

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 hall mark 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 life style 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.

B.A. (PROG) NUTRITION AND HEALTH EDUCATION

Category of Paper	Name of Papers	Theory Credits	Practical/ Tutorial Credits
Discipline Specific Course (DSC)	1. Fundamentals of Nutrition and Food Science	4	2
	2. Nutrition for the Family	4	2
	3. Introduction to Food Safety	4	2
	4. Public Health Nutrition	4	2
Discipline Specific Elective (DSE)	1. Public Nutrition	4	2
	2. Entrepreneurship for Small Catering Unit	4	2
	3. Therapeutic Nutrition	4	2
	4. Project/ Technical Report/ Dissertation	6	
Skill Enhancement Course (SEC)	1. Home Based Catering	2	
	2. Nutrition and Fitness	2	
	3. Bakery Science		2
	4. Maternal & Child Nutrition	2	
	5. Food & Nutrition		2
Generic Electives (GE)	1. Human Nutrition	4	2
	2. Nutrition: A Life Span Approach	4	2
	3. Current Concerns in Public Health Nutrition	5	1

**CHOICE BASED CREDIT SYSTEM IN
B.A. (PROG) NUTRITION AND HEALTH EDUCATION**

SEMESTER	DISCIPLINE SPECIFIC COURSE (12)	ABILITY ENHANCEMENT COMPULSORY COURSE (AECC) (2)	SKILL ENHANCEMENT COURSE (SEC) (2)	DISCIPLINE SPECIFIC ELECTIVE DSE (4)	GENERIC ELECTIVE (GE) (4)
I	English/ MIL-1	English/MIL Communication / Environmental Science			
	DSC-NHE -1A: Fundamentals of Nutrition and Food Science (Theory + Practical)				
	DSC-2A				
II	MIL/English-1	Environmental Science/ English/MIL Communication			
	DSC-NHE-1B: Nutrition for the Family (Theory +Practical)				
	DSC-2B				
III	English/ MIL-2		SEC-1		
	DSC-NHE-1C Introduction to Food Safety (Theory + Practical)				
	DSC-2C				
IV	MIL/English-2		SEC-2		
	DSC-NHE-1D: Public Health Nutrition - (Theory + Practical)				

	DSC-2D				
V			SEC-3	DSE- 1A	GE-1
				DSE-1 B	
VI			SEC-4	DSE-2A	GE-2
				DSE-2 B	

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 1 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, parantha, 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:pakorras, 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.
- Bamji MS, Rao NP, and Reddy V. Text Book of Human Nutrition; 2009; Oxford & IBH Publishing Co. Pvt Ltd.
- Wardlaw GM, Hampl JS. Perspectives in Nutrition; Seventh Ed; 2007; McGraw Hill.
- Lakra P, Singh MD. Textbook of Nutrition and Health; First Ed; 2008; Academic Excellence.
- 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.
- Sethi P and Lakra P Aahaar Vigyaan,Poshan Evam Suruksha, Elite Publishing House, 2015
- Jain P et al. *Poshan va swasthya ke mool siddhant (Hindi)*; First Ed; 2007; Academic Pratibha.
- Vrinda S. *Aahar Vigyan (Hindi)*; 2003; Shyam Prakashan
- Suri S. and Malhotra A. Food Science, Nutrition & Food Safety Pearson India Ltd. 2014.

- Raina U, Kashyap S, Narula V, Thomas S, Suvira, Vir S, Chopra S. Basic Food Preparation – A Complete Manual. Orient Longman, 2005.
- Khanna K, Gupta S, Seth R, Mahana R, Rekhi T. The Art and Science of Cooking. Phoenix Publishing House Private Limited, Delhi 1998.

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

THEORY

LECTURES 60

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

20

- Growth and development, growth reference/ standards, RDA, nutritional guidelines, nutritional concerns and healthy food choices
- 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

3

- Use of food exchange list
- Planning and preparation of diets and dishes for Young adult

