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THE UNIVERSITY CREST



Crest displays the colours of the University. These are purple, Green and white. The Book at the centre of the Crest depicts the symbol of Scholarship for which the Usmanu Danfodiyo University is best known. This significance is further emphasized by the motto of the University captioned in the Arabic word “IQRA” which means “Read”.

MESSAGE FROM THE HEAD OF DEPARTMENT

It is my pleasure to welcome you to the Department of Microbiology, a Department known for its academic excellence. During your stay in the Department you will have the best in knowledge acquisition and character development. You will also find the entire staff members of the Department to be accommodating, highly inspirational, committed and ready to ensure that your aim of coming to this Department is achieved.

During your tenure and at all times, I will always urge you to be patient, tolerant and peace-loving students so that you can be part of the journey to success.

Please note that you are required to study this handbook carefully so that you become aware of the information and guidelines contained in it. This will help you to conduct yourself within legal framework as ensured by the departmental and University rules and regulations.

Lastly, I wish you God's guidance and success throughout your period of study in the Department.

Thank You.

Prof. A. A. Farouq

Head of Department

BRIEF HISTORY OF THE DEPARTMENT

The Microbiology Department offers a 4-year programme leading to a B.Sc. Honours Degree in Microbiology. The B.Sc. Microbiology programme commenced as a unit under the Department of Biological Sciences during the 1988/89 academic session with a total of 24 students. The Department graduated its first set of graduates during the 1992/93 session. The unit was upgraded into a full Department in the year 2006. So far a total of twenty two set of students numbering two thousand and thirty (2030) have graduated since the beginning of the programme and the staff strength have increased to 18 Academic Staff, 10 technical and other supporting Staff.

The Department runs programme with the following sub-discipline: General Microbiology, Medical Microbiology including Parasitology, Industrial and Environmental Microbiology. The running of these programmes involves teaching, practicals, tutorial, seminars, field trips and industrial attachment during vacation.

The Table below present the Heads of Unit while under the Biological sciences departments and heads of department when the Unit was upgraded to department:

S/No	Name of Head of unit	Period of Headship	
		From	To
1	Mal. Maccido Dauda Abdullahi	1992	1995
2	Mal. Shuaibu Bala Manga	1995	1998
3	Dr. Tukur Adamu	1998	2000
4	Dr. Amos Yabaya	2000	2004
5	Dr. Shuaibu Bala Manga	2004	2006
The Unit was converted to Department in 2006			
6	Dr. Shuaibu Bala Manga	2006	2008
7	Dr. Ummu-K Hassan Muhammad	2008	2010
8	Prof. S.B. Manga	2010	2016
9	Dr. A. A. Farouq	2016	2018
10	Dr. A. B. Rabah	2018	2021
11	Prof. A.A. Farouq	2021	To date

LIST OF ACADEMIC STAFF

S/No	Name	Highest Qualification	Area of Specialization	Rank
1.	Shuaibu Bala Manga	Ph.D.	Medical/Pharm Microbiology	Professor
2.	Ahmadu Ali Farouq	Ph.D.	Environmental Microbiology	Professor
3.	Ummu-K Hassan Muhammad	Ph.D.	Medical Microbiology	Professor
4.	Rabah Abdullahi Bako	Ph.D.	Environmental Microbiology	Professor
5.	Riskuwa Maryam Lami	Ph.D.	Environmental Microbiology	Professor
6.	Aliyu Sarkin Baki	Ph.D.	Environmental Microbiology	Reader
7.	Aliyu Ibrahim Dabai	Ph.D.	Industrial Microbiology	Reader
8.	Auwal Gambo	M.Sc.	Medical Virology	Lecturer I
9.	Usman Abdulkadir A.	M.Sc.	Medical Mycology	Lecturer I
10.	Abdullahi Muhammad	MSc	Mycology	Lecturer I
11.	Umar B. Ibrahim	Ph.D.	Environmental Microbiology	Senior Lecturer
12.	Aminu Y. Fardami	Ph.D.	Environmental Microbiology	Lecturer I
13.	Kabiru M. Nata'ala	MSc.	Industrial Microbiology	Lecturer I
14.	Abubakar M. Jodi	MSc.	Environmental Microbiology	Lecturer I

15.	Muhammad Gazali Shuaibu	MSc.	Biotechnology	Assistant Lecturer
16.	Zainab Muhammad Sanusi	B.Sc.	Food Microbiology	Assistant Lecturer
17.	Hujjaju Muhammad Dodo	B.Sc.	Industrial Microbiology	Graduate Asst.
18.	Shafaatu Ibrahim Magawata	B.Sc.	Medical Microbiology	Graduate Asst.

LABORATORY STAFF

S/No	Name	Qualification	Rank
1.	Bashir Akilu Suleiman	HND, M.Sc, FISLT Microbiology	Principal Technologist
2.	Ibafidon Hassan Ibrahim	HND Microbiology	Snr. Technologist
3.	Christian Simon	HND SLT	Snr. Technologist
4.	Muhammad Sabiu	HND SLT	Snr. Technologist
5.	Idris Saleh Yaro	HND SLT	Technologist
6.	Umar Muhammad Kebbe	SSCE	Lab. Assistant
7.	Hamza Sanusi	SSCE	Lab. Assistant

ADMINISTRATIVE STAFF

S/No	Name	Qualification	Rank
1.	Aminu Muhammad	BSc. Computer Science	Principal Data Processing Officer
2.	Kabiru Lawal	Certificate	Chief Clerical Officer
3.	Rilwanu Umar Dange	SSCE	Caretaker

DEPARTMENTAL FACILITIES

The Department had the following facilities:

- a. Four (4) dedicated laboratories: Three (3) for undergraduate students and one (1) for postgraduate students. Four other laboratories shared with Departments of Biochemistry and Biological Sciences (Teaching Laboratory, General Laboratory, Botany and Zoology Laboratories). This is in addition to a Chemical Store housing reagents, chemicals and glass wares.
- b. Five large lecture theatres (shared) which includes Exam hall, Science theatre, Multi-Purpose Hall, New Lecture Hall and STB Hall.
- c. The Department has internet facility with several computer sets.
- d. The Department has power point projectors and a power generator set to meet efficient lecture presentation and sudden power shut down respectively.

REGULATIONS GOVERNING CONDUCT AND DISCIPLINE OF STUDENTS

A. GENERAL CONDUCT

- i. Students are advised to take good care of their personal belongings. The University will not be responsible for any damage to, or loss of personal effects.
- ii. Any breach of peace or social nuisance within the University premises should be reported to the appropriate University authority (Porter, Caretaker, Matron, Hall Administrator, Security Division, etc.)

- iii. Absence from lectures, tutorials or practical classes requires the approval of the Heads of Department and the Deans concerned.
- iv. Students are prohibited to buy, sell, keep, and consume alcoholic drinks in the University premises. Any student caught contravening this provision shall be rusticated for two semesters/contact sessions and also be deboarded from the halls of residence throughout his/her stay in the University.
- v. Students are prohibited from consuming, keeping, selling or otherwise dealing in illicit drugs within the University premises. Students caught indulging in this act shall be rusticated for two semesters and handed over to the National Drug Law Enforcement Agency (NDLEA).
- vi. Students caught with firearms and or dangerous weapons within the premises of the University shall be expelled and handed over to the Police.
- vii. Students are responsible for the conduct of their visitors within the premises of the University.
- viii. Students and visitors are only allowed access into the campuses of the University after 10.00pm on proper identification.
- ix. Visitors to the female hostels are not allowed to be at the premises beyond 10.00pm.
- x. All unauthorized vehicles and their owners should vacate the premises of the halls of residence before 10.00pm.
- xi. Loitering around the halls of residence and shelterbelts beyond 10.00pm is not allowed. Students who violate this provision shall be disciplined accordingly (ranging from warning to rustication for one semester/contact session).
- xii. Under no circumstance should students receive visitors of opposite sex in their rooms. Violation of this provision shall lead to two-semester/contact sessions rustication for the students and the lost of University accommodation throughout their stay in the University.
- xiii. Students shall not indulge in physical combat in the University. Students who violate this provision shall be rusticated for two semesters/contact sessions and in addition, forfeit University accommodation for the following session.
- xiv. No student shall take the laws into his/her hands. Students who take laws into their hands shall be rusticated for two semesters/contact session.
- xv. Any student caught with inappropriate possession of items within the University community shall be handed over to the University Security Division for further necessary action. Once the security division establishes a case of theft, he or she would be suspended and handed over to the police; where a report indicates conviction by a court of law, he or she shall be expelled.

- xvi. A student arrested by security agencies and charged for a non-bailable criminal offence shall be suspended immediately until when investigations are concluded, where a report indicates conviction by a court of law, he or she shall be expelled.
- xvii. Political parties and their activities are not allowed on campus but as citizens of the country, students are free to belong to any political party of their choice.
- xviii. Any student accused of rape, sodomy and/or bestiality/lesbianism shall be handed over to the Police and liable to expulsion should judicial authorities prove the allegation.
- xix. Any student caught forging any document relevant to his/her admission shall be expelled from the University.
- xx. A student caught forging any document of the University or any other document in a bid to cheat or gain undue advantage in the University shall be expelled.
- xxi. Students who indulge in sexual harassment of fellow students and other members of the University community shall be liable to rustication for two semesters/contact sessions or expulsion.
- xxii. **Cultism is prohibited in the University.** Students who belong to any cult shall be expelled from the University and handed over to the police.
- xxiii. No student is allowed to institute a case (civil or criminal) against a fellow student while the University is in session without prior notice to the Dean of Student Affairs Affairs.
- xxiv. In the event of a student having a case in a court of law or the police station while the University is in session, the student shall liaise with University for out of court or police settlement provided it is not a criminal case.
- xxv. No student shall indulge in any conduct that would bring the good name of the University to disrepute. Violation of this provision shall attract rustication for two semesters/contact session or expulsion.

