अध्ययन मंडल बैठक दिनांक 27.08.2024

विषय – आहार एवं पोषण

विश्वविद्यालय अन्तर्गत संचालित एम.एस.सी. आहार एवं पोषण प्रोग्राम में राष्ट्रीय शिक्षा नीति 2020 के अनुरूप प्रथम एवं द्वितीय सेमेस्टर में निम्नानुसार परीक्षा योजना एवं मूल्यांकन पद्धति की अनुशंसा की जाती है :–

Course Type	Course Code	Course Title	Paper	Semester	Credits	Max Marks	Min Marks	CIA	ESE
Program : M.Sc. Food & Nutrition									
First Semester									
DSC	MFNC-01T	Food Science	T	I	4	100	40	30	70
DSC	MFNC-01P	Food Science And Therapeutic Nutrition	P	I	4	100	40	30	70
DSE	MFNE-01T	Nutritional Biochemistry	T	I	4	100	40	30	70
DSE	MFNE-02T	Clinical Nutrition	T	I	4	100	40	30	70
DSE	MFNE-03T	Research Methodology	T	I	4	100	40	30	70
Second Semester									
DSC	MFNC-02T	Food Chemistry	T	II	4	100	40	30	70
DSC	MFNC-02P	Nutritional Biochemistry	P	II	4	100	40	30	70
DSE	MFNE-04T	Methods Of Investigation	T	II	4	100	40	30	70
DSE	MFNE-05T	Problems In Human Nutrition	T	II	4	100	40	30	70
DSE	MFNE-06T	Statistics And Computer Application	T	II	4	100	40	30	70

आज दिनांक 27.08.2024 को आहार एवं पोषण अध्ययन मंडल की बैठक में निम्नलिखित अध्यक्ष/सदस्य उपस्थित हुये।

क्र.	नाम	पदनाम	अध्यक्ष/सदस्य	हस्ताक्षर
1.	डॉ. रश्मि शुक्ला	प्राध्यापक	अध्यक्ष	
2.	श्रीमती रीता लकड़ा	सहायक प्राध्यापक	सदस्य	

FOUR YEAR POSTGRADUATE PROGRAM 2024-28
FACULTY OF HOME SCIENCE
COURSE CURRICULUM

PART A: Introduction			
Program :- Food and Nutrition		Semester : I	Session :- 2024-25
1	Course Code	MFNC-01 T	
2	Course Title	**Food Science**	
3	Course Type	DSC	
4	Pre-requisite (if any)	As per Program	
5	Course Learning Outcomes (CLO)	Learn about water, Food dispersion & carbohydrates, learn about lipids & vitamins, learn about cereals and cereals products, learn about dairy products & enzymes.	
6	Credit Value	**4 C**	1 Credit = 15 Hours – Learning & Observation
7	Total Marks	**Max. Marks : 100**	**Min. Passing Marks : 40**

PART-B, CONTENT OF THE COURSE

FOOD SCIENCE

Unit	Subject	Hours
1	1. **Water** - structure and Physical properties of water and ice and chemical nature, adsorption phenomena, types of water solution and colligative properties. - Free bound water - Water activity and food spoilage. 2. **Food dispersion** - Colloidal sol, stabilization of colloidal systems, Rheology of food dispersion. - Gels: Structure, formation, strength, types and permanence. - Emulsion: Formation, stability, surfactants and emulsifiers. - Foams: Structure, formation and stabilization.	15
2	**Polysaccharides, sugars and sweeteners:** 1. **Starch:** Structure, Gelatinization, Characteristics of some food starches, modified food starches. Non starch polysaccharides: Cellulose, hemicelluloses, pectin, gum, animal polysaccharides. 2. **Cereals and cereals products:** - Cereals grains : Structure and composition - Flours and flour quality - Extruded foods, breakfast cereals, wheat germ, bulger, puffed and flaked cereals	15
3	1. **Fats, oils and related products:** Sources, Composition, effect of composition on fat properties. Functional properties of fat and uses in food preparation. Fat substitutes, fat deterioration (Rancidity) and antioxidants.	15

	2.	**Sugars and sweeteners:** Sugars, syrups, potent sweeteners, sugar product. - Sweetener chemistry related to usage in food products: Structural relationships to sweetness perception, hydrolytic reactions, solubility and crystallization, hygroscopicity, fermentation, non-enzymatic browning.	
4	1.	**Dairy products:** Milk Composition, physical and functional properties. Denaturation effects of processing and storage.	15
	2.	**Milk products:** Cultured milk, yogurt, butter, whey, cheese, concentrated and dried products, frozen desserts, dairy product substitutes.	
	3.	**Enzymes:** Nature of enzymes, stability and action. Proteolytic enzymes, oxidase, lipases, enzymes decomposing carbohydrates, immobilized enzymes Protein denaturation, non-enzymatic browning	

