**Bayero University Kano**

**Faculty of Basic Medical Sciences**

**Department of Biochemistry**

**B Sc. Human Nutrition and Dietetics**

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

**100 Level**

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| Course Code | Course Title | Unit(s) | Status | LH | PH |
| BUK-NUT 102 | Contemporary Health Issues | 2 | R | 45 | - |
|  | Total | 2 |  |  |  |

**200 Level**

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| Course Code | Course Title | Unit(s) | Status | LH | PH |
| BUK-BCH 202 | General Biochemistry II | 2 | C | 30 | - |
| BUK-CHM 211 | Organic Chemistry I | 2 | C | 30 | - |
| BUK-NUT 204 | Biorisk Management and Nutritional Data Handling | 2 | C | 15 | 45 |
| BUK-NUT 205 | Fundamentals of Nutrition | 2 | C | 30 | - |
| BUK-PIO 216 | Gastrointestinal Physiology | 2 | C | 30 | - |
| BUK-COM 205 | Introduction to Medical Psychology | 1 | R | 15 | - |
|  | Total | 11 |  |  |  |

**300 Level**

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| Course Code | Course Title | Unit(s) | Status | LH | PH |
| BUK-BCH 301 | General Metabolism | 3 | C | 45 | - |
| BUK-NUT 306 | Nutritional Microbiology | 3 | C | 30 | 45 |
| BUK-NUT 307 | Agricultural Food Products | 3 | C | 45 | - |
|  | Total | 9 |  |  |  |

**400 Level**

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| Course Code | Course Title | Unit(s) | Status | LH | PH |
| BUK-GST 401 | Character Building, Professionalism and Team Work in Healthcare | 3 | C | 45 | - |
| BUK-NUT 408 | Food Safety and Hygiene | 3 | C | 45 | - |
| BUK-NUT 409 | Institutional Food Production and Service Management | 3 | C | 45 | - |
|  | Total | 9 |  |  |  |

**500 Level**

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| Course Code | Course Title | Unit(s) | Status | LH | PH |
| BUK-NUT 508 | Nutrition in Emergencies | 3 | C | 45 | - |
| BUK-NUT 509 | Molecular Nutrition | 3 | C | 45 | - |
| BUK-NUT 510 | Nutritional Entrepreneurship | 3 | C | 30 | 45 |
| BUK-NUT 511 | Nutrition in Life Cycle | 2 | C | 30 | - |
|  | Total | 11 |  |  |  |

**Total Summary**

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| Levels | 70% Core CCMAS | | 30% Proposed CCMAS | | Total | |
| No. of Courses | Credits | No of Courses | Credits | No. of Courses | Credits |
| 100 | 17 | 29 | 01 | 02 | 18 | 31 |
| 200 | 10 | 20 | 06 | 11 | 16 | 31 |
| 300 | 08 | 21 | 03 | 09 | 10 | 30 |
| 400 | 08 | 21 | 03 | 09 | 11 | 30 |
| 500 | 08 | 19 | 04 | 11 | 12 | 30 |
| Total | 51 | 110 | 17 | 42 | 68 | 152 |
| **72%** | **28%** | **100%** |

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| **Bayero University, Kano (BUK)** | |  |
| **Faculty of Basic Medical Sciences** | |  |
| **Department of Biochemistry** | |  |
| **B Sc. Human Nutrition and Dietetics** | |  |
| **BUK-NUT 102: Contemporary Health Issues** | **(2 Units R: LH 45; PH -)** | |
| **Senate approved relevance**  This course is designed in line with the vision and mission of 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 scientific, nutritional, educational and healthcare services to society devoid of exploitation. The character, professional outlook as well as the works ethics of the graduates would be sharpened by the course to achieve this goal.  This course would further strengthen the graduate to work as a team with others in the scientific, educational, nutritional and health sectors to achieve desired set-out team objectives while at the same time encouraging individual members’ professional development through appropriate mentorship and character building that would discourage the development of the barrage of emerging 21st century societal character vices inclusive of, but not limited to drug and substance abuse. In essence this course would enshrine the humane and professional aspects of the graduates as they serve society armed with knowledge and skills consistent with the vision and mission of Bayero University Kano. | | |
| **Overview**  "Contemporary Health Issues" is a first-year course in the BSc Nutrition and Dietetics program that focuses on providing students with an in-depth understanding of the most pressing health issues that are affecting individuals and populations worldwide.  This course covers a wide range of topics, including obesity and weight management, chronic diseases, nutritional supplements, mental health, food safety, global health issues, public health policy, health disparities and inequalities, and emerging health issues. Through this course, students will gain a thorough understanding of the causes, consequences, prevention, and management of these health issues, as well as strategies for addressing them at individual, community, and global levels. | | |
| **Objectives**  The objectives of this course are to**:**   1. define and explain contemporary health issues and why it is important to study them; 2. identify the causes, consequences, prevention, and management of obesity and weight management; 3. discuss the definition, types, risk factors, prevention, and management of chronic diseases; 4. identify and evaluate different types of nutritional supplements, their benefits, risks, and appropriate use; 5. evaluate the definition, types, factors, and strategies for improving mental health; 6. describe the definition, causes, prevention, and regulation of food safety and foodborne illness; 7. evaluate the definition, types, and strategies for improving global health issues; 8. discuss the definition, importance, and key policies related to public health policy; 9. identify and analyze factors contributing to health disparities and inequalities, and strategies for addressing them; and 10. discuss the definition, examples, and strategies for addressing emerging health issues. | | |
| **Learning Outcomes**  At the end of this course, students should be able to:   1. explain the importance of studying contemporary health issues and how they affect individuals and populations; 2. analyze and evaluate the causes, consequences, prevention, and management of obesity and weight management; 3. analyze and evaluate the definition, types, risk factors, prevention, and management of chronic diseases; 4. critically evaluate the benefits, risks, and appropriate use of nutritional supplements; 5. analyze and evaluate the definition, types, factors, and strategies for improving mental health; 6. analyze and evaluate the definition, causes, prevention, and regulation of food safety and foodborne illness; 7. analyze and evaluate the definition, types, and strategies for improving global health issues; 8. analyze and evaluate the importance, key policies, and their impact on public health; 9. analyze and evaluate the factors contributing to health disparities and inequalities, and strategies for addressing them; and 10. analyze and evaluate the definition, examples, and strategies for addressing emerging health issues. | | |
| **Course Contents**  Introduction to Contemporary Health Issues: definition, and importance; Chronic disorders: types (e.g. obesity, heart disease, diabetes, cancer), risk factors, prevention and management; Nutritional Supplements: types (vitamins, minerals, herbal supplements, etc.), benefits and risks, recommendations for use; Mental Health: Common mental health issues (e.g. anxiety, depression), factors affecting mental health, strategies for improving mental health; Food safety and food borne Illnesses: Types, causes, prevention and management; Global Health Issues: e.g. infectious diseases, maternal and child health, environmental health; Key public health policies (e.g. tobacco control, vaccination, healthy eating, personal hygiene); Emerging Health Issues (antimicrobial resistance, climate change, etc.). | | |

