



VELS



INSTITUTE OF SCIENCE, TECHNOLOGY & ADVANCED STUDIES (VISTAS)
(Deemed to be University Estd. u/s 3 of the UGC Act, 1956)

PALLAVARAM, THALAMBUR, PERIYAPALAYAM-CHENNAI

ACCREDITED BY NAAC WITH 'A++' GRADE

POST GRADUATE DEGREE PROGRAMME

/

M.Sc. Food and Nutrition

CURRICULUM &

SYLLABUS REGULATION

2025

Choice Based Credit System

(CBCS) &

Learning Outcomes Based Curriculum Framework (LOCF)

Effective from the Academic Year

2025 -2026

School of Hotel and Catering Management
Department of Hotel and Catering Management



DEPARTMENT OF HOTEL AND CATERING MANAGEMENT

VISION OF THE DEPARTMENT

To be a center of excellence in education, research, and innovation in Food and Nutrition, fostering the development of skilled professionals and researchers committed to improving public health, promoting sustainable nutrition practices, and addressing global nutritional challenges with scientific rigor and social responsibility.

MISSION OF THE DEPARTMENT

1. **To impart advanced knowledge** in food science, human nutrition, and dietetics through a comprehensive and research-oriented curriculum.
2. **To develop competent professionals** equipped with critical thinking, technical skills, and ethical values to address contemporary nutritional issues.
3. **To promote research and innovation** in the fields of nutrition, food safety, and public health for evidence-based solutions to nutritional challenges.
4. **To engage with communities and stakeholders** through outreach, education, and collaboration to promote sustainable and healthy dietary practices.
5. **To cultivate leadership and entrepreneurship** in the field of food and nutrition, empowering graduates to contribute to academia, industry, healthcare, and policy-making.

PROGRAMME EDUCATIONAL OUTCOMES (PEO)

| | |
|-------------|---|
| PEO1 | Advanced Knowledge and Research Competence Graduates will possess deep theoretical and practical knowledge in food science, human nutrition, and dietetics, with the ability to design and conduct research to address health and nutritional challenges. |
| PEO2 | Professional and Ethical Practice Graduates will demonstrate professional ethics and responsibilities while working in diverse settings such as healthcare, academia, food industry, or public health organizations. |
| PEO3 | Communication and Leadership Skills Graduates will develop strong communication, teamwork, and leadership skills to effectively educate communities, collaborate with professionals, and contribute to interdisciplinary health teams. |
| PEO4 | Problem-Solving and Critical Thinking Graduates will apply critical thinking and evidence-based approaches to assess nutritional needs, develop interventions, and solve complex problems in food and nutrition. |
| PEO5 | Lifelong Learning and Career Advancement Graduates will engage in lifelong learning to stay updated with advancements in nutrition science and pursue higher education, research, or specialized certifications for career growth. |

PROGRAMME OUTCOMES (PO)

| | |
|------------|---|
| PO1 | In-depth Knowledge and Application Acquire and apply advanced knowledge of food science, human nutrition, and dietetics to promote health and manage diseases effectively. |
| PO2 | Research and Analytical Skills Develop critical thinking and research skills to analyze nutritional problems and contribute to evidence-based solutions in food and health sectors. |
| PO3 | Health Promotion and Disease Prevention Plan and implement nutrition interventions for individuals and communities to promote wellness and prevent nutrition-related diseases. |
| PO4 | Professional Ethics and Communication Demonstrate ethical practices and effective communication skills in academic, clinical, research, and community settings. |
| PO5 | Lifelong Learning and Career Readiness Foster a commitment to continuous learning, innovation, and professional growth in diverse fields like healthcare, research, food industry, and public health. |

PROGRAMME SPECIFIC OUTCOMES (PSO)

| | |
|-------------|--|
| PSO1 | Advanced Knowledge Integration Apply in-depth knowledge of human nutrition, biochemistry, and physiology to assess nutritional status and develop effective dietary strategies for individuals and populations. |
| PSO2 | Nutritional Assessment and Research Skills Demonstrate proficiency in using scientific tools and techniques to conduct nutritional assessments, analyze dietary data, and contribute to evidence-based nutrition research. |
| PSO3 | Therapeutic Nutrition Application Design and implement medical nutrition therapy plans for the prevention and management of lifestyle-related and clinical disorders in collaboration with healthcare teams. |
| PSO4 | Community and Public Health Nutrition Plan, execute, and evaluate nutrition programs and interventions that address public health concerns, with a focus on vulnerable populations and sustainable development goals. |
| PSO5 | Professionalism and Ethical Practice Exhibit ethical responsibility, effective communication, and leadership in professional practice, education, and research within the field of nutrition and dietetics. |

BOARD OF STUDIES

List of Members

Department of Hotel and Catering Management

The following members were present for the BOS meeting

| S. No | Name & Designation | Address | Role |
|--------------|---|--|---|
| 1 | Dr. Jaisree Anand Dean – HCM | School of Hotel and Catering Management, VISTAS, Pallavaram, Chennai – 600 117. | Chairman |
| 2 | Dr. Sangeetha, HOD, THM department | Tourism and Hospitality Department Bharat Institute of Higher Education and Research, Bharat University, Chennai 600 073. | Academic Expert (External Member) |
| 3 | Mr. Shyam Gautham | Assistant Sales Manager MICE & Catering Leela Palace Hotels & Resorts, Chennai- 600 028 | Industrial Expert (External Member) |
| 4 | Mr. A. Arun Assistant Professor | School of Hotel and Catering Management, VISTAS, Pallavaram, Chennai – 600 117. | Internal Member |
| 5 | Chef Ramesh. T Culinary Demonstrator | School of Hotel and Catering Management, VISTAS, Pallavaram, Chennai – 600 117. | Internal Member |
| 6 | Mr. Karthick G Assistant Professor | School of Hotel and Catering Management, VISTAS, Pallavaram, Chennai – 600 117. | Internal Member |
| 7 | Mr. Sivamanickam P | Assistant Professor Mohamed Sathak College of Arts and Science, Sholinganallur, Chennai | Alumni |

