

**BAUCHI STATE UNIVERSITY,**

**GADAU**

**FACULTY OF SCIENCE**

**DEPARTMENT OF**

**BIOCHEMISTRY**

**STUDENTS HANDBOOK**

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## **1.0 HEAD OF DEPARTMENT REMARKS**

I am delighted to write this introductory remark on the first edition of B. Sc. Biochemistry Student's Hand book. The essence of student hand book is to avail new and returning students with up-to-date information about the Departmental requirement for admission, registration, course outline and content, examination rules and regulations and staff profile. This effort is intended to greatly minimize complaints of students on course registration to their respective level coordinators and to familiarize students with exam rules and regulations.

It is hoped that this little effort would go a long way in achieving the desired aim and objective of this publication.

I wish all our students a happy and fruitful stay in the Department.

*Dr. A. J. Alhassan*

*Head of Department*

*May, 2014*

## **LEADERSHIP OF THE UNIVERSITY**

### **The University Visitor and Key Officers**

#### ***VISITOR:***

His Excellency  
**Mallam (Dr) Isa Yuguda,**  
(Matawallen Bauchi),  
The Executive Governor of Bauchi State.

#### **THE KEY OFFICERS**

**Chancellor:**  
His Royal Highness,  
**Alhaji Sulayman Rilwan Adamu,**  
Emir of Bauchi.

**Pro- Chancellor:**  
**Prof. Ango Abdullahi, CON**  
(Magajin Rafin Zazzau)

**Vice Chancellor:**  
**Prof. Ezzeldin Mukhtar Abdurahman**

**Registrar:**  
**Alh. Usman Mahmud**

### **Members of the University Governing Council**

The Council is the governing body responsible for the general management of the University. These are the members:

Pro- Chancellor and Chairman of the Council	Prof. Ango Abdullahi, CON Magajin Rafin Zazzau
Appointee of the State Executive Governor	Surveyor Ibrahim Sa'ad Jahun (Galadiman Bauchi)
Appointee of the State Executive Governor	Ambassador Umar Babaji (Wazirin Misau)
Appointee of the State Executive Governor	Prof. Gambo Laraba Abdullahi
Appointee of the State Executive Governor	Prof Sulayman Bogoro
Representative of the Ministry of Education (Directorate of Higher Education)	Mallam Ladan Sambo
Vice- Chancellor:	Prof. Ezzeldin Mukhtar Abdurrahman
Representatives of University Senate	Deans of Faculties

Registrar & Secretary to the Council	Alh. Usman Mahmoud
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### **The University management and its Members**

The Management is concerned with matters on both academic and administrative activities and assists the Vice- Chancellor on decisions that need not be channeled to the council as well as make recommendations to the Council. The following is the list of its members:

Prof. EzzeldinMukhtar Abdurrahman, Vice- Chancellor	Chairman
Alh.Usman Mahmoud, Registrar	Member
AlhajiAyuba Mohammed Gital, Bursar	Member
DaudaAdamuBakum, Librarian	Member
Director Academic Planning	Member
All Deans of Faculties	Members
Dean Studentsø Affairs	Member
Principal Assistant Registrar	Recorder

### **Members of the Senate**

The senate is generally responsible for the academic affairs of the University. The members are: The Vice Chancellor, the University Librarian, Deans of Faculties /

Studentsø Affairs, Director of Academic Planning, all Professors holding established chairs, all Heads of Departments and the Director of Remedial Studies.

## **2.0 PHILOSOPHY OF THE UNIVERSITY**

The university shall be rooted in its host community and be a symbol of the spirit of the community, the guardian of its morals, and the formulator of its hopes and aspirations. The university is to ensure the respect of human values and safeguard the objectives of a united, fair and just State and Nation.

## **3.0 PHYLOSOPHY AND OBJECTIVES OF THE PROGRAMME**

The demand for manpower in medical laboratories, as well as in food, chemical and pharmaceutical industries is high due to population and commercial nature of Northern Nigeria, Northeast states and the country in general. The training in Biochemistry is focused towards producing skilled manpower to meet this demand. In addition the

demand for researchers in medicine, nutrition and natural sciences in the area is high due to the following reasons among others:

**Firstly;** the normal value for common biomolecules in the body fluids currently in use in hospitals in this area are either foreign or obtained from other areas of Nigeria. Research in Clinical Biochemistry will reveal the normal and abnormal values of these biomolecules in the population in this area, who are different from other socio ó culturally.

**Secondly,** there is the need to engage in the determination of the incidence of common genetic disorders in the catchments area and to suggest possible precautionary measures in order to prevent serious clinical defect.

**Thirdly,** research in nutrition will discover nutritionally rich local food sources and the appropriate diet in abnormal situations.

**Fourthly** there are the needs to intensify study on environmental research with the view to evaluate normal favourable conditions and possible solution or otherwise.

The programme was conceived in order to meet the above - mentioned demands.

The objectives of the programme are, therefore, to produce:

1. Skilled manpower capable of working in Medical Laboratories, Chemicals, Food and Pharmaceutical industries.
2. Graduates capable of undertaking further studies and research in medicine, nutrition, pharmacology and agriculture.

### **3.1 Areas of specialization in the Department**

- Enzymology and Protein Biochemistry
- Food and Nutritional Biochemistry
- Human nutrition and Dietetics
- Clinical Biochemistry
- Industrial Biochemistry
- Lipids Biochemistry
- Carbohydrate Biochemistry
- Plant/medicinal plant Biochemistry
- Toxicology and environmental Biochemistry
- Pure and applied Biochemistry
- Endocrinology

➤ Biotechnology

#### **4.0 Definition of Biochemistry**

Biochemistry is multi-disciplinary applied sciences which deals with the chemical processes and mechanisms in living organisms. It is all encompassing and bridge course for natural and physical sciences. Biochemistry governs all living organism, living processes and the relationships between both and the environment.

Since the coining of the term Biochemistry in 1903 by Carl Neuberg, due to their creative and imaginative genius, to valid and valuable criticisms and ability to solves many problems through designed laboratory findings.

Human body was believed, according to Schleiden and Schwann to composed of enormous units of living cells each made up of three classes of substances in well-defined ratio viz; water, organic (carbohydrates, lipids, proteins and nucleic acid) and inorganic. Biochemistry is the study of molecular logic of life , biochemist, therefore study the composition of these life molecules, the various reaction involving their synthesis and degradation as well as the regulation and control of these interlocking systems to enable growth in infancy, maintenance in maturity, and degeneration in old age.