PART C: Assessment and Evaluation		
Suggested Continuous Evaluation Methods:		
Maximum Marks: 100 Marks		
Continuous Comprehensive Evaluation (CCE): 30 Marks		
Semester End Exam (SEE): 70 Marks		
Internal Assessment: Continuous Internal Assessment (CIA)	Internal Test/Quiz (2) – 20+20 Assignment/Seminar – 10 Total Marks - 30	Better marks out of the two tests/Quiz + Obtained marks in assignment shall be considered against **30 Marks**
End Semester Exam (ESE):	Two Section – A & B Section A: Q1. Objective – 10x1=10 Marks, Q2. Short answer type- 5x4=20 Marks Section B: Descriptive answer type qts., 1 out of 2 from each unit – 4x10=40 Marks	

FOUR YEAR POSTGRADUATE PROGRAM 2024-28
FACULTY OF HOME SCIENCE
COURSE CURRICULUM

PART A: Introduction				
Program :- Food and Nutrition			Semester : I	Session :- 2024-25
1	Course Code		**MFNC-01 P**	
2	Course Title		**Food Science and Therapeutic Nutrition**	
3	Course Type		DSC	
4	Pre-requisite (if any)		As per Program	
5	Course Learning Outcomes (CLO)		Learn about market survey of commercial nutritional supplements planning & preparation of diets for patients. Learn about factors affecting food acceptance, sensory assortment of food quality & sensory testing of food.	
6	Credit Value	**4 C**	1 Credit = 15 Hours – learning & Observation	
7	Total Marks	**Max. Marks : 100**		**Min. Passing Marks : 40**

PART-B, CONTENT OF THE COURSE		
FOOD SCIENCE AND THERAPEUTIC NUTRITION PRACTICAL-I		
Unit	**Subject**	**Hours**

	1. Market Survey of commercial nutritional supplements and nutritional support substrates.
	 2. Case study- Interpretation of patient data and diagnostic tests and drawing up of patient diet prescription.
	 3. Use of food exchange list.
	 4. Planning and preparation of diets for patients with common multiple disorders and complications - Diabetic mellitus
	     Hypertension, Atherosclerosis
	     Liver diseases-infective
	     hepatitis, cirrhosis ,-
	     Kidney diseases- glomerulo
	     nepritis, nephrosis
	 5. Effect of solutes on boiling point and freezing of water.
	 6. Effect of types of water on characteristics of cooked vegetables, pulses and cereals.
	 7. Sugar and jaggery cookery: Relative sweetness, solubility and sizes of sugars, stages of sugar cookery, caramelization, crystallization, factor affecting crystal formation.
	 8. Starches, vegetable gums and cereals : Dextrinization, gelatinization, retro gradation, tickening power. Factors affecting gels and gulten formation.
	 9. Jams and jellies: Pectin content of fruits, role of acid, Pectin and sugar in jam and jellyformation. Use of gum as emulsifiers/stabilizers.
		15

	10.	Fats and oils : Flash Point, melting point and smoking point. Role of fats and oils in cookery as shortening agent, frying medium. Factors affecting fat absorption. Fat crystals, plasticity of fats, permanent and semi-permanent emulsions.	
	11.	Milk and milk Products: Scalding, denaturation. Effects of acid, salt, alkali, sugar, heat, enzymes, polyphenols on milk. Khoa, curd paneer, cheese (ripened and unripened).	
	12.	Egg: Structure, assessing egg quality. Use of egg in cookery-emulsion, air incorporation, thickening, binding, gelling-method of egg cookery and effect of heat, white forms and factors affectioing foam.	
	13.	Pulses: Effect of various cooking and processing methods on various functional properties of pulses and their products. Gelatin: Gelatin gel, strength and factors affecting gelation.	
	14.	Fruits and vegetables: Pigments - Effects of cooking, metal ions, Ph, effect of various cooking processes on different characteristics of vegetables, prevention of enzymatic browning.	
	15.	Leavened products: Fermentation - Use of microorganisms (lactic acid, yeast), steam as an agent, chemical agents.	
	16.	Frozen Desserts: Factors affecting ice crystal formation. Quality characteristics of frozen desserts.	

