MADONNA UNIVERSITY, NIGERIA
ELELE, RIVERS STATE

FACULTY OF BASIC MEDICAL SCIENCE
COLLEGE OF MEDICINE AND HEALTH SCIENCES

REVISED ACADEMIC PROGRAMME FOR THE AWARD OF B. SC. DEGREE IN HUMAN ANATOMY

STUDENTS HANDBOOK

2016/2017 SESSION

HISTORY OF THE DEPARTMENT

The Department of Anatomy, Faculty of Basic Medical Science of the College of Medicine and Health Sciences of Madonna University, Nigeria, Elele campus was established in 2002/2003 academic year with the approval of the University Senate. The Department received interim accreditation from the National University Commission (NUC) in 2005 and 2009. In 2012, it received full accreditation from NUC for her B.Sc. degree programme in Human Anatomy.

PHILOSOPHY

The philosophy of the department is derived from and complements that of the University. It is to prepare students for life of honour, dignity and responsibility as educated citizens with the knowledge, skill, motivation and competences for the practice of the profession in all its ramifications.

AIMS AND OBJECTIVES

The B.Sc. degree programme in human anatomy is designed to provide a comprehensive study of the functional and architectural components of the human body. This will be achieved by examining and dissecting the human body, and examination of the body using modern imaging techniques. It includes didactic lectures on the functional, applied anatomy and development of organs and tissues, and the study of the topographical anatomy of the whole human body, in part by dissection supplemented with demonstrations using pre-dissected specimens, radiographic images, anatomical cross –sections, anatomical models and videos

At the completion of the course, the student should be able to

(a) Identify, describe and demonstrate the essential features of the human body both at tissue, organ and system levels.

(b) Demonstrate in the living subject the position, extent and functional integrity and/or competence of organs and systems

(c) Identify the position and extent of normal structures of the human body in x–rays, contrast and air studies, angiograms, tomograms, ultrasounds and other scanning techniques.

(d) Identify structures at tissue and cellular levels with the aid of different types of microscopes

(e) State the anatomical basis of some clinical, hereditary or embryological abnormalities;

(f) Study, recognize and interpret some regional, ethnic or racial variations in anthropometric values, indices and measurements;

(g) Form part of the ever increasing number of human anatomists who will fit into such career positions as teachers in medical schools, research scientists in the pharmaceutical and other similar industries.

ENTRY REQUIREMENTS

Unified Tertiary Matriculation Examination (UTME) Entry Requirements

Candidates who must have obtained the approved pass mark in the UTME are required to have at least five credit level passes in English language, Physics, Biology, Chemistry and Mathematics in not more than two sittings in the West African School Certificate Examination or in the Senior Secondary School Certificate or its equivalent

DURATION OF PROGRAMME

The department of anatomy offers a four year programme leading to the award of B.Sc. degree iu Human Anatomy. Admission is by entrance examination (UTME) only.

JOB OPPORTUNITIES

Successful students in the B.Sc. Degree programme in human anatomy are well equipped for careers in teaching and specialist hospitals, private and government hospitals, and even in research centers. They are also equipped for higher degree programmes in any local or foreign institutions. They can also become employers of labour by establishing their own Anatomy laboratories.

Course Coding System

Course code contains an abbreviation letter code of three letters representing the department offering the course and three digits. The first digit represents the year or level of study. The second digit indicates the subject or the stress area. The third digit denotes the semester. (Odd numbers represent first semester; even numbers represent second semester).

Departmental Codes

BIO	-	Biology
CHM	-	Chemistry
PHY	-	Physics
GST	-	General Studies
MTH	-	Mathematics
ANT	-	Anatomy
BCH	-	Biochemistry
PIO	-	Physiology
MCB	-	Microbiology
STA	-	Statistics
PHA	-	Pharmacology
GST	-	General Studies

STRESS AREAS

Stress Area	**Code**
Gross/Functional/Applied/Radiological/Comparative Anatomy	1
Cell /Molecular Biology/ Histology/Microscopic Anatomy	2
Embryology /Biometry/Human growth /Genetics	3
Neuro-Anatomy	4
Histochemistry	5
Practical Anatomy	6
Research/ Project/ Oral Defense	7

INSTRUCTION TO DIRECT ENTRY STUDENTS

Students who gained admission by direct entry into the 200 level will ensure that they register and pass the following General Studies Courses in addition to all the courses in the Faculty/Departmental curriculum, as applicable.

FIRST SEMESTER (FOR DIRECT ENTRY STUDENTS)

Course Code	Course Title	Unit
GST 111	Communication in English I	2
GST 113	Nigerian Peoples and Culture	2
GST 121	Use of Library, Study Skills and Information Technology	2
GST 123	Communication in French	2
GST 125	Introduction to Entrepreurship Studies I	2

SECOND SEMESTER (FOR DIRECT ENTRY STUDENTS)

Course Code	Course Title	Unit
GST 104	Fundamental Philosophy	1
GST 112	Logic, Philosophy and Human Existence	2
GST 122	Communication in French	2
GST 142	Communication in German	2
GST 162	Introduction to Social Science	2

YEAR ONE FIRST SEMESTER

Course Code	Course Title	Units
Required Ancillary Courses		
BIO 101	General Biology I	3
CHM 101	General Chemistry I	3
CHM 171	Basic Practical Chemistry I	1
MTH 101	General Mathematics I	3
PHY 101	General Physics I	3
PHY 105	General Physics Laboratory I	1
General Studies Courses		
GST 111	Communication in English I	2
GST 113	Nigerian Peoples and Culture	2
GST 121	Use of Library, Study Skill and Info. Technology	2
GST 123	Communication in French	2
GST 125	Introduction of Entrepreneurship Studies I	2
Total		**24**