10

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

RECOMMENDED READINGS

1. Edelstein S, Sharlin J (ed). Life Cycle Nutrition- An Evidence Based Approach; 2009; Jones and Barlett Publishers.
2. Khanna K et al. Textbook of nutrition and dietetics; 2013; Phoenix Publisher.
3. Sharma S, Wadhwa A. Nutrition in the community- A textbook; 2003; Elite Publishing House Pvt. Ltd.
4. Jain P et al. *Poshan va swasthya ke mool siddhant (Hindi)*; First Ed; 2007; Academic Pratibha.
5. Malhan, Gupta, Jain. *Aahar aayojan, khadya sangrakshan evam griha vyavastha (Hindi)*; 1993; Sultan Chand & Sons Publishing.
6. Vrinda S. *Aahar Vigyan (Hindi)*; 2003; Shyam Prakashan.
7. Ghosh S. Nutrition and child care- A practical guide; 1997; Jaypee Bros.
8. Savage King F, Burgess A. Nutrition for developing countries; Second Ed; 1993; Oxford University Press.
9. Dietary guidelines for Indians- A Manual; 2011; NIN, ICMR, Hyderabad.
10. Gopalan,C et al. Nutritive Value of Indian foods; 1994; NIN, ICMR, Hyderabad.
11. Raina U, Kashyap S et al. Basic Food Preparation-Complete Manual; 2005; Orient Longman
12. Seth V and Singh K (2006). Diet Planning through the Life Cycle: Part 1 Normal Nutrition. A Practical Manual. Elite Publishing House Pvt. Ltd. New Delhi.
13. Chadha R and Mathur P eds. Nutrition: A Lifecycle Approach. Orient Blackswan, New Delhi. 2015

DSC-NHE 1C: INTRODUCTION TO FOOD SAFETY (CREDITS: THEORY-4, PRACTICAL-2)

THEORY

LECTURES 60

UNIT 1 Introduction to PHN

10

- 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 25
- Food safety measures: basic concept of HACCP
- Safe food handling practices and storing food safely
- Food additives

25

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.
- Sharma S, Wadhwa A. Nutrition in the Community- A textbook; 2003; Elite Publishing House Pvt. Ltd.
- Srilakshmi B. Dietetics; Fourth Ed; 2002; New Age International (P) Ltd.
- Bamji MS, Rao NP, and Reddy V. Text Book of Human Nutrition; 2009; Oxford & IBH Publishing Co. Pvt Ltd.
- The Food Safety and Standards Act along with Rules and Regulations. Delhi: Commercial Law Publishers (India) Pvt Ltd, 2011.

DSC-NHE I D: PUBLIC HEALTH NUTRITION

(CREDITS: THEORY-4, PRACTICAL-2)

THEORY

LECTURES 60

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

22

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

10

- Smoking
- Alcoholism

- Drug addiction
- AIDS including AIDS Control Programme

UNIT III Nutrition for special conditions

17

- 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 11
- (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 10
- Visit to any national programme 2

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.
- Bamji MS, Rao NP, and Reddy V. Text Book of Human Nutrition; 2009; Oxford & IBH Publishing Co. Pvt Ltd.
- Lakra P, Singh MD. Textbook of Nutrition and Health; First Ed; 2008; Academic

Excellence

- Jain P et al. *Poshan va swasthya ke mool siddhant (Hindi)*; First Ed; 2007; Academic Pratibha.
- Malhan, Gupta, Jain. *Aahar aayojan, khadya sangrakshan evam griha vyavastha (Hindi)*; 1993; Sultan Chand & Sons Publishing.

DISCIPLINE SPECIFIC ELECTIVE (DSE)

DSE- NHE- 1A: PUBLIC NUTRITION

(CREDITS: THEORY-4, PRACTICAL-2)

THEORY

LECTURES: 60

UNIT I: Concept and scope of public nutrition 5

- Definition and multidisciplinary nature of public nutrition
- Concept and scope
- Role of public nutritionist

UNITII: 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

- Wadhwa A and Sharma S (2003). Nutrition in the Community-A Textbook. Elite Publishing House Pvt. Ltd. New Delhi.
- Park K (2011). Park's Textbook of Preventive and Social Medicine, 21st Edition. M/s Banarasidas Bhanot Publishers, Jabalpur, India.
- Bamji MS, Krishnaswamy K and Brahmam GNV (Eds) (2009). Textbook of Human Nutrition, 3rd edition. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.
- ICMR (1989) Nutritive Value of Indian Foods. National Institute of Nutrition, Indian Council of Medical Research, Hyderabad.
- ICMR (2011) Dietary Guidelines for Indians – A Manual. National Institute of Nutrition, Indian Council of Medical Research, Hyderabad.
- Jelliffe DB, Jelliffe ERP, Zerfas A and Neumann CG (1989). Community Nutritional Assessment with special reference to less technically developed countries. Oxford University Press. Oxford.
- World Health Organization (2006). WHO Child Growth Standards: Methods and development: Length/height-for-age, weight-for-age, weight-for-length, weight-for-height and body mass index-for-age (d).

