**BAYERO UNIVERSITY KANO**

**BASIC MEDICAL SCIENCES**

**HUMAN PHYSIOLOGY**

**BSc PHYSIOLOGY PROGRAM**

**Proposed 30% addition to the CCMAS Course Structure/Summary**

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| **100 Level** | |  |  |  |  |  |
| **S/N** | **Course Code** | **Course Title** | **Units** | **Status** | **LH** | **PH** |
| 1 | BUK-PIO 120 | Introduction to Physiology | 3 | C | 30 | 45 |
|  |  |  |  |  |  |  |
|  |  | **Total Credits Added** | **3** |  |  |  |
|  |  | **Total Credits per Session** | **30** |  |  |  |
| **200 Level** | |  |  |  |  |  |
| **S/N** | **Course Code** | **Course Title** | **Units** | **Status** | **LH** | **PH** |
| 1 | BUK-PIO 221 | General Principles and Cell Physiology | 2 | C | 30 | - |
| 2 | BUK-PIO 223 | ANS and Skin Physiology | 2 | C | 30 | - |
| 3 | BUK-PIO 225 | Introduction to Laboratory Physiology II | 2 | C | - | 90 |
| 5 | BUK-ANA 202 | Histology of Basic Tissues | 1 | C | - | 45 |
| 6 | BUK-ANA 204 | Gross Anatomy of the Thorax, Abdomen & Pelvis | 3 | C | 30 | 45 |
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|  |  | **Total Credits Added** | **10** |  |  |  |
|  |  | **Total Credits per Session** | **35** |  |  |  |

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| **300 Level** | |  |  |  |  |  |
| **S/N** | **Course Code** | **Course Title** | **Units** | **Status** | **LH** | **PH** |
| 1 | BUK-PIO 311 | Neurophysiology III (Motor System) | 3 | C | 30 | 45 |
| 2 | BUK-PIO 313 | Neurophysiology IV (Integrative) | 3 | C | 30 | 45 |
| 3 | BUK-PIO 315 | Laboratory Teaching and Instrumentation | 2 | C | - | 90 |
| 4 | BUK-ANA 302 | Neuro-anatomy | 2 | C | 30 |  |
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|  |  | **Total credits Added** | **10** |  |  |  |
|  |  | **Total Credits per Session** | **30** |  |  |  |

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| **400 Level** | |  |  |  |  |  |
| **S/N** | **Course Code** | **Course Title** | **Units** | **Status** | **LH** | **PH** |
| 1 | BUK-PIO 405 | Environmental Physiology | 2 | C | 30 | - |
| 2 | BUK-PIO 407 | Biostatistics for Health Sciences | 2 | C | 30 | - |
| 3 | BUK-PIO 409 | Pathophysiology Blood & Immunity | 2 | C | 30 | - |
| 4 | BUK-PIO 411 | Pathophysiology Gastrointestinal & biliary system | 2 | C | 30 | - |
| 5 | BUK-PIO 413 | Neuropathophysiology | 2 | C | 30 | - |
| 6 | BUK-PIO 415 | Pathophysiology Renals & Acid Base balance | 2 | C | 30 | - |
| 7 | BUK-PIO 417 | Pathophysiology Endocrine & Reproductive System | 2 | C | 30 | - |
| 8 | BUK-PIO 420 | Physiology in Desert Environment | 2 | C | 30 | - |
| 9 | BUK-GST 401 | Character Building Professionalism and Team Work in Health Care | 2 | C | 30 | - |
|  |  |  |  |  |  |  |
|  |  | **Total Credit Added** | **18** |  |  |  |
|  |  | **Total Credit Per session** | **30** |  |  |  |

**SUMMARY**

**Level 70% CCMAS credits 30% CCMAS credits added Total**

100 27 3 30

200 25 10 35

300 20 10 30

400 12 18 30

**Total credits provided by 70% CCMAS = 84**

**Total credits for 30% CCMAS addition = 41**

**Overall credits for the 4 year Program = 125**

**Institution:** Bayero University, Kano

**Faculty:** Basic Medical Sciences

**Department:** Human Physiology

**Programme:** BSc Physiology

**BUK-PIO 120 Introduction to Physiology (2 Units, Core, LH 30)**

**Senate approved relevance:**

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| Training of high-quality graduates who are highly skilled with excellent knowledge and high proficiency in understanding physiology and its applications to address local and global challenges related to human health. This is relevant in producing graduates from BUK who are able to understand what physiology is all about and how knowledge and skills in physiology are applied to provide explanations and solve problems in various sectors of life.  **Overview:** |
| The course Introduction to Physiology focuses on providing fresh 100L students with insight on Physiology as a discipline, its scope, branches and career prospects before they proceed to 200L where they start taking regular physiology courses.  The course will prepare the students to understand the relevance of physiology and roles a physiologist play in different sectors. This will motivate students to have focus, prepare and work hard towards achieving their career goal.  **Objectives:**  The objectives of this course are to:   1. Define Physiology and explain its significance 2. Outline the scope and branches of Physiology. 3. Discuss history of physiology and medicine. 4. Illustrate the path and career steps for becoming a physiologist 5. Outline the career prospects in physiology 6. Describe the roles played by physiologists in various sectors   **Learning Outcomes:**  At the end of the course, the students should be able to:   1. Define Physiology and 2. State the significance and relevance of physiology 3. Outline the scope and branches of Physiology. 4. Discuss the history of physiology and medicine. 5. List at least 3 major steps for becoming a physiologist 6. Outline the various career prospects in physiology. 7. Enumerate at least 2 roles a physiologist can play in health sector, academic institution, research centers, pharmaceutical and food industries, communication and media, aviation and space. |

**Course content:**

Definition of Physiology, significance of physiology, scope and branches of physiology, History of Physiology and medicine, path to becoming a full physiologist, career prospects in physiology, Role of physiologist in different sectors: Academic institutions and research centers, health sector, pharmaceutical and food industries, communication sector, aviation and space. Physiologist as an entrepreneur.

