



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Home Science

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

M. Sc Food and Nutrition Sem I (2024-2026)

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				
MFSN101	CC	Advanced Food Science	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 Students will:

CEO1: understand about composition and nutritive value of food.

CEO2: gain knowledge about food processing, shelf-life extension, reduction of toxins and enhancement in sensory quality of food.

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

CO1: increase food quality in day today's life by knowing various cooking methods heat effectivity on food and skill full in evaluation of food through senses.

CO2: developed profound understanding for nutrient storing and processing.

CO3: Familiarize with role of Food Additives in food preparation and food toxins.

CO4: acquainted with knowledge of food spoilage, food preservation and food adulteration.

Syllabus

UNIT I

- Introduction to Food Science: scope and development. Food preparation: Basic terminology of cooking methods, chemical, physio-chemical and microbiological effects of heat on food constituents.
- Sensory evaluation of food: Introduction and methods.

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UNIT II

- Effects of cooking, processing, and storage on nutrients in: Cereals, pulses, fruits, Vegetables, Milk and milk products, meat, fish and poultry, sugars and beverages.

UNIT III

- Role of Food Additives in food preparation: Antioxidants, coloring agents, Curing agents, Emulsifiers.
- Flavoring agents, Leavening agents, Nutrient supplements, Sweeteners. pH controllers and preservatives.

UNIT IV

- Food toxins: Naturally occurring toxins- Trypsin inhibitors, hemagglutinins, lathrogens, aflatoxins, saponins, cyanogen's, gossypol and glucosinolates etc.
- Food toxins: Chemical toxins, pesticides, insecticides, metallic, their residual and harmful effects, methods of removal.

UNIT V

- Food Preservation: Causes of food spoilage, principles of food preservation, and methods of food preservation.
- Food adulteration: definition, common adulterants in different foods.

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Suggested readings:

- Baba sahab Desai, B. (2019). *Handbook of Nutrition and Diet*. CRC Press. United States.
- Singh, A. (2019). *Advances in Food Science and Nutrition*. Agrotech Press. New Delhi.
- Srilakshmi, B. (2015). *Food Science*. New Age International Limited, New Delhi.
- Manay, M. and Manay, S.N. (2014). *Food Facts and Principles*. New Age International (P)Limited, New Delhi.
- Potter, N.N. (2007). *Food Science*. C.B.S Publishing, New Delhi, India
- Mudambi, S. (1997). *Food Science*. New Age International (P) Limited, New Delhi.

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MFSN102	CC	Advanced Human Nutrition	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 students will:

CEO1: learn about the various important nutrients required for maintaining human health and leading an active lifestyle.

CEO2: know the types, functions, and utilization of nutrients.

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

CO1: gain knowledge of energy components with recommendations according to lifescala.

CO2: develop profound understanding for Macro and Micronutrients.

CO3: utilize the gained knowledge of nutrients classification, functions, utilization and clinical implications in improving the quality of life.

Syllabus

UNIT I

- Energy Metabolism Components of energy expenditure, Current methodology for determining energy requirements, Current recommendations for energy intake of different age, sex groups.
- Disorders of energy metabolism: Obesity and under nutrition. Metabolic syndrome from Cardiology and endocrinology perspective.

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UNIT II

Carbohydrates

- Classification, digestion, absorption and utilization: Simple and Complex carbohydrates, Non-starch polysaccharides and fiber constituents and their role in Nutrition, Newer functional role of carbohydrates in human nutrition,
- Disorders related to carbohydrate metabolism, Polyols, Glycemic Index, Glycemic load and Satiety index, Clinical implications. Nutrition for Health and Fitness: Nutrition in eating disorders. Anorexia Nervosa and Bulimia

UNIT III

Lipids

- Classification, digestion, absorption, transport, A review Functions of essential fatty acids, and Long chain PUFA in human metabolism. Role of n3 and n6 fatty acids in health and disease, Hyperlipidemia and nutritional aspect, Phytochemicals & Plant sterols in human nutrition, Visible and invisible fats in diets, Human requirements of essential fatty acids.
- Assessment of Lipid status and recommendations for heart friendly diets.

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UNIT IV

Proteins

- Classification, digestion, absorption and transport. Metabolism of proteins – Role of liver and muscles, The concept of nitrogen balance, the concept of obligatory nitrogen losses and their relevance to protein requirement and human requirements for proteins.
- Current methodology for determining protein requirements and essential amino acid requirements. Concept of quality of protein and method for measuring it.

UNIT V

Vitamins and Minerals

- Fat Soluble Vitamins – A, D, E, K and Water Soluble Vitamins (Thiamine, Riboflavin, Niacin, Pyridoxine, Folic acid, Ascorbic acid, Biotin) Minerals (Calcium, Phosphorous, Iron, Copper, Zinc, Iodine) and Trace Minerals and electrolytes (Selenium, Chromium, sodium, Potassium).
- Assessment of vitamin and mineral status, Interaction with other nutrients, Toxicity and deficiency, and RDA 2020. Drug-nutrient interrelationships: Effects of drugs on nutrient absorption and utilization, effects of foods and nutrients on drug utilization.