B. SPORT AND SPORT EQUIPMENT

- i. Students are encouraged to participate in sporting activities.
- ii. Sport equipment may be issued to students whenever necessary, be it on individual or club basis or through associations/societies.
- iii. Any student who fails to return sport equipment issued to him/her at the stipulated time will be made to pay a prescribed fine.
- iv. In the event of the lost of any equipment issued to student(s), the student(s) or club(s) shall be made to replace it and pay a fine of not less the cost.

C. MAIL

The University shall not be responsible for any missing mail.

D. IDENTITY CARDS / IDENTIFICATION

- i. The possession of University identity cards by students is compulsory.
- ii. A student must identify himself/herself by providing his/her identity card when required to do so.
- iii. Identity card is to be obtained from the Student Affairs Division on payment of prescribed fees.
- iv. Students who do not have identity card may be denied University facilities or other benefits meant for students.
- v. Upon completion of their studies or termination of studentship, the identity card should be surrendered to the Chief Security Officer.
- vi. Students who have vehicles shall obtain University stickers from the Tollgate Management Committee on payment of prescribed fees. The stickers shall be pasted boldly on their vehicles for easy identification.
- vii. Students who have vehicles shall register their vehicles with the security post at the hostel or the campus as the case may be.
- viii. Vehicles with tinted glasses are not allowed into the University by the Security Office except those permitted by law.
- ix. Reckless driving is prohibited within the University. Defaulters shall have their cars impounded, in addition to any other disciplinary measures deemed fit by the University.

E. COLLECTION OF MONEY IN THE UNIVERSITY

- i. Individual students or students' organizations shall not solicit for donations in respect of any function held by them within and outside the University except with the express permission of the Dean of Student Affairs and upon the recommendation of their Staff Adviser.
- ii. Registered students' associations are allowed to charge a token as registration or annual dues from their members. However, the charges shall be within the limit approved by the University Management.
- iii. When it is necessary to make a charge to cover the expenses for programmes organized by students' associations, printed tickets of programmes can be offered for sale on approval by the Student Affairs Division.

- iv. The Executives of any association that contravene the regulations on collection of money shall be dissolved forthwith, in addition to any disciplinary measure deemed fit by the University.
- v. Any student or group of students who collects money or donation under any false pretence shall be expelled from the University.
- vi. Withdrawal of money from the account of students' associations requires express permission of Staff Adviser(s).
- vii. Any student or group of students who embezzles (mismanages) any money or property belonging to a registered union/association/club/society or the Students Union shall be made to refund the money, replace the property or have their results/NYSC call up letters withheld or be liable to two-semester/contact sessions rustication or expulsion, as the case may be.

NB: Students rusticated in the first semester will henceforth have the portal opened to enable them register in the second semester of a session.

CHAPTER ONE

1.1 Philosophy of the Programme

The programme is designed to produce Microbiologists who are professionally equipped to meet the needs of the society. The programme focuses on theoretical and applied microbiology with emphasis on soil and medical microbiology, parasitology, industrial and environmental microbiology. The programme is predicated to involve lectures, practical, industrial work experience and field works. Graduates of the programme will have the capacity to pursue career opportunities in medical, agricultural, industrial, environmental sectors, and other related sectors of the economy.

Objectives

The objectives of the programme are to:

- a- expose students to the various aspects of microorganisms and their relationships with man.
- b- train students in the principles and theories of microbiology.

- c- develop students' skills in handling routine laboratory instruments and research equipment.
- d- impart in students thorough grounding in biochemical and microbiological research techniques.
- e- inculcate in students an awareness of the potentials of microorganisms in biotechnology, agriculture and petroleum researches.
- f- develop the students' intellectual capacity to successfully pursue higher studies in microbiology and related disciplines.
- g- produce graduates with capacity to pursue career development in teaching, research and related disciplines.

1.2 Admission Requirement

UTME

The entry requirements shall be at least credit level passes in five subjects including English Language and Mathematics, to form the core subjects with credit in three other relevant science courses Biology, Chemistry, and Physics at the Senior Secondary School Certificate or its equivalent. In addition, an acceptable pass in the University Matriculation Examination (UME) into 100-level is required.

Direct Entry

Candidates with two A level passes (graded A-E) at the Advanced Level in one or more relevant subjects (Biology, Chemistry, Geography, Mathematics and Physics) may undertake the three – year degree programme into 200-level.

1.3 Course Structure

Year One (100 Level) Courses **Minimum Requirement - 42 Units**

Core courses/Codes	Course Title	Units	Semester
MCB 101	Introductory Microbiology	2	First
BIO 101	General Biology I	3	First
BIO 102	General Biology II	3	Second
CHM 101	General Chemistry I	4	First
CHM 102	General Chemistry II	4	Second

PHY 101	General Physics I	3	First
PHY 102	General Physics II	3	Second
PHY 103	General Physics III	2	Second
PHY 107	General Physics Lab I	1	First
PHY 108	General Physics Lab II	1	Second
MAT 101	Elementary Mathematics I	3	First
MAT 103	Elementary Mathematics III	3	Second
BCH 101	Introductory Biochemistry	2	First
GST 101	Communication in English I	2	First
GST 102	Nigerian People and Culture	2	Second
GST 103	Information and Communication Technology	1	First
GST 104	Use of Library and Study skills	1	Second
GST 105	Communication in French OR	2	First
GST 106	Communication in Arabic	2	First
Total		42	

Year II (200 level) Courses
Minimum Requirement - 30 Units

Core courses/Codes	Course Title	Units	Semester
MCB 201	General Microbiology I	3	First
MCB 202	General Microbiology II	3	Second
BIO 201	Genetics I	2	First
BCH 201	General Biochemistry I	3	First
BCH 202	General Biochemistry II	3	Second
CHM 210	Physical Chemistry II	2	First
CHM 211	Organic Chemistry II	2	First
CHM 212	Inorganic Chemistry II	2	Second
CHM 213	Analytical chemistry I	2	Second
GST 211	Communication in English II	2	First
GST 212	Logic, philosophy and Human existence	2	First
GST 213	History and Philosophy of Science	2	Second
GST 214	Peace Studies and Conflict resolution	2	Second
Total		30	

Year III (300 level) Courses

Minimum Requirement - 40 Units

Core courses/Codes	Course Title	Units	Semester
MCB 301	Microbial Genetics and Molecular Biology	4	First
MCB 302	Pathogenic Bacteriology	3	Second
MCB 303	Immunology and Immunochemistry	4	Second
MCB 304	Environmental Microbiology	2	First
MCB 305	General Virology	3	First
MCB 306	Microbial Physiology and Metabolism	3	First
MCB 307	Soil Microbiology	3	Second
MCB 308	Pathogenic mycology	2	Second
MCB 309	Food Microbiology	2	Second
MCB 310	Microbiological techniques	3	First
CRO 305	Statistics for Agric. and Biological Sciences	3	First
GST 311	Entrepreneurship and Innovation	2	First
GST 312	Venture creation and Growth	2	Second
Elective Courses	Students to take any 5 units below		
BCH 301	Enzymology	3	First
BCH 308	Food Biochemistry	1	First
BCH 310	Bioenergetics	1	Second
BCH 307	Clinical BioChemistry	1	First
CHM 312	Instrumental Method Analysis	3	Second
Total		41	

Year IV (400 level) Courses
Minimum Requirement - 30 Units

Core courses/Codes	Course Title	Units	Semester
MCB 401	Seminar	2	First
MCB 402	Project	6	Second
MCB 403	Pharmaceutical Microbiology	2	First
MCB 404	Analytical Microbiology	2	First
MCB 407	Industrial Microbiology	4	First
MCB 409	Medical Parasitology	3	First
MCB 411	Petroleum Microbiology	4	First
MCB 499	Industrial Training	2	First
BUA 415	Any 2 Units from Business Administration	2	Second
Elective Courses	Students to take any 3 units below		
MCB 405	Principles of Epidemiology and Public Health	3	Second
MCB 406	Medical Virology	3	First
MCB 408	Microbial Ecology	2	First
Total		30	

Description of Courses

100 Level

GST 101: COMMUNICATION IN ENGLISH I (2 UNITS) (L:30,P:0,T:0)

Effective communication and writing in English, Language skills, Writing of essay answers, Comprehension, Sentence construction, Outlines and paragraphs, Collection and organization of materials and logical presentation, Punctuation.

GST 102: NIGERIAN PEOPLES AND CULTURE (2 UNITS) (L:30,P:0,T:0)

Study of Nigerian history, culture and arts in pre-colonial times, Nigerian's perception of his world, Culture areas of Nigeria and their characteristics, Evolution of Nigeria as a political unit, Indigene/settler phenomenon, Concepts of trade, Economics of self-reliance, Social justice, Individual and national development, Norms and values, Negative attributes and conducts (cultism and related vices), Re-orientation of moral and national values, Moral obligations of citizens, Environmental problems.

GST 103: INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) (1 UNIT) (L:15,P:0,T:0)

Development of modern ICT, Hardware technology, Software technology, Input devices, Storage devices, Output devices, Communication and internet services, Word processing skills (typing, etc).

GST 104: USE OF LIBRARY AND STUDY SKILLS (1 Unit) (L:15,P:0,T:0)

Brief history of libraries, Library and education, University libraries and other types of Libraries, Study skills (reference services), Types of library materials, using library resources including e-learning, e-materials, etc, understanding library catalogues (card, OPAC, etc) and classification, Copyright and its implications, Database resources, Bibliographic citations and referencing.

GST 105: COMMUNICATION IN FRENCH (2 Units) (L:30,P:0,T:0)

Introduction to French, Alphabets and numeracy for effective communication (written and oral), Conjugation and simple sentence construction based on communication approach, Sentence construction, Comprehension and reading of simple texts.

