

ANNEXURE - I

SCHEME AND SYLLABUS FOR CHOICE BASED CREDIT SYSTEM IN B.A NUTRITION AND HEALTH EDUCATION TO BE IMPLEMENTED FROM THE SESSION 2016-2017 ONWARDS

CONTENTS

Sr. No	Course	Course Name	Semester	Course Code	Award Type	Credits	Marks	
							Min	Max
SEMESTER-I								
1.	Core Course	English/MIL-1	I	Common for all Students				
	Ability Enhancement Compulsory Course (AECC)	(English/MIL communication) Or Environmental Science	I	Common for all Students				
	NHE Core -1A	Fundamentals of Nutrition and Food Science	I	BANHE 101	Theory (ESE)	3	23	50
	NHE Core -1A	Fundamentals of Nutrition and Food Science	I	BANHE 101(P)	Practical (ESE)	2	9	20
	NHE Core -1A	Fundamentals of Nutrition and Food Science	I	BANHE 101	Internal Assessment (CCA)	1	14	30
	Core Course	DSC-2A (Choice based course from other discipline)	I					
SEMESTER-II								
	Core Course	English/MIL-1	II	Common for all Students				
	Ability Enhancement Compulsory	(English/MIL communication) Or	II	Common for all Students				

2.	Course (AECC)	Environmental Science						
	NHE Core -2A	Nutrition for the Family	II	BANHE 202	Theory (ESE)	3	23	50
	NHE Core -2A	Nutrition for the Family	II	BANHE 202(P)	Practical (ESE)	2	9	20
	NHE-Core -2A	Nutrition for the Family	II	BANHE 202(A)	Internal Assessment (CCA)	1	14	30
	Core Course	DSC-2B (Choice based course from other discipline)	II					
SEMESTER-III								
3.	Core Course	English/MIL-2	III					
	NHE Core -3A	Introduction to Food Safety	III	BANHE 303	Theory (ESE)	3	23	50
	NHE Core -3A	Introduction to Food Safety	III	BANHE 303(P)	Practical (ESE)	2	19	20
	NHE Core -3A	Introduction to Food Safety	III	BANHE 303(A)	Internal Assessment (CCA)	1	14	30
	NHE SEC-1	Home based Catering	III	BANHE 304	Theory (ESE)	3	32	70
4.	NHE SEC-1	Home based Catering	III	BANHE 304(A)	Internal Assessment (CCA)	1	14	30
	Core Course	DSC-3B (Choice based course from other discipline)	II					
SEMESTER-IV								
	Core Course	English/MIL-2	IV					

5.	NHE Core -4A	Public Health Nutrition	IV	BANHE 405	Theory (ESE)	3	23	50
	NHE Core -4A	Public Health Nutrition	IV	BANHE 405(P)	Practical (ESE)	2	9	20
	NHE Core -4A	Public Health Nutrition	IV	BANHE405(A)	Internal Assessment (CCA)	1	14	30
	Core Course	DSC-4B (Choice based course from other discipline)	IV					
6.	NHE SEC-2	Nutrition and Fitness	IV	BANHE 406	Theory (ESE)	3	32	70
	NHE SEC-2	Nutrition and Fitness	IV	BANHE 406(A)	Internal Assessment (CCA)	1	14	30
SEMESTER-V								
7.	NHE SEC-3	Maternal and Child Nutrition	V	BANHE 507	Theory (ESE)	3	32	70
	NHE SEC-3	Maternal and Child Nutrition	V	BANHE 507(A)	Internal Assessment (CCA)	1	14	30
8.	NHE DSE-1	Public Nutrition	V	BANHE 508	Theory (ESE)	3	23	50
	NHE DSE-1	Public Nutrition	V	BANHE 508(P)	Practical (ESE)	2	9	20
	NHE DSE-1	Public Nutrition	V	BANHE 508(A)	Internal Assessment (CCA)	1	14	30
	NHE GE-1	Human Nutrition	V	BANHE 509	Theory (ESE)	3	23	50
	NHE-GE-1	Human Nutrition	V	BANHE 509(P)	Practical (ESE)	2	9	20

9.	NHE GE-1	Human Nutrition	V	BANHE 509(A)	Internal Assessment (CCA)	1	14	30
SEMESTER-VI								
10.	NHE- SEC-4	Food and Nutrition	VI	BANHE 610	Theory (ESE)	1	23	50
	NHE- SEC-4	Food and Nutrition	VI	BANHE 610(P)	Practical	2	9	20
	NHE SEC-4	Food and Nutrition	VI	BANHE 610(A)	Internal Assessment (CCA)	1	14	30
11.	NHE DSE-2	Therapeutic Nutrition	VI	BANHE 611	Theory (ESE)	3	23	50
	NHE DSE-2	Therapeutic Nutrition	VI	BANHE 611(P)	Practical (ESE)	2	9	20
	NHE DSE-2	Therapeutic Nutrition	VI	BANHE 611(A)	Internal Assessment (CCA)	1	14	30
12.	NHE GE-2	Nutrition: A Lifespan Approach	VI	BANHE 612	Theory (ESE)	3	23	50
	NHE GE-2	Nutrition: A Lifespan Approach	VI	BANHE 612(P)	Practical (ESE)	2	9	20
	NHE GE-2	Nutrition: A Lifespan Approach	VI	BANHE 612(A)	Internal Assessment (CCA)	1	14	30

ANNEXURE – II

DISTRIBUTION OF MARKS FOR CONTINUOUS COMPREHENSIVE ASSESSMENT IN EACH COURSE IN EACH SEMESTER

1. Minor Test : 15 Marks
2. Class Tests, : 10 Marks
Tutorials /Assignments
3. Attendance : 5 Marks

Total Marks : $15+10+5 = 30$ Marks

(1) Distribution of marks for conducting Minor Test

Note: Time permitted for conducting minor test shall be 1 hour.

Two types of questions will be set in Minor Test:

- i) Ten MCQ's of $\frac{1}{2}$ mark each = 5 marks.
- ii) Two questions of 5 marks each ($2 \times 5 = 10$) of short answer type.

Total marks of Minor Test = $5+10 = 15$

Attendance: 5 marks (as per University rules)

ANNEXURE – III

Paper Setting Scheme for Semester Term End Examination for NHE-Core, NHE (Discipline Specific) DSE & Generic Enhancement (GE)

Maximum marks: 50

Minimum marks: 23

Maximum time: 3 hrs.

1. Instructions for Paper setters:

The question paper will consist of 5 sections:

- A. Compulsory
- B. Unit I
- C. Unit II
- D. Unit III
- E. Unit IV

Section A : It will be compulsory consisting of 18 marks with 10 objective type questions which could be multiple choice questions, true / false, fill in the blanks etc. of 1 mark each and 4 short answer type questions of 2 marks each covering the entire syllabus.