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| **Bayero University, Kano (BUK)** | |  |
| **Faculty of Basic Medical Sciences** | |  |
| **Department of Biochemistry** | |  |
| **B Sc. Human Nutrition and Dietetics** | |  |
| **BUK-BCH 202: General Biochemistry II** | **(2 Units C: LH 30; PH -)** | |
| **Senate approved relevance**  This course is designed in line with the vision and mission of 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 scientific, nutritional, educational and healthcare services to society devoid of exploitation. The character, professional outlook as well as the works ethics of the graduates would be sharpened by the course to achieve this goal.  This course would further strengthen the graduate to work as a team with others in the scientific, educational, nutritional and health sectors to achieve desired set-out team objectives while at the same time encouraging individual members’ professional development through appropriate mentorship and character building that would discourage the development of the barrage of emerging 21st century societal character vices inclusive of, but not limited to drug and substance abuse. In essence this course would enshrine the humane and professional aspects of the graduates as they serve society armed with knowledge and skills consistent with the vision and mission of Bayero University Kano. | | |
| **Overview**  "General Biochemistry II" is a second-year course in the BSc Nutrition and Dietetics program that focuses on providing students with a comprehensive understanding of the cell theory, structures and functions of major cell components, cell types, constancy and diversity, cell organelles of prokaryotes and eukaryotes, and the chemical composition of cells.  This course also covers centrifugation and methods of cell fractionation, the structure, function, and fractionation of extra-cellular organelles, water and its distribution, regulation of water and electrolyte balance, disorders of water and electrolyte balance, acidity and alkalinity, pH and pK values, and their effects on cellular activities. | | |
| **Objectives**  The objectives of this course are to**:**   1. define the cell theory and the structures and functions of major cell components; 2. identify different cell types, their constancy, and diversity; 3. identify and describe the cell organelles of prokaryotes and eukaryotes; 4. analyze the chemical composition of cells and its importance; 5. describe the principles of centrifugation and methods of cell fractionation; 6. describe the structure, function, and fractionation of extra-cellular organelles; 7. evaluate the importance of water and its distribution in the body; 8. analyze the regulation of water and electrolyte balance in the body; 9. identify and describe disorders of water and electrolyte balance; and 10. recognize acidity and alkalinity, pH, and pK values and their effects on cellular activities. | | |
| **Learning Outcomes**  At the end of this course, students should be able to:   1. explain the structure of the cell including its components; 2. discuss the interrelationship between different organelles of the cell; 3. recognize the differences between plant and animal cells; 4. isolate the various organelles of both plant and animal cells; and 5. describe the influence of hydrogen ion concentration on cellular function. | | |
| **Course Contents**  The cell theory; Structures and functions of major cell components; Cell types, constancy and diversity; Cell organelles of prokaryotes and eukaryotes; Chemical composition of cells; Centrifugation and methods of cell fractionation; Structure, function and fractionation of extra-cellular organelles; Water, total body water and its distribution; Regulation of water and electrolyte balance; Disorder of water and electrolyte balance, Acidity and alkalinity, pH and pK values and their effects on cellular activities. | | |

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| **Faculty of Basic Medical Sciences** | |  |
| **Department of Biochemistry** | |  |
| **B Sc. Human Nutrition and Dietetics** | |  |
| **BUK-CHM 211: Organic Chemistry I** | **(2 Units C: LH 30; PH -)** | |
| **Senate approved relevance**  This course is designed in line with the vision and mission of 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 scientific, nutritional, educational and healthcare services to society devoid of exploitation. The character, professional outlook as well as the works ethics of the graduates would be sharpened by the course to achieve this goal.  This course would further strengthen the graduate to work as a team with others in the scientific, educational, nutritional and health sectors to achieve desired set-out team objectives while at the same time encouraging individual members’ professional development through appropriate mentorship and character building that would discourage the development of the barrage of emerging 21st century societal character vices inclusive of, but not limited to drug and substance abuse. In essence this course would enshrine the humane and professional aspects of the graduates as they serve society armed with knowledge and skills consistent with the vision and mission of Bayero University Kano. | | |
| **Overview**  This course provides an introduction to the chemistry of organic molecules with a focus on the reactions and properties of common functional groups.  Topics include the structures and reactions of aliphatic and aromatic compounds, carbohydrates, peptides and proteins, stereochemistry, and the investigation of reaction mechanisms. | | |
| **Objectives**  The objectives of this course are to**:**   1. demonstrate an understanding of the structures and properties of organic compounds, including their functional groups; 2. explain the various mechanisms of organic reactions and their stereochemistry; 3. analyze and interpret organic reactions using energetics and kinetics; 4. identify the various named organic reactions e.g., Grignard reaction, Aldol and related reactions; and 5. demonstrate the synthesis of alicyclic carbon compounds and their properties. | | |
| **Learning Outcomes**  At the end of this course, students should be able to:   1. describe and solve problems in chemistry of aromatic compounds; 2. describe the structures of simple sugars, starch and cellulose, peptides and proteins and show the difference in their conformation structure; 3. describe and solve problems in chemistry of bi-functional compounds; 4. explain the mechanisms of substitution, elimination, addition and rearrangement reactions; 5. describe stereochemistry and its application; 6. describe condition and pathways of the following organic reactions - Grignard reaction, Aldol and related reactions; and 7. describe simple alicyclic carbon compounds and their synthesis. | | |
| **Course Contents**  Chemistry of aromatic compounds; Structures of simple sugars, starch and cellulose, peptides, and proteins; Chemistry of bi-functional compounds; Energetics, kinetics, and the investigation of reaction mechanisms; Mechanisms of substitution, elimination, addition, and rearrangement reactions; Stereochemistry; Examples of various named organic reactions e.g., Grignard reaction, Aldol and related reactions; Simple alicyclic carbon compounds and their synthesis. | | |

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| **Faculty of Basic Medical Sciences** | |  |
| **Department of Biochemistry** | |  |
| **B Sc. Human Nutrition and Dietetics** | |  |
| **BUK-NUT 204: Biorisk Management and Nutritional Data Handling** | **(2 Units C: LH 15; PH 45)** | |
| **Senate approved relevance**  This course is designed in line with the vision and mission of 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 scientific, nutritional, educational and healthcare services to society devoid of exploitation. The character, professional outlook as well as the works ethics of the graduates would be sharpened by the course to achieve this goal.  This course would further strengthen the graduate to work as a team with others in the scientific, educational, nutritional and health sectors to achieve desired set-out team objectives while at the same time encouraging individual members’ professional development through appropriate mentorship and character building that would discourage the development of the barrage of emerging 21st century societal character vices inclusive of, but not limited to drug and substance abuse. In essence this course would enshrine the humane and professional aspects of the graduates as they serve society armed with knowledge and skills consistent with the vision and mission of Bayero University Kano. | | |
| **Overview**  This second-year course will provide students with an understanding of biorisk management and nutritional data handling and analysis. The course will cover the definition of common terms, including risk, hazard, threat, biorisk, biosafety, biosecurity, biorisk management, valuable biological material, risk assessment, risk characterization, and risk evaluation. Additionally, students will learn about the risks associated with biological work and be introduced to the biorisk management framework, which includes assessment, mitigation, and performance (AMP) model, basic biosafety and biosecurity risk assessment, and strategies for mitigating biosafety risks. The course will also cover the importance of performance evaluation and the relevance of biorisk management (BRM) as part of the Global Health Security framework.  The second part of the course will focus on nutrition and dietetics data handling and analysis. Students will learn about the importance of data formats and storage, quality control, and data validation. Additionally, the course will cover basic statistical analysis techniques, such as mean, median, and standard deviation, basic probability and hypothesis testing, and data visualization techniques such as scatter plots, bar graphs, and histograms. The course will also cover advanced statistical analysis techniques such as regression analysis and ANOVA. Finally, students will learn about nutrition and dietetics data interpretation and reporting. | | |
| **Objectives**  The objectives of this course are to**:**   1. discuss the definition of common terms associated with biorisk management, such as risk, hazard, threat, biorisk, biosafety, biosecurity, biorisk management, valuable biological material, risk assessment, risk characterization, and risk evaluation; 2. identify and evaluate the risks associated with biological work and understand the biorisk management framework, including the amp model; 3. develop strategies for mitigating biosafety risks and evaluating performance; 4. analyze the relevance of biorisk management (brm) as part of the global health security framework; 5. evaluate the importance of nutrition and dietetics data and its formats and storage; 6. develop skills in quality control and data validation; 7. demonstrate proficiency in basic statistical analysis techniques such as mean, median, and standard deviation, as well as probability and hypothesis testing; 8. develop skills in data visualization techniques such as scatter plots, bar graphs, and histograms; 9. perform advanced statistical analysis techniques such as regression analysis and ANOVA; and 10. develop skills in nutrition and dietetics data interpretation and reporting. | | |
| **Learning Outcomes**  At the end of this course, students should be able to:   1. demonstrate a comprehensive understanding of biorisk management and the risks associated with biological work; 2. develop effective strategies for mitigating biosafety risks and evaluating performance; 3. analyze the relevance of biorisk management (brm) as part of the global health security framework; 4. develop skills in nutrition and dietetics data handling, storage, and quality control; 5. demonstrate proficiency in basic and advanced statistical analysis techniques and data visualization; and 6. develop skills in nutrition and dietetics data interpretation and reporting. | | |
| **Course Contents**  Definition of common terms: (Risk, hazard, threat, biorisk, biosafety, biosecurity, biorisk management, valuable biological material, risk assessment, risk characterization and risk evaluation); Risks associated with biological work and introduction to biorisk management framework; Definition and explanation of assessment, mitigation and Performance (AMP) model; Basic biosafety and biosecurity risk assessment; Strategies for mitigating biosafety risks; Performance evaluation and its importance; Relevance of biorisk management (BRM) as part of Global Health Security framework.  Introduction to nutrition and dietetics data and its importance; Data formats and storage; Quality control and data validation; Basic statistical analysis techniques (mean, median, standard deviation, etc.); Basic probability and hypothesis testing; Data visualization techniques (scatter plots, bar graphs, histograms, etc.); Advanced statistical analysis techniques (regression analysis, ANOVA, etc.); Nutrition and dietetics data interpretation and reporting | | |

