



# 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 (2023 - 2026)

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:

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- 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

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

**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

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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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### 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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- Pelczar MJ, Chan ECS and Krieg NR (2011) *Microbiology (5th ed.)*. New Delhi : Tata McGraw Hill Publishing Co Ltd
- 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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