PART C: Assessment and Evaluation	
Suggested Continuous Evaluation Methods:	
Maximum Marks:	**100 Marks**
Continuous Comprehensive Evaluation (CCE):	**30 Marks**
Semester End Exam (SEE):	**70 Marks**

FOUR YEAR POSTGRADUATE PROGRAM 2024-28
FACULTY OF HOME SCIENCE
COURSE CURRICULUM

PART A: Introduction			
Program :- Food and Nutrition		Semester : I	Session :- 2024-25
1	Course Code	MFNE-01 T	
2	Course Title	Nutritional Biochemistry	
3	Course Type	DSE	
4	Pre-requisite (if any)	As per Program	
5	Course Learning Outcomes (CLO)	Learn about the basic of enzymes, carbohydrates, lipids and amino acid metabolism, learning outcomes: Having coherent and systematic knowledge on carbohydrate, lipid & amino acid metabolism. Understanding the mechanism adopted by the human body for regulation of metabolic pathways.	
6	Credit Value	4 C	1 Credit = 15 Hours – learning & Observation
7	Total Marks	Max. Marks : 100	Min. Passing Marks : 40

PART-B, CONTENT OF THE COURSE		
NUTRITIONAL BIOCHEMISTRY		
Unit	Subject	Hours
1	1. Hetro polysaccharides - Definition, classification, structure and properties of glycoprotein and proteoglycans. 2. Plasma proteins - Nature, properties and function. 3. Intermediately metabolism - Reactions, standard for energy changes and glycolysis, regulation, carbohydrates glyconeogensis, citric acid cycle, hexose-mono-phosphate pathway. 4. Lipids -Beta-oxidation, denovo synthesis of fatty acids, synthesis and breakdown of unsaturated fatty acids, cholesterol, phospholipids and triglycerol.	
2	5. Purines and pyrimidines -Source and Biosynthesis of purines and pyrimidines. 6. Nucleic acids - DNA replication and transcription. 7. DNA Transcription and recombinant – 8. Bio medical importance, restriction enzymes, cloning, libraries and library construction. 9. Gene Mutation - Codon, characteristics of genetic code, WOBBLE, Single base changes, transition transversion. 10. Protein biosynthesis - Initiation, formation of 40s initiation complex, formation of 80s initiation complex, elongation, steps of elongation.	
3	11. Hormones- General Characteristics, Classification & Mechanism of action, assay of hormones. Chemistry and functions of different hormones - Thyroxine, TSH, LH, ACTH and Insulin. 12. Minerals - Trace elements, their physiological functions, sources, absorption,	

	excretion and deficiency of iron, copper, iodine, zinc and selenium.	
4	13. Detoxification in the body - Metabolism of foreign compounds, oxidation, conjugation, reduction, hydrolysis. 14. Major alteration in carbohydrates, protein and fat metabolism in chronic nutrition relate degenerative disease. (Diabetes, Heart diseases).	

PART -C

References : -

1.   Deb, T.C. - Principles of Biochemistry.

2.   Harper - Physiological Biochemistry.

3.   West and Todd - Text Book of Biochemistry.

4.   Lubert / Stryer - Text Book of Biochemistry.

PART D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods:		
Maximum Marks: 100 Marks		
Continuous Comprehensive Evaluation (CCE): 30 Marks		
Semester End Exam (SEE): 70 Marks		
Internal Assessment: Continuous Internal Assessment (CIA)	Internal Test/Quiz (2) – 20+20 Assignment/Seminar – 10 Total Marks - 30	Better marks out of the two tests/Quiz + Obtained marks in assignment shall be considered against **30** Marks
End Semester Exam (ESE):	Two Section – A & B Section A: Q1. Objective – 10x1=10 Marks, Q2. Short answer type-5x4=20 Marks Section B: Descriptive answer type qts., 1 out of 2 from each unit – 4x10=40 Marks	

FOUR YEAR POSTGRADUATE PROGRAM 2024-28
FACULTY OF HOME SCIENCE
COURSE CURRICULUM

PART A: Introduction			
Program :- Food and Nutrition		Semester : I	Session :- 2024-25
1	Course Code	MFNE-02 T	
2	Course Title	**Clinical Nutrition**	
3	Course Type	DSE	
4	Pre-requisite (if any)	As per Program	
5	Course Learning Outcomes (CLO)	Learn about the role of therapeutic nutrition for the management of various diseases. Understanding the principles of meal planning. Critical assessment of nutritional state and surveillance. Understanding the role of diet in management of diseases.	
6	Credit Value	**4 C**	1 Credit = 15 Hours – learning & Observation
7	Total Marks	**Max. Marks : 100**	**Min. Passing Marks : 40**

