

M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS

Course Structure with Syllabus

PROGRAMME CODE :2PSFSM

2025-2026



**SENGAMALA THAYAAR EDUCATIONAL TRUST
WOMEN'S COLLEGE (AUTONOMOUS)**

(Affiliated to Bharathidasan University, Tiruchirappalli)
(Accredited by NAAC)

**Sundarakkottai, Mannargudi-614016,
Thiruvarur(Dt.),Tamil Nadu, India.**



SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE (AUTONOMOUS)

(Affiliated to Bharathidasan University, Tiruchirappalli)

Accredited by NAAC-An ISO 9001:2015 Certified Institution

SUNDARAKKOTTAI, MANNARGUDI-614016.

TAMILNADU, INDIA.

M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS CHOICE BASED CREDIT SYSTEM - LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS-LOCF) (For the candidates admitted in the academic year 2025-2026)

CHOICE BASED CREDIT SYSTEM

The credit based semester system provides flexibility in designing curriculum and assigning credits based on the course content and hours of teaching. The choice based credit system provides a 'cafeteria' type approach in which the students can take courses of their choice, learn at their own pace, undergo additional courses and acquire more than the required credits, and adopt an interdisciplinary approach to learning. Our College has moved to CBCS and implemented the grading system.

OUTCOME-BASED EDUCATION (OBE) LEARNING OUTCOME-BASED CURRICULUM FRAMEWORK (LOCF)

The fundamental premise underlying the learning outcomes-based approach to curriculum planning and development is that higher education qualifications are awarded on the basis of demonstrated achievement of outcomes (expressed in terms of knowledge, understanding, skills, attitudes and values) and academic standards expected of graduates of a programme of study. Learning outcomes specify what graduates completing a particular programme of study are expected to know, understand and be able to do at the end of their programme of study. The expected learning outcomes are used as reference points that would help to formulate graduate attributes, qualification descriptors, programme learning outcomes and course learning outcomes which in turn will help in curriculum planning and development, and in the design, delivery and review of academic programmes. They provide general guidance for articulating the essential learnings associated with programmes of study and courses within a programme, maintain national standards and international comparability of learning outcomes and academic standards to ensure global competitiveness, and to facilitate student/graduate mobility and provide higher education institutions an important point of reference for designing teaching-learning strategies, assessing student learning levels, and periodic review of programmes and academic standards.

Some important aspects of the Outcome Based Education

Course: is defined as a theory, practical or theory cum practical subject studied in a semester.

Course Outcomes (COs): are statements that describe significant and essential learning that learners have achieved, and can reliably demonstrate at the end of a course. Generally three or more course outcomes may be specified for each course based on its weightage.

Programme: is defined as the specialization or discipline of a Degree.

Programme Outcomes (POs): Programme outcomes are narrower statements that describe what students are expected to be able to do by the time of graduation. POs are expected to be aligned closely with Graduate Attributes.

Programme Specific Outcomes (PSOs): PSOs are what the students should be able to do at the time of graduation with reference to a specific discipline.

Some important terminologies repeatedly used in LOCF.

Core Courses (CC): A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course. These are the courses which provide basic understanding of their main discipline. In order to maintain a requisite standard certain core courses must be included in an academic program. This helps in providing a universal recognition to the said academic program.

Discipline Specific Elective Courses (DSE): Elective course may be offered by the main discipline/subject of study is referred to as Discipline Specific Elective (DSE). These courses offer the flexibility of selection of options from a pool of courses. These are considered specialized or advanced to that particular programme and provide extensive exposure in the area chosen; these are also more applied in nature.

Generic Elective Courses: An elective course chosen generally from an **unrelated discipline/subject**, with an intention to seek exposure is called a Generic Elective. Generic Elective courses are designed for the students of other disciplines. Thus, as per the CBCS policy, the students pursuing particular disciplines would have to opt Generic Elective courses offered by other disciplines, as per the basket of courses offered by the college. The scope of the Generic Elective (GE) Courses is positively related to the diversity of disciplines in which programmes are being offered by the college.

Non Major Elective (NME): A student shall choose at least two Non-major Elective Courses (NME) from outside his/her department.