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Suggested readings.

- Jatana, A. Daphnee, D. K. Haritha, S. Rohatgi, R. & Pandya Yeptho, K. (2022). *Apollo Clinical Nutrition Handbook*. Jaypee Publisher.
- Sohi, D. and Randhawa T. (2022). Textbook of Applied Nutrition & Dietetics. S. Vikas and Company
- Bamji, M. S. (2021). *Textbook of Human Nutrition*. CBS Publishers.
- Venkatraman, S. and Dandekar, P. S. (2021). *Nutrition and Biochemistry for Nurses*. Elsevier India
- Denis, M. M. and Robert E.C. (2018). *Advanced Human Nutrition*. Jones & Bartlett Learning.
- D Souza. and Pradhan, S.B.S. (2010). Handbook Of Applied Nutrition, Dietotherapy & Diet Management. D Publishers and Distributors Pvt Ltd.
- Wardlaw, G. (2010). *Contemporary Nutrition and Diet Therapy*. Benchmark publications.
- Shils, M. Olson, JA. Shike, M. Ross, AC. Cabellaro, B. and Cousins, RJ. (2006). *Nutrition Modern Health and Disease*. Lippincott, Williams and Wilkins publications.
- Shils. M.E. (2006). Modern Nutrition in Health and Disease. Lippincot, Williams & Williams, USA.
- Mahan, L.K. & Escott Stump, S. (2000). Krause's Food Nutrition and Diet Therapy. WB Saunders & Co. London
- Whitney, E.R and Rodney Roltes, S. (1996). *Under Standing Nutrition*. West Publishing Company, New York, USA.

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MFSN103	CC	Human Physiology	60	20	20	0	0	3	0	0	3

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Course Educational Objectives (CEOs): The Student will-

CEO1: acquired knowledge about the various physiological structures of the body.

CEO2: understand the functions and roles of various systems and organs in the body.

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

CO1: expand knowledge about cellular science.

CO2: develop profound knowledge about various systems and their responsibility in the body.

CO3: gain knowledge about vaccination, immunity and respiratory system.

Syllabus

UNIT I

- Physiological principles: Cell structure and function, body fluid compartments, transport mechanisms, homeostasis and feedback control systems

UNIT II

- General organization of the Nervous system: Sensory and motor nerves, major levels of nervous system function, Central and autonomic nervous systems, transmission of nerve impulse, synapse and neurotransmitters.

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UNIT III

- Digestion and absorption in the gastrointestinal tract: Digestion and absorption of carbohydrates, fats and proteins, gastrointestinal hormones.
- Blood: composition of blood, functions of blood constituents, homeostasis, blood transfusion and tissue transplant. Circulatory system: Pumping of heart, cardiac cycle, ECG and blood pressure.

UNIT IV

- The immune response: humoral and cell mediated. vaccination.
- Transport and exchange of respiratory gases (carbon-dioxide, oxygen and ammonia) and respiratory control.

UNIT V

- Elements of Reproductive physiology: Sex hormones. Breast milk production and its role in contraception. Principles of Endocrinology: Chemical control of metabolism, adrenaline, thyroid hormones.
- Control of water and electrolyte metabolism, calcium metabolism. Prostaglandins, endorphins and enkephalins. Renin-angiotensin system.

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- Hall, J. (2020). *Textbook of Medical Physiology, International Edition*. Elsevier.
- Stuart I. F., Rompolski, K. (2018). *Human Physiology*. McGraw Hill.
- Jain, A. K. (2008). *Human Physiology in a nutshell*. Arichal Publishing Company, Sirmour (H.P).
- Chaudhury, K.C (2004). *Concise Medical Physiology*. New Central Book Publishing, Calcutta.
- Ganong, W.F. (2001). *Review of Medical Physiology*. Tata McGraw-Hill publishing company. New Delhi.

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MFSN104	Major	Advanced Meal Planning	60	20	20	0	0	3	0	0	3

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Course Educational Objectives (CEOs): The students will

CEO1: discuss key considerations in developing and managing a foodservice establishment menu.

CEO2: illustrate the importance of accurate and complete product descriptions as it relates to menu design.

CEO3: examine the impact of nutrition and nutrition standards as it relates to menu preparation.

CEO4: exploration of various menus and foodservice establishments.

CEO5: identify the relationship between the menu and marketing.

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

CO1: plan and produce various types of menus for varied purposes.

CO2: identify key aspects of menu design.

CO3: appraise a menu for any changes based on the requirement.

CO4: develop the ability to plan nutritious, appealing food combinations and menu patterns that meet the requirements.

CO5: comprehend the ethics of food purchasing with especial emphasis on buying and storing.

CO6: understand various cooking methods, standardization of recipes and principles of various cookerries.