PART-B, CONTENT OF THE COURSE		
CLINICAL NUTRITION		
Unit	**Subject**	**Hours**
1	1. Etio pathophysiology, clinical symptoms, Complications, prevention and recent advances in nutritional management of GIT Disorders 2. Peptic ulcer - Aetiology, symptoms, dietary modification. 3. Intervals of feeding, bland diet, four stage diet therapy, prevention of recurrence. 4. Diarrhoea- Classification, modification of diet with special emphasis to fibre and fluids. 5. Constipation - Classification, dietary consideration. 6. Ulcerative colitis - Symptoms, dietary treatment 7. Sprue - Types, dietary consideration. 8. Pancreatic disorders - Etiology, Pathogenesis and nutritional care.	
2	1. Diseases of liver and gall bladder : 2. Infective Hepatitis - Types and dietetic management. 3. Cirrhosis - Types and dietary management. 4. Cholecystitis and Cholelithiasis - dietetic management. 5. Cardio Vascular Diseases – 6. Familial Hypercholesterolemia -nutritional care. 7. Atherosclerosis-Etiological, factors, pathogenesis, dietetic management. 8. Hypertension - Classification, etiology, nutritional care.	
3	**1. Renal Diseases :** 　　Basic renal functions, Classification of renal diseases. 　　　(i) Glomerulonephritis - Acute and chronic - Symptoms and	

		dietetictreatment Nephrosis - Symptoms and principles of nutritional care.
		   (ii) Renal failure - Acute and chronic renal failure, dialysis.
		   (i) Renal Calculi - Etiology, types of stones and nutritional
		   (ii) Care. Acid andalkaline ash diet.
		2. **Fevers and infections** - Types of fever
		    Tuberculosis, typhoid and malaria -Dietetic management	

4		3. Historical background, prevalence, etiology, biochemical and clinicalmanifestations, preventive and therapeutic measures for metabolic disorders.
		    Diabetes mellitus
		   (i) Incidence and predisposing factors.
		   (ii) Symptoms, types and diagnosis
		   (iii) Metabolism in diabetes
		   (iv) Dietary management
		   (v) Hypoglycemic agents and insulin
		   (vi) Complication of diabetes.
		4. Disorders of thyroid gland:
		    Normal Thyroid Function
		   (i) Hyperthyroidism - Symptoms and care.	

PART-C

References:

1. Fundamentals of Foods, Nutrition and Diet Therapy
   Sumati R. Mudambi New Age International, 2007
2. Dietetics - (Multi Colour Edition)- B.Srilakshmi
3. Nutrition and Dietetics Fourth Edition
   Shubhangini A. Joshi ISBN-13: 978-9339220150 ISBN-10: 9789339220150
4. Food, Nutrition and Diet Therapy By Krause &, Mahan

PART D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods:		
Maximum Marks: **100 Marks**		
Continuous Comprehensive Evaluation (CCE): **30 Marks**		
Semester End Exam (SEE): **70 Marks**		
Internal Assessment: Continuous Internal Assessment (CIA)	Internal Test/Quiz (2) – 20+20 Assignment/Seminar – 10 Total Marks - 30	Better marks out of the two tests/Quiz + Obtained marks in assignment shall be considered against **30** Marks
End Semester Exam (ESE):	Two Section – A & B Section A: Q1. Objective – 10x1=10 Marks, Q2. Short answer type-5x4=20 Marks Section B: Descriptive answer type qts., 1 out of 2 from each unit – 4x10=40 Marks	

FOUR YEAR POSTGRADUATE PROGRAM 2024-28
FACULTY OF HOME SCIENCE
COURSE CURRICULUM

PART A: Introduction				
Program :- Food and Nutrition			Semester : I	Session :- 2024-25
1	Course Code		MFNE-03 T	
2	Course Title		**Research Methodology**	
3	Course Type		DSE	
4	Pre-requisite (if any)		As per Program	
5	Course Learning Outcomes (CLO)		Learn about scientific methods, social research & surveys, learn about hypothesis, sources of data, methods or techniques of collection, sampling learn about classification and tabulation of data, analysis & interpretation of data learn about research design.	
6	Credit Value	**4 C**	1 Credit = 15 Hours – learning & Observation	
7	Total Marks		**Max. Marks : 100**	**Min. Passing Marks : 40**

