DIPLOMA IN NUTRITION AND DIETETICS CURRICULUM

KNDI

TABLE OF CONTENT

INTRODUCTION

1.1 Background information

The Kenya Nutritionist and Dietitians Institute (KNDI) was established by an Act of Parliament; the Nutritionist and Dietitian's Act No. 10.18 of 2007. It was established to provide for training, registration and licensing of nutritionists and dietitians; provide for the registration of the standards and practice of the profession; ensure the effective participation in matters relating o nutrition and dietetics. The functions of KNDI include to

1. Determine and set a framework for the professional practice of nutritionists and dietitians;

   Set and enforce standards of professional practice for nutrition and dietetics
2. Regulate quality training at all levels for persons seeking registration under the act

3.Enforce a programme of quality assurance for the nutrition and dietetics profession

4. Set and administer examinations according to the rules and regulations of KNDI
5. Approve institutions for the purpose of training persons seeking registration under the act
6. Perform other functions as may be necessary for the proper administration of the act

1.2 Historical background

People's lifestyle has continued to change over time with varying and changing health and nutrition and related consequences. Food accessibility and availability including consumption patterns are increasingly changing leading to an increase in nutrition related morbidity and mortality. Environmental degradation and climate warming have negatively impacted on food production, availability and consumption of adequate diets leading to hunger and disease.

To address these problems, home Science was started as a certificate course which was offered for three months to nurses who became nutrition field workers in 1969, to handle the nutritional related issues due to emerging and re-emerging issues. The focus by then was on curative more than prevention, promotion and rehabilitation. Majority of the ones who went through the treatment, in relation to nutrition related conditions, came back with the same challenges. Hence there was need to train health service providers in nutrition to provide care at all levels. Later the course was upgraded to certificate which was to last for two years admitting high school

graduates in 1972. This continued up to 1996 when Diploma level course was introduced due to malnutrition challenges that needed interventions at a higher level, to combat diseases and manage the conditions competently. In 1985, a master programme in human nutrition was started at university level.

1.3 Rationale

Millenium Development Goals (MDGs)1, 4, 5 and 6 are focused on addressing poverty and hunger, maternal and child morbidity and mortality. Currently in Kenya, 35% of under five children are stunted, 14% are severely stunted, 7% are wasted of which 2% are severely wasted and 16 % are underweight (HDHS, 2008-2009). According to Kenya National Technical Guidelines for Micronutrient Deficiency, (2008), the rates of underweight and stunting are 10% more in rural areas than in urban areas; Anemia affects 3 out of 4 under five children; 1 out of every 2 women of reproductive age suffer from anemia; iodine deficiency stands at 16%; iron deficiency 60%; Vitamin A deficiency 84%. Therefore, it is essential to equip nutritionist and dietitians with adequate knowledge and skills as ultimate human resource to aid in revitalizing and integrating preventive and curative nutrition services in the healthcare system in line with vision 2030.

1.4 Vision

To become an innovative regulatory institute in the provision of nutrition and dietetics services recognized internationally.

1.5 Mission

To provide for training, registration and licensing of nutritionists and dietitians; to provide for the regulation of standards and practice of the profession; to ensure their effective participation in matters relating to nutrition and dietetics and for connected purposes

2. 1 ROLES AND THE RESPONSIBILITIES OF THE DIPLOMA GRADUATES

1. Provision of Nutrition and Dietetic services in a range of settings including; community, health facilities, schools, churches, and food service departments.

2. Education of consumers on issues of nutrition and dietetics at community and family level.
3. Participation in the management of people with special needs and emerging issues including setting up appropriate interventions.
4. Planning of community nutrition and dietetic including setting up appropriate interventions in disasters and emergency.
5. Collaboration with other agencies including government, NGOs/FBOs, public and private sector on matters related to nutrition and dietetics.

6. Sensitization of other professionals working in the community on nutrition and dietetic needs/requirements and advocate for appropriate action
7. Assist in community and operational research and keep up to date with professional development.
8. Assist in Nutrition Surveillance, monitoring and evaluation at community levels.

2.2 MINIMUM ENTRY REQUIREMENTS

The minimum requirements shall be KCSE aggregate Grade C and its equivalent as ascertained by Ministry of Education and KNDI. Mandatory subjects shall be C in English, Biology/ Biological Sciences and chemistry/ Physical sciences.

Additional subjects shall be C- in any of the following subjects –

- Physics
- Mathematics,
- Home Science
- Agriculture
- General science

Credit transfer

Candidates holding certificates in Nutrition and Dietetics from recognized institutions shall also be admitted and may be considered for credit transfers.

3.0 THE CURRICULUM DETAILS

3.1 COMMON COURSES

3.1.1 COMMUNICATION SKILLS

3.1.1.1 Course purpose

This unit is intended to equip trainees with various concepts and skills of communication that they shall apply effectively in their day to day activities.

3.1.1.2 Course objectives:

By the end of this unit, the trainee should be able to:

a) Understand the importance of effective communication
b) Comprehend the concepts and methods of effective communication
c) Communicate effectively in a given situation
d) Store and retrieve information
e) Appreciate the barriers to communication

3.1.1.3 Course Content

Purpose and process of communication; Importance of communication: Process of communication: Informal and formal methods of transmission: Essentials of effective communication: Barriers to effective communication: Principles of communication: Factors to consider in choosing communication media. Forms of communication; Written communication: Verbal communication: Audio /Visual communication: Traditional forms of communication: Non verbal communication: Storage and retrieval of information; Methods of storing and retrieving information: Setting out a filing system: Planning and conducting of interviews and meetings; Definitions; Procedures used in planning and conducting interviews and meetings: Notices for meetings: Communication as a tool of management; Uses of communication by management: External aspects of communication; External aspects of communication as a tool of public relations: How external communication is used: Mass media as a form of communication:

3.1.1.4 Teaching Methodology

1. Demonstrations,
2. Practicals,
3. Lectures and
4. Tutorials

3.1.1.5 Instructional Materials/Equipment

1. Projectors,
2. Handouts,
3. Textbooks,
4. Computers and
5. Internet access

3.1.1.6 Mode of Assessment

1. Continuous Assessment Test 40%
2. Final Exams 60%

3.1.1.7 Core text books

1. Taylor, S. (1999). Communication for Business. Pearson Education Inc.: New York.

2. Voiles, P.R. (1993). Modern Business English. MacMillan/McGraw-Hill: Lake Forest, Illinois.

3.1.2 PHYSICAL SCIENCES

3.1.2.1. Course Purpose

The course introduces the contributions of physics and chemistry to man's understanding of basic physical science concepts and will expose the student to the basic scientific vocabulary in these sciences. The course emphasis is on the basic scientific principles and their applications in today's society.

3.1.2.2 Expected learning outcomes

At the end of this course students should be able to;

1. Identify and address their physical science concepts and alternate concepts (misconceptions).
2. Attain a general understanding of the basic principles of physics and chemistry.
3. Integrate the principles of physics and chemistry into discussions of their practical applications in everyday life including the environment.

4. Demonstrate familiarity with general scientific terminology and materials.

5. Demonstrate knowledge of the role of physical science in solving contemporary problems and its impact on the way we live.

6. Demonstrate problem-solving skills in the classroom and apply to the identification of unknown quantities in correctly answering application questions.

3.1.2.3 Course content

Measurement, Motion and Energy; Metric and British Systems of Measurement with Conversion Problems, Linear and Rotational Motion Including Newton's Laws Work, Energy, and Power Including Heat and Thermodynamics Electromagnetism; Static and Current Electricity, Magnetism, Electromagnetic Devices, and Electric Power, Waves and Modern Physics Waves and Their Properties; Electromagnetic Waves, with Emphasis on Light, Structure of the Atom, Nuclear Energy - Reactions, Reactors, and Its Effects on Man and the Environment Chemistry (topics covered as time permits); Elements, Compounds and States of Matter, The Periodic Table and Chemical Bonds, Atomic and Molecular Weights, Acids and Bases, Oxidation and Reduction, Applications; structure and properties of materials; atomic structure, introduction to the periodic table, the structure and properties of metallic, ionic and covalent substances , carbon chemistry; sources and properties of energy, introduction conservation of mass and energy, work, energy and power, electrical energy, nuclear energy

3.1.2.4 Teaching Methodology

1. Demonstrations,
2. Practicals
3. Lectures and
4. Tutorials

3.1.2.5 Instructional Materials/Equipment

1. Projectors,
2. Handouts,
3. Textbooks,
4. Computers and
5. Internet access

3.1.2.6 Mode of Assessment

1. Continuous Assessment Test 40%
2. Final Exams 60%

3.1.2.7 Core text book

1. Hewitt, Suchocki, Conceptual Physical Science Explorations, Boston, Massachusetts; Addison Wesley, 2002

Recommended further reading

1. Schaffer, Frank, Physical Science for Everyday, Torrance, CA; Frank Schaffer Publication, 1997 Sneider, Cary I., Gould. Alan, Hawthorne, Cheryll, Color Analyzers, Berkeley, CA, GEMS, Lawrence Hall of Science, 1996
2. Taylor, Poth, Portman, Teaching Physics with Toys, Middleton, Ohio; Terrific Science Press, 1995

3.1.3 BASIC BIOCHEMISTRY

3.1.3.1 Course Purpose

The aim of this unit is to introduce the trainee to basic concept of biochemistry and equip him/her with knowledge of biochemical metabolism. This will enable the trainee to understand and appreciate the role of biochemistry in nutrition health and disease. This is an essential tool for diet therapy and counseling.

