	<p style="text-align: center;">Dr. N.G.P. ARTS AND SCIENCE COLLEGE (An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore) Approved by Government of Tamil Nadu & Accredited by NAAC with 'A++' Grade (3rd Cycle-3.64 CGPA) Dr. N.G.P.- Kalapatti Road, Coimbatore-641 048, Tamil Nadu, India. Website: www.dnrgpasc.ac.in Email: info@dnrgpasc.ac.in. Phone: +91-422-2369100</p>	<p style="text-align: center;">BoS</p> <hr/> <p style="text-align: center;">19th</p>
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Department of Food Science and Nutrition

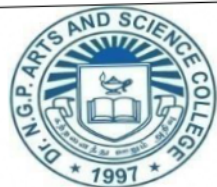
Board of Studies Meeting

Academic Year: 2025-26

The minutes of the 19th meeting of Board of Studies held on 28.06.2025 at 10.00 am at
 B1 Block- Room No. 1512 (Department of Food Science & Nutrition).

Members Present:

S. No.	Name	Category
1.	Dr. D. Sridevi	Chairman
2.	Dr. Subbarao M. Gavaravarapu Scientist 'F' & Head Dept. of Nutrition Information Communication & Health Education (Niche) ICMR - National Institute of Nutrition	University Nominee
3.	Dr. R. Radha Associate Professor Dept. of Food Service Management and Dietetics Avinashilingam University	Subject Expert
4.	Dr. Suresh D Sakhare Sr. Principal Scientist & Head Dept. of Flour Milling and Baking Technology CFTRI	Subject Expert
5.	Mrs. C. Vandhana Chief Dietitian Ramakrishna Hospitals	Industrial Expert
6.	Dr. Meera Raman	Member
7.	Dr. Priya A	Member
8.	Ms. Anjali M	Member
9.	Dr. Jancy Rani D	Member
10.	Ms. M. Rakeshwari	Member
11.	Ms. G. Priyaalini	Member
12.	Ms. Kanishka B	Member
13.	Mrs. G. Latha	Member
14.	Dr. N. Kuppuchamy	Co-opted Member
15.	Dr. A. Hazel Verbina	Co-opted Member
16.	Dr. R. Ravikumar	Co-opted Member
17.	Dr. S. Gowri	Co-opted Member
18.	Ms. S. Neha	Student Representative - UG
19.	Ms. J. Fasiha	Student Representative - PG



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The HoD and Chairman of the department of Food Science & Nutrition welcomed and introduced all the members and appreciated them for their continuous support and contribution for the development of academic standard and enrichment of the syllabus.

Further, Chairman informed the inability of the following members to attend the meeting and requested to grant leave of absence.

1. Ms. Shobana Priya N (Alumni)

After brief discussion the items of the agenda were taken one by one for discussion and the following resolutions were passed.

Item 19.1: *To review and approve the minutes of the previous meeting held on 08-11-2025.*

The chairman of the Board presented the minutes of the previous meeting held on 08-11-2025 and requested the members to approve. After brief discussion the following resolution was passed.

Resolution:

Resolved to approve the minutes of the previous meeting held on 08-11-2025

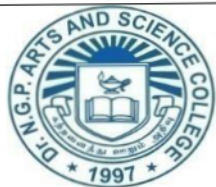
Item 19.2: *To consider and approve the syllabi for I semester for UG and PG students admitted during the academic year 2025-2026.*

The chairman presented the detailed scheme and regulation for the students admitted from the academic year 2025-26 for I semester. The members deliberated in detail about the modification required. After discussion it is unanimously decided to adopt the following changes.

Changes Made:

UG:

Course Code	Course	Reason
25FNU1CA	Core: Fundamentals of Food Science	Dr. Subbarao M Gavaravarapu suggested to include the concepts of • In unit 1 - Improving nutritional value through fermentation, germination, sprouting and malting were added, so the students are able to comprehend on how to



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		<p>naturally enhance the nutritional quality, bioavailability of nutrients, and functional properties of foods.</p> <ul style="list-style-type: none"> In unit 3 - properties of sugar, stages of sugar cookery and artificial sweeteners was included so the students could ensure proper food texture. In unit 4 – green ring formation in boiled egg were added for the students to understand the chemical reactions between sulfur and iron during cooking, which is crucial for food quality and safety.
25FNU1CB	Core: Chemistry of Foods	<p>Dr. R. Radha suggested to revamp the syllabus to provide a broader and more applied understanding of food chemistry, integrating concepts like pH, water activity, colloidal systems, and functional properties of food components.</p> <p>Key changes include the concepts of non-nutrient components, fat replacers, and pigment stability under cooking conditions, regulatory standards (FSSAI & GRAS), and product development trends, as it aligns with the food industry needs.</p>
25FNU1CP	Core Practical: Food Science	<p>Dr. Suresh D Sakhare suggested to include the following experiments to enhance practical understanding and align better with core culinary techniques:</p> <ul style="list-style-type: none"> Identification of ingredients Stages of sugar cookery Structural examination of starch <p>Experiments under DBT:</p> <ul style="list-style-type: none"> Determination of juiciness of meat Determination of over boiling of eggs & formation of Hydrogen Sulphide

PG:

Course Code	Course	Reason
25FNP1CA	Core: Advanced Food Science	The Board members resolved to adopt and retain the existing syllabus after discussion
25FNP1CB	Core: Nutrition Through Life Cycle	Dr. R. Radha suggested to include the “Nutrition for Old Age” as a separate unit as it aids in better understanding of age-related physiological changes and develop appropriate dietary interventions to promote healthy aging and reduces the risk of chronic diseases.
25FNP1CC	Core: Nutritional Biochemistry	The Board members resolved to adopt and retain the existing syllabus after discussion
25FNP1CD	Core: Food Chemistry	<p>Dr. Suresh D Sakhare suggested to include the following topics</p> <ul style="list-style-type: none"> Unit 1: Chemistry of water, ice & colloidal system Unit 2: Modified food starches

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		<ul style="list-style-type: none"> Unit 3: complementary protein Unit 5: Chemical and functional properties of active components present in condiments to gain knowledge on the chemical composition, reactions, and interactions of nutrients and food components, which form the basis for food processing and nutritional quality.	
25FNP1CP	Core Practical: Food Science and Food Chemistry	The Board members resolved to adopt and retain the existing syllabus after discussion	
25FNP1DC	DSE: Harvest Technology of Agricultural Produce	The Board members resolved to adopt and retain the existing syllabus after discussion	

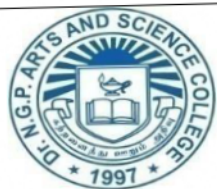
New Courses (PG):

25FNP1CQ	Core Practical: Food Analysis	The practical course was added as it plays a critical role in both the food industry and research by providing scientific methods to assess the composition, quality and authenticity of food products.
25FNP1DA	DSE: Food Product Development	The course was included as it is needed for the development of skills to innovate, formulate and evaluate new food products that meet nutritional needs and market demands.
25FNP1DB	DSE: Functional Foods	The course was designed to equip students with in-depth knowledge of the bioactive compounds present in foods that confer health benefits beyond their basic nutritional value, thereby contributing to the promotion of wellness and preventive healthcare.

After discussion the following resolution was passed.

Resolution:

Resolved to approve the above modification and adopt the revised syllabus



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for UG & PG students admitted for the academic year 2025-26.

Item 19.3: To consider and approve the syllabi for III semester for the students admitted in UG and PG during the academic year 2024-2025.

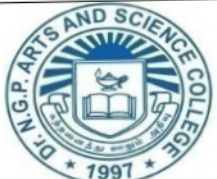
The chairman presented the detailed scheme and Regulation for the students admitted in UG and PG from the academic year 2024-2025 and syllabi for the III semester. The members deliberated in detail about the modification required.

After discussion it is unanimously decided to adopt the following changes.

Changes Made:

UG

Course Code	Course	Reason
24FNU3CA	Core: Nutrition Through Life Span	Mrs. C. Vandhana suggested to include the concepts of Growth chart interpretation, exclusive breast-feeding practice. Bottle feeding, risks and hygiene. Problems of feeding, and management, guidelines in introducing weaning foods in Unit – 3, as it enables students to evaluate infant growth and prevent nutritional problems.
24FNU3CB	Core: Human Physiology	Dr. R. Radha suggested to include the following topics for the students to understand how the body functions and responds to nutrients, which is essential for promoting health. <ul style="list-style-type: none"> • Unit – 1: Neuroglia (glial cells) • Unit – 2: Definition – Systole, diastole & blood pressure • Unit – 3: Physiology of sights and hearing • Unit – 5: Reflex action (Definition) Reflex arc (action of neuron), Peripheral Nervous system, Types - Somatic Nervous System, Autonomic Nervous System - (Sympathetic Nervous System & Para Sympathetic Nervous System and its effect).
24FNU3CC	Core: Institutional Management	Dr. Suresh D Sakhare recommended to include personnel management and financial management as two separate units, so as the students are equipped with the competencies to effectively manage human resources and practice financial control within foodservice operations. In Unit – 1: Types of menus and services was included to aid the students with the knowledge to plan balanced, cost-effective meals and choose suitable service methods for

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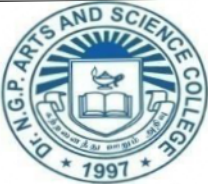
		various institutional settings.
24FNU3CP	Core Practical: Nutrition Through Life Span	The Board members resolved to adopt and retain the existing syllabus after discussion Experiments under DBT: <ul style="list-style-type: none"> Planning and preparing recipes for a child: Nutritious Snacks Planning and preparing recipes for a senior citizen: Break Fast/Dinner
24FNU3SA	SEC: Basics of Research Techniques – Computer Applications	The Board members recommended revising the syllabus to integrate computer skills with research methodologies, enabling students to understand fundamental statistical interpretation skills necessary for conducting research and project work. (E.g. utilizing Excel for nutrient calculations or SPSS for the analysis of dietary recall data)

IDC Course (II B.Sc. CLT):

24FNU3IA	IDC: Clinical Nutrition	The Board members suggested to revamp the syllabus to equip the students with knowledge of how diet impacts disease progression and recovery. It helps them interpret nutritional biomarkers and support multidisciplinary healthcare teams in patient management and nutritional assessment.
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PG:

Course Code	Course	Reason
24FNP3CA	Core: Micronutrients	The Board members suggested to remove certain concepts such as structure and chemistry of micronutrients and retain the existing syllabus after discussion.
24FNP3CB	Core: Therapeutic Nutrition – Systemic Disorders	The Board members proposed restructuring the syllabus to organize conditions in a system-wise manner—such as gastrointestinal, renal, cardiovascular, and endocrine—thereby improving conceptual clarity and strengthening clinical reasoning skills.
24FNP3CC	Core: Research Methodology and Statistics	Dr. Subbarao suggested to include the following contents in Unit – 1: <ul style="list-style-type: none"> Types of study design – cross sectional study, Cohort study, Randomized Controlled trials, Quasi experimental study and meta-analysis, Different Plagiarism Software as understanding of various study designs is crucial in research methodology to ensure the conduct of valid, reliable, and ethically sound scientific investigations.