GST 106: COMMUNICATION IN ARABIC (2 Units) (L:30,P:0,T:0)

Introduction to Arabic alphabets and writing systems, Elementary conversational drills, Basic reading skills, Sentence construction in Arabic.

BIO 101 GENERAL BIOLOGY I: (3 Units) (L:30,P:45,T:0)

Cell structure and organization, functions of cellular organelles, diversity, characteristics and classification of living things, general reproduction, interrelationship of organisms; heredity and evolution, elements of ecology and types of habitat.

BIO 102 GENERAL BIOLOGY II: (3 Units) (L:30,P:45,T:0)

A generalized survey of the plant and animal kingdoms based mainly on study of similarities and differences in the external features, ecological adaptation of these forms.

CHM 101 GENERAL CHEMISTRY I (4 units) (L:45,P:0,T:0)

Atoms, Molecules and Chemical reaction. Chemical equations and stoichiometry. Atomic Structure and periodicity. Modern electronic theory of atom. Radioactivity. Chemical Bonding. Introduction to properties of gases: (Compressibility, Expandability, Volumes of Gases Versus Volumes of Liquids or Solid), Review of ideal gas laws. Equilibria and Thermodynamics. Introduction to Chemical Kinetics: Order and molecularity of chemical reactions, kinetics of first order reactions. Electrochemistry.

CHM 102: GENERAL CHEMISTRY II (4 Units) (L:45,P:0,T:0)

Historical survey of the development of organic chemistry. Nomenclature and classes of organic compounds. Homologous series. Introduction to functional groups. Isolation and purification of organic compounds. Quantitative organic chemistry. Stereochemistry (Conformational and configurational). Determination of structure of organic compounds. Electronic theory in organic chemistry. Saturated hydrocarbons. Unsaturated hydrocarbons. Periodic Table and Periodic properties; (Size, Ionization Energy, Electron Affinity, Electronegativity, Lattice and Hydration Energies). Valence Forces; structure of solids. The chemistry of selected metals and non-metals.

PHY 101: GENERAL PHYSICS I (3 Units)**(L:30,P:0,T:15)**

Space, time and frame of reference, Measurements, Units and dimension, Scalars and Vectors, Kinematics motion in one and two dimensions, fundamental laws of mechanics, force and momentum, Newton's laws of motion and applications; Parallelogram and triangular laws of forces, applications, Statics and dynamics, moments of a force or torque, principles of moments, equilibrium under parallel forces, couples, torque, centre of gravity and centre of mass of different objects, linear momentum, conservation of linear momentum, collisions; Work, energy and power, Circular motion, simple harmonic motion, Law of Universal gravitation, circular orbit, and escape velocity, rigid body and rotational motion, moment of inertia, angular momentum and conservation laws. Elasticity; Stress and Strain, Hook's Law. Young's modulus, bulk and shear modulus, Poisson's ratio. Hydrostatics: pressure, buoyancy and Archimedes Principle, Surface tension: Stokes Law and terminal velocity, surface energy, angle of contact, adhesion, cohesion. Capillarity, drops and bubbles, Hydrodynamics streamlines and Bernoulli's Principle, Laminar and turbulent flow. Reynolds's number, Viscosity, Poiseuille's equation for flow of liquid through a tube.

PHY 102: GENERAL PHYSICS II (2 Units)**(L:15,P:0,T:15)**

Electrostatics, Electric force and field, Electric flux, Conductors and current electricity, dielectric and capacitance, Magnetic force, field and magnetic materials, Magnetic effects of current, Electromagnetic induction, electromagnetic oscillations and waves. Applications.

PHY 103: GENERAL PHYSICS III (3 UNITS)**(L:30,P:0,T:15)**

Temperature and heat: Thermometric properties. Measurement of temperature, heat, thermal expansion and heat transfer, specific heat. heat capacity, latent heat; Molecular properties of matter — solid, liquid and gases. Molecular spacing and molecular movement; Brownian movement, Gas Laws: Kinetic theory of Gases, ideal and real gas, comparison of solids, liquid and gases. Waves and wave motion: Transverse waves, Longitudinal waves, Progressive waves, Principle of super position, Stationary or standing waves and their properties, stationary longitudinal waves, Stationary transverse waves, Properties of waves, wave properties of EM waves.

PHY 107: GENERAL PHYSICS LABORATORY I (1 Unit) (L:0,P:45,T:0)

Quantitative measurements: Treatment of measurement errors, and graphical analysis. A variety of experimental techniques in mechanics and properties of matter and heat will be employed. The experiments include studies of meters, mechanical systems, heat, viscosity, etc covered in Physics 101 and Physics 103.

PHY 108: GENERAL PHYSICS LABORATORY II (1 Unit) (L:0,P:45,T:0)

Experiments related to the topics under PHY 102. The experiments cover topics in waves and electricity.

MAT 101: ELEMENTARY MATHEMATICS I (3 Units) (L:30,P:0,T:15)

Elementary set theory: subjects, union, intersection, complements, Venn diagrams. 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, the Argand diagram, De Moivre's theorem, trigonometric functions of angles of any magnitude, addition and factor formulae. Angles: rotation, radians, trigonometric ratios, reciprocal ratios, Pythagora's theorem, special angles. Trigonometric identities, trigonometric formulas.

MAT 103: ELEMENTARY MATHEMATICS III (3 Units) (L:30,P:0,T:15)

Function of a real variable, graphs, limits and idea of continuity. The derivative as limit of rate of change. Techniques of differentiation. Extreme, curve sketching. Integration as an inverse of differentiation. Methods of integration. Definite integrals. Application to areas and volumes. Two dimensional co-ordinate geometry: straight lines, circles, parabola, ellipse, hyperbola. Tangents and Normal. Pre-requisite- MAT 101

MCB 101 INTRODUCTORY MICROBIOLOGY (3 Units) (L:30,P:45,T:0)

History of the Science of Microbiology. Sterilization and disinfection; Structure, ecology and reproduction of representative microbial genera. Cultivation of microorganisms. Isolation of microorganisms; isolation of bacteria, viruses.

BCH 102: INTRODUCTORY BIOCHEMISTRY (2 UNITS) (L:15,P:,T:15)

Chemical elements of life; Composition of living matters; Introduction to chemistry of amino acids and proteins, carbohydrates, lipids, and nucleic acid. Enzymes, their nature, biochemical actions and importance, coenzymes. Prokaryotic and Eukaryotic cells, cellular particles, cytoplasm and other physiological fluids; ATP and its function.

200 Level

GST 211: COMMUNICATION IN ENGLISH II: (2 Units) (L:30,P:0,T0)

Logical presentation of papers, Phonetics, Instruction on lexis, Art of public speaking and oral communication, Figures of speech, Précis, Report writing.

GST 212: LOGIC, PHILOSOPHY AND HUMAN EXISTENCE (2 Units) (L:30,P:0,T:0)

Part (A) Islamic Philosophy

Definition, scope, relationship between Philosophy and religion (Islam). Theory of knowledge in Islam. A critical review of the sources of knowledge (perception), experience, reason, intuition etc, with special emphasis on the role of REVELATION as the most reliable source of knowledge. Ultimate reality: Allah and his attributes, critical review of philosophical proofs, Quranic approach to providing the existence of Allah, Predestination and freedom of will as aspect of Allah's knowledge and power. Prophet-hood and the Day of Judgment. Ethics in Islam

Part (B) Western Philosophy

A brief survey of the main branches of Philosophy: Symbolic Logic, Special symbols in Symbolic Logic-conjunction, negation, affirmation, disjunction, equivalent and conditional statements; Law of Tort. The method of deduction, using rules of inference and bi-conditionals qualification theory. Types of discourse: Nature of arguments, Validity and soundness; Techniques for evaluating arguments; Distinction between inductive and deductive inferences, etc. (Illustrations will be taken from familiar texts, including literature materials, Novels, Law reports and newspaper publications).

GST 213: HISTORY AND PHILOSOPHY OF SCIENCE (2 Units) (L:30,P:0,T:0)

Man – his origin and nature, Man and his cosmic environment, Scientific methodology, Science and technology in the society and service of man, Renewable and non-renewable resources – man and his energy resources, Environmental effects of chemical plastics, Textiles, Wastes and other material, Chemical and radiochemical hazards, Introduction to the various areas of science and technology. Elements of environmental studies.

GST 214: Peace Studies and Conflict Resolution (2 Units) (L:30,P:0,T:0)

Basic Concepts in peace studies and conflict resolution, peace as a vehicle of unity and development, Conflict issues, Types of conflicts, e.g. Ethnic/religious/political/economic conflicts, Root causes of conflicts and violence in Africa, Indigene/settler phenomenon, Peace – building, Management of conflict and security. Elements of peace studies and conflict resolution, Developing a culture of peace, Peace mediation and peace-keeping, Alternative Dispute Resolution (ADR), Dialogue/arbitration in conflict resolution, Role of international organizations in conflict resolution, e.g. ECOWAS, African Union, United Nations, etc.

MCB 201: GENERAL MICROBIOLOGY (3 Units) (L:30,P:45,T:0)

Historical aspects: scope of Microbiology, General characteristics of microorganisms, growth and reproduction; sterilization and disinfection; brief survey of microbes as friends and foes.

MCB 202: GENERAL MICROBIOLOGY II (3 Units) (L:30,P:45,T:0)

Systematic classification of bacteria, fungi viruses, etc. Microbial variation and hereditary, biological and biochemical reactions of microorganisms; cycles of elements in nature; nitrogen fixation. Pre-requisite – MCB 201

B10 201: GENETICS I: (2 Units) (L:30,P:0,T:0)

Hereditary and non-hereditary characters, probability and test of goodness of fit. Quantitative inheritance, variation on genome structure. The chromosome structure of the eukaryotes and prokaryotes. Linkage, cross-over, sex-linkage, sex chromosomes and sex determination. The mechanism of genetic recombination. Introduction to population genetics. Application of genetics in crop improvement and environmental protection.