Based on today's perception, Biochemistry can be divided into three principal areas viz;

- Components of living matter; their function structure relationships.
- Synthesis and utilization of living matter (metabolism), all the chemistry involves in anabolic and catabolic processes.
- Transmission of biological information, the chemistry of the substances involves. This gave birth to the field of molecular genetics.

Being vast, all-encompassing and bridging scientific profession, the scope of Biochemistry has broadened to becomes very difficult to single out one field of human endeavour which has not been penetrated in attempt to correlate biological functions with molecular structures. It is the most fascinating and exciting scientific discipline, hence it is rapidly and extensively developing, thereby allowing the recognition of numerous division including; Protein, Neuro, Membrane, Plants, Analytical, Clinical, Lipid, Carbohydrate, Microbial, Environmental, Veterinary, and Forensic Biochemistry, Biochemical Endocrinology, Biochemical Toxicology, Biochemical Engineering, and Enzymology among others.

#### **4.1 BIOCHEMISTRY AS BASIC MEDICAL SCIENCE COURSE**

It is imperative to note the significant influence of Biochemistry in the medical field, it fuel the growth of life sciences. Through the knowledge of Biochemistry the molecular mechanisms of many diseases were elucidated, this includes thalassemia, sickle cell anaemia, phenylketonuria, albinism, anatomical lesion such as myocardial infarction, liver diseases etc. The concept of Biochemistry allowed embryologist to understand the mechanism by which fertilized embryo gives rise to cells as different muscle, it help anatomist to answer the question on how cells recognize each other and form special tissues such as liver, kidney, pancreas etc.

Biochemistry is therefore one of the corner stones of modern medicine applicable in; defining health status, investigation of diseases, pharmacology, physiology, genetics, nutrition etc. The principles of Biochemistry therefore form the bedrock of modern medicine, it contributes to understanding of disease, its diagnosis, treatment and prognosis. Life is the result of continuous series of chemical reactions which are both inherently slow and apparently thermodynamically impossible, occurring at low constant temperature. The concept of enzymology and bioenergetics unveil these paradoxical events in living cells. Deviation, derangement or change from the normal Biochemistry of an organism would therefore produces significant dysfunction in making the whole organism efficient and precipitates diseases.

The role of Biochemistry in clinical diagnosis cannot be over emphasis, human being are not automobile engine that can differentiate between normal and abnormal form of changes in sound. Careful assay and compares of body fluids metabolites, enzyme activities and electrolytes are helping in the diagnosis of disease. DNA probes are used in diagnosis of genetic disorder, serological analysis reveals infectious disease, cancer etc.

It is imperative to note that Biochemistry is a basis for the rational design of new drugs. Today rapids development of powerful Biochemical concepts and techniques enables researchers to answer some of the challenging problems in medicine. Knowledge of Biochemistry allowed the synthesis of drugs for various diseases. Xanthine oxidase inhibitor used in the treatment of gout, carbonic anhydrase inhibitor used in the

treatment of glaucoma/uremia. DNA synthesis inhibitors used in the treatment of leukemia etc.

Today many antibiotics are produced through the knowledge of Biochemical techniques of genetic engineering. Reaction of these drugs (science of pharmacology) was fully understood through the knowledge of molecular structure and structural activity gained from Biochemistry.

There is no doubt genome Biochemistry is the foundation of embryology, obstetrics and gynecology. According to central dogma theory, reproduction and development, involves replication, transcription and translation, under coordinated nutritional and endocrine environment. Birth control through the manipulation of endocrine systems. These are all puzzles of biochemistry. Qualified medical personnel is he who benefited from well-designed biochemistry curriculum that allowed for proper understanding of medical diagnosis and treatment of abnormal conditions.

#### **4.2 SPECIALIZATION AND JOB OPPORTUNITY IN BIOCHEMISTRY**

Biochemists have wide areas of interest and consequently find themselves specializing in many disciplines including;

➤ **Medical or Clinical Biochemists**

Can work in hospital laboratories or other health care delivery centers to provide vital information for diagnosis and treatment of diseases.

➤ **Veterinary Biochemist**

Can work in veterinary department of government establishments such as Vet. Research Institutes, Nigerian institutes of Trypanomiasis Research. Vet. Department of Universities, Ministry of Agriculture and Agricultural Research Institutes.

➤ **Food and Nutrition Biochemist**

Can work in established food and feeds industries or work in areas of quality control, food formulation and processing. Can also work in Military Cantonment, Naval Ships, Hospitals, Old People Homes, and Health Care Rehabilitation Centers, as well as multinationals including; WHO, FAO, WFP, UNDP, NARDAC UNIDO NAPRI, REMRDC etc.

➤ **Plant Biochemist**

Can work in forestry department as plant breeders, animal breeding and animal nutrition.

➤ **Industrial and Environmental Biochemist**

Can fit into various industries such as beverages, flour mills, sugar, confectionary, bakery oil mills, textile, and chemical industries as quality control. Environmental management/pollution control unit in industries and ministries.

➤ **Microbial Biochemist**

Serve very well in fermentation, food, chemical medicine and pharmaceutical as well as petroleum industries, also play roles in crop production, disease and pest control.

➤ **Self-Employment**

Can set up business as quality control analyst to provides services to client, as sales representative for laboratory equipment and chemicals, can establish and operates; foods, drugs and hid tanning industries.

The first degree holders may alternatively use the degree for advance training in medicine, dentistry, brewing, forensic sciences. Masters in Biochemistry, pharmacology etc. Post graduate diploma with special training in biochemical techniques and instrumentation may serve as technologist or technicians, in academic and research institutions, government agencies, food, drugs, petroleum, beverages and cosmetics industries. Those with doctorates and post doctorates may remain in academics and research institutes. They may be employed in administration, policy making, planning consultancy, research and as resource personnel in international organizations such as WHO, FAO, WEP, UNDP, NARDAC UNIDO NAPRI, REMRDC, IPAN etc.