Section B: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section C: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section D: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section E: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Total marks: $18+8+8+8+8 = 50$

2. Instructions for the students:

The students are required to attempt 5 questions in all. One compulsory question from section A and selecting one question from each of the sections B, C, D and E of the question paper.

ANNEXURE – IV

Paper Setting Scheme for Semester Term End Practical Examination for NHE-Core, NHE (Discipline Specific) DSE & Generic Enhancement (GE)

Maximum marks: 20

Minimum marks: 9

Maximum time: 3 hrs.

1. Instructions for Paper setters and candidates:

Laboratory examination will consist of three parts:

- (i) Performing a practical exercise assigned by the examiner – 10 marks
- (ii) Viva voce examination – 5 marks
- (iii) Practical file – 5 marks

Note: Viva voce examination will be related to the practical performed / seminar / assignment done by the candidate related to the paper during the course of the semester.

ANNEXURE – V

Distribution of marks for Continuous Comprehensive Assessment for Skill Enhancement Courses (SEC) from Third Semester onwards:

1. Minor Test : 15 Marks
2. Class Tests, Tutorials /Assignments : 10 Marks
3. Attendance : 5 Marks

Total Marks : $15+10+5 = 30$ Marks

(2) Distribution of marks for conducting Minor Test

Note: Time permitted for conducting minor test shall be 1 hour.

Two types of questions will be set in Minor Test:

- (i) Ten MCQ's of $\frac{1}{2}$ mark each = 5 marks.
- (ii) Two questions of 5 marks each ($2 \times 5 = 10$) of short answer type.

Total marks of Minor Test = $5+10 = 15$

Attendance: 5 marks (as per University rules)

**Paper Setting Scheme for Semester Term End Examination for Skill Enhancement Course
(SEC)**

Maximum marks: 70

Minimum marks: 32

Maximum time: 3 hrs.

1. Instructions for Paper setters:

The question paper will consist of 5 sections:

- A.** Compulsory
- B.** Unit I
- C.** Unit II
- D.** Unit III
- E.** Unit IV

Section A : It will be compulsory consisting of 30 marks with 10 objective type questions which could be multiple choice questions, true / false, fill in the blanks etc. of 1 mark each and 4 short answer type questions of 5 marks each.

Section B: There will be two questions of 10 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section C: There will be two questions of 10 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section D: There will be two questions of 10 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section E: There will be two questions of 10 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Total marks: $30+10+10+10+10 = 70$

2. Instructions for the students:

The students are required to attempt 5 questions in all. One compulsory question from section A and selecting one question from each of the sections B, C, D and E of the question paper.

B.A. 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	1. Public Nutrition	4	2
	2. Therapeutic Nutrition	4	2
Skill Enhancement Course (SEC)	1. Home Based Catering	4	
	2. Nutrition and Fitness	4	
	3. Maternal and Child Nutrition	4	
	4. Food & Nutrition	2	2
Generic Electives (GE)	1. Human Nutrition	4	2
	2. Nutrition: A Life Span Approach	4	2

B.A. NUTRITION AND HEALTH EDUCATION

Outline of the UGC recommended CBCS system for B. A Nutrition and Health Education (Regular) syllabus, CBCS Course Scheme, the Examination Pattern, CCA Scheme and Paper Setting to be implemented from Academic Session 2016-17

SEMESTER-I

DISCIPLINE SPECIFIC COURSES

BANHE101: FUNDAMENTALS OF NUTRITION AND FOOD SCIENCE

(CREDITS: THEORY-4, PRACTICAL-2)

OBJECTIVES

1. To familiarize the 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.

Distribution of marks for Continuous Comprehensive Assessment

- | | | |
|---|---|----------|
| 1. Minor Test | : | 15 Marks |
| 2. Class Tests,
Tutorials /Assignments | : | 10 Marks |
| 3. Attendance | : | 5 Marks |

Total Marks : $15+10+5 = 30$ Marks

(1) Distribution of marks for conducting Minor Test

Note: Time permitted for conducting minor test shall be 1 hour.

Two types of questions will be set in Minor Test:

- (i) Ten MCQ's of $\frac{1}{2}$ mark each = 5 marks.
- (ii) Two questions of 5 marks each ($2 \times 5 = 10$) of short answer type.

Total marks of Minor Test = $5+10 = 15$

Attendance: 5 marks (as per University rules)

Semester Term End Examination

Maximum marks: 50

Minimum marks: 23

Maximum time: 3 hrs.

(1) **Instructions for Paper setters:**

The question paper will consist of 5 sections:

- A. Compulsory
- B. Unit I
- C. Unit II
- D. Unit III
- E. Unit IV

Section A : It will be compulsory consisting of 18 marks with 10 objective type questions which could be multiple choice questions, true / false, fill in the blanks etc. of 1 mark each and 4 short answer type questions of 2 marks each covering the entire syllabus.

Section B: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section C: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section D: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section E: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Total marks: $18+8+8+8+8 = 50$

(2) **Instructions for the students:**

The students are required to attempt 5 questions in all. One compulsory question from section A and selecting one question from each of the sections B, C, D and E of the question paper.

THEORY

LECTURES: 60

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

Semester Term End Practical Examination

Maximum marks: 20

Minimum marks: 9

Maximum time: 3 hrs.

1. Instructions for Paper setters and candidates:

Laboratory examination will consist of three parts:

- (i) Performing a practical exercise assigned by the examiner – 10 marks
- (ii) Viva voce examination – 5 marks
- (iii) Practical file – 5 marks

Note: Viva voce examination will be related to the practical performed / seminar / assignment done by the candidate related to the paper during the course of the semester.

BANHE101 (P)

PRACTICAL

30 periods

OBJECTIVES

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
 - Egg preparations: Boiled, poached, fried, scrambled, omelette
 - Soups: Broth, plain and cream soups
 - Baked products: Plain cake, Marble cake, Sponge cake
 - Snacks: pakoras, cutlets, upma, poha, sandwiches
 - Salads: salads and salad dressings

RECOMMENDED READINGS

- Mudambi, S.R and Rajagopal, M. V. Fundamentals of Foods, Nutrition and Diet Therapy; Fifth Ed; 2012; New Age International Publishers
- Mudambi, S. R, Rao, S.M and Rajagopal, M.V. 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. Hand book of Foods and Nutrition; Fifth Ed; 1986; BAPPCO.
- Bamji, M.S, Rao, N.P and Reddy, V. Text Book of Human Nutrition; 2009; Oxford & IBH Publishing Co. Pvt. Ltd.
- Wardlaw, G.M, Hampl, J.S. Perspectives in Nutrition; Seventh Ed; 2007; McGrawHill.
- Lakra, P., Singh, M.D. Textbook of Nutrition and Health; First Ed; 2008; Academic Excellence.
- Manay, M.S, Shadaksharaswamy. Food – Facts and Principles; 2004; New Age International (P) Ltd.
- Potter, N.N, Hotchkiss, J.H. 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 vaswasthya 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.

