PROPOSED SYLLABUS

of

B.A. (Prog) Nutrition and Health Education
Choice Based Credit System

from UGC
2015
PREAMBLE

Nutrition has been recognized and given a special role in national development. This course is following on the same lines laid out in National Policy of Nutrition. This curriculum aims at training students to take up leadership roles in extension and community outreach programs. The students are encouraged to develop a scientific temper. Familiarizing them with the use of newer technologies, methods in family and community linkages, and sustainable use of resources for human development are the hallmark of this course. This course aims at enriching the minds of the students who have interest in learning finer points of nutrition. Nutrition generates lot of concerns, issues and is very close to individual heart. Nutrition is the key to facilitate the study and enhance the quality of human life. Its approach is therefore inherently interdisciplinary. Its curriculum that engages the student through teaching, research and extension.

This course aims to develop a holistic and multidimensional understanding of the various topics. Syllabus covers basic aspects of nutrients, food science, nutrition concerns in various stages of life cycle, food safety, food security as well as open a vast understanding of the current spectrum of malnutrition. This course equips the students for skill development, academic understanding, entrepreneurship, community role and employment in various fields of food industry, health clinics, NGOs, etc.

The ongoing B.A. (Prog) with Nutrition and Health Education course was introduced as restructured course of Home Science. Until 2014-15, this course was being offered in B.A.(Prog) as a discipline course in three colleges of University of Delhi in semester mode. In Choice Based Credit System the course would be of 3-year duration, divided into 3 parts - Part I, Part II and Part III. Each part would consist of 2 semesters. There would be 4 core papers (along with 4 language and 4 core papers from some other opted discipline of B.A. Programme), 2 Discipline Centric Electives (2 DSE from other opted discipline), 4 Skill Enhancement Elective courses (SEC), 2 Generic Elective courses (GE) and 2 Ability Enhancement Compulsory Courses. Students will be given a pool of papers in DSE, SEC and GE from which they can choose their preferred papers.

The objectives of the course are-

- To introduce the students to the fundamentals of Nutrition, food and health
- To familiarize them with importance of nutrition during various stages of life.
- To impart knowledge regarding etiology and management of nutritional disorders ranging from nutritional deficiencies to lifestyle disorders.
- To emphasize on the importance of food safety, food quality, food laws and regulations, ongoing national programmes as well as imparting entrepreneurship skill for job enhancement.

The contents have been drawn-up to accommodate the widening horizons of the discipline of Food and Nutrition. They reflect the current changing needs of the students and the evolving
needs of the community. The option of project/dissertation has been offered to strengthen the knowledge, skills and research procedures to inculcate the scientific temperament of students. For each paper,

- The detailed syllabus for each paper is appended with the list of suggested readings.
- Teaching time allotted for each paper shall be 4 periods for each theory paper and 4 periods for each practical class per week. Each practical batch should ideally be between 15-20 students so that each student receives individual attention.
<table>
<thead>
<tr>
<th>Category of Paper</th>
<th>Name of Papers</th>
<th>Theory Credits</th>
<th>Practical/Tutorial Credits</th>
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<tr>
<td>Discipline Specific Course (DSC)</td>
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<td>2. Nutrition for the Family</td>
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<td>3. Introduction to Food Safety</td>
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<td>4. Public Health Nutrition</td>
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<td>Discipline Specific Elective (DSE)</td>
<td>1. Public Nutrition</td>
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<td>2. Entrepreneurship for Small Catering Unit</td>
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<td>3. Therapeutic Nutrition</td>
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<td>Skill Enhancement Course (SEC)</td>
<td>1. Home Based Catering</td>
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<td>2. Nutrition and Fitness</td>
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<td>3. Bakery Science</td>
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<td>4. Maternal &amp; Child Nutrition</td>
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<td>5. Food &amp; Nutrition</td>
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<td>Generic Electives (GE)</td>
<td>1. Human Nutrition</td>
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<td>2. Nutrition: A Life Span Approach</td>
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<td>3. Current Concerns in Public Health Nutrition</td>
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<tr>
<td>SEMESTER</td>
<td>DISCIPLINE SPECIFIC COURSE (12)</td>
<td>ABILITY ENHANCEMENT COMPULSORY COURSE (AECC) (2)</td>
<td>SKILL ENHANCEMENT COURSE (SEC) (2)</td>
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<td>English/ MIL-1</td>
<td>English/MIL Communication / Environmental Science</td>
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<td>DSC-NHE -1A: Fundamentals of Nutrition and Food Science (Theory + Practical)</td>
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<td>DSC-2A</td>
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<td>II</td>
<td>MIL/English-1</td>
<td>Environmental Science/ English/MIL Communication</td>
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<td>SEC-1</td>
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<td>DSC-NHE-1C Introduction to Food Safety (Theory + Practical)</td>
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<td>DSC-NHE-1D: Public Health Nutrition - (Theory + Practical)</td>
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<td>DSC-2D</td>
<td>SEC-3</td>
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<td><strong>VI</strong></td>
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<td>SEC-4</td>
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<td>DSE-2B</td>
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**ELECTIVE: DISCIPLINE SPECIFIC DSE (Any 2) (1 in Sem V and 1 in Sem VI):**