Signature of the Board Members

| S. No | Name & Designation | Role | Signature |
|-------|---|--------------------------------------|---|
| 1 | Dr. Jaisree Anand Dean - HCM | Chairman |  Dr. JAISREE ANAND Professor & Dean School of Hotel & Learning Management Vels Institute of Science Technology & Advanced Studies (VISTAS) Chennai - 600 117. |
| 2 | Dr. Sangeetha, HOD, THM department | Academic Expert (External Member) |  Dr. R. Sangeetha M.Sc, M.Phil, M.Ed, Ph.D. HOD - Tourism and Hospitality Management Bharathi Institute of Higher Education & Research, 173, Agaram Road, Selaiyur, Chennai - 600 073. |
| 3 | Mr. Shyam Gautham | Industrial Expert (External Member) |  |
| 4 | Mr. A. Arun Assistant Professor | Internal Member |  |
| 5 | Chef Ramesh, T Culinary Demonstrator | Internal Member |  |
| 6 | Mr. Karthick G Assistant Professor | Internal Member |  |
| 7 | Mr. Sivaramanickam P | Alumni |  |

CREDIT DISTRIBUTION

PG Diploma – Hotel and Catering Management

Minimum credits to be earned: 48

**M.Sc., Hotel and Catering Management Minimum
credits to be earned: 90**

| Component | I Sem | II Sem | I Year Total Credit | III Sem | IV Sem | 2 Yrs Total Credits |
|-----------------------------|--------------|---------------|----------------------------|----------------|---------------|----------------------------|
| DSC | 16 | 16 | 32 | 16 | - | 48 |
| AECC & Languages | - | - | - | - | - | - |
| DSE / IDC / Minor | 8 | 8 | 16 | 8 | - | 24 |
| MDC | - | - | - | - | - | - |
| VAC | - | - | - | - | - | - |
| SEC | - | - | - | - | - | - |
| SI | - | - | - | - | - | - |
| RP | - | - | - | - | 18 | 18 |
| Total Credits | 24 | 24 | 48 | 24 | 18 | 90 |

ABBREVIATIONS

| | |
|-------------|--|
| DSC | Disciplinary Specific Core |
| AECC | Ability Enhancement Compulsory Courses |
| DSE | Disciplinary Specific Elective |
| IDC | Interdisciplinary / Minor Courses |
| MDC | Multidisciplinary Courses |
| VAC | Value Added Courses |
| SEC | Skill Enhancement Courses |
| SI | Summer Internship |
| RP | Research Project |

CURRICULUM STURCTURE

| Total number of Credits: 90 | | | | | | | | | |
|---|------|---|-----------|----------------------|-----------|-----------|-----|-----|-------|
| M.Sc., Food and Nutrition | | | | | | | | | |
| Minimum credits to be earned: 90 | | | | | | | | | |
| Hours/Week | | | | Maximum Marks | | | | | |
| Category | Code | Papers | L | T | P | C | CIA | SEE | Total |
| First Semester | | | | | | | | | |
| DSC | | Basic Food Production | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| DSC | | Physiology | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| DSC | | Basics of Nutrition | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| DSC | | Principles of Food Science | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| DSC | | Biochemistry of Nutrition | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| DSE | | Basics of Statistics and Computer Application | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| DSC | | Basic Food Production Practical | 0 | 0 | 4 | 2 | 40 | 60 | 100 |
| | | Sub Total | 23 | 0 | 4 | 25 | | | |
| Second Semester | | | | | | | | | |
| DSC | | Research Methods | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| DSC | | Advanced Nutritional Biochemistry | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| DSC | | Instrumentation in Nutrition | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| DSE | | Food Microbiology & Food Safety | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| DSE | | Advanced Human Nutrition | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| | | Sub Total | 19 | 0 | 0 | 19 | | | |
| Third Semester | | | | | | | | | |
| DSC | | Food Chemistry and Food Analysis | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| DSC | | Therapeutic Nutrition | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| DSC | | Institutional Food Management | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| DSC | | Public Health Nutrition | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| DSE | | Food Processing & Food Laws | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| | | Sub Total | 19 | 0 | 0 | 19 | | | |
| Fourth Semester | | | | | | | | | |
| DSE | | Seminar | 0 | 0 | 4 | 6 | 40 | 60 | 100 |
| DSE | | Scientific Writing | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| DSE | | Statistical Techniques and Data Analysis | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| DSE | | Dissertation | 0 | 0 | 13 | 9 | 40 | 60 | 100 |
| DSE | | Publication and Ethics | 0 | 0 | 4 | 4 | 40 | 60 | 100 |
| | | Sub Total | 8 | 0 | 17 | 27 | | | |

CIA - Continuous Internal Assessment

SEE - Semester End Examination

*L – Lecture, *T- Tutorial, *P- Practical, *O - Outside the class effort / self-study