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24FNP3CD	Core: Food Additives and Contaminants	The Board members resolved to adopt and retain the existing syllabus after discussion
24FNP3CP	Core Practical: Food Analytical Techniques	The Board members resolved to adopt and retain the existing syllabus after discussion
24FNP3CQ	Core Practical: Therapeutic Nutrition – Systemic Disorders	The Board members suggested to include case study analysis for comorbid disease condition, helping students simulate real-time clinical scenarios.
24FNP3DA	DSE: Instrumentation in Food Industry	Dr. Suresh D Sakhare suggested to include the components, working principles and applications of rheometer, chromatography, spectrometry and electrophoresis to enable students to acquire a thorough understanding of the physical and chemical principles underlying various instruments, aligning with industry standards and requirements.
24FNP3DB	DSE: Food Packaging Techniques	The Board members resolved to adopt and retain the existing syllabus after discussion
24FNP3DC	DSE: Food Microbiology	The Board members resolved to adopt and retain the existing syllabus after discussion

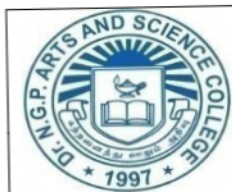
After discussion the following resolution was passed.

Resolution:

Resolved to approve the above modification and adopt the revised syllabus for UG & PG students admitted for the academic year 2024-25.

Item 19.4: *To consider and approve the syllabi for V semester for the students admitted in UG during the academic year 2023-2024.*

The chairman presented the detailed scheme and Regulation for the students admitted in UG from the academic year 2023-2024 and syllabus for the V semester. The members deliberated in detail about the modification required.



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Changes Made:

UG:

Course Code	Course	Reason
233FN1A5CA	Core: Food Preservation	Dr. R. Radha, suggested to include the concept of biopreservatives in unit – 2, for the students to understand its significance as it is a natural method to extend shelf life and ensure food safety without synthetic additives.
233FN1A5CA	Core: Fundamentals of Food Microbiology	BoS members suggested to incorporate the following topics, to equip students with the knowledge to identify spoilage mechanisms, assess food quality, and implement preventive measures in the food industry <ul style="list-style-type: none"> Unit I-Factors affecting the growth of microorganisms in food - Ph, moisture, temperature, oxidation - Reduction potential, Nutrient content, Inhibitory substances and combined effects of factors. Unit II- Include Spoilage of the plant and animal origin Unit III-Role of microorganisms in Food and Health, Role of Microorganism in Health Unit V-Microbial Analysis of Foods-Types of media (Selective, enrichment, differential media)- Preparation of media (Steps in preparation)-Measurement of microbial growth (Direct and Indirect methods)- Methods of isolating pure culture (Pour plate, spread plate and streak plate techniques
233FN1A5CC	Core: Food Processing	Dr. Subbarao M Gavaravarapu suggested to categorize High temperature processing and low temperature processing in Unit – III.
233FN1A5CD	Core: Food Safety and Quality Control	The Board members resolved to adopt and retain the existing syllabus after discussion
233FN1A5CP	Core Practical: Food Preservation	The board members suggested to rearrange the experiments and to include the methods of food preservation by minimal processing. Experiments under DBT: <ul style="list-style-type: none"> Preservation of foods by fats – confit & sous vide method Preservation of foods using protein based edible coatings

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			19th
233FN1A5SP	SEC Practical: Food Processing and Quality Control	Dr. Suresh D Sakhare suggested to include the following topics – layout of HACCP, GMP & GHP, as it is essential for ensuring food safety, maintaining quality standards in food industry.	
233FN1A5DA	DSE: Post-Harvest Technology	The board members suggested to include the concepts of Use of IoT, sensors, AI for storage & monitoring in Unit – 3, as it aids the students with modern tools to ensure food quality, reduce post-harvest losses, and enhance supply chain efficiency.	
233FN1A5DB	DSE: Clinical Nutrition	Mrs. C. Vandhana recommended to add the concepts of Nutrition Care Process (NCP), nutrigenomics, gut health, critical care nutrition, and endocrine and musculoskeletal disorders, AI in diet planning, food allergies, elimination diets, and role-playing exercises in Unit – II. It emphasizes Medical Nutrition Therapy (MNT), nutrition counseling, digital tools, and case-based learning.	
233FN1A5DC	DSE: Food Commodities	The Board members resolved to adopt and retain the existing syllabus after discussion	

After discussion it is unanimously decided to adopt the following changes.

Resolution:

Resolved to approve the above modification and adopt the revised syllabus for UG students admitted for the academic year 2023-24.

Item 19.5: *To consider and approve the syllabi for UG Diploma, Certificate, Skill oriented courses to be offered during the academic year 2025-26.*

The chairman presented the detailed scheme for Diploma, Certificate, Skill oriented courses to be offered the students admitted from the academic year 2025-26 onwards. The members deliberated in detail about the modification required. After discussion it is unanimously decided to adopt the following changes.

Resolution:

Resolved to retain the existing syllabus of 2023-24 batch without any modification for the students admitted from the academic year 2025-26.

Item 19.6: *To consider and approve the panel of examiners for conducting of End Semester Practical's examination, Central Valuation and Question Paper Setting.*

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The chairman presented the detailed the panel of examiners for conducting of End Semester Practical's examination, Central Valuation and Question Paper Setting. The members deliberated in detail about the modification required. After discussion it is unanimously decided to adopt the following changes.

Resolution:

Resolved to retain the existing panel of 2023-24 batch without any Modification for the students admitted from the academic year 2025-26.

Item 19.7: *To consider and approve the syllabi of Self-study paper offered in III semester for the students admitted during 2024-25.*

The chairman presented the detailed scheme and Self-study syllabi for the students admitted in UG and PG from the academic year 2024 -2025. The members deliberated in detail about the modification required.

After discussion the following resolution was passed.


Resolution:

Resolved to retain the existing syllabus of 2023-24 batch without any modification for the students admitted from the academic year 2024-25.

Finally, the Chairman thanked all the members for their cooperation and contribution in enriching the syllabus with active participation in the meeting and sought the same spirit in the future also. The meeting was closed with formal vote of thanks proposed by Dr. D. Sridevi, Head & Chairman – Food Science and Nutrition.

Date: 28.06.2025

(Dr. D. SRIDEVI)

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ATTENDANCE OF THE NINETEENTH BOARD OF STUDIES MEETING

Faculty: Biosciences

Board: Food Science and Nutrition

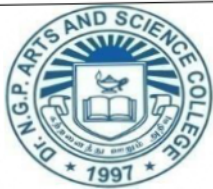
Date : 28/06/2025

Time : 10.00 a.m.

Venue : Department of Food Science and Nutrition (Room. No: 1512)

The following members were present for the Board of Studies meeting

S. No	Name	Designation	Signature
1.	Dr. D. Sridevi Professor and Head	Chairman	PRESENT
2.	Dr. Subbarao M. Gavaravarapu Scientist 'F' & Head Dept. of Nutrition Information Communication & Health Education (Niche) ICMR - National Institute of Nutrition	University Nominee	ONLINE MODE
3.	Dr. R. Radha Associate Professor Dept. of Food Service Management and Dietetics Avinashilingam University	Subject Expert	PRESENT
4.	Dr. Suresh D Sakhare Sr. Principal Scientist & Head Dept. of Flour Milling and Baking Technology CFTRI	Subject Expert	PRESENT
5.	Mrs. C. Vandhana Chief Dietitian Ramakrishna Hospitals	Industrial expert	PRESENT
6.	Ms. Shobana Priya N Dietitian Progen Weight Management	Alumni	ABSENT
7.	Ms. S. Neha III B.Sc. FSN	Student Representatives	PRESENT
	Ms. J. Fasiha II M.Sc. FN		PRESENT



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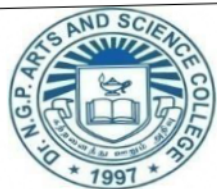
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8.	Part I (Language I) Dr. N. Kuppuchamy Associate Professor and Head Department of Tamil	Co-opted member	PRESENT
9.	Part II (Language II) Dr. A. Hazel Verbina Professor and Head Department of English	Co-opted member	PRESENT
10.	Allied - IDC- Applied Chemistry Dr. R. Ravikumar Associate Professor and Head (i/c) Department of Chemistry	Co-opted member	PRESENT
11.	Allied – IDC - Biochemistry Dr. S. Gowri Professor and Head Department of Chemistry	Co-opted member	PRESENT
12.	Dr. Meera Raman Professor	Internal Member	PRESENT
13.	Ms. Anjali M Assistant Professor	Internal Member	PRESENT
14.	Dr. D. Jancy Rani Assistant Professor	Internal Member	PRESENT
15.	Ms. M. Rakeshwari Assistant Professor	Internal Member	PRESENT
16.	Ms. G. Priyaalini Assistant Professor	Internal Member	PRESENT
17.	Dr. Priya A Assistant Professor	Internal Member	PRESENT
18.	Ms. Kanishka B Assistant Professor	Internal Member	PRESENT
19.	Mrs. G. Latha Assistant Professor	Internal Member	PRESENT

Date: 28.06.2025

(Dr. D. Sridevi)



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Syllabus Revision B.Sc. Food Science and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: I

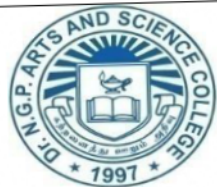
Course Code/ Name: 25FNU1CA – Fundamentals of Food Science

Unit	Existing	Changes
I	Introduction to Food Science: Food groups- 4 (ICMR), 5, 7 and 11 , functional food groups-energy yielding, body building protective and regulatory foods (only sources), food pyramid and my plate. Methods of cooking: Objectives of cooking. Cooking methods – Dry heat and moist heat methods, microwave and solar cooking Cereals: Structure and composition of rice and wheat, parboiled rice, role of cereals in cookery Millets: Classification, Nutritive value of Ragi, Jowar and Maize	Improving Nutritional Quality: - Definition-fermentation, germination(process), malting Supplementation, Fortification and Enrichment Conservation of nutrients-Guidelines to minimize nutrient losses during preparation Ohmic cooking
II	Pulses and legumes: Varieties of pulses, legumes and grams, composition, nutritive value , germination of grain , anti-nutritional factors, cooking quality of pulses. Fruits: Classification, composition and nutritive value , changes during ripening, enzymatic browning and its prevention methods. Vegetables: Classification, composition and nutritive value , selection and preparation for cooking, changes and loss of nutrients during cooking	-
III	Beverages - Classification, milk based beverages-methods of preparing tea and coffee, fruit based beverages, malted beverages and carbonated non-alcoholic beverages . Fats and Oils: Types of oils, function of fats and oils, fat substitutes Spices and Condiments: Functions and medicinal values of Cumin, Pepper, Fenugreek, Cinnamon, Cloves, Cardamom, Onion, Turmeric, Ginger and Garlic spices. Herbs—Basil, Wheat grass, Aloe vera, Oregano—An overview Difference test-paired comparison and duo-trio test, Rating test—ranking, hedonic, composite scoring test.	Sugars - Nutritive value, Properties, Sugar Related Products, Stages of sugar cookery, and Artificial Sweetener(aspartame, saccharin, sucralose, and stevia). Aerated beverages
IV	Milk – Composition and nutritive value , kinds of milk, physical properties of milk, pasteurization and homogenization of milk, changes in milk during heat processing, preparation of fermented (cheese) and non-fermented (milk powder), role of milk and milk products Egg - Structure, composition, selection, nutritive value , Evaluation of egg quality uses of egg in cookery, foam formation and factors affecting foam formation	Green ring formation in boiled egg,
V	Meat -Structure, composition, nutritive value , selection of meat, post mortem changes in meat, aging, tenderness and curing. Methods of cooking meat and their effects. Poultry: Classification, composition, nutritive value , selection, methods of cooking. Fish - Structure, composition, nutritive value , selection of fish, methods of cooking and effects	spoilage of fish Difference test-paired comparison and duo -trio test, Rating test –ranking, hedonic, composite scoring test.