3.1.3.2 Expected learning outcomes

At the end of this course students should be able to;

a) Understand the metabolism of major nutrients.
b) Understand the role of enzymes in nutrient metabolism and in provision of energy.
c) Understand the mechanism of protein synthesis.
d) Understand the role of hormones in nutrient metabolism and regulation.
e) Explain the disorders of abnormal metabolism and hormones disturbances.
f) Understand mechanism of muscle contraction.

3.1.3.3 Course content

Definitions; Carbohydrates; Classification, properties, glycolysis, TCA and electron transport chain, the pentose phosphate pathway, gluconeogenesis, glycogenesis and glycogenolysis. Regulation,Metabolic disorders, Lipids; Classification, Structure and nomenclature of fatty acids, and acylglycerols, wastes, complex and derives lipids. Saponification, Rancidity, steroids and

their functions, cholesterol, Metabolism,, oxidation and ketogenesis, mobilization and storage, disorders of fat metabolism, Proteins; Amino acid classification, structure, Protein conformation, denaturation, properties, Metabolism, Transamination, Disorders of metabolism, Inter-conversion of carbohydrates and proteins. Enzymes; role in biochemical reactions. Definitions, isoenzymes, Structure, Classification, Occurrence and function in food systems, activity, Mode of action, Properties. Nucleic acids; Occurrence, chromosome; Functions, DNA and RNA; Nucleotide structure; Derivatives, Protein synthesis; Bioenergetics; Clinical disorders of hormone deficiency and excess: Muscles; Types and functions, Structures, contraction, Biochemical and physical changes. Practicals.

3.1.3.4 Teaching Methodology

1. Demonstrations,
2. Practicals,
3. Lectures and
4. Tutorials

3.1.3.5 Instructional Materials/Equipment

1. Projectors,
2. Handouts,
3. Textbooks,
4. Computers and
5. Internet access

3.1.3.6 Mode of Assessment

1. Continuous Assessment Test 40%
2. Final Exams 60%

3.1.3.7 Core text book

1. Eric E Conn and P.K Stumpf; (1994) Outlines Of Biochemistry, 4th edition Wiley Eastern limited ,London

Recommended further reading

1. Albert l. Lehninger, (2007) Principles Of Biochemistry, 1st edition, worth publishers, new york

2. M. N Chatterjea and Rana Shinde, (2002) Medical Biochemistry. 8th edition, Jaypee brothers publishers, Newdelhi

3.2 CORE COURSES

3.2.1 INTRODUCTION TO INFORMATION TECHNOLOGY

3.2.2.1 Course Purpose

The purpose of this course is to equip learners with knowledge and skills in computer and information technology.

3.2.2.2 Expected Learning Outcomes

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

1. Explain basic computer terminologies and application of computers in modern society.
2. Apply computer skills in performing basic tasks using Microsoft office.
3. Access educational materials in their area of study using the internet.

3.2.2.3 Course Content

Introduction: History. Terminology used in computing. Personal Computer: major hardware and software components, Specifications of Personal Computers. Creating files and folders; storage devices: floppy disks, CD, DVD, USB, Blue ray. Fundamentals of Microsoft office: Applications in Word, Excel Spreadsheet, Database Management Systems, graphics (Adobe Photoshop) and multimedia. Database administration and security. Internet application: electronic mail; searching; moving files; the World Wide Web, Internet Explorer. Computer networks: LAN, WAN and Wi-Fi, Bluetooth. Computer and society: security issues, computer viruses, use and misuse of computers. Computer language. Creating computer applications.

3.2.2.4 Teaching Methodology

1.Demonstrations,
2. Practicals,
3. Lectures and
4. Tutorials

3.2.2.5 Instructional Materials/Equipment

1. Projectors,
2. Handouts,
3. Textbooks,
4. Computers and
5. Internet access

3.2.2.6 Mode of Assessment

1. Continuous Assessment Test 40%
2. Final Exams 60%

3.2.2.7 Core text books

1. Wang, W. And Perker R. C (2000). *Office 2000 for Windows*. New York, Microsoft.

2. Connie M. and Dolores W. (2009). *Computer Literacy basics: A Comprehensive Guide to IC3 (Basics Series). Course Technology*. Boston.

Recommended further reading

1. Rochester, J. B (1991*). Computers for People*. Homewood, Irwin.

2. Nickson R. C (1190). *Computers Concepts and Applications*. Glenview, Foreman.

3.2.3 BASIC MATHEMATICS

3.2.3.1 Course purpose

The purpose of this course is to equip the learner with knowledge, skills required for the application of mathematics in nutrition and dietetics.

3.2.3.2 Expected Learning Outcomes

By the end of this course the learners should be able to:

1. Perform basic mathematical calculations.
2. Apply appropriate mathematical skills in solving problems in nutrition and dietetics.
3. Use appropriate statistical techniques to solve related problems in nutrition and dietetics.

3.2.3.3 Course Content

Quadratic functions and equations, surds, logarithms and indices. Permutations and combinations. Series: finite, infinite, arithmetic, geometric and binomial (positive integral index only) including applications to compound interest, approximations, growth and decay. Remainder theorem and its application to solution of factorial and polynomial equations. Trigonometry: trigonometric functions including their graphs and inverses in degree and radian measure. Sine and cosine formulae. Statistics: Collection and representation of data and measures of central tendency and variability by graphical calculation methods. Probability: classical and axiomatic approaches to probability, compound events, conditional probability, tree diagrams and binomial distribution.

3.2.3.4 Teaching Methodology

1. Group discussions and
2. Presentations,
3. Class lectures and
4. Tutorials.

3.2.3.5 Instructional Materials/Equipment

Scientific calculator, Lecture notes, encyclopedias, textbooks, journals, Illustration charts for demonstration.

3.2.3.6 Mode of Assessment

Continuous Assessment Test 40%

Final Exams 60%

3.2.4. HIV/AIDS

3.2.4.1 Course Purpose

The purpose of the course is to provide the learner with knowledge on various aspects of HIV/AIDS.

3.2.4.2 Expected Learning Outcomes

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

1. Describe the modes of transmission and spread of HIV and AIDS.
2. Explain the methods of testing and screening for HIV and AIDS.
3. Describe the policies and methods used in treatment and management of HIV and AIDS.
4. Discuss the impact of HIV and AIDS on social, cultural, economic and religious factors on the spread and management of HIV and AIDS.

3.2.4.3 Course Content

Introduction: Human physiology, sex and sexuality. Sexually transmitted diseases (STD): Human Immunodeficiency Virus/Acquired Immune-Deficiency Syndrome (HIV and AIDS), Comparative information on trends, global and local distribution. Biology of HIV and AIDS: Overview of immune system, natural immunity to HIV and AIDS. The AIDS virus and its life-cycle, disease progression (epidemiology), transmission and diagnosis. Treatment and Management: Nutrition. Prevention and control; Abstinence, Being faithful, Condom use, Destigmatization of HIV and AIDS (ABCD) method anti-retroviral drugs and vaccines. Pregnancy and AIDs. Management of PLWHIV/AIDS. Cultural practices: Religion and AIDS .

Social stigma and destigmatization of HIV and AIDS. Behavioral change. Voluntary Counseling and Testing (VCT) Services. Drug abuse and AIDS. Effect of HIV and AIDS on individuals and society. Poverty and AIDS. Families and AIDS Orphans. Government policies: Global policies on AIDS. Legal rights of People living with HIV/AIDS. Impact of AIDS on: Family set-up/society, Population, Agriculture, Education, Development, Economy, and other sectors.

3.2.4.4 Teaching Methodology

Group discussions and presentations, class and public lectures, field visits and tutorials.

3.2.4.5 Instructional Materials/Equipment

Lecture notes, encyclopedias, textbooks, journals, newspaper articles, tape recorder, radio, video shows. Illustration charts.

3.2.4.6 Course Assessment

Continuous Assessment Test 40%

Final Exams 60%

3.2.4.7 Core text books

1. Sharma, K. S. (2003). *Sexually Transmitted diseases and AIDS*. Viva Book Private Ltd., New Delhi, India
2. Muchiri, J. (2002). *HIV AIDS, Breaking the Silence*. Paulines Publications Africa, Limuru, Kenya.

Recommended further reading

1. Willis, R. (2002). *The AIDS Pandemic*. The Stanbrough Press Ltd., Liconshire, England. First Edition.
2. Joel E. G. (2007). *100 Questions and Answers About HIV and AIDS*. 1st Ed.. Jones & Bartlett Learning, London.

3.2.5 FIRST AID

3.2.5.1 Course Purpose

To equip learners with competencies to make an initial assessment of a casualty and recognize a range of signs and symptoms associated with accidents and medical emergencies in the community.

3.2.5.2 Expected Learning Outcomes

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

1. Handle an emergency and monitor a conscious victim for life- and non life-threatening conditions.
2. Prioritize care for life-threatening injuries or sudden illnesses.
3. Manage different types of emergencies and injuries, including burns and scalds, foreign bodies, poisoning, muscle, bone, and joint injuries to the head, neck and back.
4. Practice basic precautions to reduce the risk of disease transmission control external bleeding.