YEAR ONE SECOND SEMESTER

Course Code	Course Title	Units
Required Ancillary Courses		
BIO 102	General Biology II	3
BIO 172	General Biology Practical	1
CHM 102	General Chemistry II	3
CHM 171	Basic Practical Chemistry II	1
CSC 104	Introduction to Computer Science	2
MTH 102	General Mathematics II	3
PHY 102	General Physics II	3
PHY 106	General Physics Laboratory II	1
General Studies Courses		
GST 102	Fundamental Philosophy	1
GST 112	Logic, Philosophy and Human Existence	2
GST 122	Communication in English II	2
GST 142	Communication in German	1
Total		**23**

YEAR TWO FIRST SEMESTER

Course Code	Course Title	Units
Core Courses		
ANT 211	Intro to Anatomy, Gross Anatomy of Upper & Lower Limbs	3
ANT 221	Histology of Basic Tissues	2
ANT 231	General Embryology	2
Required Ancillary Courses		
BCH 201	General Biochemistry I	2
BCH 261	General Biochemistry Practical I	1
MCB 211	General Microbiology	2
PIO 201	Introductory Physiology and Haematology	3
PIO 223	Cardiovascular Physiology	2
General Studies Courses		
GST 211	Fundamental Theology	1
GST 215	Introduction to Entrepreneurship Studies II	2
Total		**20**

YEAR TWO SECOND SEMESTER

Course Code	Course Title	Units
Core Courses		
ANT 212	Gross Anatomy of Thorax, Abdomen, Pelvis & Perineum	3
ANT 222	Systemic Histology I	2
ANT 232	Systemic Embrology	2
ANT 242	Neuroanatomy I	2
Required Ancillary Courses		
BCH 202	General Biochemistry II	2
BCH 234	Nutrition and Nutritional Biochemistry	1
PIO 212	Respiratory Physiology	2
PIO 232	Neurophysiology I	2
PIO 264	Renal Physiology, Body Fluids & Temperature Regulation	2
General Studies Courses		
GST 162	Introduction to Social Science	2
GST 222	Peace and Conflict Resolution Studies	2
GST 224	Fundamental Ethics	1
GST 252	Bioethics	1
Total		**24**

YEAR THREE FIRST SEMESTER

Course Code	Course Title	Units
Core Courses		
ANT 311	Gross Anatomy of Head and Neck	3
ANT 321	Systemic Histology II	1
ANT 341	Neuroanatomy II	2
Required Ancillary Courses		
BCH 301	Special Topic in Medical Biochemistry	3
BCH 317	Chemistry and Metabolism of Proteins & Nucleic Acids	2
PIO 333	Neurophysiology II	2
PIO 341	Gastrointestinal Physiology	2
PIO 355	Endocrinology and Reproduction	2
PHA 321	Introductory Pharmacology	2
MCB 321	Basic Immunology and Immunochemistry	2
Total		**21**

YEAR THREE SECOND SEMESTER

Course Code	Course Title	Units
Core Courses		
ANT 314	Advanced Gross Anatomy	3
ANT 324	Advanced Topics in Histology	3
ANT 334	Advanced Topics in Embryology	3
ANT 354	Introductory Histochemistry	3
Required Ancillary Courses		
PHA 322	Systemic Pharmacology	3
STA 312	Biostatistics	2
Total		**17**

YEAR FOUR FIRST SEMESTER

Course Code	Course Title	Units
Core Courses		
ANT 411	Surface & Living/Functional Anatomy	2
ANT 417	Cranial Nerves & Autonomic Nervous System	3
ANT 421	Cell and Molecular Biology	1
ANT 431	Biometry and Human Growth	2
ANT 433	Human Genetics	2
ANT 455	Histochemistry II	2
ANT 461	Anatomical and Museum Techniques	3
ANT 471	Research Methods and Research Ethics	2
Total		**24**

YEAR FOUR SECOND SEMESTER

Course Code	Course Title	Units
Core Courses		
ANT 412	Special Courses in Gross Anatomy	2
ANT 422	Special Courses in Microscopic Anatomy	2
ANT 434	Special Courses in Embryology	2
ANT 442	Special Courses in Neuroanatomy	2
ANT 462	Laboratory Work Experience	3
ANT 472	Project/Oral Defence	6
Total		**17**

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Course Code	Course Title	Units
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GST 142	Communication in German	2
GST 162	Introduction to Social Science	2

SYNOPSES OF COURSES

YEAR I

GST 125 INTRODUCTION TO ENTREPRENEURIAL STUDIES I (2 Units)

Introduction to entrepreneurship and new venture creation; entrepreneurship in theory and practice, The opportunity, forms of business, staffing, marketing and the new venture; Determining capital requirements, Raising capitals, financial planning and management; starting a new business feasibility studies, innovation; legal issues; insurance and environmental considerations.

GST 111 COMMUNICATION IN ENGLISH I (2 Units)

Effective communication and writing in English language skills. Writing of essay, letters, speeches, public announcements, minutes of meetings and term papers.Reading and listening comprehension. Construction of Sentences, outlines and paragraphs. Collection and organization of materials and logical presentation/punctuation.

GST 113 NIGERIAN PEOPLE AND CULTURE (2 Units)

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

GST 121 USE OF LIBRARY, STUDY SKILLS AND INFO & COMM. TECH. (ICT) (2 Units)

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. Development of modern ICT, hardware technology, software technology, input devices, storage devices ,output devices, word processing skills (typing, etc).