Syllabus

UNIT I

- Meal and Menu Planning: definitions considerations, factors affecting meal planning patterns and types, Mechanics of menu planning, menu format, menu design and display, computers in menu planning. Understand Food Exchange System. Recommended Dietary Allowances ICMR 2022.

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UNIT II

- Planning for food services in hospitals: physical plant, its location, floor plans, space allowance, kitchen units, storage unit, baking, dishwashing and servicing unit.
- Food Purchasing: importance, planning, management decisions. Buying methods and specifications, regulatory measures, ethics in buying. Food Receiving and Storage: mechanism of receiving, storage areas and issuing supplies

UNIT III

- Quantity Food Production: application of cookery principles for quantity food production for various food groups. Methods of cooking: Moist, Dry heat (using air as a medium) and using fat as a medium. Microwave cooking. Standardization of recipes.
- Principles of cookery- Meat, vegetable and fruit, cereal and cereal products, baked goods and desserts, salads and salad dressing preparations.

UNIT IV

- Food Service systems: Introductory concepts and development. Types of food services: Hospital, hostel, cafeterias and community kitchens.
- Equipment requirement: For food preparation, storage, distribution and serving. Manpower requirement: Personnel management, selection, training and supervision.

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- Food Safety and Quality Control: Introduction to quality assurance and food safety assurance, Current concepts of quality control,
- Quality assurance program; Quality plan, documentation of records, products standards, Product and purchase specifications, process control and HACCP, hygiene and housekeeping, corrective action, quality and program and total quality process.

Suggested readings:

- Raske, L. (2017). *Food service Management Fundamentals*. Scitus Academics.
- Kariya, P. (2016). *Meal Planner. India*: Kahootie Co.
- Terrel, M.E. and Haigu, V.F. (2016). *Professional Food preparation*. New York: John Wiley and sons.
- Sethi, M. (2016). *Institutional Food Management*. New Age International Private Limited.
- Bansal, T. (2011). *Hotel facility and planning*. Oxford publishing, New Delhi
- Marzia M. Canty, Mc, and Brighton, R. (2010). *Introduction to Catering*. London: Oxford Blackwell, Scientific Publications.
- Davis, B., Lockwood, A and Pantelidis, I. (2008). *Food And Beverage Management*. Butterworth Heinemann.
- Sethi, M. (2008). *Catering Management*. New Age International (P) Ltd.
- Khanna, K. (2007). *Textbook of Nutrition and Dietetics*. New Delhi: Elite publishing house

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MFNL105	SEC	Food and Nutrition Lab	0	0	0	90	60	0	0	4	2

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Course Educational Objectives (CEOs): The Students will –

CEO1: acquired particle knowledge for food weight, BMR and Qualitative analysis of nutrients.

CEO2: practice using senses to do sensory evaluation and measurements of biochemical marker.

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

CO1: skillful in distinguishing raw and cooked weight of Food.

CO2: develop profound knowledge of sensory evaluation of various food groups samples.

CO3: learn methods for taking biochemical markers with the help of medical equipment's.

CO4: understand qualitative analysis for Carbohydrates and Proteins.

List of Practical's:

a) Food Science

1. Raw weights and cooked weights of servings, nutritive value and cost of common Indian recipes, such as chapatti, dal, rice, vegetables, etc. Relationship between nutritive value, volume and weight.
2. Planning and preparing meal plans for Children (all age groups).
3. Planning and preparing meal plan for an adult and geriatrics.
4. Planning and preparing 7 days cyclic menu plan for Hostels.
5. To conduct sensory evaluation of the given samples using descriptive method.

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

M. Sc Food and Nutrition Sem I (2024-2026)

Subject Code	Category	Subject Name	Teaching and Evaluation Scheme								
			Theory			Practical		L	T	P	CREDITS
			End Sem University Exam	Two Term Exa	Teachers Assessment	End Sem University Exam	Teachers Assessment				
MFNL106	SEC	Food and Nutrition Lab	0	0	0	90	60	0	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

- To conduct sensory evaluation of sugar sample with the help of ‘Duo trio test’ and prepare evaluation card for the same.
- To conduct sensory evaluation of sugar samples using ‘Triangle Test’ and prepare an evaluation card for the same
- To study and conduct sensory evaluation of different pairs of sugar with lemon samples using ‘paired test’ and prepare score card for the same.
- To study and detect various adulterants in food stuffs.

b) Human Physiology

1. Blood pressure measurement by Sphygmomanometer
2. Energy requirements of self- calculation of BMR and activity increments.
3. Identification of deficiency diseases on the basis of clinical signs and symptoms.
4. Qualitative estimation of carbohydrates.
5. Quantitative estimation of carbohydrates.
6. Qualitative estimation of protein.
7. Quantitative estimation of protein.
8. Blood Sugar measurement by Glucometer.

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			Theory			Practical		L	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment	End Sem University Exam	Teachers Assessment				
MFNV 107	CV	Comprehensive Viva	0	0	0	60	40	0	0	0	2

Note: Comprehensive Viva of the candidates in presence of subject expert and faculty members.

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