**Minimum Academic standards requirements:**

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| Standard physiology laboratory with an NUC-MAS required equipments. A lecture hall with capacity of 100 students equipped with a projector and available wireless network. |

**Institution:** Bayero University, Kano

**Faculty:** Basic Medical Sciences

**Department:** Human Physiology

**Program:** BSc Physiology

**BUK-PIO 221 General Principles and Cell Physiology (2 Units, Core, LH 30)**

**Senate-approved relevance:**

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| Training of high-quality graduates who are highly skilled with excellent knowledge and high proficiency in understanding brain functions and malfunctions is in agreement with BUK’s vision and mission to address local and global challenges related to human health. This course generally introduces the Physiology of the human body to the students. It serves as a background for further understanding the physiology of other systems in the body. Understanding the basics allow our students to do research and break new ground in all medical and related fields.  **Overview:**  This course introduces the basis of Physiology. It involves basic concepts like Homeostasis and how the body maintains homeostatic balance and control. It also introduces the cell, which is the building block of every organ in the human body.  The structure and functions of cells are explained here. |
| **Objectives**  The objectives of the course are:   1. To define Physiology and explain what it means. 2. To explain the concept of Homeostasis and how the body achieves it. 3. To introduce the cell, its structure, and functions. 4. To highlight how the cell survives and carries out important functions like cellular transport, signaling, etc. 5. To describe the mechanisms of transport across cell membrane, inter-cellular junctions and communication.   **Learning Outcomes:** At the end of the course, the students should be able to   1. Define and explain what Physiology means. 2. Explain the concept of homeostasis. 3. Explain how the human body maintains homeostatic balance and control. 4. Describe a cell and distinguish between prokaryotic and Eukaryotic cells. 5. State the cell organelles and their functions. 6. Illustrate the cellular components underlying mitotic and meiotic cell divisions. 7. Describe the components of a living animal cell and their functions. 8. Identify and describe major cell signaling mechanisms. 9. Relate concepts at the cellular, tissue, organ, and system levels of homeostasis. 10. Explain how biological structure is related to function for cells, organelles, and   macromolecules. |

**Course content:**

Introduction to Physiology and its place in Medicine. The basic organization of the human body. Cellular, tissue, organ, and systems levels of the body. Homeostasis is the concept of balance and control systems. Composition of cells, and their organics, cell membrane, and its functions. Transport mechanism across biological membranes. Basic cell signaling, hormone, paracrine, and autocrine membrane potential.

**Minimum Academic standards requirements:**

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| Standard physiology laboratory with NUC-MAS required equipment. A lecture hall with a capacity of at least 100 students equipped with a projector and available wireless network.  **Institution:** Bayero University Kano  **Faculty:** Basic Medical Sciences  **Department:** Human Physiology  **Program:** BSc Physiology  **BUK-PIO 223 Autonomic Nervous System & Skin Physiology (2 units, core LH 30)**  **Senate-approved relevance**  Training of high quality graduates with sufficient understanding of the Autonomic Nervous System (ANS) and skin physiology, how it regulates day to day changes in human body functions and how these changes could be facilitated, modified or inhibited by drugs, disease conditions and environmental factors. The graduate should possess sufficient skills in ANS & skin physiology that will enable him/her contribute towards solving problems in relation to human body function either in the health sector, food & agricultural industries, pharmacological companies or research institutes.  **Overview**  Autonomic Nervous System & Skin Physiology provide the foundation for understanding how these systems contribute in regulating human body function and also explains the basis of some health conditions resulting from alteration in the physiology of these systems.  The course also provide basic explanation on how knowledge of these systems could be used to formulate modalities for diagnosis, prevention and treatment of several health conditions.  **Objectives**  The objectives of the course are to:   1. Teach students on the origin, distribution and functions of the ANS 2. Illustrate the differences between sympathetic and parasympathetic nervous systems 3. Discuss and demonstrate the actions of the sympathetic and parasympathetic on different body systems 4. Describe the major neurotransmitters in ANS and the types of receptors involved. 5. Give an overview on Basal metabolic rate, respiratory quotient and specific dynamic action 6. Describe the structure of the skin, its blood flow and functions. 7. Describe the role of skin in body temperature control. 8. Discuss effects of exposure to cold and hot weather on the skin.   **Learning outcomes**  At the end of the course, students should be able to   1. Outline the origin, distribution and functions of the ANS 2. Identify at least 5 differences between sympathetic and parasympathetic nervous systems 3. Highlights on the actions of the sympathetic and parasympathetic on different body systems 4. List the 3 major neurotransmitters in ANS and receptors involved 5. Define Basal metabolic rate, respiratory quotient and specific dynamic action 6. Describe the structure of the skin, its blood flow and functions. 7. Highlight the major roles played by skin in regulation of body temperature 8. Enumerate at least 5 major effects of exposure to cold and hot weather on the skin.   **Course contents**  General overview of the ANS, origin distribution & function of the sympathetic and parasympathetic nervous systems. Comparison between sympathetic & parasympathetic nervous systems. Actions of sympathetic & parasympathetic on different body systems. Fight & flight reaction, Major neurotransmitters in ANS, types of autonomic receptors. Basal metabolic rate, respiratory quotient and specific dynamic action. Skin structure and blood flow, physiological functions of skin, temperature regulation & role of skin in body temperature control, effects of exposures to cold and hot weather.  **Minimum Academic Standard Requirement**  A lecture hall with capacity of 100 students equipped with projector. A standard Physiology laboratory with NUC-MAS required equipment. |

**Institution:** Bayero University, Kano

**Faculty:** Basic Medical Sciences

**Department:** Human Physiology

**Programme:** BSc Physiology

**BUK-PIO 225 Introduction to Laboratory Physiology II (2 Unit, Core: PH 90)**

**Senate approved relevance:**

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| Training of high-quality graduates who are highly skilled with excellent knowledge and high proficiency in understanding basic practical skills is in agreement with BUK’s vision and mission to address local and global challenges related to human health. Relevance is seen in physiology graduates from BUK able to understand the core concepts and basic principles of simple practical experiments in order to apply the knowledge to advance research in human physiology. The objectives of the course, learning outcomes, and contents are provided to address this need.  **Overview:** |
| The course physiology practical II deals with proper handling of laboratory equipment, dissecting laboratory animals and mounting isolated organs for specific experiment.  The course also teaches the students how to conduct practical and interpret results on cardiorespiratory, muscle and other specific organ systems individually or collectively as a group and empower them to understand laboratory management protocols and safety measures.  **Objectives:**  The objectives of this course are to:   1. Dissect laboratory animals and mount isolated organs for specific experiment 2. Measure blood pressure at different postural positions and interpret results correctly 3. Interpret ECG tracing and know the sinus rhythm and the cardiac axis 4. Measure different lung volumes and capacities and interpret results correctly 5. Demonstrate the use of a peak expiratory flow meter and know how to generate a reproducible result 6. Conduct practical on Spirometry and Vitalography and interpret Miller’s quadrant 7. Conduct pregnancy test correctly 8. Asses normal and abnormal visions 9. Identify color defects in human subjects   **Learning Outcomes:**  At the end of the course, the students should be able to:   1. Define the standing operating procedures in a laboratory setting. 2. Explain postural variations in blood pressure measurement. 3. Demonstrate different ECG waves, voltages and intervals. 4. Define sinus rhythm and demonstrate cardiac axis. 5. Explain different phases of a cardiac cycle. 6. Differentiate between obstructive and restrictive lung diseases. 7. Interpret urinalysis results correctly |

