



SCHOOL OF PHARMACY, PHARMACEUTICAL AND BIOMEDICAL SCIENCES

DEPARTMENT OF PHARMACY

MISSION: The School of Pharmacy, Pharmaceutical and Biomedical Sciences will offer the Associate degree in Pharmacy as well as the Pharmacy technician certificate program. The mission of the Pharmaceutical Science is articulated to provide a learning environment that is responsive to the needs of a diverse population of Students and their diverse learning styles, produce pharmaceutical Scientists who are life-long learners prepared to offer patient –centered care in all practice settings and communities and to lead the profession as it advances its patient care vision. It will embrace technology to advance pharmaceutical practice and improve health care outcomes, engage professional and inter-professional development of its school in teaching, scholarship, and service.

The School will provide quality medical education and training. The Biomedical Sciences Associate degree is most appropriate for students with a strong background in biology who plan to move on to a medical career or apply for an advanced degree program that involves patient contact. Students have an option to pursue additional education in Medicine or Dental Medicine at a 4-year college offering those courses

PHARMACY PRE-MAJOR, AS

The NAAC Pre Pharmacy curriculum makes it possible for students to transfer to a number of public and private colleges and universities in the U.S. with junior standing within a four-year Bachelor’s degree program The courses recommended to prepare for a Pharmacy program align well with majors in chemistry, biochemistry, and biology; however, a science-related major is not required to apply to most Pharmacy programs.

1st Semester (Freshman)		
Course Code	Course Title	Credit Unit/ Hours
ENG 101	English Composition I	3
MAT 160	Survey of Calculus	4
BIO181:	General Biology (Majors) I	4
CHM 121	General Chemistry I	4
MCS 105	Introduction to Multicultural Studies	3
	Total Semester Credit Units	18

2nd Semester (Freshman)		
Course Code	Course Title	Credit Unit/ Hours
ENG 102	English Composition II	3
MAT 165	Elementary Statistics	4
BIO 182	General Biology (Majors) II	4
CHM 122	General Chemistry II	4
PSY 101	Introduction to Psychology	3
	Total Semester Credit Units	18

1st Summer		
Course Code	Course Title	Credit Unit/ Hours
HIS 101 or	History of Nigeria – from the Earliest Times to 1800	3
HIS 102–	History of Nigeria from 1800 to the present	3
HIS 201	History of Lagos up to the 20th Century	3
	Total Semester Credit Units	6

3 rd Semester (Sophomore)		
Course Code	Course Title	Credit Unit/ Hours
PHY 121	Introductory Physics I	4
PHL 210.	Ethics.	3
BIO 235	Human Anatomy and Physiology	4
CHM 281	Organic Chemistry I	4
ECO 211	Microeconomics	3
	Total Semester Credit Units	18

4th Semester (Sophomore)		
Course Code	Course Title	Credit Unit/ Hours
PHY 122	Introductory Physics II	4
BIO 211	General Microbiology	4
CHM 282	Organic Chemistry II	4
COM 111	Fundamentals of Public Speaking	3
CHM 256	Introduction to Biochemistry	3
	Total Semester Credit Units	18

MAT 160 Survey of Calculus

4 Credits,

This course is designed for students with business, social science, and life science majors. It covers functions, limits, continuity, derivative, maxima-minima, applications of the derivative, exponential and logarithmic functions, functions of several variables, maxima and minima of functions of several variables, integration, and applications of the integral.

Pre-requisite: MAT 143 or MAT 147 with a grade of “C” or better.

ENG 101 - English Composition I**3Credits**

A study of style, syntax, and basic organizational patterns. Topics include various rhetorical patterns, audience, purpose, diverse perspectives, writing, revising, and editing. Research paper required.

ENG 102 - English Composition II**3 Credits**

A composition course in argumentative writing, including invention, organization, style, and revision. Critical reading and thinking will be addressed through students' writing. Research skills and documentation will be introduced.

Pre-requisites: ENG 101 with a grade of C or better.

PSY 101 Introduction to Psychology**3 Credits**

An introduction into the empirical study of human behavior and mental processes. Topics to be treated include biological bases of behavior, sensation and perception, states of consciousness, learning, memory, motivation and emotion, language, lifespan development, intelligence, stress and health, social behavior, personality, and abnormal behavior and treatment; applications of psychology in a culturally diverse world.

MCS 105 Introduction to Multicultural Studies**3 Credits**

Students will develop a personal and historical understanding of issues related to race, social class, gender, sexual orientation, disabilities & culture; and how these issues are used in the distribution of power and privilege in the U.S. Student option grading.

CHM 161 General Chemistry I •**6 Credits**

This course covers atomic structure, stoichiometry, solutions, gas laws, periodic law, bonding, molecular orbital theory, colligative properties, radioactivity, thermochemistry, equilibrium, acids, bases, oxidation-reduction, electrochemistry, kinetics, and simple organic chemistry. Courses in the series take a quantitative approach; format includes lecture, discussion, and laboratory.

CHM 162 General Chemistry II**4 Credits.**

Continuation of 161. Liquids and solids. Solutions and colligative properties.

Continuation of thermodynamics, including entropy and free energy. Principles and applications of chemical equilibrium, including acid base chemistry (titrations, buffers). Kinetics. Redox reactions and electrochemistry.

Pre-requisite: CHM 161 with a grade of "C" or better

CHM 163 General Chemistry with Lab III (5)**3 Credits**

The last quarter of a three-quarter sequence in general chemistry for science and engineering majors. The course covers kinetics, equilibrium, oxidation/reduction reactions, acids and bases, slightly soluble salts, entropy and free energy and electrochemistry. Lab included.

Pre-requisite: CHM 162 with a grade of "C" or better

BIO181: General Biology (Majors) I**4 Credits**

This biology course focuses on the cell and molecular levels, providing a foundation for success in future courses. Principles of structure and function of living things at the molecular, cellular, and organismic levels of organization. Includes molecular and cellular biology, genetics, and viruses.

BIO182: General Biology (Majors) II**4 Credits**

This biology course focuses on the diversity of organisms across the kingdoms of life. Some of the topics covered include biodiversity and evolution. This course is taken by students majoring in the biological sciences as well as those pursuing professional school admission in the health professions.

Pre-requisite: BIO 181 with a grade of “C” or better

COM 111: Fundamentals of Public Speaking**3 Credits**

This course will introduce students to the theoretical frameworks and practical application of public speaking by integrating conceptual themes of rhetoric, stylistic organization, delivery, evaluative assessment, and argumentation.

Pre-requisite: Successful completion of ENG 101 with a grade of “C” or better

HIS 101 – History of Nigeria – from the Earliest Times to 1800.**3 Credits**

This course is a survey of the origins, migrations and settlements of various Nigerian peoples in their Kingdoms and States. The course also highlights historical developments in the Nigerian regions during this period including state formation and inter-group relations in the areas of political, religious, economic and sociocultural activities.

HIS 102– History of Nigeria from 1800 to the present**3 Credits**

The course examines some major developments including internal and external factors which brought the Nigerian communities into a state. The course also discusses the Sokoto Jihad; the fall of Oyo Empire and the Yoruba Civil Wars; the Slave Trade, the Abolition of the Slave Trade and European penetration of the hinterland; the establishment of Colonial rule/Amalgamation; and the Effects of World War I; the political and economic structure of colonial rule in the inter-war years; the World War II and its aftermaths; Nationalism and Independence; The First Republic and its collapse; the Military Regimes; the Second Republic; the Buhari/Idiagbon years; the Babangida years and the Aborted Third Republic; the Interim National Government; the Abacha and Abubakar regimes; and the Emergence of the Fourth Republic.

HIS 201 History of Lagos up to the 20th Century**3 Credits**

The course examines the various traditions of origin of Lagos; traditional political institutions in Lagos; civil wars; the relationships between Lagos and its neighbors; Lagos' participation in slavery, slave trade, and "legitimate trade"; the British Consulate; the influx and the spatial distribution of immigrants; introduction of Islam and Christianity; Colonialism and social transformation and problems including crime; Students are

expected to visit historical sites such as palaces, the point of no return in Badagry, museum etc.

PHL 210. Ethics.

3 Credits.

Overview of different types of approaches to ethical dilemmas such as theistic ethics, naturalistic ethics, and situational ethics. Covers the ethical issues confronted in personal, public, and professional life.

BIO 211 General Microbiology

3 Credits,

This course covers principles of microbiology and the impact these organisms have on man and the environment. Topics include the various groups of microorganisms, their structure, physiology, genetics, microbial pathogenicity, infectious diseases, immunology, and selected practical applications. Upon completion, students should be able to demonstrate knowledge and skills including microscopy, aseptic technique, staining, culture methods, and identification of microorganisms.

Pre-requisite: BIO 111, BIO 111L with a grade of “C” or better.

BIO 211 L General Microbiology Lab

1 Credit

This lab is designed to teach microbiology skills, including lab safety, aseptic technique, microscope use, staining, and interpreting biochemical tests. Competency in lab safety, aseptic technique, and microscope use will be required for successful completion of the course.

Pre-requisite: BIO 111, BIO 111L,

CHM 281 General Organic Chemistry I

4 Credits

An introduction to the basic principles of organic chemistry with emphasis on bonding, stereochemistry, reaction intermediates and reaction mechanisms, and structure-reactivity correlations. Intended for students in biological and life sciences.

CHM 282 General Organic Chemistry II

4 Credits

A continuation from CHEM 281 intended for students in biological life sciences, life sciences, and other programs taking no further courses in organic chemistry. Organic molecules and their reactions; relevance to biological systems. Illustrations using biomolecules such as carbohydrates, amino acids and proteins, lipids, and nucleic acids. The laboratory affords experience in elementary organic syntheses.

CHM 256 Introduction to Biochemistry

3 Credits

This is a one semester survey course of biochemistry and will focus on an introduction to proteins, nucleic acids, carbohydrates and the lipid family of biological molecules. In addition, we will discuss metabolism of carbohydrates, fatty acids and nitrogen in the body as well as the signaling that controls them. In order to appreciate these, students will be taught the basic structure of molecules and the biochemical reactions that allow them to form more advanced macromolecules in the organism. The overall goal is for students to understand that many of these reactions or metabolic pathways relate to each other in the organism.

BIO 235: Human Anatomy and Physiology**4 Credits**

This course covers all major elements of the human body, including basic anatomy, fundamental organic chemistry, cellular structure and function, and the integration, organization, and control of all the body systems. While completing this course, you will acquire an understanding of normal anatomy and physiology, of physiological adaptations to special conditions, and of some of the physiological factors in disease processes.