PERCENTAGE OF SYLLABUS REVISED: 30%

COURSE FOCUSES ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Gender Sensitization
	Intellectual Property Rights (IPR)		Innovations
	Social awareness / Environment		Constitutional Rights/Human Values/Ethics



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Syllabus Revision B.Sc. Food Science and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: I

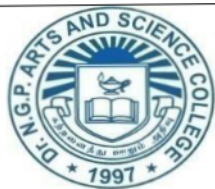
Course Code/ Name: 25FNU1CB – Chemistry of Foods

Unit	Existing	Changes
I	Physico-chemical Properties of Foods Moisture in foods, Hydrogen Bonding, Structure of water and Ice, States of water , Types of Water - Free Water, Bound Water, Entrapped water , water Activity in Foods - Measurement and control of Water Activity, Determination of Moisture Content in Foods, Dispersion, Sols, Gels, Foams, Colloids and Emulsions.	Introduction and scope of chemistry, nutrient and non-nutrient composition, factors affecting food composition (acid, alkali, enzymes, etc.), pH, ionisation, capillary water, food spoilage
II	Chemistry of Starch and Sugars Components of Starch, Swelling of Starch Granules, Gel Formation, Factors affecting Gel Formation, Retro gradation, Syneresis, Dextrinization and Hydrolysis of Starch. Effect of Sugar, Acid, Alkali, and Surface Active Agents on Starch. Sugar – Physical and Chemical Properties of Sugars – Hygroscopicity, Solubility, Sweetness, Chemical Properties – Hydrolysis, Caramelization and Maillard Reaction – Non-Enzymatic Browning, Types of Candies, Crystallization, Factors affecting Crystallization of Sugar, Sugar products and Stages of Sugar Cookery.	Carbohydrates, Classification of carbohydrates (mono, di, oligo, poly). Plant and animal sources of carbohydrates. Other polysaccharides (cellulose, hemicellulose, plant gums) Pectic substances: types, properties, processing effects
III	Chemistry of Proteins Chemistry of Wheat Proteins, Structure, Gluten Formation , Factors affecting gluten formation, Effect of Soaking, Fermentation and Germination of Pulse Proteins, Malting of Pulse Proteins , Protein Denaturation, Properties of Egg Protein, Chemistry of Milk Protein, Protein Changes in Milk, Egg and Meat Proteins during action of heat, Changes in Vegetable Proteins due to Action of Acid, Heat and Alkali.	Colloidal systems: definitions, classification (lyophilic, lyophobic), properties. Functional properties: amphoteric nature, isoelectric point, solubility. Protein classification (simple, conjugated, derived) and nutritional classification (complete/incomplete). Sources (plant, egg, milk, meat)
IV	Chemistry of Fats and Oils Physical Properties of Fats and Oils - Melting Points, Plasticity and Isomerisation Chemical Properties of Fats and Oils - Rancidity and Polymerization, Modification of Fats - Hydrogenation, Winterization, Emulsification, Tenderization Decomposition of Triglycerides, Shortening Power of Fats , Changes in Fats and Oils during Heating, Smoking Point of oil, Factors Affecting Fat Absorption in Food, Fat Deterioration, Fat Replacers.	Classification of fatty acids and lipids. Sources: visible/invisible, animal/plant. Types of rancidity. Brief introduction to types and uses in low-fat foods
V	Chemistry of Pectic Substances, Plant Pigments, Spices and Condiments Enzymes – Definition, Chemical Classification, Properties of Enzymes, Importance of Enzymes, Enzymatic Browning, Pectins and Phenolic Compounds. Pigments - Types of Plant Pigments - Water and Fat Soluble Pigments, Properties and Food Sources. Properties and Active Principles of Spices and Condiments. Flavour Enhancers.	Browning reactions (non-enzymatic, Maillard, caramelization). Specific pigment names (anthocyanins, flavonoids, etc.). Animal pigments (hemoglobin, myoglobin). Effect of cooking and pH on pigments. Natural and synthetic colors (GRAS, usage limits). Synthetic flavouring agents

PERCENTAGE OF SYLLABUS REVISED: 50%

COURSE FOCUSES ON:

✓	Skill Development		Entrepreneurial Development
✓	Employability		Gender Sensitization
	Intellectual Property Rights (IPR)	✓	Innovations
	Social awareness / Environment		Constitutional Rights/Human Values/Ethics



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Syllabus Revision – Practical Course B.Sc. Food Science and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: I

Course Code/ Name: 25FNU1CP - Food Science

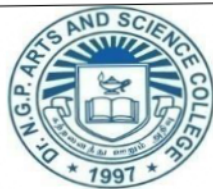
Exp. No.	Existing	Changes
1.	Food group - Grouping of foods, discussion on nutritive value	Identification of Ingredients and
2.	Measuring ingredients - Methods of measuring different types of foods – grains, flours and liquids, Determination of edible portion percentage	Of food
3.	Moist heat methods - Boiling, Simmering, Steaming and Pressure cooking.	-
4.	Dry heat methods - Sautéing, braising, baking. Fat as a medium for cooking - shallow and deep fat frying.	-
5.	Cereals - Methods of cooking fine and coarse cereals. Examination of starch. Common preparation with Cereals	Structural
6.	Pulses - Cooking of soaked, unsoaked pulses, germination and fermentation of pulses. Common preparation with pulses.	-
7.	Fruits - Prevention of darkening in fruits and vegetables. Common preparation with Fruits.	-
8.	Vegetables - Principles of cooking vegetables, Experimental cookery using vegetables pigments of different colors and textures. Common preparation with vegetables	-
9.	Milk - Experimental cookery – cheese curry and cooking vegetables in milk, Coagulation of milk proteins, preparation of paneer and curd common preparations with milk.	-
10.	Experimental cookery of Egg - boiled egg, poached egg. Common preparations with egg.	-
11.	Fleshy foods - Fish, meat and poultry – preparations	-
12.	Sugar - Stages of sugar cookery, factors affecting crystallization. Preparation of sweets using different stages of sugar cookery	-
	Experiments Under DBT	-
13.	Determination of juiciness of meat	-
14.	Determination of over boiling of eggs and Formation of Hydrogen Sulphide	-

Note: Out of 12 – 10 mandatory

PERCENTAGE OF SYLLABUS REVISED: 5 %

COURSE FOCUSES ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Gender Sensitization
	Intellectual Property Rights (IPR)		Innovations
	Social awareness / Environment		Constitutional Rights/Human Values/Ethics



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Syllabus Revision M.Sc. Food and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: I

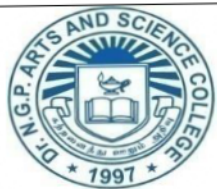
Course Code/ Name: 25FNP1CA – Advanced Food Science

Unit	Contents
I	Cereals Rice - Structure, Composition and nutritive value, starch-cookery . Wheat - Structure, composition and nutritive value. Wheat flour — types, functionality of components, baking qualities, manufacture of bread, pastries and cakes. Millets- Jowar, Bajra, Maize and Ragi. Composition and nutritive value and Products
II	Pulses, Fats & Oils Pulses - Composition and nutritive value, methods of processing – dry and wet processing, vegetable protein mixes, Anti nutritional factors and eliminations. Nuts and Oilseeds- Composition and nutritive value, nutritious food mixes from oil seeds, toxins. Fats and Oil - Nutritional importance of oil and fats, Functions of oil and fats in foods, Sources, nutritional composition, rancidity — types and prevention, role of fat / oil in food preparations
III	Fruits & Vegetables Classification, Composition and nutritive value, selection, storage, pigments, browning reactions (Enzymatic and Non-Enzymatic), pectic substances, ripening of fruits, changes on cooking. Beverages – Classification, milk & fruit-based beverages, carbonated nonalcoholic beverages. Spices and condiments – Type, uses and adulteration, role in cookery and medicinal uses. Evaluation of foods - Subjective and objective evaluation of foods. Study of proximate constituents
IV	Milk and milk products & egg Composition, physical and chemical properties - effects of heat, acid and enzymes, processing of milk – pasteurization, homogenization, types of milk. Milk products – Butter, curd, yogurt, butter milk, cheese, milk powder, khoa, ice cream. Egg - Structure, composition, grading and selection, effects of heat on egg protein, egg foam (factors affecting foam formation) and role in cookery
V	Meat, poultry & fish Meat - Structure, composition, postmortem changes, Rigor mortis, Aging and Tenderization of meat, color of meat, changes of meat in cookery and methods of cooking, meat analogues Poultry - Classification, composition, market forms, selection factors and methods of cooking Fish - Classification, composition, kinds of fish, characteristics of fresh fish, fish products and methods of cooking

PERCENTAGE OF SYLLABUS REVISED: 5%

COURSE FOCUSES ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Gender Sensitization
✓	Intellectual Property Rights (IPR)	✓	Innovations
✓	Social awareness / Environment		Constitutional Rights/Human Values/Ethics



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Syllabus Revision M.Sc. Food and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: I

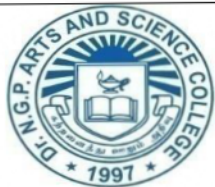
Course Code/ Name: 25FNP1CB - Nutrition Through Life Cycle

Unit	Existing	Changes
I	Nutrition in Preconception and Pregnancy Nutrition in Preconception-Introduction, premenstrual syndrome, obesity and fertility, eating disorder and fertility , polycystic ovary syndrome, nutrient intake for pre-conceptual women, factors contributing infertility in female. Nutrition in pregnancy - Stages of gestation, maternal physiological adjustments , weight gain during pregnancy and nutritional requirements for pregnancy, miscarriage, preterm delivery, multi fetal pregnancies, eating disorders and complications of pregnancy .	maternal physiological Changes ,
II	Nutrition in Lactation and Infancy Nutrition in Lactation - Physiological adjustments during lactation, Physiology of milk Production - hormonal controls and reflex action, lactation in relation to growth and health of infants, Breast feeding and problems of breast feeding, nutritional composition of colostrum and mature milk, special foods during lactation, nutritional requirements during lactation. Expressing and storing breast milk, Breast feeding promotion network of India . Nutrition in Infancy - Rate of growth, weight as the indicator, premature infant, feeding premature infants, low birth weight, breast vs. bottle feeding, nutritional allowances, complementary feeding, and weaning foods.	Physiological Changes ,
III	Nutrition for Toddlers and School age Nutrition in Toddlers Physiological and Cognitive development, feeding skill and behavior , common nutrition problems. Nutrition in Preschool Children - Growth and development of preschool children, food habits, nutritional requirements, supplementary foods. Nutrition in School Age - Early and middle childhood, physiological development, nutritional requirements and feeding, packed lunches, post school snacks, physical activity and nutrition.	Physiological Changes ,
IV	Nutrition During Adolescence, Adulthood and Old age Nutrition During Adolescence - Physical growth, physiological and psychological changes associated with puberty (menarche and menstruation in girls), nutritional needs, eating disorders - anorexia nervosa, bulimia nervosa, physiological and nutritional problems in adolescent pregnancy and its requirements and complications, physical activity and nutrition . Nutrition during Adulthood - Physiological changes of adulthood Nutrition and work efficiency for maintenance of health, RDA Nutrition for Old Age - senescence and sarcopenia theories of ageing, physiological changes, Socio-economic and psychological factors - geriatric foods and nutritional requirements, factors affecting food intake, institutionalized changes in old age.	-
V	Nutrition for Sports and Special Condition Sports and Exercise Fitness - Physical fitness assessment - cardio-respiratory fitness, assessment of body composition. Role of carbohydrate, fat and protein as a fuel for exercise, fluid and electrolyte balance during prolonged exercise, nutritional requirements in sports, dietary intake before, during and after exercise. Concept of aerobic and anaerobic exercises, Nutrition for higher altitudes, Nutrition for expeditions and space voyage, Nutrition for armed forces, Nutrition for special children ADHD and ASD	Nutrition for Old Age - Physical and Physiological Changes , nutritional needs and dietary considerations, nutrition related problems during old age