DISCIPLINE SPECIFIC CORE COURSES

| Category | Code | Course | L | T | P | C |
|----------|------|-----------------------------------|---|---|---|---|
| DSC | | Physiology | 4 | 0 | 0 | 4 |
| DSC | | Basics of Nutrition | 4 | 0 | 0 | 4 |
| DSC | | Principles of Food Science | 4 | 0 | 0 | 4 |
| DSC | | Biochemistry of Nutrition | 4 | 0 | 0 | 4 |
| DSC | | Research Methods | 4 | 0 | 0 | 4 |
| DSC | | Advanced Nutritional Biochemistry | 4 | 0 | 0 | 4 |
| DSC | | Instrumentation in Nutrition | 4 | 0 | 0 | 4 |
| DSC | | Food Chemistry and Food Analysis | 4 | 0 | 0 | 4 |
| DSC | | Therapeutic Nutrition | 4 | 0 | 0 | 4 |
| DSC | | Institutional Food Management | 4 | 0 | 0 | 4 |
| DSC | | Public Health Nutrition | 4 | 0 | 0 | 4 |

DISCIPLINE SPECIFIC ELECTIVE COURSES

| Category | Code | Course | L | T | P | C |
|----------|------|---|---|---|----|----|
| DSE | | Basics of Statistics and Computer Application | 3 | 0 | 0 | 3 |
| DSE | | Food Microbiology & Food Safety | 3 | 0 | 0 | 3 |
| DSE | | Advanced Human Nutrition | 3 | 0 | 0 | 3 |
| DSE | | Food Processing & Food Laws | 3 | 0 | 0 | 3 |
| DSE | | Seminar | 0 | 0 | 4 | 6 |
| DSE | | Scientific Writing | 4 | 0 | 0 | 4 |
| DSE | | Statistical Techniques and Data Analysis | 4 | 0 | 0 | 4 |
| DSE | | Dissertation | 0 | 0 | 13 | 15 |



I SEMESTER

**DSC Sub Code Theory Semester – I
Basic Food Production**

| L | T | P | O | C |
|---|---|---|---|---|
| 4 | 0 | 0 | 0 | 4 |

Course Objective

To develop comprehensive knowledge of professional cookery in the Hotel and Catering industries. To induce in the student professional competence at commies de cuisine in any type of food production operation with grounding basic continental and other types of cookery as all related subjects

UNIT – I History & evaluation of cookery

Personal & Kitchen hygiene * Aims & objectives of cooking food, presentation of food * various textures and consistencies * Preparation of ingredients * Classical cuts of vegetables * HACCP, Mise en place, Weights & measures.

UNIT – II Classical Brigade & Modern staffing in various category hotels

Role of Executive Chef, Duties & responsibilities of various chefs * Functioning of various sections of the kitchen * Layout of a kitchen – factors to be considered.

UNIT – III Methods of cooking

Principles of different methods of cooking – roasting, baking, frying, boiling, poaching, steaming, stewing, braising, broiling, grilling * Basic rules of each method and selection of food for each.

UNIT – IV Equipment & tools

Small and large equipment used in the kitchen – their types and uses * Heat production equipment * Cold production equipment * Ancillary equipment – knives, utensils, pots & pans * Pastry & bakery equipment * Cleaning equipment.

UNIT – V Stocks:

Definition, Types, Preparation (Recipes), storage, uses, care in preparing * Thickening agents: Types & uses * Sauces: Classification of sauces, Recipes, Derivatives of mother sauces, Miscellaneous sauces, Butter sauces * Salads & Dressings * Soups: Classification with examples, Basic recipes, Garnishes & Accompaniments * Vegetables & Fruits: Classification & Uses * The three types of browning in cookery.

COURSE OUTCOME:

On successful completion of this course learners will be able to:

- CO1. Explain the appropriate cooking methods for different constituents.
- CO2. Prepare assorted French menus with the appropriate ingredients.
- CO3. Demonstrate practical skills and techniques to prepare stocks and soups.
- CO4. Compile the menu consisting of soups, main course and desserts.
- CO5. Calculate the yield of various foods.

REFERENCE BOOKS:

1. Krishna Arora, Theory of cookery, Frank Bros, 2001
2. Ronaldkinton, David Forkett, Victor Cessarani, Theory of Catering, 2nd Revision, Hodder & Stoughton Educational, 1970.
3. Jerald W.Chesser, the Art of Science of Culinary Preparation, Educational Institute of American Culinary Federation, 1992.
4. ThangamE.Philip, Modern Cookery for Teaching Trade Volume -1, 6th Revised Edition, Orient Black Swan, 2010.

DSC Sub Code Theory

Semester – I
Physiology

| L | T | P | O | C |
|---|---|---|---|---|
| 4 | 0 | 0 | 0 | 4 |

Course Objectives:

This course will help students understand how major human physiological systems work, such as the digestive, circulatory, and respiratory systems. It will also explore how nutrition affects these systems and overall health. The course will focus on applying physiological concepts to human health and disease, helping students understand how imbalances in nutrition can impact bodily functions and contribute to diseases.

Unit 1: Cell and Tissue Physiology

12

Structure and function of cells, types of tissues, and their physiological roles. Cell membrane transport mechanisms and signal transduction.

Unit 2: Blood and Circulatory System

12

Composition and functions of blood, hematopoiesis, blood groups, and hemostasis. Structure and physiology of the heart and blood vessels.

Unit 3: Respiratory and Renal System

12

Mechanisms of respiration, lung volumes, gas exchange. Structure and function of the kidney, urine formation, and fluid-electrolyte balance.

Unit 4: Digestive and Endocrine System

12

Anatomy and function of the GI tract, digestion, and absorption. Overview of endocrine glands, hormone action, and metabolic regulation.