SEMESTER - II

BANHE202: NUTRITION FOR THE FAMILY (DSE)

(CREDITS: THEORY-4, PRACTICAL-2)

OBJECTIVES

1. To enable the students to understand the concepts of balanced diet, various food groups, recommended dietary allowances.
2. To understand the concept of meal planning, nutritional requirements of different age groups.

Distribution of marks for Continuous Comprehensive Assessment

1. Minor Test : 15 Marks
2. Class Tests, : 10 Marks
Tutorials /Assignments
3. Attendance : 5 Marks

Total Marks : 15+10+5 = 30 Marks

(1) Distribution of marks for conducting Minor Test

Note: Time permitted for conducting minor test shall be 1 hour.

Two types of questions will be set in Minor Test:

- (i) Ten MCQ's of $\frac{1}{2}$ mark each = 5 marks.
- (ii) Two questions of 5 marks each (2X5=10) of short answer type.

Total marks of Minor Test = 5+10 = 15

Attendance: 5 marks (as per University rules)

Semester Term End Examination

Maximum marks: 50

Minimum marks: 23

Maximum time: 3 hrs.

(1) Instructions for Paper setters:

The question paper will consist of 5 sections:

- A. Compulsory
- B. Unit I
- C. Unit II
- D. Unit III
- E. Unit IV

Section A : It will be compulsory consisting of 18 marks with 10 objective type questions which could be multiple choice questions, true / false, fill in the blanks etc. of 1 mark each and 4 short answer type questions of 2 marks each covering the entire syllabus.

Section B: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section C: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section D: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section E: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Total marks: $18+8+8+8+8 = 50$

(2) Instructions for the students:

The students are required to attempt 5 questions in all. One compulsory question from section A and selecting one question from each of the sections B, C, D and E of the question paper.

THEORY

LECTURES: 60

UNIT I: Basic concepts of meal planning

14 periods

- Food groups
- Food exchange list
- Concept of Dietary Reference Intakes
- Factors effecting meal planning and food related behavior

UNIT II: Nutrition during the adult years

20 periods

Physiological changes, RDA, nutritional guidelines, nutritional concerns and Healthy food choices

- Adult
- Pregnant woman
- Lactating mother
- Elderly

UNIT III: Nutrition during childhood

20 periods

Growth and development, growth reference/standards, RDA, Nutritional guidelines, nutritional concerns and healthy food choices in:

- Infants
- Preschool children
- School children
- Adolescents

UNIT IV: Dietary pattern of adults

6 periods

- Dietary guidelines for Indians
- Food pyramid
- Balanced Diet and the factors affecting the planning of diets

Semester Term End Practical Examination

Maximum marks: 20

Minimum marks: 9

Maximum time: 3 hrs.

1. Instructions for Paper setters and candidates:

Laboratory examination will consist of three parts:

- (i) Performing a practical exercise assigned by the examiner – 10 marks
- (ii) Viva voce examination – 5 marks
- (iii) Practical file – 5 marks

Note: Viva voce examination will be related to the practical performed / seminar / assignment done by the candidate related to the paper during the course of the semester.

BANHE202 (P)

PRACTICAL

30 periods

OBJECTIVES

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
 - Pre-school child
 - School age child and adolescents
 - Elderly

RECOMMENDED READINGS

- Edelstein, S, Sharlin, J. (ed). Life Cycle Nutrition – An Evidence Based Approach; 2009; Jones and Barlett Publishers.
- 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.
- Jain, P *et. al.* *Poshan vaswasthya ke mool siddhant (Hindi)*; FirstEd; 2007; Academic Pratibha.
- Malhan, Gupta, Jain *Aaharaayojan, khadyasangrakshan evam grihavyavastha (Hindi)*; 1993; Sultan Chand & Sons Publishing.

- Vrinda, S. *Aahar Vigyan* (Hindi); 2003; Shyam Prakashan.
- Ghosh, S. *Nutrition and childcare – A practical guide*; 1997; Jaypee Bros.
- Savage, King F, Burgess, A. *Nutrition for developing countries*; Second Ed; 1993; Oxford University Press.
- *Dietary guidelines for Indians – A Manual*; 2011; NIN, ICMR, Hyderabad.
- Gopalan, C *et. al.* *Nutritive Value of Indian Foods*; 1994; NIN, ICMR, Hyderabad.
- Raina, U, Kashyap, S *et. al.* *Basic Food Preparation – Complete Manual*; 2005; Orient Longman.
- Seth, V. and Singh, K. (2006). *Diet Planning throughout the Life Cycle: Part1 Normal Nutrition. A Practical Manual.* Elite Publishing House Pvt. Ltd. New Delhi.
- Chadha, R and Mathur, P. (eds.).*Nutrition: A Lifecycle Approach.* 2015. Orient Blackswan, New Delhi.

SEMESTER - III

BANHE303: INTRODUCTION TO FOOD SAFETY (DSE)

(CREDITS: THEORY-4, PRACTICAL-2)

OBJECTIVES

1. To create awareness about the importance of food safety and related issues in the students by discussing the various food handling practices.
2. To discuss food adulteration and the common food adulterants used.

Distribution of marks for Continuous Comprehensive Assessment

- | | | |
|---|---|----------|
| 1. Minor Test | : | 15 Marks |
| 2. Class Tests,
Tutorials /Assignments | : | 10 Marks |
| 3. Attendance | : | 5 Marks |

Total Marks : 15+10+5 = 30 Marks

(1) Distribution of marks for conducting Minor Test

Note: Time permitted for conducting minor test shall be 1 hour.

Two types of questions will be set in Minor Test:

- (i) Ten MCQ's of $\frac{1}{2}$ mark each = 5 marks.
- (ii) Two questions of 5 marks each (2X5=10) of short answer type.

Total marks of Minor Test = 5+10 = 15

Attendance: 5 marks (as per University rules)

Semester Term End Examination

**Maximum marks: 50
hrs.**

Minimum marks: 23

Maximum time: 3

(1) Instructions for Paper setters:

The question paper will consist of 5 sections:

- A. Compulsory
- B. Unit I
- C. Unit II
- D. Unit III
- E. Unit IV

Section A : It will be compulsory consisting of 18 marks with 10 objective type questions which could be multiple choice questions, true / false, fill in the blanks etc. of 1 mark each and 4 short answer type questions of 2 marks each covering the entire syllabus.

Section B: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section C: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section D: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section E: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Total marks: $18+8+8+8+8 = 50$

(2) Instructions for the students:

The students are required to attempt 5 questions in all. One compulsory question from section A and selecting one question from each of the sections B, C, D and E of the question paper.