CREDITS – 6 (4 Period Theory and 4 Period Practical per Week)

- DSE-NHE-1A: Public Nutrition.
- DSE-NHE-1B: Entrepreneurship for small Catering Unit
- DSE-NHE-2A: Therapeutic nutrition
- DSE-NHE-2B: Project/ Dissertation

**SKILL ENHANCEMENT ELECTIVE COURSE (Any 4, 1 each in Sem III, IV, V and VI):**

CREDITS – 2 (2 Period Theory or 4 Period Practical per Week)

- SEC-1: Home Based Catering
- SEC-2: Nutrition and Fitness
- SEC-3: Bakery Science
- SEC-4: Maternal and Child Nutrition
- SEC-5: Food and Nutrition

**ELECTIVE: GENERIC (GE) (Any 2, 1 each in sem 5 and 6):**

CREDITS – 6 (4 Period Theory and 4 Period Practical per Week)

- GE-NHE-1: Human Nutrition
- GE-NHE-2: Nutrition: A Life Span Approach
- GE-NHE-3: Current Concerns in Public Health Nutrition
DISCIPLINE SPECIFIC COURSES
DSC-NHE-1A: FUNDAMENTALS OF NUTRITION AND FOOD SCIENCE
(CREDITS: THEORY-4, PRACTICAL-2)

OBJECTIVES

1. To familiarize students with fundamentals of food, nutrients and their relationship to Health
2. To create awareness with respect to deriving maximum benefit from available food resources

THEORY

UNIT I Basic concepts in food and nutrition  5 periods
Basic terms used in study of food and nutrition

• Understanding relationship between food, nutrition and health
• Functions of food-Physiological, psychological and social

UNIT II Nutrients  20 periods
• Functions, dietary sources and clinical manifestations of deficiency/excess of the following nutrients:
  • Carbohydrates, lipids and proteins
  • Fat soluble vitamins-A, D, E and K
  • Water soluble vitamins – thiamin, riboflavin, niacin, pyridoxine, folate, vitamin B12 and vitamin C
  • Minerals – calcium, iron and iodine

UNIT III Food Groups  25 periods
• Selection, nutritional contribution and changes during cooking of the following food groups:
  • Cereals
  • Pulses
  • Fruits and vegetables
  • Milk & milk products
  • Eggs
  • Meat, poultry and fish
  • Fats and Oils

UNIT IV Methods of Cooking and Preventing Nutrient Losses  10 periods
• Dry, moist, frying and microwave cooking
• Advantages, disadvantages and the effect of various methods of cooking on nutrients
• Minimizing nutrient losses
PRACTICAL

