



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

DUAL DEGREE PROGRAM (B.Sc- M.Sc. Food and Nutrition) 2020-2023

B. Sc. Food and Nutrition Sem III

Subject Code	Category	Subject Name	Teaching and Evaluation Scheme								
			Theory			Practical		Th	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment	End Sem University Exam	Teachers Assessment				
FSN 301	III	Food Preservation	60	20	20	0	0	4	0	0	4

Abbreviation		Teacher Assessment (Theory) based on following components: Quiz / Assignment / Project / Participation in class (Given that no component shall exceed 10 Marks).
Th	Theory	
T	Tutorial	Teacher Assessment (Practical) based on following components: Viva/ File/ Participation in Lab work (Given that no component shall exceed 50% of Marks).
P	Practical	

Course Objective

- To enable the students to acquire knowledge pertaining to principles and methods of preserving foods.
- Develop ability in preparing and preserving various foods by household methods.

Course Outcome

Students are acquainted with principles of different techniques used in processing and preservation of foods.

FSN 301: Food Preservation

UNIT I: Sources of food, scope and benefit of industrial food preservation, perishable, non-perishable food, causes of food spoilage.

UNIT II: Thermal processing methods of preservation: Principle and method of: Canning, blanching, pasteurization, sterilization, evaporation.
Use of low temperature: Principle and effect on quality. Chilling, cold storage, freezing.

UNIT III: Preservation by drying, dehydration and concentration: Principle, Methods and effect on quality.

Preservation by radiation: Definition, Methods of Irradiation, Direct & Indirect effect, measurement of radiation dose, dose distribution, effect on microorganisms.



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

DUAL DEGREE PROGRAM (B.Sc- M.Sc. Food and Nutrition) 2020-2023

B. Sc. Food and Nutrition Sem III

UNIT IV: Preservation of foods by Preservatives: chemicals, antioxidants, mould inhibitors, antibodies, acidulates etc.

Preservation by salt & sugar: Principle, Method and effect on food quality.

Preservation by fermentation: Definition, Advantages, disadvantages.

UNIT V: Recent methods in preservation: Pulsed electric field processing, High pressure processing, processing using ultrasound, dielectric, Ohmic and infrared heating.

Subject Code	Category	Subject Name	Teaching and Evaluation Scheme								
			Theory			Practical		Th	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment	End Sem University Exam	Teachers Assessment				
FSNP 305	III	Food Preservation Practical	0	0	0	30	20	0	0	4	2

FSNP 305 Practicals:

- Introduction to food laboratory.
- To study different types of blanching of fruits and vegetables.
- Preservation of food by canning.
- To perform cut out analysis of caned product.
- Preservation of food by high concentration of sugar i.e. jam.
- Preservation of food by high concentration of salt/acid i.e. pickle.
- Preservation of food by addition of chemicals i.e. tomato ketchup.
- Preservation of fruits & vegetables by freezing.
- Preservation of milk by pasteurization and sterilization.

Reference Books:

- Food Processing Technology by P.J.Fellows, Woodhead publishing ltd.
- Food Science by N.N. Potter, CBS publishing.
- Physical principles of Food Preservation. Vol. II by M. Karel, O.R. Fenema and D.B. Lurd, Maroel, Dekker Inc. New York.
- The technology of food preservation by N.W. Desrosier and J.N. Desrosier, CBS publishing.



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

DUAL DEGREE PROGRAM (B.Sc- M.Sc. Food and Nutrition) 2020-2023

B. Sc. Food and Nutrition Sem III

Subject Code	Category	Subject Name	Teaching and Evaluation Scheme								
			Theory			Practical		Th	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment	End Sem University Exam	Teachers Assessment				
FSN 302	III	Hygiene and Public Health	60	20	20	0	0	4	0	0	4

Abbreviation		Teacher Assessment (Theory) based on following components: Quiz / Assignment / Project / Participation in class (Given that no component shall exceed 10 Marks).
Th	Theory	
T	Tutorial	Teacher Assessment (Practical) based on following components: Viva/ File/ Participation in Lab work (Given that no component shall exceed 50% of Marks).
P	Practical	

Course Objective

To enable students acquainted with knowledge regarding concept of hygiene and public health.