PERCENTAGE OF SYLLABUS REVISED: 50%

COURSE FOCUSES ON:

✓	Skill Development	Entrepreneurial Development
✓	Employability	Gender Sensitization
	Intellectual Property Rights (IPR)	Innovations
	Social awareness / Environment	Constitutional Rights/Human Values/Ethics



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Syllabus Revision M.Sc. Food and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: I

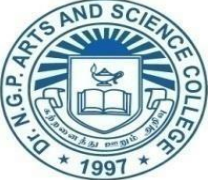
Course Code/ Name: 25FNP1CD – Food Chemistry

Unit	Existing	Changes
I	Physico-chemical properties of water and foods Structure and properties of water and ice, types of water, concept of water activity and Food spoilage, Sorption phenomena. Gels: Structure, formation, strength, types and permanence Emulsions: formation, stability, surfactants and emulsifiers, Foams: Structure, formation and stabilization.	Chemistry of water, ice and colloidal system
II	Chemistry of Non starch polysaccharides and Starch Starch: structure, properties of amylose and amylopectin, effect-of-processing gelatinization , Characteristics of some food starches. Effects of ingredients and conditions on gelatinization- retrogradation, polysaccharide hydrolysis. Non-starch polysaccharides: Applications and properties of cellulose, hemicelluloses, pectins, gums (gum arabic, guar gum, xanthan gum), agar, alginates, carrageenan	Modified Food Starches - various processing techniques and its industrial applications B- Glucans, Glucomannan
III	Chemistry of Protein Proteins, Peptide and amino acids - structure, physicochemical properties, functional properties, chemical and enzymatic modifications - denaturation, nonenzymatic browning , and other chemical changes, processing induced physical, chemical and nutritional changes, texturized proteins, protein isolates, concentrates, protein hydrolysate.	Classification of protein Complementary Protein
IV	Chemistry of Fats and Oils Classification, distribution, composition, physical, chemical and functional properties. Effect of processing on chemical structure and physical properties, uses-in-food preparations and inter-esterification of fats. Lipids exposed to frying conditions and hydrogenated fat. Lipid-protein complexes, Emulsions . Fat deterioration and antioxidants and fat substitutes.	
V	Chemistry of active compounds Pectins, phenolic components, enzymatic browning in fruits and vegetables, volatile compounds from vegetables during cooking, chemical properties of plant pigments—water and fat soluble pigments, properties and active principles in spices and condiments Fruits and vegetables - chemical and functional properties of quercetin, anthocyanin, flavonoids, tannin and gallic acid Spices – chemical and functional properties of curcumin, capsaicin, eugenol, piperine, cinnamaldehyde and allyl sulphide (spices) Condiments - chemical and functional properties of anethole, aldehyde cumino, allicin, gingerol and myristicin	Fruits and vegetables - chemical and functional properties of quercetin, anthocyanin, flavonoids, tannin and gallic acid Spices – chemical and functional properties of curcumin, capsaicin, eugenol, piperine, cinnamaldehyde and allyl sulphide (spices) Condiments - chemical and functional properties of anethole, aldehyde cumino, allicin, gingerol and myristicin

PERCENTAGE OF SYLLABUS REVISED: 20%

COURSE FOCUSES ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Gender Sensitization
	Intellectual Property Rights (IPR)		Innovations
✓	Social awareness / Environment		Constitutional Rights/Human Values/Ethics

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Syllabus Revision M.Sc. Food Science and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: I

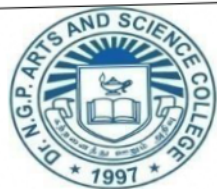
Course Code/ Name: 25FNP1DA - Food Product Development

Unit	Existing	Changes
I	New product development Definition and classification, characterization and factors shaping new product development. Food product development and technologies, Marketplace influence. Measures of Food Product Success-Production, Market, Customer, New product development – patent, patent laws, international code for Intellectual property rights (IPR)	New food product development, need for food product development
II	Stages of product development Food product development- stages in product development, Level of Innovation-New product categories. FSSAI Regulations	-
III	Sensory Evaluation Establishing sensory panels – Designing testing facilities – Analytical Test – Conduct a sensory Evaluation Test – Designing score card, objective evaluation, Instruments used for texture evaluation.	Sensory Evaluation of food products
IV	Formulation of new product development Formulation of product for infants, preschool, elderly, sports person - Selection of raw materials, portion size, standardization methods, calculation of nutritive values, cost- Suggested Retail Price (SRP), shelf life.	Formulation of new food product for target groups. Regulatory compliances.
V	Packaging and Marketing Packaging – Types of packing materials, Labelling. Concept of market and marketing –Approaches to study marketing functions, market structure, market efficiency and market integration. Role of government in promoting agricultural marketing. GST for newly developed product.	Sustainable packaging, labeling claims, GST for food products.

PERCENTAGE OF SYLLABUS REVISED: 35%

COURSE FOCUSES ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Gender Sensitization
✓	Intellectual Property Rights (IPR)	✓	Innovations
	Social awareness / Environment		Constitutional Rights/Human Values/Ethics



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Syllabus Revision – New Course M.Sc. Food Science and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: I

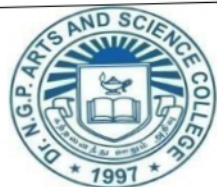
Course Code/ Name: 25FNP1DB - Functional Foods

Unit	Existing
I	Introduction to Functional Foods: Definition, History, Benefits of Functional, Classification and types of functional foods, Grouping of Functional Foods, and Market Survey and Regulatory Issues.
II	Probiotics, Prebiotics, and Synbiotics: Probiotics – definition, concept, types and role of probiotics in gastrointestinal health, cancer, and other diseases. Challenges and regulatory issues related to probiotics. Prebiotics – definition, concept, health benefits of prebiotics and recent advances in prebiotics – sources, and applications of galacto oligosaccharides (GOS), functional disaccharides, (lactulose, lactitol and lactose) and Resistant starch (RS). Synbiotics – definition, concept, sources and health benefits.
III	Free radicals and Antioxidants Free Radicals – Concept and definition of free radicals, reactive oxygen species (ROS) and oxidative Stress. Antioxidant - Definition and classification of antioxidants: Role of endogenous antioxidants - Super Oxide Dismutase (SOD), Catalases, Glutathione, Reductase, Peroxidases- Glutathione Peroxidase. Role of Exogenous antioxidants- Retinol, β -carotene, Ascorbic acid and Tocopherol.
IV	Phytochemicals Distribution and health benefits of Terpenoids, Carotenoids - Carotene, Leutein, zeaxanthin, and Lycopene. Poly Phenols - Non-Flavonoid polyphenols, Flavonoids - Flavanols, Flavanol, (Catechin) Flavan-3-ol, Flavones, Flavanones, Anthocyanidins, Phytoestrogens (isoflavonones), Other Poly Phenols: Curcumin, Tannins, Lignan and Resveratrol.
V	Food Sources of functional ingredients Cereals and grains, fruits and vegetables, milk and milk products, nuts and oilseeds, sea foods, herbs and spices – functional compounds and its role in disease prevention.

PERCENTAGE OF SYLLABUS REVISED: 100 %

COURSE FOCUSES ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Gender Sensitization
✓	Intellectual Property Rights (IPR)	✓	Innovations
	Social awareness / Environment		Constitutional Rights/Human Values/Ethics



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Syllabus Revision – Practical Course M.Sc. Food Science and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: I

Course Code/ Name: 25CIU1CP - Food Analysis

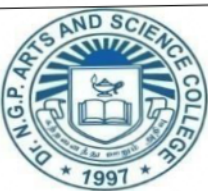
Exp. No.	Existing	Changes
1	Determination of moisture content, ash, crude fibre	
2	Determination of carbohydrate by Anthrone method	
3	Estimation of protein content of foods by Lowry's method	
4	Estimation of lipid in egg yolk	
5	Estimation of iron	
6	Estimation of phosphorus	
7	Estimation of calcium in milk and curd	
8	Estimation of ascorbic acid in citrus fruits	
9	Estimation of iodine number, acid number, saponification number	Determination of Crude Fibre Content
10	Estimation of amino acid by Sorensen's Formaldehyde titration method	
11	Qualitative analysis of phytochemical constituents	
12	Determination of protein by Micro Kjeldhal method	
12	Demonstration of fat content by Soxhlet method	
13	Demonstration of total antioxidant capacity	Estimation of Cellulose in plant material
14	Determination of microbial growth by pure culture technique and microbial count by standard plate count method	

Note: Out of 12 – 10 mandatory

PERCENTAGE OF SYLLABUS REVISED: 25%

COURSE FOCUSES ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Gender Sensitization
	Intellectual Property Rights (IPR)		Innovations
	Social awareness / Environment		Constitutional Rights/Human Values/Ethics

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Syllabus Revision

B.Sc. Food Science and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: III

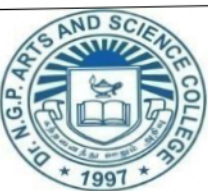
Course Code/ Name: 24FNU3CA - Nutrition Through Life Span

Unit	Existing	Changes
I	Introduction to RDA and Balanced Diet Basics for Recommending the Dietary Allowances-Introduction, Purpose of RDA, Factors Affecting RDA, Recommended Dietary Allowances for Indians, Dietary Goals and 15 dietary guidelines steps, Concept of balanced diet, Principles and factors affecting of Meal Planning. Nutritional needs of adults (men and women) –Nutritional requirement of the adult in relation to occupation (Consumption Units) and Reference Man and Woman	Sedentary, moderate and heavy work
II	Nutritional Needs during Pregnancy and Lactation Pregnancy-Stages, Physiological changes, Problems .Nutritional requirements and dietary changes during pregnancy Lactation- Physiological changes during lactation, hormonal control and relaxation, nutritional components of colostrum. Nutritional requirements and diet for lactating women	Metabolic changes , common discomfort and complications.
III	Nutrition during Infancy Infancy- Growth and development (growth chart), Breast-feeding and bottle feeding. Nutritional requirements of infants' up to one year in normal and premature infants. Problems-of-feeding- Weaning Foods - Types of supplementary food, ARF, Point-to-be-considered-in introducing weaning foods, problems in weaning and Low cost supplementary foods in India.	Growth chart interpretation, exclusive breast feeding practice. Bottle feeding risks and hygiene. Problems of feeding and management, guidelines in introducing weaning foods.
IV	Nutritional needs of Pre-school & School children Pre-school -Growth and development, and feeding problem, developing healthy eating habits. Nutritional requirements and dietary guidelines for preschool children. School children - Growth pattern, Nutritional requirement, feeding problem for School children, Importance of Packed lunch, Nutritional concerns.	-
V	Nutrition during adolescence and old age Adolescence- Physical and Psychological Growth and development, changes in food habits, Nutritional problems, eating disorder- anorexia nervosa and bulimia nervosa, Adolescent Pregnancy-Dual burden, Nutritional requirement. Old Age - Physiological changes in ageing, Psychological and Nutritional problems of elderly and their management. Nutritional requirement.	-

PERCENTAGE OF SYLLABUS REVISED: 15%

COURSE FOCUSES ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Gender Sensitization
	Intellectual Property Rights (IPR)	✓	Innovations
	Social awareness / Environment		Constitutional Rights/Human Values/Ethics