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| **Faculty of Basic Medical Sciences** | |  |
| **Department of Biochemistry** | |  |
| **B Sc. Human Nutrition and Dietetics** | |  |
| **BUK-NUT 205: Fundamentals of Nutrition** | **(3 Units C: LH 45; PH -)** | |
| **Senate approved relevance**  This course is designed in line with the vision and mission of 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 scientific, nutritional, educational and healthcare services to society devoid of exploitation. The character, professional outlook as well as the works ethics of the graduates would be sharpened by the course to achieve this goal.  This course would further strengthen the graduate to work as a team with others in the scientific, educational, nutritional and health sectors to achieve desired set-out team objectives while at the same time encouraging individual members’ professional development through appropriate mentorship and character building that would discourage the development of the barrage of emerging 21st century societal character vices inclusive of, but not limited to drug and substance abuse. In essence this course would enshrine the humane and professional aspects of the graduates as they serve society armed with knowledge and skills consistent with the vision and mission of Bayero University Kano. | | |
| **Overview**  This second-year course will provide students with an understanding of the fundamentals of nutrition. The course will cover the energy value of foods and diets, energy balance and expenditure, dietary guidelines, selection and formulation of an adequate diet, food intake and control of appetite, food habits, and factors affecting them.  Additionally, students will learn about the concept of food and nutrition security, the infection-nutrition cycle, nutrition, and immunity. The course will also cover the impact of nutrition on economic and human development and the modification of a normal diet to a therapeutic diet. | | |
| **Objectives**  The objectives of this course are to**:**   1. define the energy value of foods and diets and how energy balance and expenditure affect overall health; 2. analyze dietary guidelines and formulate an adequate diet for individuals; 3. discuss the control of food intake and appetite and the factors that affect food habits; 4. analyze the concept of food and nutrition security and the infection-nutrition cycle; 5. discuss the impact of nutrition on economic and human development; and 6. develop skills in modifying a normal diet to a therapeutic diet. | | |
| **Learning Outcomes**  At the end of this course, students should be able to:   1. demonstrate a comprehensive understanding of the energy value of foods and diets and how to maintain energy balance and expenditure for overall health; 2. formulate an adequate diet for individuals based on dietary guidelines; 3. develop skills in controlling food intake and appetite and identifying the factors that affect food habits; 4. analyze the concept of food and nutrition security and its impact on overall health and well-being; 5. demonstrate an understanding of the infection-nutrition cycle and the role of nutrition in immunity; 6. analyze the impact of nutrition on economic and human development; and 7. develop skills in modifying a normal diet to a therapeutic diet to manage various medical conditions. | | |
| **Course Contents**  Energy value of foods and diets; Energy balance and expenditure; Dietary guidelines: selection and formulation of adequate diet; Food intake and control of appetite; Food habit and factors affecting it; Concept of food and nutrition security: the infection-nutrition cycle/nutrition and immunity; Impact of nutrition, economic and human development; Modification of a normal diet to therapeutic diet. | | |

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| **Department of Biochemistry** | |  |
| **B Sc. Human Nutrition and Dietetics** | |  |
| **BUK-PIO 216: Gastrointestinal Physiology** | **(2 Units C: LH 30; PH -)** | |
| **Senate approved relevance**  This course is designed in line with the vision and mission of 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 scientific, nutritional, educational and healthcare services to society devoid of exploitation. The character, professional outlook as well as the works ethics of the graduates would be sharpened by the course to achieve this goal.  This course would further strengthen the graduate to work as a team with others in the scientific, educational, nutritional and health sectors to achieve desired set-out team objectives while at the same time encouraging individual members’ professional development through appropriate mentorship and character building that would discourage the development of the barrage of emerging 21st century societal character vices inclusive of, but not limited to drug and substance abuse. In essence this course would enshrine the humane and professional aspects of the graduates as they serve society armed with knowledge and skills consistent with the vision and mission of Bayero University Kano. | | |
| **Overview**  This second-year course will provide students with an understanding of the physiologic anatomy and function of the gastrointestinal tract, including the liver and biliary system. Students will learn about smooth muscle function, secretions in the G.I.T. and their control, movements of the gastrointestinal tract, digestion, and absorption of various food substances.  Additionally, students will gain knowledge about the gut as an endocrine organ, energy and other dietary requirements, basal metabolic rate, nitrogen balance, amino acid deficiency, hormonal control of nutritional needs, vitamins and mineral mechanisms. Students will also learn about the food value of local foodstuffs, diet sheets, and nutritional deficiency states. | | |
| **Objectives**  The objectives of this course are to**:**   1. define the physiology and function of the gastrointestinal tract, including the liver and biliary system. 2. analyze smooth muscle function, secretions in the G.I.T. and their control, and movements of the gastrointestinal tract. 3. discuss the processes of digestion and absorption of various food substances. 4. demonstrate knowledge about the gut as an endocrine organ and its function in overall health. 5. analyze energy and other dietary requirements, basal metabolic rate, and nitrogen balance. 6. identify and understand the hormonal control of nutritional needs, including vitamins and mineral mechanisms. 7. analyze the food value of local foodstuffs and develop diet sheets to address nutritional deficiencies. | | |
| **Learning Outcomes**  At the end of this course, students should be able to:   1. compare and contrast the regulation of gut function by nerves, hormones, and paracrine regulators; 2. identify the cell type and anatomical location of the endocrine cells secreting major GI hormones, such as gastrin, secretin, cholecystokinin (CCK), GLP-1, GLP-2, leptin, and motilin; 3. list the physiological functions of the components of saliva; 4. describe the role of HCl in the gastric digestion of carbohydrates and protein, and how pepsinogen is activated; 5. list the mechanisms contributing to gastric mucosal defense and how they can be compromised by drugs or pathogens; 6. list the stimuli that release secretin and CCK and explain the route by which these regulatory peptides stimulate the pancreas; 7. describe the cellular mechanisms for the hepatic uptake, conjugation, and secretion of bile salts and bilirubin; 8. describe the sequential digestion of ingested starch by enzymes of the salivary glands, pancreas, and the intestinal apical membrane; 9. describe the mechanisms and molecules mediating the solubilization and digestion of lipids in the small intestine; and 10. describe the disorders of motility that can lead to gastroparesis, achalasia, diarrhea, constipation, megacolon and irritable bowel syndrome. | | |
| **Course Contents**  Physiologic anatomy of the gastrointestinal tract; Review of smooth muscle function; Secretions in the G.I.T. and their control; Movements of the gastrointestinal tract; Digestion and absorption of various food substances; Physiologic anatomy of the liver and biliary system including their functions; Disorders of G.I.T.; The gut as an endocrine organ; Nutrition: energy and other dietary requirements; Basal metabolic rate; Nitrogen balance; Amino acid deficiency. Hormonal control of nutritional needs, vitamins, mineral mechanisms; Food value of local foodstuffs; Diet sheets and nutritional deficiency states. | | |