## **5.0 HISTORY OF THE PROGRAMME**

The Department of Biochemistry was established in the Faculty of Science along with other basic science (chemistry, biology and physic), headed by Dr. A. J. Alhassan, aiming to produce Biochemistry graduates. Firstly, there was a clear demand for graduates in the fast growing field which strives to unveil the mystery of nature from the molecular point of view. Secondly, it is a way of expanding science intake with the aim of achieving 60:40 Science: Arts ratio required by government. The programme started

with seven (7) students, who were admitted during the 2011/2012 academic session. Today the department has students at all levels

### **6.0 ADMISSION REQUIREMENTS:**

Candidates can be admitted into the programme at 100 level or 200 level depending on their previous background.

- (i) **100 level:** Candidates must have passed the Secondary School Certificate Examination/ West African Examination Council. Examination with minimum of 5 credits to include Biology, Chemistry, Physics English and Mathematics in not more than two sittings. This is in addition to obtaining the appropriate points in the UTME.
- (ii) **200 level (Direct Entry):** Candidates must have a minimum of grade C pass at Higher School Certificate/ GCE Advanced Level or equivalent in Biology, Chemistry and Physics in not more than two sittings. Candidates with 13 points or above in their National Certificate of Education (NCE) in Biology/Chemistry and at least upper credit pass in Diploma Laboratory Technology (Biochemistry option) may also be admitted.

### **7.0 THE STRUCTURE AND ACADEMIC CONTENTS OF THE PROGRAMME**

The programme operates on a SEMESTER CREDIT HOUR System. One semester credit hour represents 15 one ó hour lecture period or 30 ó hour of laboratory exercise. For the three ó year programme (i.e. for candidates admitted to level II) a minimum of 114 credit hours is needed for graduation, while 146 credit hours is the minimum for the four ó year programme. Period of formal studies in the university: 32 weeks/year for 3 or 4 years depending on level of entry. Industrial Attachment: 24 weeks at 300level.

#### **✓ Learning Outcomes**

Biochemistry graduates are expected to develop a wide range of different skills and abilities. These are divided into three broad categories:

- a. Regime of Subject Knowledge  
Graduates of Biochemistry are expected to develop high cognitive abilities and skills related to Biochemistry.
- b. Competencies and Skills  
Biochemistry graduates are also to exhibit high practical skills in Biochemistry
- c. Behavioural Attitudes

Graduates of Biochemistry are expected to be able to transfer this skill to non- Biochemistry specific competencies.

### **Attainment Level**

Graduates of Biochemistry are expected to have the ability to apply knowledge and skills in solving theoretical and practical problems in Biochemistry in relation to national and societal problems.

(e) **Course content specifications/syllabus of all courses in the Programme.**

Note: **BIO (Biology); MCB (Microbiology); PHY (Physics); MTH (Mathematics); GSP (General Studies Programme); CSC (Computer Science Course); BCH (Biochemistry); CHM (Chemistry); ANT (Human Anatomy) and PYS (Human Physiology).**

**Description of the course code:** each course code has four digits, for example BCH 2301, the first digit (2) is showing level, that the course is 200 level course, the second digits (3) is showing credit load for the course, as 3 credit course, while the last two digits is specifying semester for the course. Even number is indicating first semester while odd number is specifying second semester, hence 01 in BCH2301 showing that the course is first semester course.

## 7.1 LIST OF COURSES

### YEAR I 100 LEVEL COURSES

First semester		Credit	Second semester		Credit
Code	Title		Code	Title	
GSP 1201	Study Skills	2	BIO 1202	General Biology II	2
BIO 1201	General Biology I	2	BIO 1204	General Biology IV	2
BIO 1203	General Biology Iii	2	CHM 1202	Physical Chemistry	2
CHM 1201	Inorganic Chemistry	2	CHM 1204	Practical Chemistry	2
CHM 1203	Organic Chemistry	2	MTH 1302	Elementary Mathematics II	3
MTH 1301	Elementary Mathematics I	3	PHY 1202	Behaviour of Matter	2
PHY 1105	Physics Practical I	1	PHY 1104	Physics Practical II	1
PHY 1201	Mechanics	2	GSP1202	Use of Library and Computer appreciation	2
PHY 1203	Electricity and Magnetism	2			
CSC 1201	Introduction to Computer	2			
		<b>20</b>			<b>16</b>

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First semester		Credit	Second semester		Credit
Code	Title		Code	Title	
BCH 2301	General Biochemistry I	3	BCH 2302	General Biochemistry II	3
BCH 2101	Methods in Biochemistry	1	BCH 2204	Metabolism of Carbohydrates	2
BIO 2201	Genetics I	2	BCH 2210	General Biochemical Methods	2
CHM 2201	Organic Chemistry I	2	BIO 2206	Biostatistics	2
CHM 2203	Physical Chemistry	2	BIO 2208	Biological Techniques	2
MCB 2207	General Microbiology I	2	CHM 2206	Analytical Chemistry	2
GSP 2201	Foundation of Nigerian Culture	2	CHM 2210	Inorganic Chemistry	2
GSP 2203	Nigerian government and Economy	2	CHM 2208	Organic Chemistry II	2
ANA 2201	Embryology and Genetics	2	CHM2204	Chemistry Practical	2
GSP 2401	Use of English (for DE Students)	4	CSC 2302	Application of Computer	3
			GSP 2202	Peace and Conflict Resolution	2
		<b>22</b>			<b>26</b>

**YEAR III  
300 LEVEL COURSES**

First semester		Credit	Second semester		Credit
Code	Title		Code	Title	
BCH 3301	Enzymology	3	BCH 3600	Student Industrial Work Experience	6
BCH 3203	Metabolism of Amino Acid and Protein	2			
BCH 3205	Metabolism of Lipids	2			
BCH 3207	Food and Nutritional Biochemistry	2			
BCH 3109	Bioenergetics and Biological Oxidation	1			
CHM 3201	Instrumental Methods of Analysis	2			
CHM 3209	Organic Chemistry	2			
CHM 3211	Physical Chemistry	2			
BCH 3201	Microbial physiology and metabolism	2			
MCB 3301	Microbial genetics and Molecular Biology	3			
PYS 3201	Blood and body fluid physiology	2			
PYS 3203	Body Tissue Physiology	2			
		<b>25</b>			