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Syllabus Revision
B.Sc. Food Science and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: III

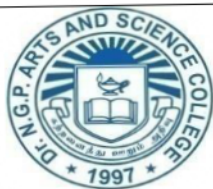
Course Code/ Name: 24FNU3CB - Human physiology

Unit	Existing	Changes
I	Cell: Structure and functions, Tissues: Structure and functions of epithelial, connective, muscular and nervous tissue. Digestive system: structure and functions, digestion, absorption of food. Associated organs of digestion- salivary gland, liver, gall bladder, pancreas and spleen	neuroglia (glial cells)
II	Blood: Composition and functions, Red Blood cells: Formation and functions, White Blood cells: Types and functions, Platelets-function. Blood groups, blood coagulation and Rhesus factor, Disorders – Anemia, Leukemia, hemophilia. Heart - Structure and functions, cardiac cycle, ECG and its significance. Blood pressure-factors affecting the blood pressure	-Definition, systole, diastole and pulse pressure
III	Sense Organs -Eye, Ear, Tongue and Skin – Structure and functions. Diseases- vision – Conjunctivitis, trachoma, glaucoma, cataract, Tongue-Papilla and taste buds, Ear – Deafness, vertigo Lungs – Structure and functions, Exchange and Transportation of gases in the body. Disturbances in respiration – Apnea, Dyspnea, Hypoxia and Asphyxia.	(physiology of sights and hearing)
IV	Male reproductive system – Structure and functions. Spermatogenesis and Structure of Sperm cell. Female reproductive system – Structure and functions, Oogenesis, Menstrual cycle, Puberty and Menarche. Endocrine glands- Pituitary, Thyroid, Parathyroid, Pancreas (endocrine function), Adrenal –functions, Gonads, hypo and hyper activity of enzymes secreted.	
V	Excretory system – Structure and functions of kidney and Nephron, Mechanism of urine formation, composition of urine, Micturition. Muscular system – Structure and Functions of the muscles & muscular action. Central nervous system - Brain, spinal cord and Peripheral Nervous system – structure , function & action.	Reflex action (Definition) Reflex arc (action of neuron) Peripheral Nervous system Types-Somatic Nervous System, Autonomic Nervous System-(Sympathetic Nervous System& Para Sympathetic Nervous System and its effect).

PERCENTAGE OF SYLLABUS REVISED: 20%

COURSE FOCUSES ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Gender Sensitization
	Intellectual Property Rights (IPR)	✓	Innovations
	Social awareness / Environment		Constitutional Rights/Human Values/Ethics



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Syllabus Revision – New Course B.Sc. Food Science and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: III

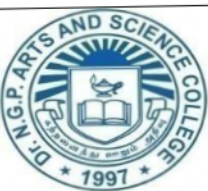
Course Code/ Name: 24FNU3CC – Institutional Management

Unit	Contents
I	Food Service Review of different types of institutional food service in operation- classification based on functional – i.e., profit oriented, service oriented and public health facility oriented, with their objective feeding's programmes in the country. Types of menus. Service of food: Self-service, tray service, waiter-waitress services, Single point service, Buffet service English service, American service, French service, Guerdon service, silver service, Russian service.
II	Management and Organization Definition, Principles and techniques of management, tools of management; leadership- qualities of good leader styles of leadership; art of delegation; Organization – Organizing- present and future trends. Process of organization. Principles of organization, types of organization, tools of management. Definition, theories and types
III	Personnel Management Definition, Sources of personnel, Criteria for selection of personnel orientation, training, motivation, supervision, importance of good human relations, employee facilities fringe benefits: Labor policies and legislation – labor laws governing food service establishments; Performance appraisal of employees.
IV	Financial management Definition, application of Management Accounts of catering operators, cost concepts, book keeping and accounting – systems of book keeping, book of account maintenance of account books, balance sheets and inventor budgetary control.
V	Hygiene, and Safety in Food Service Institutions Definition, importance, environmental hygiene and sanitation; hygiene in food handling; personnel hygiene of personnel; importance of pest and rodent control in food services. Safety in food procurement, storage, handling and preparation, control of spoilage, safety of leftover foods, disposal of food waste. Accidents in food service establishments, safety procedure, training, education, legal responsibilities of food service manager.

PERCENTAGE OF SYLLABUS REVISED: 100%

COURSE FOCUSES ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Gender Sensitization
	Intellectual Property Rights (IPR)		Innovations
	Social awareness / Environment		Constitutional Rights/Human Values/Ethics

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Syllabus Revision – Practical Course B.Sc. Food Science and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: III

Course Code/ Name: 24FNU3CP - Nutrition Through Life Span

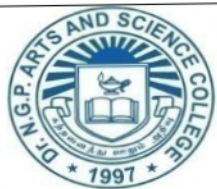
Exp. No.	Existing	Changes
1	Standardization of portions for cooked food.	Standardization of portion sizes for common cooked foods.
2	Planning, preparation and nutritional evaluation of diets in relation to activity levels).	-
3	Planning and Preparation of a balanced diet for Pregnant woman in first-second and third trimesters	(first, second, and third trimesters).
4	lactating woman (0-6 months and 6-12 months)	Planning and preparation of diets for lactating women
5	Infancy & toddlers	Planning and preparation of diets for
6	pre-school child	Planning and preparation of diets for
7	school going child	Planning and preparation of diets for
8	Adolescence boys and girls	Planning and preparation of diets for
9	Adult men and women belonging to different income group	Planning and preparation of diets for senior citizens.
10	Senior citizen	Planning Preparation of ARF, complementary and low-cost weaning foods
11	Preparation of ARF, complementary and low-cost weaning foods	Preparation of packed lunch for school going children, office workers
13	Preparation of packed lunch	Planning and preparing recipes for a child: Nutritious Snacks
14	Planning and preparing recipes for a child: Nutritious Snacks	-
15	Planning and preparing recipes for a senior citizen: Break-Fast/Dinner	-
Experiments Under DBT		
1	Planning and preparing recipes for a child: Nutritious Snacks	
2	Planning and preparing recipes for a senior citizen: Break Fast/Dinner	

Note: Out of 15 – 13 mandatory

PERCENTAGE OF SYLLABUS REVISED: 50%

COURSE FOCUSES ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Gender Sensitization
	Intellectual Property Rights (IPR)	✓	Innovations
✓	Social awareness / Environment		Constitutional Rights/Human Values/Ethics



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Syllabus Revision B.Sc. Food Science and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: III

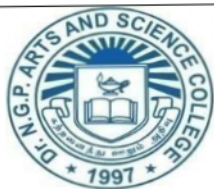
Course Code/ Name: 24FNU3SA - Basics of Research Techniques-Computer Applications

Unit	Content
I	Introduction to the world of computers Basic concepts on computer- definition, types of computers, input and output devices, peripheral devices. Components of computer: software and hardware – definition, classification, application in nutrition field. Data Storage: Local drive vs. cloud storage (Google Drive, OneDrive).
II	MS Word for Documentation and Research Writing MS Word – concepts of document and template, creating documents and saving. Text formatting, working with tables -to organize dietary data (e.g., food item, quantity, calories). Inserting Elements: Images (nutritional posters), charts, equations. References tab to insert citations, bibliography. Spell check, grammar check, file printing, word art. Plagiarism check.
III	MS Excel for Data Entry and Nutritional Calculations Excel Basics: Cells, rows, columns, workbook, and worksheet. Creating worksheet, workspace, formatting a worksheet, basic operations on data, sorting, total and subtotal, creating link between documents, programming in macros, working with charts, printing worksheets.
IV	MS PowerPoint for Presentations in Nutrition Creating a presentation. Opening, saving presentations. working with different views, working with slides–make a new slide, move, copy, go to a specific slide, layout, adding and formatting text, adding clipart, audio and other pictures, designing slide show, tools – meeting minds, presentation conference. Role of AI in creating interactive presentation for nutrition education.
V	Computer Applications in Nutrition Research Software package in nutrition education and diet counselling - Patient's health record, Nutritive value of food items, Nutritional analysis, Meal planning and recipes. Data collection – creating online form using Google forms, Data entry in MS Excel and data cleaning and analysis. Nutrition Software Overview: DietCal, Nutri Survey, Nutritionist Pro. Online Resources: PubMed, Google Scholar. Poster Making: Canva.com. Reference tools – Zotero, Mendeley.

PERCENTAGE OF SYLLABUS REVISED: 100%

COURSE FOCUSES ON:

✓	Skill Development		Entrepreneurial Development
✓	Employability		Gender Sensitization
✓	Intellectual Property Rights (IPR)	✓	Innovations
	Social awareness / Environment		Constitutional Rights/Human Values/Ethics



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Syllabus Revision B.Sc. Clinical Laboratory Technology

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: III

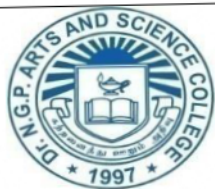
Course Code/ Name: 24FNU3IA - Clinical Nutrition

Unit	Existing
I	Basics of Clinical Nutrition Functions of food and nutrients-energy, tissue building and repair and metabolic regulation. Nutritional status-optimal nutrition, undernutrition, overnutrition. Basic five food groups, principles of meal planning, modification of diet in diet therapy, routine hospital diets.
II	Nutrition Therapy in Nutritional Imbalance and Cardiovascular disease Etiology, clinical manifestations, diet therapy for underweight and obesity. Etiology, clinical manifestations, diet therapy for hypertension and hyperlipidemia.
III	Nutrition Therapy in Diabetes mellitus and gastrointestinal diseases Etiology, clinical manifestations, diet therapy for diabetes. Etiology, clinical manifestations, diet therapy for GERD, diarrhea and constipation.
IV	Nutrition Therapy in Nutritional Deficiencies Etiology, clinical manifestations, diet therapy for PEM, anemia, Vitamin A deficiency, fluid and electrolyte imbalance. Special feeding methods to treat overt malnutrition.
V	Nutrition Therapy in Various diseases Etiology, clinical manifestations, diet therapy for liver and pancreatic disease (cirrhosis, pancreatitis), kidney disease (nephritis, renal calculi, ESRD, dialysis).

PERCENTAGE OF SYLLABUS REVISED: 100%

COURSE FOCUSES ON:

✓	Skill Development	Entrepreneurial Development
✓	Employability	Gender Sensitization
	Intellectual Property Rights (IPR)	Innovations
✓	Social awareness / Environment	Constitutional Rights/Human Values/Ethics



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Syllabus Revision M.Sc., Food and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: III

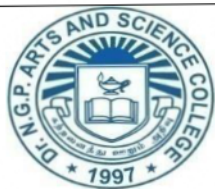
Course Code/ Name: 24FNP3CA – Micronutrients

Unit	Existing	Changes
I	Fat Soluble Vitamins -Vitamins - Introduction, Factors Influencing the Utilization of Vitamins. Fat Soluble Vitamins - Vitamin A, D, E and K, Structure, Chemistry, biosynthesis , metabolism, absorption, transport, utilization, storage, bio-availability and Methods of Assay , Deficiency and Diagnosis , Hyper Vitaminosis, Recommended Intakes and Dietary Sources.	Types of vitamins, Functions, Digestion
II	Water Soluble Vitamins-Thiamine, riboflavin, niacin, vitamin B12, folic acid, pyridoxine, pantothenic acid, biotin and ascorbic acid - Structure, chemistry, biosynthesis , metabolism, Absorption, Transport, utilization, storage, bio-availability and Methods of Assay , Deficiency and Diagnosis , Hyper Vitaminosis, Recommended Intakes, deficiency and Dietary Sources.	Digestion
III	Macro Minerals-Calcium – Distribution of calcium in the body, functions, absorption, metabolism, transport, utilization , deficiency, toxicity and requirements. Regulation of calcium (Calcium Balance). Phosphorus - Concentration in the body, functions, absorption, metabolism, transport, utilization , deficiency, toxicity, sources and requirements. Calcium - phosphorus ratio. Inter relationship between Calcium, Phosphorus and Parathyroid Hormone. Sodium, Potassium, Magnesium and Sulphur - Distribution, functions, absorption, metabolism, utilization, deficiency, toxicity, sources and requirements, Sodium and Potassium Balance.	functions of phosphorus
IV	Micro Mineral- Iron- Distribution, absorption, metabolism, functions, intake, transport and utilization, storage , Sources, requirements, deficiency, toxicity, bio availability of iron, Iron Turnover. Iodine, Flourine and Zinc - Functions, absorption, metabolism, sources, requirements, deficiency and toxicity. Trace Elements Physiology, Functions, sources, requirements, deficiency and toxicity of copper, cobalt, molybdenum, manganese, selenium, boron, chromium.	
V	Pseudo Vitamins and Antioxidants- Choline, carnitine, inositol, taurine, flavonoid, pangamate - Chemistry , functions, and Sources. Antioxidants - Reactive-Oxygen-Species, Free-radical, Mechanism of Antioxidants , Functions, Relationship with aging, cancer, CVD, CRD, CKD, Diabetes, Stroke, Liver diseases.	sources of antioxidant, role of antioxidant in human wellness.