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| **Faculty of Basic Medical Sciences** | |  |
| **Department of Biochemistry** | |  |
| **B Sc. Human Nutrition and Dietetics** | |  |
| **BUK-COM 205: Introduction to Medical Psychology** | **(1 Units R: LH 15; PH -)** | |
| **Senate approved relevance**  This course is designed in line with the vision and mission of 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 scientific, nutritional, educational and healthcare services to society devoid of exploitation. The character, professional outlook as well as the works ethics of the graduates would be sharpened by the course to achieve this goal.  This course would further strengthen the graduate to work as a team with others in the scientific, educational, nutritional and health sectors to achieve desired set-out team objectives while at the same time encouraging individual members’ professional development through appropriate mentorship and character building that would discourage the development of the barrage of emerging 21st century societal character vices inclusive of, but not limited to drug and substance abuse. In essence this course would enshrine the humane and professional aspects of the graduates as they serve society armed with knowledge and skills consistent with the vision and mission of Bayero University Kano. | | |
| **Overview**  This course provides an introduction to the fundamental concepts in psychology and their application in the medical field. It focuses on understanding the various factors that affect human behavior and how these factors can impact health and wellbeing.  Students will learn about cognitive processes, personality, social psychology, behavioral research, and psychopathology. | | |
| **Objectives**  The objectives of this course are to**:**   1. describe the basic concepts and principles of psychology and their application in the medical field; 2. enumerate the various factors that influence human behavior, including motivation, emotions, and personality; 3. explore the cognitive processes involved in learning, thinking, and memory; 4. gain knowledge of social psychology and how it affects behavior and health outcomes; 5. describe the basics of behavioral research and its applications in healthcare; and 6. develop an understanding of the major categories of psychopathology. | | |
| **Learning Outcomes**  At the end of this course, students should be able to:   1. explain basic concepts in psychology, behavior, stimulus systems, motivation and moods; 2. describe basic cognitive process, learning and intelligence and memory; 3. discuss thinking and cognitive theories; 4. explain social psychology; 5. conduct behavioral research; and 6. discuss fundamentals of psychopathology. | | |
| **Course Contents**  Basic Concepts in Psychology; be:havior, stimulus systems, motivation and moods; Basic cognitive process; learning and intelligence and memory; Thinking and cognitive theories; Personality; Introduction to social psychology; Introduction to behavioral research; Fundamentals of psychopathology. | | |

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| **Faculty of Basic Medical Sciences** | |  |
| **Department of Biochemistry** | |  |
| **B Sc. Human Nutrition and Dietetics** | |  |
| **BUK-BCH 301: General Metabolism** | **(3 Units C: LH 45; PH -)** | |
| **Senate approved relevance**  This course is designed in line with the vision and mission of 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 scientific, nutritional, educational and healthcare services to society devoid of exploitation. The character, professional outlook as well as the works ethics of the graduates would be sharpened by the course to achieve this goal.  This course would further strengthen the graduate to work as a team with others in the scientific, educational, nutritional and health sectors to achieve desired set-out team objectives while at the same time encouraging individual members’ professional development through appropriate mentorship and character building that would discourage the development of the barrage of emerging 21st century societal character vices inclusive of, but not limited to drug and substance abuse. In essence this course would enshrine the humane and professional aspects of the graduates as they serve society armed with knowledge and skills consistent with the vision and mission of Bayero University Kano. | | |
| **Overview**  General Metabolism is a course that is designed to provide an understanding of the fundamental principles of metabolism in the human body. This course covers the digestion, absorption, and transport of nutrients. It also provides a summarized form of energy metabolism involving the metabolism of carbohydrates and lipids and their clinical correlation.  The course places less emphasis on the structures of the pathways and more emphasis on the clinical correlations. It also covers a summarized coverage of metabolism of amino acids and nucleic acids, with less emphasis on the structures but more emphasis on the clinical correlations. The course will also cover inborn errors of the pathways and their nutritional management. | | |
| **Objectives**  The objectives of this course are to**:**   1. define the digestion, absorption, and transport of nutrients; 2. summarize form of energy metabolism involving metabolism of carbohydrates and lipids; 3. describe the clinical correlation of energy metabolism and its major metabolic diseases arising from derangements in each pathway; 4. summarize coverage of metabolism of amino acids and nucleic acids and discuss their clinical correlations; and 5. describe inborn errors of the pathways and their nutritional management. | | |
| **Learning Outcomes**  At the end of this course, students should be able to:   1. define the digestion, absorption, and transport of nutrients; 2. summarize form of energy metabolism involving metabolism of carbohydrates and lipids and their clinical correlation; 3. identify the major metabolic diseases arising from derangements in each pathway and understand their causes and nutritional management; 4. summarize the coverage of metabolism of amino acids and nucleic acids and discuss their clinical correlations; and 5. identify inborn errors of the pathways and understand their nutritional management. | | |
| **Course Contents**  Digestion, absorption and transport of nutrients; A summarized form of energy metabolism involving metabolism of carbohydrates and lipids and their clinical correlation (less emphasis on structures of the pathways more emphasis on the clinical correlation with detail coverage of causes, and nutritional management of major metabolic diseases arising from derangements in each pathways). A summarized coverage of metabolism of amino acids and nucleic acids (less emphasis on the structures but more emphasis on the clinical correlations); Inborn-errors of the pathways and their nutritional management (discussed in detail). | | |

