



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

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

B. Sc. Food and Nutrition Sem IV

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 401	IV	Basic Food Chemistry	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 of basic food constituents.
- Acquire knowledge about chemistry of food constituents.

Course Outcome

- Students gained the basic knowledge of food chemistry essential to understand Food Science and Nutrition.

FSN 401: Basic Food Chemistry

UNIT I: Food Constituents: Proximate composition of foods.

Carbohydrate: Introduction, Definition nomenclature, classification. General properties of sugar (physical and chemical) identification of common monosaccharides, disaccharides and polysaccharides, determination of the amount of reducing and non – reducing sugars. Chemistry of starch, glycogen, cellulose, gums and mucilage, crude fibre.

UNIT II: Protein: Physical and Chemical properties of amino acids. Classification of proteins, amino acid sequence in proteins, pleated sheet and helix structure of protein tertiary structure and conformation of proteins. Physical and chemical properties of proteins, molecular weight of proteins, protein denaturation.



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UNIT III: Lipids: Classification of lipids, fatty acid, soap and detergent, essential fatty acids, fats and oils saponification number, acid numbers, iodine value, acetyl value, Reichart – Meissl number, Oxidative and hydrolytic rancidity, reversion.

UNIT IV: Vitamins & minerals: Occurrence, chemistry, food sources, deficiency, loss during storage and processing of foods

UNIT V: Natural Pigments and Flavouring Agents: Chlorophyll, carotenoids, anthocyanins, anthoxanthins, flavonoids, tannins etc. Natural flavour constituents.

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FSNP 405	IV	Basic Food Chemistry Practical	0	0	0	30	20	0	0	4	2

FSNP 405 - Practicals:

- Qualitative test for proteins and fats/oils and their identification in unknown mixtures - Free fatty acid, Peroxide value, Saponification value, RM Number, TBA test, Iodine value.
- Quantitative estimation of proteins by Lowry and Bradford methods
- Estimation of vitamins - ascorbic acid.
- Estimation of ammonia in water.
- Estimation of plant pigments - carotenoids, flavonoids
- To determine alcohol soluble and insoluble solids in peas.
- Effect of heat on proteins.
- Determination of smoking points of fat and oils.

Reference Books:

- Belitz HD.1999. Food Chemistry. Springer Verlag.
- DeMan JM. 1976. Principles of Food Chemistry. AVI.
- Fennema OR.1996. Food Chemistry. Marcel Dekker.
- Meyer LH. 1987. Food Chemistry. CBS



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FSN 402	IV	Community Nutrition	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).
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Course Objective

To enable students to tailor individual and population food patterns according to updated scientific knowledge, in a certain region with a final aim of health promotion.

Course Outcome

Understanding of nutrition that focuses on the promotion of good health and the primary prevention of diet-related illness.

FSN 402: Community Nutrition

UNIT I: Concept of Community, types of Community, Factors affecting health of the Community. Nutritional Assessment and Surveillance: Meaning, need, objectives and importance.

UNIT II: Diet survey: Need and importance, methods of dietary survey, Interpretation - concept of consumption unit, individual and total distribution of food in family, adequacy of diet in respect to RDA, concept of family food security.

UNIT III: Clinical Signs: Need & Importance's, identifying signs of PEM, vitamin A deficiency and iodine deficiency, Interpretation of descriptive list of clinical signs.

UNIT IV: Nutritional anthropometry: Need and importance, standard for reference, techniques of measuring height, weight, head, chest and arm circumference, interpretation of these measurements.



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Use of growth chart.

UNIT V: International, national, regional agencies and organizations. Nutritional intervention programmes to combat malnutrition.

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FSNP 406	IV	Community Nutrition Practical	0	0	0	30	20	0	0	4	2

FSNP 406 Practicals:

- Anthropometric Measurement of infant - Length, weight, circumference of chest, mid-upper arm circumference, precautions to be taken.
- Comparison with norms and interpretation of the nutritional assessment data and its significance. Weight for age, height for age, weight for height, body Mass Index (BMI) ,Waist - Hip Ratio (WHR). Skin fold thickness.
- Growth charts - plotting of growth charts, growth monitoring and promotion.
- Clinical assessment and signs of nutrient deficiencies specially PEM (Kwashiorkor,marasmus) I vitamin A deficiencies, Anaemia, Rickets, B-Complex deficiencies.
- Estimation of food and nutrient intake: Household food consumption data, adult consumption unit, 24 hours dietary recall 24 hours record, Weighment method, food diaries, food frequency data, use of each of the above, information available through each individual collection of data, estimation of intakes.

