SCHOOL OF APPLIED HUMAN SCIENCES
KENYATTA UNIVERSITY

DEPARTMENT OF FOOD, NUTRITION AND DIETETICS

BACHELOR OF SCIENCE DEGREE IN FOOD, NUTRITION AND DIETETICS

AUGUST, 2014
BACHELOR OF SCIENCE DEGREE IN FOOD, NUTRITION AND DIETETICS

PREAMBLE
In Sub-Saharan Africa, disease and malnutrition are high and there is need for feasible and effective intervention programmes. In view of this, the government in its policy framework has recognized the role of health and nutrition in the well being of the population and incorporated them into its development programmes. Nutrition and health has therefore become a very important aspect of development, necessitating the training of professionals in the field of nutrition.

1. RATIONALE
The emerging nutrition and health problems pose a need to offer specialized training in the area of nutrition and health in order to provide appropriate advice and services. Currently, sub-Saharan Africa needs more trained expertise in this area to serve the diversified public health and nutritional needs and, therefore, the need for this programme. Through teaching, research and service the department will train manpower with the capacity to deal with emerging nutrition and health issues and hence bridge the existing capacity gaps in health and nutrition programmes.

2. VISION
To train highly qualified professionals in field of Food, Nutrition and Dietetics for improved livelihoods.

3. MISSION
The mission of the programme is to provide qualified professionals in the area of Food, Nutrition and Dietetics through teaching, research and community outreach.

4. COURSE OBJECTIVES:
The objectives of the programme are to:
1. Equip students with scientific knowledge and skills in food security, community nutrition and dietetics.
2. Equip students in planning, implementing and management of nutrition and health related programmes.
3. Offer training that will enable students to work in a variety of settings such as the hospital, food industry, research institutions, NGOs, emergencies and in community-based programmes.
4. Offer training that serves as a foundation for further studies and research in nutrition and health related programmes, that addresses emerging issues in nutrition.
5. Offer training that will enhance creativity that shall lead to self-reliance
6. Offer training that provides leadership and advocacy skills in solving problems related to in Food, Nutrition and Dietetics.

5. ENTRY REQUIREMENTS
5.1 Candidates must satisfy the minimum entry requirements of Kenyatta University and the School of Applied Human Sciences of a mean grade of C+(plus) at KCSE or its equivalent.
5.2 In addition candidates must have a minimum grade of C+(plus) in each of the following subjects; Mathematics, Biology/Biological Science, Chemistry/Physical Science, English/Kiswahili.
5.3 Or, Diploma holders in Nutrition and Dietetics or Nutrition and Food Science with a credit pass and a grade of C at KCSE

6. CREDIT TRANSFER
6.1 University regulations shall apply.

7. DEGREE STRUCTURE
7.1 The Department of Foods, Nutrition and Dietetics shall offer Bachelor of Science Degree in Food, Nutrition and Dietetics.
7.2 The programme shall be offered on full time and Institutional Based Programme (IBP). In order to graduate with a Bachelor of Science Degree in Food, Nutrition and Dietetics, the candidate must have done and passed at least 56 units. First Level 3 UCU's and 11 Departmental units, Second Level 14 units, Third Level 14 units and Fourth Level 14 Units.

8. DURATION
8.1 Programme shall take 4 academic years or 8 semesters for students on fulltime programme. The student should study for a minimum of 3580 hours. A theory unit will be 3 hours per week, 15 weeks, 45 hours in total per semester. A practical unit will be 7 hours a week, 15 weeks, 72 hours in total per semester.
8.2 Within the period of study, there will be two practicum sessions each lasting three months, a minimum of 480 hours each. One practicum will be done in a clinical setting (480 hours), the second will be done in a community setting.
8.3 In order to qualify for KNDI registration graduates are required to undertake a one year internship after graduation.

9. EXAMINATION
9.1 University regulations shall apply.
9.2 All units (Except for Seminar in Food, Nutrition and Dietetics, Project in Food, Nutrition and Dietetics and Practicum) shall be examined at the end of the semester. The examination will comprise of two Continuous Assessment Tests totaling to 30% and one examination of 70%.
9.3 For Seminar in Food, Nutrition and Dietetics the report will constitute 60% and oral presentation of 40%.
   9.3.1 For Project in Food, Nutrition and Dietetics, the proposal will constitute 20% report 60% and presentation 20%.
   9.3.2 For Practicum examination: the diary will consist of 20%, the main report 40%, the external assessor’s report 20% and the lecturer’s assessment 20%.
## COURSE STRUCTURE

### Year I

#### Semester I

<table>
<thead>
<tr>
<th>University Common Units</th>
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<tbody>
<tr>
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#### Department of Food, Nutrition and Dietetics

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<tr>
<td>HFN 141</td>
<td>Introduction to Food, Nutrition and Dietetics</td>
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<tr>
<td>HFN 142</td>
<td>Physical and Inorganic Chemistry</td>
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<td>HFN 143</td>
<td>First Aid</td>
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<tr>
<td>HFN 144</td>
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#### Semester II

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### Year II

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#### Semester II

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**Year III**

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**Semester II**

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**Year IV**

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<td>Project in Food, Nutrition and Dietetics</td>
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<td>Nutrition Intervention, Programme Planning, Monitoring and Evaluation</td>
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**Semester II**

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<td>Food Safety Hygiene and Legislation</td>
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<td>HFN 451</td>
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<td>Leadership and Policy in Food, Nutrition and Dietetics</td>
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<td>HFN 147</td>
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<tr>
<td>HFN 150</td>
<td>Information and Communication Technology</td>
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</tbody>
</table>

PT = Practicals
T= Theory
*Laboratory practical per week; ** Health facility practical per week; *** Field work per semester