THEORY

LECTURES: 60

UNIT 1: Introduction to PHN

10 periods

- Definition of PHN
- Levels of healthcare services

UNIT II: Food Safety and Storage

20 periods

- 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

20 periods

- 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

UNIT IV: Food laws, Regulations and Standards

10 periods

- Codex Alimentarius
- Prevention of Food Adulteration (PFA) Act
- Agmark
- Fruit Products Order (FPO)
- Meat Products Order (MPO)
- Bureau of Indian Standards (BIS)
- MMPO
- FSSAI

Semester Term End Practical Examination

Maximum marks: 20

Minimum marks: 9

Maximum time: 3 hrs.

1. Instructions for Paper setters and candidates:

Laboratory examination will consist of three parts:

- (i) Performing a practical exercise assigned by the examiner – 10 marks
- (ii) Viva voce examination – 5 marks
- (iii) Practical file – 5 marks

Note: Viva voce examination will be related to the practical performed / seminar / assignment done by the candidate related to the paper during the course of the semester.

BANHE303 (P)

PRACTICAL

30 periods

OBJECTIVES

1. To enable the students to see the preserved foods available in the market
2. To understand the importance of information displayed on the labels
3. To realize the role of adulterants in our food
 - Market survey of preserved fruit and vegetable products
 - Nutritional labeling, development and understanding
 - Simple tests for food adulteration
4. Cooking of low cost nutritious recipes for:
 - ICDS programme
 - MDM programme
 - Diarrhoea

RECOMMENDED READINGS

- Mudambi, S. R and Rajagopal, M.V. Fundamentals of Foods, Nutrition and Diet Therapy; Fifth Ed; 2007; New Age International Publishers.
- Wardlaw, G. M, Hampl, J. S. Perspectives in Nutrition; Seventh Ed; 2007; McGraw Hill.
- Sethi, P. and Lakra, P. Aahaar vigyaan, Poshan evam Suraksha, 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, M.S, Rao, N. P, 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.

SEMESTER – IV

BANHE405: PUBLIC HEALTH NUTRITION (DSE)

(CREDITS: THEORY-4, PRACTICAL-2)

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.

Distribution of marks for Continuous Comprehensive Assessment

- | | | |
|---|---|----------|
| 1. Minor Test | : | 15 Marks |
| 2. Class Tests,
Tutorials /Assignments | : | 10 Marks |
| 3. Attendance | : | 5 Marks |

Total Marks : 15+10+5 = 30 Marks

(1) Distribution of marks for conducting Minor Test

Note: Time permitted for conducting minor test shall be 1 hour.

Two types of questions will be set in Minor Test:

- (i) Ten MCQ's of ½ mark each = 5 marks.
- (ii) Two questions of 5 marks each (2X5=10) of short answer type.

Total marks of Minor Test = 5+10 = 15

Attendance: 5 marks (as per University rules)

Semester Term End Examination

Maximum marks: 50

Minimum marks: 23

Maximum time: 3 hrs.

(1) Instructions for Paper setters:

The question paper will consist of 5 sections:

- A. Compulsory
- B. Unit I
- C. Unit II
- D. Unit III
- E. Unit IV

Section A : It will be compulsory consisting of 18 marks with 10 objective type questions which could be multiple choice questions, true / false, fill in the blanks etc. of 1 mark each and 4 short answer type questions of 2 marks each covering the entire syllabus.

Section B: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section C: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section D: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section E: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Total marks: $18+8+8+8+8 = 50$

(2) Instructions for the students:

The students are required to attempt 5 questions in all. One compulsory question from section A and selecting one question from each of the sections B, C, D and E of the question paper.

THEORY

LECTURES: 60

UNIT I: Introduction to Nutritional deficiency diseases

22 periods

Causes, symptoms, treatment, prevention of the following:

- a. Protein Energy Malnutrition(PEM)
- b. Vitamin A Deficiency (VAD)
- c. Iron Deficiency Anaemia (IDA)
- d. Iodine Deficiency Disorders (IDD)
- e. Zinc Deficiency
- f. Fluorosis

UNIT II: Social Health problems

10 periods

- g. Smoking
- h. Alcoholism
- i. Drug addiction
- j. AIDS including AIDS Control Programme

UNIT III: Nutrition for Special conditions

17 periods

- k. Introduction to Nutrition for physical fitness and sport
- l. Feeding problems in children with special needs
- m. Considerations during natural and man-made disasters-

basic guidelines in disaster management

UNIT IV: Food Security

11 periods

- Key terms, factors affecting food security, recent concern
- Technologies for food and nutrition security

Semester Term End Practical Examination

Maximum marks: 20

Minimum marks: 9

Maximum time: 3 hrs.

1. Instructions for Paper setters and candidates:

Laboratory examination will consist of three parts:

- (i) Performing a practical exercise assigned by the examiner – 10 marks
- (ii) Viva voce examination – 5 marks
- (iii) Practical file – 5 marks

Note: Viva voce examination will be related to the practical performed / seminar / assignment done by the candidate related to the paper during the course of the semester.

BANHE405 (P)

PRACTICAL

30 periods

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 day's diet for PEM and snacks for PEM, VAD and IDA)
 - Students to collect information about any National programme

RECOMMENDED READINGS

- Mudambi, S. R and Rajagopal, M.V. Fundamentals of Foods, Nutrition and Diet Therapy; 2012; New Age International Publishers.
- Wardlaw, G. M, Hampl, J.S. Perspectives in Nutrition; Seventh Ed; 2007; McGrawHill.
- 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 text book; 2003; Elite Publishing House Pvt. Ltd.
- Srilakshmi, B. Dietetics; 2012; New Age International (P) Ltd.
- Bamji, M. S, Rao, N.P and Reddy, V. Text Book of Human Nutrition; 2009; Oxford & IBH Publishing Co. Pvt. Ltd.
- Lakra, P, Singh, M. D. Textbook of Nutrition and Health; First Ed; 2008; Academic Excellence.
- Jain, P.*et.al.* *Poshan vaswasthya ke mool siddhant (Hindi)*; First Ed; 2007;

Academic Pratibha.

- Malhan, Gupta, Jain. *Aaharaayojan, khadya sangrakshan evam grihavyavastha* (Hindi); 1993. Sultan Chand & Sons Publishing.

SEMESTER - V

BANHE508: PUBLIC NUTRITION (DSE)

(CREDITS: THEORY-4, PRACTICAL-2)

OBJECTIVES

1. To make students understand the meaning, importance and scope of Public nutrition.
2. To obtain knowledge about malnutrition, related deficiencies, methods of assessing nutritional status, nutritional policy and National programmes.

Distribution of marks for Continuous Comprehensive Assessment

1. Minor Test : 15 Marks
2. Class Tests, Tutorials /Assignments : 10 Marks
3. Attendance : 5 Marks

Total Marks : 15+10+5 = 30 Marks

(1) Distribution of marks for conducting Minor Test

Note: Time permitted for conducting minor test shall be 1 hour.

