BACHELOR OF MEDICAL LABORATORY SCIENCE (BMLS)

BAYERO UNIVERSITY, KANO – NIGERIA

Published by

DEPARTMENT OF MEDICAL LABORATORY SCIENCE
BAYERO UNIVERSITY, KANO
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THE UNIVERSITY CREST

The University Crest is designed in the shape of a traditional wooden slate. Rectangular in shape with the four corners slightly slanted; set in the slate are the crescent and the star. Inscribed in the star (in Ajami, Arabic scripts) is the name of the University:

Jami'atu Bayero Kano **(Bayero University, Kano)**

The Crescent

(Symbol & Unit Time)
Jami'atu Bayero Bi Kano
Bayero University, Kano

The Star

(Guiding Light)
The star carries the motto

Motto

"*Wa Fawqa Kulli Dhi Ilmin' Alim*" ("…And over every possessor of Knowledge, there is one more learned.")

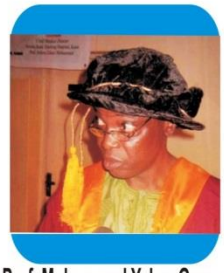
The University Colour

Blue

DEAN FACULTY OF ALLIED HEALTH SCIENCES
Dr. Jibril Mohammed,
B.Sc. (BUK), MSc. (Ife), PhD. (University of Gent, Germany)

Head of Department
Prof. Lawal Dahiru Rogo
B.Sc. (BUK), M.Sc. (ABU), PhD (TUMS-IC Iran), AMLSCN (MLSCN), FMLSCN (MLSCN)

Academic Staff



Prof. Muhammad Yalwa Gwarzo
BS.c, MS.c, Ph.D, FWAPCMLS
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BS.c, MS.c, Ph.D, FMLSCN, FWAPCMLS
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Senior Lecturer

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Lecturer I

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BMLS, MS.c, Ph.D, FMLSCN
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Lecturer I

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BMLS, MS.c, Ph.D in view
Histopathology
Lecturer I

Mal. Hayatu Sa'id
BMLS, MS.c, PDE, Ph.D in view
Immunology
Lecturer I

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BS.c, MS.c, AMLSCN, Ph.D in view
Histopathology
Lecturer I

Mal. Abdulganiy Zakariyya
BMLS, MS.c, Ph.D in view
Histopathology
Lecturer I

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Lecturer I I

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Histopathology
Lecturer I I

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Lecturer I I

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Asst Chief Med. Lab.Scientist

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Asst Chief Med. Lab.Scientist

Mansur Aminu
BS.c, AMLSCN
Asst Chief Med. Lab. Scientis

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Principal Med. Lab.Scientist

Magaji Idris Muhammad
BS.c, AMLSCN
Senior Med .Lab Scientist

Zaharadeen Umar
BMLS
Medical Lab. Scientist I

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MLT, BMLS in view
H. Med. Lab. Technician

Binta Said Wada
MLT, BMLS in view
H. Med. Lab.Technician

Abdulmalik Iliya
MLT
H. Med. Lab. Technicia

Mahmud Muhammad Rabiu
MLT, BMLS in view
Med. Lab. Technician

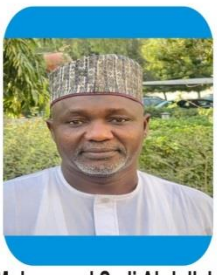
Nazifi Muhammad Ibrahim
MLT
Med. Lab. Technician

Ado Abdullahi Mai-unugwa
MLA, MLT
Med. Lab. Tech.

Hauwa Adam
MLA, MLT in view
Med. Lab. Asst.

Secretariat Staff

Sani Dahiru Danjuma
CIT, DIT,OND,HND, Bsc international relation in view
Principal Executive Officer (Admin)



Muhammad Sadi Abdullahi
BS.c HND, OND
Chief Confidential Secretary

Substaff

Muhammad Garba
SSCE
Cleaner

Shehu Abdulkadir Muhammad
SSCE, MLT in view
Lab. Assist

Yakubu Umar Suleiman
SSCE
Lab. Attendant

Haussini Garba Tuta
SSCE, MLT in view
Lab. Assist.

WELCOME ADDRESS FROM THE HEAD OF DEPARTMENT

All praise is due to Almighty Allah, the highest, and the most supreme authority, the only super power of unimaginable magnitude, for which mankind and creation cannot fully comprehend. We seek help, guidance and forgiveness from him and we seek refuge in him from the evil of our souls, and from the evil of our misdeeds. Whoever Allah guides there is no deviator for him, whoever He causes to be misguided, there is no guide for him. I bear witness with the highest conviction that there is no one or Deity worthy of worship other than Allah alone. And I witness the prophet-hood of Muhammad bin Abdullah his slave and messenger, his household and those that follows his righteous path till day of judgment.

I wish to pay tribute to all the former Head of Departments for all that they have done and to express my appreciation for their efforts in building the Department of Medical Laboratory Science almost from the scratch.

After that, I want to congratulate you for getting admission into one of the famous and fastest growing Medical Laboratory Science Department in the country. The journey of professional development starts with the selection of an institution for higher education. This is a complex and responsible choice, as it determines not only the job but also your entire life and your destiny. Therefore, we are confident that the knowledge, skills and competences that you will acquire in our Department will be useful for you in your future professional development.

On behalf of us who have the pleasure of reviewing your application, best wishes to you for a successful and enjoyable stay in the Department, the University and the future professional endeavor. We would like to assure you that the academic community at the department and all university structures are doing their best to make your education adequate to modern healthcare achievements in the world and give you the opportunity to become highly qualified and successful professionals in Nigeria and the rest of the world. We are happy to have students from different part of the country who will become our national and global ambassadors after their graduation.

You will be trained while at the University by highly talented leading researchers from various area of Basic Medical and Medical Laboratory Science specialty. This include, Anatomy, Biochemistry and Physiology during pre-clinical days. Chemical Pathology, Hematology and Blood Transfusion Sciences, Histopathology, Medical Bacteriology, Medical Mycology, Medical Parasitology and Entomology, Medical Virology and Immunology in your clinical years. We have massively equipped Medical Laboratories, with modern, state-of-the-art equipment in areas of molecular biology, tissue culture, insectary and animal care and handling. You will as well be train to develop high academic skills, build scientific and academic independence, team working and leadership skills. Which will enable you derive the maximum benefit from your university education and prepare you as a reliable future scientist and leader.

The student handbook is an important document for you; it contains all the essential information about your study at the Department of Medical Laboratory Science, Bayero University, Kano. It is hoped that you will take time to go through it, and acquaint yourself with all information herein, most of the vital information and questions you may need to ask were already answered in this handbook. This includes among others, information about examination rules and regulations, up-to-date information about the departmental requirements for admission, registration, course outline and course content, staff list and their profile. The student hand book is indeed an indispensable student companion that should be studied thoroughly.

One of the key features of our Department is its friendly atmosphere, please feel free to approach any staff if you have any concerns. You have made an excellent choice by selecting Bayero University, Kano as a destination for your studies, once again congratulation and wish you successful and happy stay at the Department of Medical Laboratory Science Bayero University, Kano.

Sincerely,

Prof. Lawal Dahiru Rogo
Head of Department

Brief History of the Department

The Department was established together with Medical Radiography and Nursing Departments in 2008/2009 academic session, in consonance with the recommendation of the Faculty of Medicine Strategic Committee of establishing Faculty of Allied Health
Sciences. The programme started with 20 students, who were admitted during 2008/2009 academic session. The Department was moved to Faculty of Allied Health Sciences with effect from 2012/2013 session following the emergence of the College of Health
Sciences.

List of Past and Present Heads of Department is as follows:

1. Dr. Muhammad Yalwa Gwarzo 2009 – 2015
2. Dr. Abdulhadi Sale Kumurya 2015 – 2018
3. Dr. Isah Abubakar Aliyu 2018- 2021
4. Dr. Jamilu Abubakar Bala 2021- 2023
5. Prof. Lawal Dahiru Rogo 2023- Date

CURRICULUM AND COURSE DESCRIPTION OF BACHELOR OF MEDICAL LABORATORY SCIENCE DEGREE PROGRAMME

INTRODUCTION

Medical Laboratory Science is a dynamic professional programme designed to provide a broad basis of fundamental scientific knowledge and its applications, such that the graduands of the programme would be well equipped to meet the changing needs of modern scientific knowledge in Healthcare and to enable them proceed for further training. The courses offered are designed to expose the students to core areas of Chemical Pathology (Clinical Biochemistry, Clinical Chemistry), Haematology and Blood Group serology, Histopathology, Medical Microbiology, Immunology and / or Immuno-Chemistry as well as Instrumentation and Techniques. Students are required to broaden their knowledge by taking ancillary courses in Chemistry, Biology, Physics,

Mathematics, Statistics, Biochemistry, Anatomy, Physiology and Pharmacology. They are also expected to understand the working of laboratory instruments and existing techniques and modify them where possible. The practical aspect of the degree programme prepares the students to fit into any diagnosticlaboratory in hospitals, research institutes, food laboratories and other allied fields, or be self-employed. In addition, the graduands are registered as Associate Members with the professional body (Medical Laboratory Science council of Nigeria). Successful completion of the programme leads to the award of the degree of Bachelor of Medical Laboratory Science (BMLS).

2.0 PHILOSOPHY OF THE PROGRAMME

The broad philosophy of the BMLS programme is to provide sound academic and professional Background for the training of Medical Laboratory Scientist, who would be capable of working anywhere. The programme is also aimed at empowering the scientist with the intellectual capacity to undertake further training towards specialization and possesses sufficient managerial ability to play leadership role in the training and practice of laboratory science.

3.0 NEED ASSESSEMENT

In order to ascertain the relevance and desirability of the programme, the Faculty conducted needs assessment survey by way of consultation with the following stakeholders: Officials of Ministries of Health, in all the catchment States, Chief Medical Officers of AKTH and other Specialist Hospitals, the outcome indicated that, there were about 30 Medical laboratory scientists of Kano State origin, most of whom are working in the metropolis. This leaves about 40 Local Government areas without a

single professional Medical Laboratory Scientist in the hospitals and comprehensive clinics, etc to provide the required expertise as well as to deliver good laboratory services. The graduate conversion programme through which most of these Medical Laboratory Scientists were produced was on the verge of being phased out, hence it becomes desirable for Bayero University, Kano to mount a BMLS programme to cater for the need of its catchment areas.

4.0 OBJECTIVES

- Laboratory training since its introduction in the country has been hospital based. However, in order to meet new challenges in the medical fields, in terms of reform agenda now being put in place to address traditional health problems and research on new and existing infectious diseases, focus has been changed at producing academically sound professionals by providing anin depth training under university setting. The specific objectives of the programme are to equip the Medical Laboratory Scientists with sufficient skill and capability to:
- Perform effectively in clinical diagnostic services; research, teaching and quality assurance.
- Function independently or in collaboration with other members of the health team in providing effective healthcare to patients at all levels.
- Produce biological and diagnostic reagent as well as fabricateand maintain laboratory equipment.
- Possess sufficient management ability to be able to play aleadership role in the training and practice of medical laboratory sciences.

5.0 COURSE DURATION

The BMLS Degree programme shall be for five (5) years for joint matriculation Examination candidates and four (4) years for direct entry candidates.

6.0 ADMISSION REQUIREMENTS

Candidates seeking admission into the BMLS programme can be admitted at the 100 or 200 levels as follows:

6.1 Unified Tertiary Matriculation Examination (UTME) (100 Level): Candidates must possess the secondary school certificate Examination (SSCE) West African Examination Council Examination (WAEC)/National Examination Council (NECO) with minimum of 5 credits including English Language, Biology, Chemistry, Mathematics and Physics in not more than two sittings. This is in addition to obtaining the appropriate points in Unified Tertiary Matriculation Examination (UTME) and post UTME examinations conducted by Bayero University, Kano.

6.2 Direct-Entry (200 Level): Candidates must: possess Medical Laboratory evidence of technician certificate registration with MLSCN a minimum of 10 points in GCE Advanced Level/IJMB or equivalent in Biology (or zoology), chemistry and physics in not more than one sitting. This is in addition to obtaining the appropriate score in any other entrance examination conducted by Bayero University, Kano, were applicable.

7.0 GENERAL REGULATIONS OF THE PROGRAMME

- The BMLS programme of BUK is an integrated professional course leading to the award of the degree of Bachelor of Medical Laboratory Science (BMLS) in accordance with National University Commision (NUC) and Medical Laboratory Science Council of Nigeria (MLSCN) Guidelines. The study of the integrated professional programme (shall normally be for a minimum of five academic sessions.
- The maximum period of study permissible for the BMLS programme shall be seven (7) academic sessions for

UTME candidates and six (6) academic sessions for Direct Entry candidates.The minimum credit load registrable per semester is 14 credits units, whilst the maximum load is 35 credit units.Academic activity is by course, specified into course units.

During the laboratory posting, log book must be certified by qualified medical laboratory scientists and endorsed by the head of Department. A passing grade of at least C at each posting is essential for graduation.

8.0 ACADEMIC MISCONDUCT

8.1 EXAMINATION MISCONDUCT AND LEAKAGES

- Candidates for any examination in the University are to conduct themselves properly in and around the examination halls as explained in Part 9 of general examination and academic regular (GEAR) for first degree programs. Deviations from these proper conducts may constitute examination misconducts, which are punishable by the penalties described below.

8.2 MISCONDUCT IN EXAMINATION HALL VICINITY, HOSTELS AND OTHER INSTITUTIONS

- For the purpose of this part, the vicinity of an examination hall is considered to be part of the examination hall. Thus, any students caught with unauthorized materials or writing in the vicinity ofthe examination hall (after the student has seen the questionpaper) shall be treated as if the materials were found on him/her inthe examination hall. Similarly, any student caught cheating inany way in students' hostels or other areas shall be appropriatelytreated.
- For the purpose of this part, any student of the University whocommits an offence punishable under this part in any otherinstitution will be treated as if he/she had committed such an offence in the University, and shall therefore be liable for any appropriate punishment.
- Examination misconduct cases discovered during the making of the examination scripts are also subject to appropriate investigation and further necessary action.

MLS 5333: SEMINAR (3 CREDITS)

The student will be required to conduct literature search on a topic in medical microbiology, write up a review and present a seminar on it. Final grade on the course will be based on the literature review and seminar presentation.

MLS 5371: LABORATORY POSTING (3 CREDITS)

This involves bench rotation in medical microbiology. The student is assessed after every bench posting on knowledge of procedure and technical competence based on participation in the routine services of the laboratory.

MBC 5366 ADVANCED MEDICAL BACTERIOLOGY

Bacteriological diagnosis,prevention and control of infectious diseases in human, pathogenesis and epidemiological consideration of the diseases ofurogenital and intestinal tracts, pathogenesis clinical significance and prevention of diseases of an aerobic pathogens, application of microbial activities for bioremediation of contaminated soil and ground water.

MBC 5368: MODERN DIAGNOSIS OF BACTERIAL INFECTIONS

Role of the laboratory in the diagnosis and monitoring of patients (direct examination, histopathology, antigen detection, antifungal susceptibility testing results, qPCR, etc.), limitation and use of public and specific databases for molecular identification, discussion of clinical cases.Fungal culture in histological samples,The epidemiology and changing spectrum offungal diseases.

MLS 5640: RESEARCH PROJECT (6 CREDITS)

This is a supervised research project on an approved topic to be undertaken by each student in the final year for partial fulfillment of the B. MLS degree requirements. Assessment of the project would be by grading of the project content a panel of internal assessors; including supervisors, to be chaired by the Head of Department.

- A students accused of involvement in examination malpractice should defend himself before the Faculty investigate committee set up by the Dean.
- After hearing from all concerned, the committee shall write a comprehensive report on each case brought before it clearly indicating its findings, as to the degree of involvement or otherwise, of each accused. It shall submit the report together with all relevant documents to the senate committee on Examination Misconduct and Leakages.
- After going through the report of the Faculty committee on Examination Misconduct and carrying further investigations (where that becomes necessary), the senate committee shall report to senate recommending the appropriate punishment to any student found to be guilty.
- A staff member who reports a case of examination malpractice shall not sit on a Faculty or Senate Examination Misconduct Committee when the committee is considering the case.
- If the question paper for an examination that is yet to take place is suspected as having been leaked, the Chief Examiner shall immediately:

(a) Withdraw the paper and cause another one to be set in its stead, even if this means shifting the examination date and/or time forward;

(b) Report the matter of the Dean who shall further direct the Faculty Committee on Examination Misconduct to investigate the case as matter of urgency.

- If the question paper for an examination that has already taken place is suspected as having been leaked, the Chief Examiners hall immediately:

(a) Report the matter to the Dean who shall further direct the Faculty Committee on Examination Malpractice to investigate the case as matter of utmost urgency.