1. Weights and measures; preparing market order and table setting
2. Food preparation, understanding the principles involved, nutritional quality and portion size
   - Beverages: Hot tea/coffee, Milk shake/ lassi, fruit based beverages
   - Cereals: Boiled rice, pulao, chapatti, paratha, puri, pastas
   - Pulses: Whole, dehusked
   - Vegetables: curries, dry preparations
   - Milk and milk products: Kheer, custard
   - Meat, Fish and poultry preparations
   - Egg preparations: Boiled, poached, fried, scrambled, omelettes, egg pudding
   - Soups: Broth, plain and cream soups
   - Baked products: Biscuits/cookies, cream cakes, sponge cake preparations, tarts and pies
   - Snacks: pakoras, cutlets, samosas, upma, poha, sandwiches
   - Salads: salads and salad dressings

RECOMMENDED READINGS

- Mudambi, SR and Rajagopal, MV. Fundamentals of Foods, Nutrition and Diet Therapy; Fifth Ed; 2012; New Age International Publishers
- Mudambi, SR, Rao SM and Rajagopal, MV. Food Science; Second Ed; 2006; New Age International Publishers
- Srilakshmi B. Nutrition Science; 2012; New Age International (P) Ltd.
- Srilakshmi B. Food Science; Fourth Ed; 2010; New Age International (P) Ltd.
- Swaminathan M. Handbook of Foods and Nutrition; Fifth Ed; 1986; BAPPCO.
- Wardlaw GM, Hampl JS. Perspectives in Nutrition; Seventh Ed; 2007; McGraw Hill.
- Manay MS, Shadaksharaswamy. Food-Facts and Principles; 2004; New Age International (P) Ltd.
- Potter NN, Hotchkiss JH. Food Science; Fifth Ed; 2006; CBS Publishers and Distributors.
- Jain P et al. Poshan va swasthya ke mool siddhant (Hindi); First Ed; 2007; Acadamic Pratibha.
- Vrinda S. Aahar Vigyan (Hindi); 2003; Shyam Prakashan
- Suri S. and Malhotra A. Food Science, Nutrition & Food Safety Pearson India Ltd. 2014.


DSC-NHE IB: NUTRITION FOR THE FAMILY
(CREDITS: THEORY-4, PRACTICAL-2)

THEORY

UNIT I Unit 1 Basic concepts meal planning 16
• Food groups and concept of balanced diet
• Food exchange list
• Concept of Dietary Reference Intakes
• Factors effecting meal planning and food related behavior.
• Dietary guidelines for Indians and food pyramid

UNIT II Nutrition during the adult years

Physiological changes, RDA, nutritional guidelines, nutritional concerns and healthy food choices 24
• Adult
• Pregnant woman
• Lactating mother
• Elderly

UNIT III Nutrition during childhood

• Growth and development, growth reference/ standards, RDA, nutritional guidelines, nutritional concerns and healthy food choices 20
• Infants
• Preschool children
• School children
• Adolescents

PRACTICAL

Objective

1. To develop in students, the concept of portion sizes
2. To impart basic cooking skills and healthy cooking practices

Introduction to meal planning
• Use of food exchange list
• Planning and preparation of diets and dishes for Young adult
• Pregnant and Lactating woman
• Preschool child
• School age child and adolescents
• Elderly

RECOMMENDED READINGS
2. Khanna K et al. Textbook of nutrition and dietetics; 2013; Phoenix Publisher.
6. Vrinda S. *Aahar Vigyan (Hindi)*; 2003; Shyam Prakashan.
8. Savage King F, Burgess A. Nutrition for developing countries; Second Ed; 1993; Oxford University Press.

**DSC-NHE 1C: INTRODUCTION TO FOOD SAFETY**

*(CREDITS: THEORY-4, PRACTICAL-2)*

**THEORY**

**UNIT I Introduction to PHN**
• Definition of PHN
• Levels of health care services

**UNIT III: Food Safety and Storage**
- Concept of food safety, Key terms, factors affecting food safety, recent concerns
- Food safety measures: basic concept of HACCP
- Safe food handling practices and storing food safely
- Food additives