Unit 5: Nervous and Reproductive System

12

Nerve impulse conduction, CNS and PNS functions. Male and female reproductive systems, menstrual cycle, and hormonal control.

Total – 60

Course Outcomes:

CO1: Demonstrate a comprehensive understanding of the structure and functions of major human physiological systems and their interrelationships.

CO2: Explain the nutritional relevance of key physiological processes, including digestion, absorption, metabolism, and homeostasis.

CO3: Analyze the physiological basis of common health conditions and disease states with respect to their impact on nutritional needs.

CO4: Evaluate physiological data and case studies to identify imbalances or dysfunctions within body systems.

CO5: Apply physiological knowledge to real-world case scenarios to propose evidence-based nutritional interventions for health maintenance and disease management.

Reference Books

1. Guyton and Hall Textbook of Medical Physiology, Authors: John E. Hall, Publisher: Elsevier, Edition: 14th Edition (2024)
2. Ganong's Review of Medical Physiology, Authors: Kim E. Barrett, Susan M. Barman, Heddwen L. Brooks, Jason X.-J. Yuan, Publisher: McGraw-Hill Education, Edition: 26th Edition (2022)
3. Medical Physiology: Principles for Clinical Medicine, Authors: Rodney A. Rhoades, David R. Bell, Publisher: Lippincott Williams & Wilkins, (2023)

| L | T | P | O | C |
|---|---|---|---|---|
| 4 | 0 | 0 | 0 | 4 |

Course Objectives:

This course will provide students with an understanding of essential nutrients, including their sources, functions, and daily requirements for maintaining optimal health. It will also evaluate the role of diet in disease prevention and overall well-being. Additionally, students will be introduced to tools and methods used for dietary assessment, enabling them to make evidence-based dietary recommendations for health improvement.

Unit 1: Introduction to Nutrition Science **12**

Concept of nutrition, classification of nutrients, nutritional requirements, RDA, and their significance.

Unit 2: Macronutrients **12**

Functions, digestion, absorption, and metabolism of carbohydrates, proteins, and fats. Energy balance and calorimetry.

Unit 3: Micronutrients **12**

Role of vitamins and minerals in the body, deficiency disorders, and dietary sources.

Unit 4: Nutritional Guidelines and Assessment **12**

Dietary guidelines, food pyramids, and tools for nutritional assessment including anthropometry and dietary surveys.

Unit 5: Nutrition across the Life Cycle **12**

Nutritional needs during pregnancy, lactation, infancy, childhood, and elderly populations.

Total : 60

Course Outcomes:

CO1: Identify and describe the major human physiological systems and explain their structural and functional roles in maintaining homeostasis.

CO2: Explain the physiological processes of digestion, absorption, and metabolism of macronutrients and micronutrients.

CO3: Analyze the interplay between nutritional status and physiological functions in the context of growth, development, and aging.

CO4: Interpret physiological data related to nutrition-related disorders and their impact on body systems.

CO5: Apply integrative knowledge of nutrition and physiology to real-life case studies and propose appropriate dietary strategies for health promotion and disease prevention.

Reference Book:

1. Textbook of Physiology Concepts with Clinical Insights (1st Edition, 2025), Author: Manjinder Kaur
 Publisher: Jaypee Brothers Medical Publishers,
2. Textbook of Physiology for Medical Students (2nd Edition, 2022) , Authors: Harminder Singh, Itika Singh,
 Mridul Yadav, Publisher: Elsevier India

Semester – I

DSC Sub Code Theory Principles of Food Science

| L | T | P | O | C |
|---|---|---|---|---|
| 4 | 0 | 0 | 0 | 4 |

Course Objectives:

This course aims to explain the physical, chemical, and biological principles that determine the properties of food. Students will examine various food components, such as proteins, carbohydrates, fats, and vitamins, and understand their functional roles in food science. Additionally, the course will explore how these scientific principles are linked to food preparation and preservation methods, emphasizing the impact of processing techniques on food quality and safety.

Unit 1: Introduction to Food Science 12

Definition, scope, and importance. Structure of food industry and principles of food evaluation.

Unit 2: Carbohydrates in Foods 12

Types, properties, and reactions of sugars and starches. Role in texture and flavor development.

Unit 3: Proteins and Fats in Foods 12

Protein structure and denaturation. Lipid classification, rancidity, emulsification, and health implications.

Unit 4: Water and Colloids 12

Water activity, its role in food stability, and food colloids such as gels and foams.

Unit 5: Enzymes and Browning Reactions 12

Role of enzymes in food processing. Enzymatic and non-enzymatic browning and their implications.

Total – 60

Course Outcomes:

CO1: Analyze the structural, physical, and chemical properties of major food components such as carbohydrates, proteins, lipids, vitamins, and minerals.

CO2: Explain the interactions among food components during processing, storage, and cooking.

CO3: Evaluate the effects of various food processing methods on the nutritional value, safety, and sensory quality of foods.

CO4: Demonstrate an understanding of basic food science principles in the selection, handling, and preparation of meals.

CO5: Apply scientific reasoning to solve problems related to food quality, preservation, and nutrient retention in practical settings.

Reference Books

- Potter & Hotchkiss. *Food Science*, 6th Ed., Springer, 2025.
- Damodaran et al. *Fennema's Food Chemistry*, 6th Ed., CRC Press, 2025.