**YEAR IV  
400 LEVEL COURSES**

First semester		Credit	Second semester		Credit
Code	Title		Code	Title	
BCH 4201	Advanced Enzymology	2	BCH 4210	Biochemical Pharmacology	2
BCH 4203	Biosynthesis of Macromolecules	2	BCH 4312	Industrial Biochemistry	3
BCH 4105	Advanced Biochemical Methods	1	BCH 4209	<b>Genetic Engineering</b>	2
BCH 4105	Tissue Biochemistry	1	BCH 4214	Special Topics and Seminar	2
BCH 4107	Membrane Biochemistry	1	BCH 4112	Biochemical Reasoning	1
BCH 4113	Bioinorganic Chemistry	1	BCH4216	Hormone Biochemistry	2
BCH 4211	Metabolic Regulations	2	BCH 4618	Research Project	6
BCH 4213	Plant Biochemistry	2			
BCH 4215	Metabolism of Nucleic Acids	2			
BCH 4319	Immunology and Immunochemistry	3			
		<b>17</b>			<b>18</b>

## COURSE DESCRIPTION BIOCHEMISTRY PROGRAMME

### 100 LEVEL COURSES

#### **BIO 1201 GENERAL BIOLOGY I {CU: 2}**

Animal cell structure and organization ; functions of the cellular organelles. Diversity, characteristics and classification of animals, Animal reproduction and interrelationship.

#### **BIO 1202: GENERAL BIOLOGY II {CU: 2}**

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

**BIO 1203 GENERAL BIOLOGY III {CU: 2}**

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

**BIO 1204: GENERAL BIOLOGY IV {CU: 2}**

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

**CHM 1201 INORGANIC CHEMISTRY {CU: 2}**

Principles of atomic structure, isotopes, empirical and molecular formulae. Electronic configuration , periodicity and building up of the periodic table. Hybridization and shapes of simple molecules , Extraction of metals. Comparative chemistry of Group IA and IVA elements. Preparation , properties, structure and application of some selected compounds. Introduction of transition metal chemistry and nuclear chemistry.

**CHM 1203: ORGANIC CHEMISTRY {CU: 2}**

Historical survey of the development and importance of organic chemistry. IUPAC Nomenclature and classification of organic compounds, Homologous series, Covalent bonds and hybridization to reflect the tetravalency of carbon in organic compounds, electronic theory in organic chemistry. Qualitative and quantitative organic chemistry; Determination of empirical and molecular formulae: simple techniques of writing structural formulae; Isolation and purification of organic compounds; Saturated hydrocarbons; structural isomerism, Properties and reactions of alkanes and cycloalkanes, mention of their chemistry and uses in petroleum; Unsaturated hydrocarbons: alkenes, alkynes, cycloalkenes: cis-trans isomerism; simple electrophilic addition reactions; Polymerization.

**CHM 1202: PHYSICAL CHEMISTRY {CU: 2}**

Principles of atomic structure, isotopes, empirical and molecular formula; nuclear structure, atomic fission and nuclear energy. The electronic structure and arrangement of electrons in atoms; Electronic configuration of 1<sup>st</sup> and 2<sup>nd</sup> rows of elements. Properties of gases: equation of state, kinetic and molecular theory of gases, and heat capacities of a gas. Equilibrium and thermodynamics ; Thermochemistry, Enthalpy of reactions , bond energies, thermodynamic cycles, Hess's law, Born Haber cycle, the meaning of  $K_a$ ,  $K_p$  and  $K_c$ , Le Chatelier's principle, pH, ionic equilibrium , buffers , indicators, solubility product, common ion effect , redox reactions. Electrode potentials, electrolytes and electrolysis.

Kinetics: The position of equilibrium and the rate at which it is attained. Factors influencing the rate of reactions. Introduction of activation and catalysis.

**CHM 1205 :PRACTICAL CHEMISTRY {CU: 2}**

Laboratory instructions and experimental procedure shall be conducted for the candidates from the following subjects areas:

**Physical:** Determination of heats of reaction, effect of solutes on boiling points of solvents , partition coefficient. Determination of molecular mass by Dumas and Victor Meyer methods. Measurements of rate equation and activation energy. Other experiments based on the scope of the lectures and as approved by the Department.

**Organic:** Safety precaution instructions , classification of organic compounds by their solubilities in common solvents. Qualitative analysis for common elements in organic compounds. Identification and classification of acids and bases functional groups. Identification of the following: neutral functional groups, alcohols, aldehydes, ketones, esters, anhydrides and others. Acetylation of aniline as an example of the preparation of solid aniline derivative. An electrophilic addition reaction .

**Inorganic:** Qualitative and quantitative analysis; molarity, concentration and percentage purity.

**PHY 1201: MECHANICS {CU: 2}**

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

**PHY 1203: ELECTRICITY AND MAGNETISM {CU: 2}**

Electrostatics; Conductors and currents; Dielectrics; Magnetic fields and induction; Maxwell's equations; Electromagnetic oscillations and waves and their applications.

**PHY 1202: BEHAVIOUR OF MATTER {CU: 2}**

Molecular treatment of properties of matter, elasticity: Hooke's law; Young's shear and bulk modulus; Hydrostatics; streamlines, Bernoulli and continuity equations, Turbulence, Reynolds number. Viscosity; Laminar flow, Poiseuille's equation. Surface tension; adhesion, cohesion, capillarity, drops and bubbles; Temperature; the zeroth law of thermodynamics; heat; gas law; laws of thermodynamics; Kinetic theory of gases. Applications.

**PHY 1170 and 1105: PHYSICS PRACTICALS I and II {CU: 1}**

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

**MTH 1301: ELEMENTARY MATHEMATICS I (ALGEBRA AND TRIGONOMETRY) {CU: 3}**

Elementary set theory: subsets, union, intersection, complements, Venn diagram, Real numbers, Integers, Rational and irrational numbers, Real sequences and series, Theory of quadratic equations, Binomial theorem, Circular measure, Trigonometric functions of angles of any magnitude, trigonometric formulae.

**MTH 1302: ELEMENTARY MATHEMATICS III (CALCULUS I) {CU: 3}**

Function of a real variable, graphs, limits and idea of continuity. The derivative, as limit of rate of change; Integration as an inverse of differentiation: methods of integration, definite integrals; Application to areas, and volumes.

**200 LEVEL COURSES**

**BCH 2301: GENERAL BIOCHEMISTRY I (3 Units) (L 30: P10: T5)**

Chemistry / structures of carbohydrates, lipids and nucleic acids. Chemistry of amino acids, proteins and their derivatives; methods of isolation and identification; Primary,

secondary, tertiary and quaternary structures of proteins; determination and biochemical applications of the structures of proteins; Nomenclature of nucleosides and nucleotides; Effects of acid and alkali on hydrolysis of nucleic acids; Structures of DNA and RNA; prokaryotic versus eukaryotic organisms.