(b) Report to the Vice-Chancellor who is the Chairman of Senate.

- If the Faculty Committee confirms that a paper that was already taken has indeed leaked, the Dean shall cause the paper to be cancelled and another one set in its place. The Dean shall brief the Vice-Chancellor about the case.

8.4 CATEGORIES OF OFFENCE AND PUNISHMENTS

The following are the categories of examination malpractice and leakages of fences, as well as the appropriate punishments for the offences:

8.4.1 Categories of Offences Punishable By Expulsion From the University

i. Impersonating another student, or being impersonated by another person at an examination.
ii. Exchanging names and/or numbers on answer scripts/sheets
iii. Introduction and use of relevant unauthorised material(s) into the examination hall.
iv. Exchange of materials (such as question papers, examination cards) containing jottings that are relevant to the ongoing examination in the examination hall. Theft and/or illegal removal of examination scripts.
v. Theft and/or illegal removal of examination scripts.
vi. Any kind of mischief likely to hinder the smooth conduct of the examination. For example, causing fire, flooding or engaging in physical violence.
vii. Collaborating with, or copying from, another candidate.
viii. Cheating outside the examinations hall, such as in toilets, hall of residence etc.
ix. An offence that falls under category B committed by a student who was previously rusticated.
x. Using mobile phones and other ICT devices to access voice ortext messages, documents, materials from the Internet, etc,during examinations;
xi. Any offence under this category committed by a student of this University in another institution.
xii. Destruction of, or tempering with, evidence by candidates –including preventing access to electronic devices.
xiii. Any other misconduct deemed by the Senate Committee onExamination Misconduct and Senate to warrant expulsion.

8.4.2 Category of Offences Punishable By Rustication

i. Facilitating/Abetting/Aiding cheating by another candidate.
ii. Introduction, but not use, of relevant unauthorised materials to the examination hall.
iii. Using mobile phones and other ICT devices in the examination hall for things unrelated to the ongoing examination.
iv. Acts of misconduct (such as speaking/conversion)during the examination that is likely to disrupt the conduct of the examination.
v. An offence in category C committed by previously warned or resuscitated student.
vi. Any offence under this category committed by a student's of this university in another institution.
vii. Any other misconduct deemed by the Senate committee on Examination Misconduct and Senate to warrant rustication.

8.4.3 Category of Offences Punishable By Written Warning

i. Introduction of unauthorised irrelevant materials into the examination hall.
ii. Writing on the question paper
iii. Failure to switch off mobile phones and other ICT devises, and/or failure to keep them out of sight.
iv. Any offence under this category committed by a student of this University in another institution.
i. Any other misconduct deemed by the Senate Committee on Examination Misconduct and Senate to warrant warning.

8.4.4 Involvement of Staff Members

- Involvement of staff members in examination malpractice and/or leakage cases could take any of the following forms (among others):

(a) Failure to report and/or covering up of cases of examination malpractice.
(b) Intervening on behalf of students involved in examination malpractice.

(a) Encouraging examination malpractice of leakage by such acts as careless handling of examination materials or invigilation.
(b) Aiding and abetting examination malpractice.
(c) Leakage of examination questions, or question papers.
(d) Unlawful alteration of examination results or marks.

- If a Faculty Committee on Examination Misconduct establishes aprima facia case against a staff member, the Dean shall, immediately upon the receipt of the Committee's report, write to the Registrar and copy the Vice-Chancellor giving details of the degree of involvement of each of the staff members to accused.
- Upon receipt of the report from the Dean, the Registrar shall advise the Vice-chancellor on the appropriate Action(s) to be taken against such staff members.

8.5 Misconduct Related To Project, Essays, Etc

- Students are to observe the University accepted high standard of academic integrity while writing any work related to their programmes as described in part 18 of these regulations. Deviations from these high standards may constitute misconducts that are punishable by the penalties described below.

8.5.1 Procedures for Preventing and Dealing With the Misconducts

- Lecturers and Supervisors should try their utmost to guide students on the correct ways of writing projects, essays, and soon, that are in line with part 18, above. The attention of the students should be drawn to any infringements to the accepted norms and standard as soon as it is observed.

- infringements on the provisions of part 18 of these regulations, the following procedures should be adopted in treating the case.
- For an ongoing work (such as a project being supervised), the student should be asked to address the problem identified. For example, having a plagiarized chapter completely re-written or providing missing citations. If the student refuses to rectify the situation, the lecturer/supervisor should resort to other actions as described below.

(b) If a student submits work that is part of a course (such as an essay, term paper, assignment, etc) which infringe was the provision of part 18, the lecturer should impose a punishment that corresponds to the degree of the offence. For example, a score of zero could be given for papers simply down load from the internet, for re-submitting the work of another student in the previous years, for direct copy from books or journals, etc. On the other hand, the penalty might be minor if the offence is only failure to cite some of the sources of information. At any rate, the lecture should be able to defend his/her actions with clear evidence of the infringement.

(c) If a student submits the final draft of a work that is a course on itsown (such as degree project) which infringes the provisions ofthe aforementioned part, he should be made to re-write it, even if this means registering again in the following session.

(d) Where the student refuses to re-write the project, or where the lecture/supervisor believes that the student has committed an offence, the student shall be referred to the Faculty Committee on Academic Ethics.

(e) After hearing from all concerned, the committee shall write a comprehensive report on each case brought before it clearly indicating its findings, as to the degree of involvement, o otherwise, of each accused. It shall submit the report together with all relevant documents to the Senate Committee on Academic Ethics.

(f) After going through the report of the Faculty Committee on Academic ethics and carrying further investigations(where that becomes necessary), the Senate Committee shall report to Senate recommending the appropriate punishment to any student found to be guilty.

8.5.2 Categories of Offences and Punishment

- If the Senate Committee on Academic Ethics establishes that student has violated the University standards on academic writing outlined in part 18, it shall recommend appropriate punishment to the Senate in line with the following general guidelines. Students punished under categories D and E would, in addition be graded 'F' in the final year project.

8.5.3 Offences Punishable By Expulsion

i. Submitting a final year project that was done by someone else.
ii. Submitting, as final year projects, a work submitted earlier for another purpose (by him/herself or by others, at the University or somewhere else).
iii. Repackaging a whole project as his/her own product
iv. Any other offence related to final year project deemed by the Committee to merit expulsion.

8.5.4 Offences Punishable By Rustication

i. Substantial plagiarism of the work(s) of others in final year projects.
ii. Fabrication or intentional misrepresentation of data, experimental results, analysis, etc used in final year projects.
iii. Intentional sabotage of the final year project (or part thereof) of other students.
iv. Any other offence related to final year project deemed by the committee to merit rustication.

8.5.5 Offences Punishable By Written Warning

i. Failure to credit in final year projects.
ii. Faking of citations in final year projects.
iii. Submitting a report written by someone else for SIWES, Internship, Teaching Practice and other courses where such reports form substantial part of the assessment.
iv. Submitting, as SIWES/Internship/Teaching Practice report, a work submitted earlier for another purpose (by him/herself or byother, at the University or somewhere else).
v. Repackaging a whole report as his/her own product.
vi. Substantial plagiarism of the work of others in SIWES/Internship and other reports.
vii. Fabrication or Intentional misrepresentation of data, experimental results, analysis, etc used in SIWES/Internship/Teaching Practice and other similar reports.
viii. Any other offence related to final year project or reports deemed by the Committee to merit a written warning.

8.5.6 Offences Punishable By Failure in the Course

i. Any of the offences in categories D and E committed by a student in respect of homework, assignment, and other aspects of the continuous assessment of a course would lead to an 'F' grade in the course.

8.5.7 Right of Appeal

- Any student accused of involvement in examination malpractice, leakages of question papers or misconduct related to academic writing has a right to fair hearing. Indeed, a number of the proceeding provisions are meant to guarantee that. However, refusal/failure by a student to fill in the appropriate form giving his/her own version of events, or to appear before a Faculty Committee should not be viewed as denial of such rights.

- Any student punished by Senate for involvement in examination malpractice, leakage or other academic misconduct may appeal directly to Senate indicating the grounds of the appeal and attaching any supporting documents. The onus is on the appellant to make a case for senate to reconsider its earlier decision on him/her.
- Upon receipt of an appeal from a student punished for involvement in examination malpractice, leakage or other academic misconducts, Senate or its Chairman, shall refer it to the Senate Appeal Committee on Academic Misconduct. The Committee shall consider each appeal on its own merit; depending on the grounds of the appeal and any supporting document provided by the appellant and make appropriate recommendations to Senate.

9.0 COURSE CODE

The coded letters for all general courses in Medical Laboratory Science are **"MLS"** while "**MMB'', ''CHP'', ''HEM''** and'' **PTH''** are used for Medical Microbiology, Chemical Pathology, Hematology and Histopathology respectively. The coded letters for all other courses offered in or conducted by other Departments or Faculties for BMLS undergraduate students are as adopted in those other departments or faculties. The first of the four number digits denotes the level; the second, the credit unit and the last two, the serial number of the course. All the courses specified below are compulsory required for the award of BMLS degree.

10.0 STUDENT GUIDANCE AND COUNSELLING

Level coordinators are assigned to each set of students in the programme. The level coordinators act as academic advisors to their students, advise them on the appropriate choice of course and ensure strict compliance with maximum credit loads to be registered for each level. Students are encouraged to present their academic grievances through the appropriate channel of communication. This channel of communication starts with level of coordinator to the Head of Department and finally to the Dean of Faculty. These grievances are subject to investigation by a committee set up either by the Head of Department or Dean of Faculty.

11.0 UNIVERSITY HEALTH SERVICES

The Director of Health heads the University Health Services (U.H.S) department. Members of staff include all Health workers.

11.1 STUDENT REGISTRATION AT CLINIC

Each registered student is entitled to free medical attention at the university Clinic. This free medical attention is also extended to the wife and children of male students only. The cost of any medical treatment received from any facility outside the university is the responsibility of the student.

Each student should present his identity card to the card man whenever the student attends the clinic. In certain cases the cardmay require the identity of the student to clear doubt. If anybody uses someone's card, the card will be confiscated and such a person will not be treated at the clinic.

12.0 PROGRESSION FROM ONE LEVEL TO ANOTHER

- **PROGRESSION FROM 100 TO 200 LEVEL:** Candidates must pass all courses in Chemistry, Physics, Biology and Mathematics offered in level 100.
- **PROGRESSION FROM 200 TO 300 LEVEL**: Candidates must pass total number of credits of the registered courses at level 200.

- **RESIT:** A candidate who fails a quarter or less than a quarter of the total credits at 200 level shall be allowed to res it the failed courses. Any candidate that fails any course during res it shall repeat the level.
- **REPEAT:** A candidate who fails more than a quarter to half of the credits registered shall repeat the level.
- **WITHDRAWAL:** A candidate who fails more than half of the credits registered shall be advised to withdraw.
    - **PROGRESSION FROM 300 TO 400 LEVEL**: A candidate must pass all courses at level 300 before proceeding to level 400.
- **RESIT:** A candidate who fails a quarter or less of the total credits at 300 level shall be allowed to res it the failed courses. Any candidates that fail any course during res it shall repeat the level.
- **REPEAT**: A candidate who fails more than a quarter to half of the credits registered would repeat the level.
- **WITHDRAWAL:** A candidate who fails more than half of the credits registered shall be advised to withdraw.
    - **PROGRESSION FROM 400 TO 500 LEVEL**: A candidate must pass all courses at 400 level before proceeding to 500 level
- **RESIT:** A candidate who fails a quarter or less of the total credits at 500 level shall be allowed to res it the failed courses. Any candidate that fails any course during res it shall repeat the level.
- **REPEAT:** A candidate who fails more than a quarter to half of the credits registered would repeat the level.
- **WITHDRAWAL:** A candidate who fails more than one half of the credits registered would be advised to withdraw.

13.0 REGISTRATION OF STUDENTS WITH THE MEDICAL LABORATORY SCIENCE COUNCIL OF NIGERIA (MLSCN)

The Faculty/department is expected to register with the council both **UTME** and **DE** students before the end of 200 level. The registration is recognized as the effective date of the commencement of the programme and it also determines when the student is due for the First and Final Professional Examinations, bearing in mind that the student must have fulfilled the university requirements to proceed to level 400 and 500 levels respectively.

13.1 Registration With The MLSCN Entails:

i. Completion of a student registration Enrolment form which must be endorsed by the Head of Department, who must be a member of the council.
ii. Payment of prescribed fees
iii. Presentation and screening of credentials for eligibility
iv. Eligible students are then enrolled as student Medical Laboratory Scientists with student registration number assigned
v. Student enrolment letters are sent through the Dean or Head of Department
vi. Students that fail the screening would be advised to withdraw from the programme forthwith.

13.2 Laboratory Courses and Laboratory Posting.

The university curriculum for BMLS five year programme should be in two stages, Pre-professional and professional.

PRE-PROFESSIONAL

Pre-professional segment should be taught in the second and third year (200 and 300 levels) of the programme. The third year courses should include introductory courses in Medical Laboratory Science. The students can only proceed to professional if they have passed all prescribed pre-professional courses. Otherwise, the student will be required to withdraw from the programme.

PROFESSIONAL

Laboratory posting commences at three hundred level and should carry a three credit unit per semester. Professional courses starts from 300 – 500 levels. First and final professional examinations must be passed with 50% marks. At level 300 all the professional laboratory courses are taught with a view to prepare students for the first council professional examination. This is expected to hold at the end of second semester of 4th year, covering all aspect of medical laboratory science courses. Thefirst professional examination is synonymous to practical examination in the second semester. This course is prerequisite for Final Professional Examination.

13.3 PRE-REQUISITE AND CONDUCT OF FIRST AND FINAL MLSCN PROFESSIONAL EXAMINATIONS AT 400 AND 500 LEVELS RESPECTIVELY

a. Attendance policies
b. Laboratory posting
c. Format of examinations/examiners
d. MLSCN pass mark

(a) ATTENDANCE POLICIES

Attendance is compulsory and absence from class and/or laboratory posting will affect final grade and quality of the student. At least 75% attendance is therefore mandatory for all phases of the programme. Absence from laboratory posting is tantamount to carry over of the posting. Whilst it is sometime possible to read up a lecture which has been missed; it is not possible to gain experiences of practical techniques lost.

Faculties should ensure that students are closely monitored during their laboratory posting.

(b) LABORATORY POSTING

As earlier highlighted laboratory posting is compulsory for all medical laboratory science students. Laboratory posting is from300-500 levels, at least 75% attendance is compulsory and is a prerequisite for writing the professional examinations. The posting should be in a MLSCN accredited laboratory.

(c) FORMAT OF PROFESSIONAL EXAMINATION

Students are examined in two phases:-

1. First Professional Examination (400 level) consisting of:

- Laboratory Posting Assessment - 20 marks
- Multiple Choice Questions (MCQs) i n allthe disciplines - 20 marks
- Practical Examination and spot test of not less than 3 hours in all the disciplines - 50 marks
- Oral/Viva in all the disciplines - 10 marks

100 marks

2. Final Professional Examinations (500 Level):

- Laboratory Posting Assessment - 20 marks
- Multiple Choice Questions (MCQs) - 20 marks
- Practical Examination and spot test of not less than 3 hours in the candidate's specialty - 50 marks
- Oral/Viva in the candidate's specialty - 10 marks

100 marks

(d) FORMAT FOR EXAMINERS

The University will appoint an external examiner who must be aregistered member of Council and must not be below the rank of senior lecturer or its equivalent. In addition, the council will appoint external examiner in each

discipline, all of which must be registered members of the Council and the Council will also appoint an Independent Assessor.

13.4 MLSCN POLICY ON INDUCTION

The induction of Medical Laboratory Grandaunds is a statutory function of the Medical Laboratory Science Council of Nigeria.

All graduands are inducted into the profession followingcompletion of their academic and professional programmes. This involves administration of oath and education on professionalism and ethics in their practice. The induction should take place within 8 week after senate approval of result.

13.5 MLSCN GUIDELINES FOR INDUCTION

Compliance with the under listed requirements by the Faculty/Department of Medical Laboratory Science is essential before council will induct grad ands of Medical Laboratory Science (MLS) into the profession.

(a) Approved final examination result by senate

(b) Request for date from MLSCN in writing with a minimum of one month notice to avoid clashing of events.

(c) Head of Department should send names of proposed speakers at the ceremony to MLSCN for vetting prior to advertising. This isto avoid embarrassment from speakers with statements not consistent with our goals.

(d) Sitting arrangement should be such that University functionaries and MLSCN officials are represented.

(e) Order of procession: student first, lecturers, university functionaries and then MLSCN representatives.

(f) After induction, the inductees are qualified for provisional associate registration.