**Note:**
1. A Unit is defined as an equivalent of 1 lecture or 2 hours of tutorial or 3 hours practical. Each unit will be offered in 3 units per as a minimum.
2. The following hours are included to fulfill the requirements of the practicum:
   - Clinical practicum: 618 hours
   - Community practicum: 800 hours
<table>
<thead>
<tr>
<th>Code</th>
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<th>ID</th>
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<th>Practical hours</th>
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<th>Total unit hours per semester</th>
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<tbody>
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*Laboratory practical per week; ** Health facility practical per week; *** Field work per semester

**Note:**
5. A Unit is defined as an equivalent of 1 lecture or 2 hours of tutorial or 3 hours practical. Each unit will be offered in 3 units per as a minimum.
6. The following hours are included to fulfill the requirements of the practicum:  
   Clinical practicum: 618 hours  
   Community practicum: 800 hours
<table>
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<th>Code</th>
<th>Unit Name</th>
<th>ID</th>
<th>Lecture hours per week</th>
<th>Practical hours</th>
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<td>HFN 440</td>
<td>Food and Nutrition Security</td>
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<td>HFN 441</td>
<td>Principles of Food Processing, Preservation and Storage</td>
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<td>Nutrition in Emergencies</td>
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<td>Nutrition Intervention, Programme Planning, Monitoring and Evaluation</td>
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<td>HFN 447</td>
<td>Seminar in Food, Nutrition and Dietetics</td>
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<td>Food Analysis</td>
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<td>Nutrition Epidemiology</td>
<td>T</td>
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<tr>
<td>HFN 450</td>
<td>Food Safety Hygiene and Legislation</td>
<td>T</td>
<td>3</td>
<td>-</td>
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*Laboratory practical per week; ** Health facility practical per week; *** Field work per semester

**Note:**

7. A Unit is defined as an equivalent of 1 lecture or 2 hours of tutorial or 3 hours practical. Each unit will be offered in 3 units per as a minimum.

8. The following hours are included to fulfill the requirements of the practicum:
   - Clinical practicum: 618 hours
   - Community practicum: 800 hours
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<td>HFN 452</td>
<td>Leadership in Food Nutrition and Dietetics</td>
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<td>HFN 453</td>
<td>Nutrition and Behaviour</td>
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<td>HFN 454</td>
<td>Practicum II</td>
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PT = Practicals  
T= Theory  
*Laboratory practical per week; ** Health facility practical per week; *** Field work per semester

**Note:**
9. A Unit is defined as an equivalent of 1 lecture or 2 hours of tutorial or 3 hours practical. Each unit will be offered in 3 units per as a minimum.  
10. The following hours are included to fulfill the requirements of the practicum:  
   Clinical practicum: 618 hours  
   Community practicum: 800 hours
COURSE DESCRIPTIONS

YEAR I, SEMESTER I

UCU 101: Development Studies
Concepts and theories of development and underdevelopment. Historical roots of African development and underdevelopment. Concept of Gender and rationale for mainstreaming gender. WID, WAD, and GAD approaches to development. Participatory development. Development strategies; indicators, problems and regional integration, population, resources and development, agriculture and rural development, urbanization and development, science, technology and development, law, justice, politics, and development, ethics, morality and development.

Course Objectives:
At the end of the course the learner should be able to;
- To interpret the concepts of development
- To analyze the essence of development in Africa
- To equip students with necessary skills to respond to development challenges and problems.
- To identify and explicate issues challenging the development processes in Africa.

References:
2. UNDP – Human Development Reports
3. World Bank – World Development Reports

UCU 103: Introduction to Critical and Creative Thinking
Philosophy; nature, methods, relevance. Critical and Creative thinking; nature, characteristics and relevance. Tools of analysis and evaluation. Intellectual virtues. Reasoning skills and argument analysis; types of arguments and purpose of arguments. Fallacious reasoning. Creativity and innovation; essential elements of creativity and innovation, creative methods and techniques, obstacles to criticality and creativity. Decision making; procedures, skills, techniques and problem solving. Personal Identity; self-examination, personal development and transformation. Case studies and models of criticality, creativity and innovation in various areas of study.

Course Objectives:
The course attempts to enable students to:
- Understand themselves and take charge of their own thinking.
- Appreciate education as a process of transformation from a state of dependency to autonomy
- Think clearly, accurately, consistently and logically.
- Acquire appropriate decision making and problem solving skills.
- Think through content in various disciplines and contexts and make good judgment.

References:
SMA 102: Basic Mathematics

Course Objectives
By the end of this course the learners should be able to:
- Perform basic mathematical calculations.
- Apply appropriate mathematical skills in solving problems in nutrition and dietetics.
- Use appropriate statistical techniques to solve related problems in nutrition and dietetics.

References:

HFN 141: Introduction to Food, Nutrition and Dietetics (NEW)
Introduction to food, nutrition and dietetics as a profession. History of nutrition and dietetics. Career opportunities, roles, responsibilities in the field of nutrition and dietetics for diploma holders. The relationships within the profession and interrelationships with other health professions. Contemporary issues in food, nutrition and dietetics. Food, nutrition and dietetics inter and intra professional relationships with other discipline.

Objectives:
By the end of the course the learner will be able to:
- Understand the field of food, nutrition and dietetics.
- Understand the history of nutrition
- Identify career opportunities available in the field of food, nutrition and dietetics.
- Learn the professional conduct of nutritionists and dieticians.

References:
HFN 142: Physical and Inorganic chemistry (NEW)

Course Objectives:
By the end of the course the learner should be able to;
- Explain basic structure and bonding of organic compounds
- Explain types of organic compounds and their reactions
- Carry out laboratory preparation of basic organic compounds
- Attain a general understanding of the basic principles of chemistry.
- Integrate the principles of chemistry into discussions of their practical applications in everyday life including the environment

References:

HFN 143: First Aid (NEW)
Overview of first aid. Roles and responsibilities of a first aider. The first aid box. Principles of first aid. First aid situations; shock, loss of consciousness, drowning, difficulty in breathing, cuts, infected wounds, burns, broken bones, dislocations, strains and sprains, poisoning, bites and stings, constipation, stomach problems, emergency problems of the gut, appendicitis and peritonitis. Care of the sick; home based nutritional and psychological support. Link between hospital and home care. Post first aid care. Practicals; 3 hours per week in the skills laboratory.