Skill Enhancement Courses (SECs): These courses focus on developing skills or proficiencies in the student, and aim at providing hands-on training. Skill enhancement courses can be opted by the students of any other discipline, but are highly suitable for students pursuing their academic programme. These courses may be chosen from a pool of courses designed to provide value-based and/or skill-based knowledge.

Field Study/Industrial Visit/Case Study: It has to be completed during the fifth semester of the degree programme. Credit for this course will be entered in the fifth semester's marks statement.

Internship: Students must complete internship during summer holidays after the fourth semester. They have to submit a report of internship training with the necessary documents and have to appear for a viva-voce examination during fifth semester. Credit for internship will be entered in the fifth semester's mark statement.

Extra Credit Courses: In order to facilitate the students, gaining knowledge/skills by attending online courses MOOC, credits are awarded as extra credits, the extra credit are at three semesters after verifying the course completion certificates. According to the guidelines of UGC, the students are encouraged to avail this option of enriching their knowledge by enrolling themselves in the Massive Open Online Courses (MOOC) provided by various portals such as SWAYAM, NPTEL, etc.

Postgraduate Programme:

Programme Pattern: The Post Graduate degree programme consists of **FIVE** vital components. They are as follows:

Part –A	:	Core Course (Theory, Practicals) Core Industry Module, Core Project
Part-B (i)	:	Elective courses
Part-B (ii)	:	Non Major Elective, Skill Enhancement course, Professional Competency course
Part-B (iii)	:	Internship
Part –C	:	Extension activity

EXAMINATION

Continuous Internal Assessment (CIA):

PG - Distribution of CIA Marks

Passing Minimum: 50 %

Assignments – 3 = 30%

Tests- 2 = 50%

Seminar = 10 %

Attendance = 10 %

Question Paper Pattern

Part A: includes two subsections

Part A 1 (10X1=10 marks)

One word question/ Fill in/ True or False/ Multiple Choice Questions
Two Questions from Each unit

Part A 2(5X2=10 marks)

Match the following

Short Answers

One question from Each unit

Total Marks - 20

Part B: (5X5=25 marks)

Paragraph Answers

Either/ or type, One Question from each unit

Part C: (10X3=30)

Essay Type Answers

Answer 3 out of 5 Questions

One Question from each unit

Part A: K1 Level

Part B: K2, K3 and K4 Level

Part C: K5 and K6 Level

Knowledge levels for assessment of Outcomes based on Blooms Taxonomy

S.No.	Level	Parameter	Description
1	K1	Knowledge/Remembering	It is the ability to remember the previously learned
2	K2	Comprehension/ Understanding	The learner explains ideas or concepts
3	K3	Application/Applying	The learner uses information in a new way
4	K4	Analysis/Analysing	The learner distinguishes among different parts
5	K5	Evaluation/Evaluating	The learner justifies a stand or decision
6	K6	Synthesis/Creating	The learner creates a new product or point of view

WEIGHTAGE of K –LEVELS IN QUESTION PAPER

(Cognitive Level) K-LEVELS →	Lower Order Thinking			Higher Order Thinking			Total
	K1	K2	K3	K4	K5	K6	
END SEMESTER EXAMINATIONS (ESE)	20	25			30		75
Continuous Internal Assessment (CIA)	20	25			30		75

QUESTION PATTERN FOR END SEMESTER EXAMINATION/ Continuous Internal Assessment

PART	MARKS
PART –A I. (No choice, One Mark) TWO questions from each unit (10x1=10) II. (No choice, Two Mark) ONE question from each unit (5x2=10)	20
PART – B (Either / or type, 5-Marks) ONE question from each unit (5x5=25)	25
PART –C (3 out of 5) (10Marks) ONE question from each unit (3x10=30)	30
Total	75

BLUEPRINT OF QUESTION PAPER FOR END SEMESTER EXAMINATION							
DURATION: 3.00 Hours.				Max Mark :75			
K-LEVELS	K1	K2	K3	K4	K5	K6	Total Marks
PART							
PART –A (One Mark, No choice) (10x1=10)	10						10
(2-Marks,No choice) (5x2=10)	10						10
PART –B (5-Marks) (Either/or type) (5x5=25)		5	10	10			25
PART –C (10 Marks) (3 out of 5) (3x10=30) Courses having only K5,K6 levels, K5 level- 3 Questions, K6 level- 2 Questions (One K6 level question is compulsory)					20	10	30
Total	20	05	10	10	20	10	75

EVALUATION

GRADING SYSTEM

Once the marks of the CIA and the end-semester examination for each of the courses are available, they will be added and converted as final mark. The marks thus obtained will then be graded as per the scheme provided in Table-1.