13.6 INTERNSHIP PROGRAMME

In pursuance of section 4 (a) of Act 11 of 2003, MLS graduates are statutory required to undergo compulsory one year continues

internship training under the supervision of registered and licensed Medical Laboratory Scientist in a Medical LaboratoryScience Council of Nigeria approved internship centres(Hospitals, Research Institutes, Medical Laboratories and otherinstitutions). Full registration which is accompanied byissuance of licence to practice as a Medical Laboratory Scientistis granted after successful completion of the internship programme.

Note:

- Graduate should collect logbooks, for the one year internship programme.
- The MLSCN should be informed on commencement of internship by forwarding letter of their appointment to council.

During the internship training internees are expected to go round all the departments/units in the approved training institutions. Apracticing Medical Laboratory Scientist is expected to supervise the internee(s) in every department/unit. He/she (internee) should be put on rotatation and the logbook countersigned.. After completion of internship, the logbook should be submitted to the MLSCN. Graduate is then mobilised for the National Youth Service Corp.

14.0 EXAMINATION

14.1 EXTERNAL EXAMINATIONS

The first professional examination (Year 4) and the final (Year 5) shall be moderated by external examiners in accordance with existing examination regulations of Bayero University, Kano.

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of the following: Multiple Choice Questions (MCQs), short and long essay constitute 60% and continuous assessment and practical's constitute 40%.

a. **Setting:** Examination questions for a course are set by the examiner of the course. The Head of Department, who is the chief Examiner, vets the questions and submits them to the external examiner for moderation.
b. **Conduct:** The Faculty Examination Officer produces examination time table to cover duration set by the university senate. The Department appoints invigilators and arranges the examination venues. Any candidate who is 30 minutes late will not be allowed to for the examination.
c. **Issuance of Results:** The result of examination are compiled by course instructors and submitted to the Departmental Examination Officer, who prepares them for presentation to Departmental Board, are then reported to the Faculty Board and senate for approval. Thereafter, results of the examination are made known to the students, and result slips issued to them.
d. **Handling of Examination Malpractice:** Entry and use of unauthorized material, copying from another person, removal of examination malpractice. Any student involved in any form of examination malpractice is handed over to the university Examination malpractice Committee for further investigations and appropriate sanction. The penalty for examination malpractice may be expulsion or rustication for two semesters, depending on the degree of offence.

15.0 PROJECT

Each student in the final year shall embark on a departmentally approved research project of his or her own area of specialization. The pass mark will be 50% or above and be graded A, B or C. The recommended number of chapters is five which include: Introduction, Literature Review, Materials and Methods, Results, Discussion, conclusion and Recommendations. A detailed guideline is provided to all 500 level students at the beginning of first semester. The graduates would defend

their research projects after completion as part of the fulfilment of the university requirements. Research proposal shell be assessed by internal examiners in the department The colour of the bound copy of the research project depends on the specialty as depicted below:

Specialty	**Colour**
Hematology and BGS	Red
Chemical Pathology Dark	Blue
Histopathology	Black
Medical Bacteriology	Green
Medical Parasitology and Entomology	Yellow
Medical Mycology	Grey
Medical Virology/Immunology	White

16.0 CRITERION FOR PLACEMENT INTO VARIOUS SPECIALTIES

Students are placed into respective specialties based on performance in the departmental core courses of 400 level (Chemical Pathology, Haematology and Blood Group Serology, Histopathology, Medical Bacteriology, Medical Parasitology and Entomology and Virology and Immunology) other than clinical courses.

17.0 GRADUATION

For a candidate to graduate, he or she must pass all the 185 credits for direct entry and 216 credits for UTME candidates in BMLS Curriculum. The BMLS programme is unclassified hence the candidate is to graduate with Bachelor of Medical Laboratory Science.

18.0 COURSE OUTLINE
100 LEVEL COURSES

FIRST SEMESTER

S/N	Course Code	Course Title	Credit Value
1	BIO 1201	General Biology I	2
2	BIO 1202	General Biology II	2
3	CHM 1241	Organic Chemistry	2
4	CHM 1251	Physical Chemistry	2
5	PHY 1210	Mechanic	2
6	PHY 1220	Electricity and Magnetism	2
7	PHY 1170	Physics Practical I	1
8	MTH 1301	Elementary Mathematics	3
9	GSP 1202	Use of Library, Study Skills and ICT	2
		TOTAL	**18**

SECOND SEMESTER

S/N	Course Code	Course Title	Credit Value
1	BIO 1203	General Biology III	2
2	BIO 1204	General Biology IV	2
3	CHM 1231	Inorganic Chemistry	2
4	CHM 1261	Practical Chemistry	2
5	PHY 1230	Behaviour of Matter	2
6	PHY 1180	Practical Physics II	1
7	GSP 1201	Use of English	2
		TOTAL	**13**

TOTAL CREDITS = 31

200 LEVEL COURSES
FIRST SEMESTER

S/N	Course Code	Course Title	Credit Value
1	ANA 2211	Gross Anatomy	2
2	ANA 2242	Histology I	2
3	ANA 2323	Embryology I and Medical Genetics	3
4	BCH 2211	Physical Biochemistry and Analytical Techniques	2
5	BCH 2213	Enzymes and Introduction To Metabolism	2
6	BCH 2214	Carbohydrate Biochemistry	2
7	PYS 2229	Introduction to Physiology (General Principle, Cell, Blood & Body Fluids)	2
8	PYS 2230	Reproductive Physiology	2
9	PYS 2209	Cardiovascular Physiology	2
10	CSC 2201	Introduction to Computer Science	2
11	GSP 2204	Foundation of Nigerian Culture, Government & Economy	2
12	*GSP 2201	Use of English	2
13	GSP 2202	Use of Library, Study Skills and ICT	2
		TOTAL	**27**

***For Direct Entry students who have not taken the course at 100 Level**

SECOND SEMESTER

S/N	Course Code	Course Title	Credit Value
1	ANA 2362	Thorax, Abdomen, Pelvis and Perineum	3
2	ANA 2243	Histology II	2
3	BCH 2215	Biochemistry of Lipid Metabolism	3
4	BCH 2307	Biochemistry of Proteins	3
5	PYS 2204	Renal Physiology	2
6	PYS 2202	Respiratory Physiology	2
7	PYS 2210	Gastrointestinal Tract Physiology	2
8	MCB 2302	General Microbiology I	3
9	COM2201	Biostatistics (Offered by Mathematics Department)	2
10	GSP 2205	Logic and Philosophy	2
11	GSP 2222	Peace Studies and Conflict Resolution	2
		TOTAL	**25**
		TOTAL CREDITS = 52	

300 LEVEL COURSES

FIRST SEMESTER

S/N	Course Code	Course Title	Credit Value
1	PAT 3301	General Pathology	3
2	PCL 33302	Phamacodynamics and Chemotherapy	3
3	MLS 3201	Introduction to Medical Laboratory Science	2
4	MCB 3303	General Microbiology II	3
5	MLS 3205	Medical Laboratory Science Ethics	2
6	MLS 3212	Medical Physics	2
7	MLS 3313	Laboratory Posting	3
		TOTAL	**18**

SECOND SEMESTER

S/N	Course Code	Course Title	Credit Value
1	MLS 3309	Immunology I	3
2	PCL 3314	Systemic Pharmacology	3
3	MLS 3314	Laboratory Posting	3
4	MLS 3304	Biomedical Engineering	3
5	MLS 3312	Medical Laboratory Management and Supply Chain	3
6	MLS 3331	Instrumentation in Medical Laboratory Science	3
7	EEP 3201	Entrepreneurship and Innovation	2
		TOTAL	**20**

TOTAL CREDITS = 38

FIRST SEMESTER

S/N	Course Code	Course Title	Credit Value
1	HEM 4311	Basic Haematology	3
2	HEM 4321	Basic Immunohaematology	3
3	MMB 4315	Basic Medical Parasitology and Entomology	3
4	MMB 4311	Basic Bacteriology/Mycology	3
5	MMB 4321	Microbial Genetics	3
6	PTH 4311	Basic Histopathology	3
7	PTH 4321	Forensic Science	3
8	MLS 4300	Molecular Biology I	3
10	CHP 4311	Basic Chemical Pathology	3
11	MMB 4222	Basic Virology I	2
12	MLS 4221	Immunology II	2
13	MLS 4231	Point of Care Testing	2
14	EEP 4201	Venture Creation and Growth	2
		TOTAL	**35**

SECOND SEMESTER

S/N	Course Code	Course Title	Credit Value
1	MLS 4301	Chemical Pathology Laboratory Posting	3
2	MLS 4302	Haematology/Blood Group Serology Laboratory Posting	3
3	MLS 4303	Histopathology Laboratory Posting	3
4	MLS4304	Medical Bacteriology Laboratory Posting	3
5	MLS 4305	Medical Parasitology and Entomology Laboratory Posting	3
6	MLS 4306	Medical Virology/Immunology Laboratory Posting	3
		TOTAL	**18**

TOTAL CREDITS = 53

500 LEVEL COURSES
CHEMICAL PATHOLOGY OPTION
FIRST SEMESTER

S/N	Course Code	Course Title	Credit Value
1	CHP 5312	Chemical Pathology I	3
2	CHP 5324	Chemical Pathology II	3
3	CHP 5325	Chemical Pathology III	3
4	CHP 5326	Clinical Enzymology	3
5	MLS 5327	Research Methodology	3
6	MLS 5321	Molecular Biology II Techniques and Applications	3
7	MLS 5364	Laboratory Posting	3
		TOTAL	**21**

SECOND SEMESTER

S/N	Course Code	Course Title	Credit Value
1	CHP 5330	Clinical Endocrinology	3
2	CHP 5331	Clinical Toxicology	3
3	CHP 5332	Advanced Chemical Pathology Techniques	3
4	MLS5333	Seminar	2
5	MLS 5371	Laboratory Posting	3
6	MLS 5640	Research Project	6
		TOTAL	**20**

TOTAL CREDITS = 42

HAEMATOLOGY AND BGS OPTION
FIRST SEMESTER

S/N	Course Code	Course Title	Credit Value
1	HEM 5322	Haematology I	3
2	HEM 5337	Haematology II	3
3	HEM 5338	Blood Group Serology I	3
4	HEM 5339	Blood Group Serology II	3
5	ML5321	Molecular Biology II Techniques and	3
6	MLS 5327	Research Methodology	3
7	MLS5364	Laboratory Posting	3
		TOTAL	**21**

SECOND SEMESTER

S/N	Course Code	Course Title	Credit Value
1	MLS5333	Seminar	3
2	MLS5371	Laboratory Posting	3
3	HEM5345	Cytogenetics	3
4	HEM5346	Advanced Heamatological Techniques	3
5	HEM5347	Advanced Blood Group Serological Techniques	3
6	MLS5640	Research Project	6
		TOTAL	**21**

TOTAL CREDITS = 42

HISTOPATHOLOGY OPTION
FIRST SEMESTER

S/N	Course Code	Course Title	Credit Value
1	PTH 5312	Histopathology I	3
2	PTH 5348	Histopathology II	3
3	PTH 5349	Histopathology III	3
4	PTH 5350	Exfoliative Cytology	3
5	MLS 5364	Laboratory Posting	3
6	MLS 5327	Research Methodology	3
7	MLS 5321	Molecular Biology II Techniques and Applications	3
		TOTAL	**22**

SECOND SEMESTER

S/N	Course Code	Course Title	Credit Value
1	MLS 5333	Seminar	2
2	PTH 5356	Cytogenetics	3
3	PTH 5357	Advanced HistopathologyTechniques	3
4	PTH 5358	Embalmment and Museum Techniques	3
5	MLS5371	Laboratory Posting	3
6	MLS 5640	Research Project	6
		TOTAL	**20**

TOTAL CREDITS = 42

MEDICAL BACTERIOLOGY OPTION

S/N	Course Code	Course Title	Credit Value
1	MBC 5360	Medical Bacteriology I	3
2	MMB 5312	Medical Bacteriology II	3
3	MMB 5362	Public Health Microbiology	3
4	MBC 5263	Host-Parasite interactions	2
5	MLS 5321	Molecular Biology II Techniques and Applications	3
6	MLS 5364	Laboratory Posting	3
7	MLS 5327	Research Methodology	3
		TOTAL	**20**

SECOND SEMESTER

S/N	Course Code	Course Title	Credit Value
1	MBC 5367	Pharmaceutical Microbiology and Advanced Techniques	3
2	MLS 5333	Seminar	2
3	MLS 5371	Laboratory Posting	3
4	MBC 5366	Advanced Medical Bacteriology	3
5	MBC 5368	Modern Diagnosis of Bacterial Infections	3
6	MLS 5640	Research Project	6
		TOTAL	**20**

TOTAL CREDITS= 40

MEDICAL PARASITOLOGY AND ENTOMOLOGY OPTION
FIRST SEMESTER

S/N	Course Code	Course Title	Credit Value
1	MPR 5301	Biology of Parasites	3
2	MPR 5203	Helminths and Helminthic Infections	2
3	MMB 5362	Public Health Microbiology	3
4	MLS 5321	Molecular Biology II Techniques and Applications	3
5	MPR 5302	Protozoa and Protozoal Infections	3
6	MLS 5364	Laboratory Posting	3
7	MLS 5327	Research Methodology	3
8	MPR 5361	Advanced Parasitology/Epidemiology	3
		TOTAL	**23**

SECOND SEMESTER

S/N	Course Code	Course Title	Credit Value
1	MPR 5204	Arthropods of Human Diseases	2
2	MLS 5371	Laboratory Posting	3
3	MLS 5333	Seminar	2
4	MPR 5205	Special Topics	2
5	MLS 5640	Research Project	6
		TOTAL	**15**

TOTAL CREDITS = 38

MEDICAL VIROLOGY/ IMMUNOLOGY OPTION
FIRST SEMESTER

S/N	Course Code	Course Title	Credit Value
1	MVI 5301	Cellular Immune response	2
2	MVI 5202	Infections and Immunity	2
3	MMB 5362	Public Health Microbiology	3
4	MVI 5203	Immunology III	2
5	MLS 5321	Molecular Biology II Techniques and Applications	3
6	MLS 5327	Research Methodology	3
7	MLS 5364	Laboratory Posting	3
		TOTAL	**18**

SECOND SEMESTER

S/N	Course Code	Course Title	Credit Value
1	MVI 5311	Basic Immunology Techniques	2
2	MLS 5333	Seminar	2
3	MVI 5212	Molecular Basis of Immune Response	2
4	MVI 5213	ImmunoPharmacology	2
5	MMB 5311	Medical Virology II	3
6	MLS 5371	Laboratory Posting	3
7	MLS 5640	Research Project	6
		TOTAL	**22**

TOTAL CR EDITS = 40

100 LEVEL COURSES

BIO 1201 GENERAL BIOLOGY I (2 CREDITS)

Animal cell structure and organization, functions of the cellular organelles, diversity, characteristics and classification of animals, animal reproduction and inter-relationships.

BIO 1202 GENERAL BIOLOGY II (2 CREDITS)

A generalized survey of the animal kingdom based mainly on the study of similarities and differences in their external features with examples from Platyhelminthes, Analids, Arthropods, Fishes, Amphibians, Reptiles, Birds and Mammals.

CHM 1241 ORGANIC CHEMISTRY (2 CREDITS)

Historical survey of the development and importance of organic chemistry, IUPAC nomenclature and classification of organic compounds, homologous series, covalent bonds and hybridization to reflect the tetravalency of carbon in organic compounds, electronic theory in organic chemistry, qualitative and quantitative organic chemistry, determination of empirical and molecular formulae, simple techniques of writing structural formulae, Isolation and Purification of organic compounds. Saturated hydrocarbons, structural isomerism, properties and reactions of alkanes and cycloalkanes; their chemistry and used in petroleum, Unsaturated hydrocarbons:-alkenes, alkynes, cycloalkenes; cis-trans isomerism, Simple electrophilic addition reaction and Polymerization.

CHM 1251 PHYSICAL CHEMISTRY (2 CREDITS)

Principles of atomic structure, isotopes, empirical and molecular formulae, nuclear structure, atomic fission and nuclear energy, the electronic structure and arrangement of electrons in atoms, electronic configuration of and 2nd rows of elements, properties of gases, equation of state, kinetic and molecular theory of gases, and heat capacities of gases, equilibrium and thermodynamics, thermochemistry, enthalpy of reactions, bond energies, thermodynamic cycles, Hess's law, Born-Haber cycle, the meaning of Ka, Kp and Kc. Le Chaterlier's principle, pH, ionic equilibrium, buffers, indicators, solubility product, common ions effect, redox reactions, electrode potentials, electrolytes and electrolysis, Kinetics; the position of equilibrium and the rate at which it is attained, factors influencing the rate of reactions, introduction of activation and catalysis.