BCH 201: GENERAL BIOCHEMISTRY I (3 Units) (L:30,P:45,T:0)

Chemistry of amino acids, proteins and their derivatives; methods of isolation and identification; primary, secondary, tertiary and quaternary structure of proteins; water, acids and bases; acidity and alkalinity, pH and pKa values and their effects on cellular activities; buffers. Chemistry and structures of carbohydrates. (1st semester)

BCH 202: GENERAL BIOCHEMISTRY II (3 Units) (L:30,P:45,T:0)

Lipids: Chemistry, structure and biological roles; determination and biochemical application of the structure. Nomenclature of nucleosides and nucleotides, effect of acid and alkaline on hydrolysis of nucleic acid. Structure and functions of major cell components, prokaryotic and eukaryotic organisms.

CHM 210: PHYSICAL CHEMISTRY: (2 Units) (L:30,P:0,T:0)

Kinetic theory of gases and ideal gas laws. Behaviour of real gases - the van der Waals equation. First Law of thermodynamics and internal energy, state and non-state functions, enthalpy changes at constant volume and constant pressure, heat capacities for ideal gases. Thermodynamic quantities (w , q , ΔU , ΔH) of ideal gases and their relationships. Van der Waals equation and critical state. Principle of corresponding states. Entropy changes in reversible and irreversible processes. Joule-Thomson effect. Pseudo order. Kinetic law for second order reactions. Factors affecting rate of reaction: Introduction to collision and transition state theories in bimolecular reactions and its comparison with Arrhenius equation. Mechanism and theories of elementary processes. Introduction to photochemical reactions. Basic electrochemistry. (Pre-requisite- CHM 101)

CHM 211: ORGANIC CHEMISTRY II (2 Units)**(L:30,P:0,T:0)**

Factors affecting structure and physical properties of organic compounds. Factors affecting the availability of electrons. Energy of activation and free radical substitution reactions in alkanes. Chemistry of alcohols, ethers, epoxides, amines, enols and alkylhalides. Nucleophilic Substitution reactions, Mechanisms of substitution reactions (SN1, SN2,). Aromaticity. Various organic reactions e.g. Addition, free radical, elimination reaction etc.

CHM 212: INORGANIC CHEMISTRY II (2 Units)**(L:30,P:0,T:0)**

Periodic trends and properties of the 1st row transition metals. Use of redox potential and reaction feasibility. Chemistry of s and p-block elements: (Alkali and alkaline earth metals: Hydrides and Complexation tendencies. Structural features of hydrides, halides, oxides and oxyacids). Chemistry of first row transition metals (Salient features, characteristic properties of 3d-elements with reference to oxidation states, colour, magnetic behaviour, and complex formation tendency). Introduction to coordination Chemistry including elementary treatment of Crystal field theory. Elementary introduction of Organometallic Chemistry. Role of metals in biochemical systems.

CHM 213: ANALYTICAL CHEMISTRY I (2 Units)**(L:30,P:0,T:0)**

Theory of errors. Statistical treatment of data (determination of mean, median, mode; Deviations, accuracy and precision, confidence limits, rejection of results and significant figure convention). Theory of sampling. Chemical methods of analysis; including volumetric (preparation of solutions inclusive) and gravimetric and physicochemical methods, Optical methods. Introductory to Spectroscopic methods of analysis. Separation methods (solvent extraction and different types of chromatographic methods). Pre-requisite - CHM 101 and 102

300 Level**GST 311: ENTREPRENEURSHIP AND INNOVATION (2 Units)****(L:30,P:0,T:0)**

This course is an introductory course for studying Entrepreneurship for the first time. The design and flow of the course are aimed at creating awareness, providing the knowledge and skills that are important to achieving success in all human endeavors.

GST 312: VENTURE CREATION AND GROWTH (2 Units)**(L:30,P:0,T:0)**

Concept of Business and New Value Creation Financing; Theories of Growth: An Overview; Sources of Funds; Marketing; New Opportunities for Expansion; Ethics and Social Responsibility; Managing Transition: From Start Up to Growth.

MCB 301: MICROBIAL GENETICS AND MOLECULAR BIOLOGY (4 Units) (L:30, P:45, T:15)

A survey of the current status of microbial genetics (Bacteria, viruses, protozoans and fungi) including discussion of methods and findings in the areas of mutagenesis, induction, isolation and biochemical characterization of mutants; adaptation, transformation, transduction, conversion and conjugation. General and specialized methods and techniques in microbial genetics. Experiments with virulent phages, temperate phages and lysogenic bacteria. Fungal and other lower eukaryotic genetics. Pre-requisite BCH 201, BIO 201, MCB 201, 202.

MCB 302: PATHOGENIC BACTERIOLOGY (3 Units) (L:30, P:45, T:0)

Definition of infection. Pathogenicity and pathogens, Host-parasite relationship Virulence and Koch's Postulates, Methods of isolation. Skin infections: Anatomy and physiology, Normal flora of the skin, Bacterial skin diseases, Skin diseases caused by viruses and Skin diseases caused by Fungi. Respiratory System Infections: Anatomy and physiology, Normal flora, Bacterial and Viral infections of the Upper and Lower respiratory tracts and Fungal infections of the Lungs. Alimentary System Infections: Anatomy and physiology: Mouth, Salivary gland, Oesophagus, Stomach and Small intestine, Pancrease, Liver and Large intestine. Normal flora of the mouth and intestine. Bacterial and Viral diseases of the Upper and Lower alimentary system. Genitourinary Infections: The Urinary system, The Genital system, Normal flora of the Genitourinary system, Urinary system infections, Non-venereal genital system diseases: Bacterial vaginitis, vulvovaginal candidiasis, Staphylococcal Toxic Shock. Sexually transmitted diseases: Bacterial STDs, Viral STDs and Protozoan STD. Nervous System infections: Anatomy and physiology, Bacterial and Viral diseases of the nervous system, Fungal and Protozoan diseases of the nervous system. Wound Infections: Anatomy and physiology, Common Bacterial wound infections, Bacterial bite infections and Fungal wound infections.

MCB 303: IMMUNOLOGY AND IMMUNOCHEMISTRY (4 Units) (L:30, P:45, T:15)

Non- Specific Immunity : Non- specific defense mechanisms, specific defense mechanisms, Cells and tissues involved in host defense, Physical barrier and antimicrobial factors in non-specific immunity, The complement system -classical and alternative pathways of complement activation, Cytokines, Phagocytosis and inflammation. Specific Immunity: Fundamental features, The nature of antigens and haptens, Nature of antibodies, The role of lymphocytes in specific immunity, Major histocompatibility complex(MHC), Development of the antibody response, Development of the cell mediated immune response, Immunological tolerance and Control of immune response. Application Of Immune Responses: Principles of immunological testing, Precipitation and Agglutination reactions, Immunofluorescence test, The complement fixation test and neutralization, Radio immuno-assay (RIA), Enzyme linked immunosorbent assay (ELISA) and western blot test, Tests used in cellular immunology, Principles of immunization and Vaccines and immunization procedures. Immunological Disorders: Hypersensitivity reactions, Transplantation immunity, Immunodeficiency disorders and Autoimmune diseases. Pre-requisite BCH 201, BCH 201.

MCB 304: ENVIRONMENTAL MICROBIOLOGY 2 Units (L:15, P:45,T:0)

Principles of microbial ecology: Bacteria in low nutrient environment, microbial competition and antagonism, microorganisms and environmental changes. Terrestrial environments: microorganisms and Soil, environmental influences in Soil. Aquatic environment. Biogeochemical cycling: Oxygen cycle, Carbon cycle, Nitrogen cycle, Sulfur cycle, Phosphorous and other cycles. Bioremediation: The biological cleanup of pollutants: Pollutants and means of bioremediation.

MCB 305: INTRODUCTORY VIROLOGY 3 Units (L:30, P:45,T:0)

Historical aspect: The virus particles, physical and chemical properties, virus reproduction. Genetic characteristics, classification and nomenclature. Method of isolation, purification and identification. The Bacteriophage. Some viruses of plants and animals. Pathogenesis and control of viral infection. Laboratory exercises on techniques of isolation, purification and identification of viruses.

MCB 306: MICROBIAL PHYSIOLOGY AND METABOLISM 3 Units (L:30,P:45,T:0)

Aspects of microbial physiology, a review of cell structure and connection growth and death of micro-organisms. Principles of metabolism: harvesting energy, components of metabolic pathways and scheme of metabolism. Enzymes: Mechanisms and consequences of enzyme action, allosteric regulation, cofactors and coenzymes, environmental factors affecting enzyme activity and enzyme inhibition. Pathways and Processes that fuel aerobic growth of chemoorganotrophs: glycolysis, the pentose phosphate pathway, transition step, tricarboxylic acid cycle, oxidative phosphorylation. Pathways and Processes that fuel anaerobic growth of chemoorganotrophs: Anaerobic respiration, fermentation. Catabolism of organic compounds other than glucose. Chemolithotrophs, Phototrophs, Carbon fixation. Anabolic pathways.

Pr-requisites BCH 201, MCB 201

MCB 307: SOIL MICROBIOLOGY (3 Units) (L:30, P:45,T:0)

The characteristics of soil environment; microbial flora and fauna of soil; microbial activities in soil; Nitrogen cycle, mineral transformation by microorganisms. Ecological relationship among soil pathogens. Effect of pesticides on soil microorganisms. Biodegradation and biofuels generation. Microbiology of the rhizosphere. Pre-requisites MCB 201 and 202.