**BCH2302: GENERAL BIOCHEMISTRY II (3 Units) (L 30: P10: T5)**

Acidity and alkalinity: pH and pKa values and their effects on cellular activities; Buffers. Cell biology

Introduction to enzymes: types, properties, classification and nomenclature, enzyme catalysis; Factors affecting the rate of enzyme catalysed reaction. Biological oxidations and bioenergetics: Gibbs equation, chemical coupling, phosphorylations, ATP and NADPH cycles; Metabolism, Introduction to metabolism of carbohydrates and lipids

**BCH 2102: METHODS IN BIOCHEMISTRY (1Units) (L 10: P5: T5)**

Principles of instrumentation; Principles, methodologies and applications of electrophoresis; chromatography: types and procedures; Spectroscopy and spectrophotometry; Centrifugation and isotope techniques.

**BCH 2204: METABOLISM OF CARBOHYDRATES (2 Units) (L 15: P5: T5)**

Degradation and digestion of carbohydrates & sugars; Glycolysis; Tricarboxylic acid cycle; Phosphogluconate pathway; Glyoxylate pathway; Pentose phosphate pathway; Cori cycle; Calvin pathway. Gluconeogenesis, glycogenesis, and glycogenolysis; Disorders of carbohydrate metabolism.

**BCH 2210 GENERAL BIOCHEMICAL METHODS (PRACTICAL) (2 Units) (L 15: P5: T5)**

Qualitative and quantitative tests on carbohydrates, lipids, proteins; Analysis of serum enzymes, ions and molecules; Food analysis; Practical laboratory exercises to cut across a wide spectrum of general biochemistry. Laboratory practical may be arranged on the basis of 6 hours per week in one semester or 3 hours per week for two semesters.

**BIO 2201: GENETICS I (2 Units) (L 15: P5: T5)**

Hereditary and non-hereditary characteristics; Chromosome theory of inheritance; the chromosome of eukaryotes; bacteria and viruses; Linkage, crossing over, sex linkage, sex chromosome and sex determination. The mechanisms of genetic recombination. Introduction to population genetics.

**BIO 2208: BIOLOGICAL TECHNIQUES (2 Units) (L30: P0 TO)**

The Microscope: types of microscopes and their uses. Preparation of microscope slides; Photometry; Colorimetry; Chromatography; Electrophoresis; Conductimetry; Experimental designs.

**CHM 2201: INORGANIC CHEMISTRY (2 Units) (L30: P0 TO)**

Stereochemistry and molecular orbital theory of simple molecules including homo- and hetero-atoms; Comparative group relationships of the elements in the periodic table. Chemistry of group IIIA (Boron group), VA (Nitrogen group), noble gases, and first row of transition metals. Concepts of hard and soft acids and bases. Chemistry in aqueous and non-aqueous media. Oxidation and reduction reactions.

**CHM 2201 and 2208: ORGANIC CHEMISTRY I and II (2 Units) (L30: P0 TO)**

Factors affecting structure and physical properties of organic compounds (atomic orbitals, bonding and hybridization); Factors affecting availability of electrons, inductive, mesomeric hyperconjugation and steric effects; Introductory stereochemistry (optical activity, conformational isomers, chirality etc): Methane, energy of activation and free radical substitution reactions in alkanes; Alkyl halides preparation, properties and nucleophilic reactions; Aromaticity and electrophilic substitution reactions. Elimination reactions.

**CHM 2203: PHYSICAL CHEMISTRY (2 Units) (L30: P0 TO)**

The laws of thermodynamics, entropy, free energies; Feasibility of chemical systems, phase rule and productive uses, phase equilibrium; Reaction rates, rate laws, molarity and order of reactions; Mechanism and theories of elementary processes, photochemical reactions.

**CHM 2206: ANALYTICAL CHEMISTRY (2 Units) (L30: P0 TO)**

Instrumentation and practical classes covering the chemistry syllabus of 200 level; Analysis of some metals, organic compounds and nutrients from samples; Methods of separation of chemical compounds; Chromatography.

**MCB 2307: GENERAL MICROBIOLOGY I (2 Units) (L30: P0 TO)**

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

**BIO 2206: BIostatistics (2 Units) (L30: P0 TO)**

Sampling; Methods of collection and presentation of biological data; Standard deviation; Probability, Correlation and regression; Correlation coefficient; inferential statistics.

**GSP 2201: FOUNDATION OF NIGERIAN CULTURE (2 Units) (L30: P0 TO)**

The heritage of the past African political development and governments; The European impact and westernization; Contemporary Nigeria, its legal system, ethics and society, educational challenges, media, language and culture.

**GSP 2202: NIGERIAN GOVERNMENT AND ECONOMY (2 Units) (L30: P0 TO)**

Problems and challenges of nationhood and development in a changing world; Government and stability; Religious tensions ó causes and solutions; Military government in Nigeria and Africa; Budget and development planning; Developmental goals for Nigeria, strategic foreign policy issues, mobilization for national development; Economic potential of Nigeria, mineral resources in Nigeria.

**CSC 2201/1201: INTRODUCTION TO COMPUTER (2 Units) (L30: P0 TO)**

Types of computer; Hard and soft wares; Operations of computer; Practical involving the usage of basic computer programs.

**CSC 2302: APPLICATION OF COMPUTER (2 Units) (L30: P0 TO)**

The course involves teaching and practicals on the application of computer; Computer programs; Uses of computer; Computer application in research; Storage and retrieval of data, computer programs for data presentation.

### **BCH 301 ENZYMOLOGY: (3 Units) (L 30: P0: T15)**

Vitamins and co-enzymes. Fat and water soluble vitamins. Structures and functions of vitamins and co-enzymes. Classification and nomenclature of enzymes. Genetics of enzymes and inhibition. Mechanisms of enzyme-catalyzed reactions. Effects of temperature, pH, ions and inhibitors on enzyme catalyzed reactions. Michaelis-Menten Equation. Allosteric/Regulatory enzymes. Active sites of enzymes. Estimation of kinetic parameters - enzyme activities,  $K_m$ ,  $V_{max}$ ,  $K_i$  etc. Zymogen activation, digestive enzymes etc. Production, isolation, purification and characterization of enzymes. Recent advances in enzymology.

