- distinguish disorders of neuromuscular transmission:Myasthenia gravis; Eaton-Lambert syndrome.

Course Content

The Skeletal system

The functions and the composition of the skeletal system. Major bones in the axial and appendicular skeleton. Types of muscles, bones and joints. Classification of bones. Joints -Types of joints — fibrous, cartilaginous and synovial. Skeletal muscles attachment to skeleton e.g. tendons, aponeurosis and raphe.

Inflammatory disease of bone: Osteomyelitis (acute and chronic). Paget's disease of bone neoplasms: Osteogenic sarcoma; Chondrosarcoma. Diseases of Joints (Arthritis; Tumors of synovium and tendon sheath).

The Muscular system

The major functions and innervations indicating the origins and insertions of the following muscles- Muscles of the back — trapezius, latissimus dorsi, splenius capitis, semispinalis capitis, erector spinae, etc. Major muscles and muscle groups of the hip, thigh, leg, and foot. Muscles of respiration, anterior and posterior abdominal wall muscles, pelvic floor muscles, muscles of mastication, muscles of the larynx. Tendons, and ligaments. , muscle spindle, golgi tendon organ.

Functional overview from whole muscle to molecular components of the sarcomere. Thick and thin myofilaments and constituent proteins. Functions of heavy and light chains of the myosin molecule.

Excitation-contraction coupling: Mechanics and energetics of skeletal muscle contraction. Calcium

metabolism. Excitation-contraction coupling and the role of transverse tubules, thin filaments, sarcoplasmic reticulum. Extracellular Calcium-physiological and clinical effects of changes. Calcium in blood and bone. Bone mineralization. Control of bone formation and resorption. Bone remodeling. Calcium, bones and osteoporosis. Hormonal control of Ca2+. Vitamin D actions and clinical correlates. PTH and Ca^{2+}. Cross-bridge cycling (rate of cycling) and muscle shortening. Sources of energy for muscle contraction and relative efficiency for ATP supply. Twitch and tetanus. Isometric and isotonic contraction. Length-force and force-velocity relationships. Influence of muscle tendons on contractile function. Muscle fatigue and causes. Fibre types in skeletal muscle. Functional features of fast-glycolytic, fast-oxidative and slow-oxidative fibres. The motor unit and recruitment of motor units in strength gradation.

Spasmolytic drugs

Diseases of Skeletal Muscle: Inflammatory diseases of muscle-bacterial myositis, viral poliomyositis; muscular dystrophy and related disorders; drug-induced, toxic, and endocrine myopathies

Neuromuscular transmission:
The neuromuscular junction. Sequence of energy transduction at the neuromuscular junction. Neuromuscular blockers; Diseases of neuromuscular transmission (Myasthenia gravis; Eaton-Lambert syndrome).

Clinical Applications

GEMP 308 Cardiovascular System in Health and Disease
Aim
The aim of this module is to understand importance of the relationship of the structure of the heart and blood vessels to the function of the cardiovascular system, how function is altered in disease and how function can be restored with medications as part of management.

Learning Outcomes

On completion of this module, the student should be able to: describe the structure and relations of the heart and major blood vessels of the body and relate these to function of the circulatory system describe the development of the heart, common congenital defects, causes and the pathology of valvular defects and how these impact function relate the structure of the heart muscle to its function as a pump and understand the basis of the valvular, pressure and volume changes during the cardiac cycle in normal and disease states describe the molecular and cellular events underlying the cardiac cycle, the principles of altering the rhythm and contractility of the heart by drugs. the categories of drugs and the principles involved describe the role of the pacemaker, the electrical events in the heart and their relationship to the normal electrocardiogram, to be able to identify normal characteristics of a normal electrocardiogram and common abnormalities associated with selected clinical conditions, describe the role of the autonomic nervous system in cardiovascular function describe cardiac output and understand the control of cardiac output in a normal individual at rest and the changes associated with activity and in disease states, and the principles of management describe the physical] factors which determine and influence blood flow in vessels, the source and regulation of blood pressure and how it is measured, and the mechanisms of control of peripheral vascular resistance, the causes of abnormal changes in blood pressure effect on function and the principles of management relate the structure of blood vessels to the flow pattern and characteristics in different segments of the vascular tree, the factors which influence venous return, causes of abnormal venous function such as thrombosis, their effect on function and the principles of management describe the factors which govern fluid exchange at the capillary and understand the patho-phvsiological basis of oedema, and the principles of management describe the factors — both local and external which vary tissue blood flow, and the special features and blood flow to selected organs such as the heart, brain, kidney, gastrointestinal region , muscle, and skin in normal and abnormal states describe the common causes, the patho-physiological basis of presentation and principles of management of heart failure define shock, describe common causes, the effects and principles of management of shock describe the presentation ,diagnosis, and management of acute chest pain.

Course Content

Development of the CVS
Gross as Anatomy of the mediastinum, heart in situ, Pericardium
Radiological Anatomy of the heart
Gross Anatomy of the vascular system
Histology of the CVS
Regional circulation, coronary circulation

Cardiac electrophysiology
Principles of ECG
The Heart as a Pump
Cardiac cycle
Regulation of Heart rate
Regulation of cardiac output
Factors which influence flow through tubes
Regulation of blood pressure
Regulation of tissue blood flow
Capillary and lymphatic circulation
Venous circulation
Regional circulation
Cardiovascular adjustments in health
Pharmacology of Arrhythmias
Anti-hypertensive drugs
Pharmacology of Ischaemic heart disease
Drugs used in cardiac failure
Peripheral vascular disease
Hypertensive vascular disease
Pathology of ischaemic heart disease
Disorders of Pericardium, endocardium
Disorders of myocardium
Valvular heart disease
Pathophysiology of cardiac failure
Aneurysms
Vasculitides
Tumours of the cardiovascular system
Microbial infections of the CVS
Interpretation of ECG – normal and abnormal
Clinical problems on capillary and tissue perfusion
Cardiac failure
Cardiovascular function in Sickle cell disease, HIV/AIDS
Clinical Examination of CVS
Investigation of CVS disorders e.g. CV line etc. Chest pain
Interpretation of ECG
Clinical problems on capillary and tissue perfusion
Congenital heart disease
Chest pain
Effect of posture, exercise (stress test), drugs on cardiac output and blood pressure
Peripheral vascular disease, varicose veins etc
Congenital heart disease
Cardiac arrest
CPR

GEMP 312 Respiratory System in Health and Disease

Aim

The aim of this module is for the student to understand the structure, function, and regulatory mechanisms of the respiratory system, and how they relate to the manifestation of common respiratory diseases, and the principles of treatment.

Pre-Requisites

The student should have basic knowledge of;

- Cell structure and their function in health and disease.
- Basic biochemistry of blood and the acid –base control mechanisms
- The classes of microorganisms and their role in causing disease.
- The function of the central nervous system and autonomic nervous system in the body

Intended Learning Outcomes

By the end of the course the student should be able to:

- Describe the anatomy and function of the respiratory tract, from the nose, nasopharynx, larynx, and bronchial tree down to the alveoli

- Describe the structure and function of the chest wall, pleural cavity, diaphragm and lungs and their role in breathing
- Describe the defences of the respiratory system and respiratory epithelium against infection
- Describe the neural and chemical control of breathing, and factors that affect the carriage of oxygen in the blood
- Describe the biochemistry and physiology of gaseous exchange at the alveolar and respiratory bronchiole level and note differences in structure and function of the bronchi and bronchioles
- Describe the functional and physiological abnormalities of respiratory failure
- Describe the microorganisms causing common infections of the upper and lower respiratory tract
- Describe the aetiology, clinical presentation and treatment of pneumonia, tuberculosis, pleural effusions, asthma, COPD and interstitial lung disease
- Describe the various presentations of occupational lung disease
- Describe malignancies of the lungs and pleura

Course Content

Introduction to Respiratory System
Anatomy of the conducting portion of the upper and lower respiratory tract
Embryology of the respiratory system and anomalies
Anatomy of the respiratory bronchioles and alveoli, blood supply and drainage
Anatomy of the lower respiratory tract -Demonstration
Respiratory System: Structure And Function
Anatomy of the thoracic cage: mechanics of respiration
Physiology of Respiration: neural and chemical control of breathing
Functional Anatomy of the larynx
Respiratory physiology: lung volume measurements, arterial blood gases
Lung volumes in the cycle of respiration
Gas Exchange
Gas transfer in the lungs and the release of oxygen to the tissues
Symptoms of respiratory disease I
Arterial blood gases and control of acid-base balance
Physiology of Breathing
Respiratory Symptoms
Pathology of the conducting airways – nasopharynx, sinuses, larynx
Immune defence mechanisms of the respiratory system
Symptoms of respiratory disease II
History taking: respiratory symptoms
Surface markings of the lung: Inspection of the chest wall
Pneumonia
Microorganisms that cause pneumonia and upper respiratory tract infection (URTI)
Symptoms and signs of pneumonia
Microbiology: Laboratory diagnosis of pneumonia
Examination of patient: signs of pneumonia
Structure and physiological function of the bronchopulmonary segment
Obstructive Airways Disease
Physiology of asthma: cells, mediators, mechanisms
Symptoms and signs of asthma, COPD: similarities and differences
Pathology of asthma, emphysema and chronic bronchitis
Pharmacology: Treatment of asthma and allergy
Differing aetiology of community-acquired and hospital-acquired pneumonia
Respiratory Failure
Physiology: types of respiratory failure
Diagnosis and management of respiratory failure
History taking and examination of patient: pneumonia, COPD, asthma
Microbiology: organisms that cause pneumonia, tuberculosis
Loeffler's Syndrome, parasitic diseases of the lungs
Tuberculosis
Tuberculosis: clinical presentation and diagnosis
Pathology: Complications of pneumonia: lung abscess, empyema, bronchiectasis
Pharmacology: Treatment of pneumonia
Chest radiographs: pathology and clinical correlates of abnormal Xrays

Treatment of tuberculosis: adverse effects and contraindications:

Interstitial Lung Disease

Pathology: occupational lung disease
Interstitial lung disease symptoms and signs: fibrosing alveolitis
Pleural effusion: symptoms, signs, causes
Theory: pathology, pathophysiology, microbiology
Chest radiographs, CT scans of chest
Examination of patients

Pleural and Lung Cancer

Pathology: pleural and lung malignancies
Lung cancer: aetiology, symptoms and signs
Diagnosis and management of occupational lung disease

Pleural Disease

Pleural effusion: differential diagnosis, investigations
Pneumothorax: symptoms and signs
Treatment of suppurative lung disease: pharmacology, clinical
Physiotherapy: Treatment of suppurative lung disease

Cardiorespiratory Disorders

Acute pulmonary oedema of cardiac and non-cardiac origin
Acute pulmonary embolism: symptoms and signs
Pharmacology: Treatment of Interstitial lung disease – steroids, immuno-modulating drugs
Pharmacology: Anticoagulant therapy
espiratory examination of patients: pleural effusion, pneumonia
Full history and respiratory examination of a patient with respiratory disease:

The Immune Compromised Patient

Respiratory infections and disorders associated with HIV/AIDS
Pharmacology: treatment of opportunistic infections in HIV/AIDS
Pharmacology: HAART – treatment of HIV/AIDS
History and examination of a patient with respiratory disease: Case presentations

Rheumatoid Arthritis and the Lung

Respiratory complications of rheumatic disorders: collagen vascular disease
Pathology: the lung in rheumatoid arthritis
Haemoptysis
Clinical medicine, pharmacology

SEMESTER 3

GEMP 401 Body Fluids, Renal System and Acid-Base Regulation

Aims

This is to impact to the students the concept of the maintenance of the "internal environment" of the body, the role of the kidneys in this regard, the consequences of the interruption by diseases of the kidneys, ureters and bladder and the effect of drugs in renal function in health and disease and the principles underlying diagnosis, investigation and management of disturbances of the "internal milieu"

Learning Outcomes

At the end of the module, the student should understand: the importance of fluid compartments of the body, the various fractions, their volume and composition and principles of assessing the various fluid volumes the effect of disturbances of fluid volume on function and mechanisms of correction the embryological development, structure and relations of the kidney, ureters, bladder and urethra, the mechanisms of visualization and the effect of anatomical aberrations on function the structure and histology of the functional unit of the kidney and urinary system processes involved in urine formation, composition of urine, common abnormalities and clinical relevance structure of the glomerulus, including the juxtaglomerular, the process of glomerular filtration, the concept of clearance, GFR and applications in clinical medicine the role of the kidney in electrolyte balance with particular reference to sodium, potassium, calcium, chloride, bicarbonate and phosphate the role of the kidney in varying the concentration of urine, the role of the kidney in disturbances of fluid volume and haemodynamics concept of diuresis, diuretic agents and their mechanisms of action concept and importance of acid-base balance, the role of the kidney in maintaining acid-base balance, interpretation of common acid-base disorders and their correction the bladder, control of micturition and disorders of micturition endocrine functions of the kidney and their clinical relevance defense mechanisms of the urinary system, common infections of the urinary system, effects on function and the principles of diagnosis and management common pathological changes in the urinary system, including glomerulonephritis, pyelonephritis, tumours and their

clinical consequences renal metabolism and excretion of drugs, their clinical application and the effect of drugs on renal function the features, consequences and principles of management of acute and chronic renal failure principles of dialysis and application principles of investigation of renal function and their application in clinical medicine.

Course Content

Body Fluids
Review of osmosis and fluid movement across membranes
Body fluid compartments
Disturbances of body fluid compartments
Hypovolemia
Problems on body fluids (gastro-enteritis, hypoalbuminaemia)
Introduction to the urinary tract
Introduction to the urinary system
Imaging of the urinary tract (Ultrasound, IVU, CT Scan, MRI, Radionucleide Scan)
Gross structure of the urinary system
Gross anatomical correlations
Development of the urinary system
Development of the urinary system
Congenital abnormalities of the urinary system
Histology of the urinary system
Problems on imaging of the urinary system
Histology of the urinary system
Congenital abnormalities of the urinary system, eg. Polycystic disease of the kidney
Filtration
Functional Unit and elements of renal function
Structure of the Glomerulus and principles of glomerular filtration
Concepts of clearance and application
Pathological disorders of the glomerulus and their effect on function
Problems relating to GFR and Clearance (International Classification of kidney disease based on GFR)
Renal Control of solutes and plasma volume
Renal handling of solutes, e.g. glucose, amino acids
Renal handling of electrolytes
Disturbances of electrolyte and solute transport, stone formation, etc.
Renal involvement in hypertension, hypotension, JGA apparatus, ACE inhibitors
Renal control of Osmolarity
Renal handling of water, the countercurrent mechanism
Role of the kidney in disturbances of blood volume – clinical correlates
Mechanisms of diuresis, Diuretic agents and mechanism of action
Tests and disorders of urine concentration
The kidney in sickle-cell disease, hyposthenuria CKD
Acid-Base Balance
Concept of buffers, generation of acid and base in health
Regulation of acid-base balance
Disorders of acid-base balance
Acid-Base disorders
Measurement of electrolytes, arterial blood gases and pH
Acid-base and potassium regulation
Micturition
Functional Anatomy and Physiology of micturition
Disorders of micturition – pathological correlation
Disorders of micturition – clinical considerations
Problems of incontinence
Urinary Tract Infections
Common microbial infections of the urinary tract
Diagnosis and investigation of urinary tract infections
Clinical presentation of urinary tract infections
Further study of infections of the urinary tract (Upper and Lower Urinary Tract Infection)
Renal Pathology
Obstructive uropathy, lithiasis

Acute inflammatory conditions of the urinary tract
Chronic inflammatory conditions of the urinary tract
Miscellaneous renal diseases

Renal Pathology

Neoplasms of the renal system
Chronic renal diseases

Renal Function and Drugs

Renal handling of drugs
Effects of drugs on renal function
Nephrotoxic drugs (NSAIDS, Antibiotics, Contrast Agents)

Acute Renal Failure

Effects of acute injury on renal function
Patho-physiology of acute renal failure
Acute renal failure – clinical considerations

Chronic Renal Failure

Chronic renal injury, end-stage kidney
Effect of and dosage of drugs in renal failure
Principles of dialysis
Visit to Dialysis Unit

The Kidney and Systemic illness

Endocrine functions of the kidney
Effect of chronic renal disease on body function 1
Case study – Renal failure
Clinical problems in chronic renal disease
Effect of systemic illness on renal function
Investigation of the urinary system
Clinical examination of the renal system
Clinical examination of urine

GEMP 403 Head and Neck & Neuroscience in Health and Disease

AIMS

- study the structures of the head and neck within a functional and clinical context
- study the functional anatomy of major structures of the nervous systems and their connections and their relevance to clinical medicine
- relate the anatomy of structures to investigative procedures of the nervous system
- study the functions of the nervous system in normal and disease states
- study common microbial infections and pathological diseases of the nervous
- system and how these impact function
- study the elect of drugs and chemicals on neural function in health and disease
- gain an understanding of psychiatric manifestations of diseases of the nervous system
- apply above information to the diagnosis, investigation and management of diseases of the nervous system

Learning Outcomes

On completion of the module, the student should be able to:

- Describe and demonstrate clinically relevant features of the skull and its radiological' images. These features will include the orbit and its contents, paranasal sinuses, auditory passages and temporomandibular joint
- Describe the junction of various muscle groups related to the head and neck
- Discuss the basis of common disorders associated with the nostrils, paranasal sinuses. pharynx, salivary and thyroid glands
- Appreciate and describe the disposition of cervical lymph nodes, area of drainage and clinical importance.
- Relate the anatomy of cranial nerves to their function and clinical examination
- Describe the embryological development of the nervous system and appreciate the importance of anatomical integrity to function
- Describe the importance of the layers covering the nervous system
- Describe the histology and function of supporting cells in the nervous system
- Describe the functional anatomy of various structures and tracts in the nervous system
- Be familiar with the function of major parts and structures in the nervous system in health and disease

- Describe the blood supply of the brain and its regulation in health and disease
- Describe the role of the meninges and cerebro-spinal fluid in health and disease.
- Know the common microbial infections of the nervous system and their impact on function
- Be familiar with common pathological processes in the nervous system and their impact on function
- Appreciate the effect of drugs and chemicals on neural function in health and application in management in CNS disease.
- Be familiar with common diseases of the nervous system, their presentation and principles of management
- Be familiar with the principles of investigation in neurology and the basis of clinical examination of the nervous system

Course Content
Head and Neck
General organization
Introduction & Genera! Regional Anatomy of the Head & Neck
Embryological development of structures of Head & Neck
Osteology & Radiology of the skull & Cervical Spine
Functional consequences of congenital abnormalities of the head and neck
Neck
Triangles of the neck
Blood supply of the head and neck
Lymphatic drainage of the head and neck
Face
Anatomy of the Orbit, Ear, and Nose.
Anatomy of the Temporal and Infratemporal regions
Anatomy of the oral cavity, pharynx and larynx
Temporomandibular joint
Examination of the eye, ear and nose
Cranial Nerves
Functional components of cranial nerves
Extracranial course, and function of cranial nerves
Clinical Examination of cranial nerves
Cranial nerve palsies
Neuroscience
Development of the nervous system
Organisation of the nervous system
Functional embryology of the nervous system
External features of the brain and spinal cord
congenital abnormalities of the nervous system
Function of neurones
Functional development of the nervous system
Structure and function of neuroglial cells
Electrical characteristics of neurones
External and internal features of the spinal cord
Synaptic and Neuromuscular transmission, Neurotransmitters
Spinal Cord
Pharmacology of neuromuscular and synaptic transmission
Neurotransmitters, chemical disturbance of brain function - Depression etc
Internal and external features of the spinal cord
Clinical physiology and common disorders of the spinal cord
Spinal cord and Medulla
Brain-stem
Internal and external features of the brain-stem
Functional importance of the brain-stem
External and internal features of the brain-stem
Consciousness
The brain stern — Arousal and sleep, Principles of EEG
Acute intracranial events
Case studies on altered consciousness eg concussion, delirium. coma
Assessment of consciousness, Brain death

Role of the cerebral cortex
Functional anatomy of the cerebrum
Clinical physiology of the cerebral cortex
Consciousness - Pharmacological modifications
Cerebrum. Thalamus
Disturbances of cortical function - Clinical and Pathological correlates
Alzheimer's disease, Effect of alcohol
Sensory System
Structure of receptors and general organisation of the sensory system
Ascending and Descending pathways
Physiology of somatic sensation
Sensory disturbance — Clinical and Pathological correlates
Clinical examination of the sensory system
Causes of sensory disturbance
Clinical physiology of pain, referred pain etc
Pharmacology of pain
Motor System
Organization of the motor system, muscle receptors, motor unit
Motor Control
Role of cortex, cerebellum and basal nuclei in motor function
Lesions of the motor system
Clinico-Pathological aspects of movement disorders
Clinical significance of the stretch reflex, upper and lower motoneurone lesions
Clinical examination of the motor system
Special Senses
Clinical physiology of vision
Clinical physiology of the auditory
Visual, Auditory and Vestibular disorders
Clinical examination of the special senses
Clinical significance of Taste and Smell.
CNS Imaging and Head Trauma
Anatomy of the blood supply of the brain, CSF, Ventricular system
Cerebral circulation, and disorders — clinical and pathological considerations
Principles of Neuro-Irnaging. CVA and Traumatic Intracranial Bleeding
Head injury, clinical presentation of CVA
Intracranial Pressure changes
Hypothalamus
Functions of the Hypothalamus. Thermoregulation
Autonomic Nervous system - Anatomical and Physiological considerations
Autonornic Pharmacology
Disorders of Autonomic function
Anatomy of Thalarnus, Hypothalamus
Disturbances of Global Brain Function
Infections of the Nervous System
Tumours of the Nervous System, Space-occupying lesions
Pathology of the Diseased Brain
Chemical Disturbances of Brain Function
Clinical Examination of the Nervous System

GEMP 405 Reproductive System in Health and Disease
Aims
The aims of this module are to make students understand the:
- processes of human reproduction from the formation of gametes to the establishment of independent life of the neonate.
- subsequent development through puberty to adulthood.
- common problems and disorders of the male and female reproductive systems.
- causes and evaluation of infertility.
- mechanisms contraception.
- sexual transmission of diseases.

Pre-requisites

Students should have completed modules that ensure that they are able to:

- describe basic cell biology, including mitosis and meiosis.
- outline the biochemistry of steroid hormones and the hormones of the pituitary gland.
- explain the basic features of endocrine systems and feedback control mechanisms of hormone action.
- describe development of the kidney, ureters, bladder and the entire urinary excretory system
- describe the mechanisms involved,and the features of, infections.
- outline the principles of neoplasia and metastasis.

Expected Outcomes

On completion of this module students should be able to:

- describe the formation of the gametes in both sexes.
- describe the embryological and fetal development of the reproductive tract in the female and male, the sequence of anatomical and physiological changes at puberty, and the mechanisms of these changes.
- describe the anatomy of the male and female reproductive system
- describe the histology of the testis and accessory sexual organs, and the histology of the ovaries, uterus, cervix, vagina and breast.
- describe the ovarian and uterine cycles, explain the endocrine control of the menstrual cycle
- outline common menstrual problems and describe the mechanism of the menopause.
- describe the processes involved in coitus, the process cf fertilisation and implantation
- describe the mechanisms of action of common forms of contraception
- list reasons for male and female infertility.
- describe the role of the placenta in the maintenance of pregnancy and the maternal and fetal adaptations to pregnancy.
- describe the normal pattern of fetal development and the principles of detection of fetal abnormalities.
- describe the processes involved in normal deiivery and some common problems of labour.
- describe mechanisms of lactation.
- describe common sexually transmitted diseases, their detection and treatment, common malignancies of the reproductive tract in the male and female, and disorders of the breast, in particular breast cancer and its treatment.
- appreciate the influences of various hormones and development of other body systems in normal development and maturation of the reproductive system in both males and females.

Course Content

Gametogenesis
Development of the male reproductive system
Development of the female reproductive system
Anatomy of the male reproductive system
Anatomy of the female reproductive system
Histology of the male reproductive system
Histology of the female reproductive system
Development of the placenta
Histology of the placenta
Anatomy of the breast
Histology of the breast
Sexual differentiation
Introduction of the Endocrine system
Function of Placenta
Physiology of pregnancy
Foetal physiology
Lactation and abnormalities of lactation
Endocrine function of the hypothalamus and Pituitary gland
Endocrine function of the gonads
Endocrine function of the adrenal gland
Hormonal control of reproduction
Disorders of female reproductive system
Disorders of male reproductive system
Tumours of the male reproductive system
Tumours of the female reproductive system

Lower genital tract infections
Stages of puberty
Normal foetal growth and development
Factors affecting foetal growth and development
Disorders of male reproductive system
Investigation of infertility
Benign breast disorders
Breast cancer
Clinical Anatomy of the female reproductive system
The menstrual cycle
Menstrual dysfunction
Menopause
Disorders of female reproductive system
Investigation of infertility
Coitus and Fertilization
Fertility and infertility
Methods of contraception
Pelvic inflammatory Disease
Examination of the placenta
Pregnancy-related disorders
Process of birth (video)
Normal labour and Problems of Labour
Assessment of foetal Development and prenatal diagnosis
Sexually transmitted Infections

GEMP 407 Health and Disease in Populations

Aim

The main objective of this module is to make students understand dynamics of populations and how to interpret population – based studies of disease distribution and associated risk factors, treatment effectiveness as well as disease prevention for the benefit of the health of patients and the population as a whole.

The Specific Objectives:

- To give students an introduction to scientific basis of epidemiology and related subjects
- To stimulate students to regard their practice of medicine not only in terms of benefit for individual patients but for the population as a whole
- To equip students with the skills to critically appraise the evidence for and against potential risk factors causing a disease or clinical interventions they may consider using
- To make students understand the interplay between various disciplines of medicine for effective and efficient health care delivery.