**UNIT III: Food Adulteration**
- PFA definition of food adulteration
- Adulterants in commonly consumed food items
- Accidental contamination: botulism, staphylococcal and aflatoxin intoxication
- Importance of food labels in processed foods and nutritional labelling
- Food laws, regulations and standards
  - Codex Alimentarius
  - Prevention of Food Adulteration (PFA) Act
  - Agmark
  - Fruit Products Order (FPO)
  - Meat Products Order (MPO)
  - Bureau of Indian Standards (BIS)
  - MMPO
  - FSSAI

**PRACTICAL**

1. Market survey of preserved fruit and vegetable products 1
2. Visit to food testing lab /or any agency of food standards 1
3. Nutritional labeling Development and understanding- use of computer graphics as an aid 5
4. Simple test for food adulteration 2
5. Case Study on food safety issues-ICDS/MDM/Diarrheal outbreak/ any other 3
RECOMMENDED READINGS

- Mudambi, SR and Rajagopal, MV. Fundamentals of Foods, Nutrition and Diet Therapy; Fifth Ed; 2007; New Age International Publishers
- Wardlaw GM, Hampl JS. Perspectives in Nutrition; Seventh Ed; 2007; McGraw Hill.
- Sethi P and Iakra P Aahaar vigyaan, Poshan evam Suruksha, Elite Publishing house, 2015
- Khanna K et al. Textbook of Nutrition and Dietetics; 2013; Phoenix Publisher.
- Srilakshmi B. Dietetics; Fourth Ed; 2002; New Age International (P) Ltd.

DSC-NHE I D: PUBLIC HEALTH NUTRITION

(CREDITS: THEORY-4, PRACTICAL-2)

THEORY

Objectives

1. To enable students to identify and contribute to the prevention of public health/social health problems in the country.
2. To equip students with workable knowledge to treat common illnesses at home.

UNIT I: Introduction to Nutritional deficiency diseases

Causes, symptoms, treatment, prevention of the following:

- Protein Energy Malnutrition (PEM)
- Vitamin A Deficiency (VAD)
- Iron Deficiency Anaemia (IDA)
- Iodine Deficiency Disorders (IDD)
- Zinc Deficiency
- Fluorosis

UNIT II Social health problems

- Smoking
- Alcoholism
• Drug addiction
• AIDS including AIDS Control Programme

UNIT III Nutrition for special conditions
• Introduction to Nutrition for physical fitness and sport
• Feeding problems in children with special needs
• Considerations during natural and man-made disasters e.g. floods, war.- basic guidelines in disaster management.

Unit IV: Food Security
(a) Key terms, factors affecting food security, recent concern  
(b) Technologies for food and nutrition security

PRACTICALS

Objectives:
1. To enable the students to develop recipes for treating various nutritional deficiencies
2. To develop in them the skill to modify normal diets for disease conditions

• Planning and preparation of snacks for PEM, VAD and IDA (one full days diet for PEM and snacks for PEM VAD and IDA  
• Visit to any national programme

RECOMMENDED READING

• Mudambi, SR and Rajagopal, MV. Fundamentals of Foods, Nutrition and Diet Therapy; 2012; New Age International Publishers
• Wardlaw GM, Hampl JS. Perspectives in Nutrition; Seventh Ed; 2007; McGraw Hill..
• Gibney et al. Public Health Nutrition; 2004; Blackwell Publishing
• Khanna K et al. Textbook of Nutrition and Dietetics; 2013; Phoenix Publisher.
• Sharma S, Wadhwa A. Nutrition in the Community- A textbook; 2003; Elite Publishing House Pvt. Ltd.
• Srilakshmi B. Dietetics; 2012; New Age International (P) Ltd.
• Lakra P, Singh MD. Textbook of Nutrition and Health; First Ed; 2008; Academic
Excellence

DISCIPLINE SPECIFIC ELECTIVE (DSE)
DSE- NHE- 1A: PUBLIC NUTRITION
(CREDITS: THEORY-4, PRACTICAL-2)

THEORY

UNIT I: Concept and scope of public nutrition 5
• Definition and multidisciplinary nature of public nutrition
• Concept and scope
• Role of public nutritionist

UNIT II: Nutritional problems, their implications and related nutrition programmes 22
• Etiology, prevalence, clinical features and preventive strategies of-
  - Undernutrition –
  - Protein energy malnutrition, nutritional anaemias, vitamin A deficiency, iodine deficiency disorders
  - Overnutrition – obesity, coronary heart disease, diabetes
• National Nutrition Policy and Programmes - Integrated Child Development Services (ICDS) Scheme, Mid day Meal Programme (MDMP), National programmes for prevention of Anaemia, Vitamin A deficiency, Iodine Deficiency Disorders.