MAT 211 Elements of Statistical Method**4 Credits**

Principles of data analysis, linear regression, data collection, elementary probability, random variables, probability distributions and statistical inference. Emphasis on practical applications and the interpretations of results. Student option grading.

Pre-requisite: MAT 151 with a grade of “C” or better

ECO 211 Microeconomics**3 Credits**

This course includes the study of the behavior of households and firms, including supply and demand, elasticity, price/input in different market structures, pricing of resources, regulations, and comparative advantage and trade.

Pre-requisites: ENG 101, MAT 102 with a grade of “C” or better

THE PHARMACEUTICAL MANUFACTURING TECHNOLOGY (PMT),**AAS**

The Pharmaceutical Manufacturing Technology (PMT) program is a specialized chemical technology program designed to meet the needs of the pharmaceutical and related industries (cosmetics, food, plastics, custom chemicals, research centers, pilot plants etc.). The PMT curriculum prepares students to work in manufacturing, research and development and quality control and quality assurance departments of pharmaceutical, cosmetics and related chemical industries. Today’s industrial environment requires technicians well-trained in state-of-the-art instruments, computer methods, safety protocols and federal and state government regulations. The PMT program provides a solid foundation in liberal arts and sciences combined with specialized training in the field. Students also have the option of transferring to science and engineering bachelor’s programs or to pharmacy schools to continue their education.

Upon successful completion of the Pharmaceutical

Manufacturing Technology program requirements, students will be able to:

1. Demonstrate the necessary knowledge, teamwork ability and laboratory skills required to begin a career as an entry-level technician in pharmaceutical and related research, institutional, and commercial enterprises.
2. Demonstrate basic laboratory safety skills and knowledge as pertains to chemistry and pharmaceutical laboratory environments.
3. Communicate effectively through oral, written, and technological means to support good laboratory operation and outcomes.

4. Demonstrate working knowledge of modern analytical instrumentation used in the pharmaceutical industry and related industries such as GC-MS, HPLC, FT-IR, TOC analyzer, UV/Vis and Fluorimetric Spectrophotometers.

1st Semester (Freshman)		
Course Code	Course Title	Credit Unit/ Hours
ENG 101	English Composition I	3
CHM 111	General College Chemistry I	4
HIS 101	History of the Modern World	3
CHM 138	Computer Applications in Chemistry	2
MAT 133	Trigonometry and College Algebra	3
	Total Semester	15

2 nd Semester (Freshman)		
Course Code	Course Title	Credit Unit/ Hours
COM 110 or	Fundamentals of Interpersonal Communication	3
COM 111	Fundamentals of Public Speaking	3
CHM 112	General College Chemistry II	4
BIO 111	General Biology I	4
MAT143	Algebra and Introduction to Calculus	3
CHM 131	Organic Chemistry I	4
	Total Semester Credit Units	18

1st Summer		
Course Code	Course Title	Credit Unit/ Hours
HIS 101 or	History of Nigeria – from the Earliest Times to 1800	3
HIS 102–	History of Nigeria from 1800 to the present	3
HIS 201	History of Lagos up to the 20th Century	3
	Total Semester Credit Units	6

3rd Semester (Sophomore)		
Course Code	Course Title	Credit Unit/ Hours
ART 102	Art Survey	1
BIO 121	General Biology II	4
CHM 127	Principles of Laboratory Safety	2
CHM 132	Organic Chemistry II	5
PMT 243	Pharmaceutical Laws and Regulations	2
PMT2 41	Pharmaceutical Chemistry	3
	Total Semester Credit Units	17

4th Semester (Sophomore)		
Course Code	Course Title	Credit Unit/ Hours
CHM 237	Quantitative Instrumental Analysis	4
PMT 242	Pharmaceutical Product Preparation	3
CHM239	Foundations of Pharmaceutical Process Technology	3
CHM 240	Pharmaceutical and Chemical Technology	3
ENG 231	Scientific and Technical Writing	3
	Total Semester Credit Units	16

66 Credits required for AAS Degree

HIS 111 Introduction to the Modern World

3 Credits

Introduction to the Modern World is a one-semester world history survey covering the significant political, economic, social, and cultural currents of the last 300 years. It introduces you to the major forces and events of the recent past and analyzes how they shaped the world in which we live today. By exploring major historical developments (industrialization, nationalism, imperialism, decolonization, neocolonialism, civil rights, warfare, and technological advances) and competing systems (capitalism and socialism; liberalism and authoritarianism), and how they interacted, you will gain a deeper understanding today's complex society

BIO-111 General Biology I

4 Credits

This course introduces the principles and concepts of biology. Emphasis is placed on basic biological chemistry, molecular and cellular biology, metabolism and energy transformation, genetics, evolution, and other related topics.

BIO 121 - General Biology II

4 Credits

Students will be introduced to the diversity of living organisms, emphasizing fundamental biological processes operating at the scale of individual organisms. Form and function of organisms will be studied in ecological and evolutionary contexts.

Pre-requisite: MAT 110 with a grade of "C" or better

PHY-111 General Physics I

3Credits

PHY-111 covers the subject of Newtonian mechanics including kinematics (the description of motion), and dynamics (the relation of motion to force and mass). Among the most important topics are Newton's Laws of Motion and the conservation of momentum and energy. Other topics include: Rotation, Simple Harmonic Motion, Waves and Sound, Fluids, and Elasticity in Solids.

PHY 113 General Physics Lab I – MECHANICS Course with WebAssign 1Credit

PHY 113 is the first part of a two-semester (PHY 113, PHY 114) sequence in algebra based introductory physics labs. PHY 113 is a one credit physics laboratory course accompanying PHY 111 lecture course. PHY 113 can be taken concurrently with, or subsequent to PHY 111. The labs will cover the material discussed in PHY 111 including motion, Newtonian mechanics, vibrations and waves; fluid; sound.

ART 102 Art Survey**1 Credit**

This course offers a survey of Western art from the period of the Renaissance to the present. A paper based on direct observation of works in a major art museum is required

COM 1 - Fundamentals of Speech Communication**3 Credits**

Fundamentals of speech communication; emphasis on developing, stating, organizing, and researching ideas, and presenting to an audience; includes developing the faculties of critical listening and problem-solving.

COM 111 Fundamentals of Public Speaking**3 Credits**

This course will introduce students to the theoretical frameworks and practical application of public speaking by integrating conceptual themes of rhetoric, stylistic organization, delivery, evaluative assessment, and argumentation.

ENG-115 Scientific and Technical Writing -**3 Credits**

A skills-based approach to technical writing in the environmental sciences field. Emphasis on developing research skills, writing research and technical reports using appropriate style guides, and preparing personal and professional communications.

MAT 133 Trigonometry and College Algebra**3 Credits**

A continuation course in intermediate algebra. Examines higher degree polynomials, rational functions, trigonometry and matrix algebra needed for more specialized study in mathematics, computer science, engineering and other related fields. Computer usage is encouraged. This course satisfies computer science prerequisites. Graphing calculator is required.

MAT 143 Algebra and Introduction to Calculus**3 Credits**

Topics include a brief review of introductory algebra, variation, elementary theory of equations, functions (including exponential and logarithmic) inequalities, systems of equations, and other related topics.

CHM 111 General College Chemistry 1**4 Credits**

Fundamental principles and theories of chemistry, aspects of atomic structure and bonding, chemical calculations, states of matter, solutions. Laboratory: chemical techniques and principles.

CHM 121 General College Chemistry II**4 Credits**

Solutions, kinetics, equilibria, electrochemistry, properties of non-metallic and metallic elements, nuclear chemistry, organic chemistry. Laboratory: chemical techniques and principles and qualitative analysis.

Pre-requisite: CHM 111 with a grade of "C" or better.

CHM 131 Organic Chemistry I**5 Credits**

Structure, nomenclature, properties and reactions of organic compounds including electronic theory and mechanisms. Laboratory: preparation, purification and identification of representative organic compounds.

Pre-requisite: CHM 121 with a grade of “C” or better.

CHM 132 Organic Chemistry II**5 Credits**

Organic spectroscopy (IR, NMR, UV) and mass spectrometry; molecular orbital theory applied to conjugated and aromatic systems; physical, chemical properties and major reactions of the main classes of organic molecules; aromatics, alcohols, aldehydes and ketones, carboxylic acids, carboxylic acid derivatives, amines, amides, peptides, carbohydrates as well as carbonyl β -substitution reactions and carbonyl condensation reactions.

Pre-requisite: CHM 131 with a grade of “C” or better.

CHM 127 Principles of Laboratory Safety**1 Credit**

An overview of laboratory safety, hazard communication, fire safety, hazardous waste, chemical storage, chemical hazards and exposure limits, emergency response and safety equipment, mock emergency, other safety procedures along with toxicology and government regulations,

ENG 101 - English Composition I**3Credits**

A study of style, syntax, and basic organizational patterns. Topics include various rhetorical patterns, audience, purpose, diverse perspectives, writing, revising, and editing. Research paper required.

HIS 101 – History of Nigeria – from the Earliest Times to 1800.**3 Credits**

This course is a survey of the origins, migrations and settlements of various Nigerian peoples in their Kingdoms and States. The course also highlights historical developments in the Nigerian regions during this period including state formation and inter-group relations in the areas of political, religious, economic and sociocultural activities.

HIS 102– History of Nigeria from 1800 to the present**3 Credits**

The course examines some major developments including internal and external factors which brought the Nigerian communities into a state. The course also discusses the Sokoto Jihad; the fall of Oyo Empire and the Yoruba Civil Wars; the Slave Trade, the Abolition of the Slave Trade and European penetration of the hinterland; the establishment of Colonial rule/Amalgamation; and the Effects of World War I; the political and economic structure of colonial rule in the inter-war years; the World War II and its aftermaths; Nationalism and Independence; The First Republic and its collapse; the Military Regimes; the Second Republic; the Buhari/Idiagbon years; the Babangida years and the Aborted Third Republic; the Interim National Government; the Abacha and Abubakar regimes; and the Emergence of the Fourth Republic.

HIS 201 History of Lagos up to the 20th Century**3 Credits**

The course examines the various traditions of origin of Lagos; traditional political institutions in Lagos; civil wars; the relationships between Lagos and its neighbors; Lagos' participation in slavery, slave trade, and "legitimate trade"; the British Consulate; the influx and the spatial distribution of immigrants; introduction of Islam and Christianity; Colonialism and social transformation and problems including crime; Students are expected to visit historical sites such as palaces, the point of no return in Badagry, museum etc.