GST 123 COMMUNICATION IN FRENCH (2 Units)

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 text.

GST 112 LOGIC, PHILOSOPHY AND HUMAN EXISTENCE (2 Units)

A brief survey of the main branches of philosophy, logic special symbols in symbolic logic conjunctions, negation, affirmation, disjunction, equivalent and conditional statement laws of torts. The method of deduction using rules of inference and bi-conditionals qualification theory. Types of discourse, Nature of arguments, validity and soundness, Distinction between deductive and inductive inferences. Ilustration will be taken from familiar texts including literature materials, Novels, law reports and news paper publications.

GST 122: COMMUNICATION IN ENGLISH II (2 Units)

Logical presentation of papers, phonetics, instruction of lexis, Arts of public speaking and oral communication, figures of speech, précise report writing.

BIO 101: GENERAL BIOLOGY I (3 Units)

Cell structures and organization; Plant and animal cells, Function of cellular organelles; diversity and characteristics of living things. General reproduction; mitosis, meiosis, abnormalities associated with gene crossing, heredity and evolution. Concept of ecology and types of habitats diversity of plants and animals. Food chains and food webs; interrelationship of organisms.Types of population dynamics, static, climax communities, types and factors affecting them. *Edaphic factors, rainfall, wind, relative humidity, light intensity etc. *Modification of the natural ecosystem. Elementary biochemistry of carbohydrates, protein, lipid and nucleic acids.

BIO 102: GENERAL BIOLOGY II (3 Units)

Levels of organization.Origin and History of classification.Principles of Binomial nomenclature.Hierarchical classification.Molecular classification of bacteria.structure, morphological features and chemical nature of viruses. Kingdom monera; Habitat, structure and morphological characteristics and life cycle of; Cyanobacteria, Archaebacteria, Eubacteria. Kingdom Protista;-Habitat, structure and morphological characteristics and life cycle of protozoans, algae and slime moulds. Kingdom Mycota;- Habitat, structure and morphological characteristics and life cycle of; ascomyctes, deuteromyctes, zygomycytes and oomycytes. Kingdom Plantae- Habitat, structure and morphological characteristics of bryophytes, pteridophytes, gymnospermae and angiospermae. Kingdom animalia;- Invertebrate and origin of animal diversity. Symmetry, cephalisation and gastrulation. Habitat, structure and morphological characteristics and life cycle of porifera, cnideria, platyhelminthes, nermetines, rotifers, nematode, acanthocephalia, annelid, mollusca, Echinodermata, and chordate.

BIO 172: GENERAL BIOLOGY PRACTICAL (2 Units)

Testing for the presence of food substances, Diffusion and osmosis experiments.Observation of cells and tissues of selected plants and animal species.Investigations on physiological processes affecting photosynthesis.Observation of mitosis in onion bulb.Observation of cyst and ova of parasitic worms. Observation of fungi hyphae, and spores, bacteria cells, protozoan specimens and algae. Observation of Plant specimens.Observation of invertebrate animal specimens.Preparation of microscopic slides.Basics of photometry, colorimetry, chromatography, electrophoresis.

CHM 101: GENERAL CHEMISTRY 1 (2 Units)

Atomic Structure and periodic table. Development of Configuration of Elements.Stoichiometry and mole concept. Electronic theory of atoms and valency. Chemical bonding. Formular and IUPAC basic nomenclature of compounds, Properties of gases; Equilibria and Thermodynamics; Chemical Kinetics; Electrochemistry.Radioactivity and its application. Phase equilibrium, study of one and two components systems.

CHM 102: GENERAL CHEMISTRY II (2 Units)

Historical survey of the development and importance of Organic Chemistry; Nomenclature and classes of organic compounds; Homologous series; Functional groups; Isolation and

Purification of organic compounds; Qualitative and quantitative organic chemistry; Stereochemistry; Determination of structure of organic compounds; Electronic theory in organic chemistry; Saturated hydrocarbons; Unsaturated hydrocarbons. Periodic table and Periodic Properties; Valence Forces; Structure of solids.The Chemistry of selected metals and non-metals.Qualitative analysis.Structure of solids.Kinetic theory of gases and gas laws.Colligative properties of dilute solutions.Raoult's law, Henry's law and molecular weight determination.Thermochemistry and Hess's law.Chemical equilibrium.Law of mass action, reaction rate and chemical energetics.Electrochemistry, Ionic equilibria.Theory of acids, bases and indicators.

CHM 171: BASIC CHEMISTRY PRACTICAL I (1 Unit)
The theory and practice of simple volumetric and qualitative analysis.Simple organic preparations, reaction of functional groups and physical determinations.

CHM 172: BASIC CHEMISTRY PRACTICAL II (1 Unit)
More on theory and practice of simple volumetric and qualitative analysis. Simple organic preparations, reaction of functional groups and physical determinations.