Grade Point Average (GPA) will be calculated from the first semester onwards for all semester. From the second semester onwards, the total performance with in a semester and the continuous performance starting from the first semester are indicated by semester Grade Point Average (GPA) and Cumulative Grade Point Average (CGPA) , respectively. These two are calculated by the following formulae:

$\text{GPA} = \frac{\sum_{i=1}^n C_i G_i}{\sum_{i=1}^n C_i}$	$\text{WAM(Weighted Average Marks)} = \frac{\sum_{i=1}^n C_i M_i}{\sum_{i=1}^n C_i}$
Where, C_i is the Credit earned for the Course i G_i is the Grade Point obtained by the student for the Course i M_i is the marks obtained for the course i and n is the number of Courses Passed in that semester.	

CGPA: Average GPA of all the Courses starting from the first semester to the current semester.

CLASSIFICATION OF FINAL RESULTS:

- i. The classification of final results shall be based on the CGPA, as indicated in Table-2.
- ii. For the purpose of Classification of Final Results, the candidates who earn the CGPA 9.00 and above shall be declared to have qualified for the Degree as ‘Outstanding’. Similarly the candidates who earn the CGPA between 8.00 and 8.99, 7.00 and 7.99, 6.00 and 6.99 and 5.00 and 5.99 shall be declared to have qualified for their Degree in the respective programmes as ‘Excellent’, ‘Very Good’, ‘Good’, and ‘Above Average’ respectively.
- iii. Absence from an examination shall not be taken an attempt.

Table- 1: Grading of the Courses

Marks Range	Grade Point	Corresponding Grade
90 and above	10	O
80 and above and below 90	9	A+
70 and above and below 80	8	A
60 and above and below 70	7	B+
50 and above and below 60	6	B
Below 50	NA	RA

NA- Not Applicable, RA- Reappearance

The candidates performance in every current semester is indicated by **Semester Grade Point Average (SGPA)** and from the second semester onwards, the continuous performance including previous semester/s is indicated by **Cumulative Grade Point Average (CGPA)**

Table-2: Final Result

CGPA	Corresponding Grade	Classification of Final Result
9.00 and above	O	Outstanding
8.00 to 8.99	A+	Excellent
7.00 to 7.99	A	Very Good
6.00 to 6.99	B+	Good
5.00 to 5.99	B	Above Average

*The candidates who have passed in the first appearance and within the prescribed duration of the PG Programme are eligible. If the candidate's Grade is O/A+ with more than one attempt, the performance is fixed as "Very Good"

Vision

Providing value based education in Nutritional Sciences, Dietetics and Public Health Nutrition to the rural women students to construct the healthy and blooming society.

Mission

- Mentoring the students by imparting skill based knowledge to suit hospital and hospitality
- Industry requirements and promote a healthy society Conscientise the students on food,nutrition and diet and to develop entrepreneurial skills for self employment