UNIT III: Assessment of nutritional status 18
• Objectives and importance
• Methods of assessment
  a. Direct – clinical signs, nutritional anthropometry, biochemical tests, biophysical tests
  b. Indirect – Diet surveys, vital statistics

UNIT IV: Nutrition Education 15
• Objectives, principles and scope of nutrition and health education and promotion
• Behaviour Change Communication

PRACTICAL

1. Planning of low cost nutritious recipes for infants, preschoolers, pregnant/nursing mothers for nutrition education.
2. Assessment of nutritional status:
   • Anthropometry – weight and height measurements
   • Plotting and interpretation of growth charts for children below 5 years
   • Identification of clinical signs of common nutritional disorders
   • Dietary assessment – FFQ and 24 hour diet recall
2. Planning and conducting a food demonstration.

RECOMMENDED READINGS

DSE- NHE- 1 B : ENTREPRENEURSHIP FOR SMALL CATERING UNITS  
(CREDITS : THEORY 4 , PRACTICAL 2)

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<td>• Kinds of food service units</td>
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<td><strong>Unit II.</strong> Menu Planning</td>
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<td>• Importance of menu,</td>
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<td>• Factors affecting menu planning,</td>
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<td>• Types of menu</td>
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<td><strong>Unit III.</strong> Organization &amp; Management</td>
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<td>• Principles of management</td>
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<td>• Functions of management/ manager</td>
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<td><strong>Unit IV.</strong> Food Production Process</td>
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<td>• Food purchase and receiving</td>
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<td>• Storage</td>
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<tr>
<td>• Quantity food production: Standardization of recipes, Recipe adjustments and portion control, Quantity food production techniques</td>
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<td>• Food service</td>
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<td>• Food hygiene and sanitation</td>
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<td><strong>Unit V: Space and Equipment</strong></td>
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<tr>
<td>• Types of kitchen areas, Flow of work and work area relationship</td>
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<td>• Equipment</td>
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<tr>
<td>a) Factors affecting selection of equipment</td>
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<td>b) Equipment needs for different situations</td>
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<td><strong>Unit V: Financial Management</strong></td>
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<tr>
<td>• Importance of Financial Management</td>
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<td>• Budgets and Budgeting process</td>
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<td>• Cost concepts</td>
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Unit VI: Personnel Management

- Functions of a personnel manager,
- Factors to consider while planning the kind and number of personnel:
  Menu, type of operations, Type of service, Job description and job specification

Unit VII: Planning of A Small Food Service Unit

- Preliminary Planning
  Survey of types of units, identifying clientele, menu, operations and delivery
- Planning the set up:
  a) Identifying resources
  b) Developing Project plan
  c) Determining investments
  d) Development of a business plan

PRACTICALS

1. Market survey for food items both raw and processed
2. Survey of food service units
3. Standardization of a recipe
4. Preparing Quick Foods for scaling up for quantity production
5. Planning menus for the following:  
   a) Packed meals for office employees
   b) Nutritious tiffins for school children
   c) School/college canteens
6. Demonstration of a specialized cuisine
7. Develop a checklist for good hygiene practices

RECOMMENDED READINGS

  By Hargar FV, Shuggart SG, & Palgne Palacio June, Macmillian Publishing Company
  New York.
- Knight J B & Kotschevar LH (2000) Quantity Food Production Planning &
Management 3rd edition John Wiley & Sons

• Tripathi P C (2000) Personnel management 15th ed Sultan Chand, New Delhi
• Longree K, Langree K, Longrie K (1996) Quantity Food sanitation, John Wiley & sons
• Taneja S and Gupta SL (2001) Enterpreneurship development, Galgotia Publishing