DSC Sub Code Theory Bio-chemistry of Nutrition

| L | T | P | O | C |
|---|---|---|---|---|
| 4 | 0 | 0 | 0 | 4 |

Course Objectives:

This course aims to provide students with an understanding of the biochemical basis of nutrient metabolism, focusing on how the body processes carbohydrates, fats, and proteins. It will also explore the link between metabolic pathways and their nutritional implications, highlighting how different nutrients contribute to energy production and bodily functions. Additionally, students will examine the regulation of metabolism under various physiological states, such as fasting, exercise, and pregnancy, to understand how the body adapts to meet nutritional needs.

Unit 1: Introduction to Biochemistry 12

Structure and functions of biomolecules. Basic concepts of bioenergetics.

Unit 2: Carbohydrate Metabolism 12

Glycolysis, gluconeogenesis, TCA cycle, and glycogen metabolism.

Unit 3: Protein and Lipid Metabolism 12

Amino acid catabolism and urea cycle. β -oxidation, ketogenesis, and lipid synthesis.

Unit 4: Enzymes and Coenzymes 12

Enzyme kinetics, regulation, classification, and the role of vitamins as coenzymes.

Unit 5: Integration of Metabolism 12

Interrelation of macronutrient pathways in fed and fasting states. Hormonal control of metabolism.

Total : 60

Course Outcomes:

CO1: Illustrate and describe major biochemical pathways involved in energy metabolism, including glycolysis, TCA cycle, oxidative phosphorylation, and beta-oxidation.

CO2: Analyze the regulation and integration of energy-yielding metabolic pathways under various physiological conditions (e.g., fed, fasting, and exercise states).

CO3: Interpret the biochemical basis and implications of metabolic disorders such as diabetes mellitus, phenylketonuria, and mitochondrial diseases.

CO4: Correlate biochemical imbalances with nutritional deficiencies and pathophysiological conditions affecting metabolism.

CO5: Utilize and interpret biochemical parameters (e.g., blood glucose, lipid profile, enzyme markers) in the nutritional assessment and diagnosis of health and disease conditions.

Reference Books

- Devlin. *Textbook of Biochemistry with Clinical Correlations*, 8th Ed., Wiley, 2025.
- Nelson & Cox. *Lehninger Principles of Biochemistry*, 9th Ed., Freeman, 2025.

DSC Sub Code Theory Basic of Statistics and Computer Application

| L | T | P | O | C |
|---|---|---|---|---|
| 3 | 0 | 0 | 0 | 3 |

Course Objectives:

This course aims to introduce students to essential statistical tools and techniques for data analysis in nutrition research. Students will learn how to apply various statistical methods to interpret data effectively, evaluate research findings, and make informed conclusions in the field of nutrition. Emphasis will be placed on the practical application of these tools to support evidence-based research and decision-making in nutrition science..

Unit 1: Introduction to Statistics

Definition, scope, types of data, measures of central tendency and dispersion. 9

Unit 2: Probability and Distributions

Basic probability, normal and binomial distributions, and their nutritional application. 9

Unit 3: Statistical Tests

T-tests, chi-square, correlation, regression, and ANOVA. 9

Unit 4: Introduction to Computers

Basics of hardware/software, MS Office, and file management. 9

Unit 5: Data Analysis Tools

Use of Excel/SPSS for basic statistical analysis and graphical representation. 9

Course Outcomes:

Total Hrs.45.

CO1: Understand fundamental statistical concepts and their relevance in nutritional research.

CO2: Apply appropriate statistical tools (e.g., mean, standard deviation, t-test, ANOVA, chi-square) to analyze nutrition-related data.

CO3: Use statistical software (e.g., SPSS, R, Excel) for data computation, analysis, and graphical presentation in nutritional studies.

CO4: Interpret statistical outputs and research findings to draw valid conclusions in the context of nutrition and health.

CO5: Design and evaluate research studies using appropriate sampling techniques, data collection tools, and statistical methods.

Reference Books:

- Gupta S.C. *Fundamentals of Statistics*, 7th Ed., Himalaya Publishing, 2025.
- Bhatnagar & Ramani. *Computer Applications in Nutrition Science*, 2nd Ed., Academic Press, 2025.

DSC Sub Code Practical Basic Food Production

| L | T | P | O | C |
|---|---|---|---|---|
| 0 | 0 | 4 | 0 | 2 |

COURSE OBJECTIVE:

To develop the perfect basic skills in handling food stuffs and using dry and moist heat methods of cooking. Using the above mentioned methods, continental cuisines are learnt in 14 application menus.

Session – I

Display, explanation & identification of small equipment, utensils & large equipment. Display, explanation & identification of various categories of dry ingredients (Nuts, fats & oils, cereals, pulses, raising agents, sweeteners, dry herbs, spices, condiments, colorings, flavourings, essences, confectionery and bakery supplies.)

Session – II

Display, explanation & identification of different vegetables according to their classification – Demonstration on the different cuts of vegetables.

Session – III

Demonstration on the preparation of vegetable stock, chicken stock, white sauce, chicken velouté, tomato sauce, & mayonnaise.

Session IV

Demonstration on the preparation of fish stock, brown stock, espagnole, fish velouté & hollandaise. The following skills / traits to be incorporated into the 15 menus that follow: (i) Different methods of cooking (ii) The various categories of soups (iii) Identification, classification, selection criteria & cuts of various types of seafood (iv) identification, selection criteria & different cuts of poultry & meat (v) basics of Indian cuisine (vi) balancing of the menus (viii) origin of the dishes.

Session V

Menu – 1: Potage Madras, Poisson a la meunière, Pommes persillées, Haricot vert au beurre, Bread roll and Crème caramel.