3.2.5.3 Course Content

Principles and Practice of First Aid: Qualifications and Responsibilities of a first aider, Managing an incident, managing a casualty, Head to toe survey, Recovery position, Breathing Disorders: Mechanism of breathing, Respiratory failure, Circulation Disorders*:* Mechanism of circulation, Circulatory failure, Disorders of the heart, Shock, Fainting, Wounds and bleeding; Types of wounds, Types of bleeding, Bleeding from special sites, Animal bites and insect stings, Emergency Resuscitation; Artificial respiration, Cardio-Pulmonary Resuscitation, choking/Blockage of the upper airway passage, Drowning; Burns And Scalds: Extent of burns, Minor burns /scalds, Severe burns/scalds, Special types of burns: Poisoning: Definition, Inhale Poisons, Swallowed Poisons, Skin Contact, Injected Poisons, Alcohol Poisoning, Food Poisoning, Foreign Bodies: Foreign bodies in wounds, Splinters in skin, Foreign bodies in the Eye, Foreign bodies in the nose, Insect in ear, Swallowed Foreign body: Brain Disorders: Unconsciousness, Head Injuries, Convulsions, Hypoglycemia:: Injuries to Bones, Joints, Muscles And Ligaments: Dislocations and fractures, Flail Chest Injuries;, Spinal Injury, Dressing and Bandages, Types of Bandages & Rules for Bandaging. How to respond to emergencies.

3.2.5.4 Course Delivery

Lectures, Group activities, Observed practicums, Video

3.2.5.5 Practicals

CPR Practice including chocking Practice on Immobilization of fractures and bandaging case scenarios

3.2.5.6 Instructional Materials and Equipment

CPR Manikins, Trauma Manikins, Visual aids, Simulated Scenarios, Video, Textbooks,Handouts

3.2.5.7 Mode of Assessment

Continuous Assessment Test 40%

Final Exams 60%

3.2.5.8 Core text books

1. St. Johns Ambulance, (2006). *Emergency first aid: a quick reference guide to step-by-step procedures for emergency first aid*. St John's Ambulance, Britain.
2. St John's Ambulance, (2006). *First Aid manual*. St John's Ambulance, Britain

Recommended further reading

1. Colquhoun, M.C. (ed.) Handley, A.J. (ed.) Evans, T.R. (ed.), (1995). *ABC of resuscitation. London*, BMJ Publishing Group.
2. Kirby N. J. and Mather S. J. (2002). *Baillieres handbook of First Aid*. Bailliere Tindal, Delhi

3.2.6 PRINCIPLES OF NUTRITION AND BEHAVIOUR

3.2.6.1 Course Purpose

The purpose of this course is to provide the learner with knowledge and skills in behavioral sciences and how it influences nutrition.

3.2.6.2 Course Content

Introduction to nutrition behaviour; Concepts and models in nutrition and behaviour; direct effects of nutrition and behaviour: Effects of Chronic and Acute Forms of Undernutrition; the Central Nervous System and Behaviour; Dietary Supplement, Mental Performance and Behaviour; Bio-behavioural and Psychosocial Influence on Nutrition; Dietary Sugar, Caffeine, Methylxanthines and Alcohol, Brain Functioning and Behaviour; Eating disorder Syndromes: Anorexia and Bulimia Nervosa; Behavioural Aspects of Overweight and Obesity.

3.2.6.3Teaching Methodology

Group discussions and presentations, class lectures and tutorials.

3.2.6.4 Instructional Materials/Equipment

Scientific calculator, Lecture notes, encyclopedias, textbooks, journals, Illustration charts for demonstration.

3.2.6.5 Mode of Assessment:

Continuous Assessment Test 40%

Final Exams 60%

3.2.6.6 Core text

1. Antony R. P. (2007). *The Science of Social Influence. Advances and future progress*. Psychology Press
2. Gerd B., Michaela W. and Gert B. (2002.) *Attitudes and Attitude Change*. Psychology Press

Recommended further reading

1. Paula M. N., Silvia K. & Francois R. (2006). *Psychology of Emotions*. Psychology Press
2. Joseph P. F. (2006*). Affect in Social Thinking and Behaviour*. Psychology Press.
3. Adrian Furnham (2005) 2nd Ed.. *The Psychology of Behaviour at Work*. Psychology Press

3.2.7 INTRODUCTION TO NUTRITION EPIDEMIOLOGY

3.2.7.1 Course Purpose

This course is designed to provide the learner with the knowledge and skills necessary for nutritional distribution and determinants of diseases and other outcomes in human population.

3.2.7.2 Expected Leaning Outcomes

By the end of this unit the student should be able to:

1. Explain the principles and techniques of epidemiology
2. calculate incidence, prevalence and other outcomes of diseases
3. analyze disease outbreaks and progression

3.2.7.3 Course Content

Definition of terms. Historical background of epidemiology. Scope and application of epidemiology; communicable diseases, nutritional deficiency diseases, occupational diseases, chronic diseases, goals of nutritional epidemiology, advantages and disadvantages of nutritional epidemiology. Steps in epidemiological approach: Steps in epidemiology, clinical medicine vs. epidemiology. Descriptive epidemiology. Measuring disease morbidity and mortality: Natural history of disease; define disease, discuss stages of susceptibility, describe disease occurrence, pathogenesis, pre-symptomatic, symptomatic, disability. Levels of disease prevention associated with stages in disease development. Population screening; define population and screening,

general aims of screening, instruments of screening, characteristics of instruments of screening, validity, reliability, yield. Considerations in establishing screening programmes.Analytical epidemiology: Observational studies (retrospective studies, prospective studies, cross- sectional, historical prospective studies) and experimental designs. Relative risk and odds ratio. Ethics in epidemiology.

3.2.7.4 Teaching methodology: lectures, group discussions, tutorials

3.2.7.5 Mode of Assessment

Continuous Assessment Tests	40%
Final Exam	60%

3.2.7.6 Core Text Book

1. Nelson M., Barrie M., Michael N., (1997). *Design Concepts in Nutritional Epidemiology*. Pub.Oxford University Press, USA.
2. Walter W., (1998). *Nutritional Epidemiology, Vol. 30*.Pub. Oxford University Press, USA

3.2.8 NUTRITION IN EMERGENCIES

3.2.8.1 Course purpose

This course is designed to provide the learner with knowledge and skills in various types of nutrition intervention methods and their application in emergencies.

3.2.8.2 Expected Learning Outcomes

By the end of this course, the trainee should be able to:

1. Discuss the types, phases and consequences of disasters/ emergencies
2. Discuss the food and nutrition emergency responses
3. Discuss the roles of key stakeholders in humanitarian assistance.

3.2.8.3 Course Content

Introduction to nutrition in emergencies: types, phases, trends and consequences of disasters. Overview of malnutrition in emergencies. Types of malnutrition and strategies used to address macro and micro nutrient deficiencies. Roles, responsibilities and stakeholders in humanitarian activities. Socio- political factors surrounding emergencies. Approaches to nutrition situation analysis: rapid assessment and nutritional surveys. Food and nutrition emergency responses: essential emergency responses. Selective feeding programmes. Supplementary feeding programmes. Therapeutic feeding programmes. Monitoring and evaluation of food and nutrition

responses in emergency situation. Nutritional intervention programmes: nutrition intervention programmes, school feeding programmes, emergency relief food, famine relief, food for work, food fortification and supplementation. Disaster preparedness and management.

3.2.8.4 Teaching Methodology

Lectures, small group discussions, demonstrations, field visits

3.2.8.5 Mode of Assessment

Continuous Assessment Tests	40%
Final Exam	60%

3.2.8.6 Core Text Books

1. Food and nutrition needs in emergencies WHO 2004
2. Infant Feeding in Emergencies Module 2 Version 1.1 WHO, 2004

3.2.9 RESEARCH METHODS

3.2.9.1 Course purpose

The aim of the course is to equip the learners with knowledge and skills that will enable them carry out operational research in nutrition.

3.2.9.2 Expected Learning Outcomes

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

1. Explain the concept of operational research
2. Apply the knowledge and skills research development and analysis
3. Discuss the importance of operational research

3.2.9.3 Course Content

Introduction to research: Definition of research, Goals of research, Types of research Importance of research, Uses of research. Proposal writing: Problem identification, Problem statement, Justification, Research objectives, Hypothesis, Expected limitations of study design and Expected outputs and utilization. Literature review: Importance of literature review, Sources, Purpose of review, Limitations, Scope of review, referencing styles and relevant references, Format of referencing, Styles of citations. Research design and methodology: Study design, Study population, Study area, sampling, data collection methods and tools, ethical considerations, Data analysis, budget, work-plan. Report writing: Components of a report, Sequence of write up.

3.2.9.4 Mode of Assessment

Continuous Assessment Tests 40%

Final Exam 60%

3.2.9.5 Core Text Book

1. Browne, L. B., (2007). *Research based evidence supporting Food and Nutrition*. 2ND end.
2. Steven, B. H., Warren S.B., et al.. (2007). *Designing Clinical Research*. Lippincott Williams & Wilkins.

3.2.10 ENTREPRENEURSHIP EDUCATION

3.2.10.1 Course Purpose

This course is intended to equip the learners with the necessary knowledge, skills and attitudes that will enable them to start, operate and manage personal or group business enterprises.

3.2.10.2 Expected Learning Outcomes

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

1. Outline factors affecting the success of a business.
2. Apply entrepreneurial competencies in business
3. Explain management skills necessary for running a successful enterprise.
4. Analyze the efficiency of resource utilization and productivity.