At the end of this modular course, students should be able to:

- Define demography and discuss the significance of births, deaths, fertility, marriages and the distribution of populations
- Discuss how the size, rate of growth and other dynamics of population such as rapid urbanization and migration of populations affect the health of the community
- Collect, tabulate and analyze epidemiological data and calculate appropriate rates like incidence rate, prevalence rate, attack rate, case fatality rate, mortality rates etc , and to be able to infer the health status of the community from calculated rates
- Design and conduct epidemiological studies – Descriptive, Analytic and Experimental – and be able to draw the necessary inferences and conclusions from these studies
- Design and operate simple systems of surveillance of common prevalent diseases
- Investigate an epidemic
- Calculate measures of central tendency and variability from collected data
- Apply sampling theory by taking random systematic and stratified samples from a population
- Design simple experiments and apply statistical tests of association, dependence and correlation
- Describe briefly modern methods of data processing
- Understand the germ theory and concepts of disinfection and sterilization

Course Content

Communicable disease Transmission Process Control of Communicable Diseases.
Introduction to Survey Research methods Data Collection Techniques and Tools
Introduction to Health and Diseases
Definition, Nature and Scope of Demography
Sources of Population Data
Design of Survey Instruments
Population Dynamics
Data type and Scale of Management
Summarization and Presentation of Data
Health indication
Fertility and its management
Epidemiologic Methods
Migration and Population Distribution
Population Composition
Morbidity, Mortality measure
Sampling, Probability and Theoretical Distribution
Pre-Testing and Revision of Survey instrument
Statistical inference
Data analysis and Report writing
Sterilization and Disinfection
Standardization of Rates
Epidemiology and Disease Control of Communicable Disaeses
Field Trip
Presentation of Report
Feedback to Community
Epidemiology of Non-Communicable Diseases Control of Non-Communicable diseases
Paradigms in health care
Common Psychological problems in the Community
Community Psychological Assessment
Pharmaco-epidemiology
Drug Development and Clinical Trail
Pharmacovigilance
Adverse Drug Reaction

GEMP 409 Medical Ethics, Behavioural Sciences

Aim

Refer to specified sections of Training Guidelines for the Department of Community Health (2002) (edited by R.B.Biritwum) for details.

Specific Objectives / Expected Outcomes

- Make a diagnosis of the health problems in a community, and workplace taking into considerations the major ecological factors, which influence health such as social, physical, occupational and biological environment.
- Draw up health programmes feasible for the existing health care system with due consideration of resources and interests of the community.
- Organize and carry out the programmes in collaboration with members of the health team and the community.
- Stimulate the community to modify their behaviour with a view to improving their health status.
- Administer health programmes and personnel, using appropriate management and evaluation techniques.
- Carry out scientific investigation/research into the health problems of a community or individuals taking into consideration medical ethics and how ethics affect medical practice.
- Identify and understand the role of stress, psychosocial factors, unemployment and gender on
- the health of the individual and the community.

Course Content

Behavioural Sciences

Man and his environment

1. The 'Biological spectrum' (Ecology, Food chain)
2. Determinants of Health
3. Community Characteristics / Dynamics

4. Family formation & Dissolution
5. Culture, Health and Economics

General Principles of Health Education
Methods and Techniques of Health Education
Visual Aids and concepts of occupational health
Communication Process
Factors Influencing Health Practices
Behavioural change strategies

Occupational/Environmental Health
Hazards at work place
Basic concepts in occupational health
Assessing and prioritizing OH
Doctor's role in OH
Occupational interventions
Application of OH in Agric, industry service and workmen's compensation
Important Occupational Health Problems
Prevention and Control of Occupational Hazards

Environment, Health and Disease
Water
Waste disposal methods
Housing
Food hygiene
Pests control,
Climate change and health impact
Diseases across borders (Port Health Duties and
international health regulations)

Health Services Management
Stress and Illness
Patient/Doctor communication
Physician well being and burnout
Psychological aspects of chronic illness and disability
Impact of Gender and Unemployment on Health
Dealing with Special Populations
Psychological aspects of pain management
Prevention in Community Mental Health
Death, dying, bereavement and grief
The life of man, the health of man
Traditional and Orthodox Medicine
The Death of Man, The Moment of death
Medical Ethics
Experimentation with human beings
Informed Consent and stigmatization
Ethical Issues in Modern Medical Practice,
The Control of Medical Practice

ELECTIVE PROGRAMME
The Medical School offers to Foreign medical students elective assignments for periods that do not exceed 10 weeks in the departments of Anaesthesia, Chemical Pathology, Community Health, Haematology, Medicine, Microbiology, Obstetrics & Gynaecology, Paediattrics, Pathology, Surgery and Psychiatry.

Elective application forms can be obtained from the School on request and must be returned, on completion, together with a recommendation from the Dean or other responsible authority of the applicant's own Medical School. Applicants should normally have completed at least one year of clinical study in their own Medical School and should have sufficient command of the English Language to enable them understand both verbal and written instructions. The success of students' applications depends on the availability of residential accommodation at the students; hostels.

Types of Electives Available

1. **Ordinary Electives**
   This is for students who want to experience conditions prevailing in countries other than their own. It is not required for their graduation.
   This kind of elective will not exceed 4 weeks.

2. **Exchange Electives**
   This is organized under IFMSA*. It will not exceed 4 weeks and tuition is free.

3. **Attachment Elective**
   Where an official report is required and is also part of the foreign students' requirement for graduation, a tuition fee is charged. The current tuition fee is USD 45.00 per week. This type of elective is up to 10 weeks or more.

4. **Pre-Medical Electives**
   For those who are waiting to enter Medical School.

Duration of Programme - Please refer to individual programmes

Application should be received 6 months before commencement of the programme. Application forms can be downloaded at the UGMS website or request can be sent to **ugmselectives@chs.edu.gh**.

Selection Criteria

- Ability to communicate adequately in English to enable one understand verbal and written instructions.
- A good academic record
- Recommendation by referees
- Extent to which applicant is likely to benefit from the elective

Health Requirements

Applicants must have the basic immunizations including Hepatitis B.

Accommodation

Limited accommodation is available at the International Students Hostel. The current charge of accommodation is US$ 10.00 per day per student. Meals are available at the canteens and restaurants on campus. Foreign students are required by University Policy to make full payment for their fees in either US Dollars or British Pound Sterling at the beginning of their programme.

Health Insurance

Is desirable

Assessment

Depends on the type of elective programme undertaken and student's institutional requirements.

Fees

A non-refundable administrative/registration fee of US$100 is payable by a successful applicant upon arrival at the School at the Cash Office, UGMS Administration Block. The school has no funds available to assist students. Tuition fees are chargeable for elective programmes, which form part of the requirements for graduation of the applicant

Elective Placement

It is possible for students to take electives in any of the following departments.

a) Anaesthesia, Anatomy, Chemical Pathology, Child Health, Centre for Tropical Clinical Pharmacology & Therapeutics, Community Health, Haematology, Medical Biochemistry, Medicine and Therapeutics, Microbiology, Obstetrics & Gynaecology, Pathology, Pharmacology, Physiology, Psychiatry, Radiology, Surgery.

b) Details of Programmes available:

Child Health

1. Programmes Available

a. Junior Clerkship Elective
b. Senior Clerkship Elective
c. Research Elective
d. Pre-clinical Attachment

2. **Duration**

The duration for the elective period is as follows:

Junior and Senior Clerkship	-	4weeks
Research Elective	-	4weeks
Pre-clinical Attachment	-	2 - 4weeks

3. The Programme will be synchronized with UGMS medical students' rotations – as much as possible.

4. **Number of Students at a time**:

Junior & Senior Clerkships	-	6 students at a time
Research Elective	-	2 students at a time
Pre-clinical Attachment	-	3 students at a time

5. **Academic Level of Students**

Junior & Senior Clerkship	-	completed basic sciences and in clinical years at medical school.
Research Elective	-	medical students in any year.
Pre-clinical Attachment	-	pre-clinical medical student

6. **Details of Programme**

ii. Learning Objectives & Competences to be Acquired

By the end of the programme the student:

a. Would be exposed to common disease states in children in Ghana
b. Should be able to identify common conditions that affect children in Ghana
c. Should have an idea of the management of disease conditions peculiar to our country.

7. Modes of Instruction:

- Lectures
- Tutorial
- Seminars
- Ward rounds and Teaching
- Clinical work

Community Health

Objective

To run elective programmes in Community Health for foreign students

Specific objectives

1. To run programmes at specified times of the year to help foreign students apply for times most suitable to them.
2. To offer different durations of programmes to suit all desires.
3. To provide programmes relevant to tropical medicine and health delivery systems

Services

There will be four (4) components of the services

1. Clinical work – at district hospital, where varied clinical conditions will be available for study.
2. Community Health work - students will have the opportunity to participate in programmes like immunization, other child welfare activities, counseling, environmental work etc. etc.
3. Alternate health care delivery/plant, herbal medicine.
4. Simple laboratory work to illustrate common parasites of Public Health importance e.g. malaria parasites, schistosoma, helminthic eggs/ova etc.etc.

Frequency

There will be an elective programme every quarter – i.e. four times in a year. Two of them will run for four

weeks each, and the other two – six weeks each.

Location

- Accommodation – Danfa Health Centre
- Clinical Work – Tetteh Quarshie Government Hospital
- Plant Medicine – Centre for Plant Medicine, Tetteh Quarshie
- Community Work – Danfa Health Centre, Tetteh Quarshie and evirons
- Akosombo – VRA Hospital

Haematology:

Programme I:	Clinical Haemoglobinopathy
Duration:	4 weeks
Time of year of programme:	January, April – August
No. of students to be enrolled :	2 students at a time
Academic level of student to be enrolled:	Pre-clinical and clinical students

Details of the programme

i. Learning objectives: Introduce students to clinical presentations of sickle cell disease in adults.
ii. Competences to be required
   a. Identify sickle cell disease patient in crisis.
   b. Encounter chronic clinical situations in patient.
   c. Be able to diagnose clinically.
   d. Demonstrate knowledge of laboratory diagnosis of the disease.
   e. Discuss public health problems associated with sickle cell disease.
iii. Modes of instruction: Clinic setting; ward rounds; laboratory demonstration.
iv. Course content: No written course content.

Programme II**:**	Haematological Oncology
Duration:	6 weeks
Time of year of programme:	March - June
No. of students to be enrolled:	3 students at a time
Academic level of students to be enrolled:	Pre-clinical and clinical students

Details of the programme

i. Learning objectives: Introduction to pathogenesis and clinical presentation of Haematological malignancies.
ii. Competencies to be required:
   a. Insight into aetiology
   b. Clinical presentation
   c. Laboratory features
   d. Principles of management
iii. Modes of instruction: Undergraduate lectures and practicals; attendance at ward rounds.
iv. Course content:
   a. Be able to:
      i. describe the aetiology, pathogenesis, presentation, diagnosis, complications and management of the haematological malignancies and the refractory anaemias.
      ii. interpret the FBC, blood film comments, bone marrow comments, biochemical and imaging results indicative of haematological malignancies and suggest further appropriate investigations for confirmation.

SCHOOL OF NURSING

INTRODUCTION

Nursing is a dynamic and challenging profession which serves to promote, maintain and restore health. The changing trends in health needs, health technology and the expectations of clients require that the graduate nurse acquires knowledge and skills of the highest standard to meet the challenges of modern day nursing. It is against this background that the School of Nursing has improved upon its programme to meet the current needs of the job market in Ghana and abroad.

This four-year degree programme will have Level 100 counting towards graduation. Nurses who hold University of Ghana Diploma in Nursing will enter the programme at Level 200. Students will be awarded BSc Nursing with one of the following options: General Nursing, Paediatric Nursing, Midwifery, Community Health Nursing and Mental Health Nursing.

ADMINISTRATION

Ernestina Safoa Donkor *BSc (Ghana) MSc (Ulster) PhD (London) GCAP (UK) FWCN*	-	Senior Lecturer **(Ag. Dean)**
Theodore M. Ahuno *BA MPA (Ghana)*	-	Assistant Registrar

DEPARTMENT OF ADULT HEALTH

Patricia Avadu *Dip in Nursing BA (Ghana) MPhil (Ghana)*	-	Lecturer ***(Ag. Head of Department)***
Lydia Aziato *BA (Ghana) MPhil (Ghana)*	-	Lecturer
Kwadwo A. Korsah *BA (Ghana) MPhil (Ghana) FWCN*	-	Lecturer
Gladys Dzansi *BA (Ghana) MPhil (Ghana)*	-	Assistant Lecturer
Cecilia Eliason *BA (Ghana) MPhil (Ghana)*	-	Assistant Lecturer

DEPARTMENT OF COMMUNITY HEALTH

Prudence P. Mwini-Nyaledzigbor *BA (Ghana) MPhil (Ghana) PhD (Tshwane, Pretoria) FWCN*	-	Lecturer ***(Ag. Head of Department)***
Patience Aniteye *BSc (Ghana) MPhil (Ghana)* PhD (LSHTM, London)	-	Lecturer
Lillian Akorfa Ohene *BSc (Ghana) MPhil (Ghana)*	-	Assistant Lecturer

DEPARTMENT OF MATERNAL AND CHILD HEALTH

Comfort Affram *Dip in Nursing BA (Ghana) MPhil (Ghana)*	- -	Lecturer ***(Ag. Head of Department)***
Ernestina Asiedua *BA (Ghana) MPhil (Ghana)*	-	Assistant Lecturer
Mary Ani-Amponsah *BA (Ghana) MPhil (Ghana)*	-	Assistant Lecturer

DEPARTMENT OF RESEARCH, EDUCATION AND ADMINISTRATION

Vivian Afrah Lawer Puplampu *BA (Ghana) MPhil (Alberta)*	-	Lecturer
Adelaide Ansah Ofei *BA (Ghana) MBA (Ghana) MPhil (Ghana),*	-	Assistant Lecturer
Adzo Atswei Kwashie *BSc (Ghana) MPhil (Ghana) FWCN*	-	Assistant Lecturer
Gladstone F. Agbakpe *BA (Ghana) MPhil (Ghana)*	-	Part-Time

DEPARTMENT OF MENTAL HEALTH

Alexander Kwablah Mensah Attiogbe - Assistant Lecturer
BA (Ghana) MPhil (Ghana)
Samuel Atindanbila - Part time Lecturer
BA, PGCE (UCC), MPhil, PhD *(Ghana)*

PROGRAMME STRUCTURE

LEVEL 100
FIRST SEMESTER
Core

Course Code	Course Title	Credits
NURS 101	Human Anatomy I	2
NURS 103	Human Physiology I	2
NURS 105	Introduction to Community Health Nursing	2
NURS 107	Introduction to Mental Health Nursing	2
NURS 109	Nursing Perspectives	2
NURS 111	Trauma and Emergency Nursing	2
UGRC 110	Academic Writing I	3
UGRC 120	Numeracy Skills	3
Total Credits		**18**

SECOND SEMESTER
Core

Course Code	Course Title	Credits
NURS 102	Human Anatomy II	2
NURS 104	Human Physiology II	2
NURS 108	Fundamentals of Mental Health Nursing	2
NURS 114	Psychology for Nurses	2
NURS 116	Obstetric Anatomy and Normal Pregnancy	1
NURS 118	Fundamentals of Nursing	1
NURS 122*	Nursing Practical I	1
UGRC 130	Understanding Human Societies	3
UGRC 150	Critical Thinking and Practical Reasoning	3
Total Credits		**17**

Long Vacation Practicum
NURS 122* will be offered partly during the semester and continued for six weeks in the long vacation.

LEVEL 200
FIRST SEMESTER
Core (Diploma holders will enter at this point)

Course Code	Course Title	Credits
NURS 231	Principles and Practice of Health Assessment	2
NURS 233	Medical Microbiology and Parasitology	2
NURS 235	Normal Labour and Puerperium	2
NURS 237	Theoretical Foundations of Nursing	2
NURS 239	Pharmacology	3
NURS 241	Foetal and Child Development	1
NURS 243	Prevention and Control of Communicable Diseases	2
NURS 245	Nursing Practical II	1
UGRC 210	Academic Writing II	3
Total Credits		**18**

▪ *Students who entered the programme as diploma holders will offer UGRC 110: Academic Writing I in addition.*

SECOND SEMESTER
Core

Course Code	Course Title	Credits
NURS 232	Medical conditions of Integumentary, Gastrointestinal and Endocrine systems	2
NURS 234	Surgical Conditions of Integumentary, Gastrointestinal and Endocrine systems	2
NURS 236	Abnormal Pregnancy, Labour and Puerperium	2
NURS 238	Classification and Management of Mental Disorders	2
NURS 242	Medical andSurgical Conditions of the Newborn and the Child	2
NURS 244	Management of Child Welfare Clinics	2
NURS 246*	Nursing Practical III	1
NURS 248	Nutrition and Dietetics	2
NURS 252	Pathology	3
UGRC 220	Liberal and African Studies	3
Total Credits		**21**

Long Vacation Practicum
NURS 246 will be offered partly during the semester and continued for six weeks in the long vacation.*
▪ *Students who entered the programme as diploma holders will not do UGRC 220: African Studies but will offer UGRC 130: Understanding Human Societies and UGRC 150: Critical Thinking and Practical Reasoning at this level.*

LEVEL 300
FIRST SEMESTER
Core

Course Code	Course Title	Credits
NURS 331	Medical Conditions of Respiratory, Cardiovascular and Genitourinary Systems	3
NURS 333	Surgical Conditions of Respiratory, Cardiovascular and Genitourinary Systems	2
NURS 335	Community Health Service Organisation and Participation	2
NURS 337	Nursing Practical IV	1
NURS 339	Reproductive Health	2
NURS 341	High Risk Neonate	2
NURS 343	Principles of Psychiatric Nursing	1
NURS 345	Nursing Research	2
Total Credits		**15**

▪ *Students who entered the programme as diploma holders will offer UGRC 120: Numeracy Skills in addition.*

SECOND SEMESTER
Core

Course Code	Course Title	Credits
NURS 332	Medical Conditions of Nervous and Musculo-skeletal Systems and Sensori-Neural Organs	3
NURS 334	Surgical Conditions of Nervous and Musculo-Skeletal Systems and Sensori-Neural Organs	2
NURS 336	Occupational and Community Health Services	2
NURS 338*	Nursing Practical V	1
NURS 342	Medical and Surgical Conditions in Childhood	2
NURS 344	Management of Major Psychiatric Disorders	1
NURS 346	Proposal Development and report writing	2
NURS 348	Gynaecological Nursing and Obstetric/Gynaecological Operations	2
NURS 352	Advanced Clinical Nursing I	2
Total Credits		**17**

Long Vacation Practicum
NURS 338 will be offered partly during the semester and continued for six weeks in the long vacation.*
▪ *Students who entered the programme as diploma holders will offer UGRC 220: African Studies in addition.*

LEVEL 400
FIRST SEMESTER
Core

Course Code	Course Title	Credits
NURS 400**	Project Work	6
NURS 451	Tools and Methods of Teaching Nursing	2
NURS 453	Principles of Management in Nursing	2
NURS 455	Biostatistics	2
NURS 457	Nursing Practical VI (Specialty option)	3
NURS 459	Advanced Clinical Nursing II	2
NURS 461	Nursing Seminar	2
Credits		16
Options (*Select 3 credits*)		
General Nursing		
NURS 463	Peri-Operative and Critical Care Nursing	3
Paediatric Nursing		
NURS 465	Integrated Management of Childhood Illnesses	3
Community Health Nursing		
NURS 467	Community Health Nursing Administration	3
Midwifery		
NURS 469	Advanced Midwifery Practice	3
Mental Health Nursing		
NURS 471	Theoretical Frameworks of Mental Health Nursing	3
Total credits		19

SECOND SEMESTER
Core

Course Code	Course Title	Credits
NURS 452	Curriculum Development in Nursing Education	3
NURS 454	Administration of Nursing Services and Schools	2
NURS 456	Teaching Practice	2
NURS 458*	Nursing Practical VII (Specialty option)	3
Credits		**13**
Options (*Select 3 credits)*		
General Nursing		
NURS 462	Palliative Care and Hospital Emergency Management	3
Paediatric Nursing		
NURS 464	Childhood Chronic and Life Threatening Diseases	3
Community Health Nursing		
NURS 466	Home-Based Nursing and National Health Programme	3
Midwifery		
NURS 468	Domiciliary Midwifery	3
Mental Health Nursing		
NURS 472	Advanced Practice in Mental Health Nursing	3
Total credits		**16**

Long Vacation Practicum
NURS 458 will be offered partly during the semester and continued for six weeks in the long vacation.*

- *NURS 400** is a six credit course, three credits allocated to each semester.*
- *The option chosen in first semester should be continued with its corresponding course in the second semester.*

COURSE DESCRIPTIONS

NURS 101: Human Anatomy I
This course is designed to help students appreciate the normal structure of the human body and apply this knowledge in nursing. The students will be exposed to the cell structure, embryology, the circulatory, respiratory and digestive systems. Students will also be exposed to preserved body structures to aid

understanding. Diagrams of anatomical structures will also be presented as part of the course. There will be concurrent practical sessions.

NURS 102: Human Anatomy II
This course is a continuation of NURS 101. The course will help students recognise the normal structure of the body and apply this knowledge in nursing. The students will be exposed to preserved body structures to aid better understanding. Descriptions of anatomical structures of the genito-urinary system, the reproductive systems, nervous systems, endocrine and musculo-skeletal systems are provided. There will be concurrent practical sessions.

NURS 103: Human Physiology I
This course is designed to give students in-depth knowledge in the general function and physiological processes of the normal human body. Students will study the functions and specific biophysiochemical properties of organs in the circulatory, respiratory and digestive systems as well as metabolisms. There will be concurrent practical sessions.

NURS 104: Human Physiology II
This course is a continuation of NURS 103. It is designed to introduce students to the physiological processes involved in the normal functioning of the musculoskeletal system, endocrine system, urinary system, nervous system, reproductive system and special sensory organs. Students are expected to study specific biophysiochemical properties of these systems. There will be concurrent practical sessions.

NURS 105: Introduction to Community Health Nursing
This course introduces students to the history, processes and methods of community health nursing. Students will also discuss the concept of health, personal and environmental health. They will develop competencies in promoting health in the community and managing home accidents. Students will be expected to select a community or group and examine its environmental health practices.

NURS 107: Introduction to Mental Health Nursing
This course is designed to introduce students to the basic concepts in mental health care. It consists of various concepts used in psychiatric/mental health nursing which would be useful to students in understanding the behaviour of clients. The course will be useful to students who are preparing to care for patients with biopsychosocial needs in a variety of clinical settings. It will also assist students to appreciate developments in psychiatric/mental health care over the years and stimulate them to develop interest in mental health care.

NURS 108: Fundamentals of Mental Health Nursing
This course is designed to equip the student with knowledge of the theoretical basis for psychiatric mental health nursing. It includes the processes of assessment, admission and discharge of various categories of people with mental health problems, as well as the legal and ethical issues involved in these processes. This knowledge will guide the student to identify clients' problems, determine and respect clients' rights in psychiatric nursing practice.

NURS 109: Nursing Perspectives
This course is designed to introduce students to the nursing profession. It explores the historical development of nursing, different perspectives on the professionalism of the nurse, ethical standards, and the legal implications of nursing practice. Students will also be acquainted with the objectives and structure of the various nursing and health related organizations, and the new trends in nursing care.

NURS 111: Trauma and Emergency Nursing
The course introduces students to the various types of trauma and their management. It will also equip students with knowledge and skills that can be utilized to provide safety / emergency care to individuals in the community. The course includes practical sessions in the laboratory and students will be expected to do return demonstration on competencies demonstrated.

NURS 114: Psychology for Nurses
The course is designed to help students appreciate the behavioural characteristics of humans. The course will examine theories underlying human behaviour. The physical, cognitive, and psychosocial factors influencing human responses to illness will be explored. Students will be introduced to appropriate mechanisms that can be used in meeting the needs of individuals with negative response to illness.

NURS 116: Obstetric Anatomy and Normal Pregnancy
This course is designed to introduce students to obstetric anatomy and physiology, and management of normal pregnancy.

NURS 118: Fundamentals of Nursing
This course is to introduce students to the basic concepts and techniques in nursing. Students will acquire knowledge and skills to carry out basic nursing procedures through the use of the nursing process and infection prevention practices. It will offer students opportunity to demonstrate skills acquired and to properly document all nursing care given to patients.

NURS 122: Nursing Practical I
This course will expose students to clinical and field experiences in emergency and trauma care, primary health care and mental health. The purpose of the placement is to enable students gain skills in basic nursing within the different clinical areas. It will be offered partly during the semester and continued as a six week long vacation course. During the long vacation, students will be placed in medical/surgical units of selected hospitals for two weeks. They will also work in polyclinics and psychiatric hospitals for two weeks respectively.

NURS 231: Principles and Practice of Health Assessment
The course is designed to equip students with knowledge and skills in carrying out comprehensive health assessment. Students will be taken through the physical assessment of the human body in relation to the various body systems. They will gain competency in determining normal and abnormal functioning of organs and systems. The course will consist of classroom teaching and skills demonstration.

NURS 232: Medical Conditions of Integumentary, Gastrointestinal and Endocrine Systems
This course introduces students to medical conditions of the integumentary, gastrointestinal, and endocrine systems. The conditions will be discussed with reference to definition, types, prevalence, aetiology, pathophysiology, clinical manifestation, diagnostic investigations, differential diagnosis and management. The framework for nursing management will be Betty Neumann's prevention concept and Virginia Henderson's nursing components.

NURS 233: Medical Microbiology and Parasitology
This course is designed to give students knowledge about microbial organisms. It will also examine the way infections and infestation are transmitted and how to disinfect and sterilize materials. The course has a practical component to enable students view micro-organisms using the light microscope. The aim is for students to apply the knowledge gained to the prevention of cross infection.

NURS 234: Surgical Conditions of Integumentary, Gastrointestinal and Endocrine Systems
The course will focus on surgical conditions of the integumentary, gastrointestinal and endocrine systems, and their surgical interventions. Neoplasms will also be discussed. The conditions will be discussed with reference to definition, types, prevalence, aetiology, pathophysiology, clinical manifestation, diagnostic investigations, differential diagnosis, and conservative/surgical management. The framework for nursing management will be Levine's conservation principles and the nursing process.

NURS 235: Normal Labour and Puerperium
This course is designed to introduce the student to the stages and management of normal labour and normal puerperium. Students are expected to gain competencies that will enable them to give appropriate care during labour and puerperium. It will also involve skills demonstration and clinical placement.

NURS 236: Abnormal Pregnancy, Labour and Puerperium
This course is designed to enable the student midwife diagnose and manage abnormalities associated with pregnancy, labour and puerperium.

NURS 237: Theoretical Foundations of Nursing
This course is designed to provide nursing students insight into the multiple nursing theories. The course will focus on theory and practical application of the concepts discussed. It will consist of presentations and applied exercises. The students will be given the opportunity to critically analyze some of the existing nursing theories and equip them to meet professional and social expectations.

NURS 238: Classification and Management of Mental Disorders
This course will focus on the classification of mental disorders, developmental, behavioural and anxiety

disorders. Students will be introduced to assessment and management of these conditions.

NURS 239: Pharmacology
This course is designed to equip students with knowledge in basic concepts of pharmacology. Students will be introduced to the principles of drug administration, effects of drugs as well as excretion of drugs from the body. The different classes of drugs and their effect on the various body systems will be discussed. Various side effects of drugs will also be analyzed.

NURS 241: Foetal and Child Development
This course offers students knowledge on conceptual and foetal development, growth and development of the child.

NURS 242: Medical and Surgical Conditions of the Newborn and the Child
This course is designed to equip students with knowledge and skills to manage the newborn and the child. It will enable students manage medical and surgical conditions in the newborn and the child.