PART-B, CONTENT OF THE COURSE		
1ST SEM – RESEARCH METHODOLOGY		
Unit	**Subject**	**Hours**
1	1. Science, scientific methods and approach. 2. Social research and surveys: Meaning, definition, nature, scope, objects, types. Distinction between social survey and research. 3. Pretesting and pilot survey.	
2	4. Hypothesis: Definition, sources, characteristics, importance, main difficulties in the formation of hypothesis, disadvantages. 5. Sources of data: Primary and secondary sources. 6. Methods or techniques of collection. Observation, Interview Schedule, questionnaire and case-study.	
3	7. Sampling: Meaning, characteristics, advantages and disadvantages. Types:- Random sampling purposive sampling stratified sampling Other sampling method. 8. Classification and tabulation of data. Analysis and Interpretation of Data.	
4	9. Research design-steps and process of its formulation. 10. Types of research design-exploratory, descriptive, diagnostic and experimental. 11. Diagrammatic presentation of data.	

PART - C
Reference:

Swayam Central
https://swayam.gov.in

youtube

PART D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods:		
Maximum Marks: **100 Marks**		
Continuous Comprehensive Evaluation (CCE): **30 Marks**		
Semester End Exam (SEE): **70 Marks**		
Internal Assessment: Continuous Internal Assessment (CIA)	Internal Test/Quiz (2) – 20+20 Assignment/Seminar – 10 Total Marks - 30	Better marks out of the two tests/Quiz + Obtained marks in assignment shall be considered against **30 Marks**
End Semester Exam (ESE):	Two Section – A & B Section A: Q1. Objective – 10x1=10 Marks, Q2. Short answer type-5x4=20 Marks Section B: Descriptive answer type qts., 1 out of 2 from each unit – 4x10=40 Marks	

FOUR YEAR POSTGRADUATE PROGRAM 2024-28
FACULTY OF HOME SCIENCE
COURSE CURRICULUM

PART A: Introduction			
Program :- Food and Nutrition		Semester : II	Session :- 2024-25
1	Course Code	MFNC-03 T	
2	Course Title	**Food Chemistry**	
3	Course Type	DSC	
4	Pre-requisite (if any)	As per Program	
5	Course Learning Outcomes (CLO)	Learn about cereals, pulses, vegetables & fruit, learn about egg, fish, meat & Poultry, learn about nuts & oil seeds composition, oil extraction, learn about spices & condiments.	
6	Credit Value	**4 C**	1 Credit = 15 Hours – learning & Observation
7	Total Marks	**Max. Marks : 100**	**Min. Passing Marks : 40**

PART-B, CONTENT OF THE COURSE		
FOOD CHEMISTRY IInd SEMESTER		
Unit	**Subject**	**Hours**
1	1. Meat and Poultry: Muscle composition, characteristics and structure. Post mortem changes during processing, preservation and their effects. Heat induced changes in meat variables in meat preparation, Tenderizing treatments, and meat products. 2. Eggs: Structure and composition, changes during storage. Functional properties of eggs, use in cookery. Egg processing, low cholesterol egg substitutes.	
2	1. Fish and sea foods: Types and composition, storage and changes during storage, changes during processing, by- product and newer products. 2. Pulses and Legumes: Structure, composition, processing, toxic constituents. 3. Nuts and oil seeds: Composition, oil extraction and by-products.	
3	1. Fruits and vegetables: Plant, anatomy, gross composition, structure, features and activities of living systems. Enzymes in fruits and vegetables. Flavour constituents, plant phenolics, pigments, post harvest changes. Texture of fruits and vegetables. Effects of storage, processing and preservation. 2. Spices and condiments: Composition, flavouring extracts - Natural and synthetic. 3. Beverages: Synthetic and natural, alcoholic and non-alcoholic, carbonated and non- carbonated, coffee, tea, cocoa, malted drinks.	
4	1. Traditional processed products: jam, jellies & squash. 2. Protein concentrates: Hydrolysates and textured vegetable proteins, milk substitutes.	

