

B.A (Prog.) with Nutrition and Health Education (NHE) as Major

Category-II

DISCIPLINE SPECIFIC CORE COURSE – DSC-1-NHE: FUNDAMENTALS OF NUTRITION

Credit distribution, Eligibility and Pre-requisites of the Course

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Fundamentals of Nutrition	4	3	1	-	Class XII Pass	NIL

Learning Objectives:

1. To familiarize students with fundamentals of nutrition and their relation to health.
2. To study the functions, dietary sources and clinical manifestations of deficiency or excess of nutrients.
3. To create awareness about enhancing nutritional quality of food.

Learning Outcomes:

After completion of the course, the students will be able to:

1. Understand basic concepts in nutrition and interpret relation between food, nutrition and health.
2. Describe functions, dietary sources and clinical manifestations of deficiency or excess of important nutrients.
3. Understand healthy cooking practices and minimizing nutrient losses.
4. Describe various methods of enhancing nutritional quality of food.

SYLLABUS OF DSC-1

Theory:

Unit 1: Basic Concepts in Nutrition

(7 Hours)

- *Unit Description:* This unit will introduce the basic terms in nutrition
- *Subtopics:*
 - Basic terms used in study of nutrition – food, health, nutrients, nutritional status, malnutrition.
 - Macronutrients, micronutrients, nutraceuticals, phytochemicals, antioxidants and balanced diet.
 - Understanding relationship between food, nutrition and health.

Unit 2: Energy, Macronutrients and Water

(13 Hours)

- *Unit Description:* This unit will introduce the students to energy components, macronutrients and water.
- *Subtopics:*
 - Energy- Components of energy expenditure and factors affecting energy requirement.

- Classification, functions, dietary sources and clinical manifestations of deficiency/excess of the following:
 - Carbohydrates including dietary fibre.
 - Dietary fat and fatty acids; introduction to lipoproteins (LDL & HDL)
 - Protein including protein quality

Unit 3: Micronutrients (18 Hours)

- *Unit Description:* This unit will introduce the various vitamins and minerals present in foods.
- *Subtopics:*
 - Functions, dietary sources and clinical manifestations of deficiency /excess of the following:
 - Fat soluble vitamins – A, D, E and K.
 - Water soluble vitamins – thiamine, riboflavin, niacin, pyridoxine, folic acid, vitamin B₁₂ and vitamin C.
 - Minerals – calcium, iron, iodine, zinc, sodium and potassium.

Unit 4: Enhancing Nutritional Quality of Food (7 Hours)

- *Unit Description:* This unit will explain ways to minimize nutrient losses and enhance nutritional quality of food
- *Subtopics:*
 - Minimizing nutrient losses during food preparation.
 - Enhancing nutritional quality by supplementation, germination, fermentation and fortification.

Essential/recommended readings:

1. Rekhi, T., & Yadav, H. (2015). *Fundamentals of Food and Nutrition*. Delhi: Elite Publishing House Pvt. Ltd.
2. Mudambi, S. R., & Rajagopal M. V. (2012). *Fundamentals of food, nutrition and diet therapy*; (6th ed.). Delhi: New Age International (P) Ltd.
3. Sethi, P., & Lakra, P. (2015). *Aahar Vigyan, Poshan Evam Suraksha*. Delhi: Elite Publishing House Pvt. Ltd.
4. Chadha, R., & Mathur, P. (2015). *Nutrition: A life cycle approach*. Delhi: Orient Blackswan.
5. Srilakshmi, B. (2018). *Food science* (7th ed.) Delhi: New Age International (P) Ltd.

Suggested readings:

1. Roday, S. (2013). *Food science and nutrition*. (2nd ed.). Oxford University Press.
2. Wardlow, G. M., & Hampl, J. S. (2019). *Perspectives in nutrition*. (11th ed.). New York, NY: McGraw Hill.
3. Agarwal, A., & Udipi. S. (2014). *Textbook of human nutrition*, Jaypee Brothers Medical Publishers (P) Ltd, New Delhi.