PHY 1210 MECHANICS (2 CREDITS)

Space and time, frames of reference, units and dimension, kinematics; Fundamental laws of mechanics, statics and dynamics; Galilean invariance, universal gravitation, work and energy, rotational dynamics and angular moments and conservation laws.

PHY 1220 ELECTRICITY AND MAGNETISM (2 CREDITS)

Electrostatics; conductors and currents, dielectrics, magnetic fields and induction, maxwell's equation, electromagnetic oscillations and waves and their applications.

PHY 1170 PHYSICS PRACTICAL I (1 CREDITS)

This introductory course emphasizes quantitative measurements, the treatment of measurement errors and graphic analysis. A variety of experimental techniques will be employed. The experiments include studies of matters, the oscilloscope, mechanical systems, electrical and mechanical resonant systems, light, viscosity etc covered in the above physics courses.

MTH 1301 ELEMENTARY MATHEMATICS (ALGEBRA AND TRIGONOMETRY) (3 CREDITS)

Elementary set theory, subsets, union, intersection, complements, Venn diagram, real numbers, integers, rational and irrational numbers, mathematical induction, real sequences and series. Theory of quadratic equations, binomial theorem, complex numbers: algebra of complex numbers; Argard Diagram, De moivre's theorem, nth.

Root of unity. Circular measurement, trigonometric functions of angles of any magnitude, addition and factor formulae.

BIO 1203 GENERAL BIOLOGY III (2 CREDITS)

Plant cell structure and organization, functions of plant cell organelles, diversity, characteristics and classification of plants, plant reproduction, hereditary and evolution, elements of ecology and type of habitats.

BIO 1204 GENERAL BIOLOGY IV (2 CREDITS)

A generalized survey of the plant kingdom based mainly on the study of similarities and differences in their external features with examples from viruses, Bacteria, protozoa, algae, fungi, bryophytes, pteridophytes, gymnosperms and angiosperms.

CHM 1231 INORGANIC CHEMISTRY (2 CREDITS)

Principles of atomic structure, isotopes, empirical and molecular formulae, electronic configuration, periodicity and building up of periodic table, hybridization and shapes of similar molecules, extraction of metals, comparative chemistry of Group IA and IVA elements. Preparation, properties, structure and application of some selected compounds. Introduction of Transition metal chemistry and nuclear chemistry.

CHM 1261 PRACTICAL CHEMISTRY (2 CREDITS)

Laboratory instrumentations and experimental products shall be conducted in the following areas: Physical; Determination of heat of reaction, effect of solutes on boiling points of solvents. Partition coefficient; Determination of molecular mass by Damas and Victor Meyer methods, measurements of rate of equation and activation energy, other experiments based on the scope of lectures as approved by the department. Organic; Safety precaution instruments, classification of organic compounds by their solubilities in common solvents, qualitative analysis for common elements in organic compounds, identification and classification of acids and bases, functional groups, identification of the following: neutral functional groups, alcohols, aldehydes, ketones, esters, anhydrides and others, acetylation of aniline as an example of the preparation of solid aniline derivative, an electrophilic addition reaction. Inorganic; Qualitative and quantitative analysis, molarity, concentration and percentage purity.

PHY 1230 BEHAVIOUR MATTER (2 CREDITS)

Molecular treatment and properties of matter, elasticity, Hook's law, Young's shear and bulk model, hydrestacles, streamlines, berncculli and continuity equations, turbulence, keynoids number, viscocity, laminar Flow, poiseuille's equation. Surface tension, adhesion, cohesion, capillary, drops and bubbles; Temperature, the laws of thermodynamics; heat, gas, kinetic theory of gases and Application.

PHY 1180 PHYSICS PRACTICAL II (1 CREDITS)

This introductory course emphasizes quantitative measurements, the treatment of measurement errors and graphic analysis. A variety of experimental techniques will be employed. The experiments include studies of matters, the oscilloscope, mechanical systems, electrical and mechanical resonant systems, light, viscosity etc covered in the above physics courses.

GSP 1201 USE OF ENGLISH (2 CREDITS)

The dictionary as a language learning tool, basic grammar, developing reading skills. comprehension and summary exercises, continuous writing, developing writing skill, developing speaking skills and the library as key learning resource.

200 LEVEL COURSES

ANA 2211: GROSS ANATOMY (2 CREDITS)

The pectoral girdle and associated joints (Sternoclavicular, acromioclavicular) Muscles acting on the shoulder joint, the axilla and Brachial Plexus, the Anatomy of the breast, blood supply, venous drainage and lymph drainage, flexor and extensor-Compartments of arm, the elbow joint, and muscle acting on it, the flexor and extensor compartment of the fore-arm, Wrist Joint, and muscles acting on it, the anatomy of the hand, the blood supply and Anatomosis of the upper limb (around scapula, humerus, elbow and hand), dermatomes of the upper limb. Posture and Locomotion in Man. The lower limb

Introduction, lymphatic and venous drainage, blood supply of lower limb. The thigh-anterior medical posterior compartment, clinical aspects, drainage of limbs, the thigh — posterior compartment, popliteal fossa. The hip joint e.t.c. Leg-Anterior Lateral Posterior compartment. Dorsum of foot, knee joint and muscles acting on it. Inversion and Eversion. Ankle joint, muscles acting on it, dermatomes of the lower limb.

ANA 2242: HISTOLOGY I (2 CREDITS)

Methods of Histology and Cytology, direct observation of living tissues and cells, examination of killed tissue, differential centrifugation, histochemical Methods, principles of Microscopic Analysis, X-ray Diffraction, the cell-nucleus, Cytoplasmic Organelles, cell membrane chemical composition of protoplasm, macromolecules e.t.c. Cell Division-Mitosis, Meiosis, Factors affecting cell division, epithelium—Classification, Structural Features, Specialisation, Function Blood-formed elements of blood, Blood cell formation, Destruction of blood cells, the bone marrow e.t.c. Connective Tissue proper — Extracellular, components, cellular elements chemistry, functions classification, Histological features, Histogenesis and histophysiology e.t.c. Cartilage-Types, Classification, Chemistry, Regeneration, Regressive change in Cartilage, Histophysiology e.t.c. The Bone classification, Chemistry, development e.t.c. Muscular Tissue, Types of muscle, Chemistry, Molecular basis of Muscular contraction, Histogenesis and regeneration of 'muscular Tissues. The Nervous Tissue. The nervous — structure, types and distribution. Peripheral nerve endings, Neuroglia, synapse and the relationships of nervous, Development of Nervous system.

ANA 2323: EMBRYOLOGY AND MEDICAL GENETICS (3CREDITS)

Oogenesis and Ovulation — Mitotic changes in Oocytes, formation and function of the Zona pellucida, Follicular growth, Pre-ovulation menstruation, Ovulation of Follicle, post-ovulation, spermatogenesis and the spermotozoan, Testis before and at Puberty, seminiferous epithelium. The spermatozoa, spermatogenic cycles and time rotations in spermatogenesis, Cycles and seasons- puberty, Oestrous and menstrual cycles, Ovulation, Pseudopregnancy and pregnancy, Delays of reproduction, Fertilization — Egg and sperm transport, Capacitation, acrosome reaction and sperm penetration, Immediate response to sperm penetration prenuclear development and syngamy, Errors of fertilizations, Fertilization in vitro Pre-Embryonic period-Cleavage, Embryonic cell differentiation, Foetal membranes, Implantation and formation of placenta at birth.

BCH 2 2 11: PHYSICAL BIOCHEMISTRY AND ANALYTICAL TECHNIQUES (2 CREDITS)

Principle of instrumentation; principles, methodologies and applications of electrophoresis; chromatography: types and procedures; spectroscopy and spectrophotometry; Centrifugation and isotope techniques. ATP cycle and synthesis, electron transport chain, and oxidative phosphorylation, NADP cycle; qualitative and quantitative tests on carbohydrates, lipids and proteins; Analysis of serum enzymes, ions and molecules.

BCH 2213: ENZYMES AND INTRODUCTION TO METABOLISM (3 CREDITS)

Chemistry and classification of lipids, properties and structures. Fats, fatty acids, Waxes, sterol, phospholipids, glycosphingosides, sulfolipids, proteolipids and steroids. General properties of proteins, classification of protein chains (primary, secondary, tertiary and quartenary structures). Colour reactions of proteins and amino acids. Chemistry and properties of Nucleic acids. Purine and pyramidine bases. Nucleosides, nucleotides and nucleic acid structures. Types and functions of the RNAs. Genome organization. Nucleoprotein. Vitamins and Co

foreign policy issues, mobilization for national development: Economic potential of Nigeria, mineral resources in Nigeria.

GSP 2201 USE OF ENGLISH (2 CREDITS)

The dictionary as a language learning tool, basic grammar, developing reading skills. comprehension and summary exercises, continuous writing, developing writing skill, developing speaking skills and the library as key learning resource.

ANA 2362: THORAX ABDOMEN, PELVIS & PERINEUM
(3 CREDITS)

Shape and frame-work of the thorax, Surface Anatomy The lungs, Apertures of the Thorax, Respiratory movements, Superficial Structure (the musdes), Intercoastal arteries and veins, Internal thoracic artery, Mediasternum (superior and inferior) middle, anterior and posterior), Lateral Parts and pleurals, Roots of the lungs, Lobes of the lungs, Intrapulmonary structure, The trachea, Sternocoasta, surface of the heart, Surface anatomy of the heart Chambers of the heart Structure of walls of heart — Myocardium
and conducting system, The aorta Oesophagus Thoracic duct, Sternal joints, Sternocostal joints, Interchondral joints Costochondral joints, Costovertebral joints, Joints and Ligaments of the Vertebral column, anterior and posterior Abdominal walls, Peritoneum, Stomach, small & Large Intestine, Liver, Spleen, Pancreas, Kidneys & Superarenal Glands, Bones and Joints of Pelvis, Pelvis and Perineum, Anatomy of male and female reproductive systems, Superficial/Deep perineal pouches.

ANA 2243: HISTOLOGY II (2 CREDITS)

Blood Vascular system, Fine structure of capillary wall, Arteries, veins, The heart, Histogenesis of blood vessels and heart, Impulse conducting system, Lymphatic system Vessels, Organs — lymph nodes, function, histogenesis and regeneration, The spleen —

diminishing sexual activity spermatogenesis stages of composition of fluid in the tubular lumen. Endocrine regulation of Cyclic alterations in the ovaries, paraoestrus oestrus, metaoestrus, dioestrus periods, Cyclic alterations in the uterus myometrium, endometrial changes menstruation. Cyclic changes in the vagina changes in the cervix, sex hormones — oestrogens, progesterone, testosterone, physiology of menopause, coitus, fertilization physiological abnormalities of human reproduction:- pubescence abnormalities, chromosome Abnormalities, abnormalities of genital tract, differentiation, infertility,
Abnormalities of menstrual cycle: - Secondary amenorrhoea, dysmenorrhoea oligomenorrhoea, menorrhagia metorhagia, Eunuchoidism.

PYS 2209: CADIOVASCULAR SYSTEM I (2 CREDITS)

Muscles: Morphology of cardiac, smooth and skeletal muscles Molecular basis of muscle contraction: Structure and function of contractile proteins; Structure and function of Regulatory proteins, Mechanism of muscle contraction, Excitation and coupling in muscle contraction Applied Physiology of Muscle contraction. Autonomic Nervous System (ANS), General description of ANS, Basic Physiology of ANS and homeostasis Physiology and Pharmacology of ANS, Applied Physiology of ANS Physiologic Anatomy of the respiratory tract, Pulmonary capacities and volume, pul ventilation, Gaseous Exchange and gas transport, Oxyhaemoglobin. Haemoglobin structure and function, oxyhaemoglobin curve and factors affecting Respiration and homeostasis — Role of respiration in acid-acid-base balance, control and regulation of respiration — Nervous and chemical controls. Respiratory insufficiency: - Hypoxia, Abnormalities ofRespiration and Specific Peculiarities of respiratory diseases. Systemic or greater circulation, pulmonary or lesser circulation. The Heart, Chambers, Capacity, Heart walls; Epicardium, Myocardium, Endocardium and pericardium. Heart valves: atrioventricular and semilunar, Cardiac cycle and phases: systolic (contract) and diastolic(relaxation) Mechanism of valve functioning, physiological properties of cardiac muscle. The basis of heart Automaticity (a) Sinoartrial node (paced maker) (b) Atrioventricular node (c) The Bundle of Hiss, Stanius experiment Heart Block, fibrillation, Refractory period of the cardiac muscle: Extra systole External manifestations of cardiac activity:

Apex beat, Heart Sounds, Bioelectrical activity of the ear and its recording: standard leads (ECG) chest leads, Control of cardiac Activity Nervous control, Reflex control: Intracardiac reflex responses — Reflex effects of the pericardium, reflex effects of the coronary pulmonary, atria and ventricular vessels, Effects of vascular reflexogenic zones, Reflex effects of visceral receptors. Effects of the cerebral cortex on cardiac Activity. Humoral control of Cardiac Activity, effects of electrolytes: Potassium and Calcium ions, effects of neurotransmitters, effects of hormones: Thyroxine, insulin, Gonadal hormones, Adrenaline and nor adrenaline. Heart Rate and factors, which modify it, Nervous influences, Humoral factors, Biological rhythms, Sex, Age and posture Indices of Cardiac Activity: Stroke (Systolic volume Cardiac Output, Heart work, Venous return.

CSC 2201 INTRODUCTION TO COMPUTER SCIENCE (2 CREDITS)

Types of computer: Hard and software, Operations of computer, practicals involving the usage of basic computer programs.

GSP 2204 FOUNDATION OF NIGERIAN CULTURE, GOVERNMENT AND ECONOMY (2 CREDITS)

The heritage of the past African political development and governments; The European impact and westernization; Contemporary Nigeria. its legal system, ethics and society, educational challenges, media, language and culture. Problems and challenges of nationhood and development in a changing world; Government and stability; Religious tensions — causes and solutions; Military government in Nigeria and Africa; Budget and development planning; Developmental goals for Nigeria. Strategic

foreign policy issues, mobilization for national development: Economic potential of Nigeria, mineral resources in Nigeria.

GSP 2201 USE OF ENGLISH (2 CREDITS)

The dictionary as a language learning tool, basic grammar, developing reading skills. comprehension and summary exercises, continuous writing, developing writing skill, developing speaking skills and the library as key learning resource.

ANA 2362: THORAX ABDOMEN, PELVIS & PERINEUM
(3 CREDITS)

Shape and frame-work of the thorax, Surface Anatomy The lungs, Apertures of the Thorax, Respiratory movements, Superficial Structure (the musdes), Intercoastal arteries and veins, Internal thoracic artery, Mediasternum (superior and inferior) middle, anterior and posterior), Lateral Parts and pleurals, Roots of the lungs, Lobes of the lungs, Intrapulmonary structure, The trachea, Sternocoasta, surface of the heart, Surface anatomy of the heart Chambers of the heart Structure of walls of heart — Myocardium
and conducting system, The aorta Oesophagus Thoracic duct, Sternal joints, Sternocostal joints, Interchondral joints Costochondral joints, Costovertebral joints, Joints and Ligaments of the Vertebral column, anterior and posterior Abdominal walls, Peritoneum, Stomach, small & Large Intestine, Liver, Spleen, Pancreas, Kidneys & Superarenal Glands, Bones and Joints of Pelvis, Pelvis and Perineum, Anatomy of male and female reproductive systems, Superficial/Deep perineal pouches.

ANA 2243: HISTOLOGY II (2 CREDITS)

Blood Vascular system, Fine structure of capillary wall, Arteries, veins, The heart, Histogenesis of blood vessels and heart, Impulse conducting system, Lymphatic system Vessels, Organs — lymph nodes, function, histogenesis and regeneration, The spleen —

ANA 2323: EMBRYOLOGY AND MEDICAL GENETICS (3CREDITS)

Oogenesis and Ovulation — Mitotic changes in Oocytes, formation and function of the Zona pellucida, Follicular growth, Pre-ovulation menstruation, Ovulation of Follicle, post-ovulation, spermatogenesis and the spermotozoan, Testis before and at Puberty, seminiferous epithelium. The spermatozoa, spermatogenic cycles and time rotations in spermatogenesis, Cycles and seasons- puberty, Oestrous and menstrual cycles, Ovulation, Pseudopregnancy and pregnancy, Delays of reproduction, Fertilization — Egg and sperm transport, Capacitation, acrosome reaction and sperm penetration, Immediate response to sperm penetration prenuclear development and syngamy, Errors of fertilizations, Fertilization in vitro Pre-Embryonic period-Cleavage, Embryonic cell differentiation, Foetal membranes, Implantation and formation of placenta at birth.