NURS 243: Prevention and Control of Communicable Diseases
The course is designed to equip students with knowledge and skills in prevention and care of individuals/families with communicable diseases. Students will be introduced to theory of disease, epidemiology, control principles and methods, control strategies and organization of diseases of public health importance. Disease notification and health regulations in public health will also be emphasized.

NURS 244: Management of Child Welfare Clinics
This course is designed to enable students develop competencies in community health practice. Students will be taken through the nursing process as applied in community health nursing, organization of child welfare clinics and immunization. They will carry out home visits and conduct a study on a problem family.

NURS 245: Nursing Practical II
This practical course is designed to enable students gain competencies in medical/surgical and paediatric nursing. The focus will include assessment of patients, admission and discharging of patients, administration of medication and care of patients using the nursing process. There will be practical examination at the end of the session. Students are expected to continue with practical experience during the inter-semester break.

NURS 246: Nursing Practical III
The course aims at giving students the opportunity to apply the nursing process in caring for patients with conditions affecting integumentary, digestive and endocrine systems. Students will also gain skills in the management of pregnant women during antenatal, labour and puerperium. There will also be placement in the community and psychiatric hospital. There will be practical examinations at the end of the session.

NURS 248: Nutrition and Dietetics
This course is designed to help students appreciate the value of nutrients in health and illness. The student will be introduced to the different types of food nutrients, their functions and sources. The effects of over-nutrition and under-nutrition will be stressed. The concept of convalescent diet, special diet and planning meals for ill patients will also be examined. The nutritional requirements for specific disease conditions will be discussed. Students will also be introduced to how to assess the nutritional status individuals.

NURS 252: Pathology
This course is designed to expose students to pathological processes that occur in the human body. Students will be taken through cellular basis of disease, inflammatory processes and healing of wounds and fractures. The concepts of immunology and development of neoplasm will be discussed. There will be concurrent practical sessions to expose students to pathological tissues macroscopically and microscopically.

NURS 331: Medical Conditions of Respiratory, Cardiovascular and Genitourinary Systems
This course is designed to enable students develop competencies in managing patients with medical conditions of the respiratory, cardiovascular and genitourinary systems. The conditions will be discussed with reference to description of the condition, types, prevalence, aetiology, pathophysiology, clinical manifestation, diagnostic investigations, differential diagnosis and management. The framework for nursing management will be Betty Neuman's prevention principles and the nursing process.

NURS 332: Medical Conditions of Nervous and Musculo-Skeletal Systems and Sensori-Neural Organs

The course will expose students to medical conditions of the nervous, musculo-skeletal system and sensori-neural organs. The conditions will be discussed with reference to definition, types, prevalence, aetiology, pathophysiology, clinical manifestation, diagnostic investigations, differential diagnosis and management. The framework for nursing management will be Betty Neuman's prevention principles and the nursing process.

NURS 333: Surgical Conditions of Respiratory, Cardiovascular and Genitourinary Systems

The course is designed to enable students develop competencies in managing patients with surgical conditions of the respiratory, cardiovascular and genitourinary systems. The conditions will be discussed with reference to definition, types, prevalence, aetiology, pathophysiology, clinical manifestation, diagnostic investigations, differential diagnosis and management. The framework for nursing management will be Levine's conservation principles and the nursing process.

NURS 334: Surgical Conditions of Nervous and Musculo-Skeletal Systems and Sensori-Neural Organs

The course is designed to help students develop competencies in managing surgical conditions of the nervous and musculoskeletal system and sensori-neural organs. The conditions will be examined based on the definition, prevalence, aetiology, pathophysiology, clinical manifestation, diagnostic investigations, surgical and conservative management. Levine's conservation principles and the nursing process will be the framework for discussing nursing interventions.

NURS 335: Community Health Service Organization and Participation

This course will equip students with the requisite knowledge and skills relating to community health practice. Students will be taken through community diagnosis, mobilization, organization and participation. The sources of community data, measurement of morbidity and mortality, and health indices will also be discussed. Students will be assigned in groups to carry out a community study as part of the course.

NURS 336: Occupational and Community Health Services

The course is aimed at assisting students to develop competencies in providing school, occupational, outreach and reproductive/adolescent health services. The problems of the school child, care of the physically/psychologically impaired and the aged will also be discussed. Students will be put in groups to undertake school health and health outreach services.

NURS 337: Nursing Practical IV

This course offers students the opportunity to apply knowledge and skills acquired in performing various nursing procedures. They will be placed on selected wards. There will be practical examinations at the end of the session. Students are expected to continue with practical experience during the inter-semester break.

NURS 338: Nursing Practical V

This course will equip students with skills in managing patients pre-, intra-, and post-, operatively. They will be placed in general and specialized theatres during the semester. Students will have psychiatric, obstetric and gynaecological nursing experiences during the long vacation.

NURS 339: Reproductive Health

This course is designed to give students insight into physical and emotional maturity of adolescents and associated problems, adolescent sexuality and associated risks. It will also expose students to basic principles of population dynamics and family planning.

NURS 341: High Risk Neonate

The course is designed to provide students with knowledge and skills to identify and manage the high risk neonate, recognise emergency conditions and take appropriate actions.

NURS 342: Medical Surgical Conditions in Childhood

The course is designed to provide students with knowledge and skills in managing medical and surgical conditions in children. Conditions affecting the endocrine, renal, gastrointestinal tract as well as tumours, genetic disorders and congenital malformations will be discussed.

NURS 343: Principles of Psychiatric Nursing

The course introduces students to the principles of psychiatric nursing. Students will be exposed to the

knowledge and skills in assessing and managing clients with major psychiatric disorders.

NURS 344: Management of Major Psychiatric Disorders
This course is a continuation of NURS 313. It will assist students to plan and deliver care that will stabilise the individual client's health status to facilitate reintegration of the client into the community.

NURS 345: Nursing Research
This course is designed to introduce students to the use of the scientific process in identification, study and solution of problems. Students will be introduced to the principles and techniques of the research process. It will stimulate critical thinking and promote evidence-based practice.

NURS 346: Proposal Development and Report Writing
The course is designed to build on NURS 315 and assist students to be able to identify health and nursing problems in the course of their work and design simple but appropriate research projects to solve those problems. Students are expected to develop competencies in writing research proposals and report. It will also create in students the need for dissemination and utilization of research findings. They will be assigned supervisors to guide them through the research process.

NURS 348: Gynaecological Nursing and Obstetric / Gynaecological Operations
The course is designed to equip the student with knowledge on the various disorders of the female reproductive system, and manage clients with gynaecological problems, and in obstetric and gynaecological operations.

NURS 352: Advanced Clinical Nursing I
This course will enable students develop competencies in preparing patients for diagnostic procedures, setting trays and trolleys for various therapeutic procedures. Procedures of the integumentary, cardiovascular, respiratory, gastrointestinal and genitourinary systems will be discussed. There will be a component on practical skill demonstrations.

NURS 400: Project Work
This course is designed to test students' ability to identify a health and/nursing problem and design appropriate research into that problem. The course is aimed at testing the ability of students to search for literature, collect quality data and produce a standard scientific project work. The student is expected to present the research problem for approval and carry out the research under the supervision of lecturers. At the end of the second semester, two copies of typed work will be presented for assessment.

NURS 451: Tools and Methods of Teaching Nursing
This course will introduce nursing students to the theory, philosophy, and principles in teaching and learning. It aims at equipping nursing students with the knowledge and skills that the nurse educator requires in order to translate curriculum objectives into measurable outcomes. This course also introduces students to the major teaching and learning strategies. It aims at equipping the student with skills in facilitating active student learning and critical thinking.

NURS 452: Curriculum Development in Nursing Education
The course introduces students to basic concepts and the application of curriculum development process to nursing education in particular. Factors influencing curriculum development and learning are examined in relation to nursing education. Students will study and critique nursing curricula at various levels.

NURS 453: Principles of Management in Nursing
This course presents the basis of the theory and science of management, and the management of the national health system. It emphasizes the essentials of management that are pertinent to the effective work of nurses while maintaining their human relation skills gained from nursing practice and sustaining the values that originally attracted them to nursing.

The functions of management – planning, organizing, staffing and leading, and controlling will provide the conceptual framework for nurses to understand the contemporary challenges nurse managers face with management of the workforce, health financing, budgeting, ethical decision-making, technology management, health information systems and emerging workplace issues. This course lays the groundwork for an understanding of the nature and importance of managing and of management as a developed and important science for managing health service organizations.

NURS 454: Administration of Nursing Services and Schools
The present day concept in nursing service administration is to demonstrate administrative functions that will provide therapeutic and satisfying situations for patients and personnel. The course is designed to prepare student/nurse administrators for working in dynamic health care environments with acute, long-term, community orientations and school of nursing. The course provides practical approaches for applying leadership and management skills.

NURS 455: Biostatistics
This course is designed to equip students with skills in basic statistical methods used in health research. In particular, students will learn methods of describing data and how to interpret and use confidence intervals and significance tests, the most common methods of allowing for random variation in research results. The presentation and comparison of proportions and means will be covered. As part of this course, students will learn to make practical use of a statistical computer package.

NURS 456: Teaching Practice
This course is a practical component of NURS 401 which exposes students to a variety of methods suitable for teaching. It aims at equipping the student with teaching skills. Students are expected to have practice teaching in the classroom setting where they will be evaluated by their lecturers and peers.

NURS 457: Nursing Practical VI (Specialty Option)
This course gives students the opportunity to undertake nursing practicum in child health, maternal health, adult health, community health and mental health depending on their specialty options.

NURS 458: Nursing Practical VII (Specialty Option)
The course gives the student the opportunity to continue with nursing practicum in their specialty option.

NURS 459: Advanced Clinical Nursing II
This course is a continuation of NURS 322 which aimed at assisting students to develop competencies in preparing patients for diagnostic procedures, setting trays and trolleys for various therapeutic procedures. Medical and surgical procedures of the endocrine, neurologic, reproductive systems and sensori-neural organs will also be discussed. Students will also be exposed to ward management and nursing records. There will be practical demonstrations and return demonstration.

NURS 461: Nursing Seminar
This course is designed to provide students the opportunity to discuss events and issues that influence health in general and/or nursing in particular. Students are expected to identify topics of interest to them and make presentations to the class for discussion and critique.

NURS 462: Palliative care and Hospital Emergency Management
The course is designed to enhance students' knowledge and skills in managing medical emergencies. They will also be introduced to managing clients / families with life threatening illnesses.

NURS 463: Peri-Operative and Critical Care Nursing
The course will equip students with the knowledge and clinical skills needed to provide care for adult patients requiring surgery and critical care. It consists of classroom teaching and practical sessions in peri-operative nursing and critical care.

NURS 464: Childhood Chronic and Life-Threatening Diseases
The students will acquire knowledge and skills to enable them manage children with life- threatening illnesses through the application of palliative care. Students will also develop competencies in managing children with chronic illnesses that are not life-threatening and children on life support.

NURS 465: Integrated Management of Childhood Illnesses
The course is designed to provide the student with knowledge and skills in the use of a more integrated approach to manage sick children to achieve better outcomes.

NURS 466: Home-Based Nursing and National Health Programme
This course prepares students for community and home-based nursing. There will be discussions on the changing policies and practice in National Health programmes

NURS 467: Community Health Nursing Administration
This course will enable students build their knowledge and skills in health care systems management, occupational health and safety, regenerative health, school health and port health. They will also be involved in disease surveillance and control, special immunization programmes and public health administration.

NURS 468: Domiciliary Midwifery
The course is designed to help the student acquire knowledge to carry out domiciliary midwifery services in the community. The student will also manage clients and families in the community during pregnancy, labour and puerperium and compile the care given into a written document.

NURS 469: Advanced Midwifery Practice
This course is designed to enable the student midwife diagnose and manage various abnormalities associated with pregnancy, labour and puerperium. There will be demonstration and clinical components. The student is also expected to present patient / family maternity care study.

NURS 471: Theoretical Frameworks in Mental Health Nursing
This course is designed to introduce the student to theoretical frameworks used in mental health care. Learners will also examine family development structure, process and concepts and review their theoretical underpinnings from family theory. It is also designed to enable students to be abreast with trends emerging in mental health care and also to appreciate the relationship between social behaviour and health. The learner will also learn to plan to care for specific mental disorders.

NURS 472: Advanced Practice in Mental Health Nursing
This course is designed to help students develop an understanding of the complexity, rewards and challenges of working in various specialty areas in the context of primary health care delivery system. Aging and developmental processes will be learnt. The student will understand the significance of the family and loved ones in planning care for the various categories of disorders. Students will be placed in chosen specialty area to carry out and present a project work.

SCHOOL OF PHARMACY

ADMINISTRATION

Prof. Arthur Commey Sackeyfio, *BSc (Pharmacy) (Manchester), PhD (Bradford), FPSG, FPCPWA*	-	Associate Professor, Ag. Dean
Mrs. Bernice S. Tamakloe	-	Assistant Registrar
Mrs. Faustina Anyetei	-	Principal Administrative Assistant

FACULTY

DEPARTMENT OF PHARMACEUTICAL CHEMISTRY

Dr. Samuel Frimpong-Manso *MPharm (Szeged), PhD (Szeged)*	-	Lecturer
Mr. Lawrence Asamoah Adutwum (Study Leave) *BPharm (KNUST), MPharm (Nagasaki), MPSGh*	-	Assistant Lecturer
Mr. George Magnus-Aryittey *BSc.(Education)(UCC) BSc. (Chemistry),(UCC), MSc. (Chemistry), (Brock)*	-	Lecturer
Mr. Kwabena Frimpong-Manso Opuni (Study Leave) *BPharm (KNUST), MPharm (KNUST), PMP, MPSGh*	-	Assistant Lecturer

DEPARTMENT OF PHARMACEUTICS AND MICROBIOLOGY

Dr. Henry Nettey *BSc (Toronto), PharmD, PhD (Mercer)*	-	Senior Lecturer
Mrs. Ofosua Adi-Dako *BPharm (KNUST), MPharm (KNUST), MPSGh*	-	Lecturer
Ms. Awo Afi Kwapong (Study Leave) *BPharm (KNUST), MPharm (KNUST), MPSGh*	-	Assistant Lecturer
Ms. Lovia Allotey-Babington *MSc (Pyatigorsk, Russia), MSc. (London), Dip Mgt (IPMC), MPSGh*	-	Clinical Tutor
Mrs. Mansa Fredua-Agyeman (Study Leave) *BPharm (KNUST), MSc. (London), MPSGh*	-	Clinical Tutor
Mr. Philip Debrah (Study Leave) *BPharm (KNUST), MPharm (KNUST), MPSGh*	-	Assistant Lecturer
Mrs. Emelia Oppong Bekoe (Study Leave) *BPharm (KNUST), MPharm (KNUST), MPSGh*	-	Assistant Lecturer

DEPARTMENT OF PHARMACOGNOSY AND HERBAL MEDICINE

DEPARTMENT OF PHARMACOLOGY AND TOXICOLOGY

Dr. Isaac J Asiedu-Gyekye *MSc (Pharm), PhD (Pyatigorsk), CMC, FDIP, MCPA, MPSGh, IPMA-UK*	-	Senior Lecturer
Dr. Patrick Amoateng *BPharm (KNUST), PhD (KNUST), MCPA, MPSGh*	-	Lecturer
Dr. Edwin Nkansah *BSc(Cape Coast), MSc (London), PhD (London),*	-	Lecturer
Dr. Kwame Benoit Nguessan Banga *BSc.(Cote d'Ivoire), MSc. (Cote d'Ivoire), PhD (Strasbourg)*	-	Lecturer

DEPARTMENT OF PHARMACY PRACTICE AND CLINICAL PHARMACY

Dr. Barima Amissah Afrane *BSc (New York), PharmD (Southern California)*	-	Senior Lecturer
Mrs. Irene Akwo-Kretchy *BPharm (KNUST), MPhil (Psychology) (Ghana), MPSGh*	-	Assistant Lecturer

SCHOOL OF PHARMACY

1.0 STUDENTS' ADMISSION, PROGRESSION AND GRADUATION

1.1 GENERAL REGULATIONS

1.1.1 The University runs a modular course structure. Under this structure, the University's academic programme has been organized into a semester system, and instruction takes the form of courses evaluated in terms of credits. Units of courses are examinable at the end of every semester and, if passed, a student shall earn credit(s) for the Units. The courses are coded and arranged in progressive order of difficulty, or in levels of academic progression.

1.1.2 Each department shall provide detailed information about the structure of courses leading to the award of Bachelors' degree.

1.1.3 It is the responsibility of each student admitted to the University of Ghana, to be familiar with the specific requirements of the degree as well as the rules, regulations and policies of the University.

1.1.4 Each student is responsible for ensuring that the courses in which registration is effected satisfy the programme requirements of the Bachelor's degree sought; advice and/or counseling for all who need assistance is freely available.

1.1.5 It is also understood that every student, by the act of registering, agrees to abide by all rules, regulations and policies of the University of Ghana and of the Faculties or Departments in which that student is registered.

1.1.6 Each student is expected to be familiar with the General Information outlined in this Handbook as well as the information pertaining to the School of Pharmacy. Students shall therefore be held liable for any lapses. When in doubt, students may consult their Heads of Department in writing with a copy to the Dean asking that advice be given in writing.

1.1.7 Exemption from any of these General Regulations may be granted only by the express permission of the Academic Board on the recommendation of the Board of the School of Pharmacy.

1.1.8 The University reserves the right to change rules, regulations and policies, as well as programme and course requirements given in this Handbook without prior notice.

1.2 ADMISSION TO THE SCHOOL OF PHARMACY

1.2.1 Further to the General Regulations regarding admission into the University of Ghana, admission to the School of Pharmacy for the B. Pharm Programme shall be direct into Level 100

a) from the Senior Secondary School (using the SSS results) and must meet the following requirements:

i. Core subjects

- passes in three subjects, namely, English, Mathematics and Integrated Science
- additionally, candidates shall be required to pass core Social Studies at least at Grade E.

ii. Elective subjects

Passes in three Elective Subjects shall be required namely Biology, Chemistry and either Physics or Mathematics.

b) Other qualifications include International Baccalaureate (IB), International General Certificate of Secondary Education (IGCSE), General Certificate of Education (GCSE), the American Grades 12 and 13 examinations and other external qualifications which have equivalencies to the Senior Secondary School Certificate of Education (SSSCE) and the General Certificate of Education (GCE).

1.3.1 ACADEMIC YEAR / STRUCTURE

1.3.1 The Academic Session shall comprise two semesters.

1.3.2 Duration of Semester

A semester shall be of 17 weeks duration and be structured as follows:

14 weeks of Teaching

1 week of Revision

2 weeks of Examinations.

1.4 **DEFINITION OF COURSE UNIT**

A course unit shall be defined as follows:

iv. One-hour lecture = 1 Unit

v. One-hour tutorial = 1 Unit

vi. One, two/three-hour practical session = 1 Unit

1.5 **DEFINITION OF COURSE CREDIT**

A credit shall be defined as follows:

iii. One-hour lecture or tutorial/week/semester

iv. One two/three-hour practical/week/semester.

1.6 **GRADING SYSTEM FOR COURSES & SUBJECTS**

1.6.1 Student performance in a subject/course shall be graded as follows:

Letter Grade	**Marks**	**Grade Point**	**Interpretation**
A	80 – 100	4.0	Outstanding
B+	75 – 79	3.5	Very Good
B	70 – 74	3.0	Good
C+	65 – 69	2.5	Fairly Good
C	60 – 64	2.0	Average
D+	55 – 59	1.5	Below Average
D	50 – 54	1.0	Marginal Pass
*E	45-49	0.5	**Unsatisfactory**
F	0 – 44	0	Fail

Note: ***Although this is a failure grade, it may still be accepted as fulfilling prerequisite for other courses.**

Other Grades

Grade	**Interpretation**	**Grade Point**
X	Fail	0
Z	Disqualification	0
I	Incomplete	0
Y	Continuing	0
AUDI	Audit	0

1.6.2 Grade Point (GP): Each grade is assigned an equivalent grade point as indicated above. The number of (grade) points earned by a student, for each course completed, is computed as the product of the number of credits for the course and the grade point equivalent of the grade obtained in that course.

1.6.3 Cumulative Grade Point Average (CGPA): The student's cumulative grade point average is calculated by dividing the total number of grade points obtained, up to any specified time, by the total number of credits of all courses for which the student has registered up to that time.

1.6.4 Final Grade Point Average (FGPA): The FGPA is the CGPA for all courses under consideration calculated up to the end of a student's academic programme.

1.7 **DEFINITION OF GRADES**

1.7.1 Pass Grades: Grades A to D+ (not less than 1.5 GPA) constitute Pass grades in a course and also a subject.

1.7.2 Failure Grades: Grades D, E, F, X, Z constitute Failure grades in a course and also in a subject.

1.7.3 Continuing: A grade Y, denoting Continuing shall be awarded at the end of a semester to any student who is taking a course, which continues into the next semester.

1.7.4 **Non-Completion of Course**:

v. A grade I, denoting Incomplete, shall be awarded to a student who is unable to complete a course for reasons adjudged by the Board of Examiners as satisfactory. Such a student shall be expected to complete the course the very next time the course is available.

vi. A grade X shall be awarded to a student who is unable to complete a course for reasons adjudged by the Board of Examiners as unsatisfactory.

1.7.5 **Disqualification:**

i. A grade Z denotes Disqualification from an examination as a result of an examination malpractice or offence, and shall be awarded whenever it is established that a candidate had attempted to gain an unfair advantage in an examination, be it in a Principal subject or an Ancillary or any other paper.

ii. A candidate awarded a grade Z may be debarred from taking a University Examination for a stated period, or indefinitely, or may be expelled from the University.

iii. A grade Z may be awarded only by the Board of Examiners.

1.7.6 **Student in Good Standing**

A student in good standing shall be one whose ***Cumulative*** Grade Point Average (***CGPA***) is at least **1.50** (***Grade D+***).

1.8 **DEFINITION OF COURSES AND SUBJECTS**

1.8.1 Core Pharmacy Course

A core pharmacy course is any course in a pharmaceutical discipline that is offered as part of the B.Pharm programme.

1.8.2 Non-Pharmacy Course

A non-pharmacy course is a course in a non-pharmaceutical discipline that is offered a part of the B.Pharm programme.

The non-pharmacy courses currently offered in the B.Pharm programme are:

PHAS 121 Mathematics for Pharmacy I
PHAS 122 Mathematics for Pharmacy II
PHAS 141 Human Anatomy and Physiology
PHAS 143 Human Anatomy and Physiology (Practical)
PHAS 142 Basic Biochemistry
PHAS 144 Basic Biochemistry (Practical)
PHAS 151 Computer Literacy I
PHAS 152 Computer Literacy II
UGRC 110 Academic Writing I
UGRC 150 Critical Thinking and Practical Reasoning
UGRC 210 Academic Writing II
UGRC 220 Liberal and African Studies

1.8.3. Core Pharmacy Subject

All core pharmacy courses in a particular pharmaceutical subject area shall constitute a subject in pharmacy.

The core pharmacy subjects currently offered in the B.Pharm Programme are:

I. General Chemistry: PHAS 111; PHAS 112; PHAS 113; PHAS 114
II. Principles of Pharmacy: PHAS 123; PHAS 125
III. Pharmaceutical Microbiology I: PHAS 124; PHAS 126
IV. Pharmacognosy: PHAS 131; PHAS 133
V. Behavioural Pharmacy: PHAS 153; PHAS 154
VI. Organic/Medicinal Chemistry I: PHAS 211; PHAS 212; PHAS 213; PHAS 214

VII. Pharmaceutical Microbiology II: PHAS 221; PHAS 223
VIII. Physical Pharmacy: PHAS 222; PHAS 224
IX. Drugs of Plant Origin I: PHAS 231; PHAS 233
X. General/Autonomic Pharmacology: PHAS 241; PHAS 242; PHAS 243; PHAS 244
XI. Biostatistics & Pharmacoepidemiology: PHAS 251
XII. Chemical Pathology: PHAS 252; PHAS 254
XIII. Drug Analysis: PHAS 311; PHAS 313
XIV. Medicinal Chemistry II: PHAS 312; PHAS 314
XV. Pharmaceutical Technology: PHAS 321; PHAS 323
XVI. Principle of Immunology: PHAS 322; PHAS 324
XVII. Drugs of Plant Origin II: PHAS 331; PHAS 333
XVIII. Endocrine & Immunopharmacology: PHAS 341; PHAS 343
XIX. Systems Pharmacology I & Toxicology: PHAS 342; PHAS 344; PHAS 346
XX. Clinical Pharmacy: PHAS 351; PHAS 353
XXI. Pharmacy Practice: PHAS 352; PHAS 354
XXII. Drug Quality Assurance: PHAS 411; PHAS 412
XXIII. Applied Pharmaceutics & Immunology: PHAS 421; PHAS 422
XXIV. Phytotherapy & Herbal Medicine: PHAS 431; PHAS 432
XXV. Systems Pharmacology II & Chemotherapy: PHAS 441; PHAS 442
XXVI. Pharmacotherapy & Disease Management: PHAS 451; PHAS 452
XXVII. Final Year Project: PHAS 410; PHAS 420; PHAS 430; PHAS 440; PHAS 450

1.8.4 Non-Pharmacy Subject

All non-pharmacy courses in non-pharmacy but related disciplines shall constitute subjects in a non-pharmacy category.

Non-pharmacy subjects currently offered in the B.Pharm programme are:

I. Mathematics for Pharmacy : PHAS 121 and PHAS 122
II. Human Anatomy and Physiology : PHAS 141 and PHAS 143
III. Basic Biochemistry : PHAS 142 and PHAS 144
IV. Computer Literacy : PHAS 151 and PHAS 152
V. Academic Writing : UGRC 110 and UGRC 210
VI. Social Studies: UGRC 150 and UGRC 220

1.9. **PROBATION AND WITHDRAWAL**

1. 9.1 A student who fails to obtain a grade point average of 1.50 (55%) in a subject shall be eligible for the Supplementary Examinations.

1.9.2 A student who fails to obtain the requisite pass in a subject after the Supplementary Examinations shall be asked by the Dean to repeat the year and the course, provided that not less than 2 courses shall be taken in the repeated year.

1.9.3 A student who fails to obtain the requisite pass in the subject after repeating the year shall be asked by the Dean to withdraw from the School of Pharmacy.

1.9.4 A student can proceed to the next stage of the programme if and only if he/she has passed all the courses of the preceding level, or has failed not more than one course.

2.0 **B.PHARM DEGREE PROGRAMME**

2.1 **DURATION OF PROGRAMME**

2.1.1 The minimum period for the B.Pharm Degree shall be 8 semesters and the maximum period shall be 12 semesters. These minimum and maximum periods are calculated from the date of first registration.