3.2.10.3 Course Content

Definition of entrepreneur , the entrepreneur and society, entrepreneurship and self-employment, the government and entrepreneurship; entrepreneurial behaviour; sources for business ideas, Resource mobilization; evaluating the sources of finance for small entrepreneurs. Decision making risk taking, Leadership, Marketing strategies, Hiring, Staff motivation and retention, financial management, and Time management.

3.2.10.4 Teaching Methodology

Demonstrations, class and public lectures and tutorials.

3.2.10.5 Instructional Materials/Equipment

Chalkboard, charts, slide and overhead/LCD projector, handouts and computers.

3.2.10.6 Mode of Assessment

Continuous Assessment Tests 40%

Final Exam 60%

3.2.10.7 Textbook for the Course

1. Dollinger, M. J. (1999). *Entrepreneurship: Strategies and Resources*, (2nd Ed)., Prentice Hall.
2. Hisrich, R. D., Peters, M. P., & Shepherd, D. A. (2007). *Entrepreneurship.* (6th Ed). New Delhi:Tata, McGraw Hill

Textbooks and Journals for Further Reading

1. Drucker, P. F. (1985). *Innovation and Entrepreneurship*, Harper & Row.
2. Kibera, F. N. (1996). *Introduction to Business: A Kenyan Perspective*, Kenya Literature Bureau, Nairobi, Kenya.

3.2.11 PRINCIPLES OF PRIMARY HEALTH CARE

3.2.11.1 Course Purpose

The purpose of this course is to equip the learners with knowledge and skills that will help them identify community problems and plan interventions to solve them.

3.2.11.2 Expected Learning Outcomes

By the end of this course unit, the trainee should be able to:

1. Explain the concept of primary health care.
2. Apply PHC knowledge and skills in nutrition and dietetics
3. Plan community projects or programmes

3.2.11.3 Course Content

Background of PHC; definitions of terms, the goals of PHC, organizational changes and functions of various administrative levels. Essential elements of PHC; local disease control, maternal child health, environmental health and sanitation, treatment of minor ailments, importance of adequate water supply, dental health, mental health, community based rehabilitation, sexually transmitted infections/AIDS. Pniciples of PHC; community initiatives, social and economic development, equity. Strategies of PWC: creating awareness, key factors in PHC roles and training needs, multiintersectoral collaboration, community participation and involvement, use of locally available resources, appropriate technology, health management at community level, rural infrastructure, problem identification, prioritization and implementation of community needs, referral systems, bottom-up approach in health management,

decentralization of decision making. Characteristic of PHC; medical model of health, PHC delivery services, advantages and disadvantages of each system. Community based healthcare;definition of terms, characteristics of CBHC, CORPS, role of nutritionist in PHC/CBHC. Nutrition and population; definition of terms, interactions between community and populations, factors influencing family size, desirable family size.

3.2.11.4 Teaching Methodology

Group discussions and presentations, class lectures and tutorials.

3.2.11.5 Instructional Materials/Equipment

Scientific calculator, Lecture notes, encyclopedias, textbooks, journals, Illustration charts for demonstration.

3.2.11.6 Mode of Assessment:

Continuous Assessment Test 40%

Final Exams 60%

3.2.12 PRINCIPLES OF FOOD PROCESSING AND PRESERVATION

3.2.12.1 Course Purpose

The purpose of the course is to equip the learner with knowledge and skills that are essential in food processing and preservation.

3.2.12.2 Expected Learning Outcomes

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

1. Identify the different types of food spoilage
2. Identify the sources of food contamination
3. Determine the causes of food spoilage
4. Name examples of food spoilage micro-organisms
5. Identify appropriate methods used in preventing food spoilage
6. Perform particular processing and preservation operations.

3.2.12.3 Course Content

Introduction to food processing and preservation. Factors causing food deterioration: microbial spoilage, food enzymes, insects, parasites & rodents, temperature, moisture, oxygen, light and time. Chemical changes in food components during storage and processing and effect on quality. Principles and Methods of food preservation: thermal processing; blanching, pasteurization,

sterilisation, canning. Low temperature preservation; refrigeration, chilling, freezing and cold storage. Evaporation and Dehydration. Fermentation. Salting and Smoking. Conrolled and Modified atmosphere storage. Irradiation. Effect of processing and preservation techniques on food quality and safety.

3.2.12.4 Teaching Methodology

Demonstrations, practicals, lectures, tutorials and field visits.

3.2.12.6 Instructional Materials/Equipment

Projector, handouts, books and computers.

3.2.12.5 Mode of Assessment

Continuous Assessment Test	40%
Final Exams	60%

3.2.12.6 Core Text Book

1.Lelieveld, Huub (2003). *Hygiene in Food Processing:* Principles and Practice. Woodhead Publishing, Limited

2. Ahvenainen, R. (2003). *Novel Food Packaging Techniques*. Woodhead Publishing, Limited

Recommended further reading

1. Lelieveld, H. (2005).*Improving Hygiene in the Food Industry*. Woodhead Publishing, Limited.
2. Thurmond, David L. (2006). *Handbook of Food Processing in Classical Rome*: For Her Bounty No Winter. Brill Academic Publishers.
3. J. Maud Kordylas (1990) Processing and preservation of tropical and subtropical foods. Macmillan publishers

3.2.13 FOOD SAFETY AND HYGIENE

3.2.13.1 Course Purpose

The course is intended to provide the trainee with knowledge, skills and attitude to handle food safely and ensure that it remains safe for consumption.

3.2.13.2 Expected Learning Outcomes

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

1. Describe food borne illnesses and the associated hazards.
2. Demonstrate hygienic food handling procedures.

3. Carry out inspection of food facilities.

3.2.13.3 Course Content

Introduction to food safety and hygiene. Food contamination. Types of hazards in foods; Physical, Biological, and Chemical. Nutritional safety. Food poisoning and food borne illnesses. Preventing food borne illnesses. Preventing food contamination; Food handling: Personal hygiene, washing hands, cross contamination, raw and cooked food, design requirements of food contact surfaces, hygiene of premises and facilities. Hygienic Premises and Equipment: Principles of Hazards Analysis and Critical Control Point (HACCP). Inspection of food facilities.

3.2.13.4 Teaching Methodology:

Lectures, tutorials and discussions.

3.2.13.5 Instructional Materials/Equipment:

Chalk/white boards, slide and overhead/LCD projector, handouts and computers.

3.2.13.6 Mode of Assessment

Continuous Assessment Test	40%
Final Exams	60%

3.2.13.7 Core Text Books

1. *M. Satin, Food Alert: The Ultimate Sourcebook for Food Safety(2008)2nd ed., Facts on File, Inc.*
2. Mark C. (2008). *Food Industry Quality Control Systems.* [CRC Press]

Recommended further reading

1. Codex Alimentarius Commission. 1995b. Guidelines for the Application of the Hazard Analysis Critical Control Point (HACCP) System (CAC/GL 18-1993). In *Codex Alimentarius,* Vol. 1 B, *General requirements* (*food hygiene*)*,* p. 21-30, Rome, FAO/WHO. Year of publication
2. Forsythe S. J., Hayes P. R. (2000). *Food Hygiene Microbiology and HACCP* 3rd ed. Aspen Publication Inc.

3.2.14 NUTRITION EDUCATION AND COUNSELING

3.2.14.1 Course Purpose

The purpose of this course is to equip the learner with nutritional counseling skills for at risk groups at individual, family and group levels, as well as Knowledge of counseling and counseling techniques in cross–cultural and multi-cultural settings.

3.2.14.3 Expected Learning Outcomes

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

1. Explain the meaning, purpose of nutrition counseling with key issues in planning a counseling session
2. State the roles and qualities of a nutrition counselor
3. Describe different techniques that can be used in nutrition counseling and elements of quality nutrition to nutrition counseling
4. Design nutrition counseling plans for at risk groups
5. Discuss dietary practices and habits that require change at individual, household, and community /institutional level

3.2.14.4 Course Content

Introduction to nutrition counseling, course overview, definition of terms, importance of nutrition counseling, role and qualities of a nutrition counselor, identification of at risk groups and diseases where counseling is required. Models /theories for understanding and influencing dietary behavior and their application; counseling in multicultural settings; Techniques in nutrition counseling. Basic Nutrition and use of supplements. Nutrition counseling in HIV/AIDS. Counseling during pregnancy and lactation. Pediatric nutrition counseling –infancy through adolescence. Geriatric nutrition counseling. Nutrition counseling for vegetarians. Counseling athletes and sports people. Counseling in various disease conditions and alcoholism.

3.2.14.5 Course Delivery

Lecture, Self-directed learning, Assignment, Group activity, Case studies

3.2.14.6 Mode of Assessment

Continuous Assessment Test	40%
Final Exams	60%

3.2.14.7 Core text books

1. Ministry of Health, Government of Kenya (2006). Kenya Guidelines on Nutrition and HIV.
2. Kenya National Diabetes Strategy 2010-2015

Recommended further reading

1. Guide Book for Nutrition Counselors. (1990) by Virginia Aronson, Barbara Fitzerrak, Lynnvincent Hewes.

3.2.15 NUTRITION ANTHROPOLOGY

3.2.15.1 Course Purpose

The purpose of this course is to impart learners with knowledge and skills in social cultural aspects of human nutrition.