Reference Books:

- King MH, King PMA, Morley D and AP Burgess(2015):Nutrition for Developing Countries, ELBS Oxford University Press.
- Passmore R and Eastwood MA (1986): Davidson and Passmore's Human Nutrition &Dietetics , 8th Revised Ed. Churchill Livingstone.
- Seshubabu VVR (2011): Review in Community Medicine, 2nd Ed, Paras Medical Books PvtLtd.



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- Mahajan BK, Roy RN , Saha I, Gupta, MC (2013):Text book of Preventive and Social Medicine, 4th Ed. Japee Brothers.
- Vir SC (2011): Public Health Nutrition in Developing Countries, Woodhead Publishing India.
- Bamji MS, Krishnaswamy K and Brahmam GNV(2017): Textbook of Human Nutrition , 4thEd. Oxford & IBH Publishing Co. Pvt. Ltd.



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FSN 403	IV	Food Quality Control	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).
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Course Objectives

- To orient students with the basic principles of quality control and importance of good personal hygiene and ensuring food safety.
- To learn about different aspects of food quality.

Course Outcome

- Knowledge of activities for ensuring quality in products by identifying defects in the actual products produced.
- Learning process that aims to identify (and correct) defects in finished products.

FSN: 403 Food Quality Control

UNIT I: Quality Control Concepts as Applied to the Food Industry - General concepts of quality and quality control, Major quality control functions

UNIT II: Quality Assurance and Total Quality Control - Quality assurance from farm to table, GHP, GMP and GAP, SOP, Methods of evaluation and control of the various aspects of quality of raw materials, Manufacturing process and testing of finished products.

UNIT III: Concept of quality attributes- physical, chemical, nutritional, microbial, and sensory; their measurement and evaluation.



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UNIT IV: Colour: Importance and need of colour determination, methods of colour determination with Hunter Colour lab, CIE system and their applications.

UNIT V: Flavour: Importance of flavour, food flavours, factors affecting food product flavours, measurement of food flavours.

Texture: Food texture, Physical characteristics of food, working of texture measuring instruments such as Texture Analyser, Texture Profile Analysis (TPA).

Reference Books:

- Philip, A.C (2001) Reconceptualizing quality. New Age International, Publishers, Bangalore.
- Bhatia, R. and Ichhpujan, R. L (2004). Quality assurance in Microbiology. CBS Pub. New Delhi.
- Clifton M & Pomeranz Y. 1988. Food Analysis - Laboratory Experiments. AVI Publ.
- Gruenwedel DW & Whitaker JR. 1984. Food Analysis Principles and Techniques. Vol. I. Physical Characterization. Marcel Dekker.
- Nollet LML. 1986. Handbook of Food Analysis. Vol. I. Marcel Dekker.



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FSN 404	IV	Food Science III	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	
P	Practical	
		Teacher Assessment (Practical) based on following components: Viva/ File/ Participation in Lab work (Given that no component shall exceed 50% of Marks).

Course Objectives

- To impart knowledge pertaining unit operations, food safety and toxicology.
- To understand different aspects of sensory science and evaluation and their application

Course Outcomes

- Knowledge of basic unit operations involved in food industry as well as food toxins and labeling of food.
- Importance of sensory evaluation and adulteration in foods.

FSN 404: Food Science III

UNIT I: Operations in the food industry Common unit operations – Basic principles- Heat transfer , Fluid Flow, Material Handling, Cleaning, Separating, Peeling, Size reduction, Mixing, Forming etc.

UNIT II: Food Toxicology-Introduction and Importance of Food toxicology, Toxins in foods- Naturally occurring toxins in foods, seafood toxins, Toxins from processed foods – melamine, biogenic amines, acrylamide, Chemical Toxins- Pesticides, Heavy metals, Microbial Toxins.

UNIT III: Food labeling- Introduction and utility of food labels, Types of labeling, Nutrition facts labeling, Nutrition and Health claims, Nutrient profiling, Ingredients list – guidelines for listing of ingredients, additives, allergens, Logos and symbols – their significance, Regulations.



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UNIT IV: Sensory Evaluation of foods- Sensory Analysis: Definition, use of sensory analysis in product evaluation. Sensory Characteristics of Food Sense of Taste, Olfaction: Odour classification, Visual, auditory, tactile and other senses, Factors influencing sensory measurements. Taste Panels: Selecting panelists, environment for sensory evaluation, sample preparation, Presentation, score cards, and recording and reporting. Types of sensory tests.

UNIT V: Food adulteration: Definition, types of adulterants, common adulterants in different foods, effect of adulterant, methods of detection.

Reference Books:

- Manay, M. and Manay, S.N. (2014). Food Facts and Principles. New Age International (P) Limited, New Delhi.
- Mudambi S. (1997). Food Science. New Age International (P) Limited, New Delhi.
- Potter, N.N. (2007). Food Science. C.B.S Publishing, New Delhi, India
- Srilakshmi, B. (2015). Food Science. New Age International (P) Limited, New Delhi