### **BCH 302 METABOLISM OF CARBOHYDRATES; (2 Units) (L30: P0 TO)**

Degradation and digestion of carbohydrates - sugars, storage polysaccharides and cell walls. Reactions of sugars. Glycolysis, the Tricarboxylic acid cycle, the phosphogluconate pathway, the glyoxylate pathway, the pentose phosphate pathway and the cori cycle: the calvin pathway. Gluconeogenesis and glyconeogenesis. Disorders of carbohydrate metabolism.

### **BCH 3205 METABOLISM OF LIPIDS: (2 Units) (L30: P0: TO)**

Classification of lipids - fatty acids, triglycerides, glycosylglycerols, phospholipids, waxes, prostaglandins. Lipid micelles, monolayers, bilayers, Lipoprotein systems. Oxidation and synthesis of fatty acids; cholesterol synthesis. Formation of ketone bodies. Integration of lipid metabolism. Acetic acid as a central precursor for biosynthesis of lipids.

### **BCH 3203 METABOLISM OF AMINO ACIDS AND PROTEINS: (2 Units) (L30:P0: TO)**

Amino acids as building blocks of proteins; covalent backbone of proteins; Amino acid sequence of proteins. Protein isolation, fractionation, purification and characterization of proteins. Biological functions of proteins. Oxidative degradation of amino acids and metabolism of one carbon units. Biosynthesis of amino acids and some derivatives; the urea cycle; metabolism of inorganic nitrogen. Disorders of amino acid metabolism.

### **BCH 3206 METHODS IN BIOCHEMISTRY: (2 Units) (L 15: P0: TO)**

Principles of instrumentation. Principles, methodologies and applications of electrophoresis, Chromatography, thin layer chromatography, spectroscopy and spectrophotometry centrifugation and isotopic techniques.

(Pre-Requisite BCH 201)

### **BCH 3207 MEMBRANE BIOCHEMISTRY: (1 Unit) (L 15: P0: TO)**

Structure, composition and functions of biological membranes. Isolation, characterization and classification of membranes; chemistry and 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; ionospheres.

**BCH 3208 FOOD AND NUTRITION BIOCHEMISTRY: (2 Units) (L 15: P0: TO)**

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 ó root and stem tubers, fruits and fruit drinks, seeds and grains, green and vegetables. Food poisoning and intoxication; prevention and cure. Food nutrients; Energy values of foods and energy expenditure by mammalians. Nutritive value of foods - carbohydrates, fats, proteins, vitamins, mineral elements and water. Nutritional disorders, prevention and therapy. Nutritional status and nutritional requirements. Recommended dietary allowances. Assessment of nutritional status. Nutrient requirements in relation to Physical, activity and ageing, diet and disease, obesity and under nutrition.

**BCH 3110 BIOENERGETICS: (1 Unit) (L 15: P0: TO)**

High-energy compounds; Chemical potentials, Electrochemical potentials, Electron transport system and oxidative phosphorylation; Regulation of ATP production. Chemical thermodynamics; Oxidations and reductions.

**BCH 3211 GENERAL BIOCHEMICAL METHODS (PRACTICAL): (2 Units) (LO: P60:TO)**

Practical laboratory exercises in areas of interest of academic staff to cut across a wide spectrum of general biochemistry. Laboratory practical may be arranged on the basis of 6 hours or 3 hours per week for a second semester.

**BCH 3600 STUDENTS INDUSTRIAL WORK EXPERIENCE (SIWES) (6 Units)**

Students will be attached to some industrial organizations for 3 months, the exact period being determined by the institution.

**BCH 4201: ADVANCED ENZYMOLOGY: (2 Units) (L 15: P0: T 15).**

Steady state enzyme kinetics. Transient kinetic methods. Chemistry of enzyme catalysis. Regulatory enzymes. Molecular models for allosterism. Multienzyme complexes. Enzyme assays. Criteria for determining purity of enzymes. Enzyme reconstitution. Regulation of enzyme activity and synthesis (Pre-Requisite BCH 311)

**BCH 4102 BIOSYNTHESIS OF MACROMOLECULES: (1 Unit) (L 15: P0: T 0)**

Structure and functions of macromolecules. Storage and structural polysaccharides; mucopolysaccharides, glycoproteins, bacterial cell wall synthesis of complex lipids, lipoproteins and nucleic acids.

**BCH 4103 TISSUE BIOCHEMISTRY: (1 Unit) (L 15: P0: T 0)**

Biochemistry of muscles, kidney, liver, and adipose tissues. General metabolism of the brain and neuronal biochemistry. Biochemistry of reproductive tissues. Detoxification and excretion in tissues.

**BCM 4104 BIOINORGANIC CHEMISTRY: (1 Unit) (L 15: P0: TO)**

Relationship between the physicochemical properties and biological functions of inorganic ions. Ligand complexes and their biochemical significance. Electrolyte metabolism. Nitrogen fixation and sulphur cycle.

**BCH 4305 BIOTECHNOLOGY GENETIC ENGINEERING: (3Units) L 15: P0: T 0)**

Replication, transcription and translation - a brief review. The genetic code and its relationship to cellular functions. DNA replication in a cell-free system. Genetic transformation, transformation and conjugation. Gene mutation, mutagenic agents and their applications to gene-transfer. Gene mapping. Structure of eukaryotic genome. Recombinant DNA and its application. Hybridomas.

**BCH 4206 METABOLIC REGULATIONS: (2 Units) (L 30: P0: TO)**

The relationship of Krebs' Cycle to protein, carbohydrate, lipid and nucleic acids metabolism. Integration of metabolic pathways. Turn-over rates and metabolic pools. Regulation of enzymes of metabolic pathways-feedback inhibition versus enzyme synthesis. Catabolites repression, end product repression, the lactose operon and arabinose operon. Identification of different regulatory mechanism in metabolic pathways.

**BCH 4207 PLANT BIOCHEMISTRY: (2Units) L30:P0: TO)**

Organization of plant cells, photosynthesis, alkaloids and flavonoids, Plant hormones. Biosynthesis of carotenoid Pigments, Biochemistry of Plant Development. The plant cell wall structure, formation and growth. Lignin formation. Free amino acids, pyrimidine, purines and nucleosides in plants. Metabolism of auxins, gibberelins and cytokinins. Synthetic growth regulators and herbicides. Structure - function relationship of plant hormones.