3.2.15.2 Expected Learning Outcomes

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

1. Describe the role of culture as a diet determinant
2. Describe nutritional behaviour and practices of the different cultures
3. Discuss various food taboos and social factors that influence lifestyle diseases
4. Demonstrate ability to influence eating habits in different cultures

3.2.15.4 Course Content

Sociology of food and nutrition; evolutionary, behavioral, social and cultural perspectives in nutrition; food taboos, cultural notions, personhood, kinship, sharing and morality; Human behaviour and food acquisition, preparation and consumption; clinical and social significance of the human diet and nutrition; social cultural processes and nutrition; cultural and ideational systems; physiological adaptation, Evolutionary perspectives on human diet; biological plasticity and human growth and development; hunter gatherer nutrition. Social factors that determine the patterns of nutrition diseases within and across population. Introduction to subject and assessment Ethics, Professional Behaviour, Role of Dietitian Structure of an Interview Group Education Gerontology Speech Pathology .Chart Reading Counselling Nutrition and the Media

3.2.15.5 Course Delivery

Lecture, Self-directed learning, Assignment, Group activity, Case studies

Instructional Materials and Equipment

Textbooks, Handouts, Computers, Community, Multimedia technology and equipment

3.2.15.6 Mode of Assessment

Continuous Assessment Test	40%
Final Exams	60%

3.2.15.7 Core text

1. Antony R. P. (2007). *The Science of Social Influence. Advances and future progress*. Psychology Press

2. Gerd B., Michaela W. and Gert B. (2002.) *Attitudes and Attitude Change*. Psychology Press

Recommended further reading

1.Paula M. N., Silvia K. & Francois R. (2006). *Psychology of Emotions*. Psychology Press

2. Joseph P. F. (2006*). Affect in Social Thinking and Behaviour*. Psychology Press.

3. Adrian Furnham (2005) 2nd Ed.. *The Psychology of Behaviour at Work*. Psychology Press

3.2.16 INTRODUCTION TO MICROBIOLOGY

3.2.16.1 Course Purpose

The purpose of this course is to provide the learners with adequate theoretical and practical knowledge and skills to enable them identify culture, enumerate and control microorganisms.

3.2.15.2 Expected Learning Outcomes

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

1. Use the microbiology laboratory, Materials and apparatus correctly and safely.
2. Classify microbes
3. Apply microbiological principles in identification of microorganisms
4. Apply microbiological principles in culturing, enumeration and control of microorganisms

3.2.16.4 Course Content

Definition of terms: microbiology, microorganisms, prokaryotes, eukaryotes. Precautions in the laboratory. Classification methods: classical taxonomy, numerical taxonomy, molecular taxonomy. Microscopy: structure of a modern light microscope, types of microscopes, use and care of microscopes, culture media, staining techniques, isolation, enumeration of microbes and control methods, biochemical tests. Mechanism of microbial metabolism, factors affecting growth of microorganism.

3.2.16.5 Teaching Methodology

Discussions, demonstrations, practicals, lectures and tutorials.

3.2.16.6 Instructional Materials/Equipment

Laboratory coat, modern light microscopes, staining dyes and reagents, culture media, autoclave and laboratory glassware. practical manual and books, Chalk/white boards, slide and overhead/LCD projector, handouts and computers.

3.2.16.7 Mode of Assessment

Continuous Assessment Test	40%
Final Exams	60%

3.2.16.8 Core Text Books

1. Greenwood, D & et al. (2002). *Medical Microbiology,* (6th edn.), Churchill Livingstone
2. Peterzar, M. J. et. al. (1993). *Microbiology – Concepts and Applications.* Mc Graw-Hill, Inc.

Recommended further reading

1. Prescott, L. M. (1993). *Microbiology Vol. 1* (22nd end.), Brown Communication Inc.
2. Smith A. L. (1985). *Principles of Microbiology.* Times Mirror/Mosby College Publishing, St. Louis.

3.2.17 FOOD MICROBIOLOGY AND PARASITOLOGY

3.2.17.1 Course Purpose

The purpose of this course is to provide the learner with knowledge and skills in carrying out microbiological analysis.

3.2.17.2 Expected Learning Outcomes

By the end of this course module unit, the trainee should be able to:-

1. Explain the role and significance of micro-organisms and parasites in food.
2. Describe the Intrinsic and extrinsic parameters of foods that affect microbial growth.
3. Culture, isolate and classify micro-organisms and parasites in food.

3.2.17.3 Course Content

Definition of terms: Food Microbiology, Parasitology. Role and significance of micro-organisms: primary sources of micro-organisms found in food; soil and water, plants and plant products, intestinal tract of man and animals, food utensils, animal feeds and hides, air and dust. Primary sources of food-poisoning bacteria. Intrinsic and extrinsic factors affecting microbial growth. Incidence and types of micro-organisms in foods: factors that influence the number and types of micro-organisms in food products. Food spoilage: meat and meat products, poultry and

sea-foods, fruits and vegetables, Dairy and Cereal products. Storage of various food products. Food poisoning: common food borne illnesses: Symptoms, prevention, and control of common food borne illnesses. Determination of micro-organisms in food: examination of bacteria, methods of sampling microorganism, methods of isolation, identification, and enumeration of indicator microorganisms.

3.2.17.4 Teaching methodology

Lecture, Practical, Group discussion, Field trips

3.2.17.5 Mode of Assessment

Continuous Assessment Test	40%
Final Exams	60%

3.2.17.6 Core Text Books

1. Greenwood, D & et al. (2002). *Medical Microbiology,* (6th edn.), Churchill Livingstone
2. Peterzar, M. J. et. al. (1993). *Microbiology – Concepts and Applications.* Mc Graw-Hill, Inc.

Recommended further reading

1. Prescott, L. M. (1993). *Microbiology Vol. 1* (22nd end.), Brown Communication Inc.
2. Smith A. L. (1985). *Principles of Microbiology.* Times Mirror/Mosby College Publishing, St. Louis.

3.2.18 INTRODUCTION TO NUTRITION AND DIETETICS

3.2.18.1 Course Purpose

The purpose of this course is to introduce the learner to the principles of nutrition and dietetics.

3.2.18.2 Expected Learning Outcomes

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

1. Define nutrition and dietetics
2. Explain the importance of nutrition in human health
3. Describe different dietetic practices, both ancient and modern
4. describe the standards and ethics of professional conduct in dietetics practice

3.2.18.3 Course Content

An introduction to dietetics as profession: educational requirements and career opportunities; orientation to the field of dietetics; role, responsibilities and relationships within the professions; and interrelations with other health professionals; Standards and ethics of professional conduct

among dieticians; the history of dietetics; modern dietetic practice; Skill and competencies in modern dietetics; Opportunities for interaction with dietetics practitioners will be offered.

3.2.18.4 Teaching methodology

Lecture, Practical, Group discussion

3.2.18.5 Mode of Assessment

Continuous Assessment Test	40%
Final Exams	60%

3.2.18.6 Core Text Book

1. Martin Eastwood, Principles of Human Nutrition, second edition; Blackwell Publishing, 2010
2. Introduction to Human Nutrition, 2nd Edition, Michael J. Gibney (Editor), Susan A. Lanham-New (Editor), Aedin Cassidy (Editor), Hester H. Vorster (Editor), March 2009, , Wiley-Blackwell

Recommended further reading

1. Public Health Nutrition, Michael J. Gibney (Editor), Barrie M. Margetts (Editor), John M. Kearney (Editor), Lenore Arab (Editor), November 2004, ©2004, Wiley-Blackwell

3.2.19 PRINCIPLES OF HUMAN NUTRITION

3.2.19.1 Course Purpose

The purpose of this course is to impart the learner with knowledge and skills pertaining to the basic principles of nutrition and its importance to human life.

3.2.18.2 Learning Outcomes

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

1. Define human nutrition, concepts and basic principles of nutrition and dietetics.
2. Describe the human dietary requirements
3. Describe the development of nutrition as a discipline and the concept of nutritional transition and its impact on human life.

3.2.18.3 Course Content

Definitions: food, diet, nutrition and human nutrition. Historical development of nutrition as a science - historical, biological, chemical; Basic principles of human nutrition: different foods and nutrients and their functions. Water. Macronutrients; proteins, fats, CHO, dietary fibre.

Micronutrients; Vitamins, minerals.Digestion, absorption, bioavailability. Deficiency diseases; the manifestations of nutritional deficiency states. Short-term and long-term consequences of dietary deficiencies or excesses; Importance of good nutrition; sources of foods and nutrients; recommended dietary standards, (RDA, RDI; common nutrition problems – national and global perspectives; conceptual framework.

3.2.18.4 Teaching methodology

Lectures, Self-directed learning, Group discussions & presentations, Assignments, Case studies

3.2.18.5 Instructional Materials and Equipment

Textbooks, Handouts, Computers, Community, Multimedia technology and equipment

3.2.18.6 Mode of Assessment

Continuous Assessment Test	40%
Final Exams	60%

3.2.18.8 Core Text Book

1. Martin Eastwood, Principles of Human Nutrition, second edition; Blackwell Publishing, 2010
2. Introduction to Human Nutrition, 2nd Edition, Michael J. Gibney (Editor), Susan A. Lanham-New (Editor), Aedin Cassidy (Editor), Hester H. Vorster (Editor), March 2009, Wiley-Blackwell

3.2.20 INTRODUCTION TO BIOSTATISTICS

3.2.20.1 Course purpose

The purpose of this course is to equip the learner with knowledge and skills in statistics for application in nutrition and health.