DSE- NHE- 2A: THERAPEUTIC NUTRITION
(CREDITS: THEORY-4, PRACTICAL-2)

THEORY

Unit I: Principles of nutrition care 8
• Nutrition Care Process
• Therapeutic adaptations of the normal diet
• Progressive diets – clear fluid, full fluid, soft and regular

Unit II: Etiology, clinical features and nutritional management of Infections and Fevers 8
• Typhoid
• Tuberculosis
• HIV

Unit III: Etiology, clinical features and nutritional management of the following 18
• GI Tract Disorders:
  o Diarrhoea
  o Constipation
  o Lactose intolerance
  o Celiac disease.
• Liver: Infective Hepatitis
Unit IV: Etiology, clinical features and nutritional management of

- Weight Imbalances-Overweight and obesity; Underweight
- Eating disorder- anorexia nervosa and bulimia

Unit V: Etiology, clinical features, basic diagnosis and nutritional management of the Following

- Type 1 and Type 2 Diabetes Mellitus
- Metabolic Syndrome
- Hypertension and Coronary Heart Disease

Unit VI: Food allergy and food intolerance

- Etiology, clinical features, diagnosis and nutritional management

PRACTICAL

Planning, preparation and service of diets for the following:

Therapeutic Diets – Normal, Soft, Clear and full fluid

- Fevers: acute and chronic
- Obesity
- Type 2 Diabetes
- Hypertension and CHD
- Survey therapeutic foods in market

RECOMMENDED READINGS


**DSE-NHE-2B: PROJECT/ DISSERTATION**

(CREDITS: THEORY-6)

Objectives
To mentor the students to design and conduct an original and ethical research. They should be able to write a dissertation in the APA format. The research done can either be empirical/data based (quantitative, qualitative, or mixed-methods) or it can be in the form of a critical review of research and theory.


Evaluation: Viva jointly by one internal and one external examiner.
SKILL ENHANCEMENT COURSES (SEC)
SEC 1: HOME BASED CATERING
(CREDITS: THEORY 2)

THEORY

LECTURES 30

Unit I. Introduction to Food Service
3
  • Factors contributing to the growth of food service industry
  • Kinds of food service establishments

Unit II. Food Production
12
  • Menu planning: Importance of menu, factors affecting menu planning, menu planning for different kinds of food service units
  • Food Purchase and Storage
  • Quantity Food production: Standardization of recipes, quantity food preparation techniques, recipe adjustments and portion control
  • Hygiene and Sanitation

Unit III. Resources
4
  • Money
  • Manpower
  • Time
  • Facilities and equipment
  • Utilities

Unit IV. Planning of A Food Service Unit
11
  • Preliminary Planning
    Survey of types of units, identifying clientele, menu, operations and delivery
  • Planning the set up:
    a) Identifying resources
    b) Developing Project plan
    c) Determining investments
    d) Project Proposal

RECOMMENDED READINGS
    By Hargar FV, Shuggart SG, & Palgne Palacio June, Macmillian Publishing Company
SEC 2: NUTRITION AND FITNESS
(CREDITS: THEORY-2)

<table>
<thead>
<tr>
<th>THEORY</th>
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<td><strong>Unit 1</strong> Understanding Fitness</td>
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<tr>
<td>• Definition of fitness, health and related terms</td>
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<td>• Assessment of fitness</td>
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<td>• Approaches for keeping fit</td>
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<td><strong>Unit 2</strong> Importance of nutrition</td>
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<td>• Role of nutrition in fitness</td>
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<td>• Nutritional guidelines for health and fitness</td>
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<td>• Nutritional supplements</td>
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<tr>
<td><strong>Unit 3</strong> Importance of Physical activity</td>
<td>7</td>
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<tr>
<td>• Importance and benefits of physical activity</td>
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<tr>
<td>• Physical Activity – frequency, intensity, time and type with examples</td>
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<td>• Physical Activity Guidelines and physical activity pyramid</td>
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<tr>
<td><strong>Unit 4</strong> Weight Management</td>
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<tr>
<td>• Assessment, etiology, health complications of overweight and obesity</td>
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<td>• Diet and exercise for weight management</td>
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<td>• Fad diets</td>
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<tr>
<td>• Principles of planning weight reducing diets</td>
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</tbody>
</table>