Session VI

Menu – 2: Crème de tomates, Steak au poivre, Baked Jacket potatoes, Petit pois a la française, French Bread and Bread & Butter Pudding.

Session VII

Menu – 3: Crème de volaille princesse, Poulet á la king, Croquettes de pommes de terre, Ratatouille niçoise and Nankhatai.

Session VIII

Menu – 4: Scotch broth, Suprême de volailles à la crème, Riz pilaf, Chou-fleur mornay, French bread and Genoese au chocolat.

Session IX

Menu – 5: Minestrone, Filet de Pomfret bonne femme, Pommes duchesse, Epinards au beurre and Queen of Puddings.

Session X

Menu – 6: Plain rice, Drumstick sambar, Naattukozhivaruvai, Tomato rasam, Potato masala and Semiya payasam.

Session XI

Menu – 7: Oeuf Farci, Poulet rôti, Beignets d' aubergines, Pommes de Terre Rôti and Jam Tarts.

Session XII

Menu – 8: Consommé brunoise, Spaghetti napolitana, Pommes pont neuf, Vichy carrots and Strawberry mousse.

Session XIII

Menu – 9: Crème d'asperges, Navarin Printanier, Chou-fleur polonaise, Pommes layoe and Macedoine de fruits.

Session XIV

Menu-10: Waldorf salad, Potato & leek soup, Poulet poché avec sauce suprêmes, Pommes allumettes, Tomates grillées and plain sponge.

Session XV

Menu-11: Gazpacho, Salade russe, Fillet de pomfret grillées, Epinards à la crème, Pommes de terre anna, and Fruit trifle.

Session XVI

Menu-12: Jeera pulao, Chicken butter masala, Phulka, Vegetable Jalfrezi, and Shahi thukra.

Session XVII

Menu-13: Hot & sour egg drop soup, Vegetablefriedrice, Chili chicken, Sweet & sour vegetables.

Session XVIII

Menu-14: Cocktail de crevettes, Poulet sauté chasseur, Pommes hongroise, Soufflé d'epinards, Swiss roll.

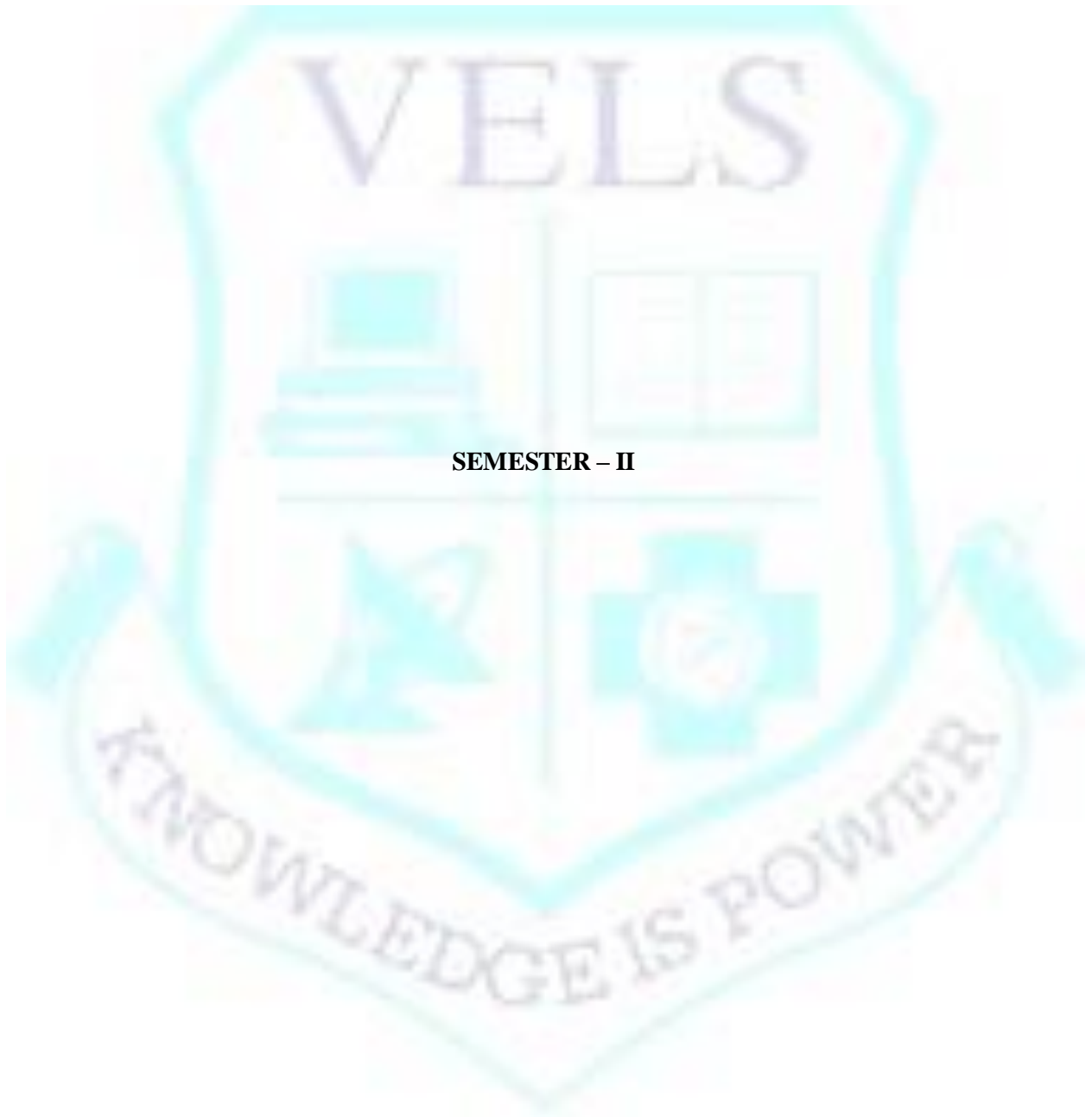
COURSE OUTCOME:

On successful completion of this course learners will be able to:

- CO1. Explain the appropriate cooking methods for different constituents.
- CO2. Prepare assorted French menus with the appropriate ingredients.
- CO3. Demonstrate practical skills and techniques to prepare stocks and soups.
- CO4. Compile the menu consisting of soups, main course and desserts.
- CO5. Calculate the yield of various foods.