CHM 237 Quantitative Instrumental**4 Credits**

Analysis Covers basic discussions of the theory, operation and analytical applications of spectroscopy and chromatography. This course begins to develop expertise in techniques involving the operation of many common laboratory instruments and how they are used in quantitative analysis with specific applications in the pharmaceutical field.

CHM 238 Computer Applications in Chemistry 1**2 Credits**

Introduction to computer applications in chemistry including: ChemOffice, Excel, PowerPoint, Internet searches and research and molecular modeling programs.

Pre-requisite: CHM 111 with a grade of "C" or better.

CHM 239 Foundations of Pharmaceutical Process Technology**3 Credits**

Discusses the wide variety of products generated by the US pharmaceutical and chemical process industry; focuses on changing government regulations, environmental health and safety issues and changing technologies. Provides knowledge of the chemical technician's role in the pharmaceutical and chemical process industry.

CHM 240 Pharmaceutical and Chemical Technology**3 Credits**

Introduction to chemical processes and methods currently used in industry, including fluid flow, heat transfer, plant utilities, distillation, extractions, crystallization, filtration, drying, etc. Students will also investigate current topics and technology applications. Students choose a current method and write a comprehensive review for its use and applications. Fieldwork investigations, library, or computer investigations may be required.

CHM233 Quantitative Analysis**4 Credits**

Theory and laboratory methods of quantitative chemical analysis with laboratory determinations employing gravimetric and titrimetric (volumetric) methods, including acid-base, precipitation and oxidation-reduction reactions; use of chelating agents and analytical instruments.

PMT 241 Pharmaceutical Chemistry**3 Credits**

This course emphasizes the chemical principles and reactions vital to drug design and drug action. The course is aimed at undergraduates who have a basic grounding in chemistry and are interested in learning about drug design and the molecular mechanisms by which drugs act in the body. It examines the general principles and strategies involved in discovering and designing new drugs and developing them for the marketplace and it looks at particular 'tools of the trade' which are used in rational drug design. Clinically important drugs will be used as examples.

Pre-requisite: CHM 131 with a grade of "C" or better.

PMT 242 Pharmaceutical Product Manufacturing**3Credits**

This course discusses the science and technology that applies to pharmaceutical manufacturing. Students will study different pharmaceutical formulations and their methods of preparation for solid, liquid and other pharmaceutical products. Specific classes of pharmaceuticals will be discussed. Special topics will include packaging and marketing regulations.

Pre-requisite: CHM 131 with a grade of "C" or better.

PMT243 Pharmaceutical Laws and Regulations**2Credits**

This course discusses the pharmaceutical laws and regulations that govern manufacturing, packaging and marketing of pharmaceutical products. Students will discuss specific examples that impacted the development of the laws and regulations.

Pre-requisite: ENG 110 with a grade of "C" or better.

PHARMACY MANAGEMENT, AAS

Pharmacy technicians are paraprofessionals who work under the supervision of a licensed pharmacist to assist with activities that do not require the professional judgment of the pharmacist. Pharmacy technicians assist with maintaining records, filling and dispensing routine prescriptions and medication orders, stocking supplies of patient care areas, maintaining inventories of drug supplies, preparing sterile compounded products, accepting prescriptions and refill requests, and providing assistance to the customers and patients specific to the pharmacy practice setting. Exciting careers are available in traditional pharmacy settings, e.g. retail and hospital pharmacies, and non-traditional pharmacy settings, e.g. compounding informatics, managed care, government, compliance, and nuclear pharmacies.

ADMISSION CRITERIA FOR THE AAS DEGREE

An Associate of Applied Science degree in Pharmacy Management emphasizes the technician's advanced career opportunities in the field. Further emphasis is placed on communications, sciences, health, analytical skills and decision making.

By completing the program, students will earn two awards:

1. Pharmacy Technology, Level 1 Certificate
- 2 Pharmacy Management, AAS

1st Semester Freshman)		
Course Code	Course Title	Credit Unit/ Hours
PHR 113	Community Pharmacy Practice	4
PHR 109	Pharmaceutical Mathematics I	3
PHR 105	Drug Classification	3
PHR 102	Pharmacy Law	1
EDU 100	Learning Framework: 1st Year Experience	3
ENG 101	English Composition I	3
	Total Semester Credit Units	17

2 nd Semester (Freshman)		
Course Code	Course Title	Credit Unit/ Hours
PHR 147	Pharmaceutical Mathematics II	3
PHR 104	Pharmacotherapy & Disease Process	3
PHR 145	Compounding Sterile Preparations & Aseptic Technique	3
PHR 149	Institutional Pharmacy Practice	4
PHR 161	Clinical - Community Pharmacy	3
	Total Semester Credit Units	16

1st Summer		
Course Code	Course Title	Credit Unit/ Hours
HIS 101 or	History of Nigeria – from the Earliest Times to 1800	3
HIS 102–	History of Nigeria from 1800 to the present	3
HIS 201	History of Lagos up to the 20th Century	3
	Total Semester Credit Units	6

3 rd Semester (Sophomore)		
Course Code	Course Title	Credit Unit/ Hours
BIO 106	Biology I for Science Majors	4
ENG 115	Scientific and Technical Writing	3
SPC 118 or	Interpersonal Communication	3
COM 111	Fundamentals of Public Speaking	3
PSY 101	Introduction to Psychology	3
PHR 143	Pharmacy Technician Certificate Review	4
	Total Semester Credit Units	17

4 th Semester (Sophomore)		
Course Code	Course Title	Credit Unit/ Hours
PHE 104	Personal/Community Health	3
PHL 101	Introduction to Philosophy	3
MRK 101	Customer Relationship Management	3
BMG 203	Problem Solving & Decision Making	3
PHR 191	Special Topics in Pharmacy2	1
PHR 261	Clinical II Institutional Pharmacy	3
	Total Semester Credit Units	16

PHM 113 - Community Pharmacy Practice **4 Credits**

Introduction to the skills necessary to process, prepare, label, and maintain records of prescriptions in a community pharmacy to include customer service, count and pour techniques, prescription calculations, drug selection and preparation, over-the-counter drugs, inventory management and legal parameters.

Corequisite: PHA 109

PHM 109 - Pharmaceutical Mathematics I **3 Credits**

Solving pharmaceutical calculation problems encountered in the preparation and distribution of drugs. **Corequisite:** PHA 113

PHR 102 - Pharmacy Law **1 Credit**

Overview of federal and state laws governing the practice of pharmacy. The role of the pharmacy technician and the pharmacist and their associated responsibilities. Includes Code of Ethics, patient confidentiality, and a comparison of legal and ethical aspects.

PHR 105 - Drug Classification **3 Credits**

A study of pharmaceutical drugs, abbreviations, classifications, dosages, side effects, and routes of administration.

PHR 147 - Pharmaceutical Mathematics II **3 Credits**
Pharmaceutical mathematics including reading, interpreting, and solving calculation problems encountered in the preparation and distribution of drugs. Conversion of measurements within the apothecary, avoirdupois, and metric systems with emphasis on the metric system of weight and volume. Topics include ratio and proportion, percentage, dilution and concentration, milliequivalents, units, intravenous flow rates, and solving dosage problems.

PHR 104 - Pharmacotherapy and Disease Process **3 Credits**
A study of disease processes and the therapeutic properties of the drugs used in treatment.

PHR 145 - Compounding Sterile Preparations **3 Credits**
The process of compounding sterile preparations and aseptic technique within legal and regulatory guidelines specified by USP standards.

PHR 149 - Institutional Pharmacy Practice **4 Credits**
Fundamentals of the diverse roles and practice of pharmacy technicians in an institutional pharmacy setting. In-depth coverage of hospital pharmacy organization, work flow and personnel, safety techniques, data entry, packaging and labeling operations, inpatient drug distribution systems including investigational drugs, continuous quality improvement and inventory control.

PHR 143 - Pharmacy Technician Certificate Review **1 Credit**
A review of major topics covered on the National Pharmacy Technician Certification examination.

Pre-requisites: PHR 104, PHR 145, PHR 147, PHR 149, with a grade of “C” or better.or permission of program director.

ENG 101 - English Composition I **3Credits**
A study of style, syntax, and basic organizational patterns. Topics include various rhetorical patterns, audience, purpose, diverse perspectives, writing, revising, and editing. Research paper required.

COM 111 Fundamentals of Public Speaking **3 Credits**
This course will introduce students to the theoretical frameworks and practical application of public speaking by integrating conceptual themes of rhetoric, stylistic organization, delivery, evaluative assessment, and argumentation.

ENG-115 Scientific and Technical Writing - **3 Credits**
A skills-based approach to technical writing in the environmental sciences field. Emphasis on developing research skills, writing research and technical reports using appropriate style guides, and preparing personal and professional communications.

PHR 161 - Clinical - Community Pharmacy **3 Credits**

A health-related work-based learning experience that enables the student to apply specialized occupational theory, skills, and concepts. Direct supervision is provided by the clinical professional. Requires LSC liability insurance.

BIO 106 - Biology I for Science Majors **4 Credits**

A contemporary course including applications of the scientific method, cellular and molecular biology, biochemistry, classical and human genetics, virology and mechanisms of evolution.

MRK 101 - Customer Relationship Management **3 Credits**

General principles of customer relationship management including skills, knowledge, attitudes, and behaviors.

PHR 191 - Special Topics in Pharmacy **1 Credit**

Topics address recently identified current events, skills, knowledges, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student. This course was designed to be repeated multiple times to improve student proficiency. This course will prepare the students for their profession by keeping them updated to current laws, policies and procedure changes. This course can be used for specialty certifications in pharmacy such as compounding, chemotherapy and pediatric doses certification.

PHL 101 Introduction to Philosophy **3 Credits**

A study of major issues in philosophy and/or the work of major philosophical figures in philosophy. Topics in philosophy may include theories of reality, theories of knowledge, theories of value, and their practical applications

PHE 104 - Personal/Community Health **3 Credits**

This course provides an introduction to the fundamentals, concepts, strategies, applications, and contemporary trends related to understanding personal and/or community health issues. This course also focuses on empowering various populations with the ability to practice healthy living, promote healthy lifestyles, and enhance individual well-being.

HIS 101 – History of Nigeria – from the Earliest Times to 1800 **3 Credits**

This course is a survey of the origins, migrations and settlements of various Nigerian peoples in their Kingdoms and States. The course also highlights historical developments in the Nigerian regions during this period including state formation and inter-group relations in the areas of political, religious, economic and sociocultural activities.

