

Bachelors in Arts with With Community Science
Category-V

**DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE-FN 8-HSC:
ADVANCED HUMAN NUTRITION**

CREDIT DISTRIBUTION, ELIGIBILITY, PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical		
Advanced Human Nutrition	4	3	1	0	-	NIL

Learning Objectives

- To understand the functions of macro and micro-nutrients and methods used for assessing their requirements.
- To comprehend why and how the requirements change under special conditions.
- To understand the interaction between nutrition and immunity.
- To comprehend the importance of diet quality.

Learning Outcomes

The students would be able to:

- Explain the importance of macro and micro-nutrients and methods used for assessing their requirements.
- Explain the reasons why the requirements change under special conditions.
- Explain the operational implication of the relationship between nutrition and immunity.
- Suggest methods to improve the quality of diets.

THEORY
(Credits 3; Hours 45)

UNIT I: Human Nutritional Requirements

20 Hours

This unit describes the methods used in defining human nutritional requirements of macro and micronutrients and the biological role of nutrients.

- Terms used in defining nutrient requirements - EAR, RDA, AI, TUL
- Methods of assessment of nutrient needs- an overview
- Biological role and factors affecting requirements of nutrients – Energy, carbohydrates and dietary fibre, proteins and amino acids, lipids and fatty acids, water, fat and water-soluble vitamins, and minerals.

UNIT II: Nutrition under special conditions

6 Hours

This unit describes how nutrient requirements change in special conditions in response to physiological changes.

- Extreme temperatures - Hot and cold
- High altitude
- Space nutrition

- Sports nutrition
- Nutrition in emergencies - war, earthquakes and floods

UNIT III: Interactions of Nutrition, Immunity and Infection

5 hours

This unit examines the relationship between nutrition, immunity, and infection, focusing on key nutrients, the impact of infections on nutritional status, and how nutrient imbalances affect immune function.

- Nutrients, essential in the development of immune system
- Effect of infections on the nutritional status of an individual
- Nutrient deficiencies and excesses affecting immuno-competence and susceptibility to infections

UNIT IV: Healthy Diets and Improving Diet Quality

14 hours

This unit focuses on principles of healthy diets and diet quality, covering dietary guidelines, nutrition transition, strategies to enhance nutrient content and bioavailability, and emerging concepts such as functional foods, nutraceuticals, and nutrigenomics.

- Dietary guidelines for Indians
- Nutrition transition and consequences of unhealthy lifestyle
- Concept of diet quality
- Methods of improving nutrient content and bioavailability -fortification, GM foods, dietary diversity, home based solutions
- Functional foods and bioactive substances, Nutraceuticals, Nutrigenomics

TUTORIAL (Credits 1; Hours 15)

1. Assessing protein quality of a meal (Chemical score and NDpCal%).
2. Measuring energy expenditure– GPAQ.
3. Group discussion on importance of energy balance.
4. Suggest ways of improving nutritional quality of any snack/ food available in college canteen.
5. Categorizing foods and cooking oils according to fatty acid profile.
6. Categorizing foods according to the dietary fibre (soluble and insoluble) profile.
7. Case study on nutritional management of a population affected by a natural disaster.
8. Prepare a presentation on food suitable for consumption in space.
9. Market survey of available health supplements, nutraceuticals, probiotic and prebiotic foods, foods for special dietary uses.
10. Survey of availability and consumption of fortified foods.

Essential Readings

UNIT I

This unit describes terms used to define nutrient requirements and the methods used for deriving human nutritional requirements of macro and micronutrients. The biological role of the nutrients and the factors which affect their requirements are also covered in this unit.

- **Chadha R., Mathur P.** Eds. (2015). *Nutrition: A Lifecycle Approach*. New Delhi: Orient Blackswan.

- **ICMR-NIN.** (2020). *Nutrient Requirements Estimated Average Requirements and Recommended Dietary Allowances*. Hyderabad: ICMR-National Institute of Nutrition
- **Bamji, M.S., Hemalatha, R., Reddy, G.B.** (2026). *Textbook of Human Nutrition*. Fifth Edition, CBS Publishers and Distributors Pvt. Ltd.