DISCIPLINE SPECIFIC CORE COURSE – DSC-2-NHE: INTRODUCTION TO FOODS

Credit distribution, Eligibility and Pre-requisites of the Course

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to Foods	4	3	-	1	Class XII Pass	NIL

Learning Objectives:

1. To introduce students with the functions of food.
2. To explain the nutritional contribution, selection, changes in cooking and storage of different food groups.
3. To generate awareness about various methods of cooking.

Learning Outcomes:

After completion of the course, the students will be able to:

1. Understand various functions of food and factors affecting food choices.
2. Acquaint themselves to select, purchase and store food safely.
3. Describe various methods of cooking and principles underlying them.

SYLLABUS OF DSC-2

Theory:

Unit 1: Basic Concepts of Food

(8 Hours)

- *Unit Description:* This unit will introduce the concept of food, functions of food and factors affecting food choices.
- *Subtopics:*
 - Definition of food including organic food, genetically modified foods, convenience foods, health foods.
 - Functions of food.
 - Factors affecting food choices.

Unit 2: Plant Based Food Groups

(15 Hours)

- *Unit Description:* This unit will introduce nutritional contribution, selection, changes in cooking and storage of the plant-based food groups.
- *Subtopics:*
 - Nutritional contribution, selection, changes in cooking and storage of the following:
 - Cereal and cereal products
 - Pulses
 - Vegetable and fruits
 - Sugars
 - Oils and fats

Unit 3: Animal Based Food Groups

(8 Hours)

- *Unit Description:* This unit will introduce nutritional contribution, selection, changes in cooking and storage of the animal-based food groups.

- *Subtopics:*
 - Nutritional contribution, selection, changes in cooking and storage of the following:
 - Milk and milk products
 - Eggs and flesh foods

Unit 4: Methods of Cooking Foods (14 Hours)

- *Unit Description:* This unit will introduce advantages and principles of cooking and various cooking methods.
- *Subtopics:*
 - Advantages of cooking
 - Principles of cooking
 - Preliminary steps in food preparation
 - Cooking methods:
 - Moist heat methods
 - Dry heat methods
 - Methods using fat as a medium
 - Others – microwave, solar cooking

Practical:

Unit 1: Cooking methods I (16 Hours)

- *Subtopics:*
 - Cooking employing dry heat methods
 - Cooking employing moist heat methods

Unit 2: Cooking methods II (14 Hours)

- *Subtopics:*
 - Cooking using frying as a cooking method
 - Cooking using microwave

Essential/recommended readings:

1. Rekhi, T., & Yadav, H. (2015). *Fundamentals of Food and Nutrition*. Delhi: Elite Publishing House Pvt. Ltd.
2. Mudambi, S. R., & Rajagopal M. V. (2012). *Fundamentals of food, nutrition and diet therapy*; (6th ed.). Delhi: New Age International (P) Ltd.
3. Sethi, P., & Lakra, P. (2015). *Aahar Vigyan, Poshan Evam Suraksha*. Delhi: Elite Publishing House Pvt. Ltd.
4. Srilakshmi, B. (2018). *Food science* (7th ed.) Delhi: New Age International (P) Ltd.
5. Raina, U., & Kashyap, S. (2010). *Basic Food Preparation – a complete manual* (4th ed.). Delhi: Orient Black Swan.

Suggested readings:

1. Roday, S. (2013). *Food science and nutrition*. (2nd ed.). Oxford University Press.
2. Wardlow, G. M., & Hampl, J. S. (2019). *Perspectives in nutrition*. (11th ed.). New York, NY: McGraw Hill.
3. Agarwal, A., & Udipi. S. (2014). *Textbook of human nutrition*, Jaypee Brothers Medical Publishers (P) Ltd, New Delhi.
4. Chadha, R., & Mathur, P. (2015). *Nutrition: A life cycle approach*. Delhi: Orient Blackswan.

