

- Austin, K. G. and Seebohar B. (2021) Performance Nutrition for Athletes. Human Kinetics.
- Bushman, B. (2017) ACSM's Complete Guide to Fitness & Health 2nd Edition, ACSM.
- Dan Benardot (2011) Advanced Sports Nutrition-2nd Edition.
- Fink, H. H. and Mikesky A. E. (2017) Practical Applications in Sports Nutrition 5th Edition.
- Heather, H.F. and Alan, E. Mikesky (2015) Practical Application in Sports and Nutrition. Fourth Edition. Jones & Bartlett Learning, Burlington, M.A.
- Ryan, M. (2020) Sports Nutrition for Endurance Athletes (3rd Edition). VeloPress.
- McArdle, W.D., Katch F. I. and Katch V. L. (2020) Sports and Exercise Nutrition (5th Edition). Wolters Kluwer.

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

DISCIPLINE SPECIFIC ELECTIVE

DSE HH 7B4: ADVANCED NUTRITION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Theory	Tutorial	Practical/ Practice		
Advanced Nutrition DSE HH 7B4	4	2	0	2	Studied Semester VI	Nil

Learning Objectives

- To understand the functions of macro and micro-nutrients in a human body.
- To study the methods used for assessing nutrient requirements.
- To comprehend why and how the requirements change under special conditions.

Learning Outcomes

- Explain the importance of macro and micro-nutrients in a human body.
- Describe methods used for assessing nutrient requirements.
- Explain the reasons why the requirements change under special conditions.

SYLLABUS OF DSE HH 7B4

THEORY

(Credits 2; Hours 30)**Unit I: Human Nutritional Requirements****20 Hours**

This unit describes the biological role and sensitive methods for estimating the requirements of different nutrients.

- Historical perspective of nutrient requirements, terms used - EAR, RDA, AI, TUL
- Methods of assessment of nutrient needs – a critical review
- Biological role, sensitive methods of assessment, bioavailability, and other factors affecting requirements of nutrients
 - Energy
 - Carbohydrates and dietary fibre
 - Proteins and amino acids
 - Lipids and fatty acids
 - Water
 - Fat soluble and water soluble vitamins
 - Minerals

Unit II: Nutrition under special conditions**10 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
- Nutrition in emergencies - war, earthquakes and floods

PRACTICAL
(Credits 2; Hours 60)

1. Methods of assessment of protein quality - Chemical score, NDpCal%
2. Measuring energy expenditure - Minute to minute activity record, GPAQ
3. Understanding fatty acid profile of commonly eaten foods
4. Understanding the dietary fibre (soluble and insoluble) profile of commonly eaten foods
5. Assessment of molar ratios of iron and vitamin C in given diets
6. Estimation of iodine content of salt
7. Estimation of carotenoid content of fruits/vegetables
8. Estimation of phytic acid / oxalates / tannins.
9. Understanding the clinical signs of nutrient deficiency and excess

Essential Readings

- Chadha R., Mathur P. Eds. (2015) Nutrition: A Lifecycle Approach. New Delhi: Orient Blackswan.
- NIN-ICMR (2020) Nutrient Requirements Estimated Average Requirements and Recommended Dietary Allowances.

Suggested Readings

- FAO/WHO. (2004) Vitamin and Mineral Requirements in Human Nutrition. Report of a Joint Expert Consultation.
- FAO/WHO/UNU (2004) Human Energy Requirements. Report of a Joint Expert Consultation. Rome.
- 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.

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