PHY 101: GENERAL PHYSICS I (3 Units)
(Mechanics, Thermal Physics and Waves) Space and Time, Units and dimension, Kinematics; Fundamental Laws of Mechanics, statics and dynamics; work and energy; Conservation laws. Elasticity; Hooke's law, Young's shear and bulk moduli, Hydrostatics; Pressure; bouyance, Archimedes' Principles., Surface tension; adhesion, cohesion, capilarity, drops and bubbles. Temperature; heat; gas laws; laws of thermodynamics; kinetic theory of gases.Sound, Applications.Measurements, Units and Dimensions.Linear motion.Relevance of linear kinematics to science and physiological affects of accelerations.Motion in a circle and simple harmonic motion.Gravitation, statics and hydrostatics, elasticity, friction, viscosity and surface tension.Heat, temperature, thermometers.Expansion of solids, liquids and gases. Gas exchanges in terrestrial organism. Heat transfer, change of state.Heat regulation in animals, low temperature in biology and in medicine.Waves and resonance ultra sound and its application.Practicals: General measurements and error analysis, simple experiments in mechanics and properties of matter. Heat and thermodynamics. Kinetic model of gas, A model for solid. Properties of metals

PHY 105: GENERAL PHYSICS LABORATORY 1 (1 Unit)
This laboratory based course emphasize quantitative measurement, the treatment of measurement and graphical analysis. A variety of experimental techniques will be employed. The experiments include studies of maters, the oscilloscope, mechanical systems, electrical and mechanical resonant systems, light, heat, viscosity, etc. covered in PHY 101

PHY 102: GENERAL PHYSICS II (2 Units)
(Electricity, Magnetism and Modern Physics) Electrostatics; conductors and currents; dielectrics; magnetic fields and induction; Maxwell's equations; electromagnetic oscillations and waves; Applications.Propagation of light at plane and curved surfaces.The human eye photosensitive pigments in the eye, colour vision and the insect eye. Optical instruments: Ophthalmoscope and compound microscope. Radioactivity and useful effects of

radiation.Current and static electricity, introductory magnetism and alternating currents.Introductory atomic physics and electronics.Practicals: Vibrations, Wave and Optics Magnetism

MTH 101: GENERAL MATHEMATICS I (3 Units)

(Algebra and Trigonometry) Real number system: simple definitions of integrals, rational and irrational numbers. The principle of mathematical induction. Real sequences and series: elementary notion of convergence of geometry, arithmetic and other simple series. Theory of quadratic equations. Simple inequalities: absolutes values and the triangle inequality. Identities, partial fraction. Sets and subsets: union, intersection, compliments. Properties of some binary operations of sets: distributive, closure, associative, commutative laws with examples. Relations in a set: equivalence relation. Properties of set functions and inverse set functions. Permutations and combinations.Binomial theorems of any index.Circular measures, trigonometric function of angles of any magnitudes.Addition and factor formulae. Complex numbers: algebra of complex numbers, the Argand diagram, De Moivre's theorem, n-th root of unity.

MTH 102: GENERAL MATHEMATICS II (3 Units)

(Vectors, geometry and dynamics) Types of vectors: points line and relative vectors. Geometrical representation of vectors in 1-3 dimensions. Addition of vectors and multiplication by a scalar. Components of vectors in 1-3 dimensions: direction cosines. Linear independence of vectors.Point of division of a line.Scalar and vector product of two vectors.Simple application. 2-dimensional coordinate geometry: straight lines. Angle between two lines. Distance between points. Equations of circle. Tangent and normal to a circle; Properties of parabola, ellipses, hyperbola, straight lines and planes in spaces; direction cosines; angle between lines; and between lines and planes; distance of a point from a plane; distance between two skew lines.

CSC 104: INTRODUCTION TO COMPUTER SCIENCE (2 Units)

History of Computer Science and their generations; Computer Hardware; functional components Modern I/0 unitsThe meaning of a computer origin, classification: Analog, Digital and Hybrid. Types of Digital computers: mainframe, mini and microcomputer models of digital computers, modes of computer operations. The generation of computer types, the meaning of a programme and a "job". The two levels of computer software: The high-level and low-level. The computer and the language levels.Examples of systems software, Interpreters, compilers, and translators.The function of system software; the functional units of a digital computer; Examples of application software packages.Data processing and data processing centers.Criteria for using a computer.Type of computer users' interface.The types of printers.Introduction of the internet.

200 LEVEL

FIRST SEMESTER

ANT 211 INTRODUCTION TO ANATOMY, GROSS ANATOMY OF UPPER & LOWER LIMBS (3 Units)

A History of Anatomy: History of Anatomy from Galen through Hippocrates to the present day. Development Anatomy from Art form to the present day scientific study.

B. Introductory Anatomy:

1. Descriptive terms, plans and terms of relationship of the human body, terms of comparison,
2. Attachment of muscles, types of muscles, movements of joints.
3. Osteology, principles of kinesiology, general organization of body systems.

C. Upper Limb:

1. Pectoral region and mammary gland
2. Axilla and brachial plexus
3. Back
4. Deltoid and scapular regions, arm, forearm, hand, bones and joints.

D. Lower Limb:

1. Front and medial sides of the thigh, gluteal region, back of the thigh and popliteal fossa
2. Leg
3. Sole of foot, bones and joints.
4. Surface Anatomy, Applied and
5. Radiological Anatomy of Upper and Lower Limbs.

ANT 221 HISTOLOGY OF BASIC TISSUES (2 Units)

1. Components of the cell, cell cycle, chromosomes, protein secretion and transcription of DNA.
2. Introduction to light microscopy, electron microscopy and units of measurement.
3. Basic tissues of the body, the epithelial, connective tissues, muscle and nervous tissue.