Course objectives:
By the end of the course, the learner should be able to:
- Handle an emergency and monitor a conscious victim for life- and non life-threatening conditions.
- Prioritize care for life-threatening injuries or sudden illnesses.
- Manage different types of emergencies and injuries.
- Practice basic precautions to reduce the risk of disease transmission and control.

References:
HFN 144: Macronutrients (NEW)
Carbohydrates, proteins, fats, alcohol and water; classification, chemical properties, structures, functions, dietary sources, Recommend Dietary Allowances (RDAs), Recommended Nutrient Intake (RNIs). Consequences of deficiencies; Signs, symptoms and management of deficiencies and Excesses and toxicities of nutrients. Nutrients; digestion, absorption and basic metabolism. Nutrient-nutrient interactions. Case studies.

Course objectives:
By the end of this course the learner should be able to:
- Define concepts and basic principles of carbohydrates, proteins, fats, water and alcohol.
- Describe the human dietary requirements of macro nutrients
- Describe deficiencies, excesses and toxicities associated with macronutrients.

References:

YEAR I, SEMESTER II

UCU 100: Communication Skills
Reading skills; skimming, scanning, intensive and critical reading, interpretation of non-verbal information, content tables and indices. Listening skills; in lectures, predicting structure of a lecture, understanding gist, recognizing change of topic and following tutorial discussions. Library skills; accessing library collections and utilizing library help services. Collecting and abstracting information; note-taking, note-making, classification and storage of information. Speaking skills; in tutorials, presenting a paper, seeking clarification and explanation, giving and justifying opinions and agreeing. Writing skills; analyzing tasks, planning, drafting and editing various types of writing, quoting and paraphrasing, indicating references, footnotes and bibliographies. Study techniques; planning work, organizing, storing and retrieving information, preparing for and writing examinations.

Course objectives:
By the end of this unit, the learner should be able to:
- Understand the importance of effective communication
- Comprehend the concepts and methods of effective communication
- Communicate effectively in a given situation
- Store and retrieve information
- Appreciate the barriers to communication

References
HFN 145: General Biology
Cell structure; cell theory, origin of life, structure, functions and distribution of cell organelles. Human tissue, organs and organs systems; skin, musculoskeletal, respiratory, reproductive, urinary, circulatory, digestive, nervous, endocrine, lymphatic and immune systems. Heredity; mendelian genetics, chromosomal basis and chemical basis of heredity.

Course objectives:
By the end of the course, students should be able to
- Outline the structure of the cell and cell organelles,
- Outline theories on the origin of life,
- Demonstrate a clear understanding of heredity and genetics
- Explain the organization and functions of biological structures such as cells, tissues, organs and systems.

References:

HFN 146: Nutrition in the Lifespan
Introduction to lifespan. Factors that determine individual’s nutritional needs. Importance of preconception nutrition in men and women. Nutritional requirements and deficiency diseases in; pregnancy, lactation, infancy, early childhood, late childhood, adolescence, adulthood and old age. Obesity among young children. Non food based interventions to maternal nutrition. Emerging issues affecting nutrition in lifecycle; policy, eating habits, globalization and technology. Emphasis on nutrition needs of vulnerable groups; how to meet these needs and the challenges faced in meeting the needs in resource poor settings.

Course objectives:
By the end of the course the learner should be able to:
- Describe the factors that influence individual nutritional needs.
- Describe the nutrient needs during the different stages of the lifecycle.
- Explain the diseases associated with deficiencies during the various stages.
- Identify emerging issues affecting nutrition in the lifecycle.

References:

HFN 147: Organic Chemistry
Functional group chemistry; hydrocarbons, alcohols, aldehydes, ketones, carboxylic acids, esters, thiols, phenols, ethers, amines and amides. Structure of biomolecules; amino acids, proteins, sugars and lipids. Chemistry related to characteristics and occurrence of nutrients and essential elements of diets. Functional group analysis and inter-conversions. Stereochemistry; nucleophilic substitution, elimination reactions and addition reactions. Tests for simple organic compounds. Practicals; 3 hours per week chemistry laboratory

Course objectives:
By the end of the course the learner should be able to:
1. Identify the main functional groups that constitute food nutrients, such as hydrocarbons, alcohols, aldehydes, ketones, carboxylic acid, amines and amino acids.
2. Draw and name the general structures of basic organic compounds and their functional groups
3. Explain some reactions processes of the main functional groups
4. Identify the functional groups that make food nutrients-carbohydrates, proteins, vitamins, lipids.
5. Explain some characteristics of these food nutrients.

References:

HFN 148: Sociology For Food, Nutrition and Dietetics (NEW)
Methodologies used in sociological study. Study of structure and functions of society; social relationships, evolution of human society, social structure, status, role, family, group, community. Class value; socialization, purpose of social inquiry. Tools in sociology and the social science of inquiry. Relationship between sociology and social sciences. Sociology of eating; diet and culture, cultural evolution and change, nutrition in transition, ethnology and ethnography in the food, nutrition and dietetics context.

Course Objectives:
At the end of course the learner should be able to:
- Discuss the development of sociology as a science and differentiate it from the other social sciences.
- Explain the elements of a culture and how culture is influencing food and nutrition.
- Explain the relationships between social structure, social stratification, and the consequences of social status.
- Describe impact of nutrition in transition in nutrition situation
- Describe inequality and other social factors contribute to social change.
References:

HFN 149: Micronutrients (NEW)

Course objectives:
By the end of this course the learner should be able to:
- Define concepts and basic principles of vitamins and minerals.
- Describe the human dietary requirements of micro nutrients
- Describe deficiencies, excesses and toxicities associated with micronutrients.