MCB 308: PATHOGENIC MYCOLOGY (2 Units) (L:30,P:45,T:0)

Structure, reproduction and classification of pathogenic fungi, laboratory methods of study, pathology and immunology of superficial systematic mycoses and actinomycoses. Pre-requisite MCB 201, 202.

MCB 309: MICROBIOLOGY (2 Units)

(L:30, P:45,T:0)

The distribution, role and significance of micro-organisms in food: intrinsic and extrinsic parameters of food that affect microbial growth, food spoilage and food borne diseases, micro-organisms. Indices of food sanitary growth and food microbiological standards. Disease of animals transmissible to man via animal food production.

Pre-requisites MCB 201, 202, BCH 201.

MCB 310 MICROBIOLOGICAL TECHNIQUES (3 Units)

(L:30, P:45,T:0)

Culturing of microorganisms; preparation of media for microbial growth. Isolation of pure culture; streaking, pour plates etc; subculturing procedures. Staining techniques for differentiation of microorganisms. Enumeration of microorganisms, direct and indirect procedures. Identification of microorganisms to include colonial and cellular morphology and biochemical procedures.

CRO 305: STATISTICS FOR AGRIC & BIOLOGICAL SCIENCES (3 Units)

(L:30,P:0,T:15)

Descriptive statistics: Mean, Mode and Median, Frequency tables and frequency distributions, statistical techniques used in analyzing data; Probability theory; Statistical methods; One sample t-test; Two sample t-test; Non-parametric tests; Correlation and regression analysis; Analysis of variance (ANOVA)

BCH 301: ENZYMOLOGY (3 Units)

(L:30,P:0,T:15)

Vitamins and co-enzymes, fat and water soluble vitamins, structures and functions of enzymes and co-enzymes. Classification and nomenclature of enzymes. Synthesis of enzymes and inhibition, mechanism of enzymes-catalyzed reactions. Effects of temperature, pH, ions and inhibitors on enzymes catalyzed reactions, estimation of kinetic parameters, enzymes activities K_m , V_{max} , Kietc zymogens activation digestive enzymes etc. production, isolation, purification and characterization of enzymes. Recent advances in enzymology.

BCH 308: FOOD BIOCHEMISTRY: (1 Unit)

(L:15,P:0,T:0)

An introduction to the theory and application of physical and chemical methods for determining the constituents of food. Food processing, preservation and storage of traditional foods, roots and stem tubers, fruits and fruit drinks, seeds and grains, green and vegetables. Food poisoning and intoxication, prevention and cure.

BCH 310: BIOENERGETICS (1 Unit)

(L:15,P:0,T:0)

High-energy compounds; chemical potentials. Electrochemical potentials, electron transport system and oxidative phosphorylation, regulation of ATP production. Chemical thermodynamics, oxidations and reductions.

BCH 307: MEMBRANE BIOCHEMISTRY (1 Unit)

(L:15,P:0,T:0)

Structure, composition and functions of biological membranes. Isolation, characterization and classification of membranes. Biosynthesis of membranes. Molecular organization of membrane components. Natural and artificial membrane bilayers. The unit membrane hypothesis. Membrane transport system - active versus passive transport systems. Transport of sugars and amino acids. Ionophores.

CHM 312: INSTRUMENTAL METHODS OF ANALYSIS (2 Units) (L:30, P:45,T:0)

Theory, principles and applications of UV/Visible Spectrometry, IR Spectrometry, Flame Emission and Atomic Absorption Spectrometry, Fluorescence and Phosphorescence spectrometry. Nuclear Magnetic resonance and Electron spin resonance. Introduction to Electro-Analytical Techniques. X-ray and radiochemical methods of analysis. Other instrumental methods: Refractometry, Polarimetry, Polarography and Colorimetry.

400 Level

MCB 401: SEMINAR IN MICROBIOLOGY AND BIOTECHNOLOGY (2 Units) (L:0, P:0,T:30)

Under the supervision of staff, the students are expected to select a seminar topic for detailed study, using library methods. The emphasis should be on recent advances in the chosen field. The course is expected to give the student the opportunity for independent thought and expression. The study will result in seminars and symposia.

MCB 402: RESEARCH PROJET IN MICROBIOLOGY AND BIOTECHNOLOGY (6 Units) (L:0,P:90,T:0)

A student will be expected to carry out a detailed field research investigation under supervision of a staff in any special area of microbiology and biotechnology, write it up as a project report and examined for his/her knowledge of the work before a panel of external and internal examiners in an oral examination.

MCB 403: PHARMACEUTICAL MICROBIOLOGY (2 Units) (L:30,P:45,T:0)

History and development of antimicrobial drugs: Discovery of antimicrobial drugs, Discovery of antibiotics, development of new generations of drugs. Features of Antimicrobial drugs: Selective toxicity, Antimicrobial action, Spectrum of activity, Tissue distribution, metabolism and excretion of drugs, effect of combination of antimicrobial drugs, adverse effects of drugs, resistance to antimicrobials. Mechanisms of action of Antibacterial drugs: Drugs that inhibit cellwall synthesis, Drugs that inhibit protein synthesis, Drugs that inhibit Nucleic acid synthesis, Drugs that inhibit metabolic pathways, Drugs that interfere with cell membrane integrity. Concepts of antibiotic sensitivity: Determining the minimum inhibitory and bactericidal concentrations, conventional disc diffusion methods. Resistance to antimicrobial drugs: mechanism of resistance to antibacterial drugs. Mechanisms of action of Antifungal drugs, Mechanisms of action of Anti-protozoan drugs.

MCB 404: ANALYTICAL MICROBIOLOGY AND QUALITY CONTROL (2 Units)
(L:30, P:45,T:0)

Introduction to analytical microbiology; Microbial detection methods; Microbial Assay; Concept of Plant sanitation. Responses of micro-organisms used in essays. Obtaining and measuring responses. Preparation of essay sample. Quality control and Quality Assurance; Hazard Analysis Critical Control Point; Microbiology standards and specifications.

Pre-requisites MCB 201/202; BCH 201.

MCB 407: INDUSTRIAL MICROBIOLOGY (4 Units) (L:45, P:45,T:0)

Fermentation systems; design and use of fermenters. Microorganisms of Industrial importance. Classification of microbial products by use. Relationship between primary and secondary metabolism; characteristics, sources and strain improvement of industrial microorganisms. Microbial growth and product formation in industrial processes; media for industrial fermentations. Foaming, Major products of Industrial Microbiology: enzyme production and immobilization; production of vitamins, amino acids, antibiotics, organic acids, beer and wine.

MCB 409: MEDICAL PARASITOLOGY (3 Units) (L:30, P:45,T:0)

Survey of animal parasites in vertebrate host, Animal association and parasitic adaptation. Ecological niche, host parasitic interaction. Host specificity.Periodic phenomenon. Transmission of parasites. Effect of host migration its parasitic population. Evolution of parasites. Control of parasites and parasitic diseases.

MCB 411: PETROLEUM MICROBIOLOGY (4 Units) (L:45, P:45,T:0)

Biogenesis of fossil fuels with emphasis on the role of microorganisms. Petroleum prospecting and secondary recovery. Microbial corrosion of pipes and equipment. Methanogenesis and methanotrophy. Effects of oil spill on microbial activities in aquatic and terrestrial ecosystems. Biodeterioration and biotransformation of hydrocarbons.

MCB 499: INDUSTRIAL TRAINING (2 Units) (L:15, P:45,T:0)

Students will be posted to industrial establishments such as food processing, brewing, distillery, pharmaceutical, research institutes or medical and health institutions. A report to be submitted for grading.

BUA 415: MARKETING MANAGEMENT (2 Units) (L:30, P:0,T:0)

Roles and Importance of marketing management, Customer Analysis, Market Planning and Analysis, Product Planning and Development, Pricing, Managing the distribution Channel; Promotion Tools; Evaluation of Total Marketing Effort and Marketing Audit.

MCB 405: PRINCIPLES OF EPIDEMIOLOGY AND PUBLIC HEALTH (3 Units)

(L:30, P:45,T:0)

Statistical applications in epidemiology. Nature of epidemiological investigations spectrum of infection. Hatred Immunity Latency of infections. Multi-factorial systems in epidemics. Zoonoses. Antigenic drifts Biological products for immunization – Recommended Immunization schedules. International control of infections diseases.

Pre-requisites MCB 201/201; MCB 302.

MCB 406: MEDICAL VIROLOGY (3 Units)

(L:30, P:45,T:0)

Viruses pathogenic for man and animals with emphasis on virulence's types of disease produced, methods of control. The bacteriophage will be used in same of the laboratory practical, to demonstrate the characteristics of the viruses. Representatives' animal viruses will also be studied in the laboratory to demonstrate the nature of viral virulence. Methods of viral cultivation and identification with special reference to tissue culture techniques will also be introduced. Pre-requisites MCB 101/102.

MCB 408: MICROBIAL ECOLOGY (2 Units)

(L:15, P:45,T:0)

Microbes and ecological theory. Physiological, morphological and genetic adaptations of microorganisms to their environment. Microbial interactions; microorganisms in natural ecosystems. The life of microorganisms in air, springs, rivers, lakes and seas. Cycling of elements in water and sediments.

2.0 CHAPTER TWO

2.1 Guidelines on Registration

Fresh Students

All fresh students admitted into the University (Matriculation, UME, Direct Entry, Certificates, Diploma) whose names appear on the various admission lists should first present themselves to the Admissions Officer for Screening and Confirmation of admission at the designated Central Registration Unit with the following:

- i. Original Admission Letter obtained from the Admissions Office
- ii. Original Certificates/Credentials ('A' Level, Diploma, 'O' Level, Primary School).
- iii. JAMB Result Slip.
- iv. Birth Certificate/Declaration of Age .
- v. Letter of Indigenization (State of Origin).
- vi. Letter of Sponsorship (if necessary).
- vii. Current passports photograph

This category of students are also expected to present the following at the Faculty Registration Centers:

- i. Notification/Evidence for Confirmation of admission.
- ii. Birth Certificate/ Age Declaration.
- iii. Original Certificates and Photocopy of credentials .
- iv. Certificate/Letter of Indigenization (State of Origin).
- v. Letter of Sponsorship (if necessary).
- vi. Medical Clearance obtained from the University Clinic.
- vii. Receipts of payment of fee.
- viii. Current passports photograph.
- ix. Completed MIS 01,02, etc forms

Returning Students:

This category of students would be expected to present the following at the Central Registration Unit/Faculty.