2.1.2 A candidate who is unable to complete his/her programme within the maximum period allowed shall lose all credits accumulated. Such a candidate shall not be allowed to re-apply for admission into the B.Pharm degree programme.

2.2 **INTERRUPTION OF STUDY PROGRAMME**

2.2.1 A student may break his/her study programme but may not break for more than 4 continuous semesters, so however that the maximum period allowable for the completion of the programme is not exceeded. Such a student shall be allowed to continue the programme from where he/she had left off.

2.2.2 A student who wishes to interrupt his/her course of study shall apply in advance to the Dean of the School of Pharmacy, stating reasons why he/she wants to interrupt his/her study programme, and permission duly granted before he/she leaves the University. The decision of the Dean shall be communicated to the

applicant before he/she leaves the University.

2.2.3 A student who breaks his/her studies for more than 4 continuous semesters shall be deemed to have lost any accumulated credits. Such a student may be allowed to re-apply for admission to the School of Pharmacy.

2.2.4 Where the ground for interruption of studies is medical, the Head of the Medical School Clinic/Director of Health Services, University of Ghana shall be required to advise the Dean on the propriety and length of period of interruption. The Dean shall cause the Head of the Medical School Clinic to investigate any medical report reaching his office from any health delivery facility outside the Medical School Clinic/University Hospital and advise accordingly.

2.3 SCHEME OF EXAMINATION FOR B.PHARM DEGREE

2.3.1 A final (end-of-semester) examination shall normally be required as a part of every course. An examination schedule showing time and place of examination for each course shall be published each semester.

2.3.2 The marks obtained in the end-of-semester examination shall contribute 70% of the grade for the course while continuous assessment shall contribute the remaining 30% (except for practicals or other courses which may be assessed entirely by continuous assessment).

2.3.3 Time allotted to examination papers shall be as follows:

1-Credit Course	-	1 hour
2-Credit Course	-	2 hours
3-or more Credit Course	-	2 to 3 hours.

2.4 ELIGIBILITY FOR EXAMINATIONS

2.4.1 A student shall attend all such lectures, tutorials, seminars and practicals and undertake all other assignments as approved by the University.

2.4.2 Each Department shall, with the approval of the Academic Board, determine the requirements for the subjects they offer.

2.4.3 Further to 2.4.1 above, a student shall attend lectures, tutorials, practicals and other activities prescribed for the courses/subjects for which he/she has registered, and execute all assignments given.

2.4.4 A student who does not fulfill the requirements for any course/subject shall not be allowed to take the examination for that course/subject.

2.4.5 In any case, a student who is absent for a **cumulative period of 21 days** from all lectures, tutorials, practicals and other activities prescribed for any subject in any semester shall be deemed to have withdrawn from the course/subject. Such a student shall not be permitted to sit for the semester examination.

2.5 REGISTRATION FOR EXAMINATIONS

2.5.1 Registration for a School of Pharmacy Examination shall require endorsement of the Registration Form by the Head of Department to the effect that the candidate has pursued satisfactorily the approved course(s) of study being offered over the prescribed period, and has attended at least 85% of lectures, tutorials, practicals and other activities prescribed for the course(s)/subjects. A candidate's registration shall not be valid unless it is so endorsed.

2.5.2 Endorsement as in (2.5.1) above shall be withheld if a candidate is not deemed to have followed satisfactorily the approved course of study (as in Section 2.4).

2.5.3 In any event of the withholding of an endorsement, the Head of Department shall request the confirmation by the Board of the School of Pharmacy.

2.6 SUPPLEMENTARY EXAMINATIONS

2.6.1 The Examiners' Board shall decide whether a student who fails in any course shall be allowed to re-write the examination in the failed course as a Supplementary Examination (to be held in the Long Vacation). If he/she re-writes and passes that examination, he/she shall be awarded the full grade earned on that occasion. The student's transcript will show the number of occasions the candidate took the examination for that particular course and the grades earned on all such occasions.

2.6.2 Supplementary Examinations shall not include continuous assessment marks.

2.6.3 Supplementary Examinations shall be held six weeks after the main examination.

2.6.4 A student shall be allowed to take not more than 5 courses in all subject areas at any one time as the Supplementary Examinations.

2.6.5 A student who at any time would be required to re-write University Examinations in more than 5 courses in all the subject areas shall repeat the year.

2.6.6 See also Regulation 1.9 (Probation and Withdrawal)

2.7 **Deferment Of Examination**

2.7.1 **On Grounds of Ill-Health:** A student who has satisfied all the requirements as specified in Section 2.5, but is unable to take the main (end of semester) examination on grounds of ill health, shall, on application to the Dean, and on provision of a Medical Certificate issued or endorsed by the Head of the Medical School Clinic/Director of Health Services, Legon, be allowed to take supplementary examination as his/her main examination. He/she shall be credited with the grade obtained in the supplementary examination.

2.7.2 Subsequent application for deferment, on grounds of ill-health, shall be subject to a Medical Certificate issued by a properly constituted Medical Board.

2.7.3 **On Grounds other than Ill-Health:** In cases of deferment on grounds other than ill-health, the Dean of the School of Pharmacy shall invite the applicant for interview. It shall be the student's responsibility to satisfy the School of Pharmacy beyond reasonable doubt why he/she wishes to defer the examinations.

2.7.4 In all cases of deferment of examinations, the applicant(s) shall obtain written responses from the Dean before leaving the School.

2.8 **EXAMINERS' BOARD**

2.8.1 There shall be Examiners' Board for the main and supplementary examinations which shall comprise the following:
Dean – Chairman
Vice Dean
Heads of Department
Internal Examiners for the various courses
Senior Assistant Registrar (AA) – Secretary

2.8.2 Examiners' Board shall receive, consider and determine the results of the respective examinations.

2.8.3 The Board shall be required to make appropriate recommendations on any candidate based on his/her performance and also on any aspect of the examination as it deems fit.

3.0 **DECLARATION OF RESULTS**

3.1 Results of semester examinations, taken at the end of each semester shall normally be published by the Dean on the School Notice Board before the commencement of the next semester.

3.2 A results slip indicating the student's performance in the examination shall be made available to the student.

3.3 **ELIGIBILITY FOR THE B.PHARM DEGREE**

3.3.1 The B.Pharm degree shall be awarded to a candidate who has been properly admitted to the University, has followed the approved courses of study over the prescribed period and has satisfied the conditions as stated in Regulations 3.3.2 and 3.3.3 below.

3.3.2 **UNIVERSITY REQUIREMENTS**

iii. evidence of regular enrolment in the degree programme
ii. discharge of all obligations owed to the University
vii. a pass in all University required courses
viii. satisfactory performance in the appropriate University Examinations.

3.3.3 **FACULTY/DEPARTMENTAL REQUIREMENTS**

Satisfactory discharge of such requirements as may be prescribed for the degree.

3.3.4 **REQUIREMENTS FOR GRADUATION**

3.3.4.1 A candidate shall be deemed to have:

i) satisfied all General University and Faculty requirements;

ii) obtained at least 55% in each course featured in the examinations;

3.4 **CONFIRMATION OF AWARD OF DEGREE**

3.4.1 A list of candidates who are deemed eligible as in Regulations 3.3 and 3.4 shall be laid before the Academic Board of the University for approval as soon as practicable.

3.4.2 No award shall be confirmed unless the Academic Board of the University is satisfied that the candidate has satisfied all the conditions for the award of a degree.

3.5 **CANCELLATION OF AWARD**

3.5.1 Notwithstanding previous confirmation of an award of a degree as in Regulation 3.4, the Academic Board of the University may at any time cancel an award even with retrospective effect if it becomes known that:

(i) a candidate has entered the University with false qualifications

(ii) a candidate has impersonated someone else

(iii) a candidate has been guilty of examination malpractice for which a grade Z would have been awarded

(iv) there are other reasons that would have led to the withholding of confirmation of the award in the first place.

3.5.2 In any such event, the decision of the Academic Board of the University shall be published on the University Notice Boards and the candidate notified. Such cancellation and the reasons for it shall be entered on the candidate's transcript.

3.6 **TRANSCRIPT OF ACADEMIC RECORD**

At the end of a student's programme, the University shall, on the payment of an appropriate fee, issue to the particular student a complete transcript of his/her academic record. This transcript shall be marked Student's Copy and shall record all courses attempted and all results obtained.

3.7 **CLASSIFICATION OF DEGREE**

The end-of-semester examination results from Level 100 except specified University and Faculty required courses shall be taken into account in the computation of the Final Grade Point Averages (FGPA) for the classification of the bachelor's degree.

3.7.1 The GPA at Levels 100, 200, 300 and 400 shall be weighted in the proportions 1:2:2:2.

3.7.2 In the determination of the FGPA, a weighted average of all repeat courses shall be used, as for instance, a 3-credit course with a 'D' at first attempt and an 'A' at the second attempt shall attract a total of 6 credits in the computation of the grade Point Average of that particular course.

3.7.3 The FGPA for FIRST CLASS shall be 3.60 or better.

3.7.4 The full scheme of classification shall read as follows:

First Class	-	FGPA of 3.60 or better
Second Class (Upper)	-	FGPA of 3.25 – 3.59
Second Class (Lower)	-	FGPA of 2.50 – 3.24
Pass	-	FGPA of 1.50 – 2.49
Fail	-	FGPA of below 1.50

3.7.5 University and Faculty required courses shall continue to remain ancillary subjects and a pass in every subject shall be required by all undergraduate degree students for the award of a Bachelor's degree; marks obtained shall be entered on the student's transcript, but shall not count towards the classification of the degree.

3.8 **UNIVERSITY OF GHANA REQUIRED COURSES**

i) Academic Writing I & II (UGRC 110 & UGRC 210)

ii) Critical Thinking and Practical Reasoning (UGRC 150)

iii) Liberal and African Studies (UGRC 220)

3.9 **FACULTY REQUIRED SUBJECTS**

i) Mathematics for Pharmacy
ii) Human Anatomy and Physiology
iii) Basic Biochemistry
iv) Computer Literacy.

3.10 **NAME OF AWARDING INSTITUTION**

University of Ghana

3.11 ELIGIBILITY FOR POSTGRADUATE DEGREES

3.11.1 Eligibility for Pharm.D, MPhil and PhD degrees shall be determined when the Departments are fully operational.

4.0 EMPLOYMENT PROSPECTS OF STUDENTS

The Pharmacy programme is structured to ensure that upon successful completion the graduates from the School will satisfy the current requirement of the Pharmacy Council of Ghana for entry into the pre-registration training programme for registration as pharmacists in Ghana. They will thus be eligible to practice as clinical pharmacists, community pharmacists, regulatory pharmacists, industrial pharmacists or, after appropriate post-graduate training, as pharmaceutical scientists in academia and research establishments.

5.0 **CURRICULA OF COURSES**

In developing the curricula and syllabuses for the School the aims and objectives of academic programmes of the School were established.

5.1 **AIMS**

The purpose of the degree programmes of the School of Pharmacy is to produce pharmacy graduates who:

- are committed to life-long learning
- having a sufficient understanding of the principles and techniques of pharmaceutical sciences (and after appropriate internship) are able to communicate and deliver pharmaceutical care in the community and hospital settings;
- are able to take professional responsibility in pharmaceutical industry for the manufacture and testing of medicinal products
- are able, after appropriate postgraduate training, to pursue careers in academia and research establishments.

Special attention is focused on the development of skills that will enable the graduate to produce therapeutic substances of plant origin. This is intended to accelerate the scientific development of herbal medicine in Ghana.

5.2 **Objectives**

At graduation the student will:

(i) understand how medicines are developed, manufactured and made available for pharmaceutical care
(ii) have a basic understanding of medicine formulation and the capability to prepare extemporaneously any medicine for which this would be regarded as the normal means of provision of pharmaceutical care
(iii) be able to supply medicines in accordance with pharmaceutical knowledge, legislation and codes of professional conduct and practice
(iv) have sufficient academic knowledge to interpret and evaluate prescriptions and other orders for medicines and to underpin a role in advising patients and other health care professionals about medicines and their usage
(v) be able to recognize common disease states and make appropriate interventions to presented symptoms
(vi) have an appreciation of the principles of medicinal products, quality assessment and quality assurance mechanisms in all aspects of scientific and professional activities
(vii) have an appreciation of research methodologies relevant to natural, clinical and social sciences.

6.0 COURSE MODULES

6.1 LEVEL 100 YEAR ONE

SEMESTER 1

COURSE CODE	COURSE TITLE	CREDITS
PHAS 111	General Chemistry I	3
PHAS 113	General Chemistry I (Practical)	1
PHAS 121	Mathematics for Pharmacy I	1
PHAS 123	Introduction to Principles of Pharmacy	3
PHAS 125	Principles of Pharmacy (Practical)	1
PHAS 131	Pharmacognosy	2
PHAS 133	Pharmacognosy (Practical)	1
PHAS 141	Human Anatomy & Physiology	2
PHAS 143	Human Anatomy & Physiology (Practical)	1
PHAS 151	Computer Literacy I	1
PHAS 153	Orientation to Pharmacy	2
UGRC 110	Academic Writing I	3
TOTAL CREDITS		**21**

SEMESTER 2

COURSE CODE	COURSE TITLE	CREDITS
PHAS 112	General Chemistry II	3
PHAS 114	General Chemistry II (Practical)	1
PHAS 122	Mathematics for Pharmacy II	1
PHAS 124	Pharmaceutical Microbiology I	3
PHAS 126	Pharmaceutical Microbiology I (Practical)	1
PHAS 142	Basic Biochemistry	3
PHAS 144	Basic Biochemistry (Practical)	1
PHAS 152	Computer Literacy II	1
PHAS 154	Psychology & Behavioural Science	2
UGRC 150	Critical Thinking and Practical Reasoning	3
TOTAL CREDITS		19

6.2 LEVEL 200 YEAR TWO

SEMESTER 3

COURSE CODE	COURSE TITLE	CREDITS
PHAS 211	Organic Pharmaceutical Chemistry I	4
PHAS 213	Organic Pharmaceutical Chemistry (Practical)	1
PHAS 221	Pharmaceutical Microbiology II	2
PHAS 223	Pharmaceutical Microbiology II (Practical)	1
PHAS 231	Drugs of Plant Origin	2
PHAS 233	Drugs of Plant Origin I (Practical)	1
PHAS 241	General Principles of Pharmacology	3
PHAS 243	General Principles of Pharmacology (Practical)	1
PHAS 251	Biostatistics & Pharmacoepidemiology	3
UGRC 210	Academic Writing II	3
TOTAL CREDITS		**21**

SEMESTER 4

COURSE CODE	COURSE TITLE	CREDITS
PHAS 212	Medicinal Chemistry I	4
PHAS 214	Medicinal Chemistry I (Practical)	1
PHAS 222	Physical Pharmacy	3
PHAS 224	Physical Pharmacy (Practical)	1
PHAS 242	Autonomic Pharmacology	3

PHAS 244	Autonomic Pharmacology (Practical)	1
PHAS 252	Chemical Pathology	2
PHAS 254	Chemical Pathology (Practical)	1
UGRC 220	Liberal and African Studies	3
TOTAL CREDITS		**19**

6.3 LEVEL 300 YEAR THREE

SEMESTER 5

COURSE CODE	COURSE TITLE	CREDITS
PHAS 311	Drug Analysis	3
PHAS 313	Drug Analysis (Practical)	1
PHAS 321	Pharmaceutical Technology	3
PHAS 323	Pharmaceutical Technology (Practical)	1
PHAS 331	Drugs of Plant Origin II	2
PHAS 333	Drugs of Plant Origin II (Practical)	1
PHAS 341	Endocrine and Immunopharmacology	3
PHAS 343	Experimental Pharmacology I (Invitro)(Practical)	1
PHAS 351	Clinical Pharmacokinetics and Bioavailability	3
PHAS 353	Entrepreneurial Skills (Practical)	1
TOTAL CREDITS		**19**

SEMESTER 6

COURSE CODE	COURSE TITLE	CREDITS
PHAS 312	Medicinal Chemistry II	3
PHAS 314	Medicinal Chemistry II (Practical)	1
PHAS 322	Principles of Immunology	3
PHAS 324	Principles of Immunology (Practical)	1
PHAS 342	Systems Pharmacology I	3
PHAS 344	Principles of Toxicology	2
PHAS 346	Experimental Pharmacology II (Invivo) (Practical)	1
PHAS 352	Principles of Pharmacy Practice	3
PHAS 354	Community Pharmacy Practice (Practical)	1
TOTAL CREDITS		**18**

6.4 LEVEL 400 YEAR FOUR

SEMESTER 7

COURSE CODE	COURSE TITLE	CREDITS
PHAS 410	Pharmaceutical Chemistry Project	*
PHAS 411	Drug Design and Development	3
PHAS 421	Applied Immunology	3
PHAS 420	Pharmaceutics Project	*
PHAS 431	Plant Poisons and Pesticides	3
PHAS 430	Pharmacognosy/Herbal Medicine Project	*
PHAS 441	Systems Pharmacology II	3
PHAS 440	Pharmacology Project	*
PHAS 451	Pharmacotherapy and Disease Management	3
PHAS 450	Pharmacy Practice Project	*
TOTAL CREDITS		**15**

* Students are eligible to select only one project

SEMESTER 8

COURSE CODE	COURSE TITLE	CREDITS
PHAS 412	Drug Quality Assurance	2
PHAS 410	Pharmaceutical Chemistry Project	*
PHAS 422	Principles of Pharmacy	2
PHAS 420	Pharmaceutics Project	*
PHAS 432	Advances in Phytotherapy and Herbal Medicine	**3**
PHAS 430	Phytotherapy Project	*
PHAS 442	Chemotherapy and Anti-infective Agents	3
PHAS 440	Pharmacology Project	*
PHAS 452	Patient Treatment Assessment	2
PHAS 450	Pharmacy Practice Project	*
TOTAL CREDITS		**12**
Add 6 Credits for Project		**18**

7.0 COURSE DESCRIPTIONS (B. PHARM)

7.1 Department of Pharmaceutical Chemistry

PHAS 111 General Chemistry I (3 Credits)

The student will be expected to appreciate the relevance of chemistry to pharmacy practice. The course will focus on chemical structure, bonding and shape as exemplified in the classical model of the atom, Bohr's models, quantum mechanics and Schrödinger equation, relation to atomic structure, Aufbau, Hund's and Pauli's principles: MO and VB approaches to bonding, shapes of atomic and molecular orbitals e.g. H_2O, NH_3 and CH_4 and Hybridisation of atomic orbitals. The Periodic Table; Equilibria in Electrolytes; Acids and Bases; Bio-inorganic chemistry; metals in the body, electrolytes and transition metals-roles in biological functions, iron in haemoglobin, zinc in some enzymes, identification, assay and uses of metals in pharmacy e.g. Fe, Mg, Al, Zn , Ca etc.

Organic chemistry: Introduction to organic chemistry: Alkanes; bonding, nomenclature, isomerism, preparations, reactions , free radical chain reaction: Alkenes; Preparation and reactions, geometric isomerism, carbonium ions, additions. Markovnikov's and anti Markovnikov's addition, polymerization, substitution and oxidation reactosn, dienes, 1, 4- addition reaction. Alkynes; preparations, addition reactions, tautomerism and acidity.

PHAS 112 General Chemistry II (3 Credits)

Appreciation of physical chemistry concepts, ability to derive reaction rates, determine the order of reactions and apply these concepts to drug stability in pharmaceutical formulations and other relevant pharmaceutical systems. Characteristics of weak acids, bases and their salts, amino acids, buffer solutions. Polarimetry and Refractometry. Electrolytic conduction. Electromotive Force. Polarography and Amperometry, Chemical kinetics – Definition of basic terms, order of reaction: derivation of Zero, first and second order Laws. Factors affecting rate of a chemical process - temperature, ionic effect. Arrhenius' and Eyring's equation, theory or rate process. Thermodynamics: First and Second Laws, Thermochemistry, Enthalpy, Entropy, Free Energy.

Introduction to spectroscopy: Light absorption and the use of filters to select various tpes of light. The electromagnetic spectrum and its separation. i.e. R O Y G B I V

PHAS 113 General Chemistry I Practical (1 Credit)

Students will develop the ability to identify laboratory equipment. The course will enable students to develop practical skills for the preparation of stock solutions, perform basic volumetric analysis, acid/base, double indicator and back titrations, redox titrations, permanganate and iodine/thiosulphate titration and complexometric titrations.

PHAS 114 General Chemistry II Practical (1 Credit)

In this course the student will be trained to use basic laboratory equipment such as polarimeter, conductometer and refractometer. By the application of physical chemistry principles the student will be enabled to identify and analyse given compounds and solutions.

PHAS 211 Organic Pharmaceutical Chemistry I (4 Credits)

In this course students will aquire the ability to classify organic coumds into grous, predict their chemical and physical properties, method of synthesis, the reactions they under and their significance to pharmacy and medicine. Functional groups to be studied includes

Benzene:. Arenes: n. Organometallic compounds. Alkyl halides: preparation; . Aryl halides:. Glycols:. Ethers and epoxides: Aldehydes and ketones; Carboxylic acids; Dicarboxylic acid; Amines; Diazonium salts; Allicyclic compounds.

PHAS 212 Medicinal Chemistry I (4 Credits)

Students will be exposed to the chemistry of Biologically important macromolecules and their interactions; Stereochemistry; Optical isomerism; Carbohydrates; Heterocyclic compounds.

Introduction to the chemistry of medicinal substances. Physicochemical principles of drug action. Drug metabolism and bio-transformation mechanisms of therapeutic significance. The Pharmacodynamic and miscellaneous agents to be encountered in this course will include analgesics, antipyretics, anti-tussives; central nervous system depressants; psychotherapeutic agents; drugs acting on the cardiovascular, renal and haematopoietic systems; hormonal and related drugs e.g. steroids, peptides, phospholipid metabolites; autonomic nervous system agonists and antagonists; Neurotransmitters in the adrenergic and cholinergic systems.

PHAS 213 Organic Pharmaceutical Chemistry Practical
(1 Credit)

Students will acquire practical skills for basic techniques in simple synthesis, determination of melting points and boiling points, recrystalisation, solvent extraction and reduced pressure evaporation.

PHAS 214 Medicinal Chemistry I Practical (1 Credit)

This course will enable students develop the practical ability to carry out synthesis, extraction, purification and recrystalisation to obtain very pure compounds. Volumetric analysis of organic compounds and related pharmaceuticals. Determination of elements and functional groups in organic compounds.

PHAS 311 Drug Analysis (3 Credits)
Introduction to spectroscopy

Spectroscopic methods of analysis and structural determination of drugs: flame photometry and atomic absorption; spectroscopy; instrumentation, underlying processes and applications in the pharmaceutical industry; interpretation of spectra and identification of compounds using spectroscopic techniques.

Techniques involving UV and Visible spectroscopy (including fluorimetry), Infra Red Spectroscopy, Nuclear Magnetic Resonance, Proton & Carbon 13 NMR, Mass Spectroscopy and X-ray crystallography will be considered. Correlation of these methods and techniques for structure elucidation will also be considered. Preparation of monographs. Chromatography in Pharmaceutical analysis (GLC and HPLC). Review of titrimetric methods for quality assurance of drugs. Non-aqueous titrations, acid/base titrations, oxidation-reduction titration etc.

PHAS 312 Medicinal Chemistry II (3 Credits)

Students will be required to demonstrate ability to relate chemistry of medicinal compounds to their physicochemical properties, structural features, stability, assay and mode of action. They will also be able to relate stereochemistry to biological activity. The course will provide approaches to synthesis of medicinal compounds and the chemistry of chemotherapeutic agents such as: antimalarials, trypanocides, antischistosomal agents, amoebicides, trichomonicides, leishmanicides, filaricides and anthelmintics. Also included are drugs acting against infectious diseases; commonly used antibiotics and related agents of clinical importance, antineoplastic and anti-viral agents.

PHAS 313 Drug Analysis Practical (1 Credit)

This course will enable students to assay, identify and estimate the purity of drugs and other pharmaceutical products using basic equipment like UV and IR spectrophotometers. Students will learn techniques involving titrimetric, gravimetric, potentiometric, chromatographic and spectroscopic methods of analysis of drugs.

PHAS 314 Medicinal Chemistry II Practical (1 Credit)

The practical skills acquired in course PHAS 214 will be used for standardization of selected solutions; iodimetric assay of penicillins by the BP method; Assay of selected drugs by BP methods; synthesis,

purification and analysis of selected drugs and pharmaceutical products.

PHAS 410 Pharmaceutical Chemistry Project (6 Credits)
In the final year of the B.Pharm degree programme students will be assigned one research project to be undertaken in both Semesters 7 and 8. The project will be designed to enable the students to demonstrate the scientific skills they have acquired in the preceding three years. A problem of relevance in pharmaceutical science or pharmacy practice which will require literature search, choice of appropriate methodology, experimental design and execution, data generation or collection, compilation, analysis and discussion of results using acceptable statistical methods will be assigned to students. Upon completion of the project, which will be carried out under the mentorship of an academic supervisor, the student will present a seminar and a final bound report for assessment.

PHAS 411 Drug Design and Development (3 Credits)
In this course, students will appreciate principles of drug development, drug design concepts including – Quantitative Structure Activity Relationships (QSAR) and appropriate formulation with pharmacologically inert excipients and additives. Students will be assigned one case study each of a therapeutic class of drugs to illustrate the design and development of specific drugs in that class.

PHAS 412 Drug Quality Assurance (2 Credits)
This course will provide an awareness and appreciation of the significance of drug quality in pharmacotherapy. Theory and practice of quality assessment of drugs and pharmaceutical products. Good Manufacturing Practices to promote quality assurance and ensure quality control. Laboratory methods and techniques for drug quality assessment and assurance.

7.2 **Department of Pharmaceutics and Microbiology**

PHAS 121 Mathematics for Pharmacy I (1 Credit)
This course will establish the relevance of mathematics in pharmacy. Application of mathematical concepts in pharmaceutical systems and phenomena will be made clear.
Differentiation: Limits, definition, product, quotient, function of a function, implicit differentiation, stationary points, turning points, points of inflection and function sketching.
Logarithmic Plots: Exponential and logarithmic functions, semi-logarithmic and logarithmic plots.
Integration Methods: By parts, algebraic substitution and partial fractions.
First-order Rate Processes: Definition, different physical processes obeying the Law (e.g. radioactive decay, chemical reaction, microbial growth, elementary pharmacokinetics), half-life and semi-logarithmic plots.

PHAS 122 Mathematics for Pharmacy II (Prerequisite PHAS 121); (1 Credit)
Zero, second and third-order reaction: The rate equations, their solutions and half-life.
Triangular Charts: Graphical representation of three component systems.
Partial Differentiation: Functions of several variables, first and second partial derivatives, geometric interpretation.
Integration: Definite integrals, area under the curve, infinite limits, approximate integration methods (trapezoidal rule).
Differential equations: Solution of ordinary differential equations by separation of variables and integrating factor methods. Partial differential equations, the unsteady state diffusion equations. Fick's Law of Diffusion.