PERCENTAGE OF SYLLABUS REVISED: 15 %

COURSE FOCUSES ON:

✓	Skill Development	Entrepreneurial Development
✓	Employability	Gender Sensitization
	Intellectual Property Rights (IPR)	Innovations
	Social awareness / Environment	Constitutional Rights/Human Values/Ethics



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Syllabus Revision M.Sc. Food and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: III

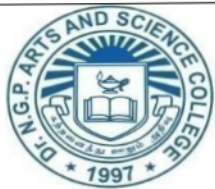
Course Code/ Name: 24FNP3CB - Therapeutic Nutrition – Systemic Disorders

Unit	Contents
I	Diet for Gastrointestinal Disorders Etiology, clinical manifestations, normal blood values, dietary management (dietary principles, foods to be included and avoided) for Esophagitis, Hiatal hernia, Dysphagia, Acid Peptic Disorders (Gastroesophageal Reflux Disease, Gastritis, Peptic Ulcer Disease, Zollinger-Ellison syndrome), Constipation, Diarrhea, Ulcerative colitis, Inflammatory Bowel Disease, Lactose intolerance.
II	Diet for Hepatobiliary and Pancreatic Disorders Etiology, clinical manifestations, blood test normal values, dietary management (dietary principles, foods to be included and avoided) for Hepatitis, Cholangitis, Fatty Liver Disease, Cholelithiasis, Choledocholithiasis, Cholesystitis, Pancreatitis.
III	Diet for Renal Disorders Etiology, clinical manifestations, normal blood values and urine tests, dietary management (dietary principles, foods to be included and avoided) for Nephritis, Nephrosis, Nephritic Syndrome, Urinary calculi, Chronic Kidney Disease, End Stage Renal Disease. Dialysis – types and dietary management.
IV	Diet for musculoskeletal and thyroid disorders Etiology, clinical manifestations, blood and urine test normal values, dietary management (dietary principles, foods to be included and avoided) for Osteoarthritis, Rheumatoid arthritis, Gout, Osteoporosis, Hypothyroidism, Hyperthyroidism.
V	Diet for Cancer and Critical illnesses Etiology, dietary management (dietary principles, foods to be included and avoided) for cancer. Nutritional manifestations associated with cancer. Feeding problems related to cancer therapy (surgery, radiation therapy and chemotherapy). Burns – types and complications, Dietary management. Pre- and post- operative nutrition.

PERCENTAGE OF SYLLABUS REVISED: 100%

COURSE FOCUSES ON:

✓	Skill Development	Entrepreneurial Development
✓	Employability	Gender Sensitization
	Intellectual Property Rights (IPR)	Innovations
	Social awareness / Environment	Constitutional Rights/Human Values/Ethics



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Syllabus Revision M.Sc. Food and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: II

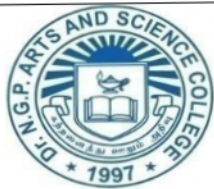
Course Code/ Name: 24FNP3CC - Research Methodology and Statistics

Unit	Existing	Changes
I	Fundamentals of Research: Meaning of research, objectives of research, types of research and their application , selection and formulation of research problems- hypothesis, research design, sampling methods — random sampling methods and non-random sampling methods, sampling errors & sample size calculation .	Types of study design – cross sectional study, Cohort study. Cross sectional study, Randomized Controlled trials, Quasi experimental study and meta-analysis.
II	Primary Data collection methods - Questionnaire, schedule method, interview method, case study method & experimentation method, secondary data – sources and precautions while using secondary data. Editing and Coding the Data Organization of Data - classification of data, formation of discrete and continuous frequency distribution, tabulation - role, general rules of tabulation, types of tables.	Observation Difference between schedule and questionnaire
III	Representation of Data - Diagrammatic and graphical representation - significance of diagrams, graphs and charts- general rules for constructing diagrams - types of diagrams .—Interpretation and Report Writing - Meaning of interpretation and precautions, Format of thesis writing - front page, main text, bibliographical citations and appendices. Publishing the research work - writing of abstract and article- content, style, grammar, reference citation. Plagiarism - Definition, types, importance and examples of plagiarism.	Different Plagiarism Software
IV	Measures of Central Tendency Measures of Central Tendency - Mean, median, mode, their relative advantages and disadvantages. Measures of dispersion — mean, standard deviation, quartile deviation. Co-efficient of variation, percentile and percentile ranks. Association of attributes and contingency tables.	Mean- (arithmetic, geometric and harmonic) Mode - Definition, formula calculation, difference
V	Tests of significance: Tests of significance — large and small sample - t' and F' test, tests for independence using chi-square test. Analysis of variance- one-way and two-way classifications, Correlation, coefficient of correlation and its interpretation, rank correlation, regression equations and predictions	Chi-square – condition for the application of χ^2 , steps involved in applying χ^2 and calculation, important characteristics and caution in using χ^2 . Correlation - coefficient of correlation and rank correlation calculation and its interpretation. t- test and F test Analysis of variance (One way and Two way) – introduction, basic principle and calculation

PERCENTAGE OF SYLLABUS REVISED: 25 %

COURSE FOCUSES ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Gender Sensitization
✓	Intellectual Property Rights (IPR)	✓	Innovations
	Social awareness / Environment		Constitutional Rights/Human Values/Ethics



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Syllabus Revision M.Sc. Food and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: III

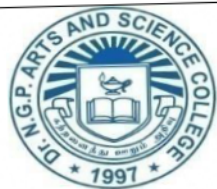
Course Code/ Name: 24FNP3CD - Food Additives and Contaminants

Unit	Existing	Changes
I	Food additives Definition, classification and functions, preservatives, antioxidants, colours and flavors, emulsifiers, sequestrants, humectants, hydrocolloids, sweeteners, acidulents, buffering salts, anticaking agents etc. – chemistry, food uses and functions in formulations, indirect food additives; toxicological evaluation of food additives . Proteins, starches and lipids as functional ingredient; isolation, modification, specifications, functional properties and applications in foods	-
II	Functionality of food additives Regulatory and legal aspects , sensory properties of foods, additives of natural origin, synthetic additives. Health and safety aspects of food additives. Present status of various food additives. Controversial food additives Saccharin, history, function, controversy status, aspartame, nitrite and nitrate compounds, nitrosamines.	-
III	Additives to improve acceptability Permitted food colors, natural and artificial, food flavours, natural and artificial, sweeteners natural and artificial, antimicrobials, aerating agents, antistaling agents, bodying agents, clouding agents, curing agents clarifiers, dietary supplements, dietary fiber, emulsifiers, enzymes, fat replacers, gelling agents, leavening agents, stabilizers, surfactants, tenderizers, texturizers, thickeners, vitamins, nutraceuticals, viscosity modifiers, whipping agents	-
IV	Flavor technology Types of flavours, flavours generated during processing – reaction flavours, flavor composites, stability of flavours during food processing, analysis of flavours, extraction techniques of flavours, flavours emulsions; essential oils and oleoresins; authentication of flavours etc.	-
V	Food adulteration Food adulteration - definition, reasons for food adulteration , methods of adulteration, and methods of detection. Consumer's responsibilities, consumer organizations. The prevention of food adulteration Act, 1954. The consumer protection Act 1986, normal food adulterants in coffee, tea leaves, edible oil, milk, spice powders	-

PERCENTAGE OF SYLLABUS REVISED: 10%

COURSE FOCUSES ON:

✓	Skill Development	Entrepreneurial Development
✓	Employability	Gender Sensitization
	Intellectual Property Rights (IPR)	Innovations
	Social awareness / Environment	Constitutional Rights/Human Values/Ethics



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Syllabus Revision – Practical Course M.Sc. Food and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: III

Course Code/ Name: 24FNP3CP - Food Analytical Techniques

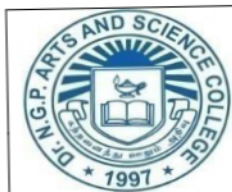
Exp. No.	Existing
1	Different plant sample extraction methods
2	Qualitative phytochemical analysis in various plant samples
3	Estimation of chlorophyll
4	Estimation of curcumin in turmeric
5	Estimation of total phenol content present in fresh fruits
6	Estimation of capsaicin in calorimetric method
7	Determination of trypsin inhibitor in pulses
8	Determination of tannin content
9	Determination of phytic acid in millets
10	Determination of Gossypol
11	Determination of Cyanogen
12	Estimation of Cellulose in plant material

Note: Out of 12 – 10 mandatory

PERCENTAGE OF SYLLABUS REVISED: 100 %

COURSE FOCUSES ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Gender Sensitization
	Intellectual Property Rights (IPR)	✓	Innovations
	Social awareness / Environment		Constitutional Rights/Human Values/Ethics



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Syllabus Revision – Practical Course M.Sc. Food and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: III

Course Code/ Name: 24FNP3CQ - Therapeutic Nutrition – Systemic Disorders

Exp. No.	Contents
1.	Nutritional Assessment and Reassessment of a patient.
2.	Analyse the case history of a patient for below conditions, calculate modified nutritional requirements, plan a day's menu and calculate the nutrients:
3.	Underweight and Obesity
4.	Diabetes Mellitus – IDDM, NIDDM, GDM
5.	Hypertension
6.	Hyperlipidemia
7.	Peptic ulcer, Diarrhea, Constipation
8.	Hepatitis, cirrhosis
9.	Acute and chronic pancreatitis
10.	Nephritis, Nephrosis, Renal failure
11.	Cancer
12.	Food Allergies
13.	Pre- and post-operative period

Note: Out of 13 – 10 mandatory

PERCENTAGE OF SYLLABUS REVISED: 100%

COURSE FOCUSES ON:

✓	Skill Development		Entrepreneurial Development
✓	Employability		Gender Sensitization
	Intellectual Property Rights (IPR)		Innovations
✓	Social awareness / Environment		Constitutional Rights/Human Values/Ethics



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Syllabus Revision M.Sc. Food and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: III

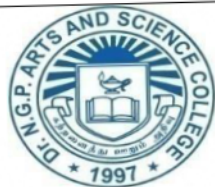
Course Code/ Name: 24FNP3DA - Instrumentation in Food Industry