HIS 102– History of Nigeria from 1800 to the present **3 Credits**

The course examines some major developments including internal and external factors which brought the Nigerian communities into a state. The course also discusses the Sokoto Jihad; the fall of Oyo Empire and the Yoruba Civil Wars; the Slave Trade, the Abolition of

the Slave Trade and European penetration of the hinterland; the establishment of Colonial rule/Amalgamation; and the Effects of World War I; the political and economic structure of colonial rule in the inter-war years; the World War II and its aftermaths; Nationalism and Independence; The First Republic and its collapse; the Military Regimes; the Second Republic; the Buhari/Idiagbon years; the Babangida years and the Aborted Third Republic; the Interim National Government; the Abacha and Abubakar regimes; and the Emergence of the Fourth Republic.

HIS 201 History of Lagos up to the 20th Century

3 Credits

The course examines the various traditions of origin of Lagos; traditional political institutions in Lagos; civil wars; the relationships between Lagos and its neighbors; Lagos' participation in slavery, slave trade, and "legitimate trade"; the British Consulate; the influx and the spatial distribution of immigrants; introduction of Islam and Christianity; Colonialism and social transformation and problems including crime; Students are expected to visit historical sites such as palaces, the point of no return in Badagry, museum etc.

PHM 261 - Clinical - Institutional Pharmacy

3 Credits

A health-related work-based learning experience that enables the student to apply specialized occupational theory, skills, and concepts. Direct supervision is provided by the clinical professional. Requires LSC liability insurance.'

PSY 101 Introduction to Psychology

3 Credits

An introduction into the empirical study of human behavior and mental processes. Topics to be treated include biological bases of behavior, sensation and perception, states of consciousness, learning, memory, motivation and emotion, language, lifespan development, intelligence, stress and health, social behavior, personality, and abnormal behavior and treatment; applications of psychology in a culturally diverse world.

FRE 211 - Intermediate French I

3 Credits

French readings, grammar, and composition based partly on the formal text and partly on selected readings. Stress will be placed on oral work.

BMG 203 - Problem Solving and Decision Making

3 Credits

Decision-making and problem- solving processes in organizations utilizing logical and creative problem solving techniques. Application of theory is provided by experiential activities using managerial decision tools.

PHARMACY TECHNICIAN, AAS

The mission of the Associate of Applied Science in Pharmacy Technician program is to educate and graduate pharmacy technicians capable of assisting pharmacists in the preparation and dispensing of medications. The program seeks to prepare graduates capable

of working in a variety of healthcare settings such as hospitals, retail, long-term care facilities, home healthcare agencies, clinic pharmacies, mail order pharmacies, and drug wholesalers.

1st Semester (Freshman)		
Course Code	Course Title	Credit Unit/ Hours
PHA 101	Introduction to Pharmacy	3
PHA 109	Pharmaceutical Math I	4
PHA 149	Institutional Pharmacy Practice	4
PHA 141	Pharmacy Drug Therapy and Treatment	4
ENG 101	English Composition I	3
	Total Semester Credit Units	18

2 nd Semester (Freshman)		
Course Code	Course Title	Credit Unit/ Hours
PHA 147	Pharmaceutical Math II	3
PHA 104	Pharmacotherapy and Disease Process	4
PHA 143	Pharmacy Technician Certification Review	2
PHA 145	Compounding Sterile Preparations	4
PHA 260	Clinical - Pharmacy Technician/Assistant	3
	Total Semester Credit Units	16

1st Summer		
Course Code	Course Title	Credit Unit/ Hours
HIS 101 or	History of Nigeria – from the Earliest Times to 1800	3
HIS 102–	History of Nigeria from 1800 to the present	3
HIS 201	History of Lagos up to the 20th Century	3
	Total Semester Credit Units	6

3 rd Semester (Sophomore)		
Course Code	Course Title	Credit Unit/ Hours
HIT 105	Medical Terminology I	3
ENG 115	ENG- Scientific and Technical Writing -	3
BIO 201	Anatomy & Physiology I	4
PHA 102	Pharmacy Law	1
BCS 105	Business Computer Applications	3
	Total Semester Credit Units	14

4 th Semester (Sophomore)		
Course Code	Course Title	Credit Unit/ Hours
BIO 202	Anatomy & Physiology II	4
PHL 206	Introduction to Ethics	3
PSY 101	Introduction to Psychology	3
BUS 101	Business Principles	3
COM 111	Fundamentals of Public Speaking	3
	Total Semester Credit Units	16

PHM101-Introduction to Pharmacy : **3Credits**

This course is an overview of the qualifications, operational guidelines, and job duties of the pharmacy technician.

PHM130-Pharmaceutical Math 1: **3 Credits**

This course covers pharmaceutical calculation problems encountered in the preparation and distribution of drugs.

PHM141-Pharmacy Drug Therapy and Treatment: **4Credits**

This course represents the study of therapeutic agents, their classifications, properties, actions, and effects on the human body and their role in the management of disease.

PHM 149- Institutional Pharmacy Practice: **4 Credits**

This course covers the fundamentals of the diverse roles and practice of pharmacy technicians in an institutional pharmacy setting. Topics will include in-depth coverage of hospital pharmacy organization, work flow and personnel, safety techniques, data entry, packaging and labeling operations, inpatient drug distribution systems including investigational drugs, continuous quality improvement and inventory control.

PHM147-Pharmaceutical MathII: **3 Credits**

This course will cover advanced concepts of Pharmaceutical Math I.

Pre-requisite: PHA 109 with a grade of "C" or better.

PHM104-Pharmacotherapy and Disease Process: **2Credits**

This course is the study of disease states and the therapeutic properties of drugs used in pharmaceutical therapy.

Pre-requisite: PHA 141 with a grade of "C" or better.

PHM143-Pharmacy Technician Certification Review: **2Credits**

An overview of major topics covered on the National Pharmacy Technician Certification Exam.

PHM45-Compounding Sterile Preparations: 4Credits

This course is a study of the process of compounding sterile preparations and aseptic technique within legal and regulatory guidelines specified by USP <797> standards.

PHM260-Clinical Pharmacy Technician/Assistant: 3Credits

This course consists of health-related work-based learning experience that enables the student to apply specialized occupational theory, skills, and concepts. Direct supervision is provided by the clinical professional.

Pre-requisite: PHA 101, PHA 141, PHA 149, PHA 109 with a grade of "C" or better.

HIT 105- Medical Terminology I: 3 Credits

Study of medical terms through word origin and structure. Introduction to abbreviations and symbols, surgical and diagnostic procedures, and medical specialties.

BUS 101- Business Principles: 3 Credits

This course provides a survey of economic systems, forms of business ownership, and considerations for running a business. Students will learn various aspects of business, management, and leadership functions; organizational considerations; and decision-making processes. Financial topics are introduced, including accounting, money and banking, and securities markets. Also included are discussions of business challenges in the legal and regulatory environment, business ethics, social responsibility, and international business. Emphasized is the dynamic role of business in everyday life.

SPC 118 - Interpersonal Communication: 3 Credits

Application of communication theory to interpersonal relationship development, maintenance, and termination in relationship contexts including friendships, romantic partners, families, and relationships with co-workers and supervisors.

Pre-requisites: One of the following TSI scores combinations or equivalent developmental courses with a grade of "C" or better (1)

COM 111 Fundamentals of Public Speaking 3 Credits

This course will introduce students to the theoretical frameworks and practical application of public speaking by integrating conceptual themes of rhetoric, stylistic organization, delivery, evaluative assessment, and argumentation.

ENG 101 - English Composition I 3Credits

A study of style, syntax, and basic organizational patterns. Topics include various rhetorical patterns, audience, purpose, diverse perspectives, writing, revising, and editing. Research paper required.

ENG-115 Scientific and Technical Writing - 3 Credits

A skills-based approach to technical writing in the environmental sciences field. Emphasis on developing research skills, writing research and technical reports using appropriate style guides, and preparing personal and professional communications.

PHA 102- Pharmacy Law: 1 Credit

Overview of federal and state laws governing the practice of pharmacy . The role of the pharmacy technician and the pharmacist and their associated responsibilities. Includes Code of Ethics, patient confidentiality, and a comparison of legal and ethical aspects.

BCS105 -Business Computer Applications: 3Credits

Introduces and develops foundational skills in applying essential and emerging business productivity information technology tools. The focus of this course is on business productivity software applications, including word processing, spreadsheets, databases, presentation graphics, data analytics, and business-oriented utilization of the internet.

COS 101- Introduction to Computing: 3 Credits

Overview of computer systems-hardware, operating systems, and microcomputer application software, including the Internet, word processing, spreadsheets, presentation graphics, and databases. Current issues such as the effect of computers on society, and the history and use of computers in business, educational, and other modern settings are also studied.

HIS 101 – History of Nigeria – from the Earliest Times to 1800 3 Credits

This course is a survey of the origins, migrations and settlements of various Nigerian peoples in their Kingdoms and States. The course also highlights historical developments in the Nigerian regions during this period including state formation and inter-group relations in the areas of political, religious, economic and sociocultural activities.

HIS 102– History of Nigeria from 1800 to the present 3 Credits

The course examines some major developments including internal and external factors which brought the Nigerian communities into a state. The course also discusses the Sokoto Jihad; the fall of Oyo Empire and the Yoruba Civil Wars; the Slave Trade, the Abolition of the Slave Trade and European penetration of the hinterland; the establishment of Colonial rule/Amalgamation; and the Effects of World War I; the political and economic structure of colonial rule in the inter-war years; the World War II and its aftermaths; Nationalism and Independence; The First Republic and its collapse; the Military Regimes; the Second Republic; the Buhari/Idiagbon years; the Babangida years and the Aborted Third Republic; the Interim National Government; the Abacha and Abubakar regimes; and the Emergence of the Fourth Republic.

HIS 201 History of Lagos up to the 20th Century**3 Credits**

The course examines the various traditions of origin of Lagos; traditional political institutions in Lagos; civil wars; the relationships between Lagos and its neighbors; Lagos' participation in slavery, slave trade, and "legitimate trade"; the British Consulate; the influx and the spatial distribution of immigrants; introduction of Islam and Christianity; Colonialism and social transformation and problems including crime; Students are expected to visit historical sites such as palaces, the point of no return in Badagry, museum etc.

BIO 201- Anatomy & Physiology I:**4 Credits**

Anatomy and Physiology I is the first part of a two course sequence. It is a study of the structure and function of the human body including cells, tissues and organs of the following systems: integumentary, skeletal, muscular, nervous and special senses. Emphasis is on interrelationships among systems and regulation of physiological functions involved in maintaining homeostasis.