Reference:

Ronald Kinton, Victor Cessarani & David Foskett, Practical Cookery - AugusteEscoffiere - Ma Cuisine
Thangam E. Philip, Modern Cookery for Teaching & Trade – Volume I & II
La Rousse Gastronomique.



SEMESTER – II

Semester – II

DSC Sub Code Theory Research Methods

| L | T | P | O | C |
|---|---|---|---|---|
| 4 | 0 | 0 | 0 | 4 |

Course Objectives:

This course aims to provide students with a solid understanding of the fundamental concepts of scientific research and its relevance to the field of nutrition. Students will develop essential skills for designing and conducting research studies, focusing on both qualitative and quantitative methods. Additionally, the course will enable students to effectively interpret and report research findings, equipping them with the tools needed to contribute to evidence-based practices in nutrition science.

Unit 1: Introduction to Research 12
Definition, purpose, and types of research. Research process and nutrition research significance.

Unit 2: Literature Review and Problem Identification 12
Techniques for literature review, research gap identification, and formulation of hypotheses.

Unit 3: Research Design and Sampling 12
Types of designs – exploratory, descriptive, experimental. Sampling techniques and sample size determination.

Unit 4: Data Collection Methods 12
Survey tools, interview techniques, focus groups, and ethical considerations.

Unit 5: Data Analysis and Report Writing 12
Data processing, coding, interpretation, and elements of a scientific report/thesis.

Total : 60

Course Outcomes:

CO1: Understand the principles and processes of scientific research in the field of nutrition and health.

CO2: Design and plan independent nutrition research projects, including formulation of research questions, hypotheses, and objectives.

CO3: Apply appropriate research tools, techniques, and methodologies for data collection, sampling, and analysis in nutrition research.

CO4: Analyze and interpret research findings to address research questions effectively.

CO5: Write and present scientific reports and research papers using standard academic formats and ethical guidelines.

Reference Books

- Kothari & Garg. *Research Methodology: Methods and Techniques*, 5th Ed., New Age Publishers, 2025.
- Kumar R. *Research Methodology: A Step-by-Step Guide*, 6th Ed., Sage Publications, 2025.

Semester – II

DSC Sub Code Theory Advanced Nutritional Biochemistry

| L | T | P | O | C |
|---|---|---|---|---|
| 4 | 0 | 0 | 0 | 4 |

Course Objectives:

This course aims to provide students with in-depth knowledge of metabolic integration and the interaction between nutrients and genes. Students will gain an understanding of how metabolism is regulated at the molecular level, focusing on the mechanisms that control nutrient utilization and energy production. Additionally, the course will explore the evaluation of biomarkers and the bioavailability of nutrients, emphasizing their importance in assessing nutritional status and the efficiency of nutrient absorption.

Unit 1: Nutrient Bioavailability 12

Factors affecting bioavailability, methods of assessment, and role of antinutritional factors.

Unit 2: Integration of Macronutrient Metabolism 12

Fed, fasting, and starvation states. Interplay of hormones and nutrients in metabolic control.

Unit 3: Nutrigenomics and Nutriepigenetics 12

Gene-diet interaction, personalized nutrition, epigenetics, and applications in disease prevention.

Unit 4: Antioxidants and Free Radicals 12

Free radical biology, oxidative stress, antioxidant defense systems, and health relevance.

Unit 5: Biochemical Markers in Nutrition 12

Use of biochemical indices in nutritional status assessment, interpretation in clinical nutrition.

Total : 60

Course Outcomes:

CO1: Explain advanced biochemical mechanisms underlying nutrient metabolism and their physiological significance.

CO2: Analyze the molecular interactions between nutrients and metabolic pathways in various physiological and pathological states.

CO3: Interpret the role of nutrients in gene expression, epigenetics, and nutrigenomics.

CO4: Evaluate the effects of nutrient-gene interactions on health outcomes and disease risk.

CO5: Utilize biochemical and molecular biomarkers for the assessment and diagnosis of nutritional status and related disorders.

Reference Books

- Gibney et al. *Introduction to Human Nutrition*, 3rd Ed., Wiley-Blackwell, 2025. Gropper & Smith. *Advanced Nutrition and Human Metabolism*, 8th Ed., Cengage, 2025

Semester – II

DSC Sub Code Theory Instrumentation in Nutrition

| L | T | P | O | C |
|---|---|---|---|---|
| 4 | 0 | 0 | 0 | 4 |

Course Objectives:

This course aims to familiarize students with various laboratory instruments used in food and nutrition analysis. Students will learn about the role and application of these instruments in assessing the nutritional composition, quality, and safety of food. The course will emphasize the practical use of equipment such as spectrophotometers, chromatography systems, and other analytical tools, ensuring students understand their significance in conducting accurate and reliable food and nutrition research..