RECOMMENDED READINGS

- New York.
- Philip E Thangam (2008) Modern Cookery for teaching and Trade Part I & II Orient Longman
SEC 3: BAKERY SCIENCE  
(CREDITS: PRACTICALS-2)

PRACTICAL

1. BASIC CONCEPTS OF BAKERY
   a) Ingredients & processes used for preparation of
      • Cream cakes and sponge cakes
      • Short crust pastry
      • Breads, buns and pizza base
      • Cookies and biscuits
   b) Product characteristics, common bakery faults and corrective measures
   c) Bakery equipment- Types, selection, operations and maintenance

2. PRACTICAL TRAINING IN BAKING OF
   • Cream cake
   • Sponge cake preparations
   • Short crust pastry
   • Breads, buns, dinner rolls and pizza base
   • Biscuits and cookies

RECOMMENDED READINGS
   • Raina et.al. (2010). Basic Food Preparation-A Complete Manual. 4rd Ed. Orient Black
SEC 4: MATERNAL AND CHILD NUTRITION
(CREDITS: THEORY 2)

THEORY

LECTURES: 30

Unit I

- Nutritional needs during pregnancy, common disorders of pregnancy (Anaemia, HIV infection, Pregnancy induced hypertension), relationship between maternal diet and birth outcome.
- Maternal health and nutritional status, maternal mortality and issues relating to maternal health.

Unit II

- Nutritional needs of nursing mothers and infants, determinants of birth weight and consequences of low birth weight, Breastfeeding biology, Breastfeeding support and counselling

Unit III

- Infant and young child feeding and care - Current feeding practices and nutritional concerns, guidelines for infant and young child feeding, Breast feeding, weaning and complementary feeding.
- Assessment and management of moderate and severe malnutrition among children, Micronutrient malnutrition among preschool children
- Child health and morbidity, neonatal, infant and child mortality, IMR and U5MR; link
between mortality and malnutrition;

Unit IV

Overview of maternal and child nutrition policies and programmes.

RECOMMENDED READINGS


SEC 5 : FOOD AND NUTRITION

(CREDITS: PRACTICAL-2)

1. Identification of food sources for various nutrients using food composition tables.
3. Introduction to meal planning, concept of food exchange system.
4. Planning of meals for adults of different activity levels for various income groups.
5. Planning of nutritious snacks for different age and income groups.
6. Preparation of nutritious snacks using various methods of cooking.
7. Nutritional labeling of food products.
8. Estimation of BMI and other nutritional status parameters.

RECOMMENDED READINGS

GENERIC ELECTIVE (GE)

GE 1: HUMAN NUTRITION

(CREDITS: THEORY 4, PRACTICAL 2)

THEORY

LECTURES: 60

Unit I: Basic Concepts in Nutrition

- Basic terms used in nutrition
- Understanding relationship between food, nutrition and health
- Functions of food-Physiological, psychological and social
- Basic food groups and concept of balanced diet

Unit II: Nutrients

Energy- Functions, sources and concept of energy balance.
Functions, Recommended Dietary Allowances, dietary sources, effects of deficiency and/ or excess consumption on health of the following nutrients:
- Carbohydrates and dietary fibre,
- Lipids
- Proteins
- Fat soluble vitamins-A, D,E and K
- Water soluble vitamins – Thiamin, Riboflavin, Niacin, Pyridoxine, Folate, Vitamin B12 and Vitamin C
- Minerals – Calcium, Iron, Zinc and Iodine

Unit III: Nutrition during Lifecycle

Physiological considerations and nutritional concerns for the following life stages:
- Adult man / woman
- Preschool children
- Adolescent children
- Pregnant woman
- Nursing woman and infant