Pre-requisite: BIO 108 with a grade "C" or better

BIO 202-Anatomy & Physiology II:**4Credits**

Anatomy and Physiology II is the second part of a two-course sequence. It is a study of the structure and function of the human body including the following systems: endocrine, cardiovascular, immune, lymphatic, respiratory, digestive (including nutrition), urinary (including fluid and electrolyte balance), and reproductive (including human development and genetics). Emphasis is on interrelationships among systems and regulation of physiological functions involved in maintaining homeostasis.

Pre-requisites: Successful completion of BIO 201 with a grade of "C" or better.

PHL 230 - Introduction to Ethics:**3 Credits**

The systematic evaluation of classical and/or contemporary ethical theories concerning the good life, human conduct in society, morals, and standards of value.

Pre-requisite: Successful completion of ENG 101 with a grade of "C" or better.

PSY 101 Introduction to Psychology**3 Credits**

An introduction into the empirical study of human behavior and mental processes. Topics to be treated include biological bases of behavior, sensation and perception, states of consciousness, learning, memory, motivation and emotion, language, lifespan development, intelligence, stress and health, social behavior, personality, and abnormal behavior and treatment; applications of psychology in a culturally diverse world.

DEPARTMENT OF BIOMEDICAL SCIENCE

BIOMEDICAL SCIENCE, AS

The Biomedical Science degree in the Applied Health Sciences is most appropriate for students with a strong background in biology who plan to move on to a medical career or apply for an advanced degree program that involves patient contact. Students have an option to pursue additional education in Medicine, Pharmacy or Dental Medicine at a 4-year college offering those courses. It builds upon a student's existing professional knowledge to enhance skills in communication, critical thinking, problem solving, and research and leadership theories.

The advanced science courses in biology, biochemistry, emerging and infectious diseases and cell biology teach students how the body reacts to disease and how to both maintain and promote health in humans and animals.

1st Semester (Freshman)		
Course Code	Course Title	Credit Unit/ Hours
BIO 111	Biology I	3
BIO 111L	Biology I Lab	1
FRE 101	Elementary French I	3
ENG 101	English Composition I	3
MAT 160	Survey of Calculus	4
COM 111 or	Fundamentals of Public Speaking	3
COM110	Fundamentals of Oral Communication	3
Total Semester Credit Units		17

2nd Semester (Freshman)		
Course Code	Course Title	Credit Unit/ Hours
BIO 112	Biology II	3
BIO 112L	Biology II Lab 2	1
CHM 111	General Chemistry I	3
CHM 111L	General Chemistry I Lab	1
ENG 102	English Composition II	3
SCI 102	Ethics in Science	2
BMS102	Introduction to Biomedical Sciences	2
Total Semester Credit Units		16

1st Summer		
Course Code	Course Title	Credit Unit/ Hours
HIS 101 or	History of Nigeria – from the Earliest Times to 1800	3
HIS 102–	History of Nigeria from 1800 to the present	3
HIS 201	History of Lagos up to the 20th Century	3
Total Semester Credit Units		6

3rd Semester (Sophomore)		
Course Code	Course Title	Credit Unit/ Hours
CHM 112	General Chemistry II	3
CHM 112L	General Chemistry II Lab	1
BMS201	Medical Microbiology and Immunology	3
BIO 211	General Microbiology	3
BIO 211	General Microbiology Lab	1
BIO210	Cell and Molecular Biology	3
BIO210 L	Cell and Molecular BiologyLab	1
MBS 203	Human Anatomy and Physiology I	2
MBS 203L	Human Anatomy and Physiology L	1
	Total Semester Credit Units	18

4th Semester (Sophomore)		
Course Code	Course Title	Credit Unit/ Hours
BIO 204	Genetics	3
BIO 204L	Genetics Lab	1
FRE 102	Elementary French II	3
PSY 101	Introduction to Psychology	3
PHY 111	General Physics I	3
PHY 111L or	General Physics I Lab1	1
MBS 206	Human Anatomy and Physiology II	2
MBS 206L	Human Anatomy and Physiology II Lab	1
CHM 256	Introduction to Biochemistry	3
	Total Semester Credit Units	16 or 17

BIO-111: General Biology I

3 Credits

This course introduces the principles and concepts of biology. It will emphasize biological principles important in understanding living organisms to include biological chemistry, molecular and cellular biology, metabolism and energy transformation, genetics, evolution, and other related topics. Upon completion, students should be able to demonstrate understanding of life at the molecular and cellular levels. This course is the first in a two-semester series intended for science majors.

BIO 111L Biology I Lab

1 Credit

Students will engage with the process of science via making observations, developing questions, designing experiments, using scientific apparatus to collect and analyze data, and communicating the results of scientific work. Additional fee required for lab. Concurrent enrollment in BIO 111

ENG 101 - English Composition I

3Credits

A study of style, syntax, and basic organizational patterns. Topics include various rhetorical patterns, audience, purpose, diverse perspectives, writing, revising, and editing. Research paper required.

ENG 102 - English Composition II**3 Credits**

A composition course in argumentative writing, including invention, organization, style, and revision. Critical reading and thinking will be addressed through students' writing. Research skills and documentation will be introduced.

Pre-requisites: Successful completion of ENG 101 with a grade of C or better.

MAT 160 Survey of Calculus**4 Credits**

This course is designed for students with business, social science, and life science majors. It covers functions, limits, continuity, derivative, maxima-minima, applications of the derivative, exponential and logarithmic functions, functions of several variables, maxima and minima of functions of several variables, integration, and applications of the integral.

Pre-requisite: Successful completion of MAT 143 or MAT 147 with a grade of "C" or better.

COM 110 Fundamentals of Oral Communication**3 Credits**

This survey course provides an introduction to human communication. Topics include the use of theory, concepts, processes, and communication practices in a variety of personal, academic, professional, and social situations. Emphases include perception, verbal and nonverbal messages, and listening in the contexts of public, interpersonal, mass, and small group communication.

COM 111: Fundamentals of Public Speaking**3 Credits**

This course will introduce students to the theoretical frameworks and practical application of public speaking by integrating conceptual themes of rhetoric, stylistic organization, delivery, evaluative assessment, and argumentation.

BIO-112: General Biology II**3 Credits**

This course is designed for science majors and provides an overview of evolution, the diversity of life, ecology, and the fundamentals of organismal structure and function. All domains and kingdoms of life are included, with the primary focus on plants and animals. Students will complete a taxonomic and comparative study of organismal anatomy, physiology, and evolutionary relationships. This course is the second in a two-semester series intended for science majors.

Pre-requisite: Successful completion of BIO 111 and BIO 111L with a grade of "C" or better.

BIO 112L Biology II Lab**1 Credit**

This course is designed for science majors and provides an overview of the diversity of life with a primary emphasis on the skill-sets that scientists use to ask and answer questions. Students will design investigations, collect and analyze data, and present their findings regarding a taxonomic and/or comparative study of organismal anatomy, physiology, and/or evolutionary relationships.

Pre-requisite: Successful completion of BIO 111 and BIOL 111L with a grade of "C" or better.

BMS102 Introduction to Biomedical Sciences**3 Credits**

This course introduces students to foundational concepts in biomedical science through the study of the human body from the earliest stages of life through to old age. The course includes an introduction to the molecular basis of cells that comprise the human body, human reproduction, basic Mendelian genetics and ageing processes. It also emphasises the importance of ethics and professional practice in biomedical science by exploring some of the human rights controversies associated with past biomedical advances.

CHM 111 General Chemistry I**3 Credits**

A thorough study of the fundamentals and principles of chemistry. This course is designed for students majoring in chemistry, pre-medicine, pre-dentistry, engineering, or science. The lecture and laboratory will cover inorganic reactions, atomic structure, stoichiometry, thermochemistry, solutions, chemical bonding, and the states of matter.

CHM 111L General Chemistry I Lab**1 Credit**

This is the required lab to accompany CHM 111, which is a thorough study of the fundamentals and principles of chemistry. This course is designed for students majoring in chemistry, pre-medicine, pre-dentistry, engineering, or science. The lecture and laboratory will cover inorganic reactions, atomic structure, stoichiometry, thermochemistry, solutions, chemical bonding, and the states of matter.

Pre-requisite: Successful completion of CHM 101 with a grade of “C” or better

CIE 102 Ethics in Science**3 Credits**

An exploration of ethical challenges arising in recent scientific activity. Some challenges will focus on the results of research. Others will concern the process of research itself and science and society’s efforts at self-regulation. In this Course, Students will examine the history and various points of view associated with scientific issues and determine how ethics can be used to navigate these problems. Emphasis also will be on current events and fundamental principles. This course is designed for all students interested in ethical facets of science.

CHM 112 General Chemistry II**3 Credits**

A thorough study of the fundamentals and principles of chemistry. This course is designed for students majoring in chemistry, pre-medicine, pre-dentistry, engineering, or science. The lecture and laboratory will cover solutions, kinetics, equilibrium, acid/base reactions, thermochemistry, and electrochemistry.

Pre-requisite: Successful completion of CHM 111 with a grade of “C” or better,

CHM 112L General Chemistry II Lab**2 Credits**

This is the required lab accompanying CHM 112, which is a thorough study of the fundamentals and principles of chemistry. This course is designed for students majoring in chemistry, pre-medicine, pre-dentistry, engineering, or science. The lecture and laboratory will cover solutions, kinetics, equilibrium, acid/base reactions, thermochemistry, and electrochemistry.

Pre-requisite: Successful completion of CHM 111 with a grade of “C” or better,

FRE 101 Elementary French I

4 Credits

This course is an introduction to French, emphasizing oral communication, listening, and writing skills. Students learn basic structures in a structured environment; they practice idioms and situational vocabulary used in conversations. The course is also an introduction to French culture.

HIS 101 – History of Nigeria – from the Earliest Times to 1800

3 Credits

This course is a survey of the origins, migrations and settlements of various Nigerian peoples in their Kingdoms and States. The course also highlights historical developments in the Nigerian regions during this period including state formation and inter-group relations in the areas of political, religious, economic and sociocultural activities.

HIS 102– History of Nigeria from 1800 to the present

3 Credits

The course examines some major developments including internal and external factors which brought the Nigerian communities into a state. The course also discusses the Sokoto Jihad; the fall of Oyo Empire and the Yoruba Civil Wars; the Slave Trade, the Abolition of the Slave Trade and European penetration of the hinterland; the establishment of Colonial rule/Amalgamation; and the Effects of World War I; the political and economic structure of colonial rule in the inter-war years; the World War II and its aftermaths; Nationalism and Independence; The First Republic and its collapse; the Military Regimes; the Second Republic; the Buhari/Idiagbon years; the Babangida years and the Aborted Third Republic; the Interim National Government; the Abacha and Abubakar regimes; and the Emergence of the Fourth Republic.