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

THEORY	LECTURES 60
Unit I. Introduction to Food Service Units	4
<ul style="list-style-type: none"> • Origin of Food Service units • Kinds of food service units 	
Unit II. Menu Planning	8
<ul style="list-style-type: none"> • Importance of menu, • Factors affecting menu planning, • Types of menu 	
Unit III. Organization & Management	6
<ul style="list-style-type: none"> • Principles of management • Functions of management/ manager 	
Unit IV. Food Production Process	18
<ul style="list-style-type: none"> • Food purchase and receiving • Storage • Quantity food production: Standardization of recipes, Recipe adjustments and portion control, Quantity food production techniques • Food service • Food hygiene and sanitation 	
Unit V: Space and Equipment	4
<ul style="list-style-type: none"> • Types of kitchen areas, Flow of work and work area relationship • Equipment 	
a) Factors affecting selection of equipment	
b) Equipment needs for different situations	
Unit V: Financial Management	5
<ul style="list-style-type: none"> • Importance of Financial Management • Budgets and Budgeting process • Cost concepts 	

Unit VI: Personnel Management 4

- 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 12

- 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
- Development of a business plan

PRACTICALS

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

RECOMMENDED READINGS

- West B Bessie & Wood Levelle (1988) Food Service in Institutions 6th Edition Revised
By Hargar FV, Shuggart SG, & Palgne Palacio June, Macmillian Publishing Company
New York.
- Sethi Mohini (2005) Institution Food Management New Age International Publishers
- Knight J B & Kotschevar LH (2000) Quantity Food Production Planning &

Management 3rd edition John Wiley & Sons

- Dessler Gary (1987) Personnel Management, Modern Concepts & Techniques Prentice Hall New Jersey
- Tripathi P C (2000) Personnel management 15th ed Sultan Chand, New Delhi
- Kazarian E A (1977) Food Service facilities Planning 3rd Edition Von Nostrand Reinhold New York
- Kotas Richard & Jayawardardene. C (1994) Profitable Food and Beverage Management Hodder & Stoughton Publications
- Longree K, Langree K, Longrie K (1996) Quantity Food sanitation,John Wiley & sons
- Roday .S (2003) Food Hygiene & Sanitation , Tata Mc Graw Hill publication Ltd
- Taneja S and Gupta SL (2001) Enterpreneurship development, Galgotia Publishing

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

THEORY

LECTURES 60

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:
 - Diarrhoea
 - Constipation
 - Lactose intolerance
 - Celiac disease.
- Liver: Infective Hepatitis

Unit IV: Etiology, clinical features and nutritional management of **10**

- 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 **12**

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

Unit VI: Food allergy and food intolerance **4**

- 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

- Khanna K, Gupta S, Seth R, Passi SJ, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics. Phoenix Publishing House Pvt. Ltd.
- Mahan L K and Escott Stump S (2013). Krause's Food & Nutrition Therapy, 13th ed. Saunders-Elsevier.
- Stacy Nix (2009). William's Basic Nutrition and Diet Therapy, 13th Edition. Elsevier Mosby.

- ICMR (1999). Nutritive Value of Indian Foods. National Institute of Nutrition, Indian Council of Medical Research, Hyderabad.
- Seth V and Singh K (2007). Diet Planning through the Life Cycle Part II: Diet Therapy. A Practical Manual, 4th edition. Elite Publishing House Pvt. Ltd.

**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.

Reference – Latest APA manual for dissertation.

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

- West B Bessie & Wood Levelle (1988) Food Service in Institutions 6th Edition Revised
By Hargar FV, Shuggart SG, & Palgne Palacio June, Macmillian Publishing Company

New York.