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| **Bayero University, Kano (BUK)** | |  |
| **Faculty of Basic Medical Sciences** | |  |
| **Department of Biochemistry** | |  |
| **B Sc. Human Nutrition and Dietetics** | |  |
| **BUK-NUT 306: Nutritional Microbiology** | **(3 Units C: LH 30; PH 45)** | |
| **Senate approved relevance**  This course is designed in line with the vision and mission of 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 scientific, nutritional, educational and healthcare services to society devoid of exploitation. The character, professional outlook as well as the works ethics of the graduates would be sharpened by the course to achieve this goal.  This course would further strengthen the graduate to work as a team with others in the scientific, educational, nutritional and health sectors to achieve desired set-out team objectives while at the same time encouraging individual members’ professional development through appropriate mentorship and character building that would discourage the development of the barrage of emerging 21st century societal character vices inclusive of, but not limited to drug and substance abuse. In essence this course would enshrine the humane and professional aspects of the graduates as they serve society armed with knowledge and skills consistent with the vision and mission of Bayero University Kano. | | |
| **Overview**  Nutritional Microbiology is a 3rd-year course in the B Sc. Human Nutrition and Dietetics program. This course aims to provide students with an understanding of the microbial world and its relationship with nutrition and dietetics. It introduces students to the importance of Nutritional Microbiology in the field of nutrition and dietetics, and the historical overview of Nutritional Microbiology.  The course also covers microbial physiology and metabolism, food microbiology, nutrient metabolism by microorganisms, gut microbiota, probiotics and prebiotics, nutritional immunology, emerging topics in Nutritional Microbiology, and laboratory exercises and demonstrations. | | |
| **Objectives**  The objectives of this course are to**:**   1. discuss the definition and importance of nutritional microbiology in the field of nutrition and dietetics; 2. evaluate the historical overview of nutritional microbiology; 3. describe bacterial structure and physiology, microbial metabolism, and energy generation; 4. describe microbial growth and reproduction; 5. identify the microbial spoilage of foods and foodborne illnesses; 6. discuss preservation techniques for food products; 7. describe fermentation and microbial production of food products, microbial production of vitamins, amino acids, and other nutrients, and microbial metabolism of dietary fibre; 8. describe the composition of gut microbiota and its role in digestion and metabolism; 9. describe the types and health benefits of probiotics and prebiotics; 10. evaluate the interaction between nutrition and the immune system and the role of gut microbiota in immune function; 11. describe the impact of diet on immune function; 12. discuss emerging topics in nutritional microbiology such as microbial biotechnology and food production, the human microbiome, and disease, and the impact of climate change on microbial ecology; and 13. perform laboratory exercises and demonstrations including microbial enumeration and identification techniques, microbial growth kinetics, fermentation, and microbial product analysis. | | |
| **Learning Outcomes**  At the end of this course, students should be able to:   1. discuss the importance of nutritional microbiology in the field of nutrition and dietetics; 2. describe the bacterial structure and physiology, microbial metabolism, and energy generation; 3. identify the microbial spoilage of foods and foodborne illnesses and understand preservation techniques for food products; 4. describe fermentation and microbial production of food products, microbial production of vitamins, amino acids, and other nutrients, and microbial metabolism of dietary fibre; 5. describe the composition of gut microbiota and its role in digestion and metabolism, and the types and health benefits of probiotics and prebiotics; 6. describe the interaction between nutrition and the immune system, and the role of gut microbiota in immune function; and 7. perform laboratory exercises and demonstrations including microbial enumeration and identification techniques, microbial growth kinetics, fermentation, and microbial product analysis. | | |
| **Course Contents**  Introduction to Nutritional Microbiology; Definition of Nutritional Microbiology: Importance of Nutritional Microbiology in Nutrition and Dietetics; Historical overview of Nutritional Microbiology; Overview of microbial physiology and metabolism; Food Microbiology: microbial spoilage of foods, food borne illnesses and food safety, preservation techniques for food products; Nutrient metabolism by microorganisms: fermentation and microbial production of food products, microbial production of vitamins, amino acids, and other nutrients, microbial metabolism of dietary fiber; Gut Microbiota: Composition of gut microbiota, The role of gut microbiota in digestion and metabolism, The impact of diet on gut microbiota; Probiotics and Prebiotics: Health benefits, prebiotics and probiotics in food and dietary supplements; Nutritional Immunology: The role of gut microbiota in immune function; Emerging Topics in Nutritional Microbiology: Microbial biotechnology and food production, The human microbiome and disease; Laboratory Exercises and Demonstrations: Microbial enumeration and identification techniques, Microbial growth kinetics, Fermentation and microbial product analysis. | | |

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| **Bayero University, Kano (BUK)** | |  |
| **Faculty of Basic Medical Sciences** | |  |
| **Department of Biochemistry** | |  |
| **B Sc. Human Nutrition and Dietetics** | |  |
| **BUK-NUT 307: Agricultural Food Products** | **(3 Units C: LH 45; PH -)** | |
| **Senate approved relevance**  This course is designed in line with the vision and mission of 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 scientific, nutritional, educational and healthcare services to society devoid of exploitation. The character, professional outlook as well as the works ethics of the graduates would be sharpened by the course to achieve this goal.  This course would further strengthen the graduate to work as a team with others in the scientific, educational, nutritional and health sectors to achieve desired set-out team objectives while at the same time encouraging individual members’ professional development through appropriate mentorship and character building that would discourage the development of the barrage of emerging 21st century societal character vices inclusive of, but not limited to drug and substance abuse. In essence this course would enshrine the humane and professional aspects of the graduates as they serve society armed with knowledge and skills consistent with the vision and mission of Bayero University Kano. | | |
| **Overview**  This third-year course will provide students with a comprehensive understanding of agricultural food products, their structures, composition, processing, and storage. The course will explore the history, scope, and importance of agriculture to human beings and its relationship with food supply and population.  Students will also learn about the different types of foods and agricultural products, such as vegetables, fruits, cereals, meat, dairy, and fish, and the role of post-harvest biotechnology in their processing and storage. Additionally, the course will cover the development and marketing of raw food products, ingredient regulations, taste panel, market testing, market research, patents, and food and nutritional security. The course will also highlight the constraints to food production in Nigeria and ways to improve agricultural food production. | | |
| **Objectives**  The objectives of this course are to**:**   1. discuss the definition, history, scope, and importance of agriculture to man; 2. describe the structures and composition of different types of agricultural food products; 3. explain the role of post-harvest biotechnology in the processing and storage of agricultural food products; 4. discuss the development and marketing of raw food products, including ingredient regulations, taste panel, market testing, market research, and patents; 5. analyze the constraints to food production in Nigeria; 6. develop strategies to improve agricultural food production in Nigeria; and 7. evaluate the concept of food and nutritional security. | | |
| **Learning Outcomes**  At the end of this course, students should be able to:   1. demonstrate a comprehensive understanding of agricultural food products, their structures, composition, and the role of post-harvest biotechnology in their processing and storage; 2. develop skills in analyzing the constraints to food production in Nigeria and developing strategies to improve agricultural food production; 3. critically evaluate the concept of food and nutritional security; 4. demonstrate the ability to conduct market testing, research, and patent analysis for raw food products; 5. develop an understanding of ingredient regulations and taste panel analysis; and 6. discuss the history, scope, and importance of agriculture to human beings and its relationship with food supply and population. | | |
| **Course Contents**  Definition of agriculture; World population and food supply; History, scope and importance of agriculture to man; Different types of foods and agricultural products, their structures and composition; Vegetables, fruits, cereals, palm-wine, roots and tubers; sugar cane, oil palm, meat, milk, cheese, butter, sausage, ham, fish, orange, mango and other juices; The processing and storage of these food products: Role of Post harvest biotechnology; Development and marketing of raw food products; Ingredient regulations; taste panel, market testing, market research, and patents. Food and nutritional security; Constraints to food production in Nigeria; Improving agricultural food production in Nigeria. | | |

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| **Bayero University, Kano (BUK)** | |  |
| **Faculty of Basic Medical Sciences** | |  |
| **Department of Biochemistry** | |  |
| **B Sc. Human Nutrition and Dietetics** | |  |
| **BUK-GST 401: Character Building, Professionalism and Team Work in Healthcare** | **(3 Units C: LH 45; PH -)** | |
| **Senate approved relevance**  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; and 9. identify the risk factors and preventive strategies for substance abuse. | | |
| **Learning Outcomes**  At the end of this course, 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. 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; and 11. enumerate four preventive strategies to address three forms of drug abuse. | | |
| **Course Contents**  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. | | |