HIS 201 History of Lagos up to the 20th Century

3 Credits

The course examines the various traditions of origin of Lagos; traditional political institutions in Lagos; civil wars; the relationships between Lagos and its neighbors; Lagos' participation in slavery, slave trade, and "legitimate trade"; the British Consulate; the influx and the spatial distribution of immigrants; introduction of Islam and Christianity; Colonialism and social transformation and problems including crime; Students are expected to visit historical sites such as palaces, the point of no return in Badagry, museum etc.

BMS 201 Medical Microbiology and Immunology 1

3 Credits

This foundational course explores the history and diversity of microorganisms, prokaryote and eukaryote cell structure and function, metabolism and growth, microbial genetics and the relevance of microbiology to other areas of biomedical science. The nature of interactions between bacteria, viruses, fungi and protists and other parasites with humans and their impacts on public health are also discussed.

BIO 211 General Microbiology**3 Credits**

This course covers principles of microbiology and the impact these organisms have on man and the environment. Topics include the various groups of microorganisms, their structure, physiology, genetics, microbial pathogenicity, infectious diseases, immunology, and selected practical applications. Upon completion, students should be able to demonstrate knowledge and skills including microscopy, aseptic technique, staining, culture methods, and identification of microorganisms.

Pre-requisite: Successful completion of BIO 111, BIO 111L, CHM 111, and CHM 111L with a grade of “C” or better.

BIO 211 L General Microbiology Lab**1 Credit**

This lab is designed to teach microbiology skills, including lab safety, aseptic technique, microscope use, staining, and interpreting biochemical tests. Competency in lab safety, aseptic technique, and microscope use will be required for successful completion of the course.

Pre-requisite: Successful completion of BIO 111, BIO 111L, CHM 111 with a grade of “C” or better,

BIO210 Cell and Molecular Biology 1**3 Credits**

The course is presented in two modules: in the first, the course introduces the nature of gene organisation, replication and expression in both prokaryotic and eukaryotic systems. The course also provides an overview of molecular technologies including recombinant DNA techniques and standard molecular methods such as Western Blot assays, PCR, rtPCR and real time PCR. These procedures underpin state of the art research and medical diagnostic assays. Applications of this technology are discussed. In the second module the course explores the nature of cellular ultrastructure; protein post-translational modification and targeting; vesicle transport in cells; regulation of the cell cycle and apoptosis.

Pre-requisite: Successful completion of CHE 111 with a grade of “C” or better

BIO210 Cell and Molecular Biology Lab**1 Credit**

Cell Biology is a study of biological principles with emphasis upon molecular cell biology, membranes, organelles, energy transfers, cell physiology, and molecular genetics. As the laboratory counterpart to Cell Biology lecture, students will participate in a research project designed to introduce them to a variety of molecular biological techniques.

Pre-requisite: Successful completion of BIO 111, BIO 111L, CHM 111, and CHM 111L with a grade of “C” or better.

BIO 204 Genetics

3 Credits

This course introduces students to the basic's concepts of genetics and heredity. Individual topics include Mendelian inheritance, genetic linkage, recombination and gene mapping, chromosome structure and function, gene expression and regulation, genetic mutation, biotechnology, cell-cycle regulation, the genetics of cancer, and more. This course will also explore the onset of genetic variability and how genetic mutations can lead to environmental adaptations and evolution.

Pre-requisite: Successful completion of BIO 112 and BIO 112L and CHM 102 or CHM 111 with a grade of "C" or better.

BIO 204 L Genetics Lab

1 Credit

This course provides an overview of genetics. Students will participate in a research project designed to introduce them to a variety of molecular biological and genetic techniques. Students will collect and analyze data, evaluate results, and present their findings to the class and/or at a conference.

Pre-requisite: Successful completion of BIO 112 and BIO112L and CHM 102 or CHM 111 with a grade of "C" or better.

PSY 101 Introduction to Psychology

3 Credits

An introduction into the empirical study of human behavior and mental processes. Topics to be treated include biological bases of behavior, sensation and perception, states of consciousness, learning, memory, motivation and emotion, language, lifespan development, intelligence, stress and health, social behavior, personality, and abnormal behavior and treatment; applications of psychology in a culturally diverse world.

FRE 102 Elementary French II

4 Credits

This course continues its emphasis on oral, listening, reading, and writing skills in order to complete acquisition of the basic structures of the language. In addition, students study idioms and vocabulary used in ordinary situations. Students will gain increased knowledge and understanding of French culture.

Pre-requisite: Successful completion of FRE 101 with a grade of "C" or better

PHY 111 General Physics I

3 Credits

This course includes a general study of kinematics, Newton's Laws of Motion, universal gravitation, work, mechanical energy, motion in a plane, momentum, hydrostatics, SHM, wave motion, sound, introductory thermodynamics, and heat transfer with applications to life sciences.

PHY 111L General Physics I Lab

1 Credit

This required lab accompanies PHY 111, which includes a general study of kinematics, Newton's Laws of Motion, universal gravitation, work, mechanical energy, motion in a plane, momentum, hydrostatics, SHM, wave motion, sound, introductory thermodynamics, and heat transfer with applications to life sciences.

BMS 203 Human Anatomy and Physiology 1*

3 Credits

An organ systems approach is used in this course to study the anatomy and physiology of healthy people. Body systems covered in this course include cardiovascular system, blood, lymphatic and immune systems, respiratory system, digestive system, urinary system, integumentary system, musculoskeletal system, and an introduction to the nervous and endocrine systems.

Pre-requisite Successful completion of BIO 111 and BIO 111L or MBS 111 and MBS 111L with a grade of "C" or better

BMS 203L Human Anatomy and Physiology I Lab

1 Credit

This course is an introduction to the study of structure (anatomy) and function (physiology) of the human body and fulfills the laboratory component of the GEM Scientific. Students will engage with the process of science via making observations, developing questions, using scientific apparatus to collect and analyze data, and communicating the results of scientific work.

Pre-requisite: Successful completion of BIO 111 and BIO 111L or MBS 111 and MBS 111L with a grade of "C" or better

BMS 206 Human Anatomy and Physiology 2

3 Credit

An organ systems approach is used in this course to study anatomy and physiology and to explain how this relates to health and common pathologies and their pharmacological treatments in the context of disease, trauma and exercise. This course provides further, in depth information from six topics that were undertaken in BIO1203 Human Anatomy and Physiology 1. The topics covered in BIO1206 Human Anatomy and Physiology 2 include cell physiology and the muscular, cardiovascular, respiratory, nervous and endocrine systems. These topics will be reviewed and extended to topics on cutting edge and current research.

Pre-requisite: Successful completion of BMS 203 with a grade of "C" or better

BMS 206L Human Anatomy and Physiology I Lab

1 Credit

This course is an introduction to the study of structure (anatomy) and function (physiology) of the human body and fulfills the laboratory component of the GEM Scientific. Students will engage with the process of science via making observations, developing questions, using scientific apparatus to collect and analyze data, and communicating the results of scientific work.

Pre-requisite: Successful completion of BIO 111 and BIO 111L or MBS 111 and MBS 111L with a grade of "C" or better

CHM 256 Introduction to Biochemistry

3 Credits

This is a one semester survey course of biochemistry and will focus on an introduction to proteins, nucleic acids, carbohydrates and the lipid family of biological molecules. In addition, we will discuss metabolism of carbohydrates, fatty acids and nitrogen in the body as well as the signaling that controls them. In order to appreciate these, students will be taught the basic structure of molecules and the biochemical reactions that allow them to form more advanced macromolecules in the organism. The overall goal is for students to

understand that many of these reactions or metabolic pathways relate to each other in the organism.

DENTAL HYGIENE, AAS

The Dental Hygiene Program prepares graduates to perform competently in providing preventive oral care, thereby preparing students for positions in the dental profession. The program incorporates didactic, clinical, technological, and laboratory teaching approaches throughout the curriculum. These enables candidates develop academic, technical, and professional knowledge and skills required for job acquisition, retention, and advancement. Diplomates of this Program provide numerous services designed to detect and prevent diseases of the mouth. These include oral prophylaxis and examination of head, neck, and the oral cavity for signs of disease. Additionally, patient education regarding oral hygiene, performing radiographic examinations, and application of fluoride and/or sealants are services provided by dental hygienists. The dental hygiene curriculum is a challenging one that provides a “hands-on” approach and incorporates a variety of educational experiences and environments from the traditional classroom to the laboratory and the on-campus clinic. The dental hygiene clinic is open to anyone seeking preventative oral health care. Program graduates receive a Dental Hygiene Associate of Applied Science degree/ National Diploma in Dental Hygiene

1stSemester(Freshman)		
Course Code	Course Title	Credit Unit/ Hours
BIO104	Microbiology	4
DHY101	Oral Hygiene I	3
BIO109	Anatomy and Physiology I	4
DHY108	Dental and Oral Anatomy and Physiology	2
DHY109	Oral Embryology and Histology	2
		15

2ndSemester(Freshman)		
Course Code	Course Title	Credit Unit/ Hours
BIO209	Anatomy and Physiology II	4
DHY201	Oral Hygiene II	3
DHY205	Dental Radiology	3
DHY209	Periodontology I	1
ENG101	English Composition I	3
HUM 101	Introduction to Humanities	3
		17

3rd Semester (Sophomore)		
Course Code	Course Title	Credit Unit/ Hours
DHY202	Oral Hygiene III	4
DHY204	Dental Materials	2
DHY206	Community Oral Health I	2
DHY207	General and Oral Pathology	2
DHY219	Periodontology II	1
COM100 or	Speech Communication	3
COM 111	Fundamentals of Public Speaking	3
HIS 101 or	History of Nigeria – from the Earliest Times to 1800.	3
HIS 102	History of Nigeria from 1800 to the present	3
	Total Semester Credit Units	17

4th Semester (Sophomore)		
Course Code	Course Title	Credit Unit/ Hours
DHY203	Oral Hygiene IV	4
DHY214	Nutrition Dental Health	2
DHY216	Community Oral Health II	1
PSY101	Introduction to Psychology	3
SOC101	Sociology	3
HIS 201	History of Lagos up to the 20th Century	3
	Total Semester Credit Units	16

5th Semester		
Course Code	Course Title	Credit Unit/ Hours
DHY200	Pharmacology for Dental Hygiene	2
DHY220	Local Anesthesia for Dental Hygienists	1
DHY208	Oral Hygiene Summer Clinical Techniques I	1
ENG 102	English Composition II	3
MAT 111	College Algebra	3
CHM 121	Chemistry I	3
CHM 121L	Chemistry I Lab	1
CMP 100	Intro to Computers	3
	Total Semester Credit Units	17

ENG 101 - English Composition I**3Credits**

A study of style, syntax, and basic organizational patterns. Topics include various rhetorical patterns, audience, purpose, diverse perspectives, writing, revising, and editing. Research paper required.