**Course content:**

Measurement of arterial blood pressure, Mean arterial pressure, Postural variation in blood pressure, Hypertension, Hypotension, Electrocardiography (ECG), Calibration of the tracing paper, Interpretation of the ECG waves; duration, voltage, intervals, rhythm, cardiac axis, Sinus rhythm, Arrhythmias, Cardiac cycle in a Toad/Frog, phases of the cardiac cycle, Peak Expiratory Flow Rate (PEFR) maneuver, Spirometric indices measurement; tidal volume, Inspiratory reserve volume, Expiratory reserve volume, Residual volume, Total lung capacity, Functional residual capacity, Inspiratory capacity, Vital capacity, Vitalography indices; Peak Expiratory Flow (PEF),Vital capacity (VC), Force Expiratory volume in one second (FEV1), Force Vital Capacity (FVC), Miller’s Prediction Quadrant, Demonstration on Specific gravity of urine, Urine microscopy, Urinalysis, Pregnancy test.

**Minimum Academic standards requirements:**

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| Standard physiology laboratory with an NUC-MAS required equipment. A lecture hall with capacity of 100 students equipped with a projector and available wireless network. |

**Institution:** Bayero University, Kano

**Faculty:** Basic Medical Sciences

**Department:** Human Physiology

**Programme:** BSc Physiology

**BUK-PIO 311 Neurophysiology III (3 Units, Core, LH 30, PH 45)**

**Senate approved relevance:**

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| Training of high-quality graduates who are highly skilled with excellent knowledge and high proficiency in understanding brain functions and malfunction is in agreement with BUK’s vision and mission to address local and global challenges related to human health. Relevance is seen in physiology graduates from BUK able to understand the reasons behind abnormal movements in disease conditions such as stroke, and to research into and brake new grounds in brain function, brain disease prevention and therapy. The objectives of the course, learning outcomes, and contents are provided to address this need.  **Overview:** |
| The course Neurophysiology III (Motor system) captures a very important brain function of controlling body movements. It deals with concepts that explain the mechanisms of voluntary and involuntary movements by skeletal muscles as dictated by the brain. This is necessary for a holistic understanding of body functions, particularly in the body’s interaction with the external environment, for example, in performing physical exercise.  The course will prepare the students to understand the reasons behind abnormal movements in disease conditions such as stroke. It will also equip the students with the necessary knowledge to research into and push the frontiers of knowledge in brain function, brain disease prevention and therapy.  **Objectives:**  The objectives of this course are to:   1. Describe the organization and major components of the motor control system. 2. Classify human reflexes based on their nature and level of integration. 3. Describe the stretch reflex and the basis of muscle tone and tendon jerks. 4. Discuss the major functions of the brain stem, basal ganglia and cerebellum. 5. Describe postural reflexes and vestibular system. 6. Demonstrate how to test for the integrity of the motor control system.   **Learning Outcomes:**  At the end of the course, the students should be able to:   1. List at least 10 parts of the motor control system and their role in the control of voluntary movement. 2. Distinguish the pyramidal and extrapyramidal systems. 3. Discuss the organisation and function of the corticospinal and corticobulbar tracts. 4. Distinguish the lesions of the upper motor neurons (UMN) and lower motor neurons (LMN). 5. Enumerate and explain at least 3 each of superficial, deep and visceral spinal reflexes and their importance 6. Illustrate how to elicit superficial and deep reflexes. 7. Explain the mechanism of cerebellar control of voluntary movement. 8. Explain the bases for the manifestation of diseases of the basal ganglia, and the pathophysiology of Parkinson disease. 9. Characterise at least 3 postural reflexes each among the spinal, medullary, midbrain and cortical reflexes. 10. Elucidate the effects of stimulation of semicircular canals such as nystagmus and vertigo. |

**Course content:**

The role of various brain areas in the mechanism of voluntary movement. Descending tracts – The pyramidal and extrapyramidal systems. The medial and lateral motor systems. Lesions of the upper motor neurons (UMN) and lower motor neurons (LMN). Peripheral reflexes, Central conditioned and unconditioned reflexes. Types of stretch reflex. The muscle spindle. Tendon jerks. Clonus. Lateral and medial brain stem motor pathways. Lesions of the brain stem motor pathway – decerebration and decortication. The basal ganglia. Diseases of the basal ganglia. Motor functions and diseases of cerebellum. Postural reflexes. Vestibular function and equilibrium.

**Minimum Academic standards requirements:**

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| Standard physiology laboratory with an NUC-MAS required equipments. A lecture hall with capacity of 100 students equipped with a projector and available wireless network. |

**Institution:** Bayero University, Kano

**Faculty:** Basic Medical Sciences

**Department:** Human Physiology

**Programme:** BSc Physiology

**BUK-PIO 313 Neurophysiology IV (3 Units, Core, LH 30, PH 45)**

**Senate approved relevance:**

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| Training of high-quality graduates who are highly skilled with excellent knowledge and high proficiency in understanding brain functions and malfunction is in agreement with BUK’s vision and mission to address local and global challenges related to human health. Relevance is seen in physiology graduates from BUK able to understand the abnormalities such as the ones seen in dementia and neurodegenerative diseases, and to research into and brake new grounds in brain function, brain disease prevention and therapy. The objectives of the course, learning outcomes, and contents are provided to address this need.  **Overview:** |
| The course Neurophysiology IV (Integrative nervous system) deals with integrative centers of the brain, which serve as the site for processing internal and external stimuli to produce brain’s own response to them. Appropriate brain response is necessary for maintaining the constancy of the internal environment (homeostasis), an essential requirement for life. Students will be equipped with the knowledge to understand the basis of human behaviors such as feeding, emotions, sleep, memory and speech.  The course will prepare the students to understand the reasons behind the abnormalities such as the ones seen in dementia and neurodegenerative diseases. It will also equip the students with the necessary knowledge to research into and push the frontiers of knowledge in brain health, brain disease prevention and therapy.  **Objectives:**  The objectives of this course are to:   1. Describe the hypothalamus, its functions and manifestations of their disturbances. 2. Describe reticular formation and the ascending reticular activating system and their functions. 3. Describe the neural connections and functions of the thalamus, and its malfunctions associated with thalamic syndrome. 4. Describe the structural components, neural connections and functions of the limbic system. 5. Characterise the layers, topography and functions of cerebral cortex. 6. Discuss electrical activity of the brain and the electroencephalogram (EEG). 7. Describe the types, stages and mechanism of sleep and sleep/wake cycle. 8. Explain the different types, mechanisms and process/stages of memory. 9. Describe common forms of memory disturbances. 10. Explain the mechanism of speech and its disturbances.   **Learning Outcomes:**  At the end of the course, the students should be able to:   1. Define the major nuclear groups and neural connections of the hypothalamus. 2. Enumerate and explain at least 10 functions of the hypothalamus. 3. Identify at least 5 manifestations of lesions of the hypothalamus. 4. Define reticular formation, its functional divisions, neural connections and functions. 5. Enumerate the functions of the thalamus, and its malfunctions associated with thalamic syndrome. 6. Identify the structural components and neural connections of the limbic system. 7. Enumerate and explain at least 10 functions of the limbic system. 8. Characterise the cerebral cortex, its layers, topography and functions. 9. Demonstrate EEG wave types and how EEG can be used. 10. Describe at least five disorders of sleep. 11. Identify and distinguish two common forms of memory disturbances. 12. Explain the steps in the mechanism of speech and speech disturbances. |

