



# Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

## Shri Vaishnav Institute of Home Science

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

DUAL DEGREE PROGRAM (B.Sc. -M.Sc. Food and Nutrition)

### B.Sc. Food and Nutrition Sem II (2021-2024)

Subject Code	Category	Subject Name	Teaching and Evaluation Scheme								
			Theory			Practical		L	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment	End Sem University Exam	Teachers Assessment				
FSN201	CC	Food Science II	60	20	20	0	0	3	0	0	3

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

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

#### Course Educational Objectives (CEOs): The Student will:

CEO1: distinguish different food groups, their classifications, nutritive value and importance in daily diet.

CEO2: gain knowledge about enzymes presents in different food groups and their use in food processing.

CEO3: understand storage, spoilage and effective methods of cooking of different food groups

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

CO1: gain knowledge about macro and micronutrient and super food as spices and condiments.

CO2: utilized the knowledge about nutritional importance of Fats, Proteins. mineral and vitamins in planning and counseling.

CO3: familiarize with sources and classification of different food groups.

CO4: evaluate the quality of the food by understanding factors affecting quality.

CO5: learn the important facts associated with storage and cooking of food groups.

CO6: acquainted with enzymes and their role in food and its processing

#### Syllabus

##### UNIT I

Fats and Oils: Types and sources (animal and vegetable), Processing, uses in different preparations, storage and nutritional aspects

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### UNIT II

Meat, fish and poultry - Classification, structure and composition, identification of meat cuts, factors affecting quality, tenderization of meat, cooking methods, gelatin –composition, properties and uses.

Eggs: Production, grade, quality selection, storage and spoilage, nutritional aspects and use in different preparations.

### UNIT III

Fruits and Vegetables: classification, names and sources of pigments, effects of cooking, canning, freezing, enzymes and flavor components in vegetables and fruits, nutritional loss during cooking, enzymatic browning.

### UNIT IV

Condiments and spices: composition and importance of spices.

Beverages: Tea, Coffee, Chocolate and Cocoa Powder-Processing, nutritional aspects, other beverages-Aerated beverages and juices.

### UNIT V

Enzymes in food: introduction, general characteristics, specificity of enzymes, sources of enzymes, Enzyme technology and immobilized enzymes, Application of enzymes in food processing.

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#### Text Books:

- Mudambi S R(1985).Fundamentals of Foods &Nutrition, Wiley Eastern Ltd., New Delhi.
- B. Srilakshmi (2017), Nutrition Science. 6th Multicolor Ed. New Age International Publishers.
- Manay N. S. O. (2001). Food: facts and principles. New Age International.
- Potter, N. N., & Hotchkiss, J. H. (2012). Food science. Springer Science & Business Media.

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FSN 202	CC	Human Physiology II	60	20	20	0	0	3	0	0	3

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

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

#### Course Educational Objectives (CEOs): The Student will:

CEO1: gain knowledge physiology of different important systems of the body.

CEO 2: discriminate cells and structures on the basis of morphology.

CEO3: acquired knowledge about immunity and immunology.

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

CO1: learn in detail about structures of body systems and their importance.

CO2: gain knowledge about specific functions of the different systems of the body.

CO3: gain knowledge about collective functions of the different systems of the body.

CO4: understand immunity concept and processing.

### Syllabus

#### UNIT I

Excretory system: Structure and function of skin, regulation of temperature of the body, Structure and functions of kidney in special reference to nephron, Physiology of urine formation.

#### UNIT II

Reproductive system: Structure and functions of gonads, conception menstrual cycle, Brief idea of pregnancy, parturition, lactation and menopause. Brief concept on spermatogenesis and oogenesis process.

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### UNIT III

Nervous System: Concept on sympathetic and parasympathetic nervous system, Brief anatomy and functions of cerebrum, cerebellum, hypothalamus and neuron, Concept on synapse and synaptic transmission, Reflexes, Special senses.

### UNIT IV

Endocrine system: Structure and functions of pituitary, thyroid, parathyroid and adrenal gland, Structure and functions of pancreas.

### UNIT V

Immunology: General principles, types of IG, general structure of Ig, T-Cells, B-Cells, Structure & function.

Cancer: Basic principles, DNA duplication, replication, genetic mode of transmission Nutritional Benefits to reduce the risk factors.

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FSN 202(P)	SE C	Human Physiology II	0	0	0	30	20		0	4	2

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

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

#### FSN 202 (P): Human Physiology

- Harvard Step test
- Identification with reason sofhistological slides (Lung, Liver, Kidney, Smallintestine).
- Stomach, Thyroid, Adrenal, Pancreas, Testis, Ovary and Muscle of mammals).
- Qualitative determination of glucoseacetone in urine.
- Blood film staining and identification of different types of blood cells.

#### Text Books:

- Chaterzee (1988) Human Physiology, Calcutta, Medicalagency.
- Pears E.C. (1988), Anatomy and Physiology fornurses, Delhi oxford University, Press.
- GytonA.C.,HallJ.E.(1996)Textbook of medical physiology, 9thEd, prism Books (Pvt.) ltd.Bangalore.

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FSN203	CC	Basic Microbiology	60	20	20	0	0	3	0	0	3

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

#### Course Educational Objectives (CEOs): The Student will:

CEO1: understand the basic characteristics of microorganisms and factors affecting their growth

CEO2: gain knowledge about food sources of microorganisms.