ANT 231 GENERAL EMBRYOLOGY (2 Units)

1. Gametogenesis, cyclic changes in the female genital tract, fertilization
2. Cleavage, blastocyst, gastrulation and formation of germ layers
3. Segmentation of mesoderm, folding of embryo, fetal membranes
4. Umbilical cord and placentation

5. Development of limbs
6. Teratology - Developmental anomalies and clinical syndromes.

PIO 201 INTRODUCTORY PHYSIOLOGY AND HEMATOLOGY (3 Units)

Introduction to Physiology and its place in Medicine.The composite cell, cell membrane and transport mechanisms, membrane potentials.Physiology of excitable tissues.Biotechnology and Human Genome.General characteristics and functions of blood.Properties and functions of plasma.red blood cells; factors involved in erythropoiesis, blood groups. White blood cells; origin, type, properties functions, antigenicity and immunities.Platelets and hemostatic mechanisms. Reticulo- endothelial system. Cloting and fibrinolytic systems Immunity and Immodeficiency disease and HIV.

P10 223 CARDIOVASCULAR PHYSIOLOGY (2 Units)

Overall plan and functions of the C.V.S. Physiologic anatomy of the heart, mechanical events of cardiac cycle, cardiac output and its estimation, E.C.G. The Vascular system; Cross sectional area of different vascular groups, systolic, diastolic, pulse and mean pressures, exchange of fluids across the capillaries, venous and central venous pressures. Integration of C.V.S functions; central control centres, regulation of systemic blood pressure. Cardio-vascular adaptations in health and disease.Circulation through special areas.Vascular endotudium in cardiovascular control.

BCH 201 GENERAL BIOCHEMISTRY I (3 Units)

Historical perspectives of biochemistry.The living cell; organization and molecular architecture, types of cells and their characteristics.The structure, size and functions of organelles.Biomolecules and the origin of life.The structural units of macromolecules-structures and functions of amino acids, monosaccharides, glycerol, fatty acids and nitrogenous bases.Inorganic synthesis of building units.Chemistry of amino acids, proteins and their derivatives.Measuring techniques in biochemistry-cell fractionation, chromatography (paper, thin layer, column, HPLC etc) calorimetry, spectrophotometry etc.Classification and hierarchical organization of proteins- primary, secondary, tertiary, and quaternary structures of proteins (with examples); determination and biochemical applications of the structures.The physical and chemical properties of water; acidity and alkalinity, pH, pOH, pKa, pKb values and their effect on cellular activities; buffer solutions- preparations of buffer solutions. The nature, classification and function of enzymes; introduction to enzyme kinetics.

GST 215 INTRODUCTION TO ENTREPRENEURIAL STUDIES 11 (2 Units)

The course is a continuation of GST 125 (Entrepreneurial Study 1.). Attention is given to management of people (Personnel Management), material management and purchasing, money (financial management), machinery (technology) management; concept of marketing, market segmentation; product: price, promotion, place, salesmanship, personal selling, available trade for entrepreneurs and decision making, students are expected to be exposed on some of the entrepreneurial skills.

SECOND SEMESTER

ANT 212 GROSS ANATOMY OF THORAX, ABDOMEN, PELVIS & PERINEUM

(3 Units)

A. Thorax:

1. Thoracic wall and Thoracic cavity

2. Pleura and lungs, bronchial tree and bronchopulmonary segments

3. Mediastinum: Subdivisions, Pericardium and the Heart, Great Vessels of the thorax, esophagus, cardiac plexuses, thoracic duct

4. Diaphragm.

B. Abdomen:

1. Anterior abdominal wall and Groin

2. External genitalia

3. Peritoneum,

4. Stomach and intestines, blood supply

5. Liver

6. Pancreas

7. Spleen

8. Kidneys and Suprarenal glands

9 Posterior abdominal wall- muscles and fascia, lumbar plexus, abdominal aorta, IVC

C. Pelvis and Perineum:

1. Male and female perineum

2. Pelvic wall and floor

3. Pelvic peritoneum

4. Viscera, nerves and vessels

5. Surface Anatomy

6. Radiological Anatomy

ANT 222 SYSTEMIC HISTOLOGY 1 (2 Units)

Histology of the:

1. Cardiovascular and lymphoid systems
2. Respiratory system.
3. Digestive system.
4. Urinary systems
5. Genital systems
6. Electron micrograph studies of each organ.

ANT 232 SYSTEMIC EMBRYOLOGY (2 Units)

Development of

1. Cardiovascular system
2. Integumentary system
3. Respiratory system
4. Digestive system
5. Urogenital system
6. Developmental anomalies and clinical syndromes
7. Pharyngeal Apparatus (Head & Neck).

ANT 242 NEUROANATOMY I (2 Units)

1. Neuroembryology
2. Neurocytology
3. Organization of the Nervous System
4. Meninges
5. Spinal cord – Gross anatomy, internal structure, ascending and descending pathways
6. Hindbrain (medulla oblongata, pons & cerebellum).
7. Midbrain

BCH 202 GENERAL BIOCHEMISTRY II (2 Units)

Structure and Organization of Biological Membranes.Mitochondrial electron transport and oxidative phosphorylation. Photosynthesis: Photoreceptor pigments, light and dark reactions of photosynthesis to include photosystems I and II, cyclic and non-cyclic photophosphorylation and a simple treatment of CO_2 fixation. Metabolism of Lipids: Digestion and absorption of

lipids. Role of lipoproteins in lipid transport.Metabolism of lipoproteins in health and disease.Storage and mobilization of energy stores in adipocytes. Fatty acid formation; Introductory bioenergetics. Energy rich compounds.The role of ATP in energy exchange reactions.Oxidation-reduction. Simple calculations based on these concepts. Carbohydrate Metabolism: Digestion and absorption, in G.I.T. Glycolysis, citric acid, pentose phosphate and glyoxylate cycles. Gluconeogenesis and a brief outline of glycogenolysis and glycogenesis. Metabolism of amino acids and proteins: Digestion and absorption of protein in the G.I.T. The concept of nitrogen balance and essential amino acids.Amino acid catabolism to include the cellular strategies for deamination and the fate of the C-skeletons; Significance of glutamine and alanine cycles.Urea synthesis. A brief outline of biotransformation processes and detoxification strategies in the metabolism of xenobiotics.