**Course content:**

The integrative centres of the nervous system, hypothalamus, hypothalamic nuclei, neural connections of the hypothalamus, functions of the hypothalamus, manifestations of hypothalamic lesions, reticular formation, Functional Divisions of the RF, Neural Connections of the RF, The ascending reticular activating system (ARAS), Functions of the ARAS, Thalamus, Anatomical Divisions of the Thalamus, Functional Divisions of Thalamic Nuclei, Functions of the Thalamus, Thalamic Syndrome, the limbic system, Neural Connections of Limbic System, Functions of the Limbic System, Reward and punishment centers, electrical activity of the brain, types of recorded potentials, types of spontaneous potentials, clinical uses of EEG, EEG features of epilepsy, types of evoked potentials, sleep, types of sleep, stages of NREM sleep, theories/mechanisms of sleep, sleep centres, jet lag, Physiological Changes During Sleep, Higher Nervous Functions, learning and memory, types of learning, intelligence, types of memory, memory consolidation and encoding, memory disturbances, speech, centres of speech, mechanism of speech, speech disorders,

**Minimum Academic standards requirements:**

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| Standard physiology laboratory with an NUC-MAS required equipments. A lecture hall with capacity of 100 students equipped with a projector and available wireless network. |

**Institution**: Bayero University, Kano

**Faculty**: Basic Medical Sciences

**Department**: Human Physiology

**Programme**: BSc Physiology

**BUK-PIO 315 Laboratory Teaching and Instrumentation (2 Units, Core: PH 90)**

**Senate approved relevance**:

Training of high-quality graduates who are highly skilled with excellent knowledge and high proficiency in understanding basic practical skills is in agreement with BUK’s vision and mission to address local and global challenges related to human health. Relevance is seen in physiology graduates from BUK able to identify different laboratory equipment, their uses and proper methods of maintenance in order to advance research in human physiology. The objectives of the course, learning outcomes, and contents are provided to address this need.

**Overview**:

The course Laboratory Teaching and Instrumentation deals with proper handling of laboratory equipment, maintenance and safe keeping of all laboratory tools in order to produce reliable results during any experimental procedure.

The course also teaches the students how to safely use, clean, store and standardize equipment to allow reproducibility of experimental results. It also teaches the students the general laboratory management protocols and safety measures.

**Objectives**:

The objectives of this course are:

1. To identify instruments, their components and uses

2. To properly handle all laboratory equipment

3. To safely maintain and store laboratory instrument after use

4. Describe the specific uses of various components of instrument used in physiology lab.

5. Discuss the precautions to be taken when using physiology laboratory instrument.

**Learning Outcomes**:

At the end of the course, the students should be able to:

1. Define the standing operating procedures in a laboratory setting.

2. Describe different methods of maintaining the laboratory equipment

3. Identify specific components of a given instrument and their uses

4. List at list 4 stages involve in safe keeping and maintaining a laboratory instrument.

5. Enumerate at least 3 precautions to be taken while conducting specific physiology practical.

**Course content**:

Identification of instruments, their different components and uses in relation to specific laboratory practical conducted in introduction to laboratory I and II.

**Minimum Academic standards requirements**:

Standard physiology laboratory with an NUC-MAS required equipment. A lecture hall with capacity of 100 students equipped with a projector and available wireless network.

**Institution:** Bayero University, Kano

**Faculty:** Basic Medical Sciences

**Department:** Human Physiology

**Program:** BSc Physiology

**BUK-PIO 405 Environmental Physiology (2 Units, Core, LH 30)**

**Senate-approved relevance:**

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| Training of high-quality graduates who are highly skilled with excellent knowledge and high proficiency in understanding brain functions and malfunctions is in agreement with BUK’s vision and mission to address local and global challenges related to human health. The environment is a common habitat where humans and other animals live and relate with one another. In the process, humans are exposed to various climatic, weather, natural, and artificial conditions far from normal. In this course, the physiological adaptations of the body to these environmental changes are discussed. This will equip our students for the challenges ahead.  **Overview:**  Here environmental factors (physical, chemical, biological, etc.) of physiologic significance and the body’s adaptations to the changes in the environmental conditions are discussed.  The course describes how human body relates to its environment and environmental factors (Physical, Biological, Chemical and Psychological) that can influence human body function. |
| **Objectives:** The objectives of this course are to:   1. Understand the environment and how humans interact with various environmental conditions and with other animals in a normal natural environment. 2. Understand the adaptations by the body in an abnormal environment or condition. 3. Know the organs and systems most vulnerable to damage in these abnormal environmental conditions and how they adjust their functions to maintain homeostasis. 4. Discuss environmental factors, their classification and effects on human body functions. 5. Discuss the human behavioral adaptation to adverse environmental conditions.   **Learning Outcomes:** At the end of the course, the students should be able to:   1. Explain the normal homeostatic functions in a normal environment. 2. Explain how the body adjusts its functions to maintain homeostasis in an abnormal environment/ condition. 3. Explain how these vulnerable organs and systems adjust their functions in order to maintain homeostasis. 4. Classify environmental factors that can affect human body functions 5. List at list 5 behavioral adaptations to adverse environmental conditions. |

**Course content:**

Concept of the environment: what constitutes an environment for humans and animals; Biometeriology: weather, season, climate; Environmental factors of physiologic significance (physical, chemical, biological, etc.) and their sources, means/mechanisms of interaction between the environment and human body; Environment, stressor, stress, and adaptation; Physiological regulation and response to stress: neuroendocrine stress mechanism, stress, and immunity; Physiological response in special environmental conditions: high altitude, deep sea diving, flying, desert, harmattan; biological and chemical warfare; Thermal biology: thermogenesis, body temperature, and thermoregulation – heat gain (environment, metabolism), heat loss (sensible, insensible), physiological adaptation in a hot and cold environment, thermotolerance, heat-shock proteins; sunstroke and frostbite.