CEO3: acquainted with food hazards, food contamination and food borne diseases.

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

CO1: understand the basic characteristics of microorganisms, their growth requirement and describe sources of microorganisms in foods.

CO2: distinguish pathogenic and non-pathogenic microorganisms.

CO3: familiarize with food hazards and contamination.

CO4: classify and describe food borne diseases and its correlation with an outbreak in the region.

#### Syllabus

##### UNIT I

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

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

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### UNIT II

Source of microbes: microbiology of air, water and soil.

### UNIT III

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

### UNIT IV

Food Hazards: physical hazards, biological hazards, chemical hazards, microbial hazards.

Food Contamination: Naturally occurring toxicants (toxicants in animal foods, toxicants in plant foods, anti nutritional 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, Food borne toxic infections, Viral infections, Parasitic infestations and Control of food borne illnesses.

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

#### Text Books:

- Pelzar MJ, Chan ECS and Krieg NR (2011) Microbiology (5th ed.), New Delhi : Tata McGraw Hill Publishing Co. Ltd
- Jay JM(2004).Modern Food Microbiology (7thed.). CBS Publishers and Distributors Springer Publications, Delhi
- Banwart GJ (1998).Basic Food Microbiology (2nded.).CBSPublishersandDistributors, New Delhi.
- William Frazier (2008). Food Microbiology (4thed.). The Mc Graw Hill CoInc.,NewYork
- S.Roday (2011)FoodSanitationandHygeine,TataMcgrawHillPublishingcoLtd, Delhi Food microbiology by V.Ramesh, MJPublishing.

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FSN 204	AECC	Basic Chemistry	60	20	20	0	0	3	0	0	3

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

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

#### Course Educational Objectives (CEOs): The Student will:

CEO1: proficient in various chemistry concepts, definitions and classifications.

CEO2: gain knowledge about buffer system, biophysical phenomenon and spectrophotometric techniques.

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

CO1: familiarize with classification of state, chemical- symbols formulae equations, atom and its characteristics

CO2: acquainted with various definitions chemical bonds and periodic classification of elements

CO3: gain knowledge about buffer system and various biophysical phenomenon and spectrophotometric Techniques

#### Syllabus

##### UNIT I

Basic Aspects in Chemistry: Classification of matter, elements, compounds and mixtures. Chemical – symbols, formulae and equations. Atomic Structure, Valency and Classification of Elements, Concept of atom and atomic structure, atomic weight, molecular weight and equivalent weight, Various types of chemical bonds and periodic classification of elements.

##### UNIT II

Definitions of commonly used terms such as matter, mass, substance, element, compound, mixture, solution, Atomic weight, Molecular weight, Molarity, Normality, Molality, Mol fraction, Millimole, Milliequivalent, Angstrom unit.

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Buffer systems – Acids, Bases, pH, Buffer, Colloids & its application, Acid & Alkaline form-ing Foods.

#### UNITIV

Biophysical Phenomenon: Viscosity, Surface tension, Adsorption, Enzyme reaction–effect of temperature, time and pH, Diffusion, Osmosis, Absorption.

#### UNIT V

Spectrophotometric Techniques: Introduction, Beer Lambert's law, Colorimetry and spectro-photometry, Atomic absorption spectroscopy and Flamephotometry.

#### Text Books:

- Bahl B.S.(1994).Textbook of Organic Chemistry., Chand&Sons,NewDelhi
- Soni P.L.(1994).Fundamental Organic Chemistry.,Chand&Sons,NewDelhi
- Srivastava V.K. and Srivastava K.K. (1987) Introduction to Chromatography – Theory and Practice.S.Chand &Co.,New Delhi.
- Raghuramulu N.,Madhavan N.and Kalyanasundaram S.(1983).,A Manual of Laboratory Techniques.NIN.
- Srivastava A.K.and Jain P.C.(1986) Chemical Analysis: An Instrumental S.Chand Company Ltd.,New Delhi.

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FSN 201(P)	SE C	Basic Instrumentation Practical	0	0	0	30	20	0	0	4	2

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#### Course Educational Objectives (CEOs): The Students will:

CEO1: acquired knowledge of basic principles and techniques of instrumentation in food and nutrition.

CEO2: proficient in handling types of instruments used for food testing.

#### Course Outcomes (COs): students will be able to:

CO1: handle basic instruments and perform experiments

CO2: execute accurate sampling and to avoid any error during experiments.

CO3: estimate pH of different solutions

#### List of Practical:

- Titration method, e.g. to find acidity of a fruit juice.
- To study the use of different laboratory glassware.
- To study the use of different thermometers-laboratory & clinical
- To study the working of equipment which can be used in food analysis e.g., oven, muffle furnace, centrifuge, pH meter, refractometer, texture analyzer, Kjeld Hal, Soxhlet, crude fiber etc.
- To study the use of different balances- common balance, electrical, electronic, scales
- Use of pH meter to find pH of different solutions.
- To study the use of UV-VIS spectrophotometer.

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- Srivastava AK and Jain PC (1986) Chemical Analysis: An Instrumental Approach (2nd ed.). S. Chand Company Ltd., New Delhi.

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Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

#### **Chairperson**

Faculty of Studies  
Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

#### **Controller of Examination**

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore

#### **Joint Registrar**

Shri Vaishnav Vidyapeeth  
Vishwavidyalaya, Indore