Unit	Existing	Changes
I	Basic instrumentation: Working principle, components and applications of pH meter, Dialysis machine , Ultra filtration, Reverse osmosis. Principle for Centrifugation and Ultracentrifugation, Calorimetry: Bomb calorimeter.	
II	Rheological parameters, rheological methods , instruments and application, Refractometer, viscometer, penetrometer , farinograph, extensiograph, amylograph, tenderometer. Analysis of texture and flavor profile .	Components, working principles rheometer
III	Principle, instrumentation & application of Colorimetric (colorimeter), UV-Vis spectrophotometer, IR Spectroscopy, Inductively coupled plasma atomic emission spectroscopy (ICP-AES) and Nuclear Magnetic Resonance (NMR).	Working Principle, instrumentation
IV	Theory & Principle, chromatographic parameter components of chromatography & types (paper, thin layer, partition) Advance chromatography: GC, HPLC, HPTLC, UHPC (principle, instrumentation & application) and types of detector.	Working Principle, component and application of different chromatography-basics Advance chromatography:
V	Working Principles, Application, Separation technique & analysis: Electrophoresis: Paper & gel, Agarose 2D Gel Electrophoresis.	Working Principles, Application of

PERCENTAGE OF SYLLABUS REVISED: 20 %

COURSE FOCUSES ON:

✓	Skill Development	Entrepreneurial Development
✓	Employability	Gender Sensitization
	Intellectual Property Rights (IPR)	Innovations
	Social awareness / Environment	Constitutional Rights/Human Values/Ethics



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Syllabus Revision B.Sc. Food Science and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: V

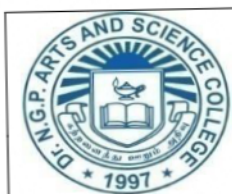
Course Code/ Name: 233FN1A5CA – Food Preservation

Unit	Existing	Changes
I	Preservation of fresh food produce Food preservation - definition, principles and methods. Postharvest physiology of fruit and vegetables, postharvest handling and minimal processing of fruits and vegetables, grains and pulses, fresh fish and seafood, meat and meat products, milk, spices and condiments.	-
II	Preservation using preservatives and microbes Food preservation using preservatives - natural antimicrobials, antioxidants, additives and preservatives, mold inhibitors and fermentation	Biopreservatives
III	Preservation by controlling water, structure and atmosphere Role of water activity in preservation. Drying and dehydration of foods - principles, advantages, limitations and applications. Glass transition and state diagram of foods. Food preservation using membranes, Encapsulation and stabilization. Modified and controlled, atmosphere packaging of produce.	-
IV	Preservation using heat and energy Thermal Processing - sterilization, pasteurization, blanching, canning and bottling, microwave and retort process - principles, advantages, limitations and applications. Freezing - Principles of freezing, fast and slow freezing. Freeze drying and refrigeration - working, advantages and disadvantages, thawing, and cold storage. Novel processing technologies - irradiation, ohmic heating, pulsed electric field, ultrasound processing, high pressure processing, hurdle technology and cold plasma processing.	-
V	Enhancing food preservation by indirect approach Food Packaging - packaging as a preservation technique, types of packaging materials used for foods, food packaging interaction. Food manufacturing control - hygienic design and sanitation, HACCP, GMP, GHP, Commercial considerations - managing profit and quality.	-

PERCENTAGE OF SYLLABUS REVISED: 5%

COURSE FOCUSES ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Gender Sensitization
	Intellectual Property Rights (IPR)	✓	Innovations
✓	Social awareness / Environment		Constitutional Rights/Human Values/Ethics



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Syllabus Revision B.Sc. Food Science and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: V

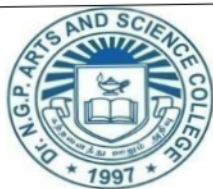
Course Code/ Name: 233FN1A5CB - Fundamentals of Food Microbiology

Unit	Existing	Changes
I	Food and Microorganisms - Importance and types of microorganisms in food industry - Bacteria, Mold and yeast, Scope of food microbiology. Factors affecting the growth of microorganisms in food - Ph, moisture, temperature, oxidation—Reduction potential, Nutrient content, Inhibitory substances and combined effects of factors.	Important of Microorganisms in Food Microbiology, Classification, Growth curve of bacteria, Signification of microorganism in food industries. Micro Organisms and Food Spoilage-General principles underlying spoilage, Classification of foods by ease of spoilage, Intrinsic and Extrinsic factors
II	Contamination, Preservation and Spoilage of different food—General principles underlying spoilage—causes of spoilage, classification of food based on spoilage. Contamination, preservation and spoilage -cereals and cereal products, sugar and sugar products , meat and meat products, vegetables and fruits, milk and milk products and canned foods.	Spoilage of Different Origin of Foods - Spoilage of Plant Origin - flours , Baked products . Spoilage of Miscellaneous and Animal Origin Foods - Fats and oils, Bottled beverages and spices
III	Microorganisms as a Food—Single cell protein, algae and mushroom as a food. Concept of probiotics, prebiotics and synbiotics. Manufacture of fermented foods, Fermented dairy products—Yoghurt and cheese. Fermented plant products— Bread, sauerkraut and pickles. Fermented beverages— types of wine and beer. Fermented meat products - Sausages. Industrial importance of yeasts. Oriental Fermented Foods.	Role of Micro Organisms in Food and Health- Role of Microorganism in Food-Lactic Acid Fermentation- Kimchi, Idli, Yeast Fermentation, Mold Fermentation- Tempeh, Soy sauce production, Acetic acid Fermentation- Kombucha Role of Microorganism In Health- Significance of prebiotic foods, Probiotic and symbiotic organisms and its significance in maintaining health.
IV	Food Poisoning-Food borne intoxication - Staphylococcus, clostridium, Bacillus cereus, Vibrio parahaemolyticus and Campylobacter jejuni. Food borne Infections - E.Coli, Salmonella, Shingella, and Listeria monocytogenes. Algal toxins and Mycotoxins.	
V	Microbiology and Food Sanitation Food sanitation—control and inspection, microbiological criteria and food safety. Quality Assurance—Microbiological quality standards of food. Food Safety objectives, Good Manufacturing Practices (GMP), Good Hygiene Practices (GHP) and Hazard Analysis and Critical Control Point (HACCP).	Microbial Analysis of Foods-Types of media (Selective, enrichment, differential media)- Preparation of media (Steps in preparation)-Measurement of microbial growth (Direct and Indirect methods)- Methods of isolating pure culture (Pour plate, spread plate and streak plate techniques

PERCENTAGE OF SYLLABUS REVISED: 60%

COURSE FOCUSES ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Gender Sensitization
	Intellectual Property Rights (IPR)	✓	Innovations
✓	Social awareness / Environment		Constitutional Rights/Human Values/Ethics



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Syllabus Revision B.Sc. Food Science and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: V


Course Code/ Name: 233FN1A5CC – Food Processing

Unit	Existing	Changes
I	Cereals and Pulses Processing Paddy Processing - Types, milling of rice, by products of rice and their utilization. Wheat processing - Milling of wheat, by products of wheat, extruded products . Millet processing - Types of millet and its processing. Innovative Millet Products . Pulse processing - Wet and dry processing, protein concentrates and protein isolates. Development of low-cost protein foods and snacks .	Extrusion Techniques
II	Milk and Edible Oils Processing Processing of Milk and milk products - Kinds of milk, Cheese and its types, butter, Probiotic milk products - Yoghurt, Kefir, Indigenous Milk products - Paneer, khoa, curd, ghee. Frozen milk products - Ice cream . Technology of oil seeds - Processing of edible oils, vegetable oils, by products of edible oil processing.	-
III	Vegetables and Fruit Processing Vegetable and fruit processing - Minimal processing, Cold storage, drying techniques - drum drying, vacuum drying, freeze drying, infra-red drying, oven drying, foam mat drying, solar drying and mechanical dehydration - use of kiln drier and tunnel drier, osmotic dehydration .	High temperature processing – Sun drying, mechanical drying - drum drying, vacuum drying, infra-red drying, oven drying, foam mat drying, kiln drying and tunnel drying. Low temperature processing – freezing, refrigeration, cold storage, thawing, freeze drying.
IV	Processing of Meat, Poultry, Egg and Fish Meat and poultry processing - Curing, smoking, freezing and cryogenic and vacuum packaging, Egg - Whole egg powder, egg yolk powder, Fish - Fish protein concentrate, fish protein isolate, fish meal and fish oil.	-
V	Processing of beverages and spices Non - alcoholic beverages - Manufacturing process of tea and coffee, Processing of cocoa bean into cocoa powder, manufacture of dark chocolate. Alcoholic beverages - Manufacturing process of Beer and wine. Spices - processing, grading specifications of spices, manufacturing process of spice oil and oleoresin.	-

PERCENTAGE OF SYLLABUS REVISED: 30%

COURSE FOCUSES ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Gender Sensitization
	Intellectual Property Rights (IPR)	✓	Innovations
✓	Social awareness / Environment		Constitutional Rights/Human Values/Ethics

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Syllabus Revision
B.Sc. Food Science and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: V

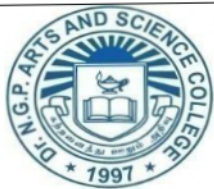
Course Code/ Name: 233FN1A5CD – Food Safety and Quality Control

Unit	Existing	Changes
I	Food safety and Quality control Food Safety - definition of food safety and food spoilage, factors affecting food Safety and food spoilage. Quality control- definition of quality control, Principles of Quality control of food, Quality Assurance-Raw material control, process control and finished product inspection.	-
II	Regulation in Quality Control Codex Alimentarius, ISO, ISI, AGMARK, FSSAI-Food Safety Act-2006, Food Safety Rules and Regulation , APEDA, JECFA	Indian Standards - FAO/WHO, FSSAI, BIS, CPA, PFA, FPO, MPO. International Standards -ISO - 9001:2000, 22000:2005 Standards, WTO, FAO, EPA.
III	Pre-requisite Programs GHP - Personal hygiene – occupational health and safety specification, Food Plant Sanitation Management - Plant facilities construction and maintenance - exterior of the building- interior of the building- equipment's. GHP in Processing, Storage, transportation, traceability, recalling procedures, training and Documentation.	Good Manufacturing Practices - Risk Analysis, Risk Management, Risk Assessment, Risk Communication - Traceability and authentication.
IV	HACCP HACCP principles- Types of Hazards, HACCP team, conduct a hazard analysis, CCP identification, establish critical limits for each CCP, establish CCP monitoring procedures, establish corrective actions procedures, establish procedures for HACCP verification and validation, documenting the HACCP Program.	-
V	Quality evaluation of foods Determination and Compliance of finished product quality with FSSAI Standards, assessment of food quality, Panel selection, sensory Laboratories, Subjective and Objective method of evaluation	-

PERCENTAGE OF SYLLABUS REVISED: 25%

COURSE FOCUSES ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Gender Sensitization
	Intellectual Property Rights (IPR)		Innovations
	Social awareness / Environment		Constitutional Rights/Human Values/Ethics



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Syllabus Revision – Practical Course – New Course B.Sc. Food Science and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: V

Course Code/ Name: 233FN1A5CP – Food Preservation

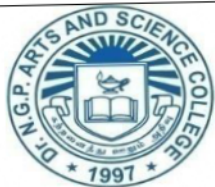
Exp. No.	Contents
1.	Methods of food preservation by minimal processing
2.	Methods of food preservation by sugaring
3.	Methods of food preservation by salting
4.	Methods of food preservation by pickling
5.	Methods of food preservation by drying
6.	Methods of food preservation by freezing and refrigeration
7.	Methods of food preservation by fermentation
8.	Methods of food preservation by smoking
9.	Methods of food preservation by sterilization and pasteurization
10.	Methods of food preservation by canning and bottling
11.	Prepare a preserved product and evaluate its sensory attributes
12.	Conduct a consumer acceptability trial for a preserved product
Experiments under DBT	
1	Preservation of foods by fats – confit & sous vide method
2	Preservation of foods using protein based edible coatings

