



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Home Science

Choice Based Credit System (CBCS) in Light of NEP-2020

B. Sc. Food and Nutrition Sem III (2022 - 2025)

Subject Code	Category	Subject Name	Teaching and Evaluation Scheme									
			Theory			Practical			L	T	P	CREDITS
			End Sem University Exam(60%)	Two Term Exam(20%)	Teachers Assessment(20%)	End Sem University Exam(60%)	Teachers Assessment(40%)					
FSN 301	Major	Nutrition through life cycle	60	20	20	0	0	4	0	0	4	

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

***Teacher Assessment** shall be based on the following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs): The students will -

CEO1: able to discuss, contrast and evaluate the roles of nutrition within the complex processes of pregnancy, lactation, child development and ageing.

CEO2: discuss the impact of socioeconomic, cultural, and psychological factors on food and nutrition behavior.

Course Outcomes (COs): Student should be able to-

CO1: acquire knowledge about physiological status and nutrition of pregnancy and lactation.

CO2: understand about physiological status and nutritional requirements of infancy and childhood.

CO3: familiarize with development and nutritional requirements of preschool and school going children.

CO4: learn about nutritional requirements of adults and old age.

Syllabus

Unit I

- Infancy: physiological development and nutritional requirements.
- Complimentary food: weaning pattern, composition, general principles in feeding infants, special feeding problems and nutritional requirements of toddlers (1-3years).

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UNIT II

- Childhood - pre-school and school going growth and development, nutritional requirements, factors influencing food intake and nutritional concerns.

UNIT III

- Adolescence - growth and development, physiologic changes, nutritional requirements and situations with special needs. Eating disorder.

UNIT IV

- Adulthood- nutrient needs, modifications for different activity levels and different income groups. Complication of adulthood.
- Geriatrics -Nutrient requirements during old age, process of aging and nutrition related problems of old Age.

UNIT V

- Pregnancy- physiological stages of pregnancy, effect of nutritional status on pregnancy outcome, nutritional requirements, guide for eating during pregnancy, complications of pregnancy and their dietary implications.
- Lactation - physiology and nutritional requirements.

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Suggested readings:

- Shubhangini A Joshi (2021). *Nutrition and Dietetics*. Tata Mc Graw-Hill Publishing Company Limited. New Delhi.
- Chadha R and Mathur P eds. (2015). *Nutrition : A Lifecycle Approach*. Orient Blackswan, New Delhi.
- Khanna K, Gupta S, Seth R, Passi SJ, Mahna R, Puri S (2013). *Textbook of Nutrition and Dietetics*. Delhi: Elite Publishing House Pvt. Ltd.
- Antia, F.P. (2005). *Clinical Nutrition and Dietetics*. Oxford University Press. Delhi.
- Srilakshmi, B. (2005). *Dietetics*. New Age International Limited Publishers. New Delhi Mahan,
- L.K., Arlin, M.T. (2000). *Krause's Food, Nutrition and Diet therapy*, W.B. Saunders Company. London.

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FSN 302(P)	Major	Nutrition in the Life cycle	0	0	0	30	20	0	0	4	2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

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CO4: learn about nutritional requirements of adults and old age.

Practical's

- Planning and preparing diet for pregnancy.
- Planning and preparing diet for lactation.
- Planning and preparing a diet for children.
- Planning and preparing diet for adolescents.
- Planning and preparing diet for adult.
- Planning and preparing diet for elderly.

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FSN 304	Minor II	Nutritional Biochemistry	60	20	20	0	0	3	0	0	3

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

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Course Educational Objectives (CEOs): The students will -

CEO1: ingrain the understanding regarding macronutrients and their metabolism.

CEO2: comprehend about different pathways for macronutrients.

Course Outcomes (COs): Student should be able to -

CO1: develop profound knowledge regarding macronutrients in respect of biochemistry.

CO2: comprehend carbohydrate metabolism by learning various cycles.

CO3: enhance knowledge about lipids.

CO4: learn protein metabolism.

CO5: understand nucleic acid and nucleoproteins.

Syllabus

UNIT I

Definition, classification, structure, functions, digestion and absorption.