	3. Fermented food-cereal based, pulse based, fruit/vegetables based like vinegar, pickle and alcoholic beverages. 4. Leavened products: Leavened agents biologically leavened and chemically leavened products. Batters and dough, bakery products. 5. Salt and salt substitutes	

PART C: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks:

Continuous Comprehensive Evaluation (CCE):	**100 Marks**	
Semester End Exam (SEE):	**30 Marks**	
	70 Marks	

Internal Assessment:		
Continuous Internal Assessment (CIA)	Internal Test/Quiz (2) – 20+20 Assignment/Seminar – 10 Total Marks - 30	Better marks out of the two tests/Quiz + Obtained marks in assignment shall be considered against **30** Marks
End Semester Exam (ESE):	Two Section – A & B Section A: Q1. Objective – 10x1=10 Marks, Q2. Short answer type- 5x4=20 Marks Section B: Descriptive answer type qts., 1 out of 2 from each unit – 4x10=40 Marks	

FOUR YEAR POSTGRADUATE PROGRAM 2024-28
FACULTY OF HOME SCIENCE
COURSE CURRICULUM

PART A: Introduction				
Program :- Food and Nutrition			Semester : II	Session :- 2024-25
1	Course Code		MFNC-02 P	
2	Course Title		**Nutritional Biochemistry**	
3	Course Type		DSC	
4	Pre-requisite (if any)		As per Program	
5	Course Learning Outcomes (CLO)		Understanding the principles of biochemical methods used for analysis of food and biological samples. Perform biological analysis with accuracy & reproducibility.	
6	Credit Value	**4 C**	1 Credit = 15 Hours – learning & Observation	
7	Total Marks	**Max. Marks : 100**		**Min. Passing Marks : 40**

PART-B, CONTENT OF THE COURSE		
NUTRITIONAL BIOCHEMISTRY IInd SEMESTER		

Unit	Subject	Hours
1	Objective This course will enable the students to- - Understand the principles of biochemical methods used for analysis of food and biological samples. - Perform biological analysis with accuracy and reproducibility Note: Any ten practicals.	

2	**Part A**
	1. Calcium: Estimation of calcium in foods and serum.
	2. Phosphorus: Estimation of inorganic phosphorous in foods and serum.
	3. Ascorbic acid: Estimation of ascorbic acids in foods.
	4. Proteins:
	  (a) Estimation of proteins in food.
	  (b) Estimation of albumin, globulin and albumin/globulin ratio in serum and urine.
	  (c) Estimation of hemoglobin.
	5. Glucose: Estimation of glucose in blood and urine.
	6. Cholesterol: Estimation of cholesterol in blood.
	7. Enzyme assay: Estimation of activity of serum alkaline phosphates and transaminase.
	8. Urea and creatinine : Estimation of urea and creatinine in serum and urine.
	9. Survery of pathological laboratories.	

3	**Part B** 1. Acids and alkalis: Preparation of dilute solutions of common acids and	

	alkalis and determining their exact normalities. 2. Buffers: Preparation of phosphate, carbonate-bicarbonate, ascorbic acid, acetate, chloride and phthalate buffers and determination of their pH by the use of indicators and pH meters.	
4	1. Spectrometer: Beer Lambert law, absorption maximum, preparation of standard curve and nutrient estimations in UV and visible range, AAS, AES, Flame photometry. 2. Fluorimetry: Estimation of thiamin and riboflavin. 3. Chromatography: Paper- identification of amino acid by circular, ascending and descending methods. Ion-exchange- Separation of amino acids. Column Separation of proteins. Thin layer- Identification of amino acids. Gas-liquid Estimation of fatty acids, HPLC – Estimation of B-carotene and a-tocopherol. 4. Electrophoresis: Fractionation of plasma proteins.	

PART C: Assessment and Evaluation	
Suggested Continuous Evaluation Methods:	
Maximum Marks:	100 Marks
Continuous Comprehensive Evaluation (CCE):	30 Marks
Semester End Exam (SEE):	70 Marks

FOUR YEAR POSTGRADUATE PROGRAM 2024-28
FACULTY OF HOME SCIENCE
COURSE CURRICULUM

PART A: Introduction				
Program :- Food and Nutrition			Semester : II	Session :- 2024-25
1	Course Code		**MFNE-04 T**	
2	Course Title		**Methods of Investigation**	
3	Course Type		DSE	
4	Pre-requisite (if any)		As per Program	
5	Course Learning Outcomes (CLO)		Learn about sampling techniques & spectrophotometric analysis. Learn about colorimetry, thermal analysis of food learn about principles & techniques of separation methods, learn about measurement of enzyme activity, radioactive tracer techniques. Lear about techniques used in analysis of various substances present in food.	
6	Credit Value		**4 C**	1 Credit = 15 Hours – learning & Observation
7	Total Marks		**Max. Marks : 100**	**Min. Passing Marks : 40**

PART-B, CONTENT OF THE COURSE		
METHODS OF INVESTIGATION IInd SEMESTER		
Unit	**Subject**	**Hours**