- i. Medical Clearance obtained from the University Clinic.
- ii. Receipt of payment of Fee..
- iii. Completed MIS 01,02, etc forms.
- iv. Letter of Sponsorship (if necessary), etc

Certificate Verifications

Students are admitted into the University on the basis of the results they presented to it. The University has Certificate Verification Committee which crosschecks and verifies the originals of students' credentials. Any student who is found not to possess the pre-requisite qualifications and/or Certificate(s) that qualifies him/her for admission into the University would be asked to withdraw from the University. In any event during verification exercise, a student is found to have posses fake/forged certificate (s), such a student(s) may be handed over to the police/security office for further investigations.

Matriculation Ceremony

- i. Matriculation is binding on every student admitted into the University for the first time.
- ii. To matriculate, each registered student must sign the matriculation register in the Faculty in accordance with the directives of the

- Registrar. Non-Matriculated (undergraduate and postgraduate) students are not bona fide students of the University.
- iii. Matriculating students are presented by their respective Deans, while the Vice-Chancellor administers the Matriculation Oath. Students are made to “solemnly undertake and swear to observe and respect the provisions of Usmanu Danfodiyo University Laws, Statutes, Ordinances and Regulations which are now in force or which may from time to time be brought into force”.

2.2 Orientation Programme for Fresh Students

This exercise is conducted at the beginning of each session for the following objectives:

1. To assist new students become acquainted with the Faculty and/or University, generally and especially, with its rules and regulations;
2. To initiate a basis for useful and friendly contact and understanding between new students, other students and the staff and;
3. To provide new students with information on their obligations, responsibilities and available students' facilities.

2.3 Attendance of Lectures and Continuous Assessment

Students are expected to attend their prescribed course lectures punctually and regularly.

- i. The University has set seventy-five (75) percent course lecture attendance as pre-requisite for sitting for examination.
- ii. Continuous assessment ranges from 25-40% of the total points in the final examination.
- iii. The Department/Faculty/University is not under any obligation to repeat course (s) and/or continuous assessment to student (s) who absents themselves from regular lectures and continuous assessments. In respect of continuous assessment (CA), the Department/Faculty/University may grant concession to students to write a make-up CA; or test as the case may be in special circumstances such as medical grounds and other approved leaves on application to the Dean of the Faculty.

2.4 Deferment of Studies

Students wishing to defer their studies for a whole session or a semester should write to the Dean of the Faculty, through Head of Department. The Department will consider, recommend and forward same to the Dean for consideration by the Faculty Board. The decision of the Faculty Board would, thereafter, be communicated to Senate for information with photocopies of the applications.

(a). Processing of Applications for Deferment of Studies

Procedurally, any student wishing to defer a whole session or the first semester thereof on personal/financial grounds should apply at the beginning of that session and certainly not later than two weeks after the end of registration exercise.

(b). Deferment of Second semester on personal grounds

For the deferment of the second semester, applications should be submitted within the first two weeks of resumption for the semester

(c). Deferment on Medical grounds

Applications for deferment of period of studies on medical grounds could be considered at any point within the session provided the University is notified immediately the applicant takes ill. Where a student is even incapacitated to apply, applications by proxy are allowed.

(d). Procedure

The application should be written to the Chairman of Senate through, Head of Department and Dean of Faculty. Upon recommendation by the Department, the Faculty Board will consider the application and forward the recommendation to Senate. The memo to be sent to the Senate will be accompanied by the original application and medical report, authenticated by the Director, Health Services.

NB:

- i. Where a student falls ill at the beginning of a session and did not notify the Department/Faculty/University before the end of the first semester of the same session, he/she shall be deemed to have voluntarily withdrawn him/her self from the University.
- ii. Where a student falls ill during the second semester and did not inform the Department/Faculty/University before the end of the semester, he/she shall be deemed to have voluntarily withdrawn him/her self from the University.

2.5 The Course Unit System

This is a system of study where courses are divided into levels and units, and students are expected to register a certain minimum number of credit units at a particular level to qualify for graduation. The system allows students to repeat failed courses at higher levels (i.e carry over), except when such a failed course(s) are a pre-requisite to courses at higher levels. With this arrangement, students can graduate at their pace but within the specified period of study approved by the University. A unit is awarded to a course of 15 hours of lectures, or of 45 hours of practical year semester. The Departmental Board moderates all question papers

internally. In addition to this, an approved External Examiner comes to the department at the end of each session. Issuance of result is after its consideration by the Department, Faculty Board and the Senate.

2.6Registration of Courses

Undergraduate Students are expected to register between a minimum of 30 units and a maximum of 48 units at each level of study. However, there is a variation from one department to the other on minimum/maximum units required at different levels of study and for different degree programmes in the faculty. All fresh students are strongly advised to study the course brochure of the department or contact the Head of Department and level coordinators to ensure correct registration of courses and units. Attention should be given also to compulsory courses.

2.7Dress Code

Nudity and the following forms of indecent appearance are not allowed in the Department/Faculty/University;

- i. Wearing of any dress that exposes the chest, un-buttoned or half-buttoned shirts.
- ii. Use of tight fittings, transparent dresses, sleeveless short blouses, heavy make-ups and excessive use of jewelry.
- iii. Use of worn out or sliced trousers/skirts, T-shirts with provocative messages and wearing of shorts/mini skirts at academic functions. In addition, female students are not allowed to wear shorts outside their hostels.
- iv. Wearing of earrings and necklaces or parking and weaving of hair by male students.
- v. Wearing of dark glasses during lectures (except on medical grounds). Students should always appear neat and tidy. Contravention of any of the above attracts appropriate punishments, ranging from warning for first offenders and rustication for subsequent violation.

2.8Academic Grievances

Academic grievances are handled by appropriate officers such as Academic Staff Advisers, the Student's level coordinators, Examinations Officers, Student's Project Coordinators, Seminar Coordinators, SIWES Coordinators etc. Problems beyond these officers are handled by the Head of Department and/or Departmental Board and where necessary, it goes to the Faculty Board and/or the Senate.

2.9Student's Academic Adviser

Within the Department, student academic advisers are the Teaching Staff, Examinations Officers, Registration Officers and Coordinators assigned to carry out certain academic programmes as well as the Guidance and Counselling Officer. There is Departmental Examinations Officer, Staff/Students seminar coordinator, Students' industrial attachment

Coordinator, final year Project Coordinator and level Coordinators. In addition, every academic staff is a coordinator of some group of courses in the Department.

3.0 CHAPTER THREE

3.1 EXAMINATIONS AND GRADUATION

3.2 Conduct of Examinations

- i. The University Senate reserves the power, under the Act establishing the University and other subsequent amendments, to decide exclusively on all academic matters.
- ii. At the end of each semester or when applicable, examinations are conducted for courses taught in various departments. Such examinations may take the forms of written papers, oral examination, practical, clinical, submission and defense of written projects, etc. as approved by the University Senate.
- iii. The time-table for the examinations shall be fixed on the various notice boards and website in the University stating the time and venue of all examinations.
- iv. Students who have clashes in the examinations based on the time-table should immediately intimate their Departmental/Faculty Examinations Officers.

- v. Students who fail to intimate the appropriate officers of the University of Impending Clashes in examinations shall blame themselves for any difficulty or eventuality that may arise.
- vi. Continuous assessment shall be included in determining the final score of candidates in the examination results.
- vii. Any student who absents him/herself from any examination without University approval and has not withdrawn from the course of study would be graded “F” for such course(s) and the grade(s) would be reflected in the calculation of his/her GPA for the semester or session. Where there is an approval, such should be documented as appropriate.
- viii. Subject to the approval of the Senate, the University may grant concessions to student(s) who could not complete or write all the examinations due to certified illness or other exigencies acceptable to the Senate. Where the Senate accepts any reason as genuine, it shall be at the pleasure of Senate to determine the nature of concession(s) to be so given.
- ix. The University may allow second semester registration in appropriate cases.
- x. Students who satisfy the requirements for examinations shall be issued with an examination card dully signed by an appropriate officer, which shall be presented to the invigilator in all examinations.
- xi. No student shall be allowed to enter the examination hall without the University identity card examinations cards.
- xii. A candidate shall not be allowed to enter the examination venue if he or she is more than 30 minutes late. However, a candidate may be allowed entry only at the discretion of the invigilator in consultation with the Head of Department or the Faculty Examinations Officer. Such cases shall be reported in writing by the invigilator to the Faculty Examinations Officer.
- xiii. A candidate shall not be allowed to leave the examination venue within 45 minutes after the commencement of the examination except under exceptional circumstances approved by the Head of Department or the Examinations Officer or the Invigilator.
- xiv. No candidate shall leave the examination venue during the last 15 minutes of the examination.
- xv. On entering the examination venue, it is the responsibility of the candidate to draw the attention of the invigilator to any paper or material on his/her seat, table or on the floor around him/her to ensure that such materials are removed before the commencement of the examination.
- xvi. A candidate who arrives late shall not be allowed extra time.