BCH 234 NUTRITION AND NUTRITIONAL BIOCHEMISTRY 1 Unit

The course in Nutrition is aimed at exposing medical students to the pivotal role of adequate and appropriate nutrition in virtually all health conditions, and how in particular, traditional beliefs, customs and habits in developing countries like Nigeria affect the growth and development of children. The course would serve to bridge the biochemistry course in basic nutrition with exposure to nutrition in pediatrics, medicine and surgery by emphasizing the pathophysiological aspects, major classes of foods and their functions: carbohydrates, fats, protein, vitamins, minerals, trace elements, dietary fibre. Daily food required and recommended intakes, protein calorie malnutritions, biochemical changes in kwashiorkor and marasmus. Role of protein deficiency in growth and development, consequences on organs and in particular brain growth; vitamin deficiencies and consequences of over nutrition – obesity, overweight and consequences; dietary fibre and diseases.Food preservative and adverse effects; Diet and dental disease; Nutrition and cancer, methods for the assessment of nutrition status.Nutritional requirements and nutritional disorders. Biochemical functions of trace elements. Liposoluble vitamins.Hydrosoluble vitamins. Coenzyme structure and functions.

MCB 211: GENERAL MICROBIOLOGY (2 Units)

History and scope of microbiology.General characteristics of microorganisms.Classification of bacteria and scientific basis of classification.International code for bacteria nomenclature.Growth, reproduction, sterilization and disinfection of microorganisms.Economic importance of microbes. Effects of the environment on microbial growth.

PIO 264 RENAL PHYSIOLOGY, BODY FLUIDS AND TEMPERATURE REGULATION (2 Units)

The skin: functional anatomy, temperature regulations; abnormalities of temperature regulation. Metabolism: factors regulating metabolism, conditions for measuring basal metabolic rate. Compartmentalization and composition of body fluids.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.Renal handling of electrolytes.Current concepts of concentration and dilution of urine.The rennin-angiotension system.Renal disorders.

PIO 212 RESPIRATORY PHYSIOLOGY (2 Units)

Physiologic anatomy of respiratory apparatus, Brief review of relevant gas laws.Lung volumes.Mechanics of breathing.Gas diffusion through alveoli, capillary membrane.Pulmonary circulation, Ventilation perfusion ratio. O2 and CO2 transport. Control of respiration, Hypoxias, O2 treatment, abnormal types of breathing.Altitude and depth acclimatization.Respiratory adjustments in health and disease.Aerospace physiology. Deep sea diving.

PIO 232 NEUROPHYSIOLOGY I (2 Units)

Development and general plan of the central nervous system. Functional anatomy of brain and spinal cord. Nerve: morphology, generation and conduction of action potential. Sensory division of the nervous system; morphology receptors, sensory pathways, reticular formation, thalamus and sensory cortex. Synaptic transmission, neurotransmitters .Basic characteristics of sympathetic and parasympathetic divisions of the autonomic nervous.

GST 222 PEACE AND CONFLICT RESOLUTION STUDIES (2 Units)

This course focuses on the basic concept of peace and conflict resolution; peace as a vehicle of unity and development; conflict issues; typ4es of conflicts e.g. ethnic/religious/political/economic conflict; root causes of conflict and violence in Africa; indigene/settler phenomenon; peace-building; management of conflicts and security; elements of peace studies and conflict resolution; culture of peace mediation and peace-keeping, Alternative Dispute Resolution (ADR); Dialogue and arbitration in conflict resolution; role of international organization in conflict resolution e.g. Economic Community of West African States (ECOWAS); African Union; United Nations; communal/indigenous conflicts; individual conflict terrorism

300 LEVEL

FIRST SEMESTER

ANT 311 GROSS ANATOMY OF HEAD & NECK (3 Units)

1. Face and Scalp
2. Cranial Cavity
3. Orbit
4. Parotid region
5. Temporal and infratemporal regions
6. Triangles of neck
7. Submandibular region, nerves and vessels in deep dissection of neck
8. Thyroid and Parathyroid
9. Pre-vertebral region and joints of neck
10. Mouth and Tongue
11. Pharynx
12. Nasal cavity and Paranasal air sinuses
13. Larynx
14. Ear and Eye
15. Radiological and applied anatomy of the Head and Neck..

ANT 321 SYSTEMIC HISTOLOGY II (1 Unit)

Histology of the:

1. Special senses (Eye, Ear & Chemical Senses)
2. Nervous system
3. Endocrine system
4. Skin, gland of the skin, Structure of the nails and hair.
5. Electron micrograph studies of each organ.

ANT 341 NEUROANATOMY II (2 Units)

1. Diencephalon – Thalamus, Hypothalamus, Epithalamus, Metathalamus&Subthalamus
2. Basal nuclei
3. Cerebral hemispheres, sulci and gyri, internal structure of cerebrum
4. Ventricular System of the brain; CSF production, circulation and absorption.
5. Blood supply of the brain
6. Visual and Auditory pathway

PIO 341 GASTROINTESTINAL PHYSIOLOGY (2 Units)

Physiologic anatomy of the gastrointestinal tract. Review of smooth muscle function. Secretions in the G.I.T. and their control.Movements of the gastrointestinal tract.Digestion and absorption of various food substances.Liver and its functions.Disorders of G.I.T.The Gut as an endocrine organ.