- Sethi Mohini (2005) Institution Food Management New Age International Publishers
- Knight J B & Kotschevar LH (2000) Quantity Food Production Planning & Management 3rd edition John Wiley & Sons
- Philip E Thangam (2008) Modern Cookery for teaching and Trade Part I & II Orient Longman
- Taneja S and Gupta SL (2001) Entrepreneurship development, Galgotia Publishing

SEC 2: NUTRITION AND FITNESS (CREDITS: THEORY-2)

THEORY

LECTURES 30

Unit 1 Understanding Fitness 7

- Definition of fitness, health and related terms
- Assessment of fitness
- Approaches for keeping fit

Unit 2 Importance of nutrition 8

- Role of nutrition in fitness
- Nutritional guidelines for health and fitness
- Nutritional supplements

Unit 3 Importance of Physical activity 7

- Importance and benefits of physical activity
- Physical Activity – frequency, intensity, time and type with examples
- Physical Activity Guidelines and physical activity pyramid

Unit 4 Weight Management

- Assessment, etiology, health complications of overweight and obesity
- Diet and exercise for weight management
- Fad diets
- Principles of planning weight reducing diets

RECOMMENDED READINGS

- Wardlaw, Smith. Contemporary Nutrition: A Functional Approach. 2nd ed: 2012.Mc Graw Hill.
- Williams Melvin. Nutrition for health, fitness and sports. 2004.Mc Graw Hill
- Joshi AS. Nutrition and Dietetics 2010. Tata Mc Graw Hill.

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 REDINGS

- Dubey, S.C. (2007). Basic Baking 5th Ed. Chanakya Mudrak Pvt. Ltd.
- Raina et.al. (2010). Basic Food Preparation-A Complete Manual. 4rd Ed. Orient Black

Swan Ltd.

- Khanna K, Gupta S, Seth R, Mahna R, Rekhi T (2004). The Art and Science of Cooking: A Practical Manual, Revised Edition. Elite Publishing House Pvt Ltd.

SEC 4: MATERNAL AND CHILD NUTRITION

(CREDITS: THEORY 2)

THEORY

LECTURES:30

Unit I **8**

- 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 **7**

- 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 **8**

- 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

5

Overview of maternal and child nutrition policies and programmes.

RECOMMENDED READINGS

- Wadhwa A and Sharma S (2003). Nutrition in the Community-A Textbook. Elite Publishing House Pvt. Ltd. New Delhi.
- Park K (2011). Park's Textbook of Preventive and Social Medicine, 21st Edition. M/s Banarasidas Bhanot Publishers, Jabalpur, India.
- Bamji MS, Krishnaswamy K and Brahmam GNV (Eds) (2009). Textbook of Human Nutrition, 3rd edition. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.

SEC 5 : FOOD AND NUTRITION

(CREDITS: PRACTICAL-2)

1. Identification of food sources for various nutrients using food composition tables.
2. Record diet of self-using 24 hour dietary recall and its nutritional analysis.
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

1. Bamji MS, Krishnaswamy K, Brahmam GNV (2009). Textbook of Human Nutrition, 3rd edition. Oxford and IBH Publishing Co. Pvt. Ltd.
2. Srilakshmi (2010). Food Science, 4th Edition. New Age International Ltd.
3. Wardlaw MG, Paul M Insel Mosby 1996). Perspectives in Nutrition, Third Edition.
4. Introduction to Human Nutrition ed.Gibney et al, Blackwell Publishers, 2005
5. Khanna K, Gupta S, Seth R, Mahna R, Rekhi T (2004). The Art and Science of Cooking: A Practical Manual, Revised Edition. Elite Publishing House Pvt Ltd.
6. NIN, ICMR (1990). Nutritive Value of Indian Foods.
7. Seth V, Singh K (2005). Diet planning through the Life Cycle: Part 1. Normal Nutrition. A Practical Manual, Fourth edition, Elite Publishing House Pvt Ltd.
8. ICMR (2010). Nutrient Requirements and Recommended Dietary Allowances for Indians.

GENERIC ELECTIVE (GE)
GE 1: HUMAN NUTRITION
(CREDITS: THEORY 4, PRACTICAL 2)

THEORY

LECTURES: 60

Unit I: Basic Concepts in Nutrition

10

- 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

25

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

25

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

- Wardlaw and Insel MG, Insel PM (2004). Perspectives in Nutrition. Sixth Edition, McGraw Hill.
- Srilakshmi B (2012). Nutrition Science.4th Revised Edition, New Age International Publishers.
- Khanna K, Gupta S, Seth R, Passi SJ, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics. Phoenix Publishing House Pvt. Ltd.