ENG 102 - English Composition II**3 Credits**

A composition course in argumentative writing, including invention, organization, style, and revision. Critical reading and thinking will be addressed through students' writing. Research skills and documentation will be introduced.

Pre-requisites: Successful completion of ENG 101 with a grade of C or better.

BIO-109 Anatomy and Physiology I**4 Credits**

This course is an introduction to the basic principles of human anatomy and physiology that emphasizes some common diseases in relation to the various body systems. Among the topics considered is the basic plan of the body, tissues, the skeletal system, the muscular system, articulations, cardiovascular system, and the respiratory system. Lectures are supplemented by writing assignments, discussion, and laboratory sessions that include dissection and elementary physiology experiments.

BIO-104 Microbiology**4 Credits**

This is a laboratory science course that emphasizes the principles of biology as they apply to microorganisms. The morphology, anatomy, physiology, growth, metabolism, nutrition, control, and identification of the various microbes, genetics including recombination technology, industrial and clinical case studies in microbiology are discussed. Representative laboratory exercises include staining procedures, media preparation, pure culture techniques, culture identification, and serology.

SOC-101 Sociology**3 Credits**

This course is an examination of the culture and structure of human societies. The course focuses on social groups and institutions, their norms and controls, and how and why they change. Topics of discussion covered include the family, education, deviance, race and ethnicity, gender roles, social change, and social inequalities.

COM-100 Speech Communication**3 Credits**

This course guides students through the methods of organizing, delivering, and evaluating the spoken word in various speech situations. Intrapersonal and interpersonal communication in conjunction with public address is studied.

COM 111: Fundamentals of Public Speaking**3 Credits**

This course will introduce students to the theoretical frameworks and practical application of public speaking by integrating conceptual themes of rhetoric, stylistic organization, delivery, evaluative assessment, and argumentation.

PSY 101 Introduction to Psychology 3 Credits

An introduction into the empirical study of human behavior and mental processes. Topics to be treated include biological bases of behavior, sensation and perception, states of consciousness, learning, memory, motivation and emotion, language, lifespan development, intelligence, stress and health, social behavior, personality, and abnormal behavior and treatment; applications of psychology in a culturally diverse world.

HUM 101 Introduction to Humanities 3 Credits

Explores the philosophic and artistic heritage of humanity expressed through a historical perspective on visual arts music and literature. The humanities provide insight into people and society. Topics include historical and cultural developments contributions of the humanities and research.

MAT 111 College Algebra 3 Credits

Emphasizes techniques of problem solving using algebraic concepts. Topics include fundamental concepts of algebra equations and inequalities functions and graphs and systems of equations; optional topics include sequences series and probability or analytic geometry.

CHM 121 Chemistry I 3 Credits

Provides an introduction to basic chemical principles and concepts which explain the behavior of matter. Topics include measurement physical and chemical properties of matter atomic structure chemical bonding nomenclature chemical reactions and stoichiometry and gas laws.

CHM 121L Chemistry I Lab 1 Credit

Selected laboratory exercises paralleling the topics in CHM 121. The laboratory exercises for this course include measurement physical and chemical properties of matter atomic structure chemical bonding nomenclature chemical reactions stoichiometry and gas laws.

CMP 100 Intro to Computers 3 Credits

Introduces the fundamental concepts terminology and operations necessary to use computers. Emphasis is placed on basic functions and familiarity with computer use. Topics include an introduction to computer terminology the Windows environment Internet and email word processing software spreadsheet software database software and presentation software.

DHY-101 Oral Hygiene I 3 Credits

This is the foundation course for clinical dental hygiene practice. Students are introduced to assessment, treatment planning, instrumentation and documentation skills utilizing interactive clinical laboratory sessions and computer assisted learning. Laboratory [6.00]. Corequisite DHY-108, DHY-109, BIO-104

DHY-108 Dental and Oral Anatomy and Physiology **2 Credits**

This course examines the anatomy and physiology of the teeth and oral structures. Emphasis is on identification of primary and permanent teeth, classification of occlusion, and description and location of anatomical structures of the head and neck. Dental terminology is defined and related to oral structures through the utilization of dental model devices; computer assisted learning and interactive laboratory sessions.

Corequisite DHY-101, DHY-109

DHY-109 Oral Embryology and Histology **2 Credits**

This course is a comprehensive study of or facial embryology and the cellular structure of dental and associated glandular and mucosal issues. Emphasis is on clinical considerations of the developmental process so as to be relevant to dental hygiene practice. The relationship between structure and function will be stressed using microscopic and clinical visuals.

Corequisite DHY-101, DHY-108

HIS 101 – History of Nigeria – from the Earliest Times to 1800. **3 Credits**

This course is a survey of the origins, migrations and settlements of various Nigerian peoples in their Kingdoms and States. The course also highlights historical developments in the Nigerian regions during this period including state formation and inter-group relations in the areas of political, religious, economic and sociocultural activities.

HIS 102– History of Nigeria from 1800 to the present **3 Credits**

The course examines some major developments including internal and external factors which brought the Nigerian communities into a state. The course also discusses the Sokoto Jihad; the fall of Oyo Empire and the Yoruba Civil Wars; the Slave Trade, the Abolition of the Slave Trade and European penetration of the hinterland; the establishment of Colonial rule/Amalgamation; and the Effects of World War I; the political and economic structure of colonial rule in the inter-war years; the World War II and its aftermaths; Nationalism and Independence; The First Republic and its collapse; the Military Regimes; the Second Republic; the Buhari/Idiagbon years; the Babangida years and the Aborted Third Republic; the Interim National Government; the Abacha and Abubakar regimes; and the Emergence of the Fourth Republic.

HIS 201 History of Lagos up to the 20th Century **3 Credits**

The course examines the various traditions of origin of Lagos; traditional political institutions in Lagos; civil wars; the relationships between Lagos and its neighbors; Lagos' participation in slavery, slave trade, and "legitimate trade"; the British Consulate; the influx and the spatial distribution of immigrants; introduction of Islam and Christianity; Colonialism and social transformation and problems including crime; Students are expected to visit historical sites such as palaces, the point of no return in Badagry, museum etc.

DHY-201 Oral Hygiene II

3 Credits

This course focuses on providing clinical dental hygiene care to patients throughout the lifespan. The course incorporates age targeted prevention, culture competence, preventive therapies, clinical technologies and an introduction to soft tissue management. Opportunities for community oral health education are included.

Pre-requisites: Successful completion of BIO-104, BIO-109, DHY-101, DHY-108, DHY-109 with a grade of “C” or better.

DHY-202 Oral Hygiene III

4 Credits

This course is a continuation and refinement of the clinical therapies integrated in Oral Hygiene II. Special needs patients, oral rehabilitation and clinical technologies are the focus of this course. Both on-campus and off-campus clinical experiences are incorporated. Laboratory [12.00].

Pre-requisites: Successful completion of BIO-104, BIO-209, DHY-200, DHY-201, DHY-205, DHY-209, DHY-220 with a grade of “C” or better

DHY-203 Oral Hygiene IV

4 Credits

This course is an advanced study of the clinical therapies introduced in Oral Hygiene III. Practice management, clinical technologies, ethics, community outreach, and preparation for dental hygiene licensing are incorporated into this course. Laboratory.

Pre-requisites: Successful completion of DHY-200, DHY-202, DHY-204, DHY-206, DHY-207, DHY-219, DHY-220 with a grade of “C” or better.

DHY-200 Pharmacology for Dental Hygiene

2 Credits

This course examines medications routinely prescribed for medical and dental conditions and the role of the dental hygienist in patient assessment and treatment planning. Systemic medications, complementary medicine, anesthesia, and oral pharmacotherapy will be included. Local anesthetic agents will be emphasized. Lecture

Pre-requisites: Successful completion of DHY-101, DHY-201, DHY-205, DHY-207, DHY-209 with a grade of “C” or better. **Corequisite** CHM-112

DHY-204 Dental Materials

2 Credits

This course is a comprehensive study of the science, technology, and application of dental materials incorporating reality based dental environment treatment modality scenarios to enhance and compliment both classroom and clinical setting course content. Particular emphasis is placed on various dental material and their specific uses, along with related fundamental and specialty clinical dental hygiene skills. Specific dental materials are stressed and utilized throughout the didactic, laboratory, and clinical components of the course. Laboratory

Pre-requisite[s]: Successful completion of BIO-209, DHY-108, DHY-109, DHY-201, DHY-207, CHM-112 with a grade of “C” or better.

DHY-205 Dental Radiology**3 Credits**

This course provides the dental hygiene student with an introduction to the principles and practices of dental radiology. Emphasis is placed on radiographic imaging techniques, film processing procedures, identification of anatomical landmarks and radiographic interpretation. Course content includes an overview of radiation history, physics, biology, protection, quality assurance and risk management. Laboratory.

Pre-requisite: Successful completion of BIO-104, BIO-109, DHY-101, DHY-108, DHY-109 with a grade of “C” or better.

DHY-206 Community Oral Health I**2 Credits**

This partially online course will examine public health/community health issues. It will focus on the role of the dental hygienist in community -based oral health care initiatives. This will include assessment, planning, implementation, and evaluation of public health/community issues. Health care delivery at local, national, and global levels will be discussed including agencies involved in the delivery and finance of oral health services.

Pre-requisites: Successful completion of BIO-109, DHY-201, DHY-205, DHY-209, DHY-200, DHY-220 with a grade of “C” or better

DHY-216 Community Oral Health II**1 Credit**

This partially online course will provide students with an opportunity to engage in a community health experience over the course of the semester and apply the principles of Community Oral Health I to a practicum project. Laboratory [2.00].

Pre-requisites: Successful completion of DHY-202, DHY-204, DHY-205, DHY-206, DHY-207, DHY-219, DHY-220 with a grade of “C” or better

DHY-207 General and Oral Pathology**2 Credits**

This course is designed to facilitate the identification and treatment of oral diseases including the relationship between systemic disease and the oral cavity. The course will focus on the understanding of disease process, recognition of deviations from normal and the differential diagnosis of oral manifestations. Hybrid format utilizing computer assisted learning and clinical case studies will be integrated. Laboratory [2.00].