PIO 355 ENDOCRINOLOGY AND REPRODUCTION (2 Units)

Endocrine system: Introduction and neuroendocrine relationship. Hypothalamo-Pituitory axis, Endocrine glands; normal, hypo – and hyper-functions.Other hormones of some clinical importance.Physiologic anatomy of male and female reproductive system.Male and female sex hormones.Cyclicity of hormone secretion in females.Physiology of contraception.Assisted fertility techniques.

MCB 321 IMMUNOLOGY AND IMMUNOCHEMISTRY (2 Units)

Basic concepts of immunology, structure of antigens, Antigenic determinants, Cellular response, Genetic of response to response to antigenic stimulations, Structure and classification of immunoglobulins and antibodies. Mechanisms and theory of antibody formation. Antibody interations, Role of lymphoid tissues and thymus in immune responses, Hypersensitivity, immunopathology Autopathology, Auto-immunology. Tumor and transplantation immunology.

PIO 333 NEUROPHYSIOLOGY II (2 Units)

Pathophysiology of pain.The association areas of the cortex.Physiological basis of motivated behaviours. Muscle spindle function in motor control. Maintenance of posture.Mechanism of locomotion.

BCH 317 CHEMISTRY AND METABOLISM OF PROTEINS &NUCLEIC ACIDS (2 Units)

Genome organisation and biosynthesis of proteins.Metabolism of purines and pyrimidines, nucleosides and nucleotides; abnormalities in nucleic acid metabolism-xeroderma pigmentation and skin cancer.

BCH 301 SPECIAL TOPICS IN MEDICAL BIOCHEMISTRY (3 Units)

Biochemistry of Blood and Special Tissues.Composition of Blood and other body fluids. Separation of blood into constituents, Serum proteins – properties and functions, Clotting mechanism. Role of anti-coagulants.Haemoglobin: Structure, properties and functions. Haemoglobin metabolism.Haemoglobins and haemoglobinopathies.Immunochemistry Molecular basis of immune reactions.Structure and function of immunoglobulins.Antigen-

Antibody interactions.Immunological laboratory methods. Neurochemistry The neuron: Structure, composition and metabolism. Neurohormonal regulatory mechanism.Metabolic antagonism in neurochemistry.Biochemistry of muscle contraction Endocrinology Structure, function and molecular mechanism of action of steroid, thyroid and polypeptide hormones.Hormonal deficiency diseases and their detection.Methods of hormonal assay.Xenobiotics and Forensic Biochemistry Detoxification mechanisms, metabolism of foreign compounds.Induction of Microsomal enzymes and drug resistance. Medico-legal: Blood, Urine and sweat test. Recent development in forensic techniques.

2ND SEMESTER

ANT 314 ADVANCED GROSS ANATOMY (3 Units)

1. Imaging techniques in anatomy,
2. surgical/pathological anatomy

ANT 324 ADVANCED TOPICS IN HISTOLOGY (3 Units)

1Tissue preparatory techniques,

2 Use of electron microscope, phase contrast microscopes, florescence microscopes, light microscopes, photomicrography.

3 Autoradiography, X-ray diffraction and immunocytochemistry,

ANT 334 ADVANCED TOPICS IN EMBRYOLOGY (3 Units)

1. Cell mechanisms involved in human development-cell proliferation, differentiation, speciation and pattern formation
2. Cell signaling
3. Stem cells
4. Cloning

ANA 354 INTRODUCTORY HISTOCHEMISTRY (3 Units)

1. History of histochemistry
2. Terminologies and definitions
3. Principles and techniques of histochemistry including immunocytochemistry
4. The microscope
5. Fixation, tissue processing
6. Enzyme histochemistry

400 LEVEL

FIRST SEMESTER

ANT 411 SURFACE AND LIVING/ FUNCTIONAL ANATOMY (2 Units)

1. Practical cum demonstration exercises to map out surface representations of majorinternal organs of the body.
2. Recognition and demonstration of major visible anatomical features of the living human subject.

ANT 417 CRANIAL NERVES AND AUTONOMIC NERVOUS SYSTEM (3 Units)

1. Detailed study of the cranial nerves
2. Organization of the autonomic nervous system

ANT 461 ANATOMICAL AND MUSEUM TECHNIQUES (3 Units)

1. Techniques for the preservation of gross anatomical tissues for teaching and research. These will include embalming and cadaver preservation.
2. Wet and Dry specimen preparation techniques for the museum set up and maintenance.

ANT 431 BIOMETRY AND HUMAN GROWTH (2 Units)

1. Definitions: Biometry, Growth.
2. Human growth assessment parameters.
3. Factors influencing growth.
4. Growth assessment standards.
5. Lecture cum practical study of major features of bones of the human skeleton.
6. Measurement of bone parameters and their application to human identification.

ANT 433 HUMAN GENETICS (2 Units)

1. Fundamental human genetic principles
2. Variation in gene expression in man
3. Patterns of inheritances in families (autosomal dominant, autosomal recessive, X-linked dominant, X-linked recessive, Y-linked and sex influenced)
4. Cytogenetics, types and classification of human chromosomes, methods of preparation of human chromosomes and Karyotyping
5. Types of numerical and structural chromosome aberrations and their causes
6. Gene Hybridization
7. Human Genomic Studies

ANT 455 HISTOCHEMISTRY II (2 Units)

1. Histochemistry of Carbohydrates, lipids, proteins, amino acids and nucleic acid
2. Histochemistry of Pigments and Minerals
3. Quantitative histochemistry
4. Ultra histochemistry

ANT 421 CELL AND MOLECULAR BIOLOGY (1 Unit)

1. Cell structure
2. Basic concepts and methods in molecular biology
3. Application of molecular biology to medical diagnosis and sex-typing.