1	1. Electrolytic dissociation: Principle, technique and theory of electrolytic dissociation.
	 2. Hydrogen ion concentration: Principle and measurement of PH, indicators, buffers.
	 3. Physiochemical techniques: Principles and methodology of the following-
	   (a) Diffusion
	   (b) Osmosis
	   (c) Filtration
	   (d) Surface tension
	   (e) Adsorption
	   (f) Centrifugation	

2	1. Chromatography: Principles, techniques and application of the following-
	   (a) Paper chromatography- Circular, ascending and descending.
	   (b) Ion exchange chromatography
	   (c) Column chromatography
	   (d) Thin layer chromatography
	   (e) Gas liquid chromatography
	   (f) High performance liquid chromatography	

3	1. Electrophoresis: Principles and techniques of paper and gel electrophoresis. 2. Microbiological assay : Principle and methodology of the following-	

	(a) Vitamins (b) Amino acids 3. Colorimetry : Principles, applications.	

4	4. Radioactive isotopes: Properties, detection and uses of radioactive isotopes in medical science.
	5. Immunological methods: Principle and technique of the following-
	    (c) Radio Immuno Assay (RIA)
	    (d) Enzyme Linked Immuno sorbent Assay (ELISA)
	6. Collection of biological samples.	

PART-C

References:

1. Hawk, P.B ., Oser, B.K. and Summerson, W.H. : Practical Physiological Chemistry. Tata McGraw Hill.
2. Varley, H. : Practical Clinical Biochemistry. The English language Book Society.
3. Das, Debjyoti : Biophysics and Biophysical Chemistry. Academic Publisher, Calcutta.
4. Advanced Textbook on Food & Nutrition Volume-1&2 ISBN-13: 978-9339220150 ISBN-10: 9789339220150
5. Handbook of Food and Nutrition
   Dr. M Swaminathan by THE BANGALORE PRESS
   Publisher Bapcco(1January 2015)ISBN-101761362801ISBN-13978-1761362804

PART D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods:		
Maximum Marks: 100 Marks		
Continuous Comprehensive Evaluation (CCE): 30 Marks		
Semester End Exam (SEE): 70 Marks		
Internal Assessment: Continuous Internal Assessment (CIA)	Internal Test/Quiz (2) – 20+20 Assignment/Seminar – 10 Total Marks - 30	Better marks out of the two tests/Quiz + Obtained marks in assignment shall be considered against **30** Marks
End Semester Exam (ESE):	Two Section – A & B Section A: Q1. Objective – 10x1=10 Marks, Q2. Short answer type- 5x4=20 Marks Section B: Descriptive answer type qts., 1 out of 2 from each unit – 4x10=40 Marks	

FOUR YEAR POSTGRADUATE PROGRAM 2024-28
FACULTY OF HOME SCIENCE
COURSE CURRICULUM

PART A: Introduction				
Program :- Food and Nutrition			Semester : II	Session :- 2024-25
1	Course Code		MFNE-05 T	
2	Course Title		**Problems in Human Nutrition**	
3	Course Type		DSE	
4	Pre-requisite (if any)		As per Program	
5	Course Learning Outcomes (CLO)		Learn about the nutritional requirements of women & children and policies to combat malnutrition, learn about neurological disorder, diet in genetic disorders, musculoskeletal disorder, learn about cancer, dental carries & AIDS.	
6	Credit Value	**4 C**	1 Credit = 15 Hours – learning & Observation	
7	Total Marks	**Max. Marks : 100**	**Min. Passing Marks : 40**	

PART-B, CONTENT OF THE COURSE		
PROBLEMS IN HUMAN NUTRITION IInd SEMESTER		
Unit	**Subject**	**Hours**
1	1. Nutritional screening and assessment of nutritional status of hospitalized and outdoor patients. 2. Identification of high-risk patients. Assessment of patient need based on interpretation of patient data (Clinical, biochemical, biophysical, personal etc.) 3. Nutritional support service: Recent advances in techniques and feeding methods. (enteral nutrition, parental nutrition) 4. pre- and post-operative diets, Diet in burns.	
2	1. **Weight imbalance-** **Obesity -** Types, etiology, assessment, treatment, diet and other measures, complications of obesity. **Under weight -** Causes, dietetic management 2. **Neurological disorders :** (i) Neuritis - Etiology, nutritional care. (ii) Migraine - Symptoms & Dietary management (iii) Anorexia Nervosa - Etiology, treatment.	
3	1. **Diet in genetic disorders:** Fructosuria, Galactosemia, Phenylketonuria. 2. **Musculoskeletal disorders:** Gout - Characteristics, nutritional care	

	3. **Cancer:**
	     - Types of cancer, Nutritional effect of cancer, Nutritional disorders related to treatment,
	     - Nutritional care in cancer.	