Xenobiotic (drugs, environmental toxins) metabolism, endocrine disruptors, free radicals, and oxidative stress, the impact of xenobiotics on the human body;

Impact of environmental/climate changes on specific organs/systems (kidney, brain, endocrine glands, liver, skin, immunity, adaptation and response to stress, etc); Sanitation and health;

**Minimum Academic standards requirements:**

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| Standard physiology laboratory with NUC-MAS required equipment. A lecture hall with a capacity of at least 100 students equipped with a projector and available wireless network. |

**Institution:** Bayero University, Kano

**Faculty:** Basic Medical Sciences

**Department:** Human Physiology

**Program:** BSc Physiology

**BUK-PIO 407: Biostatistics for Health Sciences (2 Units Core: LH 30)**

**Senate-approved relevance**

Training of high quality graduates who possesses the requisite analytical skills to conduct cutting edge research that will address local and global health challenges in line with the vision and mission of Bayero University. This will require exposure of would be graduates to modern analytical skills including statistical software, data visualization techniques, and data based decision making.

**Overview**

Biostatistics for health sciences is intended to equip graduates with analytical skills that are necessary for evidence-based decision making in health sciences.

Recent advances in health sciences have made data visualization, data processing, and use of statistical software essential for professionals and scientists in the field.

**Objectives**

The objectives of the course are to:

1. Expose students to use of modern statistical software,
2. Data visualization techniques,
3. Equip students with evidence based decision making skills,
4. Teach students on different methods of statistical analysis and hypothesis testing
5. Introduce students to practical application of data processing techniques to analyze given data set.

**Learning outcomes**

At the end of the lectures in this course, students should be able to:

1. Import data onto SPPS software,
2. Use Microsoft Excel to perform simple statistical data analysis,
3. Define and classify variables,
4. Describe numerical and graphical methods of data presentation,
5. Discuss measures of central tendency and dispersion,
6. Describe central limit theorem,
7. Conduct statistical analysis on real data using various statistical techniques,
8. Interpret results of data analysis from various statistical techniques.

**Course contents**

Introduction, Definition and classification of variable, scales of measurement, Numerical and graphical methods of data presentation (Data visualization techniques), Measures of central tendency and dispersion, Normal distribution, Sampling distribution of mean, Sampling distribution of difference between means, Sampling distribution of proportion, Sampling distribution of difference between proportions, Central limit theorem, Probability theorem, Confidence intervals: uses, computation, and interpretation, Parametric and non-parametric methods of statistical analysis, Hypothesis testing, P value: computation and interpretation, Use of SPSS and Microsoft Excel to perform statistical analysis.

**Minimum Academic standards requirements:**

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| Standard physiology laboratory with NUC-MAS required equipment. A lecture hall with a capacity of at least 100 students equipped with a projector and available wireless network. |

**Institution:** Bayero University, Kano

**Faculty:** Basic Medical Sciences

**Department:** Human Physiology

**Program:**  BSc Physiology

**BUK-PIO 409 Pathophysiology of Blood and Immunity (2 Units, Core, LH 30)**

**Senate-approved relevance:**

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| Training of high-quality graduates who are highly skilled with excellent knowledge and high proficiency in understanding brain functions and malfunctions is in agreement with BUK’s vision and mission to address local and global challenges related to human health. In this course, blood and immunity physiology will be reviewed with emphasis on the pathophysiology related to important conditions like anemia, blood transfusion, bleeding, and Immunological disorders. This course will further link Blood physiology and pathology. Ultimately, students will be able to use the knowledge gained in their research and work environment.  **Overview:**  This course involves a review of the Red Blood Cell (RBC) structure, hemoglobin synthesis, RBC production, lifespan, and destruction. Explanation on Anemia and Polycythemia, Blood grouping, and blood transfusion disorders.  A general overview of white blood cells and their roles in innate and adaptive immunity and also immunological disorders with an emphasis on HIV/AIDS and Immunization. |
| **Objectives:** The objectives of this course are to:   1. Relate the structure, functions, and characteristics of RBC with conditions like Anemia, polycythemia, Blood grouping, and blood transfusion reactions. 2. Review White blood cell functions in relation to Immunity, Immune disorders, and Immunization. 3. Relate the structure, functions, and characteristics of platelets with the concept of Hemostasis and related disorders. 4. Discuss specific autoimmune disorders. 5. Explain the Pathophysiology of HIV/AIDS   **Learning Outcomes:** At the end of the course, the students should be able to:   1. Explain conditions like Anemia, and polycythemia with suitable examples. 2. Describe how blood grouping is done and highlight some blood transfusion reactions. 3. Explain the roles of WBC in immunity, health, and disease conditions. 4. Discuss the common auto immune diseases 5. Explain how the structure of platelets relates to their hemostatic functions in health and disease conditions. |

**Course content:**

Red Blood Cell (RBC) structure and hemoglobin synthesis, RBC production, lifespan, and destruction. Anemia; Blood loss anemia, Hemoglobinopathies (sickle cell diseases), thalassemias, Iron deficiency anemia, Megaloblastic anemia, and Aplastic anemia. Polycythemia. Blood grouping, blood transfusion reactions, and Hemolytic disease of the newborn. Hyperbilirubinemia in neonates, and kernicterus.

Components of hemostasis, clot formation, and dissolution. Thrombocytosis and thrombocytopenia. Hypercoagulability states and thrombosis. Bleeding disorders; Hemophilia and Purpura. Disseminated intravascular coagulation (DIC)

Overview of Leukocytes and lymphoid tissues. Neutropenia, leukemia, lymphoma, plasma cell dyscrasias, and multiple myeloma. Overview of innate and adaptive immunity. Immuno-deficiencies; inborn and acquired (e.g. AIDS). Autoimmune Diseases, Allergy, and Hypersensitivity Reactions. Post-transplantation reaction. Immuno-proliferative diseases. Immunization, cytokines, and interleukins.