References:

HFN 150: Information and Communication Technology for Food, Nutrition and Dietetics (NEW)
Introduction. History and terminology used in computing. Operating systems; personal computer; major hardware/software components, files & folders and storage devices. Fundamentals of Microsoft windows. Software applications ; MS Word, MS Excel MS access, Ms Powerpoint, EPI info, SPSS, STATA, SAS, nutrisurvey, ENA for SMART. Internet applications. Special topics; Computers and society, security issues, viruses, use and misuse of computers. Computer languages, solving problems and creating applications. Role of Information technology in Nutrition. Practicals; 3 hours per week in a computer laboratory.

Course Objectives:
At the end of the course the learner should be able to;
- Be familiar with various computer applications
- Use relevant software related to nutrition
- Describe the role of information technology in nutrition.

References:
YEAR II, SEMESTER I

HFN 240: Foundations of Food Preparation

Course objectives:
By end of the course learners should have developed/acquired:
- Knowledge about basic principles of food preparation.
- Knowledge about properties of foods and their function in food preparation.
- Ability to utilize various properties of different foods in food preparation.
- Ability to demonstrate skills in proper food handling, preparation, presentation and maintenance of high sanitation standards.

References:

HFN 241: Human Nutrition

Course Objectives:
By the end of the course, learners should be able to;
- Describe the chemical and physical structures as well as properties of nutrients.
- Explain the function of nutrients in the body.
- Describe digestion, absorption, assimilation and utilization of nutrients in the body.
- State the recommended daily allowances of various nutrients (RDA).
- Explain factors affecting nutrient requirements

References:

HFN 242: Food Microbiology and Parasitology I (RENAMEDE)

Course objectives:
By the end of this course the learner should be able to:
- Explain the role and significance of micro-organisms and parasites in food.
- Describe the intrinsic and extrinsic parameters of foods that affect microbial growth.
- Culture, isolate and classify micro-organisms and parasites in food.

References

HFN 243: Nutrition and HIV and AIDS

Course objectives:
By the end of this course, students should be able to:
- Describe relationship between nutrition and HIV/AIDS
- Describe the aims of nutritional care and support for PLWHAs
- Describe the link between HIV/AIDS and food security as well as effective nutritional care in food insecurity situations
• Outline nutritional care and support in different physiological states i.e. pregnancy, lactation and adolescents
• Explain nutrient ARVs/drug interactions

References:

HFN 244: Primary Health Care (NEW)
Definition of Primary Health Care (PHC). Goal of PHC. Key elements of PHC. Origin, organization, strategies, implementation, achievements and constraints. Alma Ata Declaration. Approaches of PHC. Financing and reforms in PHC; community strategy, Community Based Health Care (CBHC) and World Health Organization’s goal of health for all. Millennium Development Goals (MDGs). Community resource persons/volunteers roles and training; Community Health Workers (CHWs) and Community Health Extension Workers(CHEWs). Community-based health services; Bamako Initiative and community-based distribution of contraceptives. Child health; the aims and principles of Extended Programme of Immunization (EPI), cold chain management, the preventable childhood diseases, the vaccines, the national immunization schedule, the Integrated Management of Childhood Illnesses (IMCI) concept and application, Integrated Management of Acute Malnutrition (IMAM), Prevention of Mother to Child Transmission (PMCT) and Baby Friendly Hospital Initiatives (BFHI). Roles of traditional health. Case studies of PHC implementation; Kenya, Uganda, Tanzania, South Africa, Nigeria and Ghana. Field trips; students should be exposed to 40 practical hours hands on experience in primary health care in a health facility.

Course objectives:
By the end of this course unit, the learner should be able to:
• Explain the concept of primary health care.
• Apply PHC knowledge and skills in nutrition and dietetics
• Plan, implement and evaluate community projects or programmes

References:

HFN 245: Human Anatomy
Introduction to the human body; surface anatomy, body cavities, directional anatomy and anatomical positions/planes and their importance in clinical nutrition. A gross and microscopic
anatomy of human cell and tissues: Systems; integumentary, muscular, nervous, skeletal, digestive and its accessory organs, respiratory, circulatory, lymphatic, endocrine, urinary and reproductive. Anatomy of the sense organs; the human eye, ear, nose and the tongue. Practicals; 3 hours per week in a human anatomy laboratory.

Course objectives
By the end of the course the learner should be able to;
- Define human anatomy.
- Identify, draw and describe the cell as the basic building block of the body.
- Identify different organs and body systems.
- Explain the main functions of different organs and organ systems.

References:

HFN 246: Nutrition Assessment

Course objectives:
At the end of the course, the learner should be able to;
- Define concepts in nutritional assessment.
- State the common nutritional problems and describe their causes.
- Explain the uses of the assessment of nutritional status of individuals and groups.
- Describe the types of assessment methods, the advantages, disadvantages and limitations.
- Plan and conduct a nutrition survey in a community

References:
YEAR II, SEMESTER II

HFN 247: Nutrition Anthropology
Sociology of food and nutrition; evolutionary and behavioral. Social and cultural perspectives in nutrition; food taboos, cultural notions, personhood, kinship, sharing and morality. Human behaviour in food acquisition; preparation and consumption. Clinical and social significance of the human diet and nutrition. Anthropological methodologies in nutritional studies; social cultural processes and nutrition, cultural and ideational systems, Physiological adaptation, population genetics, and nutrition. Applied research for nutrition programs. Evolutionary perspectives on human diet; biological plasticity, human growth and development, hunter gatherer nutrition, social factors that determine the patterns of nutrition diseases within and across population. The politics of food. Field trips; 40 hours per semesters, 5 hours per week of nutrition anthropology projects in the community.