4	1. Prevalence , etiology, clinical manifestation, preventive and therapeutic measures for the following-
	     - Vitamin A Deficiency IDD
	     - Rickets
	 2. Dental carries : Etiology, nursing bottle carries.
	 3. Nutrition in AIDS.	

PART-C

References:

    1. Nutrition Science (Multi ColourEdition)- B.Srilakshmi

    2. Dietetics - (Multi Colour Edition)- B.Srilakshmi

    3. Nutrition and DieteticsFourth Edition

    Shubhangini A. Joshi

PART D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods:		
Maximum Marks: **100 Marks**		
Continuous Comprehensive Evaluation (CCE): **30 Marks**		
Semester End Exam (SEE): **70 Marks**		
Internal Assessment: Continuous Internal Assessment (CIA)	Internal Test/Quiz (2) – 20+20 Assignment/Seminar – 10 Total Marks - 30	Better marks out of the two tests/Quiz + Obtained marks in assignment shall be considered against **30** Marks
End Semester Exam (ESE):	Two Section – A & B Section A: Q1. Objective – 10x1=10 Marks, Q2. Short answer type- 5x4=20 Marks Section B: Descriptive answer type qts., 1 out of 2 from each unit – 4x10=40 Marks	

FOUR YEAR POSTGRADUATE PROGRAM 2024-28
FACULTY OF HOME SCIENCE
COURSE CURRICULUM

PART A: Introduction				
Program :- Food and Nutrition			Semester : II	Session :- 2024-25
1	Course Code		MFNE-06 T	
2	Course Title		**Statistics and Computer Application**	
3	Course Type		DSE	
4	Pre-requisite (if any)		As per Program	
5	Course Learning Outcomes (CLO)		Learn about statistics, measurement of central tendency, learn about graphic presentation of data. Learn about computer, analysis of variance, computer generation, learn about chi-square test, 't' test, MS-word.	
6	Credit Value	**4 C**	1 Credit = 15 Hours – learning & Observation	
7	Total Marks	**Max. Marks : 100**		**Min. Passing Marks : 40**

PART-B, CONTENT OF THE COURSE		
STATISTICS AND COMPUTER APPLICATION IInd SEMESTER		
Unit	**Subject**	**Hours**
1	**Statistics:** Meaning, definition, scope, importance, characteristics, distrust of statistics **Measurement of central tendency:** Mean median mode	
2	1. **Graphic presentation of Data: Importance, types** - Histogram - Frequency polygon - Frequency curve - Correlation: Definition, Meaning and types. - Methods of determining coefficient of correlation - Product moment method 2. **Rank correlation. Methods of dispersion and variation:** - Mean deviation - Standard deviation - Quartile deviation	
3	1. **Introduction to Computers:** What is computer? Characteristics, components of computer system, block diagram of computer, CPU, I/O devices and memory (RAM and ROM), secondary storage devices (Hard disk, floppy disk, magnetic tape etc. 2. **Analysis of variance**	

	- One way method: Direct and shortcut.	
4	1. Computer generations. 2. Classification of computer: Analog, digital, hybrid, general and special purpose computers. 3. Types of Computer: Micro, mini, mainframe and supercomputer. 4. Chi-square test and goodness to fit. 5. Application of student 't' test for small samples. 6. Working with MS-word: Getting started with word, formatting text and paragraph. Applying text and language tools. Designing pages with columns and tables, using graphics.	

PART C: Assessment and Evaluation		
Suggested Continuous Evaluation Methods: **Maximum Marks:** **100 Marks** **Continuous Comprehensive Evaluation (CCE):** **30 Marks** **Semester End Exam (SEE):** **70 Marks**		
Internal Assessment: Continuous Internal Assessment (CIA)	Internal Test/Quiz (2) – 20+20 Assignment/Seminar – 10 Total Marks - 30	Better marks out of the two tests/Quiz + Obtained marks in assignment shall be considered against **30** Marks
End Semester Exam (ESE):	Two Section – A & B Section A: Q1. Objective – 10x1=10 Marks, Q2. Short answer type- 5x4=20 Marks Section B: Descriptive answer type qts., 1 out of 2 from each unit – 4x10=40 Marks	