Two types of questions will be set in Minor Test:

- (i) Ten MCQ's of $\frac{1}{2}$ mark each = 5 marks.
- (ii) Two questions of 5 marks each (2X5=10) of short answer type.

Total marks of Minor Test = 5+10 = 15

Attendance: 5 marks (as per University rules)

Semester Term End Examination

**Maximum marks: 50
hrs.**

Minimum marks: 23

Maximum time: 3

(1) Instructions for Paper setters:

The question paper will consist of 5 sections:

- A. Compulsory
- B. Unit I
- C. Unit II
- D. Unit III
- E. Unit IV

Section A : It will be compulsory consisting of 18 marks with 10 objective type questions which could be multiple choice questions, true / false, fill in the blanks etc. of 1 mark each and 4 short answer type questions of 2 marks each covering the entire syllabus.

Section B: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section C: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section D: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section E: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Total marks: $18+8+8+8+8 = 50$

(2) Instructions for the students:

The students are required to attempt 5 questions in all. One compulsory question from section A and selecting one question from each of the sections B, C, D and E of the question paper.

THEORY

LECTURES: 60

UNIT I: Concept and scope of Public Nutrition

5 periods

- Definition and multidisciplinary nature of Public Nutrition
- Concept and scope
- Role of Public Nutritionist

UNIT II: Nutritional problems, their implication sand related nutrition programmes

- Etiology, prevalence, clinical feature sand preventive strategies of- **22 periods**
- Undernutrition:
Protein energy malnutrition, Nutritional anaemias, Vitamin A deficiency, Iodine deficiency disorders
- Over nutrition–Obesity, Coronary Heart disease, Diabetes
- National Nutrition Policy and Programmes - Integrated Child Development Services Scheme (ICDS), Midday Meal Programme (MDMP), National programmes for prevention of Anaemia, Vitamin A deficiency, Iodine Deficiency Disorders.

UNIT III: Assessment of Nutritional Status

18 periods

- 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 periods

- Objectives, principles and scope of nutrition and health education and promotion
- Behaviour Change Communication

Semester Term End Practical Examination

Maximum marks: 20

Minimum marks: 9

Maximum time: 3 hrs.

1. Instructions for Paper setters and candidates:

Laboratory examination will consist of three parts:

- (i) Performing a practical exercise assigned by the examiner – 10 marks
- (ii) Viva voce examination – 5 marks
- (iii) Practical file – 5 marks

Note: Viva voce examination will be related to the practical performed / seminar / assignment done by the candidate related to the paper during the course of the semester.

BANHE508 (P)

PRACTICAL

30 periods

OBJECTIVES

1. To enable the students to plan and prepare low cost nutritious recipes for different age groups
2. To be able to plan and calculate diet based on dietary recall and anthropometric measurements
 - Planning of low cost nutritious recipes for infants, preschoolers, pregnant/nursing mothers for nutrition education.
 - Assessment of nutritional status:
 - Anthropometry–weight and height measurements
 - Identification of clinical signs of common nutritional disorders
 - Dietary assessment–FFQ and 24 hour diet recall
 - 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 Banarasi Das Bhanot Publishers, Jabalpur, India.
- Bamji, M. S, 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, D.B, Jelliffe, ERP, Zerfas, A. and Neumann C. G (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.

SEMESTER – VI

BANHE611: THERAPEUTIC NUTRITION (DSE)

(CREDITS: THEORY-4, PRACTICAL-2)

OBJECTIVES

1. To help the students to understand about the adaptation of a normal diet to a modified diet.
2. To teach the students about the causes, clinical symptoms and planning of diets for various diseases.

Distribution of marks for Continuous Comprehensive Assessment

1. Minor Test : 15 Marks
2. Class Tests, Tutorials /Assignments : 10 Marks
3. Attendance : 5 Marks

Total Marks : 15+10+5 = 30 Marks

(1) Distribution of marks for conducting Minor Test

Note: Time permitted for conducting minor test shall be 1 hour.

Two types of questions will be set in Minor Test:

- (i) Ten MCQ's of $\frac{1}{2}$ mark each = 5 marks.
- (ii) Two questions of 5 marks each (2X5=10) of short answer type.

Total marks of Minor Test = 5+10 = 15

Attendance: 5 marks (as per University rules)

Semester Term End Examination

Maximum marks: 50

Minimum marks: 23

Maximum time: 3 hrs.

(1) Instructions for Paper setters:

The question paper will consist of 5 sections:

- A. Compulsory
- B. Unit I
- C. Unit II
- D. Unit III
- E. Unit IV

Section A : It will be compulsory consisting of 18 marks with 10 objective type questions which could be multiple choice questions, true / false, fill in the blanks etc. of 1 mark each and 4 short answer type questions of 2 marks each covering the entire syllabus.

Section B: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section C: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section D: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section E: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Total marks: $18+8+8+8+8 = 50$

(2) Instructions for the students:

The students are required to attempt 5 questions in all. One compulsory question from section A and selecting one question from each of the sections B, C, D and E of the question paper.

THEORY

LECTURES: 60

Unit I: Principles of Nutrition Care

8 periods

- 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 Fever

10 periods

- Typhoid
- Tuberculosis
- HIV

Unit III: Etiology, clinical features and nutritional management of the following:

18 periods

- G I Tract Disorders:
 - Diarrhoea
 - Constipation
 - Lactose Intolerance
 - Celiac disease
- Liver: Infective Hepatitis

Unit IV: Etiology, clinical features and nutritional management of

24 periods

- Weight Imbalances – Overweight and Obesity; Underweight
- Eating disorders – Anorexia nervosa and Bulimia
- Type 1 and Type 2 Diabetes mellitus
- Hypertension and CHD
- Food allergy

Semester Term End Practical Examination

Maximum marks: 20

Minimum marks: 9

Maximum time: 3 hrs.

1. Instructions for Paper setters and candidates:

Laboratory examination will consist of three parts:

- (i) Performing a practical exercise assigned by the examiner – 10 marks
- (ii) Viva voce examination – 5 marks
- (iii) Practical file – 5 marks

Note: Viva voce examination will be related to the practical performed / seminar / assignment done by the candidate related to the paper during the course of the semester.

BANHE611 (P)

PRACTICAL

30 periods

OBJECTIVES

1. To enable the students to modify the diet according to the diseases.
2. To calculate the diets with the help of Nutrition composition tables.
 - ❖ 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 of therapeutic foods in the market

RECOMMENDED READINGS

- Khanna, K, Gupta S, Seth, R, Passi, S. J, Mahna, R, Puri, S (2013). Text book of Nutrition and Dietetics. Phoenix Publishing House Pvt. Ltd.
- Mahan, L. K and Escott Stump, S (2013). Krause's Food & Nutrition Therapy, 13thed. 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.