**BCH 4108 BIOCHEMICAL REASONING: [1 Unit] L 15: P0: T 0]**

Evaluation and design of experimental biochemistry from available information and data. Analysis, interpretation and inference - drawing from biochemical research data.

**BCH 4209 SPECIAL TOPICS/SEMINAR IN BIOCHEMISTRY: (2 Units)**

Hormones, immunochemistry, oncology, brain biochemistry, monoclonal antibodies. These may be taught or seminars may be given by academic Staff and Students.

**BCH 4210 ADVANCED BIOCHEMICAL METHODS (PRACTICAL): (2 Units) (L0: P60:TO):**

The purpose of this course is to familiarize students with operations of latest biochemical equipment and with methods of research, assimilation and dissemination of information. Students will go therefore round lecturers and laboratories housing specialized equipment with the aim of exposing them to such equipment under the supervision of lecturer. Part of the course will also cover the effective use of the library, preparation of dissertations or theses, papers for journal publications and journal reviews. Special assignments and essays will be given to students.

**BCH 4611 RESEARCH PROJECTS: (6 Units)**

Independent research findings into selected areas/topics of interest to the academic staff. Students will be required to carry out literature survey on the topics, perform experiments and produce reports (preferably at the end of second semester). Students will be subjected to both seminar and oral examination on the projects undertaken.

**BCH 4312 INDUSTRIAL BIOCHEMISTRY: (3 Units) (L 30: P0: T 15)**

A short review of microbial physiology and genetics. A review of general metabolic pathways and application in industrial processes. Continuous culture methods, principles and applications. The chemostat and its application in industrial fermentations. Fermentations - alcoholic, amino acid antibiotics and other secondary metabolites. Primary and secondary metabolism. Process evaluation and development. Over production of metabolites - amino acids, taste enhancers, vitamin, toxin etc. Methods for screening and selecting micro-organisms of industrial importance. Induction of mutation in micro-organism and plants for the purpose of over production; Strain selection/development and enhancement. Gene dosage and its application in industrial processes.

**BCH 4213 PHARMACOLOGICAL BIOCHEMISTRY: (2 Units) (L.15: P0: T 15)**

Cellular metabolism in infected cells. Biochemical aspects of host-parasite relationships. Metabolic factors affecting chemotherapeutic agents. Theories of the mechanism of drug action. Drug resistances and other factors affecting drug efficacy. The physiological and biochemical action of some selected drugs. Nigerian traditional medicinal plants in the management and therapy of common ailments in Nigerian - malaria, sickle cell anaemia, common cold, hepatitis etc.

**BCH 4215 METABOLISM OF NUCLEIC ACIDS: (2 Units) (L30: P0: TO)**

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

(Pre-requisite BCHM 304)

**8.0 EXAMINATION REGULATIONS**

Examinations are conducted at the end of each course in accordance with regulations approved from time to time by the Senate. To be eligible to sit for any end of course examination, candidates must be duly registered for the course and shall have a minimum attendance of 75% as decided by the Senate. End of course examination consists of one or more of the following:

- (a) Written examination comprising any or a combination of the following:  
multiple choice/short answer, essay type question and biochemical calculations,  
at 60%
- (b) Practical and continuous assessment, up to 40%.

The pass mark for each course is 40%.

- a) **Setting:** Examination questions for a course are set by the examiner of the course. The Head of Department, who is the Chief Examiner, vets the questions and submits them to the external examiner for moderation.
- b) **Conduct:** The Faculty Examination Officer produces examination time ó table to cover duration set by the university Senate. The Department appoints invigilators and arranges the examination venues. Any candidate who is 30 minutes late will not be allowed to sit for the examination.
- c) **Issuance of Results:** The result of examinations are compiled by course instructors and submitted to the Departmental Examination Officer, who prepares them for presentation to Departmental Board. The examination results, approved by the Departmental Board, are then reported to the Faculty Board and Senate for approval. Thereafter, results of the examination are made known to the students, and result slips issued to them.
- d) **Handling of Examination Malpractice:** Entry and use of unauthorized material, copying from another person, removal of examination booklet from examination venue etc. are examples of examination malpractice. Any student involved in any form of examination malpractice is handed over to the University Examination Malpractice Committee for further investigation and appropriate sanction. The penalty for examination malpractice may be expulsion or rustication for 2 semesters, depending on the degree of offence.

## **9.0 STUDENT COUNSELING AND GUIDANCE**

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

## ACADEMIC STAFF OF THE DEPARTMENT

<p><b>Prof M.S. Sule (Sabbatical Staff)</b> B.Sc. (DanfodioUniSokoto), Ph D. (Univ. of Sal ford). His area of research includes; Enzymology, Radiation Biology, Clinical Biochemistry.</p>
<p><b>DrAbubakarGidado (Visiting Staff)</b> B. Sc. (Unimaid), M. Sc. (Unimaid), Ph D. (ABU). His area of research include Clinical Biochemistry</p>
<p><b>Dr. A. J. Alhassan (Visiting Staff)</b> B. Sc. (BUK), M. Sc. (DanfodioUniSokoto), Ph D. (BUK). His area of research interest includes enzymology, environmental toxicology and biochemical entomology.</p>
<p><b>Mohammed Abubakar</b> B.Sc. (BUK), MSc. (UK) PhD (In view)</p>
<p><b>HabibuTijjani</b> B.Sc. (UniJos), M.Sc. ()PhD (In view)</p>
<p><b>Hindatu Yusuf</b> B.Sc (Unimaid), MSc (UTM), PhD (In vie Areaa of Research is Biotechnology</p>
<p><b>Mohammed Zinatu Suleiman</b> BSc and M.Sc (BUK). Her area of research include Clinical and Plant Biochemistry</p>
<p><b>Yusuf RukayyatuShehu</b> B.Sc. (DanfodioUniSokoto), M.Sc. (In view)</p>
<p><b>AbubakarSadiqTanko</b> B.Sc. (BUK), M.Sc. (In view) His area of research include Biotechnology</p>
<p><b>ZainabLadidiIdris</b> B.Sc. (BUK), M.Sc. (In view)</p>
<p><b>Maryam HaladuZangoma</b> B.Sc. (BUK), M.Sc. (In view)</p>
<p><b>AdamuIdrisMatinja</b> B.Sc. (Unimaid), M.Sc. (In view)</p>
<p><b>Ahmed Mallam Ado</b> B.Sc. (Unimaid), M.Sc. (In view)</p>

## LIST OF TECHNICAL STAFF

S/No	Name	Rank
1	JamilaSalihuYunusa	Lab Technologist
2	Sani Garba	Lab Assistant
3	Sani Suleiman	Lab Assistant
4	Kyawa Jondy Daniel	Lab Assistant

## LIST OF ADMINISTRATIVE STAFF

S/No	Name	Rank
1		
2		

3		
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### PHYSICAL FACILITIES

There is one laboratory for a start in the department for teaching the programme. There is also a proposed central laboratory complex, which may be available to the department.