BCH 2 2 11: PHYSICAL BIOCHEMISTRY AND ANALYTICAL TECHNIQUES (2 CREDITS)

Principle of instrumentation; principles, methodologies and applications of electrophoresis; chromatography: types and procedures; spectroscopy and spectrophotometry; Centrifugation and isotope techniques. ATP cycle and synthesis, electron transport chain, and oxidative phosphorylation, NADP cycle; qualitative and quantitative tests on carbohydrates, lipids and proteins; Analysis of serum enzymes, ions and molecules.

BCH 2213: ENZYMES AND INTRODUCTION TO METABOLISM (3 CREDITS)

Chemistry and classification of lipids, properties and structures. Fats, fatty acids, Waxes, sterol, phospholipids, glycosphingosides, sulfolipids, proteolipids and steroids. General properties of proteins, classification of protein chains (primary, secondary, tertiary and quartenary structures). Colour reactions of proteins and amino acids. Chemistry and properties of Nucleic acids. Purine and pyramidine bases. Nucleosides, nucleotides and nucleic acid structures. Types and functions of the RNAs. Genome organization. Nucleoprotein. Vitamins and Co

PYS 2204: RENAL PHYSIOLOGY (2 CREDITS)

Physiologic anatomy of the kidney, renal circulation and autoregulation. Glomerular filteration, tubular transport, urine formation. Counter-current system. Water volume and ionic regulation. Acid-base balance. Micturition. Abnormalities of renal function. Blood and blood vessels, arteries, arterioles, vein, venules, capillaries, Interstitial fluids (IF) and vessels through which they flow, Lymph and lymph vessels, Cerebrospinal fluid and its vessels. The skin function anatomy, temperature regulation, abnormalities of temperature regulation mechanism; factors regulating metabolism. Conditions for measuring basal metabolic rate . Compartmentalization and composition of body fluids.

PYS 2202: RESPIRATORY PHYSIOLOGY (2 CREDITS)

Physiologic anatomy of respiratory apparatus, brief reviews of relevant gas laws. Lung volumes. Mechanics of breathing, gas diffusion through alveoli capillary membrane. Pulmonary circulation. Ventilation perfusion ratio. Oxygen and carbondioxide transport. Control of respiration. Hypoxias, oxygen treatment. Abnormal types of breathing. Altitude and depth. Acclimatization. respiratory adjustments in health and disease.

PYS 2210 GASTRO INTESTINAL TRACT (2 CREDITS)

Introduction to GIT: Functions of GIT. Methods of studying the functions and structure of the G.I.T: Layers, Neural and Humoral control, Autonomic innervations of the G.I.T. Sympathetic and Parasympathetic Gastro-intestinal reflexes Functional types of movements in the G.I.T; Propulsive and mixing. Hormonal control of G.I.T. Motility. Oral Cavity: Mastication. Salivary glands, functions of Saliva, Salivary reflexes, Inhibition of salivary secretion. Physio-anatomical consideration of the stomach; Functions of the stomach, mixing and propulsion of food in the stomach, regulation of gastric motility. Gastric Secretion; Composition, properties and functions of gastric juice. Effects of Nutrient patterns on gastric secretion. Regulation of gastric secretion Stomach (gastric) emptying. Vomiting; Composition, properties and functions of pancreatic juice, effects of Nutrient composition on pancreatic secretion, functions of the liver, Composition, properties and functions of bile ejection, regulation of production

and secretion of bile by the liver, mechanism of gall bladder emptying, gall stones. Intestinal glands-villi and microvilli, types of intestinal digestion Uniqueness of intestinal secretion of enzymes, small intestine motility control — neural, hormonal and small intestine reflexes, intestinal reflexes and intestinal inhibitory reflexes, gastro-intestinal reflex. Large intestine and Rectum, Colonic mortality, defecation, control of colonic and rectal motilitymyogenic and neural control Physiology of absorption, mechanism of absorption, absorption in the mouth, Stomach, small and large intestines (Note: absorption of CHO, proteins, fats, water, sodium e.t.c.) Location and functions of the Alimentary canal, Sensations of satiation, hunger and thirst; appetite physiology of Gastrointestinal disorders, Appendicitis, Diarrhoea, constipation cancerous tumours eating disorders peptic ulcer Jaundice.

MCB 2202: GENERAL MICROBIOLOGY I (3 CREDITS)

Historical aspects; Scope of microbiology; General characteristics of micro-organisms, growth and reproduction, sterilization and disinfection; Brief survey of microbes as friends and foes.

COM 2201: BIOSTATISTICS (2 CREDITS)

Aims, characteristics and application of biostatistics in clinical and preventive medicine. Statistical data in biomedical sciences, samples, population variables, frequency distribution, vital and descriptive statistics, measurement of central tendencies — mean, median mode, dispersion, standard deviation and co-efficient of variation. Collection and presentation of data, probability distribution, Hypothetical tests of statistical significance. Analysis of variance. Regression and correlation. Experimental designs and clinical trials.

GSP 2 2 0 6 : PEACE STUDIES AND CONFLICT RESOLUTIONS (2 CREDITS)

Basic concepts and terms in peace studies and conflict resolution. Analysing the dynamics, role and resolution of conflict in African societies. Conflict management- Alternative dispute resolution spectrum. Periscoping: Conflict and role NGOs in conflict resolution. Achieving peace and reconciliation the African way. Women and youth in peace building. Peace keeping operations in the African subregions. ECOWAS/ECOMOG, SADC. An overview of the role of AU in regional and international peace and conflict resolution efforts. Conflict in society: Consequences and strategies for management. Conflict and peace reporting in Africa: The role of the media. Media Extract. An appraisal and evaluation of peace and conflict resolution efforts in Africa. Conflict and conflict resolution in Nigeria proposing the cultural relativistic approach. Unity development and co-operation as analytical tools for peace and conflict resolution.

300 LEVEL COURSES

FIRST SEMESTER

PAT 3301: GENERAL PATHOLOGY (3 CREDITS)

Introduction — Ancient, traditional and modern concept of diseases and their causes. The normal cell and cellular basis of disease. Tissues and cellular injury. Reaction to cellular injury — inflammation. Necrosis, Healing and repair. Disturbances of cell growth — cellular adaptation and neoplasm. Cytogentics and genetic disorders. Pigmentary disturbances. Calcification and Amyloidosis. Disorders of nutrition.

PCL 3313: PHARMACODYNAMICS AND CHEMOTHERAPY (3 CREDITS)

Scope of pharmacology, Origin and sources of drugs, routes of administration of drugs, drug receptors and receptor isolation. Pharmacokinetics, absorption of drugs, excretion, biotransformation, Structure — activity relationship, Mode of action of drugs. Types of drug action; Drug action in man, compliance, individual variations, presence of other drugs, genetic effects, tolerance and tachyphiaxis, effects of diseases, drug toxicity, adverse drug reactions. Drug dependence and drug interactions.

MLS 3313: LABORATORY POSTING (3 CREDITS)

Posting to all areas of Laboratory services to gain practical experience and acquire proper work ethics. Students will be posted to serve a five-week period in each of the following Departments: Chemical Pathology, Haematology, Medical Microbiology and Histopathology. Periodical examination will be conducted to test students understanding of procedures. A five hour practical examination will be conducted at the end of the semester to test the students' dexterity in the handling of equipment and performance of Laboratory tests.

MCB 3303: GENERAL MICROBIOLOGY (3 CREDITS)

The Kingdom Protozoa-organizational differences in eukaryotic cells, classification and nomenclature of micro-organisms. Bacterial cell form, structure, nutrition, reproduction and metabolism, Bacterial genetics. A typical procaryotic cell, viruses. Eucaryotic micro-organisms — fungi. Microbial control; microbes in food, water and environment. Bacterial infection and virulence. Phagocytosis. Introduction to pathogenic microbiology. Laboratory animals. Types of breeding and uses

MLS 3205: MEDICAL LABORATORY SCIENCE ETHICS (2 CREDITS)

History and Philosophy of ethics in the practice of Medical Laboratory Science. Relationship between religion and sociocultural values of Medical ethics. Ethical issues involved in private practice. Relationship between the Medical Laboratory Scientist and his patient/blood donor. Relationship between the Medical Laboratory Scientist and other members of the health team, Intraprofessional auditing, Medical Laboratory Science consultancy services, Elements of informed consent in research, Relationship between proper dressing, personal comportment? and patient care; the Psychologist's view. Medical Laboratory Science ethics, as it affects paternity disputes, infertility studies, sexually transmitted diseases etc. Real case presentations. Medico-legal aspects of Medical -Laboratory practice.

MLS 3212: MEDICAL PHYSICS (2 CREDITS)

Kinematical and Mathematical problems — circulation and purse, blood pressure and volume changes, Temperature and heat flow, Electricity, electrocardiograms, general radiation, Linear energy transfer and radiation measurement, radiation damage-detection and safety, X-ray generation and application, radioisotopes production, use and disposal.

MLS 3309: IMMUNOLOGY I (3 CREDITS)

Molecular basis of Immune reactions — antigens and the Immune response, Fate of antigens, Immunoglobulins — structure and function, general organization and assembly, classification, Antigenantibody interactions. Phagocytic cells, chemotaxis and effector function of macrophages and granulocytes. The complement system and complement abnormalities, innate Immunity — factors affecting e.g age, species specific, anatomical factors (skin membranes), nutrition, hormones, acquired Immunity — active and passive — factors affecting acquired Immunity. Lymphoproliferative organs and their functions in Immune responses. Diagnostic serological tests for assessing humoral Immunity. Tissue and organ transplantation — HLA system. Transplantation and pregnancy.

MLS 3201: INTRODUCTION TO MEDICAL LABORATORY SCIENCES (2 CREDITS)

Microscopy and Microtomy- Uses and care of Microscopes. Refrigerators and freeze-dryers-principles, Uses, care and maintenance. Handling of Laboratory organization and management, Simple analytical techniques in Chemical Pathology. Presentation of volumetric analysis, urinalysis etc. Principles oftissue preservation: fixation, processing and staining. Handling ofsurgical and autopsy specimens. Removal of formalin pigments.Basic tools of the Microbiologist — wire loop, cotton wool, pipettes,swabs and their uses. Preparation of films and basic stainingtechniques — Gram's stain, Ziehl Nelson's stain. Haematologicalstains — Principles and components. Blood film preparation andstaining, pipettes, chambers, care and uses; Hb and PCV estimation,WBC counting.

PCL 3314: SYSTEMIC PHARMACOLOGY (3 CREDITS)

Drugs mechanism of action as they relate to specific diseases andorgans, particularly pertaining to the following modules, namely:neuroscience, immunology, microbiology and oncology withpractical component.

MLS 3314: LABORATORY POSTING (3 CREDITS)

Posting to all areas of Laboratory services to gain practicalexperience and acquire proper work ethics. Students will be posted toserve a five-week period in each of the following Departments:Chemical Pathology, Haematology, Medical Microbiology andHistopathology. Periodical examination will be conducted to teststudents understanding of procedures. A five hour practicalexamination will be conducted at the end of the semester to test thestudents' dexterity in the handling of equipment and performance ofLaboratory tests.

MLS 3304: BIOMEDICAL ENGINEERING (3 CREDITS)

Principles of applied and general electronics and the mechanics of electrical circuits. Fault finding, care and maintenance of common electrical equipment in Laboratory use. Workshop practice, principles of use, maintenance and repair of common apparatus and

Laboratory equipment. DC currents and resistors, capacitors, potentiometers. and resistance boxes, galvanometers and AVO meters. Solenoid, rheostat and transformers, thermostats, semiconductors and rectifiers-filters, photomultipliers, tubes and scintillators. Improvisation Glass blowing and construction of simple laboratory equipment. Design techniques, improvement on existing equipment, review and modification of laboratory methods.

MLS 3312: MEDICAL LABORATORY MANAGEMENT AND SUPPLY CHAIN (3 CREDITS)

Supply chain management (SCM), SOP manual for SCM, Logistics Management Information System (LMIS), Introduction to Max/Min Inventory Control System (ICS), Supply pipeline and stock status assessment, Storage of Medical Laboratory Commodities, Assessing health logistics systems, Product selection and quantification, Supply planning and shipment scheduling, Procurement of Medical Laboratory Commodities, Monitoring and supervision of logistics system, Personnel, planning and organization, Laboratory management account and budgeting. Ordering, stocking — card indexing and storage, Occupational hazards and Laboratory, safety precautions and First-aid in Laboratory accidents.

MLS 3331: INSTRUMENTATION IN MEDICAL LABORATORY SCIENCES (3 CREDITS)

Micrometry, Designs and thermostatic controls of incubators, waterbaths and ovens. Principles, care and use of the autoclave, centrifuge, anaerobic incubators and jars, vacuum pumps, PH meters, membrane filtration equipment, chromatographic instruments, photometer, spectrophotometers and colorimeters — design and calibration

CHM 1231 INORGANIC CHEMISTRY (2 CREDITS)

Principles of atomic structure, isotopes, empirical and molecular formulae, electronic configuration, periodicity and building up of periodic table, hybridization and shapes of similar molecules, extraction of metals, comparative chemistry of Group IA and IVA elements. Preparation, properties, structure and application of some selected compounds. Introduction of Transition metal chemistry and nuclear chemistry.

CHM 1261 PRACTICAL CHEMISTRY (2 CREDITS)

Laboratory instrumentations and experimental products shall be conducted in the following areas: Physical; Determination of heat of reaction, effect of solutes on boiling points of solvents. Partition coefficient; Determination of molecular mass by Damas and Victor Meyer methods, measurements of rate of equation and activation energy, other experiments based on the scope of lectures as approved by the department. Organic; Safety precaution instruments, classification of organic compounds by their solubilities in common solvents, qualitative analysis for common elements in organic compounds, identification and classification of acids and bases, functional groups, identification of the following: neutral functional groups, alcohols, aldehydes, ketones, esters, anhydrides and others, acetylation of aniline as an example of the preparation of solid aniline derivative, an electrophilic addition reaction. Inorganic; Qualitative and quantitative analysis, molarity, concentration and percentage purity.

HEM 4321: BASIC IMMUNOHAEMATOLOGY/ BLOOD GROUP SEROLOGY (3 CREDITS)

ABO and Rhesus blood groups — inheritance, biosynthesis, distribution and genetic theory. Blood grouping techniques principles, advantages, and disadvantages. Antisera, Lectins and enzymes including preparation and standardization. Anticoagulants used in BGS — AD, CPD, CPD-A, etc. Modes of action and side effects. MRC blood bottles and plastic bags- advantages and disadvantages. Blood donor screening, preparation and storage of blood products — cryoprecipitates, platelet rich plasma, packed cells, fresh frozen plasma, fibrinogen, WBC etc. Blood compatibility testing. Investigation of transfusion reactions. Blood group specific substances — neutralization reactions. Blood banking - organization, structures, facilities and records. Quality assurance — physical, chemical and reagent. AHG — DCT and ICT procedures.

MMB 4311: BASIC BACTERIOLOGY/MEDICAL MYCOLOGY (3 CREDITS)

Methods for the demonstration of bacterial forms and structure. Design and preparation of culture media. Sterilization and other methods of bacterial control. Aseptic procedures and methods for pure culture isolation. Procedures for receiving, handling and processing of clinical specimens. Antibiotic assay sensitivity tests and chemotherapy. Plate reading. Principles and techniques of anaerobic bacteria, Methods of total and viable counts. Stock culture preservation. Quality control of culture and media. Record keeping in Bacteriology laboratory. Staining techniques for spores, capsules and negative staining procedure. Wet preparation, motility tests. Introductory Mycology.

MMB 4321 MICROBIAL GENETICS (3 CREDITS)

Evolution and inheritance of mutation. Bacterial DNA in heredity and mutation. Molecular basis of mutation. Isolation of mutants. Bacteriophages – plasmid episomes, transposomes and bacterial CAN transfers. Recombinant DNA technology and its applications.

MMB 4222: BASIC VIROLOGY I (2 CREDITS)

Morphology and life cycle of viruses, nomenclature and classification — various methods. Reproduction, resistance, pathology, collection of clinical specimens for viral culture. Culture methods for isolaxion of viruses. Purification, Immunity and laboratory diagnosis of viral infections — Haemaglutination test, CFT, Neutralisation of tests. Systematic study of viral diseases. Interferon, Immunotherapy and haemotherapy in viral infections, inclusion bodies and cytopathetic effects. Viral/host interactions and identifications. Viral vaccines and Immunoprophylaxis.

MLS 4221: IMMUNOLOGY II (2 CREDITS)

Cell mediated Immunological reactions. Hypersensitivity reactions, Immunological tolerance. AutoImmunity and auto-Immune diseases. Immunosuppression and Immunodeficiency diseases. Immunity and infections Tumour Immunology, Immune reactions in tissue damage. Immune complex diseases. Diagnostic tests for assessing cellular Immune functions Principles fractionation procedures, vaccination and Immunization.