Course objectives:
By the end of the course, learners should be able to:
- Describe the role of culture as a diet determinant
- Describe nutritional behaviour and practices of the different cultures
- Discuss various food taboos and social factors that influence lifestyle diseases
- Demonstrate ability to influence eating habits in different cultures

References:

HFN 248: Meal Planning, Management and Services
Introduction to meal planning. Economic, aesthetic, nutritional and managerial considerations in meal planning and service. Kitchen management and equipment for meal preparation production, service and food storage. Food and beverage service and etiquette. Introduction to food service; the service area, table appointments and methods of service. Introduction to the food pyramid and food exchange list. Meal planning for the family, special groups, institutions and special occasions. Practicals; 3 hour per week sessions in a food laboratory.

Course objectives:
By the end of the course the learner should be able to:
- Describe the processes of food selection, preparation and service in different situations.
- Plan meals for different age groups
- Describe the stages in menu planning, implementation for institutional settings.
References:

HFN 249: Nutrition and Psychology (NEW)
Basic principles of human psychology; psychosexual development stages, social development theories of personality, personality structure, personality disorders. Learning and motivation; perception and attention, thinking and decision making. Abnormal behaviour. Behaviorism; classical conditioning, operant conditioning. Psychoanalytic factors and health, psychological disorders; anxiety and mood disorders, dissociative and somatoform disorders, schizophrenia and personality disorders.

Course Objectives
At the end of the course the learner should be able to;
- Explain the basic principles of human psychology
- Explain the personality theories structure and disorder
- Discuss the psychological disorders
- Explain how psychological disorders affect nutritional status

References:

HFN 250: Nutrition and Disease Management I (NEW)
Introduction to immunology; synergy of nutrition and infections. Nutrition management of selected communicable diseases. Acute and chronic febrile disorders; malaria, typhoid, tuberculosis, HIV and AIDS, GIT diseases; diarrhoea, constipation and peptic ulcers. Hepatic diseases, renal disease, musculoskeletal diseases and neuromuscular diseases. Food allergies.
Field trips; 6 hour weekly visits to a health facility for hands on management of diseases listed above.

**Course Objectives:**

At the end of the course the learner should be able to:

- Explain the nutrition implication of the various diseases
- Discuss the pathophysiology of diseases
- Explain the nutrition management of the various diseases
- Describe how to formulate a diet for patient for various diseases

**References:**


**HFN 251: Life Skills (NEW)**


**Course objectives:**

By the end of this course the learner should be able to,

- Demonstrate understanding of the life skills principles and techniques
- Apply life skill education in leadership and management
- Apply life skill education in entrepreneurship

**References:**


**HFN 252: Human Physiology**

Introduction to functions of the human body structures and the associated pathophysiology of the organs. Parameters and the devices used in measurement of the physiology of the organs.
Physiologic levels of human body organization, human development and inheritance. Physiology of the human cell and tissue; the skin, muscles, skeletal system, joints and associated pathophysiology. Physiology of the nervous system; the brain, spinal cord, peripheral nervous system and the neurotransmissions across the brain and the visceral organs/receptors/sensory organ and the neuromuscular junction. Physiology of the endocrine system and neuroendocrine control of body homeostasis and personality/behavior patterns. Physiology of cardiovascular, lymphatic, respiratory, digestive, urinary and the reproductive system. Exercise physiology and the aging process. Practicals; 3 hours per week practical in a human physiology laboratory.

Course Objectives:
- Describe functional organization of the human body
- Discuss how physiological systems function and how they are coordinated for overall functioning of the body
- Describe principles of neurology and fundamentals of brain structure
- Discuss reproductive and exercise physiology
- Discuss approaches in measurement of physiological parameter

References:

**HFN 253: Nutrition Surveillance**

Course Objectives:
- Discuss the importance of nutrition surveillance
- Describe methods of carrying out nutrition surveillance
- Explain the various surveillance systems

Reference:
1. FSAU (2005), Nutrition guide to data collection, interpretation analysis and use, FSAU for Somalia
3. B. Cogill (2001), Anthropometric indicators measurement guide, FANTA
YEAR III, SEMESTER I

HCU 300: Introduction to Research Methods
Introduction to research methods. Importance of research in food, nutrition and dietetics. Meaning, purpose and types of research. Qualitative and quantitative approaches. Proposal development process; topic and title development, background information, statement of the problem, objectives and hypotheses, review of literature, research design, sample size determination and sampling techniques, data collection tools and procedures, research protocol and ethics. Referencing. Basic methods of data analysis and interpretations. Project; writing a proposal and presentation.

Course Objectives:
At the end of the course, the learner will be able to:

- Define research and state the characteristics and tools of research
- Explain the application of quantitative and qualitative methodologies in research
- Describe the components of a research proposal
- Write research proposal

References:

HFN 341: Maternal and Child Nutrition

Course Objectives:
At the end of the course the learner should be able to;

- Explain nutritional requirements during pre-conception period, pregnancy and lactation.
- Explain infant feeding and Breastfeeding codes.
- Describe the importance of growth monitoring for children.
- Describe intervention programmes for mother and child

References:

HFN 342: Nutrition and Sports

Course Objectives:
At the end of the course the learner should be able to;
• Describe the relationship between nutritional demands and physical activity
• Determine caloric and fluid needs for performance
• Prescribe optimal nutrition for health, exercise and sport for various populations
• Describe eating disorders among sports persons.
• Describe use and abuse of ergogenic aids and nutritional supplements

References:

HFN 343: Entrepreneurship in Nutrition

Course Objectives:
At the end of the course the learner should be able to
• Demonstrate positive attitudes towards self-employment.
• Develop a business plan for a business.
• State the factors liable to affect the success of a business.
• Portray desire to venture into a business.
• Apply entrepreneurial competencies in business situations
• Acquire management skills necessary for running a successful enterprise.
References:

HFN 344: Food Microbiology and Parasitology II (RENADED)
Control of microbial growth in foods. Destruction of microorganisms. Indicator microorganisms. Food spoilage, examples of specific foods and food products; meat, fish, milk, eggs, cereals, legumes, nuts, spices and salads. Microbial standards and testing. Food borne illnesses; food poisoning, food infection and food intoxication. Pathogenesis, clinical signs, diagnosis, treatment and control of parasites of importance to food safety. Zoonosis, taeniasis, cystercercosis, hydatidosis, trichinosis, ascaris and schistosomiasis. One field trip to food industries and microbiology laboratories. Practicals; 3 hours per week in a food microbiology laboratory practicals

Course Objectives:
At the end of the course the learner should be able to;
- Explain the classification of food related micro-organisms
- Explain the characteristics of food related micro-organisms
- Describe the role of micro-organism in food production, processing and preservation
- Discuss the effects of parasites on the nutrition status

References:

HFN 345: Nutrition and Disease Management II (NEW)
Examining the interrelationships of physiology, biochemistry and nutrition as related to medical nutrition therapy. Eating disorders. Non communicable diseases; diabetes mellitus, cardiovascular disorders, weight disorders, burns and trauma, surgical, hepatic, biliary diseases and cancer. Field Visits; 6 hour weekly visits to a health facility for hands on management of diseases listed above.

Course Objectives:
At the end of the course the learner should be able to
- Explain the nutrition implication of the various diseases
- Discuss the pathophysiology of diseases
- Explain the nutrition management of the various diseases
- Describe how to formulate a diet for patient with various conditions.
To understand the etiology and symptoms of specific infectious and organ-system diseases
To understand the metabolic changes and nutritional implications of the specific infectious and organ-system diseases
To understand the role of nutrition in the management of specific infectious and organ-system diseases

References:

HFN 346: Nutrition Counseling
Roles and qualities for the Nutrition Counselor. Sources of information for the nutrition Counselor. Theories of understanding and influencing nutrition behavior. Nutrition counseling tools and techniques ‘The How’. The counseling process/steps; rapport, assessment, diagnosis, counseling and follow up at individual and group levels. Counseling at cross-cultural and multi-cultural settings, dietary habits that require change at individual, household, community and institutional levels. National and international nutrition counseling guidelines. Counseling in different disease conditions. Role plays. Case studies. Skill laboratory practicals; 6 hours per week of nutrition counseling to a client.

Course objectives:
By the end of this course the learner should be able to:
- Explain the meaning, purpose of nutrition counseling with key issues in planning a counseling session
- Understand the roles and qualities of a nutrition counselor
- Describe different techniques that are used in nutrition counseling and elements of quality nutrition to nutrition counseling
- Design nutrition counseling plans for at risk groups
- Discuss dietary practices and habits that require change at individual, household, and community/institutional level

References:
YEAR III, SEMESTER II

HFN 347: Biostatistics in Nutrition (NEW)
Introduction to biostatistics, uses of biostatistics, variables and scales of measurements. Presentation of data; bar charts, pie charts, histograms. Descriptive statistics; frequency distribution curves, averages, means, weighed means, median, dispersion, standard deviation, measure of central tendency and dispersion. Probability and normal distributions. Estimation and hypothesis testing. Probability testing; test of significance confidence intervals, difference intervals, difference between means, univariate and multivariate analysis, parametric and non-parametric tests. Inferential statistics; t-tests, chi-square tests, analysis of variance and covariance, regression and correlation. Measurements to test strengths of association between exposure and outcome variables, ODDS ratios and relative risks. Elementary data analysis using nutrition analysis packages (ENA for SMART, EPI INFO, NUTRISURVEY) and interpretation and application of biostatistics.

Course Objectives;
At the end of the course the learner will be expected to;
- Calculate various measures of central tendency and variability of data
- Carry out simple parametric and non-parametric tests
- Correlate independent and dependent variables using Spearman and Pearson’s correlate coefficients.
- Use statistical method to obtain regression equation for the best line of fit.
- Use statistical methods and packages to analyze nutritional data.

References:

HFN 348: Analytical Chemistry
Solutions and pH. Titrimetric analysis; acid-base, complex-metric, conductometric and non-aqueous titrations. Applications in food quality control. Gravimetric analysis. Instrumental methods of analysis; flame photometry, atomic absorption spectrophotometry, fluorimetry, nuclear magnetic resonance, magnetic resonance imaging and separative techniques; gas chromatographic techniques, Thin Layer Chromatography, Higher Performance Liquid Chromatography and Gas Chromagraphy-Mass Spectrophotometry. Practicals; 3 hours per week in a chemistry laboratory.

Course Objectives:
At the end of the course the learner should be able to;
- Appreciate analytical chemistry for qualitative and quantitative analysis of samples
• Understand various analytical techniques for determination of metals using atomic spectroscopy and x-ray methods, determination of concentration of acids/bases using titrimetric methods and separation of sample mixture by gas chromatography.
• Apply knowledge of instrumental and chemical analytical methods for the analysis of sample.