Unit 1: Fundamentals of Analytical Instruments 12

Principles of colorimetry, spectrophotometry, and atomic absorption spectrometry.

Unit 2: Chromatography Techniques 12

Paper, thin-layer, gas chromatography (GC), and high-performance liquid chromatography (HPLC).

Unit 3: Electrophoresis and Centrifugation 12

Basic types and applications in protein, DNA separation. Ultracentrifugation for food component analysis.

Unit 4: Texture and Rheology Measurement 12

Textural properties, viscometers, texture analyzers, and relevance in product development.

Unit 5: Food Safety Testing Tools 12

ELISA, biosensors, PCR, and other modern techniques for contaminant and allergen detection.

Total : 60

Course Outcomes:

CO1: Understand the principles and applications of advanced analytical instruments used in food and nutrient analysis (e.g., HPLC, GC, AAS, UV-Vis spectrophotometry).

CO2: Operate laboratory instruments and apply appropriate techniques for qualitative and quantitative analysis of food components.

CO3: Interpret analytical data and laboratory results for use in research, nutritional evaluation, and quality control.

CO4: Assess accuracy, precision, and reliability of analytical procedures in food testing.

CO5: Ensure laboratory safety, follow standard operating procedures (SOPs), and comply with national and international food safety and regulatory standards.

Reference Books

- Nielsen S.S. *Food Analysis Laboratory Manual*, 5th Ed., Springer, 2025.
- Pomeranz & Meloan. *Food Analysis: Theory and Practice*, 4th Ed., Springer, 2025.

Semester – II

DSC Sub Code Theory Food Microbiology & Food Safety

| L | T | P | O | C |
|---|---|---|---|---|
| 4 | 0 | 0 | 0 | 4 |

Course Objectives:

This course aims to provide students with an understanding of the microbiological principles that affect food safety and spoilage. Students will learn about the various pathogens responsible for foodborne diseases and the mechanisms by which they contaminate food. The course will also focus on evaluating food preservation methods and hygiene practices, emphasizing how proper handling and preservation techniques can prevent contamination and ensure the safety of food products.

Unit 1: Microorganisms in Foods 12

Types of microbes, microbial growth conditions, and factors influencing food contamination.

Unit 2: Food Spoilage and Preservation 12

Spoilage mechanisms, indicators, and preservation methods – thermal, chemical, biological.

Unit 3: Pathogenic Microorganisms 12

Common food-borne pathogens: Salmonella, Listeria, E. coli, Clostridium, and their health impact.

Unit 4: Food Safety Standards and Policies 12

FSSAI guidelines, HACCP, ISO standards, and risk assessment frameworks.

Unit 5: Sanitation and Hygiene in Food Handling 12

GMPs, cleaning and sanitation practices, personal hygiene, and food handler safety.

Total : 60

Course Outcomes:

CO1: Understand the role and significance of microorganisms in food production, spoilage, and foodborne illnesses.

CO2: Identify potential microbial hazards and assess risks associated with various stages of food production and handling.

CO3: Apply appropriate methods for controlling microbial growth to ensure food safety and shelf life.

CO4: Implement food safety management systems (e.g., HACCP, ISO 22000) and comply with national and international quality standards.

CO5: Conduct microbiological assessments and interpret findings for food quality control in food service and industrial settings.

Reference Books

- Adams & Moss. *Food Microbiology*, 6th Ed., Royal Society of Chemistry, 2025.
- Jay, Loessner & Golden. *Modern Food Microbiology*, 9th Ed., Springer, 2025.

| L | T | P | O | C |
|---|---|---|---|---|
| 3 | 0 | 0 | 0 | 3 |

DSE Sub Code Theory **Advanced Human Nutrition**

Course Objectives:

This course aims to help students understand the nutritional basis of physiological processes and their relationship to chronic diseases. Students will explore how nutrients influence bodily functions and metabolic processes, as well as how imbalances in nutrition can contribute to the development and progression of chronic conditions such as diabetes, cardiovascular diseases, and obesity. The course will emphasize the importance of proper nutrition in preventing and managing these diseases, highlighting the role of diet in maintaining long-term health.

Unit 1: Nutritional Regulation of Metabolism 9

Role of diet in hormonal regulation and metabolism of nutrients.

Unit 2: Nutrient Requirements and RDA 9

Latest RDA recommendations, dietary guidelines, and individualized nutrition.

Unit 3: Nutrition and Chronic Diseases 9

Role of diet in obesity, diabetes, cardiovascular diseases, and cancer.

Unit 4: Functional Foods and Nutraceuticals 9

Bioactive compounds, probiotics, prebiotics, and their health claims.

Unit 5: Clinical and Community Nutrition Interface 9

Translating scientific knowledge into public health practice. Nutrition counseling and diet prescription.

Total : 45

Course Outcomes:

CO1: Understand and evaluate the scientific principles behind diet-disease relationships and their impact on public and individual health.

CO2: Analyze evidence-based research to assess the role of specific nutrients in the prevention and management of chronic diseases.

CO3: Design and implement nutrition interventions tailored to disease prevention and health promotion for diverse populations.

CO4: Integrate nutritional principles into clinical and community health practices, focusing on both individual and population-level interventions.

CO5: Develop strategies to communicate nutritional information and dietary recommendations effectively to healthcare professionals and the general public.

Reference Books

- Mahan & Escott-Stump. *Krause's Food & the Nutrition Care Process*, 15th Ed., Elsevier, 2025.
- Berdanier & Dwyer. *Handbook of Nutrition and Food*, 4th Ed., CRC Press, 2025.