SEMESTER III
BANHE304: HOME BASED CATERING (SEC)
(CREDITS: THEORY- 4)

OBJECTIVES

1. To apprise the students regarding Food service Industry, food production as well as standardization of a recipe
2. To share with the students the various steps to set up one's own unit.

Distribution of marks for Continuous Comprehensive Assessment

- | | | |
|---|---|----------|
| 1. Minor Test | : | 15 Marks |
| 2. Class Tests,
Tutorials /Assignments | : | 10 Marks |
| 3. Attendance | : | 5 Marks |

Total Marks : 15+10+5 = 30 Marks

(1) Distribution of marks for conducting Minor Test

Note: Time permitted for conducting minor test shall be 1 hour.

Two types of questions will be set in Minor Test:

- (i) Ten MCQ's of $\frac{1}{2}$ mark each = 5 marks.
- (ii) Two questions of 5 marks each (2X5=10) of short answer type.

Total marks of Minor Test = 5+10 = 15

Attendance: 5 marks (as per University rules)

Semester Term End Examination

Maximum marks: 70

Minimum marks: 32

Maximum time: 3 hrs.

(1) Instructions for Paper setters:

The question paper will consist of 5 sections:

- A. Compulsory
- B. Unit I
- C. Unit II
- D. Unit III
- E. Unit IV

Section A : It will be compulsory consisting of 30 marks with 10 objective type questions which could be multiple choice questions, true / false, fill in the blanks etc. of 1 mark each and 4 short answer type questions of 5 marks each.

Section B: There will be two questions of 10 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section C: There will be two questions of 10 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section D: There will be two questions of 10 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section E: There will be two questions of 10 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Total marks: $30+10+10+10+10 = 70$

(2) Instructions for the students:

The students are required to attempt 5 questions in all. One compulsory question from section A and selecting one question from each of the sections B, C, D and E of the question paper.

THEORY

LECTURES: 60

UNIT I: Introduction to Food Service

10 periods

- Factors contributing to the growth of food service industry
- Kinds of food service establishments

UNIT II: Food Production

15 periods

- 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

15 periods

- Money
- Manpower
- Time
- Facilities and equipment
- Utilities

UNIT IV: Planning of a Food Service Unit

20 periods

- Preliminary Planning

Survey of types of units, identifying clientele, menu, operations and delivery

- Planning the setup:
 - 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, F.V, Shuggart, S.G & Palgne Palacio June, Macmillian Publishing Company, New York.
- Sethi, Mohini (2005). Institution Food Management. New Age International Publishers.
- Knight, J. B & Kotschevar, L.H. (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, S.L. (2001). Entrepreneurship Development, Galgotia Publishing.

SEMESTER – IV
BANHE406: NUTRITION AND FITNESS (SEC)
(CREDITS: THEORY- 4)

OBJECTIVES

1. To help the students in understanding the importance of fitness and its relation to health and nutrition.
2. To enable the students to know about the guidelines about physical activities, weight reducing diets and nutritional supplements.

Distribution of marks for Continuous Comprehensive Assessment

1. Minor Test : 15 Marks
2. Class Tests, : 10 Marks
Tutorials /Assignments
3. Attendance : 5 Marks

Total Marks : 15+10+5 = 30 Marks

(1) Distribution of marks for conducting Minor Test

Note: Time permitted for conducting minor test shall be 1 hour.

Two types of questions will be set in Minor Test:

- (i) Ten MCQ's of $\frac{1}{2}$ mark each = 5 marks.
- (ii) Two questions of 5 marks each (2X5=10) of short answer type.

Total marks of Minor Test = 5+10 = 15

Attendance: 5 marks (as per University rules)

Semester Term End Examination

Maximum marks: 70

Minimum marks: 32

Maximum time: 3 hrs.

1. Instructions for Paper setters:

The question paper will consist of 5 sections:

- A. Compulsory
- B. Unit I
- C. Unit II
- D. Unit III
- E. Unit IV

Section A : It will be compulsory consisting of 30 marks with 10 objective type questions which could be multiple choice questions, true / false, fill in the blanks etc. of 1 mark each and 4 short answer type questions of 5 marks each.

Section B: There will be two questions of 10 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section C: There will be two questions of 10 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section D: There will be two questions of 10 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section E: There will be two questions of 10 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Total marks: $30+10+10+10+10 = 70$

(2) Instructions for the students:

The students are required to attempt 5 questions in all. One compulsory question from section A and selecting one question from each of the sections B, C, D and E of the question paper.

THEORY

LECTURES: 60

UNIT I: Understanding Fitness

10 periods

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

UNIT II: Importance of nutrition

15 periods

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

UNIT III: Importance of Physical activity

20 periods

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

UNIT IV: Weight Management

15 periods

- 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. 2nded: 2012. McGraw Hill.
- Williams, Melvin. Nutrition for health, fitness and sports.2004. McGraw Hill.
- Joshi, A, S. Nutrition and Dietetics, 2010. Tata McGraw Hill.

SEMESTER - V

BANHE507: MATERNAL AND CHILD NUTRITION (SEC)

(CREDITS: THEORY 4)

OBJECTIVES

1. To understand the role of nutrition for the pregnant women, lactating mothers, breast feeding and complementary foods.
2. To enable the students to know about child health, morbidity, maternal and child health programmes.

Distribution of marks for Continuous Comprehensive Assessment

1. Minor Test : 15 Marks
2. Class Tests, : 10 Marks
Tutorials /Assignments
3. Attendance : 5 Marks

Total Marks : 15+10+5 = 30 Marks

(1) Distribution of marks for conducting Minor Test

Note: Time permitted for conducting minor test shall be 1 hour.

Two types of questions will be set in Minor Test:

- (i) Ten MCQ's of ½ mark each = 5 marks.
- (ii) Two questions of 5 marks each (2X5=10) of short answer type.

Total marks of Minor Test = 5+10 = 15

Attendance: 5 marks (as per University rules)

Semester Term End Examination

Maximum marks: 70

Minimum marks: 32

Maximum time: 3 hrs.

(1) Instructions for Paper setters:

The question paper will consist of 5 sections:

- A. Compulsory
- B. Unit I
- C. Unit II
- D. Unit III
- E. Unit IV

Section A : It will be compulsory consisting of 30 marks with 10 objective type questions which could be multiple choice questions, true / false, fill in the blanks etc. of 1 mark each and 4 short answer type questions of 5 marks each.

Section B: There will be two questions of 10 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section C: There will be two questions of 10 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section D: There will be two questions of 10 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section E: There will be two questions of 10 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Total marks: $30+10+10+10+10 = 70$

(2) Instructions for the students:

The students are required to attempt 5 questions in all. One compulsory question from section A and selecting one question from each of the sections B, C, D and E of the question paper.