Course Outcome

Knowledge of importance of immunization and public health hazard.

FSN 302: Hygiene and Public Health

UNIT I: Health and Dimension of Health: Positive health Versus Absence of disease.

Secondary Sources of Community Health data: Sources of relevant vital statistics of infant, child & maternal mortality rates

UNIT II: Immunization: Importance and Immunization schedule for children, adults and for foreign travellers.

UNIT III: Community Water and Waste Management: Importance of water to the community, etiology and effects of toxic agents, water borne infectious agents, sources of water, safe drinking water, potable water, waste and waste disposal, sewage disposal and treatment, solid waste and disposal, liquid waste disposal.

UNIT IV: Concept of Epidemiology: Study of the epidemiologic approach-determinants of disease



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

DUAL DEGREE PROGRAM (B.Sc- M.Sc. Food and Nutrition) 2020-2023

B. Sc. Food and Nutrition Sem III

preventive & social means.

Communicable and infective disease control: Nature of communicable and infectious diseases, infection, contamination, disinfections, decontamination, transmission-direct & indirect, vector borne disease infecting organisms and positive agents, environmental agents and epidemiological principles of disease control.

UNIT V: Public health hazards due to contaminated foods: Food borne infections and intoxications: symptoms, mode of transmission and methods of prevention, investigation and detection of food borne disease out-break.

Reference Books:

- Hygiene and preventive medicine – YashpalBedi
- Home Management and Hygeine – SweeraRehtan, Dinesh Pub.
- Textbook of Preventive & social medicine by Park & Park.
- Smith, G.W.: Preventive Medicine and public health. 2nd edition. McMillan Co. New York.
- SeshubabuVVR : Review in Community Medicine, 2nd Ed, Paras Medical Books Pvt Ltd.
- Mahajan BK, Roy RN , Saha I, Gupta, MC :Text book of Preventive and Social Medicine, 4th Ed. Japee Brothers.
- Vir SC : Public Health Nutrition in Developing Countries, Woodhead Publishing India.



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

DUAL DEGREE PROGRAM (B.Sc- M.Sc. Food and Nutrition) 2020-2023

B. Sc. Food and Nutrition Sem III

Subject Code	Category	Subject Name	Teaching and Evaluation Scheme								
			Theory			Practical		Th	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment	End Sem University Exam	Teachers Assessment				
FSN 303	III	Basic Nutritional Biochemistry	60	20	20	0	0	4	0	0	4

Abbreviation		Teacher Assessment (Theory) based on following components: Quiz / Assignment / Project / Participation in class (Given that no component shall exceed 10 Marks).
Th	Theory	
T	Tutorial	Teacher Assessment (Practical) based on following components: Viva/ File/ Participation in Lab work (Given that no component shall exceed 50% of Marks).
P	Practical	

Course Objectives

- To enable students to understand the characteristics of nutritional biochemistry in foods.
- To obtain an insight into the chemistry of major nutrients and physiologically important compounds.

Course Outcome

- To apply the knowledge in the field of human nutrition and dietetics.

FSN: 303 Basic Nutritional Biochemistry

UNIT I: Definition, classification, structure, properties of carbohydrates, proteins and lipids. Functions, Digestion and absorption of carbohydrates, proteins and lipids.

UNIT II: Metabolism of Carbohydrates and Lipids-Carbohydrate Metabolism, Glycolysis, TCA cycle & energy generation, HMP Shunt pathway, gluconeogenesis, glycogenesis, glycogenolysis, blood sugar regulation.

UNIT III: Lipids: Oxidation and biosynthesis of fatty acids (saturated & mono-unsaturated), Synthesis and utilization of ketone bodies, Ketosis, fatty livers, Essential Fatty acids, Cholesterol and its clinical significance.