3.2.20.2 Expected Learning Outcomes

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

1. Explain concepts in biostatistics.
2. Collect, organize and present data in a scientific way.
3. Apply various measures of central tendency and dispersion, the concepts of correlation, regression.
4. Develop and explain research questions.

3.2.20.3 Course Content

Introduction to biostatistics: Concept of statistical data, Scales of measurement, Types of data, Classifying data, Organization of data. Measures of central tendency: Mean, Mode, Median. Measures of dispersion: Range, Deciles / percentiles, Variance, Standard deviation, Quartile range Relative measurements: Ratio, Proportion, Percentages, Rates. Determination of sample size. Probability and the normal distribution: Measures of relationships: Scatter diagrams, correlation and regression. Tests of significance (Chi – square, T. Test, F. Test). Statistical analysis packages including. EXCEL, SPSS, SAS, GENSTAT, Epi info, Nutrisurvey.

3.2.20.4 Teaching methodology.

Presentations, Lectures, Discussions, Tutorials,

3.2.20.5 Mode of Assessment

Continuous Assessment Test	40%
Final Exams	60%

3.2.20.6 Core Text Books

1. Blard M. (1996). *An Introduction to Medical Statistics* (2nd edn.), Oxford University
2. Kuzma J.W. (1990). *Basic Statistics for the Health Sciences* (2nd edn.), U.S.A Mayfied Publishing Co.

Recommended further reading

1. Wonnacott, T H and Wonnacott, R J (1997). Introductory statistics. (3rd ed.), New York Wiley and sons.
2. Larson, R E et al (1993), Precalculus. Lexington, D C. Health

3.2.21 LIFE SKILLS

3.2.21.1 Course purpose

The purpose of this course is to empower the learner to face challenges posed by their physiological, psychological, social and economic circumstances.

3.2.21.2 Expected Learning Outcomes

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

1. Develop critical thinking skills.

2. Deal with health problems, fears and anxieties relating to growing up, sexuality and relationships
3. Enhance self esteem and assertiveness in relationships with peers and adults
4. Develop an appreciation for gender equity
5. Make optimum use of time and available resources in order to improve quality of life
6. Develop attitudes, values and skills that promote co-existence, positive and responsible healthy lifestyles
7. Develop an understanding of support and sense of care and responsibility for disadvantaged groups in the community

3.2.21.3 Course Content

Categories and benefits of life skill education. Life skills versus living skills. Self awareness: self description, physical attributes, life vision and mission, personal values, beliefs, goals and ambition, self assessment, strengths and weaknesses, challenges hindering attainment of life goals, strategies to overcome the challenges. Values associated with the self awareness skill, self evaluation using self analysis table. Self esteem: signs of high and low self esteem, factors enhancing self esteem, importance of high self esteem, effects of low self esteem, and ways of boosting self esteem. Stress management: causes and effects of stress, coping with stress, values associated with positive stress. Emotions: definition, good and bad feelings, emotional intelligence, coping with emotions. Empathy: importance of empathizing, empathy versus sympathy, situations and values associated with empathy. Assertiveness; assertive behaviour, steps and importance of being assertive, distinguish between assertiveness, aggressiveness and passiveness, peer pressure versus peer influence, values associated with assertiveness.

3.2.21.4 Teaching methodology

Lectures, Presentations, Discussions, Tutorials.

3.2.21.5 Mode of Assessment

Continuous Assessment Test	40%
Final Exams	60%

3.2.22 HUMAN ANATOMY AND PHYSIOLOGY

3.2.22.1 Course Purpose

This course is designed to enable the learner understand the different body systems and how they relate to nutrition.

3.2.22.2 Expected Learning Outcomes

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

1. Describe the anatomy of the skeletal, muscular, nervous, endocrine and cardiovascular and lymphatic systems and their physiology
2. Describe the relationship between the structure of cells and tissues to the functions of the body.
3. Describe the relationship between the functions of different body system in health and disease.

3.2.22.3 Course Content

The cell: Structure of the cell and cell division, tissues. Muscular Skeletal system. Structure and functions of: Gastrointestinal, cardiovascular, lymphatic, respiratory, renal, nervous, and endocrine systems. Reproductive system and sensory organs. Homeostasis: the electrolyte, fluid and water balance.

3.2.22.4 Teaching methodology

Presentations, Lectures, Discussions, Tutorials,

3.2.22.5 Mode of Assessment

Continuous Assessment Test	40%
Final Exams	60%

3.2.22.6 Core Text Books

1. Susan Standring. Gray's Anatomy: The Anatomical Basis of Clinical Practice, Publisher: C.V. Mosby
2. Elaine N. Marieb. Human Anatomy & Physiology, Sixth Edition by, Hardcover, Publisher: Benjamin-Cummings

Recommended further reading

1. Valerie C. S., Tina S., (2003). *Essentials of Anatomy And Physiology*.F.A. Davis Company. Philadephia

Frank H. Netter, John T. Hansen. (2002). Atlas of Human Anatomy, Third Edition, Publisher: ICON Learning Systems

3.2.23 MEAL PLANNING, MANAGEMENT AND SERVICE

3.2.23.1 Course purpose

The purpose of this course is to equip the learner with necessary knowledge, skills and attitudes to formulate, prepare and present balanced meals for individuals and groups.

3.2.23.2 Expected Learning Outcomes

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

1. Describe the processes of food selection, preparation and service in different situations.
2. Describe the rationale for food selection, methods of preparation and service.
3. Describe the stages in menu planning, implementation and the different types of service.

3.2.23.3 Course Content

Meal planning: Introduction to meal planning. Economic, aesthetic, nutritional and managerial considerations in meal planning and service. Food pyramid, food exchange list. Meal planning for the family, special groups, institutions and special occasions; food service and etiquette. Equipment for meal preparation and production. Food storage equipment. kitchen management. Food and beverage service: Introduction to food service, the service area, service equipment, table appointments, methods of service.

3.2.23.4 Teaching methodology

Presentations, Lectures, Discussions, Practicals, Tutorials,

3.2.23.5 Mode of Assessment

Continuous Assessment Test	40%
Final Exams	60%

3.2.23.6 Core Text Book

1. Hope S. W. (2010). *Diabetes Meal Planning Made Easy. American Diabetes Association*; 4th Ed.Alexandria Virginia.

2. Mary T. and Becki V. (2005). *Cooking among friends: Meal planning and preparation delightfully simplified. Cooking Among Friends*, LLC. USA.

Recommended Text Book

1. Meal planning and preparation Resource, (2007). www.nal.usda.gov/fnic/service/mealplanning.pdf
2. David A. M., (1999). Food Preparation for the Professional, 3rd edn. New York: John Wiley & Sons

3.2.24 FOOD PRODUCTION FOR INVALIDS AND CONVALESCENTS

3.2.24.1 Course Purpose

The course is designed to provide the learner with the basic knowledge on production of food and beverages for invalids and convalescents.

3.2.24.2 Expected Learning Outcomes

By the end of this unit, the trainee should be able to:

1. Describe the various methods of cooking
2. Discuss the effects of various cooking methods on food.
3. Identify the appropriate methods of cooking of different foods for invalids and convalescents.

3.2.24.3 Course Content

Introduction to food production: Definition of terms used in food and beverage production. Methods of cooking. Effect of cooking on nutrients. Types of fuel used in food and beverage production. Selection, production and use of the following foods and their products; Poultry, eggs, milk, meat, fish, vegetables, fruits, cereals, legumes, nuts, fats and oils.

3.2.24.4 Teaching methodology

Presentations, Lectures, Discussions, Tutorials, Practicals

3.2.24.5 Mode of Assessment

Continuous Assessment Test	40%
Final Exams	60%

3.2.24.6 Core Text Books

1.WHO infant and Young Child Feeding Guideline 2007

2.Infant and Young Child feeding Guidelines in the context of HIV/AIDS, 2nd Edition, July 2010.

3.Overview of new born: The United Nations Children's Fund (UNICEF) Regional Office for South Asia, 2004

3.2.25 NUTRITION IN THE LIFESPAN

3.2.25.1 Course purpose

The purpose of this course is to enable the learner understand the nutritional requirements in different stages of the lifecycle.

3.2.25.2 Learning outcomes

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

1. Describe the factors that influence individual nutritional needs.
2. Describe the nutrient needs during the different stages of the lifecycle.
3. Construct healthful dietary patterns for the different stages of the lifecycle
4. Explain the diseases associated with deficiencies during the various stages.
5. Identify emerging issues affecting nutrition in the lifecycle.

3.2.25.3 Course Content

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. Importance of breast feeding, formula feeding, nutrition of the adolescents, Obesity among young children, nutrition in pregnancy, nutritional problems during pregnancy, interventions to maternal nutrition other than the food approach, Education and counseling of the youth, poor eating habits, wrong and the right ways of dieting, nutrition of the adults, problems facing adult nutrition, nutrient requirements nutrition of the elderly, nutritional problems of the elderly and possible interventional strategies, Emerging issues affecting lifecycle nutrition: policy, eating habits, globalization.