UNIT II

This unit describes how nutrient requirements change in special conditions like living in extremely hot or cold environments or living at very high altitudes. The physiological changes which happen in the human body in these extreme environments will also be covered. Nutritional considerations for astronauts and sportspersons are also a part of this unit. It also includes how nutritional needs are taken care of during natural calamities like earthquakes and floods or during emergencies like war.

- **Chadha R., Mathur P.** Eds. (2015). *Nutrition: A Lifecycle Approach*. New Delhi: Orient Blackswan.
- **Chopra S, Singh SN and Mathur P.** (2023). *Nutritional Fuelling for Microgravity Environment of Space Missions*, Current Nutrition & Food Science, 19. <https://dx.doi.org/10.2174/1573401319666230503162143>
- **Singh, Som Nath.** (2021). *Nutritional Requirements for Special Conditions*. eGyanKosh, IGNOU. <https://egyankosh.ac.in/handle/123456789/33312>
- **UNHCR/UNICEF/WFP/WHO.** (2004). *Food and Nutrition Needs in Emergencies*. World Health Organization, Geneva.
- **WHO.** (2000). *The Management of Nutrition in Major Emergencies*. World Health Organization, Geneva.

UNIT III

This unit examines the relationship between nutrition, immunity, and infection, focusing on key nutrients, the impact of infections on nutritional status, and how nutrient imbalances affect immune function.

- **Bamji, M.S., Hemalatha, R., Reddy, G.B.** (2026). *Textbook of Human Nutrition*. Fifth Edition, CBS Publishers and Distributors Pvt. Ltd.
- **Chadha R., Mathur P.** Eds. (2015). *Nutrition: A Lifecycle Approach*. New Delhi: Orient Blackswan.

UNIT IV

This unit focuses on principles of healthy diets and means of improving diet quality, covering dietary guidelines, nutrition transition, strategies to enhance nutrient content and bioavailability, and emerging concepts such as functional foods, nutraceuticals, and nutrigenomics.

- **Chadha R., Mathur P.** Eds. (2015). *Nutrition: A Lifecycle Approach*. New Delhi: Orient Blackswan.
- **ICMR-NIN.** (2024). *Dietary Guidelines for Indians*. Hyderabad: ICMR-National Institute of Nutrition

Suggested Readings:

- **FAO/WHO** (2004). *Vitamin and Mineral Requirements in Human Nutrition*. Report on Joint Expert Consultation. <https://iris.who.int/server/api/core/bitstreams/d2d18d86-d4ef-471e-a4a0-964044f31c3f/content>

- **FAO/WHO/UNU (2004).** *Human Energy Requirements*. Report on Joint Expert Consultation. Rome. <https://www.fao.org/4/y5686e/y5686e00.htm>
- **FAO/WHO/UNU (2007).** *Protein and Amino acid Requirements in Human Nutrition*. Report of a joint WHO/FAO/UNU expert consultation WHO Technical Report Series 935. Geneva: WHO. <https://iris.who.int/server/api/core/bitstreams/b7c5ec43-bc59-4b38-b702-3f0e96a06fa1/content>

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time

**Bachelors in Arts with With Community Science
Category-V**

**DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE-FN 10-HSC:
THERAPEUTIC NUTRITION**

CREDIT DISTRIBUTION, ELIGIBILITY, PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical		
Therapeutic Nutrition	4	3	0	1	-	NIL

Learning Objectives

- To understand the basic principles of therapeutic nutrition and nutrition care process.
- To learn the modification of normal diets in the management of common diseases.
- To understand the etio-pathophysiology and metabolic anomalies of various disorders/diseases and provide appropriate nutrition care for their management and prevention.

Learning Outcomes

The students would be able to:

- Understand the principle of diet therapy and the nutrition care process.
- Develop an ability to modify a normal diet for therapeutic purposes.
- Develop an understanding of etiology, pathophysiology, metabolic changes, clinical symptoms, and management of some common disorders/diseases.

**THEORY
(Credits 3; Hours 45)**

UNIT I: Introduction to Therapeutic Nutrition and Nutrition Care Process

9 Hours

Students will be introduced to the concept of therapeutic nutrition (Medical Nutrition Therapy-MNT) and nutrition care process, therapeutic adaptations of normal diets, and progression of diets from liquid to solid. The concept of nutrition support systems will also be discussed.