Reference:

HFN 349: Nutrition Education

Course objectives:
At the end of the course, the student should be able to:
• Discuss the aims of nutrition education and the role of a nutrition educator
• Enumerate the main problems and potentials of nutrition education
• Describe the various approaches used in nutritional education
• Assess the value of different nutrition education messages, media and materials
• Discuss the role of stakeholders in provision of nutrition education

References:

HFN 350: Food Biotechnology (NEW)
Definitions and concepts. Biotechnology and traditionally fermented foods. Contribution of modern biotechnology to the improvement of traditional fermented foods. Enzymes in food processing and new product development. Impact of biotechnology on food flavour and colour in food industries. Plant biotechnology and genetically modified foods; meat quality improvements through biotechnology applications, biotechnology regulation and food safety. Social and ethical issues in biotechnology. Field trip to a food industry. Practicals; 3 hours per week in a food microbiology laboratory.
Course Objectives:
At the end of the course the learner should be able to;

- Explain the concept of biotechnology
- Describe how microorganisms can be genetically modified
- Apply biotechnological techniques in food production and fermentation processes,
- Analyse the current status and future prospects of food biotechnology

References:

HFN 351: Nutrition Biochemistry

Course objectives:
At the end of the unit, the learner should be able to:

- Explain the metabolic processes that follow digestion and absorption of simple sugars, amino acids, free fatty acids, and cholesterol.
- Explain the metabolic functions of vitamins and minerals obtained from foods.
- Explain enzymatic and non-enzymatic browning and oxidation of foods – meat, fish, vegetables, fruits and milk
- Explain the principle of fermentation and malting processes.
- Explain the importance of pigments and colours in foods

References:

HFN 352: Therapeutic Dietetics
cleft lip and palate. Malabsorption problems; inborn errors of metabolism, lactose intolerance and food allergies. Gastrointestinal diseases and disorders. Management of underweight, overweight and obesity. Field trips; 6 hours per week, exposure to therapeutic dietetics practicals in a health facility setting.

Course Objectives:
At the end of the course the learner should be able to;
- Explain the principles of diet therapy.
- Describe types of diet modification used in patient care.
- Explain the application of different modes of feeding

Reference:
7. Springhouse Corporation (2002). Fluids & electrolytes made incredibly easy. (2nd Ed.) Publisher: Springhouse, Pa.: Springhouse

HFN 353: Practicum I
Supervised practical experience in medical facility settings (or) organizations dealing with community nutrition (or) food industries to gain hands-on experience in the relevant areas for a period of 3 months after completion of units up to third year level. Maintenance of a daily record of activities in the student diary and submission of a report at the end of practicum. Evaluation by external supervisor using the departmental evaluation form during practicum and submission of the marks to the department. Diary and practicum report marking by departmental lecturers upon completion and award of marks to the unit.

Course objectives:
By the end of the course, the learner should be able to:
- Write a report on ones experience in the institution or organization of attachment.
- Demonstrate use of nutrition and dietetic skills in the place of attachment.
- Identify problems and intervention for discussion with the management of the organization or facility.
- Document lessons learnt from the field attachment exercise.

Reference
YEAR IV, SEMESTER I

HFN 440: Food and Nutrition Security


Course objectives:

By the end of the course, the learner should be able to:

- Describe the dimensions of food security
- Discuss the Sustainable Livelihood Framework by DFID/IFAD.
- Describe the food chain.
- Describe the methods of determining/measuring/assessing food and nutrition security and agricultural planning.
- Discuss problems related to food security such as HIV/AIDS, gender issues, rural and urban food and nutrition security.
- Discuss the early warning systems, nutrition policy issues, planning and interventions.

References:


HFN 441: Principles of Food Processing, Preservation and Storage

Diversity and quality of food materials. Quality of raw food materials. Deterioration of foods; cases, effects and control. Processing and preservation techniques: energy input; heat, irradiation, microwaves, pressure. Temperature reduction; chilling and freezing. Water removal; concentration, evaporative drying and freeze drying. Biological methods; acid and alcohol fermentation and malting. Chemical methods; additives and smoking. Nutrient loss and process optimization. Packaging and storage. Practicals; 3 hours per week in a food processing laboratory.

Course Objectives:

By the end of the course learner should be able to:

- Explain the principles of food processing and preservation
- Describe the effects of the processing methods on the sensorial and nutritional quality of foods
• Describe appropriate storage conditions for different classes of foods

References:

HFN 442: Nutrition in Emergencies
Types of emergency situation. Assessment of nutrition status in emergencies; Lot Quality Assurance Survey (LQAS) and Standardized Monitoring ART methodology in conducting nutrition surveys. Nutrition interventions in emergency situation; CTC programme planning, implementation, monitoring and evaluation. Human rights approaches to emergencies, cultural dynamics and gender issues. Principles of humanitarian assistance. SPHERE standards. Vulnerable groups; Disaster preparedness plan. Challenges in the management of a crises situation. Current developments in nutrition in emergencies. Field trips; 40 hours per semesters of exposure to an emergency setting.

Course Objectives:
At the end of the course, the learner will be able to:
• Describe the types and effect of emergencies on nutrition and health
• Discuss the issues of nutrition and public health concerns during an emergency
• Discuss the various nutrition interventions under taken during an emergency
• Understand the role of the various stakeholders and community participation in emergency
• Explain how to monitor and evaluate nutrition responses

References:
2. SPHERE project 2004. Humanitarian Chatter and Minimum Standards in Disaster
4. SPHERE Project 2004: Humanitarian Charter and Minimum Standards in disaster

HFN 443: Food Chemistry (NEW)

Course Objectives:
By the end of this course learner should be able to:

- Describe the relationship between the chemical composition of food and its chemical, physical and sensory properties.
- To identify the chemical structure of food components including fats, proteins, amino acids, carbohydrates and vitamins to understand how structure determines functional behaviour of these food components with respect to food quality, nutrition and safety.
- To explain how temperature, pH, ionic strength, type of bonds, aw affect chemical changes in food systems and how to adjust these conditions to improve or minimize chemical and biochemical deterioration of food systems.
- To compare and contrast food processing operations on the chemical changes of food components as they relate to food quality, nutrient composition and safety.

References:

**HFN 444: Project in Food, Nutrition and Dietetics**
Proposal development in a selected topic in the areas of food, nutrition and dietetics. Data collection on the proposed topic, data analysis report writing and presentation. Proposal development and data collection

**Course Objectives:**
By the end of this unit, students shall be able to:

- Describe the process of identifying research projects in nutrition.
- Describe data collection strategies for projects.
- Describe proposal components as applied in different project proposals.
- Write a proposal, conduct a research (data collection) analyze data and present results.