THEORY

LECTURES: 60

UNIT I : 20 periods

- 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: 15 periods

- Nutritional needs of nursing mothers and infants, determinants of birth weight and consequences of low birth weight, Breast feeding biology, Breast feeding support and counseling

UNIT III : 15 periods

- 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 U 5 MR; link between mortality and malnutrition

UNIT IV: 10 periods

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, M.S, Krishnaswamy, K and Brahmam, GNV (eds.) (2009). Textbook of Human Nutrition, 3rd edition. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.

SEMESTER – VI
BANHE610: FOOD AND NUTRITION
(CREDITS: THEORY- 2, PRACTICAL-2)

OBJECTIVES

1. To introduce the students to cooking, preparation of simple recipes using different methods of cooking.
2. To understand the parameters of Body Mass Index and meal planning for different activity levels.

Distribution of marks for Continuous Comprehensive Assessment

- | | | |
|---|---|----------|
| 1. Minor Test | : | 15 Marks |
| 2. Class Tests,
Tutorials /Assignments | : | 10 Marks |
| 3. Attendance | : | 5 Marks |

Total Marks : 15+10+5 = 30 Marks

(1) Distribution of marks for conducting Minor Test

Note: Time permitted for conducting minor test shall be 1 hour.

Two types of questions will be set in Minor Test:

- (i) Ten MCQ's of $\frac{1}{2}$ mark each = 5 marks.
- (ii) Two questions of 5 marks each (2X5=10) of short answer type.

Total marks of Minor Test = 5+10 = 15

Attendance: 5 marks (as per University rules)

Semester Term End Examination

**Maximum marks: 50
hrs.**

Minimum marks: 23

Maximum time: 3

(1) Instructions for Paper setters:

The question paper will consist of 5 sections:

- A. Compulsory
- B. Unit I
- C. Unit II
- D. Unit III
- E. Unit IV

Section A : It will be compulsory consisting of 18 marks with 10 objective type questions which could be multiple choice questions, true / false, fill in the blanks etc. of 1 mark each and 4 short answer type questions of 2 marks each covering the entire syllabus.

Section B: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section C: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section D: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section E: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Total marks: $18+8+8+8+8 = 50$

(2) Instructions for the students:

The students are required to attempt 5 questions in all. One compulsory question from section A and selecting one question from each of the sections B, C, D and E of the question paper.

THEORY

LECTURES: 60

UNIT I: Introduction to Meal planning:

15 periods

Definition of Meal planning

Factors affecting Meal planning

Meal Planning with budget provisions per head for:

Child's birthday party

Formal Tea party

Evening Dinner

Picnic lunch

Working lunch for conferences/workshops

UNIT II: Planning of meals for:

15 periods

Sedentary Workers – male, female

Moderate workers

Heavy workers

For sports persons

UNIT III: Formulation of Food frequency questionnaire:

15 periods

Guidelines to be followed

Tracking of food groups for the whole week

Use of Food composition tables and exchange lists

UNIT IV: Methods of determining Nutritional Status:

15 periods

Anthropometric measurements

Estimation of B.M.I

Measures of Weight control, fads and myths and hazards of sudden weight loss

Guidelines for maintenance of normal weight

Interventions for a healthy life style

Semester Term End Practical Examination

Maximum marks: 20

Minimum marks: 9

Maximum time: 3 hrs.

1. Instructions for Paper setters and candidates:

Laboratory examination will consist of three parts:

- (i) Performing a practical exercise assigned by the examiner – 10 marks
- (ii) Viva voce examination – 5 marks
- (iii) Practical file – 5 marks

Note: Viva voce examination will be related to the practical performed / seminar / assignment done by the candidate related to the paper during the course of the semester.

BANHE610 (P)

PRACTICAL

30 periods

OBJECTIVES

1. To enable the students to use simple methods of cooking for various levels of activities.
2. To procure recipes of snacks for various age groups and occasions.
3. To understand the importance of anthropometric measurements.
 - Identification of food sources for various nutrients using food composition tables.
 - Record diet of self using 24 hour dietary recall and its nutritional analysis.
 - Introduction to meal planning, concept of food exchange system.
 - Planning of meals for adults of different activity levels for various income groups.
 - Planning of nutritious snacks for different age and income groups.
 - Preparation of nutritious snacks using various methods of cooking.
 - Estimation of BMI and other nutritional status parameters.

RECOMMENDED READINGS

- Bamji, M. S, Krishnaswamy, K, Brahmam, GNV (2009). Textbook of Human Nutrition, 3rd edition. Oxford and IBH Publishing Co. Pvt. Ltd.
- Srilakshmi (2010). Food Science, 4th Edition. New Age International Ltd.

- Wardlaw, M.G, Paul, Minsel, Mosby (1996). Perspectives in Nutrition, Third Edition.
- Introduction to Human Nutrition (ed.). Gibneyetal, Blackwell Publishers, 2005.
- Khanna, K, Gupta, S, Seth, Mahna, R, Rekhi, T (2004). The Art and Science of Cooking: A Practical Manual, Revised Edition. Elite Publishing House Pvt. Ltd.
- NIN, ICMR (1990). Nutritive Value of Indian Foods.
- Seth, V, Singh, K (2005). Diet planning through the Life Cycle: Part1. Normal Nutrition. A Practical Manual, Fourth edition, Elite Publishing House Pvt. Ltd.
- ICMR (2010). Nutrient Requirements and Recommended Dietary Allowances for Indians.

SEMESTER – V

BANHE509: HUMAN NUTRITION (GE)

(CREDITS: THEORY 4, PRACTICALS 2)

OBJECTIVES

1. To enable the students to understand basic concepts in Nutrition, nutrients and their functions, sources and deficiency symptoms.
2. To understand the nutritional requirements during different stages of life.

Distribution of marks for Continuous Comprehensive Assessment

- | | | |
|---|---|----------|
| 1. Minor Test | : | 15 Marks |
| 2. Class Tests,
Tutorials /Assignments | : | 10 Marks |
| 3. Attendance | : | 5 Marks |

Total Marks : 15+10+5 = 30 Marks

(1) Distribution of marks for conducting Minor Test

Note: Time permitted for conducting minor test shall be 1 hour.

Two types of questions will be set in Minor Test:

- (i) Ten MCQ's of $\frac{1}{2}$ mark each = 5 marks.
- (ii) Two questions of 5 marks each (2X5=10) of short answer type.

Total marks of Minor Test = 5+10 = 15

Attendance: 5 marks (as per University rules)

Semester Term End Examination

Maximum marks: 50

Minimum marks: 23

Maximum time: 3 hrs.