MLS 4231: POINT OF CARE TESTING (2 CREDITS)

Evolution of near patient testing; Principles and performance of Point of Care Testing (POCT) devices; role of POCT in medical practice; Limitations of POCT, Generic POCT solutions (including specifications, principles, and operations) and limitations in haematology, haemostasis, infectious diseases, toxicology, clinical chemistry and molecular diagnostics; Information connectivity and integration of POCT with laboratory interface; quality management and regulatory oversight of POCT solution by the medical laboratory; Regulatory guidelines for new POCT devices/services.

EEP 4201: VENTURE CREATION AND GROWTH

Module 1: Business Opportunity and Constraints Evaluation; Module 2: Issues on Business Growth: An Overview; Module 3: Sources of Funds; Module 4: Entrepreneurial Marketing; Module 5: New Opportunities for Expansion (e-Business); Module 6: Ethics and Social Responsibility; Module 7: Managing Transition: From Start Up To Growth.

500 LEVEL COURSES

CHEMICAL PATHOLOGY

CHP 5312: CHEMICAL PATHOLOGY I (3 CREDITS)

Principles of analytical techniques in clinical chemistry, devising of new techniques, biological trails and tests for acceptability; Solid/Dry phase chemistry, dipstick technology, thin film technology & Immobilized enzymes, analytical techniques for qualitative and quantitative determination of enzymes, hormones, proteins, lipids, trace elements, non-protein nitrogen. Volumetric analysis - Partition, absorption of gel filtration, ion exchange and gas liquid chromatography. Electrochemical analysis – principles of potentiometric analysis. Fractionation of proteins – fractional precipitation (salting out); Chromotographic and electrophoretic procedures. Protein precipitants – mode of action and choice in analytical procedures

CHP 5324: CHEMICAL PATHOLOGY II (3 CREDITS)

Physiology of the pancreas and the alimentary canal. Pancreatic function tests- to include secretin and pancreozymin stimulation tests. Glucose tolerance test, insulin sensitivity test, estimation of amylase. Estimation of the activity of trypsin in duodenal contents, gastric function tests to include F-ICL secretions, histamine and augmented histamine tests. Fractional and tubeless test meals. Intestinal absorption test, vitamin

absorption test, the Congo red test for amyloidosis and faecal fat estimations. Diseases of the muscle. Lipidaemia, hyperlipoproteinaemia and hypolipoproteinaemia — definition, causes consequences and investigation.

CHP 5325: CHEMICAL PATHOLOGY III (3 CREDITS)

Physiology of the Kidney, renal clearance and glomerular filtration rate. Renal plasma flow, maximal tubular excretory and reabsorptive cap, Urea clearance, creatinine and inuline clearance. Concentration and dilution tests. Impairment of renal function. Renal failures. Azotaemia, ureamia, Anuria. Sodium loss in renal disease. The liver — anatomy and physiology — Biosynthesis of bilirubin, excretion of bile pigments. Jaundice — types and pigment excretion in jaundice; urine, blood urea and ammonia. Paraproteinaemia, Bence Jones proteinuria and significance. Porphyrinaemia, porphyria and porphyrinuria. Definition, causes, consequences and investigation
of some inborn-errors of metabolism. Phenylketonuria, Galactosaemia, fructose intolerance, Albinism, Akaptonuria, aminoacidurias, Causes and investigations of nutritional disorder.

CHP 5326: CLINICAL ENZYMOLOGY (3 CREDITS)

General principles of enzyme kinetics, activation and repression of enzyme activities. Enzymes as catalysts, protein and co-factors. Enzymes induction, inhibition, purification and specificity. Michaeli's constant. Diagnostic Enzymology, Isoenzymes and Coenzymes.

MLS 5327: RESEARCH METHODOLOGY (3 CREDITS)

Introduction to research methodology. Collection of literature review articles. Problem definition.
Sampling techniques. Experimental designs of medical and Public health studies. Questionnaire design and data collection analysis. The role of research in health and social welfare. The need for institutional and governmental ethical clearance for

some research projects. Research proposals and sourcing of funding for research projects. Art of scholarly publications.

MLS 5321 MOLECULAR BIOLOGY II TECHNIQUES AND APPLICATIONS (3 CREDITS)
Bioinformatics: Genomic/cDNA library – preparation and isolation, cloning, primer design and RT-PCR and its application in diagnosis. Blotting (principle and application of Western, Southern and Northern blots). Purification of RNA and DNA. Transgenic animals and their uses in research. Tissue culture techniques. Use of recombinant DNA in the production of monoclonal antibodies. Genetic engineering and its application in Biotechnology.

MLS 5364: LABORATORY POSTING (3 CREDITS)
This involves bench rotation in the Clinical Pathology. The students is assessed after every bench posting on knowledge of procedure and technical competence based on Participation in the routine services of the laboratory.

CHP 5330: CLINICAL ENDOCRINOLOGY (3 CREDITS)

Physiology of the Thyroid glands, the basal metabolic rate, hyperthyroidism and Antithyroid drugs. The use of radioactive iodine, adrenocorticotrophic hormones and the adrenal glands, adrenal hormones, drenocortical hyperactivity and hypoactivity. Assessment of function of gonadotrophic hormones and their relationship to ovarian disease, steroids of biochemical importance and their urinary excretion products. Estimation of urinary 17- Ketosteroids and 17-hydroxy- corticosteroids, noradrenalin, adrenalin and their metabolites.

CHP 5331: CLINICAL TOXICOLOGY (3 CREDITS)

Practical and theoretical aspects of poisoning, investigations of suspected cases of poisoning, estimation of blood alcohol, detection of barbiturates, cocaine, heroin, opium etc. in urine, sweat, blood and duodenal aspirate. Estimation of blood salicylates, sulphonamides, blood O , CO and pH. Trace elements — bioavailability and 2 2 function.

CHP 5332: ADVANCED CHEMICAL PATHOLOGY TECHNIQUES (3 CREDITS)

Principles and Techniques of isoelectric focusing, high performance liquid chromatography (HPLC) and affinity chromatography, Isotope labeling techniques. Measurement of radioactivity, Preparation and analytical ultracentrifugation. Cell cloning, Preparation of monoclonal antibodies, Fluorescence antibody technique and radioImmunoassay. Electrophoresis —paper, cellulose acetate, agar gel, starch and polyacrilamide. Iso-electric focusing, SDS-PAGE electrophoresis, enzyme Immunoassays, receptor assays. Automation, Micro and ultramicro analysis.

MLS 5333: SEMINAR (3 CREDITS)

The student will be required to conduct literature search on a topic in Chemical Pathology, write up a review, and present a seminar on it. Final grade on the course will be based on the literature review and seminar presentation.

MLS 5371: LABORATORY POSTING (3 CREDITS)

This involves bench rotation in the Clinical Pathology. The students is assessed after every bench posting on knowledge of procedure and technical competence based on Participation in the routine services of the laboratory.

HAEMATOLOGY/ BLOOD GROUP SEROLOGY OPTION

HEM 5322: HAEMATOLOGY I (3 CREDITS)

Haemoglobinopathy I and II—to include red cell membrane haemoglobin, and enzymes abnormalities, Genetics of RBC metabolism. Acquired haemolytic anaemia and their investigation. Leucocytes — Physiology, kinetics, and functions, Leucocytosis and eucopaenia. Leukaemias — classifications including the FAB mode, features and laboratory management. Cytochemical procedures, Myeloproliferative and Lymphoproliferative disorders. Preparation and cytology of blood and bone marrow films in health and disease. Platelets; Structure, Physiology and functions, tests for platelet function. Normal and abnormal Haemostasis — coagulation factors, platelets, vascular integrity, inhibitors, fibrinolytic activity etc. Haemorrhagic disorders,Control of anticoagulant therapy and Haemophilia states.

HEM 5337 HAEMATOLOGY II (3 CREDITS)

Identification of blood parasites, the spleen and splenomegaly syndromes. Drugs, Chemicals and the blood, blood in infancy, childhood and pregnancy. Heredity and blood disorders, blood in microbial infections. Anaemia in community; classification, mechanism and laboratory investigations in Immunoheamatological disorders, Autoimmune haemolytic anaemia, thrombocytopaenia, leucopaenia,

systemic and disseminated lupus erythematosus, rheumatoid arthritis, etc. Myelomatosis and other MPRa proteinaemia.

HEM 5338 BLOOD GROUP SEROLOGY 1 (3 CREDITS)

Genotype in Rhesus blood Groups, other blood groups- MNS, kell, kidd, Duffy, Lewis. P1, e.t.c. Haemolytic disease of the Newborn- Types, aetiology, antenatal and postnatal management. Blood group serology in paternity dispute. Haemolysin titration, absorption and Elution techniques. Indications and complications of blood transfusion. Red cell survival tests — Radioisotope and differential agglutination methods. Screening of donor blood for infective agents — HIV, HBV, Malaria, trypanosomes, Syphilis etc. Anamalous results in compatibility testing, preparation and standardization of AHG.

HEM 5339: BLOOD GROUP SEROLOGY II (3 CREDITS)

Leucocyte and platelet antigens and antibodies, National blood transfusion service, preparation of commercial quantities of polyclonal antisera, principles, uses and techniques of producing monoclonal antibodies, types of blood substitutes and preservations, WHO standards in BGS, quality assurance in BGS, and Red cell membrane structure in relation to blood group antigen locations.

MLS 5321 MOLECULAR BIOLOGY II TECHNIQUES AND APPLICATIONS (3 CREDITS)

Bioinformatics: Genomic/cDNA library – preparation and isolation, cloning, primer design and RT-PCR and its application in diagnosis. Blotting (principle and application of Western, Southern and Northern blots). Purification of RNA and DNA. Transgenic animals and their uses in research. Tissue culture techniques. Use of recombinant DNA in the production of monoclonal antibodies. Genetic engineering and its application in Biotechnology.

MLS 5327 RESEARCH METHODOLOGY (3 CREDITS)

Introduction to research methodology, collection of literature review articles. Problem definition, sampling techniques, experimental designs of medical and Public health studies. Questionnaire design and data collection analysis, the role of research in health and social welfare, the need for institutional and governmental ethical clearance for some research projects. Research proposals and sourcing of funding for research projects, art of scholarly publications.

MLS 5364: LABORATORY POSTING (3 CREDITS)

This involves bench rotation in the Haematology laboratory. The student is assessed after every bench posting on knowledge of procedure and technical competence based on Participation in the routine services of the laboratory.

MLS 5333: SEMINAR (3 CREDITS)

The student will be required to conduct literature search on a topic in Haematology, write up a review and present a seminar on it. Final grade on the course will be based on the literature review and seminar presentation.

MLS 5371: LABORATORY POSTING (3 CREDITS)

This involves bench rotation in the Haematology laboratory. The student is assessed after every bench posting on knowledge of procedure and technical competence based on Participation in the routine services of the laboratory.

HEM 5345: CYTOGENETICS (3 CREDITS)

Sex chromosome, in-activation of x-chromosomes. Theory and practice of clinical cytogenetics, mosaicism, mapping of autosomes and X-chromosomes. DNA synthesis, genes in kindred segregation, dominant and recessive inheritance, X-linked inheritance, independent assortment, linkage and association, allelism, genes and the individual gene variation and interactions. Chimeras, genes in families and population selection, pedigree analysis, mutation and mutagens. Hardy-Weinberg equation; genetic drift and inbreeding, methods of cytogenetic analysis, including staining. Chromosomes abnormalities — Trisomy, monosomy, translocation, nondisjunction, deletion, duplication, isochromosomes, Klinefelter's and Turner's Syndromes. Philadelphia and Christ Church chromosomes. Clones and Slide reporting.

HEM 5346: ADVANCED HAEMATOLOLGY TECHNIQUES (3 CREDITS)

Principles and techniques of isoelectric focusing, protein separation by column chromatography. Finger printing- principles and techniques, purification of proteins/enzymes, Ultracentrifugation and molecular weight determination. Culture of blood cells and parasites, Leucocyte typing. Platelet aggregation-principles and techniques. Isotope labeling techniques, measurement of radioactivity. Flourescence antibody techniques, radio- Immunoassay, ELISA, Western blotting, Immunolectrophoresis. Electrophoresis, Competitive protein binding, Electrophoresisstarch, agar gel and polyacrilamide gel. Principles of polymerase chain rection, Paul Bunnell test, Demonstration of Iron, Foetal Haemoglobin, Ham's test and Lymphocyte transformation test etc.

HEM 5347: ADVANCED BLOOD GROUP SEROLOGY TECHNIQUES (3 CREDITS)

Techniques for emergency compatibility testing — Low ionic sucrose solution, spin coomb's albumin. Special compatibility techniques- Exchange and Extracoporeal blood transfusion. Preparation of enzymes used in BGS, forensic applications of BGS, 2 stages of coomb's technique. Automation in BGS, Groupamatic Technicon autoanalysers for antibody and antigen detection and identification, pipette washers e.t.c.

MLS 5640 RESEARCH PROJECT (6 CREDITS)

This is a supervised research project on an approved topic to be undertaken by each student in the final year for Partial fulfillment of the B. MLS degree requirements. Assessment of the project would be by grading of the project content a panel of internal assessors; including supervisors, to be chaired by the Head of Department.

HISTOPATHOLOGY OPTION

PTH 5312: HISTOPATHOLOGY I (3 CREDITS)

Principles of histochemical methods, DNA demonstration by Feulgen techniques, silver impregnation methods, PAS, Manson trichrome - iron impregnation methods. tissue culture techniques, Genes and genetic codes. Chromattin tissues, Schmols, Diazo and Perl's reaction. Other
histochemical procedures. Enzyme histochemistry — Acid and alkaline phosphatases, oxidative
Enzymes, Quality assurance and automation in Histopathology laboratory. Cyro-screening and slide reporting.

PTH 5348: HISTOPATHOLOGY II (3 CREDITS)

Cytology of normal cells, review of histology of— cardiovascular, Respiratory, Gastro-intestinal, Urogenital, Neuro-histology, and histology of — endocrine glands, pituitary, Thyroid, Pancreas, Adrenal, Ovary and testis. Cytology of epithelial cells, atypical and malignant cells.

PTH 5349: HISTOPATHOLOGY III (3 CREDITS)

Systemic Pathology: Heart; Hypertensive heart-disease, heart failure, and Cardiomyopathies, Respiratory;Tuberculosis and Pneumonia, Renal; Nephropathy associated with infestations and infections, glomerulonephritis, Lymphoreticular; Malignant lymphomas (Non-Hodgkins and Hodgkins lymphoma, Burkitts).

Idiopathic; Tropical Splenomegaly syndrome, Gastrointestinal tract; Cancers of the mouth, Oesophagus, intestines and stomach. Liver; Hepatitis, Cirrhosis, primary Liver cell carcinoma, Female Reproductive Organs; Pelvic inflammatory disease, Cancer; Cervical, trophoblastic, ovarian, Skin Leprosy and Kaposis sarcoma. Nutritional; Protein energy malnutrition and Slide reporting.

PTH 5350: EXFOLIATIVE CYTOLOGY (3 CREDITS)

Introduction to exfoliative cytology, definitions and principles of exfoliative cytology methods. Diagnostic criteria for cell malignancy, kinds of tumours, sampling, fixation and staining techniques in clinical cytology. Gynae (Cytology), hormonal evaluations, cells and other constituents in sputum, effusions, CSF, urine and other fluids, slide reporting.

MLS 5364: LABORATORY POSTING I (3 CREDITS)

This involves bench rotation in the Pathology. The student is assessed after every bench posting on knowledge of procedure and technical competence based on Participation in the routine services of the laboratory.

MLS 5327 RESEARCH METHODOLOGY (3 CREDITS)

Introduction to research methodology, Collection of literature review articles. Problem definition, Sampling techniques, experimental designs of medical and Public health studies. Questionnaire design and data collection analysis, the role of research in health and social welfare. The need for institutional and governmental ethical clearance for some research projects. Research proposals and sourcing of funding for research projects and art of scholarly publications.

MLS 5321: MOLECULAR BIOLOGY II TECHNIQUES AND APPLICATIONS (3 CREDITS)

Bioinformatics: Genomic/cDNA library – preparation and isolation, cloning, primer design and RT-PCR and its application in diagnosis. Blotting (principle and application of Western, Southern and Northern blots). Purification of RNA and DNA. Transgenic animals and their uses in research. Tissue culture techniques. Use of recombinant DNA in the production of monoclonal antibodies. Genetic engineering and its application in Biotechnology.

MLS 5333: SEMINAR (3 CREDITS)

The student will be required to conduct literature search on a topic in Histopathology, write up a review and present a seminar in it. Final grade on the course will be based on the literature review and seminar presentation.