- Carbohydrates,
- Proteins and
- Lipids

UNIT II

Carbohydrate metabolism:

- Glycolysis, TCA cycle & energy generation, HMP Shunt pathway, gluconeogenesis, glycogenesis, glycogenolysis.
- Blood sugar regulation.
- Chemistry of starch, glycogen, cellulose, mucilage and crude fibre.

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UNIT III

Lipids:

- Oxidation and biosynthesis of fatty acids (saturated & mono-unsaturated).
- Synthesis and utilization of ketone bodies, Ketosis, fatty livers.
- role of essential Fatty acids (Omega 3 and Omega 6 Fatty acid).

UNIT IV

Metabolism of proteins:

- Biologically important peptides and their role in the regulation of amino acid metabolism.
- Trans-amination, deamination, and decarboxylation.
- Amino acid sequence of proteins.
- Purines, Pyrimidines and Nucleic acids: introduction, chemistry, and its biological importance

UNIT V

Vitamins and Minerals

- Fat soluble vitamins (Structure and biochemical role) – A and D
- Water soluble vitamins (Structure and biochemical role) – B1, B2, niacin, pyridoxine, folic acid, B12 and C
- Biological role and occurrence of inorganic elements – iron, calcium, phosphorous, iodine, selenium and zinc.

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- Nayak, S. (2021). *Handbook of Biochemistry and Nutrition*. India: Jaypee Brothers Medical Publishers.
- Robbins, D. (2022). *Nutritional Biochemistry and Metabolism*. Wilmington: Kaufman Press.
- Satyanarayana, U., & Chakrapani, U. (2021). *Biochemistry*. Kolkata. Books and Allied (P) Ltd Elsevier.
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- Murray, R. K. 1. (2012). *Harper's illustrated biochemistry* (28th ed.). New York: McGraw-Hill.

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Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

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Course Educational Objectives (CEOs): The students will –

COE1: able to understand the basic characteristics of microorganisms, their growth requirement and describe sources of microorganisms in foods.

COE2: Able to classify and describe food borne diseases and use this information while reporting and investigating an outbreak in the region.

Course Outcomes (COs): Student should be able to -

CO1: develop profound knowledge regarding microorganisms, their action on food and human body.

CO2: comprehend about differentiate between pathogenic and non-pathogenic microorganisms.

CO3: enhance knowledge about microorganisms' growth.

CO4: learn about food hazards and contaminants protein metabolism.

CO5: understand food borne diseases.

Syllabus

UNIT I

- Introduction of microbiology, history and significance of food microbiology.
- Classification of microbes, Structure of microbes,
- Metabolism of microbes.

UNIT II: Source of microbes:

- Air,
- Water and
- Soil.

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UNIT III

- Growth of Microorganisms in food.
- Factors affecting growth of microorganisms. Oxygen, Temperature, Moisture requirement the concept of water activity, Osmotic pressure, Hydrogen ion concentration, Light

UNIT IV

- Food Hazards and Contaminants-Food Hazards-Physical hazards, biological hazards, Chemical hazards, Microbial hazards.
- Food Contamination-Introduction to Food contamination, naturally occurring toxicants (toxicants in animal foods, toxicants in plant foods, antinutritional factors in foods), Environmental contaminants, biological contaminants, pesticide residues, veterinary drug residues, heavy metals.

UNIT V

- Food borne Diseases: Introduction of Food Borne diseases, Diseases, and their classification.
- Food borne intoxications or poisonings.
- Food borne infections- viral infections, parasitic infestations.
- Control of food borne illnesses.

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Reference Books:

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- S. Roday (2011). *Food Sanitation and Hygiene*. Tata Mc graw Hill Publishing co Ltd, Delhi Food microbiology by V. Ramesh, MJP publishing.
- William Frazier (2008). *Food Microbiology (4th ed.)*. The Mc Graw Hill Co Inc., New York
- Jay JM (2004). *Modern Food Microbiology (7th ed.)*. CBS Publishers and Distributors Springer Publications, Delhi
- Banwart GJ (1998). *Basic Food Microbiology (2nd ed.)*. CBS Publishers and Distributors, New Delhi

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