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| **Bayero University, Kano (BUK)** | |  |
| **Faculty of Basic Medical Sciences** | |  |
| **Department of Biochemistry** | |  |
| **B Sc. Human Nutrition and Dietetics** | |  |
| **BUK-NUT 408: Food Safety and Hygiene** | **(3 Units C: LH 45; PH -)** | |
| **Senate approved relevance**  This course is designed in line with the vision and mission of 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 scientific, nutritional, educational and healthcare services to society devoid of exploitation. The character, professional outlook as well as the works ethics of the graduates would be sharpened by the course to achieve this goal.  This course would further strengthen the graduate to work as a team with others in the scientific, educational, nutritional and health sectors to achieve desired set-out team objectives while at the same time encouraging individual members’ professional development through appropriate mentorship and character building that would discourage the development of the barrage of emerging 21st century societal character vices inclusive of, but not limited to drug and substance abuse. In essence this course would enshrine the humane and professional aspects of the graduates as they serve society armed with knowledge and skills consistent with the vision and mission of Bayero University Kano. | | |
| **Overview**  Food Safety and Hygiene is a course that provides an understanding of the principles and concepts related to food safety and hygiene. The course covers topics such as microorganisms and food-borne illness, food contamination, and control measures, good manufacturing practices (GMPs), and Hazard Analysis and Critical Control Points (HACCP).  The course will also covers topics such as sanitation and cleaning in food processing and handling environments, personal hygiene and food handler responsibilities, pest control, and food storage practices. The course provides an understanding of food safety regulations and guidelines and the importance of food safety audits and inspections. The course also covers emerging food safety issues and trends. | | |
| **Objectives**  The objectives of this course are to**:**   1. discuss the principles and concepts related to food safety and hygiene; 2. identify the role of microorganisms in food-borne illness; 3. identify and control food contamination and understand the control measures; 4. describe the principles of good manufacturing practices (GMPs) and hazard analysis and critical control points (HACCP); 5. discuss the principles of sanitation and cleaning in food processing and handling environments 6. discuss personal hygiene and food handler responsibilities; 7. identify and control pests and understand food storage practices; 8. describe food safety regulations and guidelines, such as the national agency for food and drug administration and control (NAFDAC) and the standard organization of Nigeria (SON) regulations; 9. identify the importance of food safety audits and inspections; and 10. evaluate emerging food safety issues and trends. | | |
| **Learning Outcomes**  At the end of this course, students should be able to   1. describe the principles and concepts related to food safety and hygiene 2. identify microorganisms that cause food-borne illness and understand how to control their growth 3. identify and control food contamination and understand the control measures 4. discuss the principles of good manufacturing practices (GMPs) and hazard analysis and critical control points (HACCP) 5. describe the principles of sanitation and cleaning in food processing and handling environments 6. discuss personal hygiene and food handler responsibilities 7. identify and control pests and understand food storage practices 8. discuss food safety regulations and guidelines, such as the national agency for food and drug administration and control (NAFDAC) and the standard organization of Nigeria (SON) regulations 9. describe the importance of food safety audits and inspections and how to prepare for them 10. evaluate emerging food safety issues and trends and their impact on food safety. | | |
| **Course Contents**  Introduction to food safety and hygiene concepts and principles; Microorganisms and food-borne illness  Food contamination and control measures; Good Manufacturing Practices (GMPs) and Hazard Analysis and Critical Control Points (HACCP); Sanitation and cleaning in food processing and handling environments; Personal hygiene and food handler responsibilities; Pest control and food storage practices; Food safety regulations and guidelines, such as NAFDAC and SON regulations; Food safety audits and inspections; Emerging food safety issues and trends. | | |

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| **Bayero University, Kano (BUK)** | |  |
| **Faculty of Basic Medical Sciences** | |  |
| **Department of Biochemistry** | |  |
| **B Sc. Human Nutrition and Dietetics** | |  |
| **BUK-NUT 409: Institutional Food Production and Service Management** | **(3 Units C: LH 45; PH -)** | |
| **Senate approved relevance**  This course is designed in line with the vision and mission of 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 scientific, nutritional, educational and healthcare services to society devoid of exploitation. The character, professional outlook as well as the works ethics of the graduates would be sharpened by the course to achieve this goal.  This course would further strengthen the graduate to work as a team with others in the scientific, educational, nutritional and health sectors to achieve desired set-out team objectives while at the same time encouraging individual members’ professional development through appropriate mentorship and character building that would discourage the development of the barrage of emerging 21st century societal character vices inclusive of, but not limited to drug and substance abuse. In essence this course would enshrine the humane and professional aspects of the graduates as they serve society armed with knowledge and skills consistent with the vision and mission of Bayero University Kano. | | |
| **Overview**  The course "Institutional Food Production and Service Management" will introduce students to the principles and practices of managing food production and service in institutional settings such as hospitals, schools, and other organizations.  The course will cover topics such as staffing, sanitation and safety, menu planning and budgeting, nutritional considerations, equipment selection and care, and bookkeeping. | | |
| **Objectives**  The objectives of this course are to**:**   1. describe the organizational structure of food service in institutions and hospitals; 2. learn effective staffing techniques including recruitment, discipline, and management; 3. evaluate the importance of staff welfare, work output motivation, and incentive in institutional food service management; 4. gain knowledge on sanitation and safety practices to maintain a healthy food production and service environment; 5. develop the skills for menu planning and budgeting; 6. discuss the importance of nutritional considerations in institutional meals; 7. learn about modern and traditional equipment and procedures in relation to time, energy, monetary expenditure, and health; 8. develop the ability to select and care for equipment for maximum benefit; and 9. discuss the importance of bookkeeping in institutional food service management. | | |
| **Learning Outcomes**  At the end of this course, students should be able to:   1. discuss the organizational structure of food service in institutions and hospitals, and effectively manage staffing techniques including recruitment, discipline, and management; 2. create and implement effective staff welfare, work output motivation, and incentive plans; 3. maintain sanitation and safety practices to create a healthy food production and service environment; 4. develop and implement menu planning and budgeting strategies to meet nutritional goals and ensure financial efficiency; 5. select, use, and care for equipment for maximum benefit in an institutional setting; 6. comply with food safety regulations and guidelines to ensure high-quality food service; and 7. effectively maintain and utilize bookkeeping practices in institutional food service management. | | |
| **Course Contents**  Organizational structure in food service in institutions and hospitals; Effective staffing, staff recruitment, discipline and management; staff welfare, work output motivation/incentive; sanitation and safety; Menu planning and budgeting; Book keeping; Nutritional consideration of institutional meals; Modern and traditional equipment and procedures in relation to time, energy, monetary expenditure and health, selection and care of equipment for maximum benefit. | | |