Pre-requisites: Successful completion of BIO-209, DHY-200, DHY-205, DHY-208, DHY-209, DHY-220 with a grade of “C” or better

DHY-208 Oral Hygiene Summer Clinical Techniques**1 Credit**

This course is designed to provide additional clinical experience for all first year students. Further development of debridement skills, patient treatment plans, special needs populations, and patient management will be the focus. Additional experience will be gained in the use of EMR (electronic medical records), digital intraoral photography, and digital radiography. Clinic [4.00].

Pre-requisites: Successful completion of DHY-201, DHY-205, DHY-209 with a grade of “C” or better Corequisite DHY-200.

DHY-209 Periodontology I**1 Credit**

This course is the study of the principles and concepts of periodontal disease including the tissues surrounding the teeth in both healthy and diseased states. Soft tissue management, periodontal therapies and case management are discussed. The role of systemic disease and periodontal health is also addressed.

Pre-requisites: Successful completion of BIO-104, BIO-109, DHY-101, DHY-108, DHY-109 with a grade of “C” or better

DHY-219 Periodontology II**1 Credit**

This course is an advanced study of the disease process and treatment modalities for periodontal disease. Emphasis is placed on the dental hygienist's role in developing soft tissue management programs including initial therapy, maintenance and evaluation of oral health. Implants, periodontal surgery and oral rehabilitation are also integrated. Case studies, integration of clinical therapies and

Pre-requisites Successful completion of DHY-200, DHY-201, DHY-205, DHY-209, BIO-209 with a grade of “C” or better.

DHY-214 Nutrition Dental Health**2 Credits**

This course explores basic nutrition as it applies to general and oral health. Students learn to identify patients with dietary and nutritional deficiencies, provide nutritional counseling treatment plans, and adapt behavioral modification techniques.

Pre-requisites: Successful completion of CHM-112, DHY-202 with a grade of “C” or better

DHY-220 Local Anesthesia for Dental Hygienists**1 Credit**

This course is designed to provide the student with the necessary knowledge and skills to administer local anesthesia properly to patients who require pain management during dental hygiene treatment. Special emphasis will be given to the pharmacology of local anesthetic and pain control, injection fundamentals, and the clinical administration of local anesthesia. Local and systemic complications along with legal considerations will also be presented. Laboratory/Clinical [1.00].

Pre-requisites: Successful completion of DHY-201, DHY-205, DHY-209, BIO-209 with a grade of “C” or better. **Corequisite** DHY-200

BIO-209 Anatomy and Physiology I**4 Credits**

This course continues the study of human anatomy and physiology. Among the topics considered are the digestive system, metabolism, urinary system, fluid and electrolyte balance, the nervous system, the endocrine system, and the reproductive system. Lectures are supplemented by writing assignments, discussion and laboratory sessions that include dissection and elementary physiology experiments.

Pre-requisite: Successful completion of BIO-109 with a grade of “C” or better

DENTAL TECHNOLOGY, AAS

Dental technology is the art and science of designing and fabricating custom made corrective devices and replacements for natural teeth. The goal and challenge for a dental technologist is to create a restoration that is a perfect match to a patient's natural dentition. Technological revolutions have allowed computer-based modeling to support a broad application to the fabrication process. Dental technologists are an essential member of the dental team. NAAC's Dental Technology program encompasses digital dentistry in preparing you in five speciality areas: dentures, partial dentures, ceramics, orthodontics, and crowns and bridges. As part of the program curriculum, Students will work with commercial dental laboratories and the University teaching Hospitals and the Dentistry Clinic to gain hands-on experience.

1stSemester (Freshman)		
Course Code	Course Title	Credit Unit/ Hours
DTT 100	Intro to the Dental Laboratory	2
DTT 101	Elements of Dental Technology	2
DTT 102	Dental Anatomy and Terminology	3
DTT 103	Removable Prosthodontics I	4
DTT 109	Fixed Prosthodontics I	4
CHM 111	Physics and Chemistry I	3
	Total Semester Credit Units	18

2ndSemester (Freshman)		
Course Code	Course Title	Credit Unit/ Hours
DTT 106	Dental Materials	3
DTT 105	Removable Prosthodontics II	4
DTT 108	Gnathological Concept	3
DTT 111	Fixed Prosthodontics II	4
ENG 101	English Composition 1	3
	Total Semester Credit Units	17

3rdSemester (Sophomore)		
Course Code	Course Title	Credit Unit/ Hours
DTT 204	Orthodontics	3
DTT 112	Removable prosthodontics III	4
DTT 203	Ceramic Restorations	2
DTT 206	Fixed Prosthodontics III	4
JUR 101	Jurisprudence I	2
	Total Semester Credit Units	15

4th Semester (Sophomore)		
Course Code	Course Title	Credit Unit/ Hours
DTT 207	Removable Prosthodontics IV	4
DTT 208	Fixed Prosthodontics IV	4
DTT 202	Laboratory Management	3
MAT 112	Pre-Algebra	3
DTT 299	Dental Implants	4
	Total Semester Credit Units	18

CHM 101 Physics and Chemistry I

3Credits

This course is an introduction to quantum mechanics for use by chemists. Topics include particles and waves, wave mechanics, semi-classical quantum mechanics, matrix mechanics, perturbation theory, molecular orbital theory, molecular structure, molecular spectroscopy, and photochemistry. Emphasis is on creating and building confidence in the use of intuitive pictures.

ENG 101 - English Composition I

3Credits

A study of style, syntax, and basic organizational patterns. Topics include various rhetorical patterns, audience, purpose, diverse perspectives, writing, revising, and editing. Research paper required.

HLE 101 Health Law and Ethics.

3Credits

This course presents for discussion, legal and ethical issues arising from the organization and delivery of health care services. Topics include contracts, torts, business law; medical recordkeeping and retention; physicians' public duties; licensure, certification and regulation of health professionals; consent for treatment; and exploration of issues arising from various bioethical topics.

MAT 112 Pre-Algebra

3Credits

This course will cover chapters 1-10. Topics include whole numbers, integers and solving equations, read graphs, read verbal descriptions, write simple algebraic expressions, fractions, mixed numbers, decimals, ratio, proportion, percent, geometry, exponents and polynomials.

DTT 100 Intro to the Dental Laboratory

2Credits

Students learn an introduction to the modern dental laboratory. Working with gypsum products, as well as model and die production are stressed.

DTT 101 Elements of Dental Technology

2Credits

Orientation to the field of dental laboratory technology, including ethics, jurisprudence, history, and categories of training and employment.

DTT 102 Dental Anatomy and Terminology **3Credits**

The students learn about dental terminology, oral cavity including morphology and function of the primary and secondary human dentition, occlusion concepts and anatomical landmarks. Additionally, the students learn the significance of: skull osteology, myology and tooth supporting structures, histology.

DTT 103 Removable Prosthodontics I **4Credits**

Students learn the art and science of creating natural looking complete dentures by using PTC techniques and methodology. The course includes: dental anatomy, concepts of a natural smile, selecting and setting denture teeth in balanced occlusion, duplication of natural tissue, and processing, finishing and polishing complete dentures according with established clinical standards and an introduction to digital dentistry.

DTT 105 Removable Prosthodontics II **4Credits**

Students learn the design, materials ' science and construction of maxillary complete dentures opposing a mandibular over denture, reline and repair complete dentures, Immediate Maxillary Denture and Wrought wire Mandibular Stay Plate.

DTT 106 Dental Materials **3Credits**

Students learn by lecture, demonstration and experiment the physical properties of dental materials including, composition and uses of dental materials.

DTT 108 Gnathological Concept **3Credits**

Students learn about gnathological concepts of morphology and functional occlusion. Understanding and reconstructing ideal and functional contacts. Organic waxing of the maxillary and mandibular teeth occlusal surfaces is accomplished on fully adjustable articulators.

DTT 109 Fixed Prosthodontics I **3Credits**

The student learns morphological and functional waxing of anterior and posterior single units by analogue and digital applications.

DTT 111 Fixed prosthodontics II **4Credits**

Students learn to wax single and multiple units by using PTC techniques and methodology based on student learning outcomes. Learning and understanding concepts such as: tooth contour alignment, functional and morphological occlusion. Students learn fundamental concepts in metal and ceramic substructure designs applied to single units. Students learn techniques in spruing, investing and casting including soldering applications.

DTT 112 Removable prosthodontics III **4Credits**

The student will learn removable partial denture construction, both analog and digital, from start to finish. The course will consists of two sections, framework production and replacement teeth addition to the framework. The first section will consist of the: use of the dental surveyor; design of the partial denture framework; waxing; casting Cobalt-

Chromium alloy; finishing and polishing the framework. The second section will consist of replacement tooth set-up; wax-up; processing; equilibration; finish and polish.

DTT 202 Laboratory Management

3Credits

The students learn to observe and work with a skilled dental technician in a dental office, clinic or dental laboratory. The student applies the know ledge and skills learned in the classroom in a dental office, clinic or dental laboratory. The students learn about production, operation, and management of dental laboratory business including Human Resource Management. Various types of business financing. Identify various marketing strategies. Business ownership and current professional topics.

DTT 203 Ceramic Restorations

2 Credits

The student learns about dental ceramic restorations, including: materials proprieties and manipulation, tooth morphologic design, feldspathic materials sintering, contouring staining, glazing, polishing, as w ell as science of color and esthetic design.

DTT 204 Orthodontics

3Credits

This course goes into the construction and repair of orthodontic and Pedodontics appliances. Emphasis will be placed on pouring and trimming orthognathic study casts, wire bending techniques, soldering and welding techniques, and fabrication of various types of orthodontic appliances.

DTT 206 Fixed Prosthodontics III

4Credits

This is an advanced course in the Fixed Prosthodontics specialty. Topics to be learn includes the science of materials, gnathological concepts, prosthetic framework design techniques, and technologies applied in the restorative prosthodontics procedures in alignment with clinical acceptable standards.

DTT 207 Removable Prosthodontics IV

4Credits

This is an advanced course in Removable Prosthodontics Specialty in the Dental Technology Program. This course incorporates advanced removable dentures design, materials' science, and manufacturing techniques.

DTT 208 Fixed Prosthodontics IV

4Credits

This is an advanced course in the Fixed Prosthodontics specialty, level four. This course incorporates advanced Ceramic Restorations analysis, design and manufacturing techniques, including science of materials and their applications. Students will learn the methodology of feldspathic porcelain powders application techniques as it applies to single and multiple units, by incorporating the proper morphologic, functional and optical values. Digital technology is an integral part of the course instructions and applications.

DTT 299 Dental Implants**4Credits**

Topics to be taught in dental implants including history, surgical overview, types of implants and implant restorations, case planning, Prosthodontic procedures, laboratory procedures, restorative materials, case finalization.