3.2.25.4 Teaching methodology.

Presentations, Lectures, Discussions, Tutorials,

3.2.25.5 Mode of Assessment

Continuous Assessment Test 40%

Final Exams 60%

3.2.25.7 Core Text Book

1. Abravanel's Body Type Diet and Lifetime Nutrition Plan by Elliot D. Abravanel and Elizabeth A. King (Paperback - July 6, 1999)
2. International Dietetics & Nutrition Terminology (IDNT) Reference Manual: Standardized Language for the Nutrition Care Process by American Dietetic Association (Paperback - **Sept. 2008)**

COMMUNICABLE AND NON-COMMINICABLE DISEASES

3.2.26.1 Course purpose

The purpose of this course is to equip learners with skills, knowledge and attitude to enable them to prevent, control and manage communicable and non-communicable diseases.

3.2.26.2 Expected Learning Outcomes

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

1. Distinguish between communicable and non-communicable diseases
2. Describe the causes, consequences and solutions of communicable and non-communicable disease
3. Identify regions prone to various communicable diseases in developing countries

3.2.26.3 Course Content

Aetiology and principles of communicable diseases: Diarrhea, Pneumonia, Bronchitis, HIV/AIDS, Malaria, tuberculosis, measles, herpes zoster, zoonotic diseases. Aetiology and principles of non-communicable diseases: Rheumatoid arthritis, Osteoarthritis, Osteoporosis, Gout, Obesity, diabetes, inflammatory bowel disease, Hypertension, Asthma, Cancer.

3.2.26.4 Teaching methodology

Presentations, Lectures, Discussions, Tutorials,

3.2.26.5 Mode of Assessment

Continuous Assessment Test 40%

Final Exams 60%

3.2.26.6 Core Text Book

1. Ministry of Health, Government of Kenya., (2006). Kenya Guidelines on Nutrition and HIV.
2. Ogola, E. N. et al. (2006.). *Medicine, Non-Communicable Diseases in Adults*. (2nd ed.). NairobI: AMREF.

Recommended further reading

1. Sam M. and Geetha N., (2000). *A text book of Nutrition for Nurses*. Jaypee, India
2. Williams, S. R., (1994) *Nutrition and diet therapy* (6th Ed.). Mosby,St. Louis, Missouri
3. Grodner, M., Anderson, S. L. and DeYoung, S., (2000) *Foundations and Clinical Applications of Nutrition; A Nursing Approach*. (2nd Ed.). Mosby

3.2.27 DIET THERAPY I

3.2.27.1 Course Purpose

To enable the learner plan and execute nutrition care to patients/clients

3.2.27.2 Learning objectives

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

1. Describe the basic concepts of diet therapy.
2. Recognize special dietary needs for patients / clients with different disorders and use the appropriate nutritional care to manage them
3. Evaluate patients / clients response to nutritional care and modify accordingly
4. Apply the knowledge, skills and attitudes learned in clinical practice

3.2.27.3 Course Content

Introduction; Definition of terms, therapeutic diets, Normal, Diet modification, Modified diets, roles of nutritionists and dietitians, the care process, phases of the care process: Drug – nutrient interaction introduction, Nutritional supplements: functional foods and nutraceuticals, enteral and parenteral nutrition, nutritional therapy in diseases of infancy and child hood, hospitalized children, LBW infants, Failure to thrive, colic, functional infant vomiting, constipation, diarrhea, cleft lip and palate, malabsorption problems, inborn errors of metabolism, lactose intolerance, food allergies, gastrointestinal diseases and disorders, management of underweight, overweight and obesity.

3.2.27.5 Teaching methodology

Presentations, Lectures, Discussions, Tutorials,

3.2.27.6 Mode of Assessment

Continuous Assessment Test	40%
Final Exams	60%

Reference books

Sue Rodwell Williams,(1997) Nutrition and Diet Therapy, 8th edition, Mosby St Louis Missouri

Dietetic Manual

3.2.28 DIET THERAPY II

3.2.28.1 Course Purpose

To enable the learner plan and execute nutrition care to patients/clients

3.2.28.2 Learning objectives

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

1. Describe the basic concepts in dietary management of various disorders.
2. Describe the impact diet induced lifestyle diseases
3. Describe how to manage various lifestyle diseases

3.2.28.3 Course Content

Dietary management for various disorders relating to body systems; diseases of the liver, gallbladder and pancreas. Diseases of the heart, blood vessels and the lungs; coronary heart disease, atherosclerosis, hyper-lipoprotenemia; classes of proteins, functional classification of lipid disorders, acute cardiovascular diseases, hypertension, Diabetes mellitus. Renal diseases.

3.2.28.4 Teaching methodology

Presentations, Lectures, Discussions, Tutorials,

3.2.28.5 Mode of Assessment

Continuous Assessment Test	40%
Final Exams	60%

3.2.28.6 Core Text Book

1. Ministry of Medical Sciences, (2010) Kenya National Cliniical Nutrition and Dietetics Reference Manual.
2. Prof. Ogola, E. N. et al. (2006) *Medicine, Non-Communicable Diseases in Adults.* (2nd Ed.). NairobI: AMREF

Recommended further reading

1. Williams, S. R.,(1994). *Nutrition and diet therapy* (6th ed.). Mosby,St. Louis, Missouri
2. Grodner, M., Anderson, S. L. and DeYoung, S., (2000). *Foundations and clinical applications of Nutrition; A nursing approach*. (2nd ed.). Mosby

3.2.29 DIET THERAPY III

3.2.29.1 Course Purpose

To enable the learner plan and execute nutrition care to patients/clients

3.2.29.2 Learning objectives

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

4. Describe the basic concepts in dietary management of various disorders.
5. Describe the impact of dietary induced lifestyle diseases
6. Describe how to manage various lifestyle diseases

3.2.29.3 Course content

Dietary management in immunity, stress and infections; surgery and burns, cancer, HIV/AIDS and other clinical disorders or conditions. Nutritional support in musculoskeletal diseases: Rheumatoid arthritis, Osteoarthritis, Osteoporosis, Gout. Nutritional support in neuromuscular diseases; traumatic brain injury, spinal cord injury, stroke, cerebral palsy, epilepsy, spina bifida, down syndrome, Parkinson's disease, huntington's chorea, guillain –bare syndrome, mytrophic sclerosis, multiple sclerosis, myastheria gravis, Alzheimers

3.2.29.4 Teaching methodology

Presentations, Lectures, Discussions, Tutorials,

3.2.29 .5 Mode of Assessment

Continuous Assessment Test	40%
Final Exams	60%

2.29.5 Core Text Book

1. Ministry of Medical Sciences, (2010) Kenya National Cliniical Nutrition and Dietetics Reference Manual.

2. Prof. Ogola, E. N. et al. (2006) *Medicine, Non-Communicable Diseases in Adults.* (2nd Ed.). NairobI: AMREF

Recommended further reading

3. Williams, S. R.,(1994). *Nutrition and diet therapy* (6th ed.). Mosby,St. Louis, Missouri
4. Grodner, M., Anderson, S. L. and DeYoung, S., (2000). *Foundations and clinical applications of Nutrition; A nursing approach*. (2nd ed.). Mosby

3.2.30 NUTRITIONAL ASSESSMENT AND SURVEILLANCE

3.2.30.1 Course Purpose

The purpose of this course is to introduce the learner to the methods of nutritional assessment and surveillance.

3.2.30.2 Expected Learning Outcomes

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

1. Describe the different methods of nutritional assessment.
2. Plan, conduct and use nutritional assessment for various programs.
3. Analyze nutritional status assessment data.
4. Describe principles of nutritional surveillance.
5. Design a nutrition surveillance program.

3.2.30.3 Course Content

Nutritional assessment: Nutritional surveys, surveillance, and screening. Nutritional assessment indices: Reference distribution, reference limits, cut off points. Methods of nutritional assessment: socio-demographic, dietary, biochemical and clinical, anthropometric. Types of nutritional surveys: assessment of lactation, complementary feeding, dietary intake, growth monitoring, pregnancy monitoring, operational assessment. Principles of nutrition surveillance: theory and methodology of programme and system planning, monitoring and evaluation. Practical skills in designing a nutritional assessment programme.

3.2.30.4 Teaching methodology

Presentations, Lectures, Discussions, Tutorials,

3.2.30.5 Mode of Assessment

Continuous Assessment Test 40%

Final Exams 60%

3.2.30.6 Core Text Books

1. Rosalind S. G. (1990). *Principals for nutritional assessment.* USA Oxford University Press
2. Margaret D. S., Catherine C., Judith A. G. (1995). *Nutrition assessment: a comprehensive guide for planning intervention 2nd ed.* Aspen publishers

Recommended Further Reading

1. Robert D. L., David C. N. (1993). *Nutritional assessment*. Brown & Benchmark
2. Bruno J. V., Philip J. G., Yves G. (1999). *Mini nutritional assessment (MNA)*: research and practice in the elderly, Nestlé Nutrition Services

3.2.30 LEGAL ASPECTS IN FOOD, NUTRITION AND DIETETICS

3.2.31.1 Course Purpose

This course is intended to equip the learner with the legal knowledge important in nutrition and dietetics.

3.2.31.2 Expected Learning Outcomes

By the end of this course unit, the trainee should be able to:

1. Explain the sources of law in Kenya
2. Describe the organization of the judiciary
3. Demonstrate competency in interpreting public health and safety legislation.