PHAS 123 Introduction to Principles of Pharmacy (3 Credits)
This course will explain the fundamental principles of pharmacy as the procurement, storage and delivery of medicines in accordance with the ethics and laws of pharmacy practice. The course will provide students with the knowledge of the theory and practice of pharmacy by the following processes: Formulation, compounding and extemporaneous preparation of various dosage forms of medicines. Dispensing and counselling in a comprehensive pharmaceutical care delivery system.

PHAS 124 Pharmaceutical Microbiology I (3 Credits)
This course will introduce students to the fundamentals of the biology of micro-organisms and their significance in pharmacy.
Bacteriology: history; classification and nomenclature; structure and function; culture media; growth requirements, dynamics of growth; mode of reproduction; simple identification procedures. Gram staining and important biochemical diagnostic methods.

Virology: Structure of virus, bacteriophage cultivation techniques. Assay: Mode of replication of animal virus and bacteriophage; in virulent or avirulent form.

Phenomenon of lysogeny in bacteria and latency in human cells. Transduction and recombination interference. Comparative study of virus with other submicroscopic infective agents; oncogenic viruses and tumours.
Mycology: Basic principles in mycology: Yeasts and moulds. Morphological characteristics, growth requirements, multiplication and reproduction; isolation, cultivation (culture media) and microscopic examination; economic importance.
Parasitology: Morphology, life cycles and classifications of human and animal parasites. Parasite infections of humans e.g. nematodes, trematodes, cetodes and protozoa.

PHAS 125 Principles of Pharmacy Practical (1 Credit)
Introduction to dispensing prescriptions – labeling, sources of information, pharmaceutical compounding, posology and dosage calculations, pharmaceutical calculations, measurements and weighings. Pharmaceutical dosage forms; Routes of administration, Basic incompatibilities in dispensing; colouring and flavouring agents, pharmaceutical solvents, diluents, antioxidants and buffers, common waxes, oils and fats. Precision and accuracy in dispensing. Various calculations used in dispensing. Preparation of percentage solutions, aromatic solutions, mixtures, emulsions, suspensions, syrups, lotions creams and suppositories.

PHAS 126 Pharmaceutical Microbiology I Practical (1 Credit)
This course seeks to provide students with practical skills in microbiology through the following sources of micro-organisms: soil, atmosphere, water bodies, humans and pharmaceutical containers, etc. Microscopic examination of prepared slides – fungi, bacteria etc. Staining techniques: simple, differential (Gram) stain, spore and motility. Culture media; Liquid/Solid; aerobic/anaerobic media; routine and diagnostic media (include McIntosh Fields' Jar, Anaerobic Jar). Isolation of micro-organisms: Serial dilution, pour plate, streaking, spreading etc. Bacteria and Fungal enumeration: Total count turbidometrics microscopic count, viable count, pour plate, roll tube, over dried (Miles and Misra) agar plate techniques. Statistical evaluation of counting techniques.

PHAS 221 Pharmaceutical Microbiology II (2 Credits)
In this course students will be made aware of the significance and implications of microbial contamination of pharmaceutical products and the need for disinfection and sterilization. The course will provide for an understanding of the physicochemical methods for controlling microbial contamination of pharmaceutical products and for total elimination of microbial contaminants from products and creation and maintenance of sterile work environment.
Methods of Sterilization: Dry heat; moist heat (autoclave-various types); Heating with a bactericide (HWAB); Filtration (various types); High efficiency particulate air filters (HEPA filters); Testing of filters. Gaseous sterilization, ethylene oxide sterilization. Radiation sterilization. Monitoring of sterilization efficiency by physical, chemical and bacteriological methods.
Principles of Disinfection: Types of disinfectants; dynamics of disinfection; factors influencing efficiency of disinfection process; evaluation of disinfectant activity.
Preservation: Basic principles; Types; choice (factors to consider); Preservation of sterile pharmaceutical products.

PHAS 222 Physical Pharmacy (3 Credits)
This course provides for an understanding of the physical concepts applicable to pharmacy and an appreciation of the scientific basis of pharmaceutical formulation, compounding and mixing.
The course deals with the following characteristics of matter pertaining to pharmacy.

- Liquid state: Liquefaction of gases, aerosols, vapour pressure of liquid, boiling point.
- Solid and crystalline state: crystalline solids, X-ray diffraction, polymorphism, crystallization, effloresencse, Exsiccation, Desiccation, Hygroscopic substances, Deliquescence.
- Solid and Liquid Equilibium: Melting point and intermolecular forces, sublimation, cooling of liquid mixtures, eutectic mixtures.
- Phase Equilibria; Intermolecular forces between molecules – repulsion and attractive forces, Van der Waals force, H-Bonds, Ion-dipole, Ion-induced dipole, hydrophobic interactions.

States of Matter: (Liquids, Solids, gases) change of state, complexes, liquid crystals, glassy state,

polymorphism. Phase equilibria and the phase rule, viscosity and reheology, surface and interfacial phenomena.

PHAS 223 Pharmaceutical Microbiology II Practical (1 Credit)
In this course, students will become familiar with the types of equipment used for sterilization and disinfection in formulation and manufacture of sterile pharmaceutical products. Students will acquire hands-on practical experience with the formulation and preparation of the following sterile pharmaceutical products: parenteral products, ophthalmic solutions, occulenta, (in single and multiple dose forms); surgical dressings. Students will learn aseptic techniques applicable to the preparation of thermolabile sterile products. Students will learn biochemical characteristics of micro-organisms; perform antibiotic sensitivity tests and sterility testing protocols.

PHAS 224 Physical Pharmacy Practical (1 Credit)
This course will provide students with an understanding of the practical aspects of the relevance of the following phenomena in pharmacy: Thermodynamics; solutions and phase Equilibria. Ionic solutions and Electrolytic Equilibria; Reaction kinetics; Disperse Systems and Rheology.

PHAS 321 Pharmaceutical Technology (3 Credits)
In this course students will learn the theoretical basis of processes employed in pharmaceutical industry for the manufacture and quality assurance of pharmaceutical products. The course will cover good manufacturing practices in general, and specifically, the following processes: Preformulation; Bioavailability and Bioequivalence Testing; Separation; Tonicity, Osmoticity, Osmolality, Osmolarity;

Packaging; Stability of products. Quality Assurance and Control. The following product types will also be considered: Solutions, Emulsions, suspensions and Extractives; Medicated topical application; Powders; Oral solid Dosage forms; coated dosage forms; sustained-release drug delivery systems; Aerosols.

PHAS 322 Principles of Immunology (3 Credits)
This course will provide an awareness of the immunological basis of disease and an understanding of immunotherapy as an aspect of pharmaceutical science. The course will involve a consideration of: the immune system-characteristics of antigens and antibodies, Humoral immunity, cellular immunity; Tumor immunology; Immunogenetics; Immunological deficiencies; Types of immunity and hypersensitivity reactions. *Active Immunization*: Vaccines, Toxoids.
Passive Immunization: Human immune sera, Animal immune sera

PHAS 323 Pharmaceutical Technology Practical (1 Credit)
This course will enable students acquire practical skills necessary for small and medium scale manufacture of pharmaceutical products in the laboratory. In addition, students will be exposed to real industrial conditions of pharmaceutical product manufacture through supervised industrial attachments. Students will become familiar with various industrial equipments and obtain operational experience in their use. Students will be given practical manufacturing exercises to enable them develop competencies in pharmaceutical technology applicable to: Tabletting, Capsuling, Rheology, Solubilization, Particle size analysis, drug stability assessment etc.

PHAS 324 Principles of Immunology Practical (1 Credit)
In this course students will learn practical aspects of the production of immunopharmaceuticals. These will include:

1. Biologic Immunogens for Active Immunity-vaccines and Toxoids.
2. Biologic Immunogens for Passive Immunity-Human Immune Sera (Homologous Sera) and Animal Immune Sera (Heterologous Sera).

Students will also learn the clinical conditions for use and the criteria for storage of these products.

PHAS 420 Pharmaceutics Project (6 Credits)
This is a final year project in pharmaceutics which will be taken in Semesters 7 and 8. The format of the course is similar to PHAS 410, PHAS 430, PHAS 440 and PHAS 450. (Please see PHAS 410).

PHAS 421 Applied Immunology (3 Credits)

This course will highlight aspects of the applications of immunology in pharmacotherapy. Students will appreciate the immunological basis of the use of immunodiagnostic drugs, immunosuppressant drugs, immunostimulant drugs and immunoassay of drugs. The phenomenon of drug induced allergy will also be part of this course.

PHAS 422 Principles of Pharmacy (Prerequisite PHAS 123) (2 Credits)

In this course, students will learn the principles of drug supply management. The course will entail

- Selection of drugs (appreciation of treatment guidelines, formularies and EDLs)
- Procurement of drugs (this entails quantifying drug requirement)
- Distribution of drugs (this involves medical stores management, drug management at health facilities and storage facilities). Packaging, storage and quality assurance of drugs and medicines.

7.3 **Department of Pharmacognosy and Herbal Medicine**

PHAS 131 Pharmacognosy (2 Credits)

In this course students will study the following:

Plant morphology, plant cell types and structure, organized cell inclusions, introductory taxonomy, isolation techniques for tissues and cells. In addition students will study the history and scope of pharmacognosy and classification of crude drugs. Students will appreciate the pharmacognostical features of powders of natural origin, fibres and surgical dressings, plant physiology, basic plant physiology, basic plant metablolism and secondary plant metabolites.

PHAS 133 Pharmacognosy Practical (1 Credit)

In this course students will be introduced to the structural and functional features of the light microscope and its accessories. Students will appreciate the principles, techniques and reagents that are used in microscopy. Students will use the microscope to examine unicellular products of pharmaceutical interest e.g. chalk, diatomite and yeast. Cell contents to be examined will include: calcium oxalate, silica carbonate crystals, starch and aleurone grains. Microscopic techniques will be applied using chemo-microscopic reagents to identify cell wall constituents such as lignin, lipids, carbohydrates, amino acids, proteins and oil droplets. Students will acquire practical skills in the techniques of microscopical analysis, measurements in microscopy and in the preparation of permanent microscope slide mounts. Students will be enabled to identify the descriptive features of plant parts such as flowers, fruits, leaves, stems, barks, roots and seeds.

PHAS 231 Drugs of Plant Origin I (2 Credits)

This course will introduce students to medicinal plants and their secondary metabolites as potential therapeutic agents. Students will be enabled to identify active chemical constituents of medicinal plants in terms of their structure and biological characteristics. The pharmaceutical significance of the active constituents will be emphasized. The occurrence, extraction, detection and physico-chemical characterization of the following classes of plant constituents will be considered: complex carbohydrates; glycosides; saponins; alkaloids; lipids; volatile oils and related substances; phenolic compounds; benzopyrans and enzymes.

PHAS 233 Drugs of Plant Origin I Practical (1 Credit)

In this course students will apply standard phytochemical tests to establish the chemical identity and evaluate the pharmaceutical potential of medicinal plant products. Students will be enabled to perform standardisation and quality assessment of natural products of plant origin. Students will learn techniques of extraction, separation and isolation of plant constituents.

PHAS 331 Drugs of Plant Origin II (2 Credits)

This course will ensure appreciation and understanding of factors which influence cultivation, collection, preparation and storage of medicinal plants and also the scientific and technological processes of analysis of natural drugs of plant origin. The course will consider the following: *Crude drug production***:** Endogenous and exogenous factors affecting cultivation and preparation of plant drugs; collection, processing and

storage of natural drugs. *Adulteration*: Forms of adulteration, choice of adulterants and their detection in natural drugs. *Evaluation of natural drugs:* Methods of evaluation, including chemical, physical, microscopic and biological methods; quantitative microscopic methods, fluorescence analysis and polarographic techniques. *Separation techniques*: Materials for chromatography, the various types

including, column chromatography (CC), paper chromatography (PC), thin layer chromatography (TLC), gas liquid chromatography (GLC), High Performance Liquid Chromatography (HPLC), gel filtration and ion exchange chromatography; electrophoresis; and their application in isolation of compounds in plant extracts.

PHAS 333 Drugs of Plant Origin II Practical (1 Credit)
In this course students will acquire practical skills for the evaluation, standardization and quality assessment of natural drugs of plant origin. The course will entail the application of microscopy, quantitative microscopy, fluorescence phenomena and chromatography. Students will develop ability to assay natural drugs by the use of standard assay procedures.

PHAS 430 Pharmacognosy/Herbal Medicine Project (6 Credits)
(As for PHAS 410, PHAS 420)

PHAS 431 Plant Poisons and Pesticides (3 Credits)
In this course students will be made aware that plant products are not only potentially therapeutic in humans but can also be toxic to both humans and animals including pests. The course will inform students to recognize biological sources, physico-chemical characteristics and toxicity profile of plant products that are poisonous (including poisonous mushrooms), allergenic, carcinogenic, hallucinogenic, teratogenic and pesticidal. Students will be enabled to appreciate the need for identification and care in handling such plant products to ensure personal safety and also to propose antidotal measures in cases of accidental contamination or ingestion.

PHAS 432 Advances in Phytotherapy and Herbal Medicine (3 Credits)
Students will be made aware of recent developments in phytotherapy and herbal medicine. This will be achieved through illustration of phytotherapy of specific chronic and acute diseases with selected medicinal plants and herbal preparations. Through comparative study of orthodox and traditional medicine, students will appreciate advantages and disadvantages of both systems. Aspects of complimentary medicine will be considered. This will include principles of homeopathic and chiropractic medicine and acupuncture. The course will highlight recent promotion of the use of traditional medicine by the WHO particularly in Developing Countries and the strategic plans for achieving integrated pharmacotherapy using both orthodox and traditional medical practices. Current trends in plant medicine research and the role of research in promoting Traditional Medicine will be emphasized. Socio-cultural implications of the use of Traditional Medicine will be considered. Provision will be made for students to interact with practitioners of traditional medicine to appreciate the intricate psychical aspects of the practice.

7.4 **Department Of Pharmacology And Toxicology**

PHAS 141 Human Anatomy and Physiology (2 Credits)
Appreciation of the action of drugs in human subjects requires a sound knowledge and understanding of the structure and functions of the body at the cellular, tissue, organ and system levels. In this course students will learn the micro-anatomical features and physiological functions of cells, tissues and organs in the following systems of the body: musculo-skeletal system, blood and cardiovascular systems, renal system, endocrine system, reproductive system, digestive system, respiratory system and the nervous system. Details of the structure and function of these systems will be presented and treated in a manner that would ensure that students can recognize the normal state and be able to detect deviations that constitute disease.

PHAS 142 Basic Biochemistry (3 Credits)
Biochemistry and biochemical concepts form an important basis for an understanding of the mechanisms of drug action. This course will therefore provide the essential biochemistry base for the development of the principles of pharmacology and toxicology. Students will study and gain understanding of the structure and molecular properties of the following biomolecules: amino acids, proteins, enzymes, simple and complex carbohydrates, fatty acids, lipids, nucleotides, RNA and DNA. The course will further provide a basis for understanding

- The principles of metabolic pathways;
- The role of glycolysis and citric acid cycle in oxidative phosphorylation and energy production;
- The integration of carbohydrate and fat metabolism;

- Bioenergetics; mitochondrial respiration and oxidative phosphorylation;
- Metabolism of amino acids, heam and nucleotides;
- Hormonal regulation of metabolism

Students will develop an appreciation of biological information transfer and molecular biology within the context of:

- Genome organization and gene structure
- DNA replication, repair and recombination
- RNA synthesis and processing
- Mechanisms of gene regulation
- Recombinant DNA technology in medicine and pharmacy

PHAS 143 Human Anatomy and Physiology Practical (1 Credit)
Students will be exposed to experimental methodology to enable them acquire skills for defining the structure (histological features) of various tissues and organs and appreciating the functional characteristics of skeletal and cardiac muscle. Further skills will be developed in observing cardiovascular and respiratory functions. *Haematology*: erythrocyte count; total and differential leucocyte count; estimation of haemoglobin in blood by Sahli's method; determination of colour index; determination of blood group – ABO system and Rhesus Factor. *Nerve-muscle preparation*: the simple muscle twitch; effect of temperature on simple muscle twitch; effect of different strengths of shock; velocity of nerve impulse; effect of fatigue; summation of responses and genesis of tetanus. *Histological examination of various tissues*: nervous tissue, skeletal tissue, smooth muscle, cardiac muscle, kidney and liver. *Cardiovascular system*: Frog heart model (*in situ* contractions) – effect of acetylcholine and adrenaline; blood pressure measurements before and after exercise; effect of change of posture on blood pressure. *Respiratory system*: Spirometry-measurement of lung capacities; the Forced Expiratory Volume (FEV_T).

PHAS 144 Basic Biochemistry Practical (1 Credit)
In this course students will acquire practical skills in biochemistry and appreciate biochemical concepts. The course will entail the following laboratory exercises: isolation of glucose from fruits and urine; determination of lactose content of cow's milk; tests for vitamin A and Thiamine; paper chromatography of amino acids; characterization of pigments in leaves; passive transport; simple demonstration of the activity of dehydrogenases; Urine analysis – determination of protein in urine, glucose in urine, abnormal constituents of urine; glucose tolerance test; cholinesterase stability test.

PHAS 241 General Principles of Pharmacology (3 Credits)
In this course students will be introduced to fundamental concepts pertaining to drug action. Historical development of pharmacology will be addressed. Students will gain appreciation and understanding of the following: Basic pharmacological and toxicological terminology – definitions; Pharmacokinetics – administration, absorption, distribution, biotransformation and elimination of drugs; pharmacodynamics – drug receptor theory, mechanisms of drug action, relationship between drug concentration and effect; measurement in pharmacology (quantitative aspects of pharmacology); Factors influencing response to drugs; Principles of toxicology; Pharmacogenetics.

PHAS 242 Autonomic Pharmacology (3 Credits)
Students will acquire understanding of the structure and function of the autonomic nervous system. This will form the basis of appreciation of the pharmacological significance and therapeutic application of the following: cholinoceptor – activating and cholinesterase- inhibiting drugs; cholinoceptor-blocking drugs; adrenoceptor-activating and other sympathomimetic drugs; adrenoceptor antagonist drugs.

PHAS 243 General Principles of Pharmacology Practical (1 Credit)
In this course students will acquire experience in basic principles of experimental pharmacology. Students will become familiar with laboratory equipment, materials, methodology and techniques in experimental pharmacology. Simple experiments will be designed to illustrate routes of administration of drugs, dose-response relationships, agonists and their sites of action, the phenomenon of antagonism (types, qualitative and quantitative aspects), biological assay (types and presentation-graphical or mathematical).

PHAS 244 Autonomic Pharmacology Practical (1 Credit)
Students will acquire the ability to perform simple experiments to illustrate concepts of autonomic pharmacology. Experiments will demonstrate pharmacology of cholinomimetic and sympathemimetic agents, antagonists acting on cholinoceptors and adrenoceptors, enzyme inhibitors and their effects on drugs acting within the autonomic nervous system. Experiments will involve the use of intestinal smooth muscle of the rabbit and guinea-pig (isolated tissues) and the respiratory system of the guinea-pig (bronchodilators and bronchoconstrictors in the whole animal).

PHAS 341 Endocrine and Immunopharmacology (3 Credits)
This course will ensure an understanding of the pharmacology of the following: Autacoids – histamine, 5-hydroxytryptamine (serotonin), vasoactive peptides, the eicosanoids; Nonsteroidal anti-inflammatory drugs; Disease-modifying antirheumatic drugs; Drugs used in gout; Drugs used in allergy and antagonists of autacoids. Immunomodulators: immunostimulants and immunosuppressive agents. Endocrine drugs; hypothalamic and pituitary hormones, thyroid and antithyroid drugs, adrenocorticosteriods and adrenocortical antagonists, pancreatic hormones and antidiabetic drugs, agents that affect bone mineral homeostasis.

PHAS 342 Systems Pharmacology I (3 Credits)
Students will acquire understanding of drugs acting on the following systems: *Cardiovascular and renal system* - antihypertensive agents, vasodilators and antiangina agents, drugs used in heart failure, agents used in cardiac arrhythmias, diuretic agents. *Gastrointestinal system* - drugs used to inhibit or neutralize gastric acid secretion e.g. H_2–receptor antagonists, antacids, muscarinic receptor antagonists, proton-pump inhibitors; drugs that affect reflex mechanism of vomiting e.g. emetics and antiemetics; drugs that affect gastrointestinal motility e.g. laxatives, purgatives. *Respiratory System* – drugs used in the treatment and management of asthma, mucolytics, antitussives, respiratory stimulants. *Blood* – coagulants, anticoagulants, drugs used in anaemia, anti-hyperlipidaemic agents. In the study of all these drugs students will be expected to know the mechanism of pharmacological action, undesired side effects, clinical indications and clinically significant interactions with other drugs.

PHAS 343 Experimental Pharmacology I Practical (In vitro) (1 Credit)
Students will be expected to acquire practical skills in isolating tissues and organs and preparing them in appropriate experimental conditions for various types of study. Emphasis will be placed on the choice of experimental tissue or organ and the maintenance of suitable ambient conditions for the experiment. In this course students will gain hands-on experience with the following isolated tissues and organs: *Intestinal smooth muscle (Rabbit duodenum)* to study smooth muscle relaxation or contraction in response to selected agonists; *Guinea-pig tracheal chain preparation to* study the effects of various spasmogens in a cumulative dose-response manner; *Isolated Phrenic-nerve-hemidiaphragm preparation of the rat* to study the pharmacological properties of neuromuscular blocking drugs; *Rat isolated uterus preparation* to study the effects of selected drugs on the uterine smooth muscle in the non-pregnant and pregnant state. *Frog rectus abdominis muscle preparation* to perform a bioassay (STTS assay) of acetylcholine.

PHAS 344 Principles of Toxicology (2 Credits)
This course will seek to provide knowledge of fundamental concepts of toxicology to students. Aspects of toxicology to be treated will include: introduction to Toxicology: occupational and environmental; heavy metal intoxication and chelators; antidotes in poisoning; Tissue and organ manifestations of chemical poisoning; characteristics of acute and chronic poisoning.

PHAS 346 Experimental Pharmacology II Practical (in vivo) (1 Credit)
This course will provide the student with skills in pharmacological experimentation in whole or intact subjects as opposed to isolated tissues and organs. The student will acquire techniques in preparing the subject for the study. The subject may be conscious or anaesthetized. The procedure may be invasive or non-invasive. Students will be expected to carefully note the conditions for the experiment and observe and learn the outcome of every procedure. The course will include the following: *The human eye* – effects of selected drugs on the eye to illustrate the autonomic inervation and clinical relevance; *the guinea-pig skin* - effects of selected drugs on the micro-circulation and inervation of the skin and clinical significance; *the anaesthetized cat* - effects of selected drugs on the arterial blood pressure of the cat in the anaesthetized state; *The conscious guinea-pig* – effects of selected drugs on pulmonary function of the guinea-pig in the conscious state to demonstrate broncholdilalation and bronchoconstriction with clinical implications; *sleeping time in rats* – effects of selected centrally

acting drugs (barbiturates) on sleeping time in rats and the interaction with other drugs; *Sulphonamide metabolism in man* - determination of urinary output of a sulphonamide after oral ingestion in man, clinical implications.

PHAS 440 Pharmacology Project (6 Credits)
(As for PHAS 410, PHAS 420)

PHAS 441 Systems Pharmacology II (3 Credits)
This course will consider drugs that affect central nervous system (CNS) Functions and Disorders. Students will be expected to acquire understanding of the classification, general pharmacological properties, including pharmacokinetics, pharmacodynamics, clinical uses and contraindications and undesirable side effects of CNS drugs. The course will provide a broad pharmacological knowledge of the following: Chemical transmission and drug action in the central nervous system; sedative-hypnotic drugs; the alcohols; antiseizure drugs; general anaesthetic agents; local anaesthics; skeletal muscle relaxants; pharmacologic management of parkinsonism and other movement disorders; antipsychotic agents; antidepressants; opioid analgesics and antagonists and drug and substance abuse.

PHAS 442 Chemotherapy and Anti-infective Agents (3 Credits)
In this course students will be expected to develop knowledge and understanding of the classification, general pharmacological properties including pharmacokinetics, pharmacodynamics, clinical uses, contraindications and undesirable side effects of the drugs. The course will deal with the following: basic principles of chemotherapy; cancer chemotherapy; antibacterial agents; antiviral drugs; antifungal drugs; antiprotozoal drugs; anthelminthic drugs; drug resistance.

7.5 **Department of Pharmacy Practice and Clinical Pharmacy**

PHAS 151 Computer Literacy I (1 Credit)
This course provides students with fundamental knowledge by way of introduction to informatics. This will include the following: Historical development of computers and computer networks – digital computers and analog computers; Basic parts of a computer system, how the computer system works, hardware and software of computer system. Basic computer applications – word processing, computer graphics, calculations and simulations e.g. Spreadsheet, statistical software and data representation; information management, search algorithms and databases; Global information infrastructure – structure and organization of the world wide web (www), www browsers, information search in www, search engines educational resources in www, pharmaceutical resources in www, molecular and bioinformatics.

PHAS 152 Computer Literacy II (Prerequisite: PHAS 151) (1 Credit)
Will provide the students with the requisite knowledge that would enable them develop further computer literacy skills. The course will prepare students to develop competence to describe the structure and functions of an operating system and apply software in the practice of pharmacy and healthcare delivery. **Application software vrs system software (operating system) with suitable examples.** The learning opportunities in this course will include the following: Robotics and automation in pharmacy; integrated healthcare information systems; legal and ethical aspects of information technology; commercial applications of information technology and the use of computer technology in drug information and pharmaceutical error prevention.

PHAS 153 Orientation to Pharmacy (2 Credits)
In this course students will be introduced to pharmacy as a discipline in Science, as an industry, as a profession in healthcare delivery and as a social service to the community. Students will be expected to understand and appreciate the scope, evolution of pharmacy globally and in Ghana, the ethics of the profession, the branches of Pharmacy: Hospital Pharmacy, Community Pharmacy, Industrial Pharmacy, Academic and Research Pharmacy and Regulatory Pharmacy. Students will be made aware of career opportunities and responsibilities in the job market and the requirements for training and registration for practice.

PHAS 154 Psychology and Behavioural Science (2 Credits)
In this course students will learn the relevance of psychology in pharmacy practice. The role of the pharmacist in getting patients to accept pharmaceutical care will be emphasized. The course will entail: definition, brief history and scope of psychology, illness behaviour, understanding the patient, effective counselling to ensure therapeutic confidence and patient compliance. Students will be

enabled to appreciate the significance of good inter-personal relationships in healthcare delivery. Aspects of behavioural science and industrial and social psychology will be considered.