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

THEORY	LECTURES: 60
Unit I: Principles of meal planning	10
<ul style="list-style-type: none">• Balanced diet• Food groups• Food exchange list• Factors effecting meal planning and food related behaviour.• Dietary guidelines for Indians and food pyramid	
Unit II: Nutrient requirements	8
<ul style="list-style-type: none">• Concept of Dietary Reference Intakes• Overview of methods for assessment of nutrient needs	
Unit III: Nutrition for adulthood and old age	12
<ul style="list-style-type: none">• Adult: Nutrient requirements for adult man and woman, RDA, nutritional guidelines, nutritional concerns, diet and lifestyle related diseases and their prevention• Elderly – Physiological changes in elderly, RDA, nutritional guidelines, nutritional and health concerns in old age and their management, factors contributing to longevity	
Unit IV: Nutrition during pregnancy and lactation	12
<ul style="list-style-type: none">• 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.• Lactation – Physiology of lactation, RDA and nutritional needs of a nursing mother, nutritional guidelines	
Unit V: Nutrition during childhood	18
<ul style="list-style-type: none">• Growth and development, growth reference/ standards, RDA, nutritional guidelines, nutritional concerns and healthy food choices- Infants- Preschool children- School children- Adolescents	
PRACTICAL	
Unit I: Introduction to meal planning	3
-Use of food exchange list	

Unit II: Planning and preparation of diets and dishes for	10
• Young adult	
• Pregnant and Lactating woman	
• Preschool child	
• School age child and adolescents	
• Elderly	

Unit III: Planning complementary foods for Infants	2
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RECOMMENDED READINGS

- Khanna K, Gupta S, Seth R, Passi SJ, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics. Phoenix Publishing House Pvt. Ltd.
- Wardlaw GM, Hampi JS, DiSilvestro RA (2004). Perspectives in Nutrition, 6th edition. McGraw Hill.
- ICMR (2011) Dietary Guidelines for Indians. Published by National Institute of Nutrition, Hyderabad.
- ICMR (2010) Recommended Dietary Allowances for Indians .Published by National Institute of Nutrition, Hyderabad.
- Chadha R and Mathur P eds.(2015) Nutrition: A Lifecycle Approach. Orient Blackswan. New Delhi.
- Seth V and Singh K (2006). Diet Planning through the Life Cycle: Part 1 Normal Nutrition. A Practical Manual. Elite Publishing House Pvt. Ltd. New Delhi.
- Gopalan C, Rama Sastri BV, Balasubramanian SC (1989) Nutritive Value of Indian Foods. National Institute of Nutrition, ICMR, Hyderabad.

GE 3: CURRENT CONCERNS IN PUBLIC HEALTH NUTRITION

(CREDITS: THEORY 5, TUTORIAL 1)

THEORY

LECTURES: 75

Unit I: Nutritional problems affecting the community	25
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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 10

Appropriate interventions involving different sectors such as Food , Health and Education

Unit III: Nutrition Policy and Programmes 30

- 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 10

- 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. 9
2. Planning and evaluation of low calorie nutritious recipes for weight management. 2
3. Planning and conducting a food demonstration. 2
4. Visit to an ongoing nutrition programme. 1

RECOMMENDED READINGS

- Wadhwa A and Sharma S (2003). Nutrition in the Community-A Textbook. Elite Publishing House Pvt. Ltd. New Delhi.
- Park K (2011). Park's Textbook of Preventive and Social Medicine, 21st Edition. M/s BanarasidasBhanot Publishers, Jabalpur, India.
- Bamji MS, Krishnaswamy K and Brahmam GNV (Eds) (2009). Textbook of Human Nutrition, 3rd edition. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.
- Gibney MJ (2005). Public Health Nutrition.
- Vir S. (2011) Public Health Nutrition in developing countries. Vol 1 and 2
- ICMR (1989) Nutritive Value of Indian Foods. National Institute of Nutrition, Indian Council of Medical Research, Hyderabad.
- ICMR (2011) Dietary Guidelines for Indians – A Manual. National Institute of Nutrition, Indian Council of Medical Research, Hyderabad.
- Park K (2011). Park's Textbook of Preventive and Social Medicine, 21st Edition. M/s BanarasidasBhanot Publishers, Jabalpur, India.
- Bamji MS, Krishnaswamy K and Brahmam GNV (Eds) (2009). Textbook of Human Nutrition, 3rd edition. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.