ANT 471: RESEARCH METHODS AND RESEARCH ETHICS (2 Units)

1. Definitions of Research
2. Types of research
3. Preparatory stages: Literature search, Protocol development, Sampling
4. Methods for acquisition of data
5. Basics of data processing
5. Report/Manuscript presentation
6. Human and animal ethical issues

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SECOND SEMESTER

ANT 412, 422, 434,& 442

Comprehensive review and special studies in various branches of human anatomy and/or with seminar presentation

ANT 472 PROJECT & ORAL DEFENCE (6 Units)

Students will undertake research project on simple problems in areas of their interest and guided by their supervisors. In addition to experimental work, the students will be required to learn how to search and compile the literature review, collect, arrange and present bibliography. Evaluation of project report will be carried out as follows: Internal examiner (30%) and External examiner (70%).

ADDITIONAL INFORMATION

Regulations

- Instructions shall be based on course credit system.
- Maximum number of credit units a student can register for in a semester is 24.
- Courses shall be taught by lectures, tutorials, practical/clinical demonstration or a combination of these
- Courses shall be evaluated in terms of course units. A course unit is defined as one lecture/tutorial contact hour per week or three hours of laboratory or clinical class experience or a combination of these
- There shall be four (4) levels of courses.
- Examination shall be taken in all courses taught during each semester and candidates will be credited with the number of units assigned to the courses, which they passed.
- The calculation of the cumulative grade point average (CGPA) and the classification of the degree shall follow the same format as the general University regulation for classifying single Honours degrees.
- A student who has taken more than one academic year in excess of the approved minimum period of study to complete this BSc. Human Anatomy degree programme shall not be eligible for an Honours classification.

Grading System

A student's work in the University is presently graded in the following letters and each of the letters carries an equivalent number of grade points. To determine the final grade a student receives in a course at the end of a semester, 30% weight is given to continuous assessment and 70% to the semester examination.

%Score	Letter Grade	Points	Rating
70% and above	A	5	Excellent
60-69	B	4	Good
50-59	C	3	Average
45-49	D	2	Satisfactory
40-44	E	1	Pass
0-39	F	0	Fail

Course Code	Course Title	Units
Required Ancillary Courses		
BIO 1	General Biology I	**3**
CHM 111	General Chemistry I	**3**
CHM 171	Basic Practical Chemistry I	**1**
MTH 111	General Mathematics I	**3**
PHY 111	General Physics I	**3**
PHY 151	General Physics Laboratory I	**1**
General Studies Courses		
GST 111	Communication in English I	**2**
GST 113	Nigerian People and Culture	**2**
GST 125	Intro to Entrepreneurial Studies I	**2**
GST 123	Communication in French	**2**
GST 121	Use of Library, Study Skill and Information Technology	**2**
Total		**24**

Grade Point Average

At the end of each semester, a student's grade point average is worked out. Supposing he or she offers the following courses. And assuming that he or she obtains A, B, D, C, E, F, A, B, D, A and C respectively according to the grading system. The total point of each course will be worked out as follows:

S/N	Course Code	Course Title	Units
	Required Ancillary Courses		
1	BIO 1	General Biology I	**3X5(A)=15points**
2	CHM 111	General Chemistry I	**3X4(B)=12 points**
3	CHM 171	Basic Practical Chemistry I	**1X2(D)=2 points**
4	MTH 111	General Mathematics I	**3X3(C)=9 points**
5	PHY 111	General Physics I	**3X1(E)=3 points**
6	PHY 151	General Physics Laboratory I	**1X0(F)=0 points**
	General Studies Courses		
7	GST 111	Communication in English I	**2X5(A)=10 points**
8	GST 113	Nigerian People and Culture	**2X4(B)=8 points**
9	GST 125	Intro to Entrepreneurial Studies I	**2X2(D)=4 points**
10	GST 123	Communication in French	**2X5(A)=10 points**
11	GST 121	Use of Library, Study Skill and ICT	**2X3(C)=6 points**
	Total		**24 79points**

The total credit units is 24 while the total points is 79. In order to find the grade point average, the total number of points (79) is divided by the total number of credit units (24). This gives a grade point average of 3.29.

The Cumulative Grade Point Average (CGPA

The CGPA is the measure of the student's overall performance at any given point in his /her programme. CGPA is normally computed at the end of each semester as an up-to-date weighted mean of the grade points where the weights are the course credit units. The grade points earned at the end of each semester examination shall count towards the CGPA below. CGPA= the sum of all quality points divided by the sum of all credit units for all courses registered of repeated so far in the programme. CGPA of at least 1.00 shall place a student in good academic standing. A student whose CGPA lies between 0.60 and 0.99 shall be placed on academic probation in the following session. A student in academic probation shall re-register and repeat the failed courses and any other course subject to a maximum of 15 credit units**.** A student is required to register all failed courses in the previous academic year depending on the semester before registering courses prescribed for a new academic year**.**

At the end of the programme, a cumulative grade point average will be calculated. The CGPA determines the class of degree a student shall be awarded.

FINAL CGPA	**CLASS OF DEGREE**
4.50-5.00	1ST CLASS
3.50-4.49	2ND CLASS UPPER DIVISION
2.40-3.49	2ND CLASS LOWER DIVISION
1.50-2.39	3RD CLASS
0.00-1.49	FAIL