B.A (Prog.) with Nutrition and Health Education (NHE) as Non-Major
Category-III

DISCIPLINE SPECIFIC CORE COURSE – DSC-2-NHE: INTRODUCTION TO FOODS

Credit distribution, Eligibility and Pre-requisites of the Course

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Introduction to Foods	4	3	-	1	Class XII Pass	NIL

Learning Objectives:

1. To introduce students with the functions of food.
2. To explain the nutritional contribution, selection, changes in cooking and storage of different food groups.
3. To generate awareness about various methods of cooking.

Learning Outcomes:

After completion of the course, the students will be able to:

1. Understand various functions of food and factors affecting food choices.
2. Acquaint themselves to select, purchase and store food safely.
3. Describe various methods of cooking and principles underlying them.

SYLLABUS OF DSC-1

Theory:

Unit 1: Basic Concepts of Food (8 Hours)

- *Unit Description:* This unit will introduce the concept of food, functions of food and factors affecting food choices.
- *Subtopics:*
 - Definition of food including organic food, genetically modified foods, convenience foods, health foods.
 - Functions of food.
 - Factors affecting food choices.

Unit 2: Plant Based Food Groups (15 Hours)

- *Unit Description:* This unit will introduce nutritional contribution, selection, changes in cooking and storage of the plant-based food groups.
- *Subtopics:*
 - Nutritional contribution, selection, changes in cooking and storage of the following:
 - Cereal and cereal products
 - Pulses
 - Vegetable and fruits

- Sugars
- Oils and fats

Unit 3: Animal Based Food Groups (8 Hours)

- *Unit Description:* This unit will introduce nutritional contribution, selection, changes in cooking and storage of the animal-based food groups.
- *Subtopics:*
 - Nutritional contribution, selection, changes in cooking and storage of the following:
 - Milk and milk products
 - Eggs and flesh foods

Unit 4: Methods of Cooking Foods (14 Hours)

- *Unit Description:* This unit will introduce advantages and principles of cooking and various cooking methods.
- *Subtopics:*
 - Advantages of cooking
 - Principles of cooking
 - Preliminary steps in food preparation
 - Cooking methods:
 - Moist heat methods
 - Dry heat methods
 - Methods using fat as a medium
 - Others – microwave, solar cooking

Practical:

Unit 1: Cooking methods I (16 Hours)

- *Subtopics:*
 - Cooking employing dry heat methods
 - Cooking employing moist heat methods

Unit 2: Cooking methods II (14 Hours)

- *Subtopics:*
 - Cooking using frying as a cooking method
 - Cooking using microwave

Essential/recommended readings:

1. Rekhi, T., & Yadav, H. (2015). *Fundamentals of Food and Nutrition*. Delhi: Elite Publishing House Pvt. Ltd.
2. Mudambi, S. R., & Rajagopal M. V. (2012). *Fundamentals of food, nutrition and diet therapy*; (6th ed.). Delhi: New Age International (P) Ltd.
3. Sethi, P., & Lakra, P. (2015). *Aahar Vigyan, Poshan Evam Suraksha*. Delhi: Elite Publishing House Pvt. Ltd.
4. Srilakshmi, B. (2018). *Food science* (7th ed.) Delhi: New Age International (P) Ltd.
5. Raina, U., & Kashyap, S. (2010). *Basic Food Preparation – a complete manual* (4th ed.). Delhi: Orient Black Swan.

Suggested readings:

1. Roday, S. (2013). *Food science and nutrition*. (2nd ed.). Oxford University Press.
2. Wardlow, G. M., & Hampl, J. S. (2019). *Perspectives in nutrition*. (11th ed.). New York, NY: McGraw Hill.
3. Agarwal, A., & Udipi, S. (2014). *Textbook of human nutrition*, Jaypee Brothers Medical Publishers (P) Ltd, New Delhi.
4. Chadha, R., & Mathur, P. (2015). *Nutrition: A life cycle approach*. Delhi: Orient Blackswan.