RECOMMENDED READINGS

GE 2: NUTRITION: A LIFESPAN APPROACH  
(CREDITS: THEORY 4, PRACTICAL 2)

<table>
<thead>
<tr>
<th>THEORY</th>
<th>LECTURES: 60</th>
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<tbody>
<tr>
<td><strong>Unit I: Principles of meal planning</strong></td>
<td>10</td>
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<tr>
<td>• Balanced diet</td>
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<td>• Food groups</td>
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<td>• Food exchange list</td>
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<td>• Factors effecting meal planning and food related behaviour.</td>
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<td>• Dietary guidelines for Indians and food pyramid</td>
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<td><strong>Unit II: Nutrient requirements</strong></td>
<td>8</td>
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<tr>
<td>• Concept of Dietary Reference Intakes</td>
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<tr>
<td>• Overview of methods for assessment of nutrient needs</td>
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<tr>
<td><strong>Unit III: Nutrition for adulthood and old age</strong></td>
<td>12</td>
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<tr>
<td>• Adult: Nutrient requirements for adult man and woman, RDA, nutritional guidelines, nutritional concerns, diet and lifestyle related diseases and their prevention</td>
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<tr>
<td>• Elderly – Physiological changes in elderly, RDA, nutritional guidelines, nutritional and health concerns in old age and their management, factors contributing to longevity</td>
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<td><strong>Unit IV: Nutrition during pregnancy and lactation</strong></td>
<td>12</td>
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<tr>
<td>• Pregnancy – Physiological changes in pregnancy, RDA, nutritional guidelines, nutritional needs, effect of nutritional status on pregnancy outcome, optimal weight gain and its components, nutrition related problems in pregnancy and ways to control them.</td>
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<tr>
<td>• Lactation – Physiology of lactation, RDA and nutritional needs of a nursing mother, nutritional guidelines</td>
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<td><strong>Unit V: Nutrition during childhood</strong></td>
<td>18</td>
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<tr>
<td>• Growth and development, growth reference/ standards, RDA, nutritional guidelines, nutritional concerns and healthy food choices</td>
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<td>- Infants</td>
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<td>- Preschool children</td>
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<td>- School children</td>
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<td>- Adolescents</td>
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**PRACTICAL**

| Unit I: Introduction to meal planning | 3 |
| - Use of food exchange list | |


**Unit II**: Planning and preparation of diets and dishes for

- Young adult
- Pregnant and Lactating woman
- Preschool child
- School age child and adolescents
- Elderly

**Unit III**: Planning complementary foods for Infants

**RECOMMENDED READINGS**


**GE 3: CURRENT CONCERNS IN PUBLIC HEALTH NUTRITION**

(CREDITS: THEORY 5, TUTORIAL 1)

**THEORY**

**Unit I: Nutritional problems affecting the community**

Etiology, prevalence, clinical features and preventive strategies of-

- Undernutrition - Protein energy malnutrition: Severe Acute Malnutrition and Moderate Acute Malnutrition, Nutritional Anaemias, Vitamin A Deficiency, Iodine Deficiency Disorders
- Overnutrition – obesity, coronary heart disease, diabetes
- Fluorosis
Unit II: Strategies for improving nutrition and health status of the community  
Appropriate interventions involving different sectors such as Food, Health and Education

Unit III: Nutrition Policy and Programmes  
- National Nutrition Policy  
- Integrated Child Development Services (ICDS) Scheme, Mid day Meal Programme (MDMP), National programmes for prevention of Anaemia, Vitamin A deficiency, Iodine Deficiency Disorders

Unit IV: Food and Nutrition Security  
- Concept, components, determinants and approaches  
- Overview of Public Sector programmes for improving food and nutrition security

TUTORIAL  
1. Planning and evaluation of low cost nutritious recipes for preschoolers, school age children, adolescents, pregnant and nursing mothers.  
2. Planning and evaluation of low calorie nutritious recipes for weight management.  
3. Planning and conducting a food demonstration.  
4. Visit to an ongoing nutrition programme.

RECOMMENDED READINGS  