References:
1. WFP report on project implementation, 2000

**HFN 445: Nutrition Intervention, Programme Planning, Monitoring and Evaluation (RENAAMED)**

Course objectives:
At the end of the course the learner should be able to:
- Describe the different types of interventions and their appropriateness in different situations
- Discuss the criteria for selecting nutrition intervention programmes
- Construct the tools used in planning and evaluation of interventions
- Analyse case studies of successful interventions

References:

HFN 446: Nutrition Care Process and Therapy (NEW)
Introduction to nutrition therapy. Role of dieticians and other health professionals in therapeutic care process. Application of the principles of dietetics. Nutrition care algorithms, steps in the nutrition care process. Practical standard operating procedures. Steps in nutrition care process; assessment, diagnosis, nutrition intervention, nutrition monitoring and evaluation. Design and implementation of nutrition care strategies; evaluation of client response and progress. Field trip; 6 hours per week practical exposure to steps of nutrition care process in a health facility setting.

Course Objectives:
At the end of the course the learner should be able to:
- Describe nutrition therapy and its role in the management of diseases
- Describe the nutritional care processes.
- Describe the implementation, monitoring and evaluation of nutrition care process

References:

YEAB IV, SEMESTER II

HFN 447: Seminars in Food, Nutrition and Dietetics
Analysis of contemporary global issues in food, nutrition and dietetics. Literature search, critiquing research articles, discussion and presentation skill. Written research seminar reports. Evaluation is by 100% continuous assessment.

Course objectives:
At the end of the course learner should be able to:
- Discuss the current issues in foods, nutrition and dietetics
- Critique papers and presentations
- Write academic papers and present them in a classroom setting.
- Explain factors involved in planning and organizing for workshops and seminars

References:

HFN 448: Food Analysis
Instrumental and biophysical techniques in food analysis. Standard methods for assay of food components; protein, carbohydrates, lipids, vitamin and minerals and enzyme assay. Practical application of chromatographic, calorimetric, fluorimetric and spectrophotometric methods. Nuclear magnetic and resonance imaging. Analytical standards. Specifications for food analysis. Practicals; 3 hours per week in a food chemistry laboratory.

Course objective:
At the end of the course the learner should be able to:
- Be able to analyze various food products.
- Describe the basic principles of analytical procedures and techniques commonly used to provide information about the chemical composition, structure and physical properties of food materials.
- Be able to perform food analysis experiments, analyzing data and reporting their findings.

References:
HFN 449: Nutritional Epidemiology

Course objectives:
At the end of the course the learner will be able to;
- Define epidemiology and epidemiological concepts
- Explain the cause of malnutrition and other diseases
- Calculate different rates of mortality and morbidity
- Discuss the different epidemiological models
- Apply epidemiology to the study and practice of nutrition related fields

References:

HFN 450: Food Safety, Hygiene and Legislation

Course objectives:
At the end of the course the learner should be able to;
- Define different concepts as used in food hygiene safety and legislation.
- Explain the typical growth curve of microorganisms in food
- Explain Hazard Analysis Critical Control Point
- Differentiate food standards from food laws
- Apply principles of good manufacturing practices in institutional management

References:

HFN 451: Nutrition Pharmacology (NEW)

Course Objectives:
On completion of this subject students will be able to:
- To identify the common drugs used in pharmacotherapy in the health facilities
- Demonstrate the understanding of common food, nutrient and drug interaction in human
- Demonstrate the understanding of the corrective measures and alternative methods available for drug, food and nutrient interactions
- Be familiar with drugs that treat various conditions

References:

HFN: 452 Leadership and Policy in Food, Nutrition and Dietetics (NEW)

Course Objectives:
By the end of the course the students should be able to;
- Identify appropriate indicators to use for food, nutrition and policy planning.
- The students should also be able to analyze food and nutrition policies in Kenya.
• Describe the steps in policy formulation processes in the area of food nutrition and dietetics.
• Describe different leadership styles that can be applied in the management of nutritional programmes.

References:

HFN 453: Nutrition and behavior (NEW)
Introduction to nutrition behavior. Concepts and models in nutrition and behavior. Research methods and analytical strategies. Direct effect of nutrition and behavior; brain behavior connections, short term effects of nutrition of nutrition and behavior: neurotransmitters. Effects of chronic and acute forms of under nutrition; B vitamins, the central nervous system and behavior; minerals, central nervous system and behavior; dietary supplements, mental performance and behavior; bio-behavioral and psychosocial influence on nutrition; dietary sugar and behavior; caffeine, the methylxanthines and behavior; alcohol, brain functioning and behavior; eating disorder syndrome: anorexia bulimia nervosa; behavioral aspects of overweight and obesity.

Course Objectives:
At the end of the course, the students should be able to:
• Describe the effects of nutrition on behavior
• Describe the effects of nutrient deficiencies on behavior
• Identify nutritional disorders that cause behavior changes

References

HFN 454: Practicum II
Supervised practical experience in medical facility settings (or) organizations dealing with community nutrition to gain hands-on experience in the relevant areas for a period of 3 months. Upon completion of all the course units before graduation. Maintenance of a daily record of activities in the student diary and submission of a report at the end of practicum. Evaluation by external supervisor using the departmental evaluation form during practicum and submission of
the marks to the department. Diary and practicum report marking by departmental lecturers upon completion and award of marks to the unit.

Course objectives:
By the end of the course, the learner should be able to:

- Write a report on one's experience in the institution or organization of attachment.
- Demonstrate use of nutrition and dietetic skills in the place of attachment.
- Conduct a situational analysis in regard nutrition and dietetics management at the assigned organization or health facility.
- Identify problems and intervention for discussion with the management of the organization or facility.
- Document lessons learnt from the field attachment exercise.

References: