CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

NATIONALLY ACCREDITED (IV CYCLE) WITH "A+" GRADE BY NAAC
TIRUCHIRAPPALLI

DEPARTMENT OF FOOD SERVICE MANAGEMENT AND DIETETICS

M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS

SYLLABUS

2026-2027 and Onwards

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
DEPARTMENT OF FOOD SERVICE MANAGEMENT AND DIETETICS

VISION

To strengthen and integrate academic excellence, ethical values and social responsibility to develop a healthy nation by imparting skill based knowledge, professional competency and entrepreneurial skills.

MISSION

- To have a breath of knowledge across the subject areas of Nutrition and Dietetics.
- To professionally enrich the students for successful career in Academia, Industry and Research.
- To promote and inculcate self-reliance, social relevance, sound value system and code of professional practice among students.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEOs	Statements
PEO1	**LEARNING ENVIRONMENT** To facilitate value-based holistic and comprehensive learning by integrating innovative learning practices to match the highest quality standards and train the students to be effective leaders in their chosen fields.
PEO2	**ACADEMIC EXCELLENCE** To provide a conducive environment to unleash their hidden talents and to nurture the spirit of critical thinking and encourage them to achieve their goal.
PEO3	**EMPLOYABILITY** To equip students with the required skills in order to adapt to the changing global scenario and gain access to versatile career opportunities in multidisciplinary domains.
PEO4	**PROFESSIONAL ETHICS AND SOCIAL RESPONSIBILITY** To develop a sense of social responsibility by formulating ethics and equity to transform students into committed professionals with a strong attitude towards the development of the nation.
PEO5	**GREEN SUSTAINABILITY** To understand the impact of professional solutions in societal and environmental contexts and demonstrate the knowledge for an overall sustainable development.

PROGRAMME OUTCOMES FOR
M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS PROGRAMME

PO NO	On completion of M.Sc., Programme, the students will be able to
PO1	**SCIENTIFIC MANAGEMENT AND CAREER OPPORTUNITIES** Master the scientific and applied aspects of the subject for employment opportunities.
PO2	**EXPLORE CREATIVITY AND INTELLIGENCE** Employ novel ideas with conceptual thinking to secure self-discipline and independence to foster scientific attitude by exploration of science.
PO3	**TEAM BUILDING AND SCIENTIFIC TEMPERAMENT** Inculcate training, internships and team spirit with leadership skills through academic projects and transmit complex scientific and technical information and contribute to the scientific community.
PO4	**INNOVATIVE LEARNING AND TECHNOLOGICAL ADVANCEMENT** Perceive research in the specialized areas and to engage in life-long learning to keep pace with emerging trends in academics, research and technology.
PO5	**PERSONALITY DEVELOPMENT WITH SOCIAL RESPONSIBILITY** Achieve ethical, social and holistic values with social responsibility to develop a healthy life.

PROGRAMME SPECIFIC OUTCOMES FOR M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS

PSO NO	The Students of M.Sc., Food Service Management & Dietetics will be able to	POs Addressed
PSO1	Analyze scientific concepts in the area of Nutrition, Food Service Management and Dietetics.	PO1
PSO2	Apply critical thinking, technical skills and collaborative approach in food and nutrition, dietetics and managerial practices.	PO2, PO3
PSO3	Develop core competency skills through experimental work, internship and projects to support actions that promote social development.	PO3, PO5
PSO4	Utilize local, national and global trends, emerging techniques and changes of legislation to enhance work performance.	PO4
PSO5	Establish entrepreneurial skills in designing innovative healthy food products and facility planning.	PO2, PO5

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

DEPARTMENT OF FOOD SERVICE MANAGEMENT AND DIETETICS

M. Sc., FOOD SERVICE MANAGEMENT AND DIETETICS

CHOICE BASED CREDIT SYSTEM-LEARNING OUTCOME-BASED CURRICULUM FRAMEWORK (CBCS – LOCF)

(For the Candidates admitted from the Academic year 2026-2027 onwards)

Semester	Course	Course Title	Course Code	Inst. Hrs. / week	Credits	Exam			Total
						Hrs.	Marks		
							Int	Ext	
I	Core Course– I (CC-I)	Advanced Food Science	26PFS1CC1	6	5	3	30	70	100
	Core Course – II (CC-II)	Advanced Dietetics I	26PFS1CC2	6	5	3	30	70	100
	Core Practical –I (CP-I)	Advanced Dietetics I (P)	26PFS1CP1	6	5	3	40	60	100
	Discipline Centric Elective Course-I (DCEC-I)	A. Applied Physiology	26PFS1DCE1A	5	3	3	30	70	100
		B. Operations Management in Food Service	26PFS1DCE1B						
		C. Bakery Science	26PFS1DCE1C						
	Generic Elective Course -I (GEC-I)	A. Public Health Nutrition	26PFS1GE1A	4	2	3	30	70	100
		B. Food Processing and Preservation	26PFS1GE1B						
	Non-Major Elective Course -I (NMEC-I)	Fundamentals of Nutrition	26PFS1NME1	3	2	3	30	70	100
	Total			**30**	**22**				**600**

SEMESTER I	INTERNAL MARKS: 30		EXTERNAL MARKS: 70	
COURSE CODE	**COURSE TITLE**	**CATEGORY**	**HRS / WEEK**	**CREDITS**
26PFS1CC1	**ADVANCED FOOD SCIENCE**	**CORE**	**6 [4 (Theory) + 2 (Practical)]**	**5**

Course Objectives

- To gain knowledge on nutritional composition and properties of food
- To develop skills to judge the quality of food
- To apply the principles of cooking in food preparations

Pre requisites

- Basic knowledge on Food Science
- Fundamentals of Food Chemistry

S. No.	Course Features	Relevance Status
1.	Course emphasis on Employability/Entrepreneurship/Skill Development	Employability, Entrepreneurship, Skill Development
2.	Course integrates cross cutting issues relevant to Professional Ethics/Gender sensitization/ Environment and Sustainability/ Human Values / Indian Knowledge System	Environment and Sustainability
3.	Course relevant to Local/Regional/National/ Global needs	Global need
4.	Course focus on Sustainable Developmental Goals	SDG 12,14,15

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On Successful Completion of the course, students will be able to	Cognitive Level
CO 1	List the nutritional composition of food groups	K1 & K2
CO 2	Predict the properties of food with processing and preparation techniques	K2 & K3
CO 3	Examine the changes that take place during cookery and factors affecting cooking quality	K3
CO 4	Evaluate role of subjective and objective methods on food quality evaluation	K4 & K5
CO 5	Prioritize the importance of food additives	K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2	3	3	2	2	2
CO2	3	3	3	2	2	3	3	2	2	2
CO3	3	3	3	2	2	3	3	2	2	2
CO4	3	3	3	2	2	3	3	2	2	2
CO5	3	3	3	2	2	3	3	2	2	2

"1" -Slight (Low) Correlation "2" - Moderate (Medium) Correlation
"3" - Substantial (High) Correlation "-" - indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	a. **Cereals** Structure, nutritional composition- Rice, Wheat, Millets. Nutritive value of breakfast cereals and fermented products. Gluten formation, factors affecting gluten formation. Gelatinization, gelation, retrogradation, syneresis, dextrinization. Role of cereals in cookery, problems encountered in cereal cookery. Starch – components, types of starches, modified starch. b. **Pulses and legumes** Nutritional composition, processing of pulses – soaking, germination, decortication, fermentation. Factors affecting cooking quality of pulses. Toxins in pulses and methods of removal. c. **Nuts and oilseeds** Classification, nutritional composition, role of nuts and oilseeds in cookery.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
II	**a. Milk and milk products** Nutritional composition, effect of physical and chemical factors on milk components, processing methods - clarification, pasteurization, homogenization. Types of milk, types of milk products- concentrated dairy products, dried dairy products, fermented milk products. b. **Sugar** Types of sugar, sweeteners and role of sweeteners. physical and chemical properties of sugar, stages of sugar cookery, crystallization, factors affecting crystallization.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6

	c. **Fats and oils** Physical and chemical properties of fats and oils, hydrogenation, winterization, rancidity- types, prevention, flavor reversion, smoking point, thermal changes in fat, role in cookery. Absorption of fat, factors affecting absorption of fat, fat replacers.			
III	**a. Meat and poultry** Meat-structure, types, nutritional composition, processing, postmortem changes, ageing, tenderization, cuts of meat, meat cookery, effect of cooking. Poultry - classification, nutritive value, selection and storage, methods of cooking. b. **Fish** Classification, nutritive value, selection, processing, and storage, methods of cooking. c. **Egg** Structure and nutritional composition, selection, processing, storage, quality check, foam formation, factors affecting foam formation.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
IV	**a. Fruits** Classification, composition, selection, processing, storage, ripening, enzymatic browning and preventive measures. b. **Vegetables** Classification, composition, selection, processing, storage, changes during cooking, loss of nutrients while cooking, changes in plant pigments while cooking. c. **Spices and condiments** Types, processing and storage, role in cookery, volatile compounds.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
V	**a. Evaluation of quality of foods** Sensory characteristics of food –appearance, colour, flavor, odour, taste, mouth feel. Methods of sensory analysis- Difference test, Rating test, Sensitivity test, Descriptive profile method. Requirements for conducting sensory tests. Objective methods- chemical methods, physio-chemical methods, microscopic examination, physical methods. Procedures for determination and monitoring shelf life. b**. Colloidal system** Types of colloidal dispersion, properties of colloidal system, emulsion-types, stability of emulsion, emulsifiers. c. **Food additives** Needs, and food safety, unintentional additives. Types - Preservatives, antioxidants, sequestrants, humectants, bleaching and maturing agents, starch modifiers, emulsifiers, stabilizers, gelling agents, thickeners and surface active agents, anti-caking agents, anti- foaming agents, colouring agents, flavour enhancer, acids, bases and buffers, glazing agents.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6

VI	**SELF STUDY FOR ENRICHMENT** **(Not to be included for External Examination)** Benefits of germination, Role of sugar in cookery, Coagulation of egg protein, Uses of spices and condiments in Indian cookery, Role of food additives in food industry.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6

Practical (2 Hours / Week)

Related Experience:

List of Experiments:

1. Starch cookery: Microscopic examination of different starches, gelatinization of starch.

2. Pulse cookery: Factors affecting the cooking quality of pulses.

3. Milk Cookery: Effect of heat, acid, curdling of milk**.**

4. Sugar cookery: Stages of sugar cookery

5. Fats and oils cookery: Smoking temperature, factors affecting absorption of fat.

6. Meat, fish and poultry cookery: Effect of cooking methods on meat, fish, poultry**.**

7. Egg cookery: Testing the quality of egg. Coagulation of egg white and egg yolk.

8. Fruit cookery: Measures for the prevention of enzymatic browning.

9. Vegetable cookery: Effect of acid, alkali and heat on pigments in vegetables.

10. Sensory evaluation of food: Preparation of score card and Sensory analysis.

Text Books

1. Avantina Sharma., (2012), *Textbook of Food Science and Technology*, CBS Publishers and Distributors Pvt. Ltd.
2. Singh, S. K., (2019), *Essentials of Food Science*, Ishwar Books, New Delhi, India.
3. Mohini Sethi., (2019), *Food Science Experiments and Applications*, (2nd ed.), CBS Publishers and Distributors Pvt. Ltd.
4. S.M. Reddy., (2015), *Basic Food Science and Technology*, New Age International(P) Limited, Publishers, New Delhi, India.
5. B. Srilakshmi., (2018), *Food Science* (7th ed.). New Age International (P) Limited, Publishers, New Delhi, India. Edition VII.

Reference Books

1. Norman N. Potter, (2007), *Food Science*, CBS Publishers and Distributors Pvt. Ltd. Edition V
2. H.K. Chopra., (2015), *Food Chemistry*, Narosa Publishing House Pvt. Ltd.
3. Swaminathan, M., (2012). *Essentials of Food and Nutrition,* Ganesh and Company, Madras.

Web links

- https://starch.eu/ingredients/
- https://www.britannica.com/science/fat-processing
- http://www.yourarticlelibrary.com/home-science/eggs/egg
- https://www.who.int/news-room/fact-sheets/detail/food-additives
- http://samples.jbpub.com/9781449694777/9781449603441_CH03.pdf

Journals

1. Food Chemistry, Elsevier Sci. Ltd, England.
2. Food Science and Technology, Soc Brasileira Ciencia Technologia Alimentos, Brazil.
3. Food Research International, Elsevier Science, United States.
4. Journal of Food and Agriculture, Wiley-Blackwell, England.
5. Journal of Food Science and Technology, Scientific Publishers, India

Pedagogy

Chalk and talk, PPT, e-content, Discussion, Assignment, Demo, Quiz, Seminar, Industrial Visit

Course Designer

- Ms. T.R. Revathi

SEMESTER I	INTERNAL MARKS: 30			EXTERNAL MARKS: 70
COURSE CODE	**COURSE TITLE**	**CATEGORY**	**HRS / WEEK**	**CREDITS**
26PFS1CC2	**ADVANCED DIETETICS I**	**CORE**	**6**	**5**

Course Objective

- To plan therapeutic diets.
- To analyze the underlying causes, pathophysiology and complications of diseases.
- To outline the focus of nutrition and dietetics in the prevention of diseases.

Pre requisites

- Principles of menu planning.
- Basics of therapeutic nutrition.

S. No.	Course Features	Relevance Status
1.	Course emphasis on Employability/Entrepreneurship/Skill Development	Employability, Entrepreneurship, Skill Development
2.	Course integrates cross cutting issues relevant to Professional Ethics/Gender sensitization/ Environment and Sustainability/ Human Values/ Indian Knowledge System	Professional Ethics, Environment and Sustainability
3.	Course relevant to Local/Regional/National/ Global needs	Global need
4.	Course focus on Sustainable Developmental Goals	SDG 3,12

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Illustrate the role of dietitian in the hospitals and interpret special feeding methods	K1 & K2
CO2	Apply the principles of dietary counseling for various diseases	K3
CO3	Analyze the nutritional requirements and menu plans for therapeutic conditions	K4
CO4	Assess symptoms, causes and complications of various diseases	K5
CO5	Predict the conditions and suggest the dietary modifications	K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	2	3	3	3	3	3
CO5	3	3	3	3	2	3	3	3	3	3

"1" – Slight (Low) Correlation "2" – Moderate (Medium) Correlation
"3" – Substantial (High) Correlation "-" - indicates there is no correlation.

SYLLABUS

UNIT I	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	**a. Dietitian and Counseling** Dietitian - Definition and types of dietitians, role of dietitian in the hospital and community. Counseling - Definition, counsellor and Client, techniques of counseling and classification of counseling. **b. Routine Hospital Diet and Special Feeding Methods** Routine Hospital Diet -Clear fluid diet, full fluid diet, soft diet, regular diet. Special feeding methods - Enteral nutrition and Parenteral nutrition. Feeding the Patient - Assessment of patient needs, introduction to assessment tools.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
II	**Dietary Management in Febrile Conditions** Definition, etiology, Metabolic changes, types of fever, clinical manifestations, dietary modification for febrile conditions - acute, chronic and recurrent fevers - typhoid, influenza, malaria, poliomyelitis, rheumatic fever, tuberculosis, HIV and COVID-19. **Dietary Management in Food allergy** Food allergy and food intolerance – Definition, mechanism, clinical manifestations, diagnosis and dietary management.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
III	**Dietary management in Diseases of Gastro Intestinal Tract** Definition, etiology, types, clinical manifestations, dietary modification for gastro intestinal disorders – Gastritis, peptic ulcer, diarrhoea, constipation, malabsorption syndrome and haemorrhoids. **b. Dietary management in Biliary Tract Disorders** Definition, etiology, types, clinical manifestations and dietary modification for liver disorders - fatty liver, hepatitis, cirrhosis and liver transplantation. Gall bladder disorders - cholecystitis and cholelithiasis.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6

	c. Dietary management in Pancreatic Disorders Definition, etiology, types, clinical manifestations and dietary modification for Pancreatitis.			
IV	**Dietary Management in Underweight and Obesity** Definition, energy balance, etiology, clinical manifestations, complications, dietary and lifestyle modifications of underweight and obesity. **. Dietary management in Diabetes Mellitus** Definition, types, screening and diagnostic criteria, etiology, clinical manifestations, complications, dietary management. Food exchange system, glycemic index, glycemic load, nutritive and non-nutritive sweeteners. Lifestyle recommendations, drugs and insulin.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
V	**. Dietary Management in Hormonal diseases** Definition**,** Etiology, clinical manifestations, and dietary modification for Cushing's syndrome, Addison's disease, hypothyroidism and hyperthyroidism. **. Dietary Management in inborn errors of metabolism:** Definition**,** classification**,** **e**tiology, clinical manifestations and dietary management of Galactosemia, Phenylketonuria and Niemann–Pick Disease.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
VI	**SELF STUDY FOR ENRICHMENT** **(Not to be included for External Examination)** Professional ethics and obligations of dietitian. Women and HIV. Types of jaundice. Theories of Obesity. Mechanisms of Goitrogens interfering with Thyroid Hormone Synthesis.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6

Text Books

1. Mahan, Kathleen, L., Krause's, (2004). *Food, Nutrition and Diet Therapy*(11th ed.)., Pennsylvania; Saunders.
2. Antia, F . P., (2005).*Clinical Dietetics and Nutrition,*(5th ed.).Oxford University Press, New Delhi,
3. Prakash Lohar, S., (2007).*Endocrinology –Hormones and Human Health*, MJP publishers, Chennai.
4. Srilakshmi, B., (2009).*Dietetics,* (2nd ed.)New Age International Publications, New Delhi.
5. Shubhangini Joshi, A., (2014), *Nutrition and Dietetics*, (5th ed.). McGraw Hill, Education Private Limited, New Delhi.
6. Swaminathan, M., (2012). *Essentials of Food and Nutrition,* Ganesh and Company, Madras.
   Maity, S . P., *Pharmacology for Second Professional Students*, (6th ed.)Books & AlliedPvt. Ltd.

Reference Books

1. Robinson, Corrine, H., (1982). *Normal and Therapeutic Nutrition*,(16th ed.). Macmillan McGraw Hill School Division, New York.
2. Udai Veer, (2007). *Elements of Food Science*, Anmol Publications Pvt Ltd, New Delhi.
3. Srilakshmi, B., (2008). *Nutrition Science,*(3rd ed.).New Age International Publications, New Delhi.
4. Indrani, T.K., (2008). *Nursing Manual of Nutrition and Therapeutic Diet,*(2nd ed.). Jaypee Brothers medical publishers (P) Ltd.
5. Mary Marian, (2008). *Clinical Nutrition for surgical patients.* Jones and Barletta Publishers.
6. Sangeetha Karnik, (2010). *Nutrition and Dietetics Therapy,* Biotech PharmaPublications, Hyderabad.
7. Robert D. Lee & David C. (2003). *Nutritional Assessment*, McGraw-Hill, New York.

Web Links

- https://gpadampur.files.wordpress.com/2015/08/caft-complete-vedpal.pdf
- https://sfsurgery.com/wp-content/uploads/2014/06/Pancreatitis.pdf
- https://my.clevelandclinic.org/health/treatments/21098-tube-feeding--enteral-nutrition
- https://my.clevelandclinic.org/health/diseases/7104-diabetes-mellitus-an-overview
- https://www.mayoclinic.org/diseases-conditions/cancer/symptoms-causes/syc-20370588

Journals

1. Food and Nutrition Bulletin, Sage Publications Inc, Japan.
2. Food and Nutrition Research, Co-Action Publishing, Sweden.
3. Food Digestion, Springer Verlag, Germany.
4. Nutrition and Cancer, Lawrence Erlbaum Associates Inc. United States
5. Nutritional Therapy and Metabolism, Wichtig Publishing, Italy.
6. Nutrition in Clinical Practice, Sage Publications Inc, United States

Pedagogy

Lecture, assignment, PowerPoint presentation, quiz, seminar, visit to hospital dietary units

Course Designer

- Ms. E. Agalya

SEMESTER I	INTERNAL MARKS: 40		EXTERNAL MARKS: 60	
COURSE CODE	**COURSE TITLE**	**CATEGORY**	**HRS / WEEK**	**CREDITS**
26PFS1CP1	**ADVANCED DIETETICS I (P)**	**CORE PRACTICAL**	**6**	**5**

Course Objective

- To understand the modification of normal diet for therapeutic purpose.
- To acquire the skills of preparing diet for various disease conditions.
- To study the importance of dietitian in hospitals.
-

Pre requisites

- Application of dietary principles.
- Planning and preparation of modified diet.

S. No.	Course Features	Relevance Status
1.	Course emphasis on Employability/Entrepreneurship/Skill Development	Employability, Entrepreneurship, Skill Development
2.	Course integrates cross cutting issues relevant to Professional Ethics/Gender sensitization/ Environment and Sustainability/ Human Values / Indian Knowledge System	Professional Ethics, Environment and Sustainability
3.	Course relevant to Local/Regional/National/ Global needs	Global need
4.	Course focus on Sustainable Developmental Goals	SDG 3,12

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Describe nutrient composition of clear fluid, full fluid and soft diet	K1 & K2
CO2	Classify foods to be included and avoided in the treatment of diseases	K3
CO3	Identify the importance of dietary principles in the management of diseases	K4
CO4	Evaluate the nutritive value and plan menu for therapeutic conditions	K5
CO5	Recommend various routine hospital diets	K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3
CO3	3	3	3	3	2	3	3	3	3	3
CO4	3	3	3	3	2	3	3	3	3	3
CO5	3	3	3	3	2	3	3	3	3	3

"1" – Slight (Low) Correlation "2" – Moderate (Medium) Correlation

"3" – Substantial (High) Correlation "-" - indicates there is no correlation.

List of experiments:

1. **Planning, preparation of Routine Hospital Diets**

- Clear Liquid Diet
- Full Liquid Diet
- Soft Diet
- Blenderized Diet
- Mechanically altered diet

2. **Planning, preparation and diet counselling for Specific Conditions**

a) Febrile Conditions - Acute, Intermittent and Chronic

b) Gastrointestinal Diseases - Peptic Ulcer, Diarrhoea and Constipation

c) Liver Diseases - Hepatitis and Cirrhosis

d) Gall Bladder Diseases - Cholecystitis and Cholelithiasis

e) Diabetes Mellitus – Type I, Type II and Gestational Diabetes Mellitus

f) Obesity

g) Underweight

Text Books

1. Mahan, Kathleen, L., Krause's, (2004).*Food, Nutrition and Diet Therapy*, (11th ed.)Pennsylvania; Saunders.
2. Antia, F . P., (2005). *Clinical Dietetics and Nutrition,*(5th ed.)Oxford University Press, New Delhi.
3. Prakash Lohar, S., (2007). *Endocrinology –Hormones and Human Health*, MJP publishers, Chennai.
4. Srilakshmi, B., (2009). *Dietetics*, (2nd ed.).New Age International Publications, New Delhi.
5. Shubhangini Joshi, A., (2014),*Nutrition and Dietetics*,(5th ed.). McGraw Hill, Education Private Limited, New Delhi.
6. Gopalan, C., & etal., (2018). *Nutritive Value of Indian Foods*, National Institute of Nutrition Hydrabad.

Reference Books

1. Joshi, Y. K., (2003). *Basics of Clinical Nutrition*, (2nd ed.).Jaypee Brothers,Medical Publishers, New Delhi.
2. Indrani, T.K., (2008). *Nursing Manual of Nutrition and Therapeutic Diet*, (2nd ed.).Jaypee Brothers medical publishers (P) Ltd.
3. Mary Marian, (2008). *Clinical Nutrition for surgical patients,* Jones and Barletta Publishers.

Web Links

- https://sfsurgery.com/wp-content/uploads/2014/06/Pancreatitis.pdf
- https://my.clevelandclinic.org/health/treatments/21098-tube-feeding--enteral-nutrition
- https://my.clevelandclinic.org/health/diseases/7104-diabetes-mellitus-an-overview

Journals

1. Food and Nutrition Research, Co-Action Publishing, Sweden.
2. Food Digestion, Springer Verlag, Germany.
3. Nutritional Therapy and Metabolism, Wichtig Publishing, Italy.
4. Nutrition in Clinical Practice, Sage Publications Inc, United States

Pedagogy

Lecture, Demonstration, Practical

Course Designer

- Ms. E. Agalya

SEMESTER I	INTERNAL MARKS: 30	EXTERNAL MARKS: 70		
COURSE CODE	**COURSE TITLE**	**CATEGORY**	**HRS / WEEK**	**CREDITS**
26PFS1DCE1A	**APPLIED PHYSIOLOGY**	**DISCIPLINE CENTRIC ELECTIVE**	**5**	**3**

Course Objectives

- Acquire basic understanding of human anatomy and physiology.
- Understand the integrated functioning of cells, tissues, organs and systems to maintain life.
- Explain the structure of major human organs and explain their role in maintenance of health

Pre requisites

- Prior knowledge on human physiology
- Fundamentals of structure and function of human organs.

S. No.	Course Features	Relevance Status
1.	Course emphasis on Employability/Entrepreneurship/Skill Development	Employability, Entrepreneurship, Skill Development
2.	Course integrates cross cutting issues relevant to Professional Ethics/Gender sensitization/ Environment and Sustainability/ Human Values/ Indian Knowledge System	Professional Ethics, Gender sensitization
3.	Course relevant to Local/Regional/National/ Global needs	Global need
4.	Course focus on Sustainable Developmental Goals	SDG 3

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On Successful Completion of the course, students will be able to	Cognitive Level
CO 1	Describe composition and functions of blood and cell	K1 & K2
CO 2	Show the physiology of circulatory and respiratory system	K3
CO 3	Predict the different homeostatic mechanisms of the human body.	K4
CO 4	Determine the regulatory functions of the digestive and excretory systems.	K5
CO 5	Elaborate structure and function of endocrine and reproductive system	K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	2	1	2	-	2	2	1
CO2	3	2	2	2	1	2	-	2	2	1
CO3	3	2	2	2	1	2	-	2	2	1
CO4	3	2	2	2	1	2	-	2	2	1
CO5	3	2	2	2	1	2	-	2	2	1

"1" – Slight (Low) Correlation "2" – Moderate (Medium) Correlation
"3" – Substantial (High) Correlation "-" -indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	**Physiology of cell, cell membrane, nerve and muscle** a. Internal Environment - The Concept of Homeostasis. b. Cellular level of organization – Review of structure and function of cell and its organelles. Cell division, cell differentiation. c. Membrane physiology – Transport of substance through cell membrane, Resting Membrane Potential. d. Excitation of Skeletal Muscle- Neuromuscular Junction, Neuromuscular Transmission, Excitation and Contraction Coupling.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
II	**Digestive system** a. Review of structure and function - Secretory, Digestive and Absorptive functions - Role of liver, pancreas and gallbladder. b. Motility and hormones of Gastro Intestinal Tract. c. Regulation of food intake – Role of hunger and satiety centres.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
III	**Circulatory, cardio vascular and respiratory system** a. Review of Blood composition and function, Erythropoiesis, Haemostasis and blood coagulation, Blood groups and histocompatibility. b. Cardio vascular system- structure and function of heart and blood vessels, regulation of cardiac output and blood pressure, heart failure and hypertension. c. Structure and functions of the respiratory system, Mechanism of respiration and pulmonary ventilation, Regulation of respiration and gas exchange, Oxygen and carbon dioxide transport.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6

IV	**Excretory and nervous system** a. Mechanism of urine formation – glomerular filtration, tubular reabsorption and secretion, Regulation of urine volume and composition, Role of kidneys in acid–base balance and maintenance of blood pH. b. Structure and functions of neuron, conduction of nerve impulse, role of neuro transmitters, blood brain barriers, CSF, hypothalamus and its role in various body functions.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
V	**Immune, endocrine and reproductive system** a. Cell-mediated and humoral Immunity, Activation of WBC and production of antibodies. Role in inflammation and defense. b. Endocrine glands - Regulation of hormonal secretion, hyposecretion and hypersecretion of endocrine hormones – Pituitary, thyroid, pancreas, adrenal. c. Reproductive System – Review of Testes and Ovaries, functions of testosterone, deficiency of testosterone. Functions of Uterus, Hormonal control of menstrual cycle, physiological changes in pregnancy, parturition, lactation and menopause.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
VI	**SELF STUDY FOR ENRICHMENT** **(Not to be included for External Examination)** Apoptosis, Gut–brain axis in regulation of food intake, Abnormalities of heart function, Role of diuretics, Lymphatic system.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6

Text Books

1. Sembulingam, K., & Sembulingam, P. (2016). *Essentials of Medical Physiology*. Jaypee Brothers Medical Publishers, New Delhi.
2. Subramanyam, S., & Sarada, S. (2018). *Textbook of Human Physiology*. S. Chand & Company Ltd., New Delhi.
3. Randhawa, S.S., & Kabra, A. (2017). *Human Anatomy and Physiology – I*. S. Vikas and Company, India.
4. Murugesh, N. (2010). *Anatomy, Physiology and Health Education* (6th ed.). Sathya Publishers, Madurai.

Reference Books

1. Guyton, A.C., & Hall, J.E. (2000). *Guyton and Hall Textbook of Medical Physiology*. Saunders, United States of America.
2. Waugh, A., & Grant, A. (2003). *Ross and Wilson Anatomy and Physiology in Health and Illness*. Churchill Livingstone, New York.
3. Murugesh, N. (2011). *Anatomy and Physiology*. Sathya Publishers, Madurai.
4. Waugh, A., & Grant, A. (2014). *Ross and Wilson Anatomy and Physiology in Health and Illness*. Reed Elsevier India Private Limited, New Delhi.

Web links

- **https://www.khanacademy.org/science/health-and-medicine/human-anatomy-and-physiology**
- **https://www.biologyonline.com/tutorials/the-human-physiology**
- **https://digitaleditions.library.dal.ca/intropsychneuro/chapter/hunger-and-eating/**
- **https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=NuAs6SreCGryddEfs4kkBA=**

Journals

1. Human Physiology. Maik Nauka / Interperiodica Publishing, Russian Federation.
2. Indian Journal of Clinical Anatomy and Physiology. Innovative Publication Pvt. Ltd., India.
3. American Journal of Physiology: Endocrinology and Metabolism. American Physiological Society, United States.
4. Canadian Journal of Physiology and Pharmacology. Canadian Science Publishing (NRC Research Press), Canada.
5. Applied Physiology, Nutrition, and Metabolism. National Research Council Canada, Canada.
6. Journal of Applied Physiology. American Physiological Society, United States.

Pedagogy

E-content, Lecture, Power point presentation, Seminar, Assignment, Demonstration, Group Discussion, Quiz, Case study.

Course Designers

- Ms. L. Gayathri
- MS. S.Fathima

SEMESTER I	INTERNAL MARKS: 30		EXTERNAL MARKS: 70	
COURSE CODE	**COURSE TITLE**	**CATEGORY**	**HRS / WEEK**	**CREDITS**
26PFS1DCE1B	**OPERATIONS MANAGEMENT IN FOOD SERVICE**	**DISCIPLINE CENTRIC ELECTIVE**	**5**	**3**

Course Objectives

- To understand key operational functions of front office, housekeeping, and kitchen areas.
- To apply workflow, inventory, sanitation, and safety principles in food service operations.
- To develop skills in human resource management and professional ethics in food service settings.

Pre requisites

- Foundational knowledge of hospitality and food service operations
- Basic understanding of food safety, sanitation, and workplace procedures.

S. No.	Course Features	Relevance Status
1.	Course emphasis on Employability/Entrepreneurship/Skill Development	Employability, Entrepreneurship, Skill Development
2.	Course integrates cross cutting issues relevant to Professional Ethics/Gender sensitization/ Environment and Sustainability/ Human Values/ Indian Knowledge System	Professional Ethics, Environment and Sustainability
3.	Course relevant to Local/Regional/National/ Global needs	Global need
4.	Course focus on Sustainable Developmental Goals	SDG 8,9,16

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On Successful Completion of the course, students will be able to	Cognitive Level
CO 1	Demonstrate operational functions of front office and housekeeping in hospitality settings.	K1 & K2
CO 2	Construct kitchen layout, space allocation, and food service equipment utilization.	K3
CO 3	Analyze the operations management principles for workflow and guest satisfaction.	K4
CO 4	Interpret inventory control, purchasing, sanitation, and safety protocols.	K5
CO 5	Assess Human resource functions, professional ethics, and appraisal systems in food service operations.	K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	1	-	2	3	2	1	2	1
CO2	3	2	1	-	2	3	2	1	2	1
CO3	3	2	1	-	2	3	2	1	2	1
CO4	3	2	1	-	2	3	2	1	2	1
CO5	3	2	1	-	2	3	2	1	2	1

"1" – Slight (Low) Correlation "2" – Moderate (Medium) Correlation
"3" – Substantial (High) Correlation "-" -indicates there is no correlation

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	**Front Office management** a) **Introduction and Structure**: Role of front office in revenue generation, organizational hierarchy (front office manager, reception, reservations, concierge, bell desk), interdepartmental coordination with housekeeping and F&B. b) **Guest Cycle Processes**: Reservations (manual/system-based), check-in procedures, room assignment, check-out, and billing/settlement, guest services - Handling inquiries, complaints, concierge services, message/mail delivery and ensuring satisfaction. Equipment and Systems: Property management systems (PMS), front desk layouts, communication tools (PBX- Private Branch Exchange, EPABX-Electronic Private Automatic Branch Exchange), and security features. c) **Management Practices:** Yield/revenue management, staff responsibilities and etiquette	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
II	**Housekeeping management** a) **Department Structure and Layout:** Organizational hierarchy (executive housekeeper, supervisors, room attendants), floor plans, layout for guest rooms, public areas, laundry, and coordination with front office/engineering. b) **Cleaning Standards and Schedules:** Daily/weekly/periodic cleaning procedures for rooms, bathrooms, public spaces; methods for surfaces, floors, glass, metals; guest room categories (occupied, vacant, checkout). c) **Supplies and Inventory Management:** Cleaning agents/equipment identification, usage, storage; linen control, lost-and-found procedures, handling guest requests/complaints.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6

III	**Kitchen layout and equipment** **a) Layout:** Types (square, rectangular, U-shaped, L-shaped, parallel, and straight-line); space allocation (storage, preparation, cooking, service, cleaning); workflow optimization to reduce cross-traffic. b) **Design Considerations:** Ventilation, plumbing, electrical needs; compliance with health codes, ergonomics. **c) Equipment Selection and Use:** Ovens, ranges, fryers, mixers, refrigeration; maintenance schedules, safety features. Space Planning Tools: Flowcharts, bubble diagrams; integration with dining/service areas.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
IV	**Inventory, purchasing, and safety** **a) Inventory Control Systems:** Perpetual/periodic methods, PAR levels, stock rotation (FIFO), yield analysis. **b) Purchasing Processes:** Vendor selection, specifications, bidding, receiving/inspection, cost analysis**.** Cost Management - Budgeting, standardization, recipe costing, variance analysis**.** **c) Sanitation Protocols:** HACCP principles, cleaning schedules, pest management, waste disposal, safety Measures: Hazard identification (physical/chemical/biological), OSHA standards, emergency procedures.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
V	**Human resource management** **a) Personnel management:** Functions of personnel management. Professional ethics in Food Service work areas. **b) Man power planning**: Steps in man power planning, process of recruitment and selection. **c) Performance appraisal:** Methods, merits and demerits, promotion, demotion, transfer, separation and retirement. Grievances and grievances handling .	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
VI	**SELF STUDY FOR ENRICHMENT** **(Not to be included for External Examination)** Pod hotel, Lost and found Procedures, Point of Sale System, Property Management System, Software and apps used for Reservation.	**-**	CO1 CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6

Text books

1. Ahmed Ismail, (2004). *Front office operations and Management*. Delmar Publications, Singapore.
2. Naseem Ahmed, (2006). *Principles of Hotel Management*. Anmol Publications Pvt.Ltd.
3. Anil Bhat, Arya Kumar, (2008). *Management Principles, Processes, and Practices*. Oxford University Press, New Delhi
4. Mohini Sethi, (2011). *Catering management – An Integrated approach*. New Age International Pvt. Ltd. New Delhi

Reference Books

1. Premavathy N, (2008). *Principles of Management (Business Management*). Sri Vishnu Publication.
2. Raghubalan G and Smritee Raghubalan, (2009). *Hotel housekeeping - Operations and Management*. Oxford University Press, New Delhi.
3.Vijay R. Thakur, (2007). *Food and Beverage Service*. Denetis Co. USA.

Web links

- https://www.ahlei.org/
- https://www.hospitalitynet.org/
- https://psu.pb.unizin.org/hmd329/chapter/ch10/
- https://ebooks.inflibnet.ac.in/hsp04/chapter/organization-of-housekeeping/

Journals

1. Journal of Industrial Engineering and Management, Omnia Science.
2. Journal of Food Service Business Research, Taylor and Francis, United Kingdom.
3. Journal of Hotel and Business Management, Longdom Publishing, Belgium.

Pedagogy

Lecture based teaching and learning, Group - teaching and learning, Individual learning / Self Study, Peer teaching Kinesthetic learning Game - based learning, Expeditionary learning, Technology based learning, Inquiry based learning, Leaning through problem-solving etc.,

Course Designer

- Dr. V.Ramya

SEMESTER I	INTERNAL MARKS: 30		EXTERNAL MARKS: 70	
COURSE CODE	**COURSE TITLE**	**CATEGORY**	**HRS / WEEK**	**CREDITS**
26PFS1DCE1C	**BAKERY SCIENCE**	**DISCIPLINE CENTRIC ELECTIVE**	**5**	**3**

Course Objective

- To analyze the role of bakery ingredients and equipment in product quality.
- To apply specific technologies for manufacturing a variety of baked products.
- To focus on critical principles of hygiene, quality control, and relevant food laws.

Pre requisites

- Role of baking in food Industry.
- Basics concepts in production.

S. No.	Course Features	Relevance Status
1.	Course emphasis on Employability/Entrepreneurship/Skill Development	Employability, Entrepreneurship, Skill Development
2.	Course integrates cross cutting issues relevant to Professional Ethics/Gender sensitization/ Environment and Sustainability/ Human Values / Indian Knowledge System	Professional Ethics, Environment and Sustainability
3.	Course relevant to Local/Regional/National/ Global needs	Global need
4.	Course focus on Sustainable Developmental Goals	SDG 9,12

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Summarize the market trends and requirements of modern bakery production.	K1 & K2
CO2	Illustrate the impact of ingredient modification on dough properties and final product characteristics.	K3
CO3	Analyze various dough preparation to systematically create high-quality bread products.	K4
CO4	Develop a formula and select the appropriate processing technique for specific bakery items	K5
CO5	Assess and justify standard quality control measures to ensure regulatory compliance and food safety.	K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	3	2	2	3	3	3	3	2	1
CO2	2	3	2	2	3	3	3	3	2	1
CO3	2	3	2	2	3	3	3	3	2	1
CO4	2	3	2	2	3	3	3	3	2	1
CO5	2	3	2	2	3	3	3	3	2	1

"1" – Slight (Low) Correlation "2" – Moderate (Medium) Correlation ¬
"3" – Substantial (High) Correlation "-" - indicates there is no correlation.

SYLLABUS

UNIT I	CONTENT	HOURS	COS	COGNITIVE LEVEL
I	**Introduction in bakery industry:** Bakery industry-history and development , status and scope in India, bakery layout, major and minor equipment used in bakery units, digitalization and automation in bakery.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
II	**Bakery Ingredients and Functionality:** Cereal Proteins and Gluten - Structure, hydration, and the role of gluten in dough formation and gas retention. Fats - Role of fat in tenderness, flavor and creaming, types of fats. Emulsifiers - Function in improving volume, crumb structure, and reducing staling. Sweeteners- Role in tenderness, moisture retention, crust color. Leavening agents - Mechanism of yeast (biological), Baking powder/Soda (chemical), and air/steam (physical).	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
III	**Bread and Pastry:** Bread - Dough preparation methods - Straight dough, Sponge dough, no-time dough. Procedures- Mixing, fermentation (proofing), moulding, and baking. Bread quality - volume, crumb structure, crust color, and flavor. Bread staling and anti-staling measures. Common bakery faults and their corrective measures Pastry types: short-crust, puff, choux. Role of chilling and fat lamination.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
IV	**Biscuit, Cookie and Cake:** Biscuit and Cookie – Classification - hard dough, soft dough, wire-cut. Processing - mixing, sheeting, cutting/molding, and baking. Quality Factors - Spread factor, texture (snapping/crumbliness), and moisture. Cake - manufacturing - creaming method, blending method, two-stage method. formula balancing.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
V	**Food Safety and Quality Control in Bakery:** Hygiene and Sanitation - Personal hygiene, HACCP principles in a bakery setting. Spoilage: - Microbial spoilage (e.g., ropiness in bread) and fat rancidity. Food Laws: Overview of FSSAI regulations, food Additives (preservatives, colors, flavors), and labeling requirements for bakery products.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
VI	**SELF STUDY FOR ENRICHMENT** **(Not to be included for External Examination)** Role of ingredients used in bakery**.** Flavoring agents used in bakery. Dietetic Bakery products: low fat, low sugar, high fibre. Differentiation between biscuit and cookie Registration and licensing of bakery unit in FSSAI	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6

Text Books

1.P. Cauvain & L. Young (2020*). Baking Problems Solved.* Woodhead Publishing
2. S. Rajiv & S. Manley (2017). *Technology of Breadmaking*. Springer.
3. Samuel A. Matz (1992). *Bakery Technology and Engineering*. Springer.
4. Y. H. Hui (Ed.) (2006). *Bakery Products: Science and Technology*. Blackwell Publishing.
5.W. P. Edwards (2007). *The Science of Bakery Products*. RSC Publishing.

Reference Books

1.B. S. Kamel & C. Enrique (2001). *Chemical and Functional Properties of Food Proteins*. CRC Press.
2. S. Purlis (2010). *Modelling Food Processing Operatio*ns.Woodhead Publishing
3. A. Mohan (2019). *Quality Control in Food Industry*. McGraw Hill Publishing
4. P. Cauvain (2015). *Technology of Breadmaking* (2nd Ed.). Springer.
5. C. Fellows (2009). *Food Processing Technology*: Principles and Practice. Woodhead.

Web Links

- https://fssai.gov.in/
- https://www.aaccnet.org/
- https://www.ift.org/
- https://bakerpedia.com/
- https://fssai.gov.in/cms/food-safety-and-standards-regulations.php

Journals

- Journal of Cereal Science, England (UK).
- Trends in Food Science & Technology, Netherlands / UK publisher.
- Food Research International, Netherlands / UK (Europe).
- Journal of Food Engineering, United Kingdom.
- International Journal of Microbiology, Netherlands

Pedagogy

Lecture, assignment, PowerPoint presentation, quiz, seminar, Industrial visit to bakery unit

Course Designer

Ms. N. Ganga Devi

SEMESTER I	INTERNAL MARKS: 30		EXTERNAL MARKS:70	
COURSE CODE	**COURSE TITLE**	**CATEGORY**	**HRS / WEEK**	**CREDITS**
26PFS1GE1A	**PUBLIC HEALTH NUTRITION**	**GENERIC ELECTIVE**	**4**	**2**

Course Objectives

- To understand the importance of nutrition and health.
- To comprehend the nutritional status pertaining to various sectors of population.
- To gain knowledge various intervention programs.

Pre requisites

- Basic knowledge on principles of nutrition.
- Fundamentals of community nutrition.

S. No.	Course Features	Relevance Status
1.	Course emphasis on Employability/Entrepreneurship/Skill Development	Employability, Entrepreneurship, Skill Development
2.	Course integrates cross cutting issues relevant to Professional Ethics/Gender sensitization/ Environment and Sustainability/ Human Values / Indian Knowledge System	Environment and Sustainability
3.	Course relevant to Local/Regional/National/ Global needs	Global need
4.	Course focus on Sustainable Developmental Goals	SDG 1,2,3,11

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On Successful Completion of the course, students will be able to	Cognitive Level
CO 1	State basic sciences relevant to nutrition and apply public health principles to current public health related issues	K1& K2
CO 2	Interpret the nutritional status of the population making use of the different evidence- based scientific assessment methods and protocols	K3
CO 3	Examine the impact of nutrition policies on the health of individual as well as population	K4
CO 4	Compare the health and nutritional challenges encountered in different regions and understand the various strategies employed to address them	K5
CO 5	Assess Nutrition Education programs for a target population using appropriate aids	K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	-	3	3	3	3	3
CO2	3	3	3	3	-	3	3	3	3	3
CO3	3	3	3	3	-	3	3	3	3	3
CO4	3	3	3	3	-	3	3	3	3	3
CO5	3	3	3	3	-	3	3	3	3	3

"1" – Slight (Low) Correlation "2" – Moderate (Medium) Correlation
"3" – Substantial (High) Correlation "-"- indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	**a. Concept of Public Nutrition** Concept of Community, Socio cultural aspect of food preference, Relationship between health and nutrition, Role of public nutritionists in the health care, Relation of nutrition to national development - socio-economic, industrial and agricultural development. **b. Epidemiology** Definition, aim, components, measurement in Epidemiology - IMR, NMR, MMR and tools of measurement, approach.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
II	**a. Nutritional problems** PEM, Vitamin A Deficiency Diseases, Anaemia, Iodine Deficiency Disorders and Fluorosis, Synergism between malnutrition and infection. **b. Nutritional Policy and Planning** Aims, Government guidelines and Policy, Governmental and Non-Governmental organization, Health care delivery system in rural and urban India, I.E.C. (Information Education and Communication).	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
III	**a. Health Communication** Concepts, scope, elements and models of communication, Communication Process - Approaches and Barriers to communication, communication for extension education and development. Nutritional education-Objective and Channels. **b. Nutritional Monitoring and Surveillance** Objectives and components of Nutrition Monitoring, Nutrition Monitoring Programs in India (NNMB, NSSO, NFHS, DLHS, FNB) Nutrition Surveillance system, objectives, uses and its indicators.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6

IV	**a. National organizations** - Role of various National organizations to improve the nutritional status of the community. ICAR, ICMR, CSWB, SSWB, NNMB, NIN, CFTRI, DFRL, NIPCCD and NFI, Save the Children. b. International Organizations Role of various National organizations to improve the nutritional status of the community. World Bank, World Health Organization (WHO), United Nations International Children's Emergency Fund (UNICEF), World Food Programme (WFP). Voluntary organizations -(GAIN) Micronutrient Initiatives, CARE, CRS, AFPRO, IDA, WABA.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
V	**a. National Health Programs** Planning, Execution and Evaluation of various health programs (Special Nutritional Program, Midday meal, ICDS, IDD). **b. Food based interventions** Fortification, Supplementation, Genetic improvement of foods, their characteristics and uses for different target groups. Chief Minister's Nutritious Noon Meal Programme (CMNNMP), Tamil Nadu Chief Minister's Breakfast Scheme.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
VI	**SELF STUDY FOR ENRICHMENT** **(Not to be included for External Examination)** Nutritional Assessment methods. Role of nutrition policy in combating nutritional problem. Relationship between communication and extension education. Activities of World Health Organization (WHO). Components of Poshan Abhiyan 2.0	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6

Text Books

1. Brown Judith, E.(2008) *Nutrition.*(3rd ed.) Thomson Wadsworth USA.
2. Park, K. (2008) *Essentials of Community Health Nursing* (5th ed.).M/s Banarsidas Bhanot, Publishers. Jabalpur.
3. Josephine Martin and Charlotte Beckett Oakley, (2008). *Managing Child Nutrition Programs*.(2nd ed.) Jones& Bartlett Publishers.
4. Seema Sonkar and Doreas L. Essiamah, (2008) *Food and Nutrition Security challenges towards combating malnutrition*. Chandralok Prakashan. Kanpur.
5. Bamji M.S, Prahlad Rao N, Reddy. (2016) *Textbook of Human Nutrition*.(4th ed.). Oxford and PBH, Publishing Co. Pvt. Ltd. New Delhi.

Reference Books

1. Prakash Shetty,(2002). *Nutrition through the life cycle*.(1st ed.). Leatherhead publishing. Leatherhead International Ltd. UK.
2. Gibney, M.J., Margetts, B.M., Kearney, J.M., Arab, L., (2004). *Public Health Nutrition*. (2nded.).UK. Blackwell Publishing Co.
3. Carolyn D. Berdanice., (2009), *Advanced Nutrition*, (2nd ed.). CRC Press.
4. M. Swaminathan., (2012), *Advanced Textbook on Food and Nutrition*. (2nd ed). Bangalore Printing and Publishing Co. Ltd., Bangalore,
5**.** Raheena Begum. M., (2015), *A textbook of Foods, Nutrition and Dietetics.(*3rd ed.).Sterling Publishers Pvt. Ltd., New Delhi.
6. Park K.,(2021), *Park's Textbook of Preventive and Social.*(26th ed.). M/S Banarasidas, Bharat Publishers, Jabalpur, India.

Web References

• https://www.who.int/
• https://www.encyclopedia.com/food/encyclopedias-almanacs-transcripts-and-maps/assessmentnutritional-status
• https://www.fao.org/about/en/
• https://www.nin.res.in/downloads/NNMBREPORT2001-web.pdf
• https://www.icmr.gov.in/

Journals

1. Society for Nutrition Education and Behavior, Elsevier Sci. Ltd, England
2. Journal of the Academy of Nutrition and Dietetics, Elsevier Science Inc publishing, United States.
3. Public Health Nutrition, Cambridge University, England
4. Food Research International, Elsevier Science Inc, United States.
5. Journal of Food and Agriculture, Wiley-Blackwell, England

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Demo, Quiz, Seminar, Visi to ICDS

Course Designer

- MS. T.R. Revathi

SEMESTER I	INTERNAL MARKS: 30		EXTERNAL MARKS: 70	
COURSE CODE	**COURSE TITLE**	**CATEGORY**	**HRS / WEEK**	**CREDITS**
26PFS1GE1B	**FOOD PROCESSING AND PRESERVATION**	**GENERIC ELECTIVE**	**4**	**2**

Course Objectives

• To Gain knowledge on principles of food processing and preservation.

• To enable students to understand the types of spoilage occurring in foods.

• To learn important methods of food preservation to ensure the quality of processed food.

Pre requisites

- Basic knowledge on food processing and preservation
- Fundamentals of food science and food chemistry.

S. No.	Course Features	Relevance Status
1.	Course emphasis on Employability/Entrepreneurship/Skill Development	Employability, Entrepreneurship, Skill Development
2.	Course integrates cross cutting issues relevant to Professional Ethics/Gender sensitization/ Environment and Sustainability/ Human Values / Indian Knowledge System	Professional Ethics, Environment and Sustainability
3.	Course relevant to Local/Regional/National/ Global needs	Global need
4.	Course focus on Sustainable Developmental Goals	SDG 2, 9,12,15

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On Successful Completion of the course, students will be able to	Cognitive Level
CO 1	Explain the principles and practices of food processing and preservation	K1 & K2
CO 2	Construct the novel technologies in the processing and preservation of foods.	K3
CO 3	Make use of various preservation techniques in food processing industries. Understand the technology available currently for food processing.	K3
CO 4	Determine the method of action of different preservatives.	K4 & K5
CO 5	Construct the characteristics of additives and their specific use in foods.	K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	3	3	3	3	3	3
CO2	3	3	2	3	3	3	3	3	3	3
CO3	3	3	2	3	3	3	3	3	3	3
CO4	3	3	2	3	3	3	3	3	3	3
CO5	3	3	2	3	3	3	3	3	3	3

"1" – Slight (Low) Correlation "2" – Moderate (Medium) Correlation
"3" – Substantial (High) Correlation "-"- indicates there is no correlation

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	**a. Introduction to food processing and preservation** Definition, principles, need, importance, advantages and disadvantages during processing and preservation of foods. Classification of food on the basis of pH value and moisture. **b. Traditional methods of food processing and preservation** Drying/dehydration, smoking, curing/ salting, pickling, sugaring, fermentation	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
II	**a. Processing and preservation by low Temperature** Refrigeration, freezing, using low temperature - Cold Preservation -Freezing and Refrigeration - Air freezing, Indirect contact freezing, Immersion freezing, Controlled Atmosphere, Modified Atmosphere, de hydro freezing, cryo-freezing. Changes in foods during refrigeration and frozen storage. **b. Processing and preservation by heat** Blanching, pasteurization, sterilization and Ultra High Treatment processing, canning, dielectric heating, baking, roasting and frying. Retort processing of Ready to eat (RTE) products. Newer methods of thermal processing – batch and continuous.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
III	**a. Processing and preservation by drying** Drying – water activity, microbial spoilage due to moisture. Physical and chemical changes during drying control of chemical changes. Selection of methods based on characteristics of foods to be processed and preservation. Dehydration of fruits, vegetables, milk, animal products. Various methods employed in production of dehydrated commercial products, advantages and disadvantages of different methods, Packaging and storage of dehydrated products.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

	b. Processing and preservation by concentration and evaporation concentration and evaporation methods of food processing, freeze concentration, ultra-filtration, reverse osmosis**.**			
IV	**a. Processing and preservation by non-thermal methods** High pressure, pulsed electric field, hurdle technology. Food irradiation, Principles of using electromagnetic radiation in food processing, ionizing radiations and nonionizing radiations, advantages and disadvantages, Units of radiation, kinds of ionizing radiations used in food irradiation, mechanism of action, uses of radiation in food industry, concept of cold sterilization. Controlling undesirable changes in food during irradiation. GRAS and legal aspects for gamma irradiation. Permissible limits for chemical preservatives. Use and application of enzymes and microorganism in processing and preservation of foods. **b. Food preservation by use of fermentation** Food fermentations, benefits and mechanism of fermentation, fermented food products - Beer, Wine, Soya sauce, Cheese, Sauerkraut, Kefir, Kombucha, Kimchi, Soya bean products. Microbial vs Industrial fermentation.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
V	**a. Recent advances in food preservation** Extrusion- process - macaroni products, breakfast cereals - RTC, RTS, RTE. Protein concentrates, isolate. Genetically modified foods. Enrichment and fortification - definition, fortification and enrichment of cereal products with vitamins and minerals. Use and application of enzymes and microorganism in processing. Pulse electric field special packaging, ohmic heating, IR heating, inductive heating, pulsed X-rays, Hurdle technology, Cold press technology. **b. Packaging in food processing and preservation** Types of containers used in storage of processed foods, selection of containers for the preserved foods, special food packaging.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6
VI	**SELF STUDY FOR ENRICHMENT** **(Not to be included for External Examination)** Explore techniques to extend the shelf life of processed foods, Vacuum sealing, Relate sustainable development goals with food packaging, Ultraviolet light technology, Preservation at home level.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5, K6

Text Books

1. Srilakshmi B. (2007), *Food Science* (4th ed) New Age International (P) Limited, New Delhi.
2. Subhulakshmi G., Udipi A. Shobha and Ghugre S. Padmini (2021), *Food Processing and Preservation* (2nded) New Age International Publishers, New Delhi.
3. Sankhla A., Mogra R. and Avinash P (2014) *A Practical Guide to Food Preservation* (1sted) Agrotech Publishing Academy, Udaipur.

Reference Books

1. Manoranjan Kalia(2014) *Food Quality Management* (2nd ed), Aggrotech Publishing Academy, Udaipur.
2. Potter N *Food Technology*, (5th ed), Cornell University, Ithaca, New York.
3. Shakunthala Manay, N. and N. Shadaksaraswamy, (2024), *Food facts and Principles* (5th ed) New Age International Publishers, New Delhi.

Weblinks

- https://nchfp.uga.edu/#gsc.tab=0
- https://www.terrafoodtech.com/en/food-preservation-methods-comparison/
- https://www.ndsu.edu/agriculture/extension/extension-topics/food-and-nutrition/food-preservationand-wild-game

Journals

1. Food Processing, Potman Publishing Company, New York, USA
2. Trends in Food Science and Technology
3. International Journal of Food Science and Technology

Pedagogy

E-content, Lecture, Power point presentation, Seminar, Assignment, Quiz, Group Discussion, Visit to food processing and preservation industry.

Course Designer

- Ms. T. R. Revathi

SEMESTER I	INTERNAL MARKS: 30		EXTERNAL MARKS: 70	
COURSE CODE	**COURSE TITLE**	**CATEGORY**	**HRS / WEEK**	**CREDITS**
26PFS1NME1	**FUNDAMENTALS OF NUTRITION**	**NON-MAJOR ELECTIVE**	**3**	**2**

Course Objectives

- To obtain knowledge on nutrients and its classification1”1
- To enable sources, excess and deficiency effects of nutrients
- To study the role of nutrients on human health

Pre-Requisites

- Basic knowledge on nutrients
- Fundamentals of health and its components

S. No.	Course Features	Relevance Status
1.	Course emphasis on Employability/Entrepreneurship/Skill Development	Employability, Entrepreneurship, Skill Development
2.	Course integrates cross cutting issues relevant to Professional Ethics/Gender sensitization/ Environment and Sustainability/ Human Values/ Indian Knowledge System	Environment and Sustainability
3.	Course relevant to Local/Regional/National/ Global needs	Global need
4.	Course focus on Sustainable Developmental Goals	SDG 3,12

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On Successful Completion of the course, students will be able to	Cognitive Level
CO 1	Understand basic concepts of nutrition, health, and the main nutrients needed by the body.	K1 & K2
CO 2	Describe basic five food groups, balanced diet, factors affecting RDA and BMR	K3
CO 3	Assume the role of nutrients in human nutrition	K4
CO 4	Determine the excess and deficiency effects of nutrients	K5
CO 5	Prioritize the importance of water and water–electrolyte imbalances.	K6

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	2	3	2	2	2	2
CO2	3	3	2	2	2	3	2	2	2	2
CO3	3	3	2	2	2	3	2	2	2	2
CO4	3	3	2	2	2	3	2	2	2	2
CO5	3	3	2	2	2	3	2	2	2	2

"1" – Slight (Low) Correlation "2" – Moderate (Medium) Correlation
"3" – Substantial (High) Correlation "-" -indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	**a) Introduction to Nutrition** Definition of Nutrition, Health, Malnutrition, Undernutrition and Overnutrition. Interrelationship between nutrition and health, adequate/ optimum nutrition. **b) Nutrients and RDA** Classification and basic functions of nutrients. Basic five food group, My plate and concept of balanced diet, RDA, Factors affecting RDA.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
II	**a) Carbohydrates** Nutritional classification, functions, sources, deficiency and excess effects. Dietary Fibre – classification, sources, role in human nutrition **b) Energy** Units of measurement, Total Energy Requirement, Basal Metabolic Rate, Factors affecting Basal Metabolic Rate, Energy content of foods.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
III	**a) Protein** Nutritional classification, functions, sources and requirements. Essential amino acids, their importance, and effect of deficiency. **b) Fat/ Lipids** Classification of Fatty acids. Functions, sources and requirement. Importance of essential fatty acids, their requirement and effect of deficiency.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
IV	**a) Fat soluble vitamins** Vitamin - A, D, E and K- functions, sources, requirements, deficiency disorders. **b) Water soluble vitamins** B-complex vitamins –Thiamine, Riboflavin, Niacin, Folic acid, Biotin, Pantothenic acid, B12 and Vitamin C - functions, sources, requirements and deficiency disorders.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6

V	**a) Macro minerals** Calcium, Phosphorus, Sodium, Potassium, - functions, sources, requirements, deficiency and toxicity. **b) Micro minerals** Iron, Fluorine, Zinc, Copper, Iodine -functions, sources, requirements, deficiency and toxicity. **c) Water** Functions of water in the human body, water distribution, maintenance of water. Dehydration and Oedema	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6
VI	**SELF STUDY FOR ENRICHMENT** **(Not to be included for External Examination)** Digestion and absorption of nutrients. Energy balance. Non-Essential amino acids. Precursor of vitamin A. Interrelationship between nutrients.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5,K6

Text Books

1. Mudambi, S.R., & Rajagopal, M.V. (2012). *Fundamentals of Foods, Nutrition and Diet Therapy* (5th ed.). New Age International Publishers.
2. Srilakshmi, B. (2022). *Nutrition Science* (7th ed.). New Age International (P) Ltd.
3. Potter, N.N., & Hotchkiss, J.H. (2006). *Food Science* (5th ed.). CBS Publishers and Distributors.
4. Sharma, S., & Wadhwa, A. (2013). *Nutrition in the Community: A Textbook*. Elite Publishing House Pvt. Ltd.
5. Roday, S. (2017). *Food Science and Nutrition* (2nd ed.). Oxford University Press.
6. Swaminathan, M. (2012). *Handbook of Food and Nutrition*. Bangalore Press.

Reference Books

1. Agarwal, A., & Udipi, S.A. (2014). *Textbook of Human Nutrition*. Jaypee Brothers Medical Publishers Ltd., New Delhi.
2. Joshi, S.A. (2014). *Nutrition and Dietetics*. McGraw Hill Education (India) Pvt. Ltd., New Delhi.
3. Indrani, T.K. (2008). *Nursing Manual of Nutrition and Therapeutic Diet*. Jaypee Brothers Medical Publishers (P) Ltd., New Delhi.
4. Vahisht, M. (2002). *Introduction to Food, Nutrition and Food Processing* (2nd ed.). Anmol Publications.

Web Links

- https://vikaspedia.in/health/nutrition/nutrition-and-health-1
- https://www.hsph.harvard.edu/nutritionsource/vitamins/
- https://www.ataglanceseries.com/nutrition/definition.asp
- https://vikaspedia.in/health/nutrition/types-of-vitamins-and-minerals

Journals

1. Annals of Food Science and Technology. Valahia University Press, Romania.
2. International Journal of Food and Nutrition Sciences. Wiley-Blackwell Publishing Ltd., Oxford.

Pedagogy

Lecture, E-content, Power Point Presentation, Quiz, Seminar, Assignment, Group Discussion, Quiz, Case study.

Course Designer

- Ms. L. Gayathri
- Dr.B.Thanuja