Appendix-53
Resolution No. 38 {38-1 [38-1-3(11)]}



INDEX

Department of Home Science
Semester – II

B.A (Prog.) with Nutrition and Health Education (NHE)

<u>S. No.</u>	<u>Content</u>	<u>Page No.</u>
1.	B.A. (Prog.) with Nutrition Health Education (NHE) as Major DISCIPLINE SPECIFIC CORE (DSC) DSC-3-NHE: Diet Planning through the Life Span DSC-4-NHE: Dietary Goals and Guidelines for Indians	2-6
2.	B.A. (Prog.) with Nutrition Health Education (NHE) as Non-Major DISCIPLINE SPECIFIC CORE (DSC) DSC-4-NHE: Dietary Goals and Guidelines for Indians	7-9

B.A (Prog.) with Nutrition and Health Education (NHE) as Major
Category-II

DISCIPLINE SPECIFIC CORE COURSE – DSC-3-NHE: DIET PLANNING THROUGH THE LIFE SPAN

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Diet Planning Through the Life Span	4	3	-	1	Class XII Pass	DSC-1-NHE and DSC-2-NHE

Learning Objectives:

1. To introduce students to the basic concepts of meal planning.
2. To equip them with knowledge of physiological changes, nutritional requirements, nutritional concerns and healthy food choices during the life cycle.

Learning Outcomes:

After completion of the course, the students will be able to:

1. Describe physiological changes and nutritional requirements across the lifespan.
2. Understand the factors affecting meal planning.
3. Understand the importance of food exchange list and use them for meal planning.
4. Plan and prepare balanced meals and nutritious snacks for various age groups.

SYLLABUS OF DSC-3

Theory:

Unit 1: Nutrient Requirements and Recommendations (5 Hours)

- *Unit Description:* This unit will introduce the concept of dietary reference intake.
- *Subtopics:*
 - Nutrient requirement - concept and background
 - Dietary reference intake
 - EAR and RDA
 - Reference man and reference woman

Unit 2: Fundamentals of Menu Planning (6 Hours)

- *Unit Description:* This unit will introduce essential requirements for planning of meals.
- *Subtopics:*
 - Introduction and use of food exchange list
 - Concept and importance of meal planning
 - Factors affecting meal planning

Unit 3: Nutrition during Childhood

(16 Hours)

- *Unit Description:* This unit will introduce nutritional requirement, physiological changes, nutritional concerns and healthy eating practices during childhood.
- *Subtopics:*
 - Infancy
 - Preschoolers
 - School- going children
 - Adolescents

Unit 4: Nutrition during Adulthood and Old Age

(18 Hours)

- *Unit Description:* This unit will introduce nutritional requirement, physiological changes, nutritional concerns and healthy food choices during adulthood and old age.
- *Subtopics:*
 - Adulthood
 - Pregnancy
 - Lactation
 - Old age

Practical:

Unit 1: Introduction to Meal Planning

(10 Hours)

- *Subtopics:*
 - Use of comprehensive food exchange list in meal planning
 - Meal distribution and menu planning
 - Nutrient calculations

Unit 2: Planning and Preparation of Diets/Dishes/Snacks

(20 Hours)

- *Subtopics:*
 - Infant- complementary feeding
 - Preschooler child
 - School aged child
 - Adolescent
 - Adult
 - Pregnant and lactating woman
 - Elderly

Essential/recommended readings:

1. Chadha, R., & Mathur, P. (2015). *Nutrition: A life cycle approach*. Delhi: Orient Blackswan.
2. Sethi, P., & Lakra, P. (2015). *Aahar Vigyan, Poshan Evam Suraksha*. Delhi: Elite Publishing House Pvt. Ltd.
3. Mudambi, S. R., & Rajagopal M. V. (2012). *Fundamentals of food, nutrition and diet therapy* (6th ed.). Delhi: New Age International (P) Ltd.
4. Siddhu, A., Bhatia, N., Singh, K., Gupta, S. (Eds.). (2017). *Lady Irwin College Technical series 6: Compilation of food exchange list*. Delhi: Global books organisation.
5. Puri, S. et al (2020). *Food exchange list- A tool for meal planning*. New Delhi: Elite publishing house.
6. Longvah, T. et al (2017). *Indian food composition tables*. Hyderabad, Telangana: National Institute of Nutrition.