**Minimum Academic standards requirements:**

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| Standard physiology laboratory with NUC-MAS required equipment. A lecture hall with a capacity of at least 100 students equipped with a projector and available wireless network. |

**Institution:** Bayero University, Kano

**Faculty:** Basic Medical Sciences

**Department:** Human Physiology

**Program:** BSc Physiology

**BUK-PIO 411 Pathophysiology Gastrointestinal & biliary System (2 Units Core: LH 30)**

**Senate-approved relevance**

Training of high quality graduates who are skillful and knowledgeable of the physiological basis of major gastrointestinal conditions. The graduate should have sufficient understanding of gastro-intestinal physiology to enable him contributes towards solving societal problems that are linked to major gastrointestinal conditions either in health, academic, or research institutions. This is in line with Bayero University’s core value of integration and active learning. Health conditions affecting the gastrointestinal system have seen an astronomical rise in recent years, an integrative and active learning approach that will empower graduates with skills and knowledge to conduct cutting edge research in gastrointestinal physiology and also produce competent manpower in health disciplines is therefore required to address this.

**Overview**

Gastrointestinal physiology provides the foundation for understanding the basis of major health conditions affecting the system. This knowledge is required in preventing, diagnosing, and treating health conditions affecting the system by health professionals. It also equips graduates with necessary skills to conduct cutting edge research in the field that could change the fate of many people living with gastrointestinal tract conditions.

Having learned about general aspects of gastrointestinal physiology, students will now be exposed topics that will provide integration, better understanding of pathophysiological basis of gastrointestinal disorders and current research areas in the subject.

**Objectives**

The objectives of the course are to:

1. Revise physiologic anatomy of the GIT
2. Integrate knowledge of gastrointestinal tract physiology with other organ systems,
3. Introduce students to physiological basis of some gastrointestinal tract disorders.
4. Expose students to current research areas in gastrointestinal tract physiology.

**Learning outcomes**

On completion of this course, students should be able to:

1. Describe the physiologic anatomy of the gastrointestinal tract,
2. Relates gastrointestinal tract function with that of other organ systems in the human body,
3. Describe the mechanism of secretion of HCL acid by gastric parietal cells, the potential therapeutic targets, associated disorders and research interests in the topic.
4. Discuss the basic pathophysiology of dyspepsia and peptic ulcer disease
5. Describe the pathophysiology of vomiting, diarrhea and mal-absorption.
6. Discuss disorders of bile secretion and pathophysiology of jaundice.

**Course contents**

Overview of physiologic anatomy of the gastro-intestinal tract, Basic electrical rhythm of the gastro-intestinal tract, Gastric acid secretion and abnormalities, Dyspepsia and peptic ulcer disease, Pathophysiology of vomiting, diarrhea and mal absorption. Nutritional disorders related to GIT. Bile secretion and abnormalities, jaundice.

**Minimum Academic standards requirements:**

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| Standard physiology laboratory with NUC-MAS required equipment. A lecture hall with a capacity of at least 100 students equipped with a projector and available wireless network. |

**Institution:** Bayero University, Kano

**Faculty:** Basic Medical Sciences

**Department:** Human Physiology

**Programme:** BSc Physiology

**BUK-PIO 413 Neuropathophysiology (2 Units, Core, LH 30)**

**Senate approved relevance:**

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| Training of high-quality graduates who are highly skilled with excellent knowledge and high proficiency in understanding brain functions and malfunction is in agreement with BUK’s vision and mission to address local and global challenges related to human health. Relevance is seen in physiology graduates from BUK able to understand the abnormalities such as the ones seen peripheral neuropathy and pain, and to research into and brake new grounds in brain function, brain disease prevention and therapy. The objectives of the course, learning outcomes, and contents are provided to address this need.  **Overview:** |
| The course neuropathophysiology focuses on derangements in functions of the nervous system. These derangements form the basis of symptoms and signs seen in the manifestations of neurological diseases.  The course will prepare the students to understand the reasons behind the abnormalities such as the ones seen in peripheral neuropathy. It will also equip the students with the necessary knowledge to research into and push the frontiers of knowledge in brain health, brain disease prevention and therapy.  **Objectives:**  The objectives of this course are to:   1. Describe the types and pathways of pain and the body analgesia system. 2. Enumerate and explain briefly some common disease conditions associated with sensory disturbances. 3. Describe the features and causes of peripheral neuropathy. 4. Describe the pathophysiological features of *tabes dorsalis*. 5. Discuss the pathophysiological basis behind the manifestations of the UMNLs and LMNLs. 6. Describe the features of complete transection of the spinal cord and its stages. 7. Describe the pathophysiology of some common neurodegenerative diseases. 8. Discuss the mechanisms and disturbances of memory. 9. Discuu sleep, EEG waves anf their uses.   **Learning Outcomes:**  At the end of the course, the students should be able to:   1. Enumerate at least 3 common sensory disturbances. 2. Itemize the manifestations and at least 3 causes of peripheral neuropathy. 3. Explain the pathophysiological features behind the manifestations of *tabes dorsalis*. 4. Explain what are UMNLs and LMNLs and distinguish between their manifestations 5. Describe the 3 stages that follow complete transection of the spinal cord. 6. Enumerate at least 3 neurodegenerative diseases and their pathophysiology. 7. Describe the types, stages and EEG features of sleep. 8. Describe the types, mechanism and disturbances of memory. 9. Mention at least 3 memory disturbances and their mechanisms. |

**Course content:**

Pain and analgesia system; common diseases associated with sensory disturbances (syringomyelia, *tabes dorsalis*, peripheral neuropathy, subacute combined degeneration of the spinal cord): manifestations and causes of peripheral neuropathy, pathophysiology of *tabes dorsalis*; UMN and LMN lesions, transaction of the spinal cord and its stages, hemisection of the spinal cord; neurodegenerative diseases; mechanisms and disturbances of memory; sleep, wakefulness and EEG.