Note: Out of 12 – 10 mandatory

PERCENTAGE OF SYLLABUS REVISED: 100%

COURSE FOCUSES ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Gender Sensitization
	Intellectual Property Rights (IPR)		Innovations
✓	Social awareness / Environment		Constitutional Rights/Human Values/Ethics



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Syllabus Revision – Practical Course B.Sc. Food Science and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: V

Course Code/ Name: 223FN1A5SP - Food Processing and Quality Control

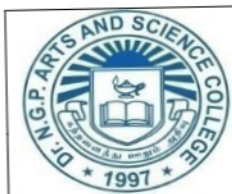
Exp. No.	Contents
1.	To determine the moisture content of a food sample using a moisture analyzer
2.	To estimate the moisture content in food products using the hot air oven method
3.	To determine the ash content in a food sample through preparation of ash solution
4.	To estimate the total ash content of food products by dry ashing method
5.	To determine the water absorption capacity of flour or other powdered food materials
6.	To measure the pH and total soluble solids (TSS) of prepared jam or jelly samples
7.	To assess the viscosity of liquid food samples using a viscometer
8.	To determine the salt content in food samples using a digital salt meter
9.	To estimate the titratable acidity in fermented food products like curd or idli batter
10.	To evaluate the smoking point, acid number, saponification value, and rancidity of various edible oils
11.	To determine the moisture content, rehydration ratio, and cooking volume of sun-dried or dehydrated fruits and vegetables
12.	To perform density analysis of dough to assess quality parameters
Experiments under DBT	
1	Analyzing the texture of processed foods using TPA & Viscometer
2	Detection of non-permitted food additives in market food samples

Note: Out of 12 – 10 mandatory

PERCENTAGE OF SYLLABUS REVISED: 100%

COURSE FOCUSES ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Gender Sensitization
	Intellectual Property Rights (IPR)	✓	Innovations
✓	Social awareness / Environment		Constitutional Rights/Human Values/Ethics



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Syllabus Revision B.Sc. Food Science and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: V

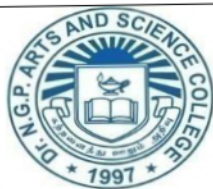
Course Code/ Name: 233FN1A5DA - Post Harvest Technology

Unit	Existing	Changes
I	Introduction to Post-Harvest Technology Introduction to Post Harvest Technology - Definition, importance. Elements of Post-harvest system. Scenario of Food Processing and Post-Harvest Management-Agro Processing Centers, Cold Storages, Food Parks, Agri Export Zones, Agri Logistics-Long & Short Holding Produce, Record Keeping System on food supply chain.	Scenario of Food Processing in india
II	Harvesting and Field Handling Maturity Indices, Harvesting Techniques and Operations-Hand Harvesting, Machine Harvesting, Transport -Types of Transport from the farm level and distribution of agricultural produce, Grading and its Equipment's.	Modes of transport (road, rail, cold chain vehicles), challenges in logistics
III	Packinghouse and storage Packing house- Need, Packhouse Operations, Storage- Principles, Types of Storage operations, Factors affecting storage, Storage structures and Temperature for fruits, vegetables and root crops, milk, and meat products.	Use of IoT, sensors, AI for storage monitoring.
IV	Post-Harvest Loss and its Control Food loss -Types, Agents- Physical agents (moisture, temperature), Chemical losses, biological losses- insect infestation, rats and rodents, birds, animals, and Control of Spoilage Agents- Methods to prevent the entry of rats and rodents, Fumigation, Controlling the inhouse conditions.	-
V	Post-Harvest Distributions MOFPI-Integrated Cold Chain and Value Addition Infrastructure Scheme-Objectives and Components, Grains- Underground & Above ground storage, Food Corporation of India- Godown, Functions of Central Warehouse Corporation, State Warehouse Corporation, PDS.	-

PERCENTAGE OF SYLLABUS REVISED: 15%

COURSE FOCUSES ON:

✓ Skill Development	✓ Entrepreneurial Development
✓ Employability	Gender Sensitization
✓ Intellectual Property Rights (IPR)	✓ Innovations
Social awareness / Environment	Constitutional Rights/Human Values/Ethics



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Syllabus Revision B.Sc. Food Science and Nutrition

Faculty: Bio-Sciences

Board: Food Science and Nutrition

Semester: V

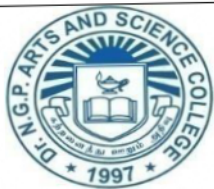
Course Code/ Name: 223FN1A5DB - Clinical Nutrition

Unit	Contents
I	Introduction to Clinical Nutrition and Nutritional Care Process. Scope and relevance of clinical nutrition. Role and ethics of a clinical nutritionist in healthcare settings. The Nutritional Care Process (NCP): Nutritional Assessment (ABCD method), Nutrition Diagnosis (PES format), Intervention, Monitoring, and Evaluation, Documentation practices in clinical dietetics. Team approach in clinical settings – Interdisciplinary collaboration. Practical considerations in clinical counseling and nutrition education. Case Study on NCP Case Simulation Activity
II	Emerging Trends in Clinical Nutrition Personalized Nutrition and Nutrigenomics: Basic concepts of gene–nutrient interactions and tailored diets for disease prevention. Artificial Intelligence in clinical dietetics (e.g., AI-driven nutrition planning or risk prediction tools). Gut Health and Microbiome: Role of gut bacteria in digestion and immunity, Dietary sources of prebiotics and probiotics. Culinary Nutrition – Food as Medicine: Healthy cooking for lifestyle disease prevention. Nutrition Technology: Use of mobile apps, software, and tele-nutrition in diet planning and monitoring. Practical Application: Case-based diet planning for common conditions using digital tools. Sample menu plan using herbs, prebiotics and probiotics
III	Inborn Errors of Metabolism, Food Allergies, and Critical Care Nutrition Intervention Medical Nutrition Therapy in Metabolic Disorders: Phenylketonuria (PKU), Maple Syrup Urine Disease (MSUD), Galactosemia, Tyrosinemia. Food Allergies and Intolerances: Overview of food allergies and intolerances, Symptoms and diagnostic approaches. Elimination diet – principles, procedure, and application in diagnosis and management. Basics of Critical Care Nutrition: Nutritional needs of critically ill patients. Nutritional support in ICU (enteral/parenteral feeding). Role Play: Basic Counseling and Elimination Diet Plan for food allergies.
IV	Medical Nutrition Therapy for Endocrine, Electrolyte, and Musculoskeletal Disorders Nutritional management of common endocrine conditions such as hypothyroidism, hyperthyroidism, Addison's disease, Cushing's syndrome, and PCOS. Dietary care in fluid and electrolyte imbalances such as hypocalcemia, hypercalcemia, hypokalemia, hyperkalemia, hyponatremia, and hypernatremia. Role of diet in the prevention and management of musculoskeletal disorders including osteomalacia, osteoporosis, and rheumatoid arthritis with emphasis on anti-inflammatory diets, calcium, and vitamin D. Case study on individualized diet planning for endocrine and bone-related conditions.
V	Nutrition Counselling and Patient Education Basics of nutrition counselling – goals and process. Communication and behavioural change strategies: Health Belief Model, Transtheoretical Model (Stages of Change). Counselling techniques for chronic conditions (e.g., diabetes, hypertension, obesity). Preparation and use of patient teaching aids: Leaflets, charts, models, and interactive materials role play for counselling practices. Motivational Counselling and Teaching Aid Presentation

PERCENTAGE OF SYLLABUS REVISED: 100%

COURSE FOCUSES ON:

✓	Skill Development		Entrepreneurial Development
✓	Employability		Gender Sensitization
	Intellectual Property Rights (IPR)	✓	Innovations
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ATTENDANCE OF THE NINETEENTH BOARD OF STUDIES MEETING

Faculty: Biosciences

Board: Food Science and Nutrition

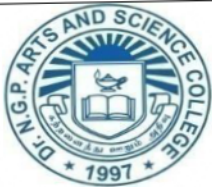
Date : 28/06/2025

Time : 10.00 a.m.

Venue : Department of Food Science and Nutrition (Room. No: 1512)

The following members were present for the Board of Studies meeting

S. No	Name	Designation	Signature
1.	Dr. D. Sridevi Professor and Head	Chairman	
2.	Dr. Subbarao M. Gavaravarapu Scientist 'F' & Head Dept. of Nutrition Information Communication & Health Education (Niche) ICMR - National Institute of Nutrition Hyderabad- 500007	University Nominee	ONLINE
3.	Dr. Radha Associate Professor Dept. of Food Service Management and Dietetics Avinashilingam University Coimbatore - 641043	Subject Expert	 28.06.25
4.	Dr. Suresh D Sakhare Sr. Principal Scientist & Head Dept. of Flour Milling and Baking Technology CFTRI (Central Food Technology Research Institute) Mysore - 570020	Subject Expert	 28/6/25
5.	Ms. Vandana Chief Dietitian Ramakrishna Hospitals Coimbatore - 641044	Industrial expert	 28/6/25
6.	Ms. Shobana Priya N Dietitian Progen Weight Management Coimbatore - 641028	Alumni	ABSENT
7.	Ms. Neha III B.Sc. FSN	Student Representatives	 28/6/25
	Ms. Fasiha J II M.Sc. FSN		 28/6/25



Dr. N.G.P. ARTS AND SCIENCE COLLEGE

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Approved by Government of Tamil Nadu & Accredited by NAAC with 'A++' Grade (3rd Cycle-3.64 CGPA)
Dr. N.G.P. - Kalapatti Road, Coimbatore-641 048, Tamil Nadu, India.
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8.	Part I (Language I) Dr. N. Kuppuchamy Associate Professor and Head Department of Tamil	Co-opted member	<i>[Signature]</i> 28/06/25
9.	Part II (Language II) Dr. A. Hazel Verbina Professor and Head Department of English	Co-opted member	<i>[Signature]</i> 28/06/25
10.	Allied - IDC- Applied Chemistry Dr. R. Ravikumar Associate Professor and Head (i/c) Department of Chemistry	Co-opted member	<i>[Signature]</i> 28/06/25
11.	Allied - IDC- Biochemistry - II Dr. S. Gowri Professor and Head Department of Chemistry	Co-opted member	<i>[Signature]</i> 28/06/25
12.	Dr. Meera Raman Professor	Internal Member	<i>[Signature]</i> 28/06/25
13.	Ms. Anjali M Assistant Professor	Internal Member	<i>[Signature]</i> 28/06/25
14.	Dr. D. Jancy Rani Assistant Professor	Internal Member	<i>[Signature]</i> 28/06/25
15.	Ms. M. Rakeshwari Assistant Professor	Internal Member	<i>[Signature]</i> 28/06/25
16.	Ms. G. Priyaalini Assistant Professor	Internal Member	<i>[Signature]</i> 28/06/25
17.	Dr. Priya A Assistant Professor	Internal Member	<i>[Signature]</i> 28/06/25
18.	Ms. Kanishka M Assistant Professor	Internal Member	<i>[Signature]</i> 28/06/25
19.	Mrs. Latha G Assistant Professor	Internal Member	<i>[Signature]</i> 28/06/25

Date: 28.06.2025

(Dr. D. Sridevi)