UGRC 110 Academic Writing I (3 Credits)
The main objective of Academic Writing I is to equip students with the language skills that will enable them to read and write effectively. Students will be taken initially through fundamental issues in grammar and composition in order to consolidate their language skills in these areas. Subsequently, reading and writing skills relevant to university work will be introduced. These will include the structure of the essay, unity, completeness and coherence in essay writing; summarizing as a skill basic to exposition, writing from sources, referencing skills and avoiding plagiarism. The course will be taught in small groups and class activities are characterised by group work, oral presentations and extensive practical assignments.

UGRC 150 Critical Thinking and Practical Reasoning (3 Credits)
An essential element in the training of social studies and humanities students is providing a corrective and diagnostic skill set that enables students to discriminate logically between: rhetorical ploys that give *motives* vs. arguments providing *good logical reasons* for believing an assertion. Students need to recognize the contrast between *inductive* and *deductive* reasoning and the different types of support yielded by each, to evaluate the quality of evidence confirming an empirical hypothesis about human conduct, to maintain individual professional and scholarly discretion in the face of peer pressure and mob mentality. Those enrolled in this course will be provided the vocabulary and techniques to employ critical thought and practice within the academic arena and beyond.

PHAS 251 Biostatistics and Pharmacoepidemiology (3 Credits)
This course will offer students learning opportunities to acquire knowledge in the principles of statistics, especially as they apply to analysis and evaluation of Biomedical systems including pharmacotherapy. Evaluation of pharmaceutical interventions in public health issues, using appropriate statistical methods, will be given prominence. The course will emphasize the following: Presentation of sample data; Measures of central tendency and dispersion; Probability distribution; Sampling procedures; Estimation – application of Student's t Test, the Chi- Square Test, Analysis of Variance (ANOVA) and Experimental Design; Hypothesis testing; Fitting a line; Regression theory; Correlation and Contingency tables. Students will be expected to develop competencies in the application of these statistical principles for the assessment of pharmacotherapy in the management of diseases. The practical significance of biostatistics in health care delivery systems will be emphasized.

PHAS 252 Chemical Pathology (2 Credits)
An awareness of the nature and extent of deviation from normal values and features of physiology, biochemistry and micro-anatomy in disease is an essential pre-requisite for effective pharmaceutical care. This course will provide the necessary knowledge in chemical pathology for determining remedial measures to be taken. Students will acquire an understanding of normal and disease – related changes in biochemical and physiological parameters occurring in tissue and body fluids, cells and tissues, organs and systems of the body. Students will be expected to know relevant terminology and pharmaceutical mechanisms underlying procedures that are employed to restore normalcy to these parameters.

PHAS 254 Chemical Pathology Practical (1 Credit)
This course deals with the practical aspects of PHAS 252. Students will gain practical experience in methodology for measuring parameters in chemical pathology. Students will be expected to be familiar with equipment, reagents and histopathological techniques employed in chemical pathology. Diagnostic value and clinical significance of changes in the biochemical and physiological parameters will be discussed.

UGRC 210: Academic Writing II
Academic Writing II is a follow-up to Academic Writing I and builds upon the skills acquired in the first year. Students will be required to read and critique a variety of academic essays in their areas of study. Writing activities will derive from these reading tasks and students will be guided to develop their writing through process writing which involves: pre-drafting, drafting, re-writing and revising. In this broad context, students will revise and consolidate their grammar through proof reading and editing activities. The course will also involve training students to write from multiple sources as a preparation for doing research-based writing. Activities will be geared towards getting students to

develop the skills of extracting and sorting information from multiple sources and synthesizing them into coherent arguments in an essay. Students will be required to write such a synthesis essay for assessment. Subsequently, students will be introduced to academic presentation skills.

UGRC 220: Liberal and African Studies
Course Structure
The Liberal and African Studies course seeks to provide basic background knowledge of Africa, its histories, people and cultures. After a general introduction to African Studies, General Studies and Leadership in Africa, students will be required to take one of these five modules: Gender and Culture, Gender and Development, Leadership in Africa, African Art, its Philosophy and Criticism, and Philosophy in African Cultures.
The general introduction takes two weeks and involves **four** hours of lectures, **one** hour of tutorial and a practical activity – film show. This module is examinable through the electives.

Description of Modules:
General Introduction to African Studies
This introduction aims to provide basic background knowledge of Africa, its histories, peoples and cultures. It serves as the spring board from which to launch the elective courses on African and Liberal Studies.

Introduction to Gender
The main objective of the two week introduction is to help students appreciate the gendered nature of African societies, how this impacts development and state as well as state and civil society responses to gender inequalities. The course will cover topics such as why we deal with gender issues in African studies and key gender concepts and make a case for transforming gender relations on the basis of three justifications - citizenship rights and the constitution, development imperatives and the promotion of gender equitable cultures. Week two will focus on state and civil society responses to gender inequalities focusing on legal and cultural reforms, affirmative action, gender and development and civil society activism. The role of individual and group agency and leadership in changing gender relations will be highlighted.

Introduction to Leadership in Africa
Good leaders are expected to solve new problems which arise in their domain and the changing landscape of business. Leadership is a complex process by which the leader influences others to perform and achieve. Leadership attributes – beliefs, values, ethics, character, knowledge and skills – are all traits which can be learned. This course provides the basis for understanding what leadership is and what leaders do to be successful. The course particularly seeks to make students understand traditional and contemporary concepts and practices of leadership in Africa.

Gender and Culture in Africa
This module examines how culture shapes the positions of women and men in African societies and analyses cultures and cultural practices as dynamic, contested and rooted in socio-economic conditions and power relations. Key concepts in gender studies are analysed in relation to debates about accepted notions of culture. Students will be encouraged to reflect on their own experiences of gender and their role in reinforcing and transforming the nature of gender relations in society.

Gender Issues in Africa's Development
This module will introduce students to key concepts and issues in gender and development with specific reference to Africa. It argues that development is not a neutral process, but impacts men and women differently. Key topics will include men and women's access to resources in Africa such as land, labour, credit, time and social capital, production and reproduction. The module will also examine the gendered implications of natural resource management and sustainable development as well as decision making. It will further examine state and civil society responses to gender issues in Africa. The main objective of this foundation course is to sensitize students to gender issues and enable students recognize and understand the relevance of gender as a development issue and how gender inequalities negatively affect development.

Leadership in Africa
This course encompasses leadership styles and models, leadership in management, a history of chieftaincy and traditional leadership in Africa, African leadership and democracy, as well as

challenges confronting African traditional leadership.

African Art, its Philosophy and Criticism
This module is designed to introduce students to an understanding of African art and its conceptual framework as evidence of material culture actively involved in the historical process and life of the African. As a cultural practice, it forms the bedrock of African aesthetic expression. The course argues that the environment, availability of materials for producing art, different histories and external influences have affected African art and its development. The course proposes that African art is reflective and representative of African belief, philosophy, values and taste, and that it is used in several social, political and religious functions. As a fairly new field, the course introduces students to the forms of art, historical and theoretical enquiries and approaches to the subject such as art as history, history as an art, aesthetics, style, subject and subject matter interpretations and meanings, visual narratives, gender perceptions, roles and representations, art criticism and contemporary discourses on the practice of art on the continent.

Philosophy in African Cultures
This course aims to introduce students to philosophical thought in African cultures emphasizing its relation and relevance to contemporary African cultures and development. Topics will include African cosmologies, concepts of God, deities, ancestors, African communal and individualist values, the concept of the human being, destiny, evil and ethics/morality, gender and race.

PHAS 351 Clinical Pharmacokinetics and Bioavailability (3 Credits)
In this course students will learn an important clinical aspect of pharmacotherapy- i.e. the fate of drugs in living systems. Students will acquire understanding of the following concepts: *Administration of drugs* – various routes of administration, note advantages and disadvantages and clinical significance; *Absorption* from site of administration; *Distribution* into various tissues and body fluids; *Elimination* – renal excretion or metabolic biotransformation followed by excretion of metabolites. The characteristics of these processes and the role of plasma proteins and organs such as the liver and kidneys will be emphasized. Students will be expected to know the mathematical interpretations of concepts such as Area Under the Curve (AUC), Half life, Bioavailability and also appreciate the clinical significance of hepatic enzyme induction or inhibition, plasma protein binding of drugs, First-pass metabolism and Volume of distribution. Knowledge of the phases and characteristics of metabolism is important and students will be expected to understand the link between renal excretion and glomerular filtration rate (GFR) and pH of urine. The significance of hepatic and renal disease in clinical pharmacokinetics will be emphasized.

PHAS 352 Principles of Pharmacy Practice (3 Credits)
This course will provide students with knowledge of the principles involved in pharmacy practice. Students will be expected to understand the legal and ethical principles of the practice of pharmacy. They will be expected to acquire full knowledge of the provisions of the Pharmacy Act 489, 1994 and its Legislative Instrument (L.I.1645 of 1998) and also the Food and Drugs Law 1992, PNDC L 305B and amendments. Students will be introduced to the code of Ethics of the Pharmaceutical Society of Ghana: Professional ethics, professional characteristics and responsibilities. They must also acquire thorough knowledge of the following; Institutional patient care, Ambulatory patient care, Long-term patient care facilities, the role of the pharmacist in public health, behavioural determinants of the patient, patient communication, drug education and information, patient compliance, the prescription, drug interactions, clinical drug literature, the pharmacist and the National Health Insurance Scheme.

PHAS 353 Entrepreneurial skills (Practical) (1 Credit)
This course will enable students to acquire skills as entrepreneurs in pharmacy practice particularly in a highly competitive technological and economic environment. Students will be expected to develop the ability to:

- Recognize and assess their entrepreneurial potential,
- Appreciate the need to be creative and innovative in their profession,
- Recognize the importance of action planning and effective communication to ensure prudent decision-making and
- Develop attitudes that will make them focused, motivated and open to change.

Students will develop the ability to apply basic concepts and tools involved in the creation and functioning of a new and profitable technology- based venture. The course will entail:

- Evaluation of opportunities, assessment and acquisition of resources, development of a business plan and
- Assessment of the implications of prevailing business climate and economic and professional environment for establishing a new enterprise.

PHAS 354 Community Pharmacy Practice Practical (1 Credit)

In this course students will be exposed to real life situations of Community Pharmacy Practice. The School will link up with selected Community pharmacies where students will be assigned short periods of professional mentorships under identified pharmacists. The School will set up a Model Community Pharmacy for teaching in an actual professional setting. Students will be expected to gain supervised experience in the Model Pharmacy practice. Students will present written reports of case studies assigned to them.

PHAS 450 Pharmacy Practice Project (6 Credits)

(As for PHAS 410, PHAS 420)

PHAS 451 Pharmacotherapy and Disease Management (3 Credits)

In this course students will learn the general application of drugs to the treatment of diseases. The course will entail identification and recognition of:

- Pathophysiology of Diseases.
- Factors influencing the choice of appropriate pharmacotherapeutic intervention.
- Medication Implications e.g. drug interactions, adverse drug events and iatrogenic effects
- Patient compliance issues
- Patient counseling issues
- Therapeutic outcomes
- Follow-up pharmaceutical care

PHAS 452 Patient Treatment Assessment (2 Credits)

In this course students will be given access to selected patients on drug treatment

- Ward rounds
- OPD Pharmacy

Students will have opportunity to determine the patient's response to therapy.

This will be done in consultation with health-care providers. Subsequent to this, students will be expected to evaluate the merits and demerits of the treatment given in the context of the broad principles of pharmacotherapy.

SCHOOL OF PUBLIC HEALTH

1.0 Background

The Bachelor of Public Health programme was developed in collaboration with the Ministry of Health and Ghana Health Service. The programme was planned to run for FIVE years in the first instance. In the first five years only candidates with diploma certificates who are already working in the health service are considered and admitted to Level 200. This undergraduate programme is to offer opportunities for middle level health professionals to upgrade themselves and promote continuing professional development. The programme content is designed with the view to developing capacity to improve the implementation of public health programmes and interventions. It is intended to help develop mid-level public health practitioners who will work at the district and programme levels in the Ghana Health Service and its Allied institutions. The first batch of students was enrolled in October of the 2010/2011 academic year.

FACULTY

CENTRAL ADMINISTRATION

Richard Adanu *MBChB(Ghana) MPH(Johns Hopkins) FWACS*	-	Associate Professor (Ag. Dean)
Okyere Boateng *BSc(Cape Coast), MSc(KNUST), MHSc (Toronto)*	-	Senior Assistant Registrar
Godfred Amoah *BEd(Winneba), MEd(Cape Coast)*	-	Assistant Registrar
Israel Agbo *CA(Ghana)*	-	Accountant
Sarah Abla Adinku *BA,MA,MPhil(Ghana)*	-	Librarian

DEPARTMENT OF HEALTH POLICY PLANNING AND MANAGEMENT

Moses Aikins *BSc(Ghana) MA(London)PhD(London)*	-	Senior Lecturer (Head of Department)
Reuben Esena *BSc(Ghana) MPhil(Kumasi),PhD(UK)*	-	Lecturer
Augustine Adoma Afari *BSc, MBA(Ghana) MA,PHD(UK)*	-	Lecturer
Justice Nonvignon *BA(UCC), MA(Ghana)*	-	Tutor

DEPARTMENT OF EPIDEMIOLOGY AND DISEASE CONTROL

Patricia Akweongo *BA(Ghana) MA, PhD(South Africa)*	-	Senior Lecturer (Head of Dept.)
Francis Anto *BSc MPhil PhD(Ghana)*	-	Lecturer
Samuel Oko Sackey *MBChB MPH (Ghana)FGCP*	-	Lecturer
Priscillia Awo Nortey *B. Pharm (Kumasi) MPH(Ghana)* *PhD (Nottingham)*	-	Lecturer
Phyllis Antwi *MBChB MPH (Ghana) MSc (London) FGCP*	-	Lecturer

DEPARTMENT OF SOCIAL AND BEHAVIOURAL SCIENCE

Philip Baba Adongo *BA(Ghana) MSc (Keele) PhD(London)*	-	Senior Lecturer (Head of Dept)
Phyllis Dako-Gyeke *BA(Cape Coast) MA(Ohio) PhD(Bowling)*	-	Lecturer
Emmanuel Asampong *BSc, MPhil(Ghana)*	-	Lecturer
Mercy Ackumey *BA,MA,MPH (UG), PhD(Basel)*	-	Lecturer
Kwabena Opoku-Mensah *BA, MPhil(UG)*	-	Research Fellow
Diana Baah Odoom *BA, MPhil(UG), PhD(Birmingham)*	-	Lecturer

DEPARTMENT OF POPULATION, FAMILY AND REPRODUCTIVE HEALTH

Augustine Ankomah *BA(Ghana) MSc (Nigeria) PhD(Exeter)*	-	Senior Lecturer (Head of Dept)
Amos Laar *BSc MPH PhD(Ghana)*	-	Lecturer
Gameli Norgbe *MD PhD(Ukraine) MPH (South Africa)*	-	Lecturer
Margaret Atuahene *BSc(USA) MA(Ohio) MPH/M.Ed(Columbia)*	-	Lecturer

DEPARTMENT OF BIOSTATISTICS

Richmond Aryeetey *BSc,MPH(Ghana) PhD(Iowa)*	-	Lecturer (Ag. Head of Dept.)
Omar B. Ahmad *MBChB(Kumasi) MSc(Florida) ScD(Johns Hopkins)*	-	Lecturer
Wisdom Atiwoto *MBChB(Kumasi) MPhil(Ghana)*	-	Assistant Lecturer
Frances B. Da Costa Vroom *BIS(Canada) MSc(Ghana)*	-	Tutor
Samuel Bosomprah *BSc(UG), MSc (London)*	-	Tutor

DEPARTMENT OF BEHAVOURAL, ENVIRONMENTAL AND OCCUPATIONAL HEALTH

Ishmael D. Norman *BA JD(USA) PhD(Ghana)*	-	Lecturer (Ag. Head of Dept.)
Isabella Quakyi *BSc MSc(UK) PhD(London)*	-	Professor
Mawuli Dzodzomenyo *BSc(Ghana)MPhil PhD(Japan)*	-	Lecturer
Julius N. Fobil *BSc MPhil(Ghana)DrPH DTM(Germany)*	-	Senior Research Fellow
Judith Stephens *BSc(Kumasi) MSc(UK)MPH (Ghana)* *MPhil(Ghana)*	-	Lecturer

1.1 PROGRAMMES AVAILABLE UNDER THE BACHELOR OF PUBLIC HEALTH

The programme options available are:

1. Public Health Nursing
2. Nutrition
3. Applied Environmental Health Sciences
4. Disease Prevention and Control
5. Health Information Systems
6. Health Promotion
7. Population Mental Health

1.2 FIELDWORK

Field practice in June – August is mandatory every year for students at level 300. Students are required to participate in a field practicum of at least 8-10 weeks duration. Experiences to be gained include: community diagnoses, report writing, developing implementation strategies, and presenting reports at community meetings.

During this period, students are given the opportunity to work at a district or health department. Students will then develop papers relevant to their practicum experience, into a project.

The student will be provided with an opportunity to take a principal role in the development and conduct of a project within a community or a health department. The student will apply the principles learned in the classroom to planning, implementation, analysis and interpretation of the project. The project is to be completed within one academic year. The amount of time the student will spend at the agency or health department is expected to vary according to the needs of the project. The student will generally be expected to spend a greater time conducting background research, collecting and analysing data, writing up results and interpretation for the

final report. Examples of field work projects could include programme evaluations, needs assessments, surveys, intervention implementation and analysis of existing data. Each student will conduct this field work under the direction of a faculty member.

1.3 DEPLOYMENT OF BACHELOR OF PUBLIC HEALTH PROGRAMME

Candidates with diplomas will have their diploma coursework evaluated and admitted into Level 300 if it is found out that they have undertaken all the Level 200 courses offered in the programme and credited with those courses, otherwise they would be admitted into Level 200.

3.0 THE BACHELOR OF PUBLIC HEALTH PROGRAMME

2.1 ADMISSION REQUIREMENTS

The general University Admissions regulations and requirements shall apply in addition to the following:

2.1.1 DIPLOMA

Candidates with Diploma in health or related sciences who satisfy the requirements for admission shall enter at Level 200 (the second year of the 4-year bachelor's degree programme). Students admitted to Level 200 may be given exemption for some courses based on previous studies.

2.1.2 Credits for Courses undertaken.

Candidates who have taken prescribed level 200 courses at the Diploma level will be credited with such courses.

The Requirements:

(i) Candidates with Diplomas awarded by University of Ghana, Institutions recognized by or affiliated to the University of Ghana and Institutions under the Ministry of Health shall require an FGPA of 3.2 or better/equivalent and shall attend a selection interview.

(ii) Diplomas awarded by institutions other than those indicated in (i) above may be considered eligible on recommendation by a special committee to be appointed by the Dean.

The committee shall assess the candidate's transcripts and the course content of the diploma to determine the suitability of his/her previous training and make recommendations accordingly, to the Dean.

Shortlisted candidates shall be required to sit an entrance examination and attend a selection interview.

2.2 ACADEMIC SESSION/ STRUCTURE

The academic year shall be two semesters. The First Semester session covers the period of August – December and the Second Semester runs from January – May. Each Semester is structured as follows:

13 weeks of Teaching
1 week of Revision
3 weeks of Examination

2.2.1 REGISTRATION

For a student to obtain credits in any course, he or she must be admitted into the School and must be properly registered for that course during the official registration period at the beginning of each semester. The student shall plan his/her courses in consultation with his/her course Advisor.

2.3 INTERNSHIP TRAINING

Students shall be affiliated to relevant institutions for their internship training during the long vacation of Level 300.

2.4 DURATION OF PROGRAMME

The duration of the Bachelor of Public Health Programme for individuals entering at various levels shall be as follows:

Level 100 entrants: Minimum of 8 semesters and maximum of 10 semesters

Level 200 entrants: Minimum of 6 semesters and maximum of 8 semesters

Level 300 entrants: Minimum of 4 semesters and maximum of 6 semesters

A Student who is unable to complete the programme within the stipulated maximum period shall forfeit all accumulated credits and lose his/her studentship.

Such a student may however re-apply for admission into the University.

The minimum and maximum periods are calculated from the date of first registration.

2.5 STUDY PROGRAMME FOR THE BACHELOR'S DEGREE

The Total Study Programme for the BSc. Public Health shall comprise the following:

(i) General University Requirement
(ii) Faculty Requirement
(iii) Core Courses as determined by the school
(iv) Elective Courses as determined by the School/Department

2.5 General University Requirement

1. UGRC 220 - African Studies
2. UGRC 110 - Academic Writing I
3. *UGRC 210 - Academic Writing II
4. UGRC 150 - Critical Thinking and Practical Reasoning
5. *UGRC 130 - Understanding Human Societies

These are requirements for graduation by all students irrespective of their level of entry.

**Note: UGRC 130 - Understanding Human Societies will be replaced by GSPH 106 - Health Behaviour and Society and UGRC 210 - Academic Writing II will be replaced by GSPH 214 -Writing for Public Health.*

2.6 MINIMUM AND MAXIMUM WORKLOAD PER SEMESTER

2.6.1 A full-time student shall be required to carry a minimum workload of 18 credits per semester and a maximum of 21.

2.6.2 Under special circumstances, a student may, with the approval of the Dean of Faculty, be allowed to carry a workload outside these limits, provided that the minimum workload will not fall below 15 credits per semester.

3.0 EXAMINATIONS

3.0.1 Continuous Assessment

There shall be a continuous assessment of each course taken and marks obtained shall contribute 30% towards the final grade while the end of semester examination contributes 70% of the final mark. (Except for practicals or related courses which may be assessed entirely by continuous assessment).

3.0.2 **Long Essay/Project Work**

Long Essay/Project Work shall be submitted for assessment before the start date of lectures for the second semester. In default the candidate shall be asked to submit the Long Essay/Project Work the following semester and shall be treated as a Repeat Examination, with all its implications.

3.0.3 **End of Semester Examinations**

(i) Each course, with the exception of a Project, shall normally be completed in one semester.

(ii) A final (end-of-semester) examination shall normally be required as a part of every course. An examination schedule showing time and place of examination for each course shall be published each semester.

(iii) The time allotted to the examination papers shall be as follows:

1 – Credit Course	- 1 hour
2 – Credit Course	- 2 hours
3 or 4 – Credit Course	-2 to 3 hours

3.1 ELIGIBILITY FOR EXAMINATION

(i) A student shall attend all such lectures, tutorials, seminars and practicals and undertake all other assignments as are approved by the University.

(ii) Further to (3.1(i)), a student shall be expected to attend lectures, tutorials, practicals and execute all assignments given.

(iii) Each Department shall, with the approval of the Academic Board, determine the requirements for the course they offer. A student who does not fulfil the requirement shall not be allowed to take the examination for that course.

(iv) In any case, a student who is absent for a Cumulative Period of 25% from all lectures, tutorials, practicals and other activities prescribed for any course in any semester shall be deemed to have withdrawn from the course. Such a student shall not be permitted to sit for the semester examination.

4.0 Credit Hours Required to Graduate

4.1 Requirement

A candidate shall be deemed to have:

(a) Satisfied all General University and School requirements;

(b) Obtained passes in all courses and subjects;

(c) Accumulated all the credits for all the courses at Levels 100, 200, 300 and 400 as appropriate for the candidate's level of entry.

Entry into Level 100

i. Students can take a maximum of 142 credits hours and pass at least 132 credits hours including all core courses.

Entry into Level 200

ii. Students can take a maximum of 118 credits hours and pass at least 102 credit hours including all core courses.

4.2 **Eligibility**

(a) A Bachelor's Degree appropriately designated shall be awarded to a candidate who has been properly admitted to the University, has followed the approved courses of study over the prescribed period and has satisfied the conditions.

(b) University requirements:

i. Evidence of regular enrolment

ii. Discharge of all obligations owed to the University

iii. A pass in all University required courses

i. Satisfactory performance in the appropriate University Examination.

(c) School/Department Requirement(s)

Satisfactory Discharge of such requirement(s) as may be prescribed for the degree.

4.3 **CLASSIFICATION OF BACHELOR'S DEGREE**

4.3.1 All end-of-semester examination results from Level 200 shall be taken into account in the computation of the Final Grade Point Averages (FGPA) for the classification of the bachelor's degree.

4.3.2 The GPAs form Levels 200 to 400 shall be of equal weighting.

4.3.3 In the determination of the FGPA, a weighted average of all repeat courses shall be used, as for instance, a 3-credit course with a 'D' at first attempt and an 'A' at the second attempt shall attract a total of 6 credits in the computation of the Grade Point Average of that particular course.

SUMMARY OF COURSES FOR THE B. PUBLIC HEALTH PROGRAMME.

The study programme for the B. Public Health will comprise the following

a. General University requirements
b. Core Courses
c. Prescribed Electives

General University Requirements

UGRC 110 Academic Writing I
UGRC 150 Critical Thinking and Practical Reasoning
UGRC 220 African Studies
*UGRC 130 Understanding Human Societies will be replaced by GSPH 106 Health Behaviour and Society and UGRC 210 Academic Writing II will be replaced by GSPH 214 Writing for Public Health.