**Minimum Academic standards requirements:**

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| Standard physiology laboratory with an NUC-MAS required equipments. A lecture hall with capacity of 100 students equipped with a projector and available wireless network. |

**Institution:** Bayero University, Kano

**Faculty:** Basic Medical Sciences

**Department:** Human Physiology

**Programme:** BSc Physiology

**BUK-PIO 415 Pathophysiology, Renal and Acid Base Balance (2 Units, Core: LH 30)**

**Senate approved relevance:**

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| Training of high-quality graduates who are highly skilled with excellent knowledge and high proficiency in understanding basic practical skills is in agreement with BUK’s vision and mission to address local and global challenges related to human health. Relevance is seen in physiology graduates from BUK able to identify pathophysiology of common renal disorders in order to link the physiological process with clinical manifestations of these disorders. The objectives of the course, learning outcomes, and contents are provided to address this need.  **Overview:** |
| The course Laboratory Teaching and Instrumentation deals with proper handling of laboratory equipment, maintenance and safe keeping of all laboratory tools in order to produce reliable results during any experimental procedure.  The course also teaches the students how to safely use, clean, store and standardize equipment to allow reproducibility of experimental results. It also teaches the students the general laboratory management protocols and safety measures.  **Objectives:**  The objectives of this course are:   1. To describe the basic anatomy of the Bowman’s capsule, loop of Henle and the collecting ducts 2. To discuss the arrangement of the juxtaglomerular cells, macula densa and afferent and efferent arterioles 3. To enumerate the steps involved in hemodialysis 4. To explain the role of kidney in Acid Base Balance 5. Discuss metabolic acidosis and alkalosis   **Learning Outcomes:**  At the end of the course, the students should be able to:   1. To list 10 functions of Kidney 2. Explain the glomerular and tubular interaction in regulating fluid and electrolyte balance 3. Discuss the role of kidney in Acid Base Balance 4. Describe the Pathophysiology of metabolic acidosis and alkalosis 5. Explain the principles of hemodialysis 6. Describe the pathophysiology of renal failure |

**Course content:**

Glomerulotubular balance, Tubuloglomerular balance, Juxtaglomerular apparatus, Principles of hemodialysis, Nephrotic syndrome, glomerulo-nephritis, renal failure, Renal hypertension, relationship between high blood pressure and renal disease, Metabolic Acidosis and Alkalosis.

**Minimum Academic standards requirements:**

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| Standard physiology laboratory with an NUC-MAS required equipment. A lecture hall with capacity of 100 students equipped with a projector and available wireless network. |

**Institution**: Bayero University, Kano

**Faculty**: Basic Medical Sciences

**Department**: Human Physiology

**Programme**: BSc Physiology

**BUK-PIO 417 Pathophysiology Endocrine & Reproductive System (2 Units, Core, LH 30)**

**Senate approved relevance**:

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| Training of high-quality graduates who are highly skilled with excellent knowledge and high proficiency in understanding the functions and malfunctions of endocrine and reproductive system is in agreement with BUK’s vision and mission to address local and global challenges related to human health. Relevance is seen in physiology graduates from BUK able to understand the pathophysiology behind endocrine and reproductive disorders and to research into and brake new grounds for disease prevention and therapy. The objectives of the course, learning outcomes, and contents are provided to address this need.  **Overview**: |
| The course Patho-Physiology Endocrine and reproductive system picks essential topics from endocrine and reproductive physiology in order to emphasize the knowledge on these body systems and the pathophysiology of disorders related to these systems.  The course will also equip the students with the necessary knowledge to research into and push the frontiers of knowledge in endocrine and reproductive health, disease prevention and therapy.  **Objectives:**  The objectives of this course are to:   1. Explain the commonalities and differences between neural, endocrine and paracrine control. 2. Revise the mechanisms of actions of different classes of hormones 3. Elucidate the hypothalamo-pituitary-adrenal axis. 4. Discuss the pathophysiology and manifestations of hyper- and hypo-activity of anterior pituitary gland. 5. Describe the abnormalities of posterior pituitary gland. 6. Describe the pathophysiology of cushion syndrome 7. Discuss the pathophysiology behind diabetes mellitus and its manifestation 8. Describe the hormonal control and abnormalities of spermatogenesis 9. Explain the hormonal control and disorders of menstruation, ovarian and menstrual cycle. 10. Highlight on role of hormones in normal pregnancy and lactation and related disorders.   **Learning Outcomes:**  At the end of the course, the students should be able to:   1. Explain the mechanisms of actions of different classes of hormones 2. Understand the hypothalamo-pituitary-adrenal axis. 3. Discuss the pathophysiology and manifestations of hyper- and hypo-activity of anterior pituitary gland. 4. Outline the link between cushion syndrome and its manifestations 5. Illustrate the linkage between hyper-aldosteronism and fluid and electrolyte disturbance. 6. Understand the pathophysiology behind diabetes mellitus and its manifestation 7. Describe the hormonal control and abnormalities of spermatogenesis 8. Explain the pathophysiology behind abnormalities of menstruation and ovulation. 9. Describe the role of hormones in normal pregnancy and lactation and related disorders. |

**Course content:**

Overview of pituitary gland, Growth hormone functions and abnormalities; pathophysiology behind gigantism and acromegaly, hyperthyroidism and the pathophysiology behind its manifestation. Pathophysiology of diabetes insipidus. Hyperactivity of adrenal cortex, pathophysiology behind cushion syndrome and its manifestations, pathophysiology of hyper aldosteronism. Pathophysiology behind Diabetes mellitus. Hormonal control & abnormalities of spermatogenesis, hormonal control and disorders of ovarian and menstrual cycles. Hormonal control of pregnancy and lactation. Abnormalities of lactation.

**Minimum Academic standards requirements:**

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| Standard physiology laboratory with an NUC-MAS required equipments. A lecture hall with capacity of 100 students equipped with a projector and available wireless network. |