- xvii. A candidate shall deposit any handbag, brief case, books, handouts, etc. outside the examination venue or in front of the invigilator before the commencement of the examination. A student coming into the examination hall with material(s) other than writing material(s) will be doing so at his/her own risk.
- xviii. A candidate shall comply with the instructions to candidates as set out on a question paper and answer booklet or other materials supplied.
- xix. Candidate(s) shall also comply with any lawful instruction(s) given by the invigilator.
- xx. A candidate shall only use the answer booklet or other materials provided by the invigilator. All rough works must be crossed out neatly.
- xxi. Rough works shall only be done on the answer booklet.
- xxii. Supplementary answer sheets or booklets, even if they contain only rough work, must be neatly packed into the answer booklet.
- xxiii. Under no circumstance shall a candidate write anything other than his/her admission number and name on the question paper.
- xxiv. Where attention of the invigilator is required, hand should be raised to indicate the need. Absolute silence must be maintained.
- xxv. There should be no writing on examination card and the question paper unless a student is asked to do so.
- xxvi. Nursing mothers are not allowed to write examinations with their babies
- xxvii. Female students wearing face covering are required to be appropriately identified before they are admitted into the Examination Hall and s may be required later for identification.

3.3 Writing of Examinations on Hospital Beds

- i. A hospitalized student shall apply for permission to write examination on his/her hospital bed through his/her physician. The application should reach the Head of Department at least 7 days before the examination of the affected course.
- ii. The Head of Department shall, within 24 hours of receipt of the application, forward his recommendation to the Dean of his Faculty.
- iii. Subject to availability of facilities, the Dean approves the application and notifies the University Authority through the Registrar.
- iv. A copy of the approval shall be made available to the Chairman, Examinations Monitoring Committee, before the commencement of the examination for necessary action.

- v. The approval shall be communicated to the student at least 24 hours to the examination.
- vi. A minimum of N1, 000.00 and a maximum of N5, 000.00 shall be paid by the student, being expenses for the conduct of the examination per paper.
- vii. Examination materials (question papers and scripts) for the student should leave the main examination hall within 2 minutes of commencement of the examination and should reach the hospital within 45 minutes of commencement.

3.4 Guidelines For Re- Marking Of Examination Script(s)

- i. When a student applies for his/her scripts to be re-marked, Senate is to approve the assessor on the recommendation of the Vice-Chancellor.
- ii. The assessor should be paid an appropriate honorarium to be determined by Senate.
- iii. A student who wishes to apply for his/her paper (s) to be re-marked, should do so within one week of release of examination results by his/her Faculty.
- iv. A student should pay, in cash and in advance, the full expenses for the re-marking (to be estimated by Registry) before his/her script (s) is/are sent out. The payment should be done within one week of Senate's approval of the assessor.
- v. The verdict of the assessor, which would be reported to the Senate before being known to the student, will be final.
- vi. All such requests should be routed through the complainant's Faculty Board, which should, within two weeks of the receipt of the complaint, investigate and present to the Senate their findings and recommendation (s).
- i. If the complainant is however, not satisfied with the decision taken at this stage, he/she would then be free to apply for his/her script (s) to be remarked by another external assessor in accordance with the above guidelines.

3.5 Calculation of Grade Point Average (GPA) And Cumulative Grade Point Average (CGPA)

- i. Letter grades and grade points are earned from percentage scores in the final examination in a given course as follows:

S/No	Percentage Score	Letter Grade	Grade Point
1	70 – 100	A	5
2	60 – 69	B	4
3	50 – 59	C	3
4	45 – 49	D	2
5	40 - 44	E	1

5	0 – 39	F	0
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GPA and CGPA are not calculated for DVM and MBBS programmes nor are these degrees classified at the end of the training. For this reason, the minimum pass grade is a “C” for all courses and any score below fifty percent (50%) is graded “F”.

- iii. The performance of a student in a semester is reported as (GPA), while the overall performance at the end of the session (and/or at any point in his/her study programme) will be reported as CGPA.
- iv. A weighed Grade Point (GP) is determined for the performance in each course by multiplying the grade point obtained by the credit unit of the course.
- v. Adding the weighed grade point obtained in all courses offered in that semester and dividing the sum by the total value of credit of all the courses, determines the GPA for the semester.
- vi. Cumulative Grade Point is calculated by adding the weighed grade points obtained in all courses offered up to the end of a given session (and/or up to a point in a student’s programme or end of the programme) and dividing the sum by the total value of credits of all courses at that point.
- vii. To qualify for a Bachelor’s degree, a student must obtain a minimum number of credit units for each level of study (core and elective courses) and the total units required for his/her programme as well as the credit units for General Studies courses.

3.6 Classification of Degrees

Degree classes will be designated with reference to Grade Point Average as follows:

S/No	CGPA	Class of Degree
1	4.50 – 5.00	First Class Honours
2	3.50 – 4.49	Second Class Honours (Upper)
3	2.40 – 3.49	Second Class Honours (Lower)
4	1.50 – 2.39	Third Class Honours
5		

- ii. For classification of Diplomas and Certificates, students are advised to contact their respective Directors.

3.7 Probation, Withdrawal And Inter-Faculty / Programme Transfer

- i. If a student's GPA falls below 1.00 during one session, he/she would be placed on probation (warning period) in the hope that the student will improve in the following session.
- ii. If in the following session, the student's GPA still falls below 1.00. he/she shall be withdrawn from the programme. However, if a student's GPA falls below 0.50 at the end of any session, he/she shall be withdrawn without any probation.
- iii. Students in DVM or MBBS programmes are not normally placed on probation. Therefore, students undergoing these programmes are advised to contact their Faculties/College on conditions that may lead to withdrawal because of poor academic performance.
- iv. A student so withdrawn for poor academic performance in one programme may be considered for another programme on application, provided he/she obtains a CGPA of not less than 0.75 at the end of the probation period. Application forms for such transfers are available in the Academic Secretary's Office upon payment of prevailing charges.

3.8 Regulations Guiding Withdrawal From Academic Programmes

1. Voluntary Withdrawal

The University has no objection to any student withdrawing from any programme voluntarily. However, the University is not under any obligation to accept such student into any other programme. Nonetheless, only students from College of Health Sciences, Faculties of Agriculture, Law, Medical Laboratory Sciences, Pharmaceutical Sciences or Veterinary Medicine may be considered for transfer after he/she must have satisfied the following conditions:

- i. he/she must have spent two (2) academic sessions in the former Faculty;
- ii. he/she must present a letter of consent from the sponsor;
- iii. he/she must present written evidence of interaction with the student adviser, or the University Guidance and Counseling Officer;
- iv. he/she must present positive recommendation from Departmental and Faculty Boards attaching relevant minutes and other genuine evidences; and
- v. (ii-v) must be obtained before the expiration of registration period to facilitate registration of the accepted student.

2. Withdrawal Due to Academic Incompetence

For any student withdrawn due to academic incompetence from the College of Health Sciences, Faculties of Agriculture, Law, Medical Laboratory Sciences, Pharmaceutical Sciences or Veterinary Medicine to be considered on transfer to another Faculty, the following conditions must be satisfied:

- i. at the end of the probationary period a student must have attained a CGPA of 0.75;
- ii. transferring student must satisfy the entry requirements of accepting Department/Faculty;
- iii. under no circumstance should a student be considered for transfer for more than once throughout the period of his/her studentship; and
- iv. any student who fails to graduate after exhausting his/her maximum period of studentship will not be considered for transfer to any Faculty.

3.9 Spill Over

- i. Students who are not able to graduate at the end of their approved period of study shall be allowed to carry over such courses into the following session. This period shall be referred to as “First Spill Over”.

All grades scored in that session shall be fully credited to the student and scored class of degree awarded.

- ii. Students who could not graduate at the end of the second spill over would be withdrawn from the University. It should be noted that the period of study of any undergraduate student shall not exceed the normal period prescribed for the study by more than four semesters. Diploma students have only two additional semesters.

3.10 Graduating with an ‘F’ Grade in a Course

- i. To graduate, the University expects students to pass all registered courses. However, in exceptional circumstances, they may apply to graduate with an “F” grade in an elective course irrespective of the session of registration of the course.
- ii. The application is made through the Head of Department and Faculty to the Chairman of Senate, provided the course is not a core course.
- iii. Such students are also expected to meet minimum requirements for graduation in terms of credit units at different levels.
- iv. For other conditions required for the consideration of such applications, students are advised to contact their Heads of Department.
- v. It should be noted that the provision is not a right but a privilege.

CHAPTER FOUR

4.0 GUIDELINES FOR 400 LEVEL B.Sc. PROJECT

The following simple guideline are the requirements expected to be met for a successful completion of 400 level B.Sc. Hons [Microbiology] project write up

4.1 Contents of the project write up.

The following format should be used in putting the project together when writing.

1. Title page
2. Dedication
3. Declaration
4. Project Approval
5. Acknowledgments
6. Table of contents
7. List of Tables
8. List of figures
9. List of plates (if any)
10. Abstract
11. Chapter 1-Introduction
12. Chapter 2-Literature Review
13. Chapter 3- Material and methods
14. Chapter 4 -Results
15. Chapter 5 -Discussion
16. References
17. Appendix (if any)

These sequences must be followed.

4.2 Title Page:

The title page bears the title of the project, names of the author and the supervisor, a certification clause and the date (i.e. the month and year in which the project was done). The certification clause should read something as follows.

**A PROJECT SUBMITTED, AS PART OF THE REQUIREMENTS FOR THE
AWARD OF THE DEGREE OF BACHELOR OF SCIENCE [B.SC HONS] IN
THE DEPARTMENT OF MICROBIOLOGY, USMANU DABFODIYO
UNIVERSITY, SOKOTO**

4.3 Dedication.

The inclusion of this expected and must be concise and in good English.

4.4 Declaration.

Under this heading the following statement should be made:

I hereby declare that the contents of this project written by me are purely a record of my research work. It has not been presented before in any previous application for a degree. All quotation and literature cited from other sources have been duly acknowledged .