COURSES FOR LEVEL 100 AND 200

All Courses at levels 100 and 200 are Core (compulsory)

Level 100	**Semester 1**	
Course Code	**Course Title**	**Credit**
GSPH 101	Anatomy & Physiology	3
GSPH 103	Basic Science	2
GSPH 105	Basic Concepts in Food and Nutrition	2
GSPH 109	Basic Concepts in Medical Sociology I	2
UGRC 110	Academic Writing	3
UGRC 150	Critical thinking and Practical Reasoning	3
Total		**15**

Level 100	**Semester 2**	
Course Code	**Course Title**	**Credit**
GSPH 102	Introduction to Public Health	2
GSPH 104	Computing in Public Health	2
GSPH 106	Health Behaviour and Society	3
GSPH 112	Introduction to Psychology	2
GSPH 114	Human Growth and Development	2
GSPH 116	Community Entry and Organisation	2
GSPH 118	Public Speaking and Presentation	2
Total		**15**

Level 200	**Semester 1**	
Course Code	**Course Title**	**Credit**
GSPH 203	Epidemiology: Principles and Methods	2
GSPH 205	Medical Anthropology: Cultural Foundation for Health and Illness	2
GSPH 207	Introduction to Biostatistics	2
GSPH 209	Introduction to Microbiology	3
GSPH 211	Introduction to Pharmacology	2
GSPH 213	Introduction to Public Health Ethics	2
GSPH 215	Basic Principles of Environmental Health	2
Total		**15**

Level 200	**Semester 2**	
Course Code	**Course Title**	**Credit**
GSPH 202	Ecological Approach to Health	2
GSPH 204	The Health Care System in Ghana	2
GSPH 208	Population, Health and Development	3
GSPH 212	Introduction to Research Methods	2
GSPH 214	Writing for Public Health	3
UGRC 220	African Studies	3
Total		**15**

COURSES AT LEVEL 300 AND 400

Level 300	**Semester 1**	
CORE COURSES FOR LEVEL 300 (All Options)		
Course Code	**Course Title**	**Credit**
GSPH 305	Principles of Disease Control	3
GSPH 307	Public Health Nutrition	2
GSPH 309	Primary Health Care System	2
GSPH 311	Environmental Health and Sanitation	2
GSPH 313	Monitoring and Evaluation of Health Programmes I	2
Core		**11**
Electives		**7-10**
Total		**18-21**

Electives (level 300)

Course Code	**Course Title**	**Credit**
GSPH 315	Research Methods I	2
GSPH 301	Child Survival Programme: Expanded Programme of Immunization	2
GSPH 303	Reproductive Health: Maternal Health Care	2
GSPH 319	Neglected Tropical Diseases	2
GSPH 317	Introduction to Health Policy	2
GSPH 321	Zoonotic Infections	2
GSPH 323	Non-Communicable Diseases	2
GSPH 325	Environmental Quality and Sanitary Inspection	2
GSPH 327	Municipal Sanitary Services and Amenities	2
GSPH 329	Hygiene of Food Processing and Handling	2
GSPH 331	Introduction to Population and Health	2
GSPH 333	Database System Management I	3
GSPH 335	Health Data Management	2
GSPH 337	Information Security	2
GSPH 339	Nutrients and their Metabolism	2
GSPH 341	Assessment of Nutritional Status	3
GSPH 343	Malnutrition and Food Security	2
GSPH 345	Contemporary Issues in Health Promotion	2
GSPH 347	Health Communications Theory and Practice	2
GSPH 349	Research Methods in Social and Behavioural Sciences	2
GSPH 351	Information Technology Application in Health Care management	2

Level 300 **Semester 2**

CORE COURSES FOR LEVEL 300 (All Options)

Course Code	**Course Title**	**Credit**
GSPH 304	Fundamentals of Public Health Surveillance	2
GSPH 312	Management and Leadership of Health Services	2
GSPH 314	Health Management Information Systems	2
GSPH 322	Research Methods II	2
GSPH 324	Public Health Seminar I	2
Core		**10**
Electives		**8-10**
Total		**18-20**

ELECTIVES(Level 300)

Course Code	**Course Title**	**Credit**
GSPH 302	Infant and Young Child Feeding	2
GSPH 306	Child Survival: Management of the Sick Child	2
GSPH 308	Family Planning Methods and Practice	2
GSPH 316	School Health Services I	2
GSPH 318	Introduction to Occupational Health and Safety	2
GSPH 326	Global Climate Change and Health Effects	2
GSPH 328	Control of Emerging and Re-emerging Diseases	2
GSPH 332	Integrated Disease Surveillance Systems	3
GSPH 334	Geographic Information Systems I	2
GSPH 336	Water Supply and Treatment	2
GSPH 338	Solid Waste Management	2
GSPH 342	Pest and Vector Control	2
GSPH 344	Environmental Exposure Assessment	2
GSPH 346	System Analysis and Design	2
GSPH 348	Data Analysis and Presentation (HMIS) I	3
GSPH 352	Applied Nutrition	2
GSPH 354	Nutritional Surveillance	2
GSPH 356	Life style and Nutrition	2
GSPH 358	Behaviour Change Communication	2
GSPH 362	Mass Communication in Health Education and Public Health	2

Level 400 **Semester 1**

CORE COURSES FOR LEVEL 400 (All Options)		**Credit**
GSPH 405	Introduction to Gender and Health Care	2
GSPH 410	Project Work	8
GSPH 413	Scientific Communication including Report Writing	2
GSPH 415	Public Health Ethics	2
Core		**10 (-4)**
Electives		**8-11**
Total		**18-21**

ELECTIVES (Level 400)

Course Code	**Course Title**	**Credit**
GSPH 401	Biostatistics for Public Health	2
GSPH 403	Reproductive Health IV – Comprehensive Care for HIV/AIDS	2
GSPH 405	Introduction to Gender and Health Care	2

GSPH 407	School Health Services II	2
GSPH 409	Reproductive Health and Culture	2
GSPH 411	Health problems of infants and children	2
GSPH 417	Database Management II	2
GSPH 421	Public Health Surveillance of Chronic Diseases	2
GSPH 423	Emergency/Preparedness and Outbreak Investigation	2
GSPH 427	Domestic and Industrial Waste Water Disposal	2
GSPH 429	Health Aspects of Housing	2
GSPH 431	Gender and Environmental Health	2
GSPH 433	Public Health Legislation, Regulation and Enforcement	2
GSPH 435	Human Excreta and Sewage Disposal	2
GSPH 437	Introduction to Field Epidemiology	2
GSPH 439	Geographic Information Systems II	2
GSPH 441	Clinical Data Classification and Coding I	2
GSPH 443	Electronic Health and Data Systems	2
GSPH 445	Data Base Systems and Management II	2
GSPH 447	Food and Nutrition Policy	2
GSPH 449	Communication for Nutrition and Healthy Lifestyle	2
GSPH 451	Nutrition Transition in Ghana	2
GSPH 453	Diet and Disease	2
GSPH 455	School Feeding Programmes	2
GSPH 457	Food Safety and Hygiene	2
GSPH 459	Intervention Strategies for Health Promotion	2
GSPH 461	Principles and Practice of Community Organisation	2
GSPH 463	Psychological Influence on Health	2
GSPH 465	School Based Nutrition Education	2
GSPH 467	Adolescent Health: Social and Behavioural Perspective	2

Level 400 **Semester 2**

CORE COURSES FOR LEVEL 400 (All Options)

Course Code	**Course Title**	**Credit**
GSPH 410	Project Work	8
GSPH 414	Public Health Seminar II	2
GSPH 420	Field Attachment	2
Core		**8 (-4)**
Electives		**10-13**
Total		**18-21**

ELECTIVES (Level 400)

Course Code	**Course Title**	**Credit**
GSPH 402	Health Promotion and Education	2
GSPH 404	Health Care for Aged and Elderly	2
GSPH 406	Mental and Social Health Care	2
GSPH 408	Monitoring and Evaluation of Health Programmes II	2
GSPH 412	Health Promotion and Disease Prevention	2
GSPH 416	International Health Regulations	3
GSPH 418	Global Health Security	2
GSPH 422	Environmental Health Promotion and Education	2
GSPH 424	Institutional Development and Sector Management	2
GSPH 426	Environmental Epidemiology	2
GSPH 432	Medical Records and Management	2

GSPH 434	Public Health Programme Planning and Evaluation	2
GSPH 436	Clinical Data Classification and Coding II	2
GSPH 438	Nutrition Rehabilitation Programmes	2
GSPH 442	Food Laws and Regulations	2
GSPH 444	Nutrition Seminar	2
GSPH 446	Change Interventions for Chronic Disease	2
GSPH 448	Rights for the Health of Women and Children	2
GSPH 452	Reproductive Health in Developing Countries	2
GSPH 454	Mental Health as a Public Health Issue	2

COURSE DESCRIPTIONS

LEVEL 100 COURSES

GSPH 101 Anatomy & Physiology

Definition and the scope of anatomy; organization of the body systems, the cell, embryology, body cavity and its contents; digestive, respiratory and circulatory system the nervous system; human metabolism other physiological processes.

The various organs of the body, their functions in health and illness; The various body systems such as the blood system, the lymphatic system, the nervous system, the cardiovascular system etc. Normal values of the body functions and their relationship to health and illness.

GSPH 103 Basic Science

Mechanics (Laws of motion, levers and pulleys, work energy and power), Optics (law of reflection, real and virtual images, reflection and refraction, dispersion of light, lenses and lens aberrations, optical instruments eg human eye, magnifying glasses, microscopes and telescopes), electricity and radioactivity.

The students will be introduced to measurements, conversion factors, atoms and elements, electronic configuration, the periodic table. Discuss chemical bonding, ionic and covalent bonds, bond polarity. Electrolytes and non- electrolytes, acids and bases, ionization of water, pH scale, buffers. Solutions, water as solvent, nature of solute- solvent interactions, concentration of solutions, structure and oxidation of alcohols, aldehydes and ketones. amino acids, protein structure denaturation of proteins by temperature, enzymes and their effects on reactions in the body, nucleic acids, DNA and RNA, base pairing.

Basic concepts in genetics, Sickle cell disease, thalassemias and related genetic diseases, genetic screening, principles of parasitism, parasitic groups and their relation to disease, insects of medical importance, principles of pest control.

GSPH 105 Basic Concepts in Food and Nutrition

Agriculture, food storage, food systems and food security; food preservation, food development and sensory characteristics; nutrients and food sources; carbohydrates, proteins, vitamins and minerals; cultural economic and traditional factors that shape food habits

GSPH 109 Basic Concepts in Medical Sociology

This introductory course will examine the basic concepts of medical sociology with particularly focus on the perspective on health and illness and health care systems. The course will assess the social aspects of health including the problems addressed by health care institutions, societal response to disease and sickness and institutional and organizational setting of health care systems.

LEVEL 100.
SEMESTER 2

GSPH 102 Introduction to Public Health

Definition of public health; the dimensions of public health, preventive medicine, social medicine, community health, and community medicine; three levels of prevention, primary, secondary and tertiary; key public health functions. The enter relationship between human beings and their total environment

GSPH 104 Computing in Public Health

Basic concepts of the computer and the peripherals, web structure and email. Introduction to Epi info, data base structure, questionnaire development, data collection, data screens and data entry, data cleaning and basic data analysis.

GSPH 106 Health Behaviour and Society

Define health, society, social groups, illness, sickness, health care, mental illness. Interface of social system and culture, levels of social change, social dimension of healthcare system meaning for the individuals and institutions. The functions and structures of politics and religion and its effects on society and individuals will also be examined.

GSPH 112 Introduction to Psychology I

Define social psychology, basic concepts of symbolic interactionism, cognitive basis of role making and role taking related to health situations, establishing horizontal and vertical linkages deviance and identity. Theories biological foundations of behavior, sensation and perception, basic principles of learning, information processing, memory, language, intelligence, motivation, emotion, personality, social behavior, mental disorders and therapies.

GSPH 114 Human Growth and Development

Birth of human being, inherited and environmental factors, changes in adolescence, adults, family systems and lifestyle. Challenges of adulthood, Ageing, death and dying,

GSPH 116 Community Entry and Organization

The course content includes: Community structure and governance, community resources, community organization, Community entry and needs assessment; Communication channels, advantages and disadvantages; Health education/promotion; Community participation; gender roles in community organization and communication.

GSPH 118 Public Speaking and Presentation

Introduction to public speaking, the process of communication; models of communication, knowing your audience, performing audience analysis, listening, adapting to an audience –the goal statement, organising a speech, selecting and narrowing ideas for presentation, beginning and ending a presentation, difference between oral and written style, supporting ideas with arguments, informative speaking, persuasive speaking, speaking in groups.

LEVEL 200

SEMESTER I

GSPH 203: Epidemiology: Principles and Methods

Measures of disease frequency, rates, ratios; descriptive studies, analytic studies geographic comparisons, temporal comparisons ;survey sampling ;epidemiological study design; surveillance

GSPH 205: Medical Anthropology: Cultural Foundation for Health and Illness

This course will help the student to understand the societal and cultural determinants of health. The content of the course will include the definition and concept of culture and health; the practice of medical anthropology; Social structures and conceptions of disease; treatment and outcome; influence of culture and religion on behavior in relation to health and diseases; health decision making, modern and traditional systems for health care and culture and social epidemiology.

GSPH 207: Introduction to Biostatistics

Descriptive statistics; sampling techniques, summary measures, measures of central tendency, measures of dispersion, normal distribution, data presentation, measures of association.

GSPH 209: Introduction to Microbiology

Foundation and overview of microbiology, the structure and functioning of fungi, bacteria and viruses, the methods used to culture, control and study these organisms in the laboratory, Isolation, Classification and Identification of Microbes.

GSPH 211: Introduction to Pharmacology

General principles of pharmacology; mechanism of drug action; classification, drug metabolism and pharmacokinetics, introduction to toxicology, principles of adverse drugs reactions; poisoning including insecticides and agrochemicals. Reactions to common domestic chemicals including corrosives and heavy metals such as in the digestive, neurological, cardiovascular systems. Introduction to safety monitoring.

GSPH 213 Introduction to Public Health Ethics

Traditions and values in public health, social determinants of health, ethical analysis and decision making, ethics and pandemic power, participation and disparities, research with human subjects, professional ethics, cross-cultural ethics

GSPH 215 Basic Principles of Environmental Health

The course will include the following: 1. Definitions: Environment, health, environmental health, environmental health hazards. 2. Classification of the elements of the environment (physical, biological, chemical, radiological). 3. Sources of environmental health: waste materials (human, industrial, etc) and support media (food, water, soil, air). 4. Methods of transmission of environment hazards from source to objects at risk. 5. Impacts of environmental hazards on man, animals and the environment. 6. Methods of control of environmental hazards. 7. Applications of concepts and principles.

LEVEL 200

SEMESTER 2

GSPH 202 Ecological Approach to Health

Environment and human biology, climate, chemical pollution, food production, food conservation; poisons and toxic agents, organic pollution of water; effects of environmental degradation: greenhouse effect of ozone layer depletion, desertification

GSPH 204 The Health Care System in Ghana

This course will cover the concepts of health systems and public health, national health systems, historical development of Ghana's health system, challenges and strategies for health systems. Measures to meet challenges of the health system.

GSPH 208 Population, Health and Development

Factors affecting population distribution, implications of population distribution,Components of population change, factors in historical decline and mortality and morbidity, general overview of demographic analysis, vital registration, population growth and distribution, mortality measurements, fertility measurements; population policies and programmes in Ghana

GSPH 212 Introduction to Research Methods

The course will introduce the formulation of research questions, research objectives, describe the qualitative methodology, purposive sampling, sample size determination, Construct variables, and discuss the generalization, validity and reliability. Data analysis including thematic and network analysis and presentation

GSPH 214 Writing for Public Health

Writing readable health messages, summarizing, important points, write lists, choosing a style that is easy to follow; using the active voice; defining difficult words by context clues

LEVEL 300
SEMESTER 1

GSPH 301 Child Survival Programme: Expanded Programme on Immunization

Global and national immunization strategy; types of vaccines; vaccine management, maintenance of the cold chain system, organization of immunization sessions, improving access and coverage of immunization; community mobilization for vaccination programmes, monitoring and supervision of immunization activities; immunization surveillance, vaccination coverage survey

GSPH 303 Reproductive Health: Maternal Health Care

Maternal health care : antenatal care, labour and postnatal care; emergency obstetric care strategies, appropriate technologies for monitoring pregnancy and labour; Definitions of maternal death, identifying maternal deaths, facility based maternal deaths review, verbal autopsy for maternal death, epidemiology of maternal mortality in Africa; near miss obstetric events. Issues relating to reproductive morbidities in women.

GSPH 305 Principles of Disease Control

Burden and trends of infectious diseases, Determinants of infectious disease, natural history of infectious disease, management and control strategies, problems and challenges, specific interventions for selected infectious diseases

GSPH 307 Public Health Nutrition

Various food groups, carbohydrates, proteins, fats, vitamins, trace elements; specific micronutrient deficiencies, Vitamin A deficiency , iron deficiency and anemia, iodine deficiency disorder ; nutritional requirements of pregnant and lactating women, infants and children; obesity and related conditions; growth monitoring and promotion; under- nutrition; community based nutrition programmes; nutritional surveillance, growth monitoring and promotion. Retrieval of medical data, develop and modify questionnaires.

GSPH 309 Primary Health Care System

Definition of primary care and history, common health problems, maternal and child health care, including family planning, nutrition, immunization, safe water supply, basic sanitation, locally endemic diseases and what can be done to prevent and control them. Treatment of common diseases and injuries. Preventive, promotional, and rehabilitative services for the individual, family and community. Community involvement in the formulation and implementation of health care activities. Discussion on continued dialogue with the community and health care professional. The role of primary care in the National health care system.

GSPH 311 Environmental Health and Sanitation

The course will introduce students to the basics of environmental health and sanitation and will cover environmental epidemiology, toxicology, policy and regulation. Students will have the opportunity to study various agents of environmental diseases- including zoonotic and vector-borne diseases, toxic mental and elements, pesticides and other organic chemicals. Students will also be introduced to the application of environmental health and sanitation in the area of water and air quality, food safety, solid and liquid water and occupational health.

GSPH 313 Monitoring and Evaluation of Health Programmes

Formative evaluation research, project monitoring-process evaluation; evaluation-effectiveness evaluation, framework for evaluation-inputs, outputs, outcome and impact, programme indicators, data collection methods, types of analysis, key elements of evaluation plan, scope of the evaluation, methodological approach, implementation plan, dissemination and utilization of results

ELECTIVES (LEVEL 300)

GSPH 315 Research Methods

The course introduces the basic concepts of research including a historical perspective. Discusses the scientific method for research, advantages and disadvantages, describes the research process and explains the various

components of the research process. It explores several methods of formulating a research question. It introduces the formulation of general objectives and specific objectives. The courses address the formulation of research hypothesis and it relations with the research question.

GSPH 317 Introduction to Health Policy

Factors influencing public social policy development, Environmental context of reform, the role of different players within the policy process, effective use of modern tools in policy making, forging consensus in policy making research., Agenda setting, Policy design factors, policy background, policy process variables, policy participation, policy implementation

GSPH 319 Neglected Tropical Diseases

Burden of neglected tropical diseases, prevalence of trachoma, soil transmitted helminthes, schistosomiasis lymphatic filariasis, treatment of neglected tropical diseases. Prevention of NTDs and global effort to control and eliminate NTDs.

GSPH 321 Zoonotic Infections

The burden of zoonotic diseases, prevalence and control of zoonotic diseases, surveillance and control of emerging and re-emerging diseases and the challenge of veterinary public health, global trends in emerging infectious diseases, wildlife and zoonoses.

GSPH 323 Non-Communicable Diseases

Definitions, Types of non-communicable diseases and the burdens especially those relevant to Ghana. Risk factors and their management and strategies for prevention and control. Non-communicable diseases; cancer registers and other registers used in disease control.

GSPH 325 Environmental Quality and Sanitary Inspection

Concepts of environmental quality (hygiene);Practice at community level (prevention of contamination of land, premises and infrastructures and pollution of water infrastructures (roads, drainage systems, parks, etc.) and the pollution of water bodies

(beaches, river banks, etc).Identification of environmental hygiene problems at premises level (residential, commercial, industrial, institutional), public places (markets, lorry parks, beaches, river banks, lagoons, stadia, and open undeveloped lands).

Legislation: Role of legislation in environmental quality (hygiene) promotion; procedures for the making and review of national and local legislation; practices in Ghana. Sanitary Inspection: Environmental hygiene monitory by Sanitary Inspection; hygiene education; compliance enforcement and procedures. Institutional Arrangements: Institutional and development concept and principles; structure of appropriate department/units; sanitary inspection in Ghana. Identification of the sources of air pollution both indoor and outdoor.

GSPH 327 Municipal Sanitary Services and Amenities

Concept of provision of municipal sanitary services and amenities. Elements of municipal services: Public cleansing (streets, drains, markets, lorry parks, stadia, etc); maintenance of hygienic conditions at waste storage and disposal sites; pest control (mosquitoes, flies, rodents).

Elements of Municipal Amenities: Litter bins; waste storage site/containers and final disposal; Sites and facilities; public urinals and toilets; cemeteries; food and meat markets; public spots (parks and seats); developed beaches.

Strategies for Financing Municipal Programmes (financing, modernization, maintenance, expansion, etc). Standards of design operation and maintenance.

Institutional arrangements for the municipal programmes.

GSPH 329 Hygiene of Food Processing and Handling

Definitions: Food-borne Diseases, Food hygiene, food infection, food intoxication. Principles: Food and nutrition; food-borne diseases: classification of diseases (infection, intoxication), causative agents, transmission

mechanisms, manifestation; incriminating food; preventive measures.
Food and Safety Practices: (i) Raw food and meat (prevention of contamination, meat hygiene) (ii) Primary processing (hygienic practices, milling, packaging, storage, etc) (iii) Prepared foods (hygiene in preparation, storage, serving, etc)
Food establishments: Approval of sites, facilities, design of layout, display equipment, permits and certificates of operation. Food Inspection and Hygiene Education: (i) establishment of departments/units (ii) design of appropriate educational programmes.
Legislation: National and. local; permits/certificates, enforcement of legislation (notices, prosecution, sanctions).Institutional Arrangements: Roles of government, business association, etc; department/unit of local authority; mechanisms for inter-agency coordination and collaboration

GSPH 331 Introduction to Population and Health
Basic concepts of population growth and socio-economic development, rates and ratios, sources of demographic data, data evaluation, age-sex composition, ideal family size, fertility preference, measures of infant, foetal and perinatal mortality, construction of crude and adjusted mortality rates, demographic transition and Hoover theory.

GSPH 333 Database Management System I
The evolution of database systems, early database management systems, overview of database management system components, the storage manager, the query manager, the client server architecture. Introduction to Data Protection, overview of storage technology, backup and restore, remote copy and replication, basic security concepts, storage system security, policy based data protection, Information lifecycle management

GSPH 335 Health Data Management
Collection, organization, analysis and presentation of health care data; vital and public health statistics; calculation of health care specific statistics, hospital utilization; mortality rates, autopsy rates, outpatient statistics; preparation of statistical reports; methods of ensuring data quality-accuracy, timeliness, completeness and validity

GSPH 337 Information Security
Information security management; information security culture; misuse and abuse of computer systems; computer ethics and security; authorization and access control; malicious software in ubiquitous computing; statistical database security; copy protection system; information security culture; security governance and compliance; data warehousing, data mining and security

GSPH 339 Nutrients and their Metabolism
Nutrient utilization: digestion, absorption and metabolism, metabolic relationships among carbohydrate, protein and fat in the major tissues of the body
Reading List

GSPH 341 Assessment of Nutritional Status
Study the techniques used in assessing nutritional status of individuals and communities during health and disease using dietary, biochemical, and clinical and anthropometric measurements. Methods of measuring the dietary intake of individuals and communities; anthropometric measurements of individuals and communities and how to do them; biochemical assessments of individuals and communities; clinical and functional appraisal of nutritional status and vital statistics and nutritional surveillance as well as growth monitoring.

GSPH 343 Malnutrition and Food Security
Relationships between diseases; nutrition and diets. Epidemiology of diseases with dietary origins Vitamin A deficiency disorders, Iron deficiency anaemia, Iodine deficiency disorders, dental disorders, GIT disorders, Gallstones, Cardiovascular diseases, obesity and diabetes, cancers. Diet, nutrition and the prevention of chronic diseases. Dietary management in therapy. Food fads and disease prevention. Management of food fads.

GSPH 345 Contemporary Issues in Health Promotion

The course will deal with contemporary issues in promoting health and exploring concepts of health, wellness – illness continuum, levels of prevention, culture and values, sources of community information, health as a value, folk healing and professional care system. It will also introduce students to the communication process and ethics, barriers to effective communication, health care ethics, screening: advantages and disadvantages and sources and effects of stress.

GSPH 347 Health Communications Theory and Practice

Communicating is key to the implementation of public health programmes. The course will introduce students to the various communication theories including theories of communication impact on behavior, various cognitive theories, social process theories, emotional response theories and mass media theories. The course will also provide students the opportunity to learn various frameworks for designing and producing communication strategies and how to introduce such strategies into intervention programmes and evaluate them.

GSPH 349 Research Methods in Social and Behavioural Sciences

The course will introduce students to research methods to improve knowledge, theory and practice in the field. It will provide students the epistemological and theoretical framework to both quantitative and qualitative research methods in the social sciences. The course will assess the principles and applications of both quantitative and qualitative methods. It will cover sampling methods, questionnaires, structured and unstructured interviews, ethnography, participant observation, participatory action research and ethical issues of research.

GSPH 351 Information Technology Application in Health Management II

Managerial-oriented approach to the use of IT in organizations to improve quality and productivity. Case studies highlight new technology and applications, including fuzzy logic, neural computing, and hypermedia, problems many district teams encounter.

LEVEL 300

SEMESTER II

GSPH 302 Infant and Young Child Feeding

Nutritive needs of infants and young children, Breastfeeding and its challenges, Supplementary and complementary feeding, International code for breastfeeding, feeding of the low-weight-birth infant, weaning practices, effects of early feeding on later life. Goals of nutritional management of infant and young children.

GSPH 304 Fundamentals of Public Health Surveillance

Historical development of surveillance; planning a surveillance system, sources of health related information, collecting surveillance data, analyzing and interpreting surveillance data, use of surveillance data for public health action. Evaluating public health surveillance system.

GSPH 306 Child Survival: Management of the Sick Child

Define IMCI, Improving case management skills of health-care staff, Improving overall health systems, Improving family and community health practices, algorithms for diagnosis and treatment of Acute respiratory Infections, Diarrhoea, malaria, ear infection, malnutrition and vaccination status. Community IMCI .

GSPH 308 Family Planning Methods and Practice

Description of various contraceptive methods, mechanisms of action, failure rates, safety issues and warnings, barriers to increased use, a management of unsafe abortion, emergency contraception, approaches to delivery conducting situational analysis, family planning and HIV positive women.

GSPH 312 Management and Leadership of Health Services

This course will cover the nature of management, different management skills, roles in the management model, planning and the planning process; organizing, division of work, delegation and coordination; leading and understanding and managing conflict for health services. The importance of leadership, the leading process, and

leadership treats and styles. Interpersonal conflict, beneficial and dysfunctional aspects of conflict, sources of conflict, managing and resolving conflict.

GSPH 314 Health Management Information Systems

The course will aim at introducing students to the general concepts of health management information systems. Description of various health management information systems used at all levels of the health system and their linkage will be made.

GSPH 316 School Health Services I

School Health service, including role of the school teachers and parents, Child growth and development, basic hygiene including oral hygiene, sanitation, nutrition including common foods , fruits and their nutrient value. Physical exercise and health.

GSPH 318 Introduction to Occupational Health and Safety

Pre-placement screening; Occupational lung diseases, silicosis, asbestos -related diseases, occupational asthma, and byssinosis; health monitoring and investigation of a hazard; use of protective clothing; sickness absence, measuring absence, basic statistics and misconceptions, factors known to influence sickness absence; rehabilitation and settlement at work; principles of toxicology

GSPH 322 Research Methods II

The course will introduce proposal writing from formulation of research questions, research objectives, design of the study, data collection, analysis, discussion and presentation of results. Principle of ethical conduct of research, Grant writing and sourcing of funding to conduct research

GSPH 324 Public Health Seminar I

Global public health diseases affecting developing countries; control measures in place for global public health diseases affecting developing countries.