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| **Bayero University, Kano (BUK)** | |  |
| **Faculty of Basic Medical Sciences** | |  |
| **Department of Biochemistry** | |  |
| **B Sc. Human Nutrition and Dietetics** | |  |
| **BUK-NUT 508: Nutrition in Emergencies** | **(3 Units C: LH 45; PH -)** | |
| **Senate approved relevance**  This course is designed in line with the vision and mission of 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 scientific, nutritional, educational and healthcare services to society devoid of exploitation. The character, professional outlook as well as the works ethics of the graduates would be sharpened by the course to achieve this goal.  This course would further strengthen the graduate to work as a team with others in the scientific, educational, nutritional and health sectors to achieve desired set-out team objectives while at the same time encouraging individual members’ professional development through appropriate mentorship and character building that would discourage the development of the barrage of emerging 21st century societal character vices inclusive of, but not limited to drug and substance abuse. In essence this course would enshrine the humane and professional aspects of the graduates as they serve society armed with knowledge and skills consistent with the vision and mission of Bayero University Kano. | | |
| **Overview**  This course focuses on the role of nutrition in emergency situations. It covers various types and causes of emergencies, nutritional problems of internally displaced persons (IDPs) and refugees, and the humanitarian response to emergencies.  The course will also discusses the principles of nutrition in emergency preparedness and the management of nutritional problems during and after emergencies. The course emphasizes the importance of food security, information systems, and the prevention and management of malnutrition in emergencies. | | |
| **Objectives**  The objectives of this course are to**:**   1. explain the concepts of food security and nutrition in emergencies; 2. learn the types and causes of emergencies; 3. discuss the nutritional problems of internally displaced persons (IDPs) and refugees; 4. analyze the humanitarian response to emergencies, including food aid and nutrition; 5. explain the guiding principles for feeding infants and young children in emergency situations; 6. describe the principles of preventing and controlling micronutrient deficiencies in populations affected by emergencies; 7. evaluate the consequences of migration on the nutritional status and quality of life of populations; and 8. describe the major nutritional deficiency diseases in emergencies, particularly among infants and young children, pregnant and lactating mothers, and the elderly. | | |
| **Learning Outcomes**  At the end of this course, students should be able to   1. identify the key concepts of food security and nutrition in emergencies and the types and causes of emergencies; 2. analyze the nutritional problems of internally displaced persons (IDPs) and refugees and the humanitarian response to emergencies, including food aid and nutrition; 3. evaluate the guiding principles for feeding infants and young children in emergency situations and understand the principles of preventing and controlling micronutrient deficiencies in populations affected by emergencies; 4. evaluate the consequences of migration on the nutritional status and quality of life of populations and the major nutritional deficiency diseases in emergencies, particularly among infants and young children, pregnant and lactating mothers, and the elderly; 5. demonstrate the ability to develop and implement nutrition programs and interventions for populations affected by emergencies; and 6. describe the role of information systems in emergency situations and the principles of food security and nutritional rehabilitation in emergency settings. | | |
| **Course Contents**  Definitions of emergencies, concept of food security and nutrition in emergencies, types and causes of emergency; Nutrition in Emergency preparedness; Nutrition emergency; Nutritional problems of internally displaced persons (IDPs) and refuges, humanitarian response to emergencies, food aids and nutrition, information systems in emergency situations; Nutrition procedure in times of disaster including famine relief operations nutrition rehabilitation centres; Population and food supply; Nutrition and national harmony; Consequences of migration and nutritional status and quality of life will be stressed as well as some indicators of poverty in relation to malnutrition and infections in African countries; Major nutritional deficiency diseases in emergencies-infant and young children, pregnant and lactating mother, the elderly; Guiding principles for feeding infant and young children in emergency; Preventing and controlling micronutrient deficiencies in populations affecting by emergencies. | | |

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| **Bayero University, Kano (BUK)** | |  |
| **Faculty of Basic Medical Sciences** | |  |
| **Department of Biochemistry** | |  |
| **B Sc. Human Nutrition and Dietetics** | |  |
| **BUK-NUT 509: Molecular Nutrition** | **(3 Units C: LH 45; PH -)** | |
| **Senate approved relevance**  This course is designed in line with the vision and mission of 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 scientific, nutritional, educational and healthcare services to society devoid of exploitation. The character, professional outlook as well as the works ethics of the graduates would be sharpened by the course to achieve this goal.  This course would further strengthen the graduate to work as a team with others in the scientific, educational, nutritional and health sectors to achieve desired set-out team objectives while at the same time encouraging individual members’ professional development through appropriate mentorship and character building that would discourage the development of the barrage of emerging 21st century societal character vices inclusive of, but not limited to drug and substance abuse. In essence this course would enshrine the humane and professional aspects of the graduates as they serve society armed with knowledge and skills consistent with the vision and mission of Bayero University Kano. | | |
| **Overview**  “Molecular Nutrition” focuses on the molecular and cellular mechanisms underlying nutrition and metabolism.  The course provides an in-depth understanding of the digestion, synthesis, and metabolism of macronutrients and micronutrients, and how their interactions with the genome and proteome contribute to the development of various metabolic diseases. | | |
| **Objectives**  The objectives of this course are to**:**   1. discuss the molecular basis of metabolic diseases, such as cvd, cancer, diabetes, and respiratory diseases; 2. analyze the molecular and cellular mechanisms underlying the digestion, synthesis, and metabolism of macronutrients and micronutrients; 3. examine the role of nutrigenomics and nutrigenetics in molecular nutrition; 4. describe the structure, folding, and design of proteins, and the molecular recognition and enzyme catalysis involved in their function; 5. discuss the molecular basis of malnutrition and its impact on health; 6. analyze the role of lipids in nutrition, their types, functions, and interaction with nutrients, and the molecular basis of lipid-related diseases; 7. analyze signal transduction in molecular nutrition; and 8. analyze nutrition bio-models in research and understand how they can be applied to molecular nutrition. | | |
| **Learning Outcomes**  At the end of this course, students should be able to:   1. apply molecular biology and biochemistry techniques to analyze nutrition and metabolism; 2. analyze the molecular basis of various metabolic diseases and their implications for nutrition; 3. analyze the role of nutrigenomics and nutrigenetics in the development of nutritional therapies; 4. identify the molecular basis of lipid and protein metabolism, and understand their implications for health and disease; and 5. develop effective strategies to prevent and manage malnutrition based on an understanding of the molecular basis of nutrition and metabolism. | | |
| **Course Contents**  Review of nutritional physiology: digestion, synthesis and metabolism of carbohydrate, protein, lipids and vitamins; Nutrigenomics and nutrigenetics, genomics, proteomics, transcriptomics and metabolomics; Molecular basis of metabolic diseases – CVD, cancer, diabetes, respiratory diseases etc.; Molecular basis of malnutrition: undernutrition and overnutrition; Lipids – types, functions, synthesis, secretion and degradation, and interaction with nutrients, diseases; Protein – structure, folding and design, molecular recognition and enzyme catalysis; Signal transduction; Models in studies of molecular nutrition from single atoms to intact organisms, nutrition bio-models in research. | | |