UNIT IV: Metabolism of Amino acids and Proteins- Biologically important peptides and their role in the regulation of amino acid metabolism, Trans-amination, deamination and decarboxylation,



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

DUAL DEGREE PROGRAM (B.Sc- M.Sc. Food and Nutrition) 2020-2023

B. Sc. Food and Nutrition Sem III

Urea cycle, Effect of nitrogen free diet on urea cycle enzymes, Plasma proteins, Protein biosynthesis – Translation, transcription and post-translation events.

UNIT V: Biochemical Aspects of Purines, Pyrimidines and Nucleic Acids, Chemistry and biological importance of nucleic acids, Nucleoproteins, Metabolism of purines, Metabolism of pyrimidines.

Reference Books:

- Murray RK, Granner DK, Mayes PA and Rodwell VW (1990) Harper's Biochemistry (22nd ed), New Jersey : Prentice Hall International Inc
- Conn EE and Stmpf PK (1994) Outlines of Biochemistry (4th ed.), New Delhi : NewAge International Ltd.
- Weil JH (1990) General Biochemistry (6th ed.), New Delhi : Wiley Eastern Ltd.
- Satyanarayana U and Chakrapani U (2010). Biochemistry. Books and Allied (P) Ltd., Kolkata



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

DUAL DEGREE PROGRAM (B.Sc- M.Sc. Food and Nutrition) 2020-2023

B. Sc. Food and Nutrition Sem III

Subject Code	Category	Subject Name	Teaching and Evaluation Scheme								
			Theory			Practical		Th	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment	End Sem University Exam	Teachers Assessment				
FSN 304	III	Introduction to Food Packaging	60	20	20	0	0	4	0	0	4

Abbreviation		Teacher Assessment (Theory) based on following components: Quiz / Assignment / Project / Participation in class (Given that no component shall exceed 10 Marks).
Th	Theory	
T	Tutorial	Teacher Assessment (Practical) based on following components: Viva/ File/ Participation in Lab work (Given that no component shall exceed 50% of Marks).
P	Practical	

Course Objective

- To provide knowledge of basic concepts and significance of packaging and different forms of packaging.
- To introduce students to storage study concept.

Course Outcome

- Should be able to recognize different packaging material.
- Knowledge of purpose of packaging.

FSN 304: Introduction to Food Packaging

UNIT I: Packaging–Concepts, definition, Significance, classification. Deteriorative changes in food and packaging methods for prevention.

UNIT II: Factors determining the packaging requirements of various foods, Packaging of perishable and processed foods.

UNIT III: Primary packaging media – Properties and application of Paper, paper boards, metals, plastics, glass. Food containers-rigid containers and flexible packaging materials.

UNIT IV: Application of different packaging materials in food industry. eg. bags, pouches,



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

DUAL DEGREE PROGRAM (B.Sc- M.Sc. Food and Nutrition) 2020-2023

B. Sc. Food and Nutrition Sem III

wrappers, cartons, films etc.

UNIT V: Advancements in packaging: Biodegradable packaging, Edible packaging, Active packaging, Modified atmosphere packaging, Controlled, Vacuum packaging, Aseptic packaging.

Subject Code	Category	Subject Name	Teaching and Evaluation Scheme								
			Theory			Practical		Th	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment	End Sem University Exam	Teachers Assessment				
FSNP 306	III	Food Packaging Practical	0	0	0	30	20	0	0	4	2

FSNP 306 : Practical

- Familiarization of different types of packaging materials.
- To perform vacuum packaging of food sample and carry out its storage study.
- To perform modified atmospheric packaging of food sample and carry out its storage study.
- Cut out analysis of canned food
- Visit to packaging unit of food plant.

Reference Books:

- Robertson, G.L. "Food Packaging: Principles and Practice". 2nd Edition. Taylor & Francis, 2006.
- Ahvenainen, Raija. "Novel Food Packaging Techniques". Wood Head Publishing, 2003.
- Mathlouthi, M. "Food packaging and Preservation". Aspen Publications, 1999.
- Paine, F.A. and Paine, H.Y. 1983. A Handbook of Food Packaging. Leonard Hill, Glasgow, UK.