Lectures are normally to hold in theaters and halls for all levels. There are number of offices for members of staff located in the Faculty of Basic Medicine Sciences.

### TOOLS AND EQUIPMENT

The following tools and equipment are located in the three laboratories belonging to the department.

S/N	EQUIPMENT	QTY	MODEL	TYPE
1.	Chemical weighing balance	1		
2.	Vortex mixer	1	TT-XHC	Techmel and Techmel USA
3.	Conductivity meter	1	DDS.307	Electrical
4.	Water deionizer	1	MANU30357	ELGA
5.	Spectrophotometer	1	2100	UNICO
6.	Centrifuge	2	90.1	
7.	Water bath constant temperature oscillator	1	SHA-B	
8.	Thermostatic Drying oven	1	DHG.9202	Thermal-electric
9.	Biological Microscope	8	XSZ.107BN	
10	Drying/Worming cabinet	1		Gen Lab LTD Thermal Engineers
11	The portable Stainless-steel pressure steam sterilization machine	1	YX-280A	
12	Electronic Temperature Regulating Heating mantle		98.I.B	Searchtech instrument
13	Ph/mV/Temperature Meter	1	3505	JENWAY
14	Electrical distiller	1	HS.Z68.5	
15	Electronic thermostat water temperature tank and electronic thermostat water tank for three usages	1	HH.W21.CR4 2II	B.BRAN SCIENTIFIC AND INSTRUMENT

				COMPANY ENGLAND
16	Hand Held Refractometre	1	REF 101/111	
17	Pioneer™ Balance	1		OHAUS
18	Fumes Hood	1	FH 1200	FH 12Z0055
19	Triple Beam Balance	1	MB.2610	Unequal arm type
20	Micropipettes	1	ISO 9001:2000	Lassany

## STUDENT EVALUATION

The academic performance of the students is evaluated using the GPA/CGPA grading system. The following are some of the important features of the system.

1. **Letter Grades:** each course is assessed by a letter grade using the letters A, B, C, D, and F. Each letter corresponds to a range of marks as follows, A for 70 ó 100%, B for 60 ó 69%, C for 50 ó 59%, D for 45 ó 49, and F for 0 ó 44%. The grades A ó D denote passes, and the grade F denotes a failure in the course.
2. **Incomplete Grade:** The Incomplete grade, -I ÷ is awarded to a student who has completed all aspects of a course except the end ó of ó semester examination, and senate has accepted as valid his/her reason(s) for not sitting for the examination. The student would not carryover the course. Rather, he/she will only sit for the examination when it is offered next. His/Her continuous assessment is carried forward and added to the examination marks.
3. **Grade Point:** Each letter grade is assigned a Grade Point as follows: A = 5, B = 4, C = 3, D = 2 and F = 0.
4. **Points:** All points obtained in a course are the product of the credit value of the course and the grade point obtained in the course. Thus, if a student obtained a ðBö in a three credit course, the points are  $4 \times 3 = 12$ .
5. **Grade Point Average (GPA):** The semester Grade Point Average (GPA) is defined as the weighted average of all the grade points obtained in the semester, with the credits as the weights It is an indication of the student's (average ) performance in the semester. In computing the GPA, credit values of course(s) graded incomplete are not counted. Thus

$$\text{GPA} = \frac{\text{Total Semester Points}}{\text{Total Semester Credits}}$$

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Where credits for incomplete course are not counted in totaling the credit.

**Cumulative Grade Point Average (CGPA):** The Cumulative Grade Point Average (CGPA) is defined as the weighted average of all the grade points obtained by the student from the time he/she joined the programme of study up to the time of computation. Thus, the CGPA gives an indication of the student's overall performance in the programme of study. The CGPA is, therefore, computed as follows:

$$\text{CGPA} = \frac{\text{Total Semester Points for ALL Semesters}}{\text{Total Semester Credits for ALL Semesters}}$$

Where credits for incomplete course are not counted in totaling the credit.

The GPA and CGPA values are interpreted as follows:

<b>GPA/CGPA</b>	<b>Interpretation</b>
4.5 ó 5.00	Excellent
3.50 ó 4.49	Very Good
2.40 ó 3.49	Good
1.50 ó 2.39	Fair
1.00 ó 1.49	Satisfactory
0.00 - 00.99	Poor

**BAUCHI STATE UNIVERSITY (BASUG)  
DEPARTMENT OF BIOCHEMISTRY**

**STUDENTS OF SESSION REPORT FORM**

NAME í í í í í í í í í í í í í í í REG. NO í í í í í í í í í í .  
 STUDENT YEAR OF STUDY í í í í í .SESSION í í í í í í í í í ..  
 TOTAL CREDIT ACCUMULATED BEFORE THIS í í í í í í í í .....  
 TOTAL CREDIT EAR í

**FIRST SEMESTER V RESULTS**

Course No	Course Title	Credit	Letter Grade	G. P.	Points

TOTAL FOR THE SEMESTER í í í í í í í í í í í í í í í í í í ..  
 FIRST SEMESTER G.P.A = í í í í í í í í í í í í í í í í í í í ..

**SECOND SEMESTER V RESULTS**

Course No	Course Title	Credit	Letter Grade	G. P.	Points


TOTAL FOR THE SEMESTER í í í í í í í í í í í í í í í í í ..

SECOND SEMESTER G.P.A = í í í í í í í í í í í í í í í í í .í

CURRENT CGPA í ..í í

TOTAL CREDIT REGISTRED (NOW) í í í í í í í í í í .....í

TOTAL CREDIT EARNED í í í í í í í .í í í í í í í í .....í

REMARKS í

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