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| **Bayero University, Kano (BUK)** | |  |
| **Faculty of Basic Medical Sciences** | |  |
| **Department of Biochemistry** | |  |
| **B Sc. Human Nutrition and Dietetics** | |  |
| **BUK-NUT 510: Nutritional Entrepreneurship** | **(3 Units C: LH 30; PH 45)** | |
| **Senate approved relevance**  This course is designed in line with the vision and mission of 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 scientific, nutritional, educational and healthcare services to society devoid of exploitation. The character, professional outlook as well as the works ethics of the graduates would be sharpened by the course to achieve this goal.  This course would further strengthen the graduate to work as a team with others in the scientific, educational, nutritional and health sectors to achieve desired set-out team objectives while at the same time encouraging individual members’ professional development through appropriate mentorship and character building that would discourage the development of the barrage of emerging 21st century societal character vices inclusive of, but not limited to drug and substance abuse. In essence this course would enshrine the humane and professional aspects of the graduates as they serve society armed with knowledge and skills consistent with the vision and mission of Bayero University Kano. | | |
| **Overview**  The "Nutritional Entrepreneurship" course is designed to equip students with the knowledge and skills necessary to start and run their own nutrition and dietetics businesses.  The course covers topics such as business models, market research, branding, legal and regulatory considerations, and innovations in the food industry. Students will also learn about case studies of successful nutrition and dietetics businesses, and develop a business plan with financial projections. | | |
| **Objectives**  The objectives of this course are to**:**   1. identify the role of entrepreneurship in nutrition and dietetics; 2. develop knowledge of business models in the food industry; 3. gain insight into consumer behaviour and market segmentation; 4. learn how to develop a business plan with financial projections; 5. develop skills in marketing and branding strategies for nutrition and dietetics businesses; 6. discuss the legal and regulatory considerations for nutrition and dietetics businesses; 7. gain knowledge of quality control, safety, and risk management in the food industry; 8. learn about innovations in nutrition and dietetics, including the use of technology and trends in the food industry; and 9. analyze case studies of successful nutrition and dietetics businesses. | | |
| **Learning Outcomes**  At the end of this course, students should be able to:   1. develop a comprehensive understanding of the principles of entrepreneurship in nutrition and dietetics; 2. develop skills in market research, branding, and marketing strategies for nutrition and dietetics businesses; 3. learn about legal and regulatory considerations for nutrition and dietetics businesses; 4. develop the ability to analyze business models and develop a business plan with financial projections; 5. gain knowledge of quality control, safety, and risk management in the food industry; 6. learn about innovations in nutrition and dietetics and the use of technology in the food industry; and 7. analyze case studies of successful nutrition and dietetics businesses and apply lessons learned to develop a successful business plan. | | |
| **Course Contents**  Introduction to entrepreneurship in nutrition and dietetics; The role of nutrition and dietetics in entrepreneurship; Business models in the food industry, including start-up, growth, and scaling; Market research, consumer behaviour, and customer segmentation; Developing a business plan, including financial projections and funding options; Marketing and branding strategies for nutrition and dietetics businesses; Legal and regulatory considerations for nutrition and dietetics businesses; Quality control, safety, and risk management in the food industry.  Case studies of successful nutrition and dietetics businesses; Production of functional foods, nutraceuticals, fermented foods (pickles, kefir, natto, etc. and probiotic cultures) and food additives; Traditional and ethnic food and beverages; Application of nutritional entrepreneurship in the management of chronic diseases. | | |

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| **Bayero University, Kano (BUK)** | |  |
| **Faculty of Basic Medical Sciences** | |  |
| **Department of Biochemistry** | |  |
| **B Sc. Human Nutrition and Dietetics** | |  |
| **BUK-NUT 511: Nutrition in Life Cycle** | **(2 Units C: LH 30; PH -)** | |
| **Senate approved relevance**  This course is designed in line with the vision and mission of 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 scientific, nutritional, educational and healthcare services to society devoid of exploitation. The character, professional outlook as well as the works ethics of the graduates would be sharpened by the course to achieve this goal.  This course would further strengthen the graduate to work as a team with others in the scientific, educational, nutritional and health sectors to achieve desired set-out team objectives while at the same time encouraging individual members’ professional development through appropriate mentorship and character building that would discourage the development of the barrage of emerging 21st century societal character vices inclusive of, but not limited to drug and substance abuse. In essence this course would enshrine the humane and professional aspects of the graduates as they serve society armed with knowledge and skills consistent with the vision and mission of Bayero University Kano. | | |
| **Overview**  This course provides an in-depth study of the role of nutrition in human development and health throughout the lifespan. The course covers the nutritional needs and recommendations during pregnancy, infancy, childhood, adolescence, adulthood, and older adulthood.  The course will also examines cultural and social influences on food choices and eating patterns, and the role of nutrition and dietetics professionals in promoting good nutrition and health outcomes. | | |
| **Objectives**  The objectives of this course are to**:**   1. describe the importance of nutrition in the life cycle and its impact on health and well-being; 2. identify the nutritional needs and recommendations for each stage of the life cycle; 3. describe the role of breastfeeding, complementary feeding, and the introduction of solid foods in infant and child nutrition; 4. examine the impact of adolescent nutrition on growth, development, and health outcomes; 5. learn the importance of healthy eating patterns, weight management, and chronic disease prevention and management in adult nutrition; 6. recognize the impact of aging on nutrient needs and the management of age-related health conditions in older adulthood; 7. identify cultural and social influences on food choices and eating patterns throughout the life cycle; and 8. describe the role of nutrition and dietetics professionals in promoting good nutrition and health outcomes throughout the life cycle. | | |
| **Learning Outcomes**  At the end of this course, students should be able to   1. explain the importance of nutrition in the life cycle and its impact on health and well-being; 2. identify the nutritional needs and recommendations for each stage of the life cycle; 3. discuss the role of breastfeeding, complementary feeding, and the introduction of solid foods in infant and child nutrition; 4. analyze the impact of adolescent nutrition on growth, development, and health outcomes; 5. describe the importance of healthy eating patterns, weight management, and chronic disease prevention and management in adult nutrition; 6. recognize the impact of aging on nutrient needs and the management of age-related health conditions in older adulthood; 7. evaluate cultural and social influences on food choices and eating patterns throughout the life cycle; and 8. apply knowledge of nutrition and dietetics in promoting good nutrition and health outcomes throughout the life cycle. | | |
| **Course Contents**  Introduction to the concept of nutrition in the life cycle and its importance for health and wellbeing throughout the lifespan; Nutritional needs and recommendations during pregnancy, including macronutrient and micronutrient requirements, weight management, and dietary guidelines; Infant and child nutrition, including the role of breastfeeding, complementary feeding, and the introduction of solid foods; Adolescent nutrition and its impact on growth, development, and health outcomes; Adult nutrition, including healthy eating patterns, weight management, and the prevention and management of chronic diseases; Nutrition in older adulthood, including the impact of aging on nutrient needs, the management of age-related health conditions, and the importance of maintaining good nutrition for health and wellbeing; The role of nutrition in specific life stages, such as the peri-menopausal period and menopause, and the management of related health conditions; Cultural and social influences on food choices and eating patterns throughout the life cycle; The role of nutrition and dietetics professionals in promoting good nutrition and health outcomes throughout the life cycle. | | |

**Recommendations on 70% CCMAS**

The Departmental Program Working Group (PWG) observed that the course **ANA 203: General and Systemic Embryology (2 Units C: LH 30; PH -)** is not relevant to B Sc. Human Nutrition and Dietetics. It is suggested that this course be replace by the course "**BUK-ANA 203: Anatomy of the Gastrointestinal Tract**".

**Course Title:** Anatomy of the Gastrointestinal Tract

**Course Overview:** This course is designed to provide students with a comprehensive understanding of the structure of the gastrointestinal tract.

The course will cover the anatomy of the gastrointestinal tract from the mouth to the anus, including the stomach, small intestine, large intestine, and associated organs such as the liver, pancreas, and gallbladder.

**Learning Objectives:** By the end of this course, students should be able to:

1. evaluate the structure of the gastrointestinal tract;
2. describe the structure of associated organs of the git;
3. analyze the impact of nutrition and dietary choices on gastrointestinal anatomy;
4. discuss the role of gut microbiota in the maintaining the integrity of the GIT; and
5. apply knowledge of gastrointestinal anatomy to evaluate and design appropriate dietary plans.

**Learning Outcomes:** Upon successful completion of this course, students will be able to:

1. describe the structure of the gastrointestinal tract;
2. describe the structures of the associated organs in (1) above;
3. evaluate the impact of nutrition and dietary choices on gastrointestinal structure;
4. evaluate the role of gut microbiota in the maintaining the integrity of the GIT; and
5. apply knowledge of gastrointestinal anatomy to evaluate and design appropriate dietary plans.

**Course Contents:**

Introduction to Gastrointestinal Anatomy; Overview of the digestive system; Gastrointestinal anatomy: Mouth and salivary glands, Stomach, Small intestine, Large intestine; Associated Organs: Liver, gallbladder and Pancreas; Nutrition and Gastrointestinal Anatomy: Impact of nutrition on gastrointestinal anatomy; Dietary interventions for gastrointestinal disorders and prebiotics, probiotics, and gut microbiota.