PTH 5356: CYTOGENETICS (3 CREDITS)

Theory and Practice of Clinical Cytogenetics, Chromosome analysis, structure, organization and staining techniques chromosomes in man. Normal Karyotype and Chromosomal abnormalities. Mosaicism, Trisomy, monosomy, translocation,

Klinefelter's and Turner's Synoromes; Sex Chromatin. Inactivation of X and sex determination. Genetic diseases, clones, mapping of autosomes, DNA synthesis, Genes in Kindred segregation. X-linked inheritance. Chimeras. Genes in families and population, selection, Pedigree analysis, mutation and mutagens, Hardy — Weinberg equation, genetic drift, inbreeding. Slide reporting, Philadelphia and Christ Church Chromosomes.

PTH 5357: ADVANCED HISTOPATHOLOGY TECHNIQUES (3 CREDITS)

Fluorescence microtechniques, Autoradiography — Principles and techniques, Ultramicrotomy, Microincineration, Principles of photograph; macro and microphotography. Preparation of stained smears and specimen for microphotography and macrophotography respectively. Electron microscopy preparation of materials and embedding reagents used. Toxicity of some reagents used in electron microscopy. Embalmment techniques and demonstrations.

PTH 5358: MUSEUM AND EMBALMMENT TECHNIQUES (3 CREDITS)

Preparation and Museum mounting of specimens, techniques of museum display, organisation of a medical Museum, Fixation and storage of museum specimens, Special museum techniques e.g Dawson's method, Methods of colour maintenance.

MLS 5371: LABORATORY POSTING II (3 CREDITS)

This involves bench rotation in the Pathology. The student is assessed after every bench posting on knowledge of procedure and technical competence based on Participation in the routine services of the laboratory.

MLS 5640: RESEARCH PROJECT (6 CREDITS)

This is a supervised research project on an approved topic to be undertaken by each student in the final year for Partial fulfilment of the B. MLS degree requirements. Assessment of the project would be by grading of the project content a panel of internal assessors; including supervisors, to be chaired by the Head of Department.

MEDICAL BACTERIOLOGY OPTION

MBC 5360: MEDICAL BACTERIOLOGY II (3 CREDITS)

Principles of bacterial infection and pathogenesis, Biological and clinical basis of infectious diseases. Clinical and diagnostic microbiological consideration of diseases of upper respiratory. Lower respiratory, genitourinary and intestinal tracts, central nervoussystemic organs. Definition, assessment, epidemiology and controlof hospital infections.

MMB 5312: MEDICAL BACTERIOLOGY I (3 CREDITS)

Principles of bacterial taxonomy, Biochemical and serological basis of identification of Bacteria of medical importance. The pyogenic cocci (Staphylococcus, Streptococcus, Pneumococci, Neisseriae).

The enterobacter — coliforms, Gastroenteritis and Food poisoning, Salmonellosis, Shigellosis, Vibrio cholera, Pseudomonas,Bacteriodes etc. the Haemophilis (Brucellae, Yersinia, Bordetallaetc). Anaerobic spore formers — Aerobic spore formers (Bacillus anthracis, Clostridia),

the Spirochaetes, the mycobacteria, Actinomycetes, Corynobacteriae, Rickettsiae, Chlamydiae, Mycoplasma, L forms, Listeria, Eryspelothrix, Bartonella etc. general pathology, epidemiology features, diagnosis, control and therapy. Aseptic collection of clinical specimens. Supportive investigations — kin tests etc. to aid diagnosis. Rapid techniques in Medical Microbiology.

MMB 5362: PUBLIC HEALTH MICROBIOLOGY (3CREDITS)

General principles of microbial disease transmission — waterborne, airborne, food borne, arthropod-borne and contagious diseases. Principles and techniques for water treatment. Waste water disposal, preventive measures in the control of Bacteria, Parasitic and viral infections. Vaccines and Immunization. Immunization programme and schedule (EPI).

MBC 5263: HOST PARASITE INTERACTIONS (2 CREDITS)

Interrelationships between bacterial and viral parasites and their host cells or tissues. Stresses microbial strategies and mechanisms of colonization, invasion, pathogenesis and resistance to host defense.

MLS 5321: MOLECULAR BIOLOGY II TECHNIQUES AND APPLICATIONS (3 CREDITS)

Bioinformatics: Genomic/cDNA library – preparation and isolation, cloning, primer design and RT-PCR and its application in diagnosis. Blotting (principle and application of Western, Southern and Northern blots). Purification of RNA and DNA. Transgenic animals and their uses in research. Tissue culture techniques. Use of recombinant DNA in the production of monoclonal antibodies. Genetic engineering and its application in Biotechnology.

MLS 5364: LABORATORY POSTING (3 CREDITS)

This involves bench rotation in Medical Microbiology. The student is assessed after every bench posting on knowledge of procedure and technical competence based on Participation in the routine services of the laboratory.

MLS 5327: RESEARCH METHODOLOGY (3 CREDITS)

Introduction to research methodology, collection of literature review articles. Problem definition, Sampling techniques. Experimental designs of medical and public health studies. Questionnaire design and data collection analysis. The role of research in health and social
welfare. The need for institutional and governmental ethical clearance for some research projects. Research proposals and sourcing of funding for research projects and art of scholarly publications.

MBC 5367: PHARMACEUTICAL MICROBIOLOGY AND ADVANCED TECHNIQUES (3 CREDITS)

Principles of antibiotic and chemotherapeutic modes of bacterial resistance to antibiotics, sensitivity testing. Preparation of antibiogram discs, minimum inhibitory concentration of antibiotics .Antibiotics—history, mode of action, metabolism and classifications. Antibiotics assay, chemotherapy, use of animal models in the study of microbial infections. Automation in medical microbiology. Preparation and standardization of bacterial antigens and Immune sera. Immunofluorescence, radio-Immunoassay and ELISA techniques.

MLS 5333: SEMINAR (3 CREDITS)

The student will be required to conduct literature search on a topic in medical microbiology, write up a review and present a seminar on it. Final grade on the course will be based on the literature review and seminar presentation.

MLS 5371: LABORATORY POSTING (3 CREDITS)

This involves bench rotation in medical microbiology. The student is assessed after every bench posting on knowledge of procedure and technical competence based on participation in the routine services of the laboratory.

MBC 5366 ADVANCED MEDICAL BACTERIOLOGY

Bacteriological diagnosis,prevention and control of infectious diseases in human, pathogenesis and epidemiological consideration of the diseases ofurogenital and intestinal tracts, pathogenesis clinical significance and prevention of diseases of an aerobic pathogens, application of microbial activities for bioremediation of contaminated soil and ground water.

MBC 5368: MODERN DIAGNOSIS OF BACTERIAL INFECTIONS

Role of the laboratory in the diagnosis and monitoring of patients (direct examination, histopathology, antigen detection, antifungal susceptibility testing results, qPCR, etc.), limitation and use of public and specific databases for molecular identification, discussion of clinical cases.Fungal culture in histological samples,The epidemiology and changing spectrum offungal diseases.

MLS 5640: RESEARCH PROJECT (6 CREDITS)

This is a supervised research project on an approved topic to be undertaken by each student in the final year for partial fulfillment of the B. MLS degree requirements. Assessment of the project would be by grading of the project content a panel of internal assessors; including supervisors, to be chaired by the Head of Department.

MEDICAL PARASITOLOGY AND ENTOMOLOGY OPTION

MPR 5301: BIOLOGY OF PARASITES (3 CREDITS)

Knowledge of the structure, classification and life cycles of all protozoa and helminthes of medical importance and their intermediate hosts and vectors. Arthropods and other vectors of importance diseases of man. parasites of animals such as Trypanosomes, Lewisi, Eimeriidae, Fasciola hepatica, Diphylidium caninum, Larval forms of Taenia. Echinococus granulosus. Hydatid disease in man.

MPR 5203: HELMINTH AND HELMINTHIC INFECTIONS (2 CREDITS)

Morphology, Biology, Life cycle and classification. Cestodia-Order Pseudophylidea and Order Cyclophyllidea. Trematoda – Superfamilies schistomatoides; Fascioloidea, Opisthorchoidea, Trichinelloidea, Strongytoidea, Filariodea.

MMB 5362: PUBLIC HEALTH MICROBIOLOGY(3 CREDITS)

General principles of microbial disease transmission — waterborne, airborne, food borne, arthropod-borne and contagious diseases. Principles and techniques for water treatment. Waste water disposal, preventive measures in the control of Bacteria, Parasitic and viral infections. Vaccines and Immunization. Immunization programme and schedule (EPI).

MLS 5321: MOLECULAR BIOLOGY II TECHNIQUES AND APPLICATIONS (3 CREDITS)
Bioinformatics: Genomic/cDNA library – preparation and isolation, cloning, primer design and RT-PCR and its application in diagnosis. Blotting (principle and application of Western, Southern and Northern blots). Purification of RNA and DNA. Transgenic animals and their uses in research. Tissue culture techniques. Use of recombinant DNA in the production of monoclonal antibodies. Genetic engineering and its application in Biotechnology.

MPR 5302: PROTOZOA AND PROTOZOAL INFECTIONS (3CREDITS)
Morphology, physiology, life cycle and classification of protozoa, Rhizopoda (Amoebae), Mastigophora (Heamoflagellates and Intestinal Flagellates), Sporozoa (Malarial parasites, Coccidia), Ciliata (Balantidium) and parasites of certain classification; Toxoplasma, Sacrocystic, Pneumocystics.

MLS 5364: LABORATORY POSTING (3 CREDITS)
This involves bench rotation in Medical Microbiology. The student is assessed after every bench posting on knowledge of procedure and technical competence based on Participation in the routine services of the laboratory.

MLS 5327: RESEARCH METHODOLOGY (3 CREDITS)
Introduction to research methodology, collection of literature review articles. Problem definition, Sampling techniques. Experimental designs of medical and public health studies. Questionnaire design and data collection analysis. The role of research in health and social welfare. The need for institutional and governmental ethical clearance for some research projects. Research proposals and sourcing of funding for research projects and art of scholarly publications.

MPR 5361 : ADVANCED PARASITOLOGY/EPIDEMIOLOGY (3 CREDITS)

Epidemiological study of protozal and helminthic infections in rural communities. Advanced methods of differential diagnosis of Parasitic infections. Modern trends in parasitology, Basic concepts in the Immunology of Parasitic infections, definitions and principles of epidemiology. Epidemiology and control of common communicable diseases.

MPR 5304: ARTHROPODS OF HUMAN DISEASE (3 CREDITS)

Morphology, structure and classification of Arthropods of Medical importance. Dipera: Families – Culicidae, Psychodidae, Similidae, Ceratpogonidae, tatanidae, Muscidae, Calliporidae, Oestridgeae. Hemptera: Families – pediculidae. Siphonaptera: Families publiodes, Coratophyllidae, Leprosyllidae. Acarina: Families – Ixodidae, Agrasidae, Trombiculidae, Dermanyssidae, Procrphyalides, Linguatulidae.

MLS 5371: LABORATORY POSTING (3 CREDITS)

This involves bench rotation in medical microbiology. The student is assessed after every bench posting on knowledge of procedure and technical competence based on participation in the routine services of the laboratory.

MLS 5333: SEMINAR (3 CREDITS)

The student will be required to conduct literature search on a topic in medical microbiology, write up a review and present a seminar on it. Final grade on the course will be based on the literature review and seminar presentation.

MPR 5205: SPECIAL TOPICS (TECHNIQUES) (2 CREDITS)

Concentration of parasites in faeces and body fluids. Hatching test for viability of ova. Detection of embryos and protozoa in vectors. Methods of using a key for identification of arthropods. Preparation of thin and thick blood films for protozoa, diagnostic methods and procedures in helminthic infections, concentration methods for parasites in biological specimens, counting methods and culture technique. Permanent preparation of malaria sporozoites, oocysts, and exflagellating gametocytes. Preparation of reagents andprocedures for fixing and staining faeces, tissues and arthropods containing parasites. Maintenance of blood protozoa and helminthes for teaching and research programmes Snail aquaria. Permanent preparations of arthropods. An elementary knowledge of thispreservation and mounting of pathological specimens. Preservation of arthropods, helminthes and protozoa for transit and museum purposes.

MLS 5640: RESEARCH PROJECT (6 CREDITS)

This is a supervised research project on an approved topic to be undertaken by each student in the final year for Partial fulfilment of the B. MLS degree requirements. Assessment of the project would be by grading of the project content a panel of internal assessors; including supervisors, to be chaired by the Head of Department.

IMMUNOLOGY/VIROLOGY OPTION

MVI 5201: CELLULAR IMMUNE RESPONSES (3 CREDITS)

Principles and theories of adaptive cellular Immunity; T-cells, Th-1 and Th-2 cells, cytotoxic T cells N K cells, macrophages, neutrophils basophills cell mediated Immunity. APCs, MHC molecules, Myeloid cells, Lymphoid cells, bone marrow and Thymus, concept of tolerance, antigenic degradation presentation and co-stimulatoryresponses, Cellular interactions in adaptive cellular Immunity, activation of lymphocytes Immunization and vaccination, delayed type hypersensitivity reaction congenital and acquired defects in T lymphocytes, etc.

MVI 5202: INFECTIONS AND IMMUNITY (2 CREDITS)

Immunology of tumor cells, Genetic correction of tumors cellular and humoral Immune responses against tumor cells, Immunological surveillance Immunotherapy; Natural resistance to infections,Immunization against viral, Parasitic, bacterial and Mycotic infections; Antibodies and Immunologic injury, Immune deficiency diseases and bacterial infection, bacterial adjuncts, Immunology of viral, Parasitic and Mycotic infection.

MMB 5362: PUBLIC HEALTH MICROBIOLOGY (3CREDITS)

General principles of microbial disease transmission — waterborne, airborne, food borne, arthropod-borne and contagious diseases. Principles and techniques for water treatment. Waste water disposal, preventive measures in the control of Bacteria, Parasitic and viral infections. Vaccines and Immunization. Immunization programme and schedule (EPI).

MVI 5203: IMMUNOLOGY III (2 CREDITS)

Clinical tests and predisposing factors and treatment for allergy. Combine T and B cell deficiency, deficiency of antibody mediated Immune response and disease predisposition, HIV and AIDS,Hepatitis and rheumatoid arthritis. Diseases mediated by Immunological mechanisms, eg Asthma, hay fever, urticaria and eczema; Transfusion reaction Hemolytic Disease of the Newborn; Lymph proliferative disorder, Immune deficiency disease, wiskot Aldrich syndrome chidiek shigashi syndrome, Di George syndrome, Huntington syndrome, lazy leucocytes syndrome and Auto Immunediseases. Immuno pathology; Diseases mediated by Immunological mechanisms, atopy e.g. asthma, hay-fever, urticaria and eczema.haemolytic disease of the newborn, auto Immune disorder, transplantation and graft rejection, glomerulonephritis, Immunecomplex diseases, granulomatous disease.

MLS 5321: MOLECULAR BIOLOGY II TECHNIQUES AND APPLICATIONS (3 CREDITS)

Bioinformatics: Genomic/cDNA library – preparation and isolation, cloning, primer design and RT-PCR and its application in diagnosis Blotting (principle and application of Western, Southern and Northern blots). Purification of RNA and DNA. Transgenic animals and their uses in research. Tissue culture techniques. Use of recombinant DNA in the production of monoclonal antibodies. Genetic engineering and its application in Biotechnology.

MLS 5327: RESEARCH METHODOLOGY (3 CREDITS)

Introduction to research methodology, collection of literature review articles. Problem definition, Sampling techniques. Experimental designs of medical and public health studies. Questionnaire design and data collection analysis. The role of research in health and social welfare. The need for institutional and governmental ethical clearance for some research projects. Research proposals and sourcing of funding for research projects and art of scholarly publications.

MLS 5364: LABORATORY POSTING (3 CREDITS)

This involves bench rotation in Virology (serology) and Immunology. The student is assessed after every bench posting on knowledge of procedure and technical competence based on participation in the routine services of the laboratory.

MVI 5311: BASIC IMMUNOLOGICAL TECHNIQUES (3CREDITS)

Safety and hazard in Immunology laboratory; serological diagnosis of viral, bacterial Parasitic and Mycotic infections. Compliment fixation test; neutralization test; haemagglutination test; haemagglutination inhibition test; Immunoflourescence technique; radioImmunoassay Enzyme-linked Immunosorbent assay cells and tissue culture techniques. Phagocytic function test ; T cell and B cell determination; determination of inhibitory substances; Lymphoblastosis; antigen and antibody production; serological reactions in tissue and organ transplantation, HLA system etc.

MLS 5333 SEMINAR (3 CREDITS)

The student will be required to conduct literature search on a topic in medical microbiology, write up a review and present a seminar on it. Final grade on the course will be based on the literature review and seminar presentation.