**Institution:** Bayero University, Kano

**Faculty:** Basic Medical Sciences

**Department:** Human Physiology

**Programme:** BSc Physiology

**BUK-PIO 420 Physiology in Desert Environment (2 Units, Core, LH 30)**

**Senate approved relevance:**

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| Training of high-quality graduates who are highly skilled with excellent knowledge and high proficiency in understanding the effects of extreme temperatures, particularly as found in desert environment is in agreement with BUK’s vision and mission to address local and global challenges related to the effects of climate change and desertification on human health. Relevance is seen in physiology graduates from BUK able to understand the challenges posed on human body by high environmental temperatures and other adverse conditions found in desert environment that continues to encroach and damage this part of the country. This is important for health promotion and disease prevention. The objectives of the course, learning outcomes, and contents are provided to address this need.  **Overview:** |
| The course Physiology in Desert Environment deals with extreme environmental conditions, especially those found in desert environment and their effect on body functions. It also touches on traditional practices to adapt to excessive heat, and possible detrimental effects. Some extreme internal environment such as fasting and starvation are considered. Students will be equipped with the knowledge to understand the basis of human behaviors such as feeding, emotions, sleep, memory and speech.  The course will prepare the students to understand how the body responds to extreme changes in atmospheric conditions. It will also equip the students with the necessary knowledge to research into and push the frontiers of knowledge on the interaction between climate change and human health.  **Objectives:**  The objectives of this course are to:   1. Describe extreme environments (desert, polar regions) in terms of extreme temperatures and other atmospheric conditions. 2. Discuss climate change and its implications on local environment and desertification. 3. Discuss adjustments in nutrition and metabolism in hot and cold environments. 4. Discuss the physiology of food and water deprivation (fasting and starvation). 5. Describe water/fluid homeostasis in extreme desert conditions. 6. Discuss thermoregulation, hypo- and hyperthermia and heat stroke. 7. Discuss behavioural adaptation strategies in extreme hot conditions. 8. Describe systemic physiological and pathpohysiological responses in extreme hot environments. 9. Describe the peculiarities of exercise and sports in desert conditions. 10. Discuss disorders associated/provoked/exacerbated by exposure to extreme hot environment.   **Learning Outcomes:**  At the end of the course, the students should be able to:   1. Define extreme hot (desert) and cold (polar) environments. 2. Characterize environmental conditions of the desert. 3. Give examples of climate change and how its relationship with desertification. 4. Mention how nutrition and metabolism are adjusted in hot and cold environments. 5. Itemize the metabolic changes during prolonged food and water deprivation (fasting and starvation). 6. Highlight important nuances regarding water/fluid homeostasis in extreme desert conditions. 7. Discuss on risk factors and mechanisms of hypo- and hyperthermia and heat stroke in desert environment. 8. Itemize at least 5 local traditional practices in fighting heat, their mechanisms and possible detrimental effects. 9. Itemize at least 10 systemic physiological and pathophysiological responses to extreme hot environments. 10. Itemize at least 10 important peculiarities to consider during exercise and sports in desert conditions. 11. Itemize 5 disorders associated/provoked/exacerbated by exposure to extreme hot or cold environments. |

**Course content:**

Definition of extreme environment (extremes of temperatures); climate change, desertification and erosion, extreme desert environmental conditions; nutrition and metabolism in hot and cold environments, physiology of food and water deprivation (fasting and starvation); water/fluid homeostasis in extreme desert conditions, thermoregulation and heat stroke, traditional behavioural adaptation strategies in extreme hot conditions, systemic physiological and pathpohysiological responses in extreme hot environments, benefits and detriments of exposure to extreme hot environment, exercise and sports in desert conditions, disorders associated/provoked/exercerbated by exposure to extreme hot or cold environment,

**Minimum Academic standards requirements:**

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| Standard physiology laboratory with an NUC-MAS required equipments. A lecture hall with capacity of 100 students equipped with a projector and available wireless network. |

**Institution:** Bayero University, Kano

**Faculty:** Faculty of Basic Medical Sciences

**Department:** Department of Human Physiology

**Programme:** BSc Physiology

**BUK-GST 401 Character Building, Professionalism and Team Work in Healthcare.**

**Senate approved relevance to mission and strategic goals of the university:**

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| This course is designed in line with the vision and mission of the Bayero University, Kano to produce graduates that are highly qualified with excellent knowledge and high proficiency in skills capable of delivering excellent, respectful, empathic and culturally attuned healthcare services to society devoid of exploitation. The character, professional outlook as well as the work ethics of the graduates would be sharpened by the course to achieve this goal.  This course would further strengthen the graduates to work as a team in the health sector to achieve the desired objectives. It should encourage individual members’ professional development through appropriate mentorship and character building. The course will discourage the development of the barrage of emerging 21st century societal vices inclusive of, but not limited to drug and substance abuse. In essence the course would entrench the humane and professional aspects of the graduates as they serve the society equipped with knowledge and skills consistent with the vision and mission of the Bayero University, Kano.  **Overview:** |
| A major life expectation of the graduates from this programme is the deployment of their services to a variety of clients including students, colleagues and vulnerable groups in the Nigerian milieu and beyond. Graduates of this programme, working with others, would also be expected to research into, propose, design and implement programmes, working with others, would research into, propose, design and implement policies and legislations in many areas of need to enhance better societal outcomes in health and education.  Accordingly, this course would prepare graduates from this programme to deploy their expertise in knowledge, skills, professionalism and work ethics in a culturally accepted manner, in the various services they offer to a variety of clients in healthcare, academia and other fields of endeavor.  In addition, the students will be exposed to communication and counselling skills that are consistent with the various cultural milieus of practice that they are likely to encounter. Furthermore, it will enhance the collaborative nature of the work they would be involved in post-qualification. The students would be exposed to nature of successful team work, appropriate leadership styles, mentorship and character building skills and ways of refraining from societal vices such as drug and substance abuse.  **Objectives:**  The objectives of this course are to:   1. Describe various types of leadership styles applicable in clinical and academic settings. 2. Equip students with various skills of mentoring in clinical and academic settings. 3. Enumerate the characteristics of a successful team in achieving team objectives. 4. Describe the roles of professionalism in various fields of healthcare delivery. 5. Describe the principles and practice of psychology in healthcare settings. 6. Describe the principles of effective communication for the patients, healthcare team and the general public. 7. Discuss the essentials of successful character building for various personality traits. 8. Describe the general principles of ethics in medicine and health care research. 9. Identify the risk factors and preventive strategies for substance abuse.   **Learning Outcomes:**  At the end of the course, the students should be able to:   1. Identify at least three common types of leadership styles with two merits and demerits of each. 2. Discuss any two theories of leadership that could be applied in healthcare. 3. Identify at least three mentoring skills needed by all healthcare professionals. 4. Enumerate four attributes of a successful team. 5. Mention five circumstances where professionalism is required to meet client needs and expectations. 6. Discuss human behaviour and its application in health counselling. 7. Conduct three counselling sessions in three recognised clinical scenarios. 8. To demonstrate effective communication skills in dealing with clients, and the general public in recognised clinical scenario. 9. Enumerate four forms of character traits each for three personality types. 10. Mention four ethical challenges and four appropriate ethical principles to address them in a clinical practice and research. 11. Enumerate four preventive strategies to address three forms of drug abuse |

**Course content:**

Concept of leadership and meaning of leaders. Theories, principles and styles of leadership. Methods of developing team wisdom. Team work as a personal skill. Creating powerful partnership in mentoring. Mentoring and mentoring skills: Stages of formal mentoring relationships. Introduction to professionalism in healthcare practice. Communication and interpersonal skills.Introduction to general psychology and medical psychology.

Counselling psychology in applied psychology. Definition, principles and application of effective communication skills in healthcare settings. The principles of Character Building and types personality traits. Philosophical concepts of Character Building. Code of ethics and principles for various health professions. Case scenarios in health care and their ethical implications. Introduction to psychoactive substances and their clinical manifestations. Cultural perspectives and management strategies in psychoactive substance abuse.

**Minimum Academic standards requirements:**

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| A lecture hall with a minimum seating capacity of fifty students with a projector and flip chart. |
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