3.2.31.3 Course Content

Introduction to law: Meaning of law, Sources of laws in Kenya, Arms of government and Court hierarchy. The law of tort; the meaning and scope, tort and crime, tort and contract, torts and vicarious liability, torts related to dietetics, Defenses under the law of tort, remedies under the law of tort. Criminal law; the meaning and scope, types of contracts, essentials of valid contracts, Capacity to enter into a contract, breach of contracts, remedies, termination, consumer protection. Public health and safety legislations: Nutritionist and Dieticians Act; Dangerous Drugs Act; Food, Drugs and Chemical Substances Act; Radiation Protection Act; Public Health Act; Pharmacy and Poisons Act; The Trade Licensing Act; bio-safety act and other related acts. Intellectual property right. Emerging legal issues in nutrition. Nutrition policy.

3.2.32.4 Teaching methodology

Presentations, Lectures, Discussions, Tutorials,

3.2.32.5 Mode of Assessment

Continuous Assessment Test	40%
Final Exams	60%

Core text books

3.2.32 FOOD SECURITY

3.2.32.1 Purpose:

The purpose of this course is to provide the learner with knowledge and skills in food security as a function of food production, distribution and storage.

3.2.32.2 Expected Learning Outcomes

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

1. Explain the meaning of food security at national, household and individual levels.
2. Describe the factors affecting food security
3. Describe the actions to improve food security
4. Discuss global factors that impact on food security

3.2.33.3 Course Content

Definition and measurement methods of food security at national, household and individual level. Right to food and food sovereignty. Gender, food security and nutrition. Causes of food insecurity. Effects of food insecurity. Actions to improve food security: access, supplies, storage, production, distribution, marketing, import and export, prices, availability, processing, transport. Global and regional challenges of food security: Global trends in food production, trade and economic implications. Crosscutting issues: Cultural, social and political factors. Micro-economic environment and governance. Case studies in food security. Practical food security assessment, data collection and analysis at individual, house hold and community levels.

Teaching methodology

Presentations, Lectures, Discussions, Tutorials and Field trips, practical

Mode of Assessment

Continuous Assessment Test	20%
Practical	20%

Final Exams 60%

References

1. A Sociology of Food and Nutrition: The Social Appetite. Second edition Germov J, Williams L, eds, Oxford University Press, South Melbourne, 2009, 461 pages, ISBN 0-195-51625-7

3.2.33 COMMUNITY PARTNERSHIP SKILLS

Contact hours 30 hours

3.2.33.1 Course purpose

The purpose of this course is to provide the learner with knowledge, skills and attitudes in community partnership skills.

3.2.33.2Expected learning outcomes

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

1. Understand the concept of community partnership
2. Identify different levels of participatory partnership
3. Identify possible problems and challenges in developing a genuine partnership
4. Describe and carry out community entry process to establish a partnership relationship, using participatory methods
5. Develop community mobilization skills

3.2.33.3 Course content

Introduction; definition of terms, overview, characteristics of community entry programme, the community structure. Levels of partnership; ideal partnership relationship, benefits of a genuine relationship, challenges of developing a genuine relationship, community entry process; steps in community entry and partnership process, tools and methods, community mobilization; Steps in community mobilization, Functions of a community acting group, Levels of participation, Participator techniques, community mobilization in nutrition intervention programmes

3.2.33.4 Teaching methodology

Presentations, Lectures, Discussions, Tutorials and Field trips.

3.2.33.5 Mode of Assessment

Continuous Assessment Test	40%
Final Exams	60%

3.2.34 NUTRITION INTERVENTIONS IN HIV

Contact Hours: 45

3.2.34.1 Course Purpose

The purpose of the course is to provide the learner with knowledge on nutrition and HIV Expected Learning Outcomes

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

5. Describe the modes of transmission and spread of HIV and AIDS.
6. Explain the relationship between Nutrition and HIV
7. Describe the importance of nutrition in the treatment and management of HIV and AIDS.
8. Discuss the impact of Nutrition for the various individual infected with HIV

3.2.34.3 Course Content

Human Immunodeficiency Virus/Acquired Immune-Deficiency Syndrome (HIV and AIDS), Situation analysis of Nutrition and HIV in Kenya.The role of Nutrition for people who are infected y the virus. HIV and Malnutrition.The vicious cycle of Nutrition and HIV. Effects of HIV and AIDS on nutrition.Under nutrition and HIV. Over nutrition and HIV.

The relationship between food security and HIV. HIV infection and Immune system. Changes in metabolism, nutrient assimilation.The significance of nutrition within the continuum of care and support for those infected with HIV/ Nutritional care and support for PLHIV .The interaction between nutrients, and drugs (including ART); and nutrition considerations for special groups such as children born to HIV-infected

women, children who are HIV positive, pregnant and lactating women Prevention of mother to Child transmission (PMTCT).The role of the various nutrients in treatment for PLHIV The importance of micronutrient for PLHIV. Relationship between Nutrition and HIV and Co morbidities. The socio-economic impact of HIV and AIDS in relation to Nutrition.

Nutrition Assessment Counseling and support for PLHIV. Monitoring and Evaluation of the Nutrition Care Process

3.2.34.4Teaching Methodology

Group discussions and presentations, class and public lectures, field visits and tutorials.

Instructional Materials/Equipment

Lecture notes, encyclopedias, textbooks, journals, newspaper articles, tape recorder, radio, video shows. Illustration charts.

3.2.34.5 Course Assessment

Continuous Assessment Test 40%

Final Exams 60%

3.2.34.6 Core text books

1. WHO/FAO Living Well with HIV/AIDS: A Manual on Nutritional Care and Support

   for People living with HIV and AIDS, 2002.
2. Government of Kenya Ministry of Health. Reference Manual on Nutrition and HIV/AIDS in Kenya May2005 (in Draft).
3. Government of Kenya. Ministry of Health. NASCOP. PMTCT Training Curriculum; Kenya PMTCT project. “A short course for health workers providing PMTCT services in areas with limited resources and high HIV prevalence (2009).

3.2.34.7 Recommended further readings

a) Government of Kenya Ministry of Health NASCOP.4th EDITION ART Guidelines2011
b) Government of Kenya Ministry of Health National Home-based Care Programme and Service Guidelines, May 2005(in draft).
c) Government of Kenya Ministry of Health. Home Care Handbook: A Reference Manual for Home-based Care for People with HIV and AIDS in Kenya, (August 2006)
d) Kenya AIDS NGOs Consortium Information Package for People with HIV and AIDS, 2000.
e) National AIDS Control Council. Kenya National HIV/AIDS Strategic Plan 2005/6 -2009/10. 2005.
f) Joel E. G. (2007). *100 Questions and Answers About HIV and AIDS*. 1st Ed.. Jones & Bartlett Learning, London.

3.2.35.MATERNAL AND CHILD NUTRITION

Contact hours 45

3.2.35.1 Course Purpose

The purpose of this course is to provide the learner with knowledge and skills that they shall apply while educating communities on the relationship between childhood infections and nutrition, the importance of maternal care during pregnancy and the need for proper nutritional care.

3.2.35.2.Expected learning outcome

By the end of this unit, the learner should be able to:

a) Understand importance of child health in relations to disease and nutrition
b) Prevent childhood diseases through nutrition practice
c) Promote child health through prevention of childhood diseases

3.2.35.3.Content

Prenatal care: Definition of terms, Importance of prenatal care, Aspects of prenatal care, Problems during pregnancy, Normal growth and development: Growth and development, Factors influencing growth and development, Aspects of growth and development, Measurement of growth, Stages of growth, growth monitoring (card), The new born baby, Characteristics of a healthy baby, Common problems of a new born baby, Care of a new born baby, Feeding a new born baby, Pre – maturity: Definition, Characteristics of a pre-mature baby, Management of a pre-mature baby, Methods of feeding, Complications of premature babies, Lactation, Infant formulas and other milk sources, Complementary feeding & weaning, immunization, Family planning

3.2.35.4 Instructional Materials/Equipment

Lecture notes, encyclopedias, textbooks, journals, newspaper articles, tape recorder, radio, video shows. Illustration charts.

3.2.35.5 Course Assessment

Continuous Assessment Test 40%

Final Exams 60%

3.2.36 PRACTICAL ATTACHMENT

Contact Hours: 16weeks

3.2.36.1 Course Purpose

The purpose of this course is to provide learners with opportunity for practical experience in institutions and organizations providing nutrition and dietetic services.

3.2.33.2 Expected Learning Outcomes

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

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

3.2.36.3 Course Content

Types of nutrition and dietetics services provided; common needs and interventions for meeting them; common challenges in the provision of services; interventions for meeting common needs and solving common problems related to nutrition. Discussions between the institutions and the attachée, Supervision and evaluation of the student, Follow-up and discussions during the attachment period.

3.2.33.4 Instructional Materials and Equipment

Logbooks and field manuals

3.2.33.5 Teaching methodology

Presentations, Lectures, Discussions, Tutorials,

3.2.33.6 Mode of Assessment

Student Assessment at the place of attachment	50%
Attachment Report	50%

LIST OF REVIEWERS

NAME	ORGANIZATION
Dr. Anastasiah Kimeu	Capacity Kenya, Nairobi
Prof. Edward Karuri	KNDI
Ms. Joyce Atinda	KNDI
Dr. Joyce Meme	KEMU, Nairobi
Mr. Job Mapesa	KEMU, Nairobi
Mr. Samwel M. Nato	Mombasa Polytechnic University College, Mombasa
Mr. Lucy Waititu	Rift Valley Technical Training Institute, Eldoret
Ms. Olivia Akoth	Thika School of Medical and Health Sciences, Thika
Ms. Peninah Itonga Makena	NEP College, Garissa