MVI 5212: MOLECULAR BASIS OF IMMUNE RESPONSES (2 CREDITS)

Mechanisms for the development of Immune system; overview of Immune functions and its various components. Chemotaxis, cytokines and effector mechanisms of tolerance and hypersensitivity reactions. Immune Paralysis; antigen presentation; recognition of self and non self proteins etc.

MVI 5213: IMMUNOPHARMACOLOGY (2 CREDITS)

Anti- inflammatory agents, antibodies and Immunopharmacological agents; Monoclonal and Polyclonal antibodies and their therapeutic applications. Introductory concept to Immunesuppressive agents' e.g azathioprine, glucocorticoids cyclosporins, Allergy and anti allergic substances; Natural and synthetics Immuno stimulants.

MMB 5311: MEDICAL VIROLOGY II (3 CREDITS)

Preservation and storage of viruses. Public health approach to control of viral infections including vaccination, Immunization and herd's Immunity. Safety precautions in Immuno-virological techniques. In-depth study of pathogenesis, Immunology, epidemiology and management of viruses of medical importance, including, picornaviruses, retroviruses, arboviruses, herpes viruses, hepatitis viruses, poxviruses, Rotavirus enteroviruses, Mycoplasma, rickettsiae and foot and mouth disease; Basic knowledge of diagnostic procedures using animal, egg, cell and tissue culture, serology, microscopy and staining methods. Principles of purification, concentration, Equipment Care and Maintenance, vaccine production.

MLS 5371: LABORATORY POSTING (3 CREDITS)

This involves bench rotation in Virology (serology) and Immunology. The student is assessed after every bench posting on knowledge of procedure and technical competence based on participation in the routine services of the laboratory.

MLS 5640: RESEARCH PROJECT (6 CREDITS)

This is a supervised research project on an approved topic to be undertaken by each student in the final year for Partial fulfilment of the B. MLS degree requirements. Assessment of the project would be by grading of the project content a panel of internal assessors; including supervisors, to be chaired by the Head of Department.

GENERAL STUDIES PROGRAMME (GSP) COURSES

Course Code	Course Title	Level	Semester	Credit Value
GSP12 01/ *2201	Use of English	100 /200	Second/	2
			First	
GSP1202/ *2202	Use of Library Study	200	First	2
	Skills and ICT			
GSP 2204	Foundation of	200	Second	2
	Nigerian Culture ,			
	Gov ernment and			
	Economy			
GSP 2205	Logic and Philosophy	200	First	2
GSP 2206	Peace Studies and	200	Second	2
	Conflict Resolution			
EEP 3201	Entrepreneurship and	300	Second	2
	Innovation			
EEP 4201	Venture creation and	400	First	2
	Growth			
			Total	**14**

***For fresh Direct Entry students who have not taken the course at 100 level

20.0 THE COLLEGE LIBRARY SERVICES Opening Hours:

1. **During Session:**
   Mondays to Sundays : 8.00 a.m – 10.00 p.m

2. **During Vacation**
   Monday to Sunday : 8.00 a.m – 6.30 p.m

Departmental e-library equipped with computers

LIBRARY RULES AND REGULATIONS

1. Students and senior staff of the University may use the library. However the University Librarian can givepermission to others to use the library subject to the approval of the Library Committee.
2. No person shall be allowed to borrow any book or any other material until they have been properly charged out.

   The following materials are for use in the library only:reference books, fine art books with plates, books on temporary reserve, manuscripts, rate books, micro films,current and bound volumes of journals and governmentdocuments.
3. It is very serious offence to remove or damage any part of a book or periodical.
4. On leaving the library, all library users must surrender their books and papers to the library officials at the entrance for inspection.
5. Library users must not attempt to put books back on the shelves. Once taken off the shelves, the books should be left on the tables.
6. Senior staff may borrow books for a period of one month while students and others for a period of 14 days.
7. Fines are levied on all overdue books at the rate of 10 kobo per day. Books that are recalled are charged at the rate of 10 kobo per day from 72 hours after the date on which the notice is sent. Books on reserve that are not returned within 2 hours attract a fine of 50 kobo per hour.
8. Failure to return books or other materials to the library within the stipulated time could lead to suspension from using the library. This means total exclusion from entering the library.
9. Students are allowed to borrow 5 books at a time, while teaching staff are allowed up to 15.

10. Students are allowed to borrow 5 books at a time, while teaching staff are allowed up to 15.

LIST OF ACADEMIC STAFF MEDICAL LABORATORY
11. SCIENCE BAYERO UNIVERSITY KANO

S/NO.	NAME OF ACADEMIC STAFF	DISCIPLINE	QUALIFICATION
1	Prof. Lawal Dahiru Rogo	Medical Laboratory Science	BS.c, MS.c, Ph.D
2	Prof. Muhammad Yalwa Gwarzo	Medical Laboratory Science	BS.c, MS.c, Ph.D
3	Prof. Abdulhadi Sale Kumurya	Medical Laboratory Science	BS.c, MS.c, Ph.D
4	Dr. Hadiza Lawal Abdullahi	Medical Laboratory Science	BS.c, MS.c, Ph.D
5	Dr. Isah Abubakar Aliyu	Medical Laboratory Science	BS.c, MS.c, Ph.D
6	Dr. Jamilu Abubakar Bala	Medical Laboratory Science	BS.c, MS.c, Ph.D
7	Dr. Muhammad Ahmed Bello	Medical Laboratory Science	BS.c, MS.c, Ph.D
8	Dr. Hassan Yahaya	Medical Laboratory Science	BS.c, MS.c, Ph.D
9	Dr. Nura Garba	Medical Laboratory Science	BMLS MS.c, Ph.D
10	Dr. Aminu Ibrahim	Medical Laboratory Science	BS.c, MS.c, Ph.D
11	Dr. Auwal Bello Mohammad	Medical Laboratory Science	BS.c, MS.c, Ph.D
12	Dr .Danladi	Medical	BMLS MS.c, Ph.D

	Suleiman Bala	Laboratory Science	
13	Dr. Ahmad Isyaku Adamu	Medical Laboratory Science	BS.c, MS.c, Ph.D
14	Dr. Hamza Sule	Medical Laboratory Science	BS.c, MS.c, Ph.D
15	Dr. Isah Suleiman Yahaya	Medical Laboratory Science	BMLS, MS.c, Ph.D
16	Rahinatu Sanusi Sharfadi	Medical Laboratory Science	BS.c, MS.c,
17	Mal. Rufa'I Umar Zubair	Medical Laboratory Science	BS.c, MS.c,
18	Mal. Hayatu Saidu	Medical Laboratory Science	BMLS, MS.c,
19	Mal. Abdulganiy Zakariyya	Medical Laboratory Science	BMLS, MS.c
20	Malama Fatima Bashir Shema	Medical Laboratory Science	BMLS, MS.c
21	Mal. Garba Yahaya	Medical Laboratory Science	BS.c, MS.c,
22	Mal. Halliru Abdullahi Hassan	Medical Laboratory Science	BS.c, MS.c,
23	Mal. Imam Malik Kabir	Medical Laboratory Science	BS.c, MS.c,
24	Prof. Dato Dr. Muhammad	Medical Laboratory Science	BS.c, MS.c, Ph.D

25	Profesor Azeez Oyebanji Akande	Medical Microbiology, and Parasitology	BS.c, MS.c, Ph.D
26	Professor Mutari Hajara Ali	Physics	BS.c, MS.c, Ph.D
27	Professor Mansura Abimbola Abdulazeez	Biochemistry	BS.c, MS.c, Ph.D
28	Professor Ibrahim Yusuf	Mathematical Sciences	BS.c, MS.c, Ph.D
29	Professor Yahaya Ibrahim Yola	Physics	BS.c, MS.c, Ph.D
30	Dr. Almuktar Yahuza Adamu	Parasitology	BS.c, MS.c, Ph.D
31	Professor Adamu Jibril Alhassan	Biochemistry	BS.c, MS.c, Ph.D
32	Professor Usman Aliyu Dutsinma	Microbiology	BS.c, MS.c, Ph.D
33	Professor Aminu Zakari Muhammad	Pathology	MBBS, MS.c, Ph.D
34	Dr. Yusuf Muhammad	Medical Microbiology, and Parasitology	BS.c, MS.c, Ph.D
35	Professor Ali Bala Umar	Pathology	BS.c, MS.c, Ph.D
36	Dr.	Medical Microbiology,	BS.c, MS.c, Ph.D

	Abdussalam Yayo Manu	and Parasitology	
37	Dr. Dahiru Falalu	Medical Laboratory Science	BS.c, MS.c, Ph.D
38	Dr. Hamisu Umar Takalmawa	Medical Microbiology, and Parasitology	BS.c, MS.c, Ph.D
39	Dr. Isa Usman Lawal	Physiotherapy	BS.c, MS.c, Ph.D
40	Dr. Abdulsalam Kabiru	Veterinary Medicine	DVM, MS.c, Ph.D
41	Dr. Mohammed Ibrahim Imam	Pathology	MBBS, MS.c, Ph.D

NB: those with asterisk are on study fellowship

NON-ACADEMIC STAFF LIST DEPARMENT OF MEDICAL LABORATORY SCIENCE

S/NO.	NAME OF ACADEMIC STAFF	DISCIPLINE	QUALIFICATION
1	Nasiru Abubakar Salisu	Medical Laboratory Science	BS.c, MS.c
2	Salmanu Hamza Adam	Medical Laboratory Science	BS.c
3	Mansur Aminu	Medical Laboratory Science	BS.c
4	Zaharadeen Umar	Medical Laboratory Science	BMLS
5	Ado Idris	Medical Laboratory	BS.c

	Adamu	Science	
6	Magaji Idris Muhammad	Medical Laboratory Science	BS.c
7	Abdulmalik Iliya	Medical Laboratory Science	MLT
8	Binta Said Wada	Medical Laboratory Science	MLT
9	Nura Garba	Medical Laboratory Science	MLT
10	Nazifi Muhammad Ibrahim	Medical Laboratory Science	MLT
11	Mahmud Muhammad Rabiu	Medical Laboratory Science	MLT
12	Ado Abdullahi Mai-unugwa	Medical Laboratory Science	MLT
13	Hauwa Adam	Medical Laboratory Science	MLA
14	Shehu Abdulkadir Muhammad	Medical Laboratory Science	SSCE
15	Haussini Garba Tuta	Medical Laboratory Science	SSCE
16	Yakubu Umar Sulaiman	Medical Laboratory Science	SSCE
17	Muhammad Sadi Abdullahi	Administrative Staff	BS.c HND, OND
18	Sani Dahiru	Administrative Staff	CIT, DIT,OND,HND

	Danjuma		
19	Muhammad Garba		SSCE

NB: those with asterisk are on study fellowship

DEPARTMENT OF MEDICAL LABORATORY SCIENCE
LIST OF STAFF ON FELLOWSHIP

ACADEMIC STAFF

S/N	Name	Rank	Qualification / Specialization	REMARKS
1.	Rufa'I U. Zubair	Lecturer I	BSc.M.Sc,AMLS CN Histopath.	Ph.D in view – Malaysia
2.	Garba Yahaya	Lecturer II	HND,M.Sc,AML SCN	Ph.D in view – Benin
3.	Imam Malik Kabir	Lecturer II	BMLS, M.Sc,	Ph.D in view – Brazil
4.	Fatima Bashir Shema	Lecturer I	BMLS, M.Sc, Histopathology	Ph.D in view – BUK
5.	Hayatu Sa'idu	Lecturer I	BMLS, M. Sc Haematology	Ph. D in view – ABU
6.	Rahinatu Sanusi Sharfadi	Lecturer I	B.Sc,MSc,AMLS CN-Bacteriology	Ph.D in view – BUK

NON – ACADEMIC STAFF

S/N	Name	Qualification / Specialization	REMARKS
1.	Salmanu Hamza Adamu	B.Sc, MSc in view AMLSCN Haematology	Msc in view
2.	Ado Idris Adamu	B.Sc, MSc in view AMLSCN-Chem. Path	Msc in view
3.	Nura Garba	MLT	BMLS in view
4.	Binta Said Wada	MLT	BMLS in view

5.	Mahmud Muhammad. Rabiu	MLT	BMLS in view
6.	Hauwa Adam	MLA	MLT in view
7.	Shehu Abdulkadir Muhd.	SSCE	MLT in view
8.	Sani Dahiru Danjuma	CIT, DIT,OND,HND	Bsc international relation in view
9..	Haussini Garba Tuta.	SSCE	MLT in view

24.0 PHYSICAL FACILITIES

·There are four laboratories in the department for teaching the programme. The laboratories belong to the department, which are located at new complex of Faculty of Allied Health Sciences, Aminu Kano Teaching Hospital (AKTH) for the training of clinical students (Level 300, 400 and 500). The laboratories constitute all the specialties (Medical Microbiology (Bacteriology, Medical Parasitology and Entomology, Medical Mycology, Medical Virology/ Immunology), Chemical Pathology, Histopathology and Haematology).·Lecturers are normally held in Theatre I, II, III and 'Yar Adu'a Complex for 100 level students, while Physiology, Anatomy and Biochemistry complexes are used for 200 levels students. Level 300 students do their lecture at School of Continuing Education, Dala and all lectures for level 400 and 500 are normally conducted at Departmental lecture venues at AKTH.

·Currently there are eleven (11) offices for members of staff located at Faculty of Allied Health Sciences, Aminu Kano Teaching Hospital (AKTH), however, more sites are under construction to pave way for more offices.

LABORATORY EQUIPTMENTS

S/N	***ITEM***	***QUANTITY***
1	PCR Machine	1
2	LCD Teaching Microscope	1
3	Fluorescent Microscope	1
4	Microscope	25
6.	Spectrophotometer	3

7.	Flame photometer	1
8.	Colorimeter	4
8	Incubator	3
9	Hot air oven	2
10.	Refrigerator	5
11	deionizer	1
12.	Microtome machine	1
13.	Electrophoresis machine	1
26.	Autoclave	1
14.	PH Meter	2
15.	Hot plate	1
16	Bench Centrifuge	3
17.	Bucket centrifuge	4
18.	Anaecrobic jar	3
19.	Water bath 6-holes	5
20.	Floating water bath	1
21	Haematocrit centrifudge	5
22.	Electronic weight Balance	5
23.	Thermometer	11
24.	First aid box	2
25.	Magnetic stirrer	1
26	Magnifying Lens	100
27.	Deionizer	1
28	Stablizer	6

29	Blood mixer	1
30	Code Reader	2
31	Distiller	1
32	Vortex mixer	3
33.	Canister	1
34	Micro pipette (1ml)	1
35	Micro pipette (200ul)	3
36.	Micropipette (100ul)	4
37.	Spectrophotometer	2
38	Floating water bath	1
39.	Shaker	1
40	Magnetic stirrer	1
41	Glass stirring Rod(200mm)	10
42	Glass stirring Rod(150mm)	10
43.	Glass stirring rod	3
44	ESR Rack	5
45.	Haematcrit Reader	3
46	Dessicator	1
47	Bunsen burner	19
48	Staining rack	10
49	Test tube holder	29
50	Spatula	4
51	Fire extinguisher	7
52	Retort stand(Base)	20

53	Retort stand(clamps)	20
54	Wire gauge	80
55	Stop watch	10
56	Test tube rack	10
57	Multi channel pipette	1
58	Micropipette 50ml	16
59	Micropipette 100ml	16
60	Micropipette 200ml	6
61	Micropipette 500ml	4
62	Micro pipette 1000ml	9
63	Micro pipatte 10ml	4

26.0 EXTERNAL EXAMINERS

All question papers are moderated by an external examiner. Similarly, all BMLS Research projects are assessed by the examiners. The following are the external examiners of the Department

1. Dr. Azubuike Nkiruka Chinonyelum (Associate Professor)

   University of Nigeria (Enugu Campus) From 2023 to date.

2. Dr. Nafisa Kabir (Associate Professor)

   Federal University Dutse Jigawa State. From 2023 to date.

3. Dr. Ahmad El- fulati (Senior Lecturer)

   Ahmad Bello University Zaria Kaduna. From 2023 to date.

4. Dr. Ibrahim Kala Kwalfe (Senior Lecturer)

   Usman Danfodio University Sokoto. From 2023 to date

27.0 LINKAGES

Currently the department partners with the following agencies, with ultimate aim of attaining academic excellence as well as expose the students to the contemporary challenges in medical practice.

- U.S. Agency for International Development (USAID) in collaboration with John Snow, Inc.(JSI)
- Institute of Human Virology, Nigeria (IHVN) in collaboration with Association of Public Health Laboratories (APHL) through the Strengthening Health Human Resources in Nigeria (SHaRING) USG PEPFAR funded Project.

Student of Medical Laboratory Science