(1) Instructions for Paper setters:

The question paper will consist of 5 sections:

- A. Compulsory
- B. Unit I
- C. Unit II
- D. Unit III
- E. Unit IV

Section A : It will be compulsory consisting of 18 marks with 10 objective type questions which could be multiple choice questions, true / false, fill in the blanks etc. of 1 mark each and 4 short answer type questions of 2 marks each covering the entire syllabus.

Section B: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section C: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section D: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section E: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Total marks: $18+8+8+8+8 = 50$

(2) Instructions for the students:

The students are required to attempt 5 questions in all. One compulsory question from section A and selecting one question from each of the sections B, C, D and E of the question paper.

THEORY

LECTURES: 60

UNIT I: Basic Concepts in Nutrition

15 periods

- 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: Macro-nutrients

15 periods

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

UNIT III: Micro-nutrients

Functions, Recommended Dietary Allowances, dietary sources, effects of deficiency and/or excess consumption on health of the following nutrients:

15 periods

- 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 IV: Nutrition during Lifecycle

15 periods

Physiological considerations and nutritional concerns for the following life stages:

- Adult man/woman
- Pre-school children
- Adolescents
- Pregnant woman
- Nursing woman and infant

Semester Term End Practical Examination

Maximum marks: 20

Minimum marks: 9

Maximum time: 3 hrs.

1. Instructions for Paper setters and candidates:

Laboratory examination will consist of three parts:

- (i) Performing a practical exercise assigned by the examiner – 10 marks
- (ii) Viva voce examination – 5 marks
- (iii) Practical file – 5 marks

Note: Viva voce examination will be related to the practical performed / seminar / assignment done by the candidate related to the paper during the course of the semester.

BANHE509 (P)

PRACTICAL

30

periods

OBJECTIVES

- To teach the students about the importance of weights and measures; preparing market order and table setting
 - To use different methods of cooking for maximum retention of nutrients
 - To plan diets for different age groups
1. Weighing of the common raw ingredients used in cooking.
 2. Recipes cooked by using different methods of cooking:
 - Boiling
 - Steaming
 - Roasting
 - Pressure cooking
 - Frying – shallow, deep frying
 3. Planning of diets for various life stages keeping in mind the nutritional considerations:
 - Adult man and adult woman
 - Pre-school children
 - Adolescents
 - Pregnant woman
 - Nursing woman and infant

RECOMMENDED READINGS

- Wardlaw and Insel M.G, Insel, P.M (2004). Perspectives in Nutrition. Sixth Edition, Mc Graw Hill.
- Srilakshmi, B. (2012). Nutrition Science. 4th Revised Edition, New Age International Publishers.
- Khanna, K, Gupta, S, eth, R, Passi, S.J, Mahna, R, Puri, S. (2013). Textbook of Nutrition and Dietetics. Phoenix Publishing House Pvt. Ltd.

SEMESTER – VI

BANHE612: NUTRITION: A LIFESPAN APPROACH (GE)

(CREDITS: THEORY 4, PRACTICAL 2)

OBJECTIVES

1. To know about the principles, factors affecting meal planning, dietary guidelines and methods of assessment of nutrient requirement.
2. To inculcate interest in the students to know about the need for the nutrients in different stages of life span of human beings.

Distribution of marks for Continuous Comprehensive Assessment

- | | | |
|---|---|----------|
| 1. Minor Test | : | 15 Marks |
| 2. Class Tests,
Tutorials /Assignments | : | 10 Marks |
| 3. Attendance | : | 5 Marks |

Total Marks : 15+10+5 = 30 Marks

(1) Distribution of marks for conducting Minor Test

Note: Time permitted for conducting minor test shall be 1 hour.

Two types of questions will be set in Minor Test:

- (i) Ten MCQ's of ½ mark each = 5 marks.
- (ii) Two questions of 5 marks each (2X5=10) of short answer type.

Total marks of Minor Test = 5+10 = 15

Attendance: 5 marks (as per University rules)

Semester Term End Examination

Maximum marks: 50

Minimum marks: 23

Maximum time: 3 hrs.

(1) Instructions for Paper setters:

The question paper will consist of 5 sections:

- A. Compulsory
- B. Unit I
- C. Unit II
- D. Unit III
- E. Unit IV

Section A : It will be compulsory consisting of 18 marks with 10 objective type questions which could be multiple choice questions, true / false, fill in the blanks etc. of 1 mark each and 4 short answer type questions of 2 marks each covering the entire syllabus.

Section B: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section C: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section D: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Section E: There will be two questions of 8 marks each. These questions may contain sub parts and will be of long answer type. The student will attempt one out of the two questions.

Total marks: $18+8+8+8+8 = 50$

(2) Instructions for the students:

The students are required to attempt 5 questions in all. One compulsory question from section A and selecting one question from each of the sections B, C, D and E of the question paper.

THEORY

LECTURES: 60

UNIT I: Principles of meal planning

10 periods

- Balanced diet
- Food groups
- Food exchange list
- Factors affecting meal planning and food related behaviour
- Dietary guidelines for Indians and food pyramid

UNIT II: Nutrient requirements

8 periods

- Concept of Dietary Reference Intakes
- Overview of methods for assessment of nutrient needs

UNIT III: Nutrition for adulthood and old age

12 periods

- 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 periods

- 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 periods

- Growth and development, growth reference/standards, RDA, nutritional guidelines, nutritional concerns and healthy food choices in the following:
 - Infants
 - Pre-school children
 - Schoolchildren
 - Adolescents

Semester Term End Practical Examination

Maximum marks: 20

Minimum marks: 9

Maximum time: 3 hrs.

1. Instructions for Paper setters and candidates:

Laboratory examination will consist of three parts:

- (i) Performing a practical exercise assigned by the examiner – 10 marks
- (ii) Viva voce examination – 5 marks
- (ii) Practical file – 5 marks

Note: Viva voce examination will be related to the practical performed / seminar / assignment done by the candidate related to the paper during the course of the semester.

BANHE612 (P)

PRACTICAL

30 periods

OBJECTIVES

- To encourage the students to use food exchange list and food composition tables in calculating diets
- To plan and cook dishes for different age groups

Introduction to meal planning

Use of food exchange list

Planning and preparation of diets and dishes for

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

Planning complementary foods for Infants

RECOMMENDED READINGS

- Khanna, K, Gupta, S, Seth, R, Passi, S. J, Mahna, R, Puri, S. (2013). Text book of Nutrition and Dietetics. Phoenix Publishing House Pvt. Ltd.
- Wardlaw, G. M, Hampi, J. S, DiSilvestro, R. A(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. NewDelhi.
- Seth, V and Singh, K. (2006). Diet Planning through the Life Cycle: Part1 Normal Nutrition. A Practical Manual. Elite Publishing House Pvt. Ltd. New Delhi.
- Gopalan, C, Rama Sastri, B. V, Balasubramanian, S. C. (1989). Nutritive Value of Indian Foods. National Institute of Nutrition, ICMR, Hyderabad.