Suggested readings:

1. Wardlow, G. M., & Hampl, J. S. (2019). *Perspectives in nutrition*. (11th ed.). New York, NY: McGraw Hill.
2. Khanna, K. et al. (2013). *Textbook of nutrition and dietetics*. Delhi: Elite Publishing house (P) Ltd.
3. Shubhangini, A., & Joshi, S. (2021). *Nutrition and Dietetics* (5th ed.). McGraw Hill Education (India) Private Limited. ISBN: 978-93-90727-82-7.
4. Edelstein, S., & Sharlin, J. (Eds). (2009). *Life cycle nutrition – an evidence based approach* Burlington, MA: Jones and Barlett Publishers.

DISCIPLINE SPECIFIC CORE COURSE – DSC-4-NHE: DIETARY GOALS AND GUIDELINES FOR INDIANS

Credit distribution, Eligibility and Pre-requisites of the Course

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Dietary Goals and Guidelines for Indians	4	3	1	-	Class XII Pass	NIL

Learning Objectives:

1. To introduce the concept of nutritionally adequate diets and healthy lifestyles from conception

till old age.

2. To equip the students with the knowledge of dietary goals and guidelines for Indians relating to nutritional requirements, deficiency diseases and chronic diet-related disorders.

Learning Outcomes:

After completion of the course, the students will be able to:

1. Describe food groups, food pyramid and the concept of a balanced diet.
2. Understand the physiological changes throughout the lifespan.
3. Acquaint themselves with the dietary goals and dietary guidelines for Indians across the life cycle.

SYLLABUS OF DSC-4

Theory:

Unit 1: Basic Concepts of Food (9 Hours)

- *Unit Description:* This unit will introduce various food groups, concept of balanced diet, food pyramid and other aspects regarding diet.
- *Subtopics:*
 - Food groups: basic classification and nutritional contribution
 - Food pyramid
 - Balanced diet and My food plate
 - Food facts, fads and fallacies

Unit 2: Dietary Guidelines I (15 Hours)

- *Unit Description:* This unit will introduce basic dietary goals for healthy living and dietary guidelines.
- *Subtopics:*
 - Dietary goals
 - Guidelines to ensure nutritional adequacy and prevent deficiency diseases
 - Guidelines related to various stages of life

Unit 3: Dietary Guidelines II (13 Hours)

- *Unit Description:* This unit will introduce dietary guidelines to deal with health concerns and healthy food practices.
- *Subtopics:*
 - Guidelines to maintain an ideal body weight and prevent chronic diet-related disorders
 - Guidelines regarding food-related practices

Unit 4: Practical Application of Dietary Guidelines (8 Hours)

- *Unit Description:* This unit will introduce practical aspects with suitable examples

to attain all dietary guidelines for Indians.

- *Subtopics:*

Sample eating patterns/ menus for the following meals/ snacks:

- Breakfast
- Lunch/packed lunch
- Dinner
- Snacks

Essential/recommended readings:

1. Damyanthi, K. et al. (2011). *Dietary guidelines for Indians- A manual*. (2nd ed.) Hyderabad. National Institute of Nutrition.
2. Chadha, R., & Mathur, P. (2015). *Nutrition: A life cycle approach*. Delhi: Orient Blackswan.
3. Agarwal, A., & Udipi. S. (2014). *Textbook of human nutrition*, Jaypee Brothers Medical Publishers (P) Ltd, New Delhi.
4. Sethi, P., & Lakra, P. (2015). *Aahar Vigyan, Poshan Evam Suraksha*. Delhi: Elite Publishing House Pvt. Ltd.

Suggested readings:

1. Mudambi, S. R., & Rajagopal M. V. (2012). *Fundamentals of food, nutrition and diet therapy* (6th ed.). Delhi: New Age International (P) Ltd.
2. Wardlow, G. M., & Hampl, J. S. (2019). *Perspectives in nutrition*. (11th ed.). New York, NY: McGraw Hill.
3. Shubhangini, A., & Joshi, S. (2021). *Nutrition and Dietetics* (5th ed.). McGraw Hill Education (India) Private Limited. ISBN: 978-93-90727-82-7.
4. Khanna, K. et al. (2013). *Textbook of nutrition and dietetics*. Delhi: Elite Publishing house (P) Ltd.