ELECTIVES (Level 300)

GSPH 326 Global Climate Change and Health Effects

Variety of effects associated with climate change in different regions on health, malaria, contamination of water bodies, pollution adaptations of human communities to climatic change

GSPH 328 Control of Emerging and Re-emerging Diseases

Emerging infections in historical context, geographical spread of infections, human demographics and behavior, climate and weather, international travel and commerce, war and famine, technology and industry, microbial adaptation and change, economic development and land use, development of multiple-resistant bacterial pathogens, emerging issues in blood borne infections, resurgent vector borne diseases.

GSPH 332 Integrated Disease Surveillance Systems

Overview of surveillance, importance of surveillance, standard case definitions, standard methods for reporting priority diseases district –level indicators for monitoring quality of surveillance and response at the health facility, community –based surveillance, alert thresholds, information flow in integrated disease surveillance, developing public health bulletin, IDSR contribution to epidemic preparedness.

GSPH 334 Geographic Information Systems I

Definition of geographical information system; spatial data; database management; data input and editing; data analysis; data editing; data quality issues; GIS project editing and management, use of GISs in surveillance and monitoring vector-borne diseases, environmental health, children and pedestrian

GSPH 335 Health Data Management

Analysing public health data; validity of ICD 10 Hospital discharge data, applied spatial statistics for public

health data, analysis of hospital data of chronic diseases such as cancer, diabetes.

GSPH 336 Water Supply and Treatment

Definition: Water resources, source of supply, portability, safeness etc.

Sources of Water Supply (Water resources): Sources: Surface water (rivers, lakes, dams, ponds, lagoons, sea water); Ground water (springs, water table); Rain water.

Uses of Water Resources: Human physiological requirement; Domestic (personal hygiene, food preparation, waste disposal); Industrial and commercial (manufacturing, food and drink services); Agricultural (irrigation, crop watering, etc); Public cleansing (drain cleansing); Fire fighting.

Water Associated Diseases: (i) Water's role in disease transmission (ii) Classification of water-associated diseases (water-borne, water-based, water-washed, water-related)

Water Purification: Purpose: Provision of safe water for drinking; production of water meeting industrial standards.

Methods of Source Protection: Protection of sources of supply (springs, rivers, etc); Household methods (boiling, cloth filtration, chemical disinfection, etc); Conventional water treatment

Drinking Water (Quality) Standards: Parameters (Bacteriological, physical, chemical, radiological); Indicators and limit setting.

Water Supply Development: Classification of schemes: Rural Water Supply (sanitary wells, bore-hole supply, springs); small town supply (limited pipe-borne distribution; Urban supply (pipe-borne supply.

GSPH 338 Solid Waste Management

The course will examine the following: Definition: Waste, refuse, rubbish, recycling, waste management.

Classification of solid wastes by characteristics and source. Sources of solid waste generation: domestic, commercial, industrial, agricultural, hospital, institutions, etc.

Waste generation: Individual, community.

Hazards of solid waste accumulation in the community (health, land, degradation, property devaluation, etc) Methods of Storage, collection, transportation, treatment and final disposal.Financing and tariff systems for solid waste management.

Types of legislation and bye-laws needed for solid waste management.

Institutional arrangements: Central, regional, district and town level organizations, human resource development.

GSPH 339 Nutrients and their Metabolism

Nutrient utilization: digestion, absorption and metabolism, metabolic relationships among carbohydrates, proteins and fat in the major body tissues, differences in digestibility of foods and physiologic implications, influence of food and non-nutrienfood components, nutrient –nutrient interactions in foods, effects of macronutrients and fiber.

GSPH 342 Pest and Vector Control

Definitions: Pest, vector, vector control, pesticide, insecticide, larvicide, adulticide, biolarvicide, etc.Importance of pest and vectors: Agents of disease transmission Causes of nuisance (biting, irritation, itching. Droppings, odour, etc); General Control Principles: Identification and morphological characteristics Biology (Life cycle, behavior, resting place, dispersal, ecology, food, etc) Public health importance: Diseases: Nuisance (irritation, biting, itching, droppings, odours, etc); Pest/Vectors and Disease:

Pesticide Classification, Formulation and Use Regulation of Pesticide Use: Legislation to control import and export, labeling, packaging, storage, transportation, safe use, etc. Institutional Arrangements: Central government (Agriculture, Health and Environment) Ministries, districts and local authorities; private sector (importers/retailers, pest control, service providers).

GSPH 344 Environmental Exposure Assessment

Environmental exposures to chemicals and biological contaminants; study design issues relating to air water sediment and soil sampling, water protection inspection, water management and protection of water quality,

monitoring air quality, measures for the protection of farmland quality

GSPH 346 Systems Analysis and Design

The course will include the following: Basic definition-systems, systems analysis, information system, General overview of systems development, systems theory and relevance to information system, systems life cycle (SLDC)-preliminary investigation, the analysis phase, the design phase, development stage, implementation, systems evaluation. System design tool-systems flow charts, Entity relationship diagrams, data flow diagrams, Hipo chart, Warnier Orr diagram, decision tree, pseudo code, data dictionary, application of systems analysis/design, systems management, systems professionals, systems engineers, analysts, designer, architect, owner, developer user.

GSPH 348 Data Analysis and Presentation (HMIS) I

Review of the database structure, the Ministry of Health HMIS, coding system, the basic indicators and their definition, analysis of defined dataset from the HMIS, generate basic indicators and presentation of data.

GSPH 352 Applied Nutrition

Structure of nutritional programmes, mode of implementation and evaluation; effects of socio-economic factors on nutrition; how urbanization affects nutrition; mode and objectives of nutrition education to the public and methods of delivery and the role of local and international organizations in combating hunger and malnutrition.

GSPH 354 Nutritional Surveillance

Principles of disease surveillance and how it applies to nutritional diseases. Nutritional diseases of public health importance and their epidemiology. Surveillance of nutritional diseases of public health importance. Standard indicators for nutritional surveillance and how to collect data.

GSPH 356 Lifestyle and Nutrition

Relationships between diseases, nutrition and diets. Epidemiology of diseases with dietary origins, Vitamin A deficiency disorders, Iron deficiency anaemia, Iodine deficiency disorders, dental disorders, GIT disorders, Gallstones, Cardiovascular diseases, obesity and diabetes, cancers. Diet, nutrition and the prevention of chronic diseases. Dietary management in therapy. Food fads in disease prevention and management.

GSPH 358 Behaviour Change Communication

The course will introduce students to definition of principles and concepts such as behavior, communication and behavior change communication. It will also deal with the various steps to behavior change, health communication in cultural context, the challenges and considerations of behavior change communication.

GSPH 362 Mass Communication in Health Education and Public Health-3 credits

The course content will include mass communication theory and practice; community entry processes, media use as a health promotion/health communication strategy; use of radio, television, and the internet for health promotion; media use in health promotion campaigns (HIV prevention campaigns; malaria prevention campaign, tobacco campaigns); marketing and unhealthy advertising (alcoholic beverages); television and children's health; marketing and social marketing; working with the media and writing media releases; Writing for the print media; cross cultural communication; communication with people with disability; pre-testing developed media materials; health sponsorships; coalition building, political lobbying and media advocacy for health.

LEVEL 400

SEMESTER I

GSPH 401 Biostatistics for Public Health

The course focuses on basic statistical concepts especially on types of measurement in public health. Basic concepts in data analysis, presentation of data and reports. The course will be very practical using data from Ghana Health Service reports to illustrate the concepts and provide analysis of reports in public health

GSPH 403 Reproductive Health: Comprehensive Care for HIV/AIDS

Prevention of HIV transmission,HIV counseling and testing, opt out screening, prevention of mother to child transmission, antenatal couple counseling; anti retroviral therapy and prevention, perception of HIV risk; "3 by 5" initiative

GSPH 405 Introduction to Gender and Health Care

Health and social construction of gender, gender stereotypes, health beliefs and behaviors: resources for constructing gender, the social construction of disease, medical Institution and its construction of gender and health, gender and utilization of health services, gender and responses to symptoms

GSPH 407 School Health Services II:

Basic cause of common childhood diseases such as malaria common cold, HIV/AIDs, TB, helminthes infection, cuts and wounds, and methods to prevent them. Alcohol use and smoking and their effects on health. Local foods and fruits and their nutrient value and use. Monitoring and evaluation of school health programmes.

GSPH 409 Reproductive Health and Culture

Define reproductive health, cultural context of sexuality, cultural factors & determinants of use of family planning, sexual violence, female genital mutilation, Reproductive tract infections, and treatment, effects of contraception and health of mothers and children, adolescent fertility and contraception

GSPH 410 Project Work

GSPH 411 Health problems of infants and children

Definition of the childhood morbidity and mortality; causes of perinatal and neonatal mortality, prematurity and low birth weight; childhood diseases of public health importance.

GSPH 413 Scientific Communication Including Report Writing

Definition of scientific communication; writing a scientific paper; when to begin writing; preparing the text, abstract preparation, introduction, materials and methods, results, discussion, acknowledgments, citation of references, ethics in scientific publishing; The publishing process, conference communications, oral presentation, poster presentation, scientific style.

GSPH 414 Public Health Seminar II

Global public health diseases and developing countries, Poverty and health, measurements of poverty and health; indicators of the Millennium Development goals

GSPH 415 Public Health Ethics

Traditions and values in public health, social determinants of health, ethical analysis and decision making, ethics and pandemic power, participation and disparities, research with human subjects, professional ethics, cross-cultural ethics.

ELECTIVES (Level 400)

GSPH 417 Database Management II

Database concepts-database files, types, records field, advantages and disadvantages of DBMS, types of database organization, features of data-query, report data dictionary, utilities systems recovery, database application development; overview of storage and indexing; database profession, new developments in database management, data service delivery, diagnosis, health information management and administration, ethics of using databases, health database systems, features of application software, developing databases for health systems.

GSPH 421 Public Health Surveillance of Chronic Diseases

The course content will include the new public health priorities, characteristics of chronic disease surveillance,

reporting of chronic disease surveillance, behavioural determinants of health and disease, determinants of population health, global burden of disease approach, risk factors for cardiovascular and cerebrovascular diseases. The epidemiology and prevention of diabetes mellitus, Neoplasms, HIV/AIDS and Tuberculosis will be reviewed.

GSPH 423 Emergency/ Preparedness and Outbreak Investigation

The course will investigate the steps in outbreak investigation and the importance of team work in the investigation of outbreak and the role of Laboratory in the disease outbreak investigation.

GSPH 427 Domestic and Industrial Waste Water Disposal

Principles: Definitions: Waste, Waste water, Sullage, Sewer, Soil pipe. Sources of waste water: Domestic, Commercial, Industrial, etc.Classification: Liquid, Semi-liquid, Turbidity, colour, Odour ; Characteristics: 1) Composition (water, solids, dissolved matter Degradability (organic decomposition, clarification, gaseous emissions, etc) Facilities/Infrastructures for disposal of waste waters: Street drains, Storm water drain (natural, built), house drains, open spaces, ponds, etc. Development and Management of Drainage: Drainage network design, construction and maintenance. Private and public premises' connections, Legislation and bye-laws and enforcement. Institutional Arrangements: Roles of District Assemblies and local councils; definition of the responsibilities of property owners; monitoring and promotion of development.

GSPH 429 Health Aspects of Housing

Definitions: Housing, premises, workplace, ventilation, illumination, town planning, zoning, building code, building permit, etc; Health problems attributed to housing (diseases, injuries, nuisance, etc);Town planning (physical planning) principles for development of communities (layout, zoning, etc) Criteria for assessing healthfulness of housing: Fundamental physiological needs; Protection against contagion (diseases); Protection against accidents; Legislation: Building Code, permits, building inspection and enforcement of code; demolition; Institutional Arrangements: Establishment of department/unit for regulation of building construction; human resource development; logistics.

GSPH 431 Gender and Environmental Health Care

This course introduces students to the construction of gender and sex and gender as a theoretical concept. It also looks at the historical, international, and domestic perspectives of gender, the social structures that affect the development of individual and society's health, and how gender influences the construction of public health in different societies. The course will provide some understanding into societal patterns of health, disease, and well-being, and the socio-cultural determinants that affect people's experiences and expectations of health. This course examines some health issues where gender plays an important role: reproductive health, sexual health, health policy etc.

GSPH 433 Public Health Legislation, Regulation and Enforcement

Definitions: Legislation, Acts, Regulations, Bye-laws, enforcement, sanctions.

Role of Legislation: Establish governmental institutions and agencies (eg. Local Government Administration, Food and Drugs Board, etc); Regulations, Standards and tariff systems.

Pressures that initiate legislation: Problems with public cooperation, revenue mobilization, demand for projects and services, etc.

Relevant legislation for Environmental Health (i) National (e g. Environmental Health Policy of Ghana, Environmental Protection Agency), (ii) Local (e g. District Assembly bye-laws on sanitation), Procedures for Enactment of Legislation

Monitoring and Enforcement: Establishment of department/office/unit for monitoring and enforcement; provision of appropriate courts (e g.Sanitary courts); mechanisms for inter-agency coordination and collaboration.

GSPH 435 Human Excreta and Sewage Disposal

Definitions: Human excreta, night soil, sanitary waste, degradability and sewerage.

Principles: Prevention of risk of exposure (hygienic handling), treatment to reduce hazardousness and facilitate disposal. Collection and transportation (cartage, sewerage).Treatment methods and systems: On/off site systems, types of facilities (toilets, urinals).Final disposal methods (land, water, sea disposal)
Institutional Arrangements: Relevant organizations and stakeholders: Central Government (Ministry of Water Resources, Works and Housing, EPA, District/Local Government, Waste Collection Service Providers, Households, establishment of district departments/units to regulate services, sector organization.

GSPH 437 Introduction to Field Epidemiology

Definition of field epidemiology, operational aspects of epidemiologic investigations, conducting a field investigation, surveys and sampling, using a computer for field investigations, analyzing and interpreting data,

GSPH 439 Geographic Information Systems II

Definition of geographical information system; spatial data; database management; data input and editing; data analysis; data editing; data quality issues; GIS project editing and management, use of GISs in surveillance and monitoring vector-borne diseases, environmental health, children and pedestrian

GSPH 441 Clinical Data Classification and Coding I

History and development of disease classification, the structure and conventions of the International Classification of Diseases and Related Health Problems; tenth Revision, Basic coding principles, retrieval of relevant information from health records for the classification of diseases and procedures in medicine.

GSPH 443 Electronic Health and Data Systems

Definition of electronic health record, difference between electronic health record and electronic medical record; structure of electronic health records, context of use of electronic health records, functions of an electronic health record, informed consent and electronic health records; standardization of electronic health records; implementing security and access control for an electronic health record, access to electronic health records, security infrastructure and archives for electronic archives and electronic health records; secondary uses of electronic health records, medico-legal purposes, quality management, education research, policy development/health service management, health statistics analysis and trend analysis

GSPH 445 Data Base Systems and Management II

Database concepts-database files, types, records field, advantages and disadvantages of DBMS, types of database organization, features of data-query, report data dictionary, utilities systems recovery, database application development; overview of storage and indexing; database profession, new developments in database management, data service delivery, diagnosis, health information management and administration, ethics of using databases, health database systems, features of application software, developing databases for health systems

GSPH 447 Food and Nutrition Policy

The course is designed to help students know the role of policy in food and nutrition programming at the national level. The course will engage the students in discussing how policies are developed and evaluated.

GSPH 449 Communication for Nutrition and Healthy Lifestyle

The premise of this course is that nutritional and life styles problems are caused by human behavior and have long-term implications. To address and create long-term solutions to these problems, behavior needs to change. This course provides students with a practical introduction to the strategies, methods and tools of nutrition and health life styles communication that effectively leads to changes in behavior. The field-based skills gained through this course will provide students the skills of communicating nutritional and health life styles messages for changing behaviors. The course will focus
on nutritional and healthy life styles social marketing strategies to ensure desired changes in behavior.

GSPH 451 Nutrition Transition in Ghana

The concept of nutrition transition, obesity trends in the developing world, biological factors, genetic factors, ecological factors, food availability and dietary intake; obesity and cardiovascular diseases.

GSPH 453 Diet and Disease

Nutritional measurement, chronic diseases, epidemiology of chronic diseases, relationship between nutrition and chronic diseases, public health impact of nutrition in chronic diseases.

GSPH 455 School Feeding Programmes

History of school feeding, school health and nutrition recovery, school feeding as a nutrition intervention, school feeding to improve child cognitive development, school feeding and short and long term –food and security, designing school feeding programmes, evaluating school feeding programmes.

GSPH 457: Food Safety and Hygiene

Principles, science and technology of Food preservation, Food deterioration, food additives; food toxins, bacterial contamination

Food quality and acceptance; quality characteristics of foods and their measurement

Development of specifications and standards of quality, sampling for quality control;

Policies and guidelines for regulating and monitoring public food safety and hygiene; HACCP, Codex; Personal hygiene in food safety regulation; Pest management in food storage and transport; Food poisoning; epidemiology of food contamination

Health effects of eating spoiled foods; toxins in food; Food chain and bioterrorism

Agencies involved in food safety and hygiene control: FDB, Standards board, Port Health

GSPH 459 Intervention Strategies for Health Promotion

Health promotion interventions have become important aspect of health care provision in recent years. A number of health promotion programmes have failed to achieve their intended goals due to the fact that appropriate strategies were not put in place regarding the broader environment within which such programmes were implemented. Sometimes the effectiveness or ineffectiveness of a strategy is dependent upon time and season the intervention is implemented.

The course will deal with the following: Introduction to intervention strategies, definition of terms; (health promotion, intervention, strategy), strategic frameworks for health promotion, the Need for health promotion interventions, past and present health intervention strategies (planning, implementation, monitoring, sustainability, partnership building, evaluation), factors that determine the choice of strategies and communication as a strategy for intervention.

GSPH 461 Principles and Practice of Community Organization

Community involvement in the implementation of health interventions has become an important part of intellectual discourse. This course aims at providing a general understanding of the basic principles behind community organization for health. It is also intended to expose students to community entry processes towards community organization for health.

It will deal with the following: definition of terms and concept (Community, organization, community entry, community organization), the concept of community, types of community (geographical, professional, etc), principles of community organization, steps in community organization (stages of community organization), community analysis (strengths, weaknesses, available resources, potentials, etc), major stakeholders in the community (governmental and nongovernmental agencies, traditional institutions, youth, religious and other identifiable groupings), importance of community entry for health intervention (identification of community and group leadership, social marketing.

GSPH 463 Psychological Influence on Health

Health Psychology is an area that studies the social, behavioural, cognitive and emotional factors that influence the maintenance of health, development of illness and disease, course of illness or disease and client/patient as

well as family's response to illness and disease. Generally, understanding how social factors relate to the promotion and maintenance of good health/wellness gives way to an appreciation of the causation, prevention and treatment of illness.

GSPH 465 School Based Nutrition Education

Nutrition, health and academic performance. The School as a vehicle for nutrition interventions. School-based nutrition interventions as a component of school health program. School-based nutrition education, nutritional status assessment of school age children, school feeding policy, program implementation and monitoring. Pre-school age feeding. Food choice and preferences of school-age children. School feeding dietary quality. Costs and benefits of school-based nutrition interventions.

GSPH 467 Adolescent Health: Social and Behavioral Perspective

This course is designed to assist students to learn about adolescent social and behavioral environmental of adolescent health using theoretical frameworks based on contemporary theories and strategies. Students will examine how adolescent behavior impacts their health within the context of individuals, groups and communities and its

Public health implication of adolescent health. It will also cover key issues that concerns adolescents including adolescence sexuality and sexual health, contraception, teenage pregnancy and abortion, peer influence, substance abuse, adolescent friendly programmes and recreational activities.

CORE COURSES FOR LEVEL 400 (All Options)

GSPH 410	Project Work	8 Credits
GSPH 414	Public Health Seminar II	2 Credits
GSPH 420	Field Attachment	2 Credits

LEVEL 400

SEMESTER II

ELECTIVES (Level 400)

GSPH 402 Health Promotion and Education

The course will equip the student with basic knowledge on the theories and principles of health promotion and education. It will enable students to understand the complex and dynamic nature of health promotion processes, and how to relate these to underlying themes of social and health inequalities and to a broader societal values and practices. The course will provide a multidisciplinary approach to health promotion from a sub-Saharan Africa and an international perspective.

GSPH 404 Health Care for Aged and Elderly

The course will introduce students to major public health problems (both communicable and non-communicable diseases) of the aged and elderly which include; food borne diseases; emergence of antimicrobial resistant bacteria; sexually transmitted diseases; vector borne diseases; vaccine preventable diseases on the one hand and Diabetes mellitus, obesity, high blood pressure, hypertension, stroke on the other hand. Students will be introduced to the provision of palliative care for people with chronic conditions and complex care needs and provision of primary health care for the aged and elderly. The course will also deal with nutrition and healthy eating, health promoting physical activity and promoting healthy weight.

GSPH 406 Mental and Social Health Care

The course will deal with the theories and principles of medicine, mental health and the socio-culture context of seeking care for mental health. In recent times, mental health has become an important public health issue. Student will get the opportunity to acquire the skills of taking history and assessing individual status of mental health. In addition to this, the course will teach students the various forms of mental health conditions including depression, mania and cyclic mood change, anxiety, psychosis, dementia and mild cognitive impairment and substance abuse and dependence. The course will stress on how to manage such conditions at the community level.

GSPH 408 Monitoring and Evaluation of Health Programmes II

Framework for monitoring and evaluation of programmes; structure and responsibilities of the monitoring and evaluation systems of various control programmes; data collection, collation and management, Methodological frameworks for evaluating health programs, Health evaluation categories & indicators, Typologies of indicators for evaluation of public health services, Research designs for evaluative studies, How to quantify effects of health programmes, Reporting health evaluation.

GSPH 412 Health Promotion and Disease Prevention

The key challenge facing illness prevention today is how to effectively communicate public health messages to the population at risk of getting certain diseases. This course will seek to introduce students to health promotion theories and principles that will equip them to effectively communicate public health issues to the general population. Students will be given the opportunity to plan and implement community based health promotion activity and involve the mass media in the activity. Particular attention will be paid to communicable (malaria, tuberculosis, HIV/AIDS) and non-communicable diseases (heart disease, cancer, and diabetes). Issues relating to adopting responsible and health behaviors to avoid ill-health will be addressed.

GSPH 416 International Health Regulations

Definition of International Health Regulations; Purpose and scope, principle and responsible authorities; information and public health response; points of entry; public health measures; communicable disease control; health documents; general provisions; core capacity requirements for surveillance and response; core capacity for designated airports, ports and ground crossings; international cooperation; legislation.

GSPH 418 Global Health Security

Definition of global health security, tropical infectious diseases, bioterrorism, trafficking of illicit drugs, smuggling of people, illegal weapons sale, dumping of unsafe and ineffective pharmaceuticals, food security

GSPH 422 Environmental Health Promotion and Education

This subject will provide students with an opportunity to identify, develop and evaluate practical applications of health promotion with particular in environmental health. The subject introduces the principles and theory of health promotion within environmental and community development framework. Principles that guide education for health and planning education sessions will be critically examined.

GSPH 424 Institutional Development and Sector Management for Environmental Health

Definition: Institution, sector, vision, mission statement, management; development; Institutional development process: stages of development, pressures for institutional developments, etc.; Diagnosis (assessment) of institutional strengths and weaknesses and management of change; Sector organizational development: Constraints to sectoral performance; pressures for sectoral change, etc; Framework for assessing sectoral organization; sector institutions and their roles;Special topics: Decentralization principles; local government system in Ghana; private sector participation.

GSPH 426 Environmental Epidemiology

Environmental epidemiology and assessment of chemicals and biological contaminants; study design issues relating to air water sediment and soil sampling, water protection inspection, water management and protection of water quality, monitoring air quality, measures for the protection of farmland quality, statistical methods for environmental epidemiology.

GSPH 432 Medical Records and Management

Evolution and the development of the health record; the context of health records management; the principles and practices of health records management; appraisal; storage and access issues; confidentiality and security issues; organization and management of health records service: patient identification and registration procedures, indexes and registers, filing and retrieval systems, admission and discharge procedures.

GSPH 434 Public Health Programme Planning and Evaluation

The course will involve introducing students to the history of health program planning, planning and evaluation cycle, public health pyramid, use of public health pyramid in programme planning and evaluation, defining community, community needs assessment, sample construction, sample size and ethics and evaluation.

GSPH 436 Clinical Data Classification and Coding II

Structure and applications of internal classification of health interventions; structure and application of the international classification of diseases for oncology (ICD-O); General principles and guidelines for the development of disease registry; Role of disease registry in health care delivery and research; specific development and implementation of registry system for non-communicable diseases such as cancers, development of communication and presentation skills

GSPH 438 Nutritional Rehabilitation Programmes

Protein-energy malnutrition in young children, under-nutrition, nutritional marasmus and kwashiorkor; hospital based rehabilitation of severe malnutrition, acute phase, rehabilitation phase, catch-up growth, methods to detect cases of severe malnourished children in the community, distribution of supplement foods to children,

GSPH 442 Food Laws and Regulations

International and national laws, regulations, policies and conventions related to processing, packaging, marketing, distribution, and usage of foods. Food standards and quality. Emphasis on public protection and safety aspects of food laws and regulations. Role of international and national level agencies in the application, enforcement and monitoring of food laws (WHO, FAO, Codex, WTO, FDB, GSB). Food laws and public safety advocacy.

GSPH 444 Nutrition Seminar

The course will attempt to expose students to the role nutrition plays in healthy living and longevity. It will provide students the opportunity to review and learn from both international and national research work on nutrition and health.

GSPH 446 Change Interventions for Chronic Disease

The course focuses on understanding theory-based chronic and lifestyle interventions at different levels of change (individuals, networks/groups, organizations and communities). The course will deal with research aspects of change interventions and this will take students through formative (qualitative) research, Community-based participatory research, intervention Design and evaluation. Key theories that students will be introduced to will include transtheoretical model, social cognitive theory, theory of reasoned action/Planned behavior, health belief model, social networks and social support, mass communication, social marketing

GSPH 448 Rights for the Health of Women and Children

The rights for the health of women and children in Ghana; laws and legislations for women and children's rights ; lapses in the legislations on the rights and health of women and children; enforcement of legislations on the rights for the health of women and children, design and implementation of programmes to promote women and children health rights.

GSPH 452 Reproductive Health in Developing Countries

Healthy sexuality, sexual violence, reproductive tract infections, family planning including long term methods and services, pregnancy and child bearing, interventions to reduce maternal mortality. Organizational issues for reproductive health programmes.

GSPH 454 Mental Health as a Public Health Issue

The course will cover emerging and contemporary debates in mental health. mental health challenges facing both younger and older people, the influence of the life-course and life events on mental health alongside the

development and significance of personality, the wider implications and possibilities for mental health services, the use of alternative and complementary approaches.