Name of Candidate \ Signature

Date

4.5 Certification:

Under this heading, the following statement should be made:

This Project Entitled [Give of the project by name of the author] meet The regulations governing the department of degree of bachelor of science in the department of microbiology in Sokoto and is approved for its contribution to knowledge and literary presentation .

External Examiner

Date

Supervisor

Date

Head Of Department

Date

4.6 Acknowledgements

All sorts of assistance received in the course of the project work and the project preparation are to be noted here . The language has to be clear and simple irrespective of style . Avoid windedness

4.7 Table Of Contents.

The Table reflects the nature of materials in the project , under specific titles give their respective page and arranged in the order they should appear in the project .Example:

Title	i
Dedication	ii
Certification	iii
Acknowledgement	iv
Table of Contents	v
List of Tables	vi
List of Figures	vii
Abstract	viii
CHAPTER ONE	1
INTRODUCTION	1
CHAPTER TWO	4
LITERATURE REVIEW	4

4.8 Abstract.

The abstract give a concise description of what work was done (Methodology), what results were obtained and what conclusion deduction made. On the whole the abstract should contain 150- 200 words and must be written in a single paragraph.

4.9 Chapter One: Introduction

This brings to light the conception of the whole project idea. It should be able to relate to similar past work with relevant references. The introduction should actually lead up to a definite statement that justifies the study and mode of approaching the problems raised if any. In other words, introduction should contain the following:

1. Short paragraphs that describe the nature and scope of the problems investigated,
2. Review pertinent literature to provide important background into and
3. State the method of investigation or reason for the choice of particular method .

4.10 Chapter Two: Literature Review

This should give the relevant background information with respect to the area under study, backed up by relevant references. The period covered will depend on the nature of the field of study, literature available and perhaps the supervisor: However, it should be less than 10 printed pages and maximum of 20 pages.

4.11 Chapter Three: Materials and Methods:

The essentials of all the materials and techniques used are critically given in this section backed with refereed authorities. Efforts should be made to nature that all descriptions are to the points rather than being unnecessary verbose. Standard pieces of materials and equipment used (e.g Agar or autoclave) should not be described or given in catalogue form, but rather their names and makes, code numbers or models should be clearly stated, and the nature of any special adaptations or improvisations to the techniques or instruments indicated. This section should be such that any one wanting to repeat the experiment should do so without difficulties. In summary, the only purpose for the materials and methods is to provide enough information so that the experiment could be repeated by competent colleagues.

4.12 Chapter Four: Results:-

The results should be presented in a clearly understandable form; such as tables, figures and plates (i.e graphs, annotated diagrams, photograph and photomicrographs) where relevant and helpful in explaining an idea. In constructing Tables the minimum number of cross-illness should be used. Each Table should have a clear and self-explanatory title. Table should be numbered consecutively with arabic numerals throughout the project and reference to any Table in the text should be indicated using a capital T (e.g -----Table 1----- Table 2----- Table 3-----), Tables should be typed as near as possible after the paragraph in which they have been mentioned for the first time. Full page Tables should be inserted immediately after the page in which they have been mentioned for the first time. Titles for Tables are normally typed at the top of the Tables but large typed length wise along the page should have their captions at the free end of the bound copy. Tables based on data other than those collected directly from the investigation and/or very long Tables should normally be inserted as Appendices at the end of the project. The results should contain 2 goals.

1. Give some kind of overall description of the experiments **without repeating** the experimental details provided in materials and methods
2. Present the data. The data should be unambiguously illustrated. As a general rule, present the results that best clarify the important points of your discussion. Raw data should be presented in an appendix.

Figures includes graphs and annotated diagrams. Arabic numerals should be used in numbering figures e.g Figure 3. Plates include photographs and photomicrographs'. Roman numerals should be used in numbering plates e.g. Plate I Plate II plate III. Each figure or plate must have a concise but comprehensive caption. The caption should be typed below the figure or plate. Tables, figures, graphs and plate must be explained briefly. Under no circumstances should series of Tables, etc be presented naked. Result presented in the Table should be not be repeated in figure. One of them could be presented in appendix especially the table if it is a lengthy one.

4.13 Chapter Five: Discussion:

This section should relate the significance of the whole project with respects to the results, vis-à-vis similarly previous work backed with referred authorities. The problems raised should be indicated where possible. Anomalies pointed out under results should now be explained based on previous works and researchers reasons.

The components of a good discussion usually contain these elements:

1. Quote the result and refer to it in the Table or observations. Such results should tally with the objectives of the work.
2. Explain scientifically why you think the result occurred the way it is and state the implication of your finding (result) this provide the basis of why your work is important as compared to other people research
3. Show how your results and interpretations agree or contrast with previously published work. Explain why your results do not agree with comparable results.
4. State your conclusions on all the results and summarize your evidence for each conclusions.

In summary:- What did you find? How do your results relate to those reported previously? Was your hypothesis correct? Does the hypothesis need to be changed and what are the desired changes? Are all tables, graphs and other illustration absolutely necessary to understand the study? Are statistical differences/significances clear?

4.14 Conclusion

For the conclusion, this should reflect the objectives of the study. In summary, conclusion should reflect the aims/objectives of the research whether they are achieved or not. Conclusion is almost the same with abstract except that in conclusion, methodology is not required to be mentioned

4.15 Recommendation:

Recommendations should be drawn from the research findings like what the author could not solve in the present research and possible advice on how to improve on the present research.

4.16 Reference:-

The reference list should be arranged in alphabetical order of first author's surnames and presented as follows:-

- a. **From a journal article:** Surname first (in capital): initials (in capital): year of publication (in bracket): title paper: full name of the journal; volume number (if any):

and the first and last pages of the paper e.g ISA, S.A. (1989). Soil bacteria as indicators of pollution. *Samaru Journal of Environmental Health* 4(1):5.8.

- b. **From a text book with one or few definite authors:** Authors(s) name (s); year of publication; Title of the Book; publisher; place published, relevant page(s) e.g. SAIDU, M.T. (1989). *Handling of Dairy Products*. Bauchi International Press, Bauchi, Nigeria, pp.99.
- c. **From an edited multi-authored text book or standard manual:** Author(s) name(s); year of publication; title of the relevant chapter in the edited Book; names of the editor (s) of the book, title of the edited book, publisher, place published; the first and last pages of the relevant chapter, E.g. BRAIRD-PARKER, A.C. (1969). The uses of Baird parker medium for the isolation and enumeration of *Staphylococcus aureus* in; SHAPTON, D.A. and GOULD, G.W. (eds), *isolation Methods for Microbiologist Technical* Series No. 3 Academic press, London, U.K. pp 1-8.
- d. **From an unpublished project:** Author(s) names; year of thesis; title of these, type of project; department, University awarding degree; city and country of University. E.g ORKWOR, G.C. 1981) Studies on weed control in irrigated onions (*allium cepa*) in Northern Nigeria. Unpublished M.Sc. thesis Department of microbiology, Kaduna State University, Kaduna Nigeria.

The title of all Journals and Textbooks are to be **underlined or italicized**.

4.17 Citation

When a reference is made the names(s) of the author(s) and/or the years are given in brackets. The initials are not included. There are two possible ways of doing this.

- a. A cogent statement can be backed by reference to an author. In this case the name of the author and the year are enclosed in a bracket e.g. "New understanding of the complex ecology of soil bacteria has been recently reviewed (Isa, 1989)".

b. The name of the author of a paper can be part of a cogent statement being made. In this case only the year of the author's paper is enclosed in a bracket. E.g. "Isa (1989) has presented data to show that a greater understanding of pollution control will help in the formation of a better public health policy". If there are two authors, all their names are given, e.g. (Tijani and Rawfar 1989) but where there are more than two authors, the name of the first author is given with the phrase "et alia" in article cited, then the citation would be indicated as follows: (Toyee et al., 1989). Suffices are used if two or more papers by the same author(s) in the same year cited. (e.g. 1998a, 1998b etc). authors should be indicated in chronological order.

4.18 **Pagination**

Pagination is describing numbers to the pages of the written project. The pagination starts from the title page to the last page under references or Appendix (if any). Different coding systems however are used; Starting from the title page up to the last page of the abstract inclusive, roman numerals (i, ii, iii. etc), are used. Arabic numerals (1,2,3etc), are used from introduction to the last page of reference or appendix (if any).

4.19 **Language**

The written-up should be in English language written in simple form that can be easily understood without sacrificing, the technical nature of the field of study.

4.20 **Type Of Paper**

The type of paper to be used should be **A4 Size** and **WHITE** in color. The copy of the project to be sent to the external examiner should be loose bound and must reach the coordinator within seven days after the last and final presentation of B.Sc. project seminar in the Department only after the oral examination and after all necessary corrections and alternations have been made to the satisfaction of the supervisors. The colour of the cover of the permanently bound thesis shall be **BLACK**. Submission of three copies of fully corrected and bound project should be through the supervisors of the student. The supervisors would check that the project has been satisfactorily prepared, and sign, date and forward to the Head of Department for signing. A project that does not contain the signature of supervisor and Head of Department indicating approval shall be deemed to be incomplete and unsuitable for inclusion in the department archive, the three copies to be submitted to the supervisor for approval shall not be (1) poor print out of typed script (2) poor photocopies of originals. The

three copies to be acceptable shall be (1) original copies of typed scripts or (2) very good photocopies of originals.

In the event that any student fails to submit bound copies of fully corrected project to his or her supervisors or submits copies that fail to meet the standard of the Department (i.e. no signature in the approval page) the student concerned will not have his or her final year project grade included in the result sent for approval by Faculty Board, the final year result shall remain in complete until such a time affected student has fully complied with the provisions of these guidelines to the satisfaction of the Department.

N.B. This guideline must be followed completely for the project to be accepted-No deviation will be accepted.

Students' practical work will be graded by the supervisor and grades submitted to project coordinator as part of project final grade.