B.A (Prog.) with Nutrition and Health Education (NHE) as Non-Major
Category-III

DISCIPLINE SPECIFIC CORE COURSE – DSC-4-NHE: DIETARY GOALS AND GUIDELINES FOR INDIANS

Credit distribution, Eligibility and Pre-requisites of the Course

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Dietary Goals and Guidelines for Indians	4	3	1	-	Class XII Pass	NIL

Learning Objectives:

1. To introduce the concept of nutritionally adequate diets and healthy lifestyles from conception till old age.
2. To equip the students with the knowledge of dietary goals and guidelines for Indians relating to nutritional requirements, deficiency diseases and chronic diet-related disorders.

Learning Outcomes:

After completion of the course, the students will be able to:

1. Describe food groups, food pyramid and the concept of a balanced diet.
2. Understand the physiological changes throughout the lifespan.
3. Acquaint themselves with the dietary goals and dietary guidelines for Indians across the life cycle.

SYLLABUS OF DSC-2

Theory:

Unit 1: Basic Concepts of Food

(9 Hours)

- *Unit Description:* This unit will introduce various food groups, concept of balanced diet, food pyramid and other aspects regarding diet.
- *Subtopics:*
 - Food groups: basic classification and nutritional contribution
 - Food pyramid
 - Balanced diet and My food plate
 - Food facts, fads and fallacies

Unit 2: Dietary Guidelines I

(15 Hours)

- *Unit Description:* This unit will introduce basic dietary goals for healthy living and dietary guidelines.
- *Subtopics:*
 - Dietary goals
 - Guidelines to ensure nutritional adequacy and prevent deficiency diseases
 - Guidelines related to various stages of life

Unit 3: Dietary Guidelines II

(13 Hours)

- *Unit Description:* This unit will introduce dietary guidelines to deal with health concerns and healthy food practices.
- *Subtopics:*
 - Guidelines to maintain an ideal body weight and prevent chronic diet-related disorders
 - Guidelines regarding food-related practices

Unit 4: Practical Application of Dietary Guidelines

(8 Hours)

- *Unit Description:* This unit will introduce practical aspects with suitable examples to attain all dietary guidelines for Indians.
- *Subtopics:*

Sample eating patterns/ menus for the following meals/ snacks:

 - Breakfast
 - Lunch/packed lunch
 - Dinner
 - Snacks

Essential/recommended readings:

1. Damyanthi, K. et al. (2011). *Dietary guidelines for Indians- A manual*. (2nd ed.) Hyderabad. National Institute of Nutrition.
2. Chadha, R., & Mathur, P. (2015). *Nutrition: A life cycle approach*. Delhi: Orient Blackswan.
3. Agarwal, A., & Udipi. S. (2014). *Textbook of human nutrition*, Jaypee Brothers Medical Publishers (P) Ltd, New Delhi.
4. Sethi, P., & Lakra, P. (2015). *Aahar Vigyan, Poshan Evam Suraksha*. Delhi: Elite Publishing House Pvt. Ltd.

Suggested readings:

1. Mudambi, S. R., & Rajagopal M. V. (2012). *Fundamentals of food, nutrition and diet therapy* (6th ed.). Delhi: New Age International (P) Ltd.

2. Wardlow, G. M., & Hampl, J. S. (2019). *Perspectives in nutrition*. (11th ed.). New York, NY: McGraw Hill.
3. Shubhangini, A., & Joshi, S. (2021). *Nutrition and Dietetics* (5th ed.). McGraw Hill Education (India) Private Limited. ISBN: 978-93-90727-82-7.
4. Khanna, K. et al. (2013). *Textbook of nutrition and dietetics*. Delhi: Elite Publishing house (P) Ltd.