PROGRAMME OUTCOMES FOR M.Sc.,DEGREE PROGRAMMES

PO.No	Programme Outcomes (Upon completion of the M.Sc.,Degree Programme, the Post graduate will be able to)
PO-1	Disciplinary Knowledge: demonstrate in-depth knowledge and understanding of theories, policies, and practices in one or more disciplines that form a part of a PostGraduate program of study in Master of Science.
PO-2	Critical Thinking and Problem Solving: apply analytic thought to a body of knowledge, analyse and evaluate evidence, arguments, claims, beliefs on the basis of empirical evidence, identify relevant assumptions or implications, formulate coherent arguments, critically evaluate practices, policies and theories by following scientific approach to knowledge development: solve problems and extrapolate the same to real life situation
PO-3	Information/digital literacy and Communication Skills: use ICT in a variety of learning situations, demonstrate ability to access, evaluate, and use a variety of relevant information sources, and use appropriate software for analysis of data: communicate thoughts and ideas analytically and effectively in writing and orally using appropriate media, and present complex information in a clear and concise manner to different groups.
PO-4	Research-related skills: conduct independent inquiry in a chosen scientific discipline, demonstrate sense of inquiry and capability for asking relevant/appropriate questions, problematising, synthesizing and articulating; recognize cause-and-effect relationships, define problems, formulate hypotheses, test hypotheses, analyse, interpret and draw conclusions from data, establish hypotheses, predict cause-and-effect relationships; plan, execute and report the results of an experiment or investigation.
PO-5	Scientific reasoning and Reflective Thinking: analyse, interpret and draw conclusions from quantitative/qualitative data and critically evaluate ideas, evidence and experiences from an open-minded and reasoned perspective; critically and sensibly evaluate life experiences, with self awareness and reflexivity of both self and society.
PO-6	Multidisciplinary Approach, Innovation and Entrepreneurship: propose novel ideas of interdisciplinary approach in providing better solutions and new ideas for the sustainable developments; identify opportunities, entrepreneurship vision and use of innovative ideas to create value and wealth for the betterment of the individual and society.
PO-7	Moral and ethical awareness/reasoning: embrace moral/ethical values in conducting one's life, formulate a position/argument about an ethical issue from multiple perspectives, and use ethical practices in all work, demonstrate the ability to identify ethical issues related to one's work, avoid unethical behavior such as fabrication, falsification or misrepresentation of data or committing plagiarism, not adhering to intellectual property rights, appreciate environmental and sustainability issues, and adopt objective, unbiased and truthful actions in all aspects of work.
PO-8	Self directed Learning: work independently, identify appropriate resources required for a project, and manage a project till completion.
PO-9	Lifelong Learning: engage in continuous learning for professional growth and development, acquire knowledge and skills, adapt to changing environment and to changing trades and demands of work place through knowledge/skill development/reskilling.
PO-10	Multicultural Competence, Social Interaction and Effective Citizenship: understand the values and beliefs of multiple cultures, global perspectives, engage and interact respectfully with diverse groups and elicit views of others, mediate disagreements and help reach conclusions in group settings, and demonstrate empathetic social concern and equity centred national development.

PROGRAMME SPECIFIC OUTCOME (PSO)

PSO No.	Program Specific Outcomes (M.Sc., Food service Management and Dietetics)
PSO1	Placement: To prepare the students who will demonstrate respectful engagement with others' ideas, behaviors, beliefs and apply diverse frames of reference to decisions and actions
PSO2	Entrepreneur: To create effective entrepreneurs by enhancing their critical thinking, problem solving, decision making and leadership skill that will facilitate startups and high potential organizations
PSO3	Research and Development: Design and implement HR systems and practices grounded in research that comply with employment laws, leading the organization towards growth and development.
PSO4	Contribution to Business World: To produce employable, ethical and innovative professionals to sustain in the dynamic business world.
PSO5	Contribution to the Society: To contribute to the development of the society by collaborating with stakeholders for mutual benefit



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M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS

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

(Applicable to the candidates admitted form the academic year 2025-2026)

ELIGIBILITY: Those who have completed UG Degree in Home Science, Nutrition and Dietetics, Food and Nutrition, Food Science and Nutrition, and other related disciplines in home Sciences viz, Clinical Nutrition and Dietetics, Food Service Management and Dietetics, with not less than 50% marks in aggregate for Part III from a recognized University rules.

Sem	Part	Course	Course Code	Title of the Course	Ins. Hours /Week	Ins.Hours/Week				Credit	Exam Hours	Marks		Total
						L	T	P	S			CIA	ESE	
I	Part A	Core Course–I	P25ND101	Advances in Food Science	6	4	1	-	1	5	3	25	75	100
		Core Course–II	P25ND102	Applied Human Physiology	6	4	1	-	1	5	3	25	75	100
		Core Practical–I	P25ND103P	Advances in Food Science (P)	6	-	-	6	-	3	3	25	75	100
	Part B(i)	Elective Course–I	P25NDE11A/ P25NDE11B/ P25NDE11C	Applied Food Microbiology/ Nutrition Through Life Span/ Public Health Nutrition	5	4	1	-	-	3	3	25	75	100
		Elective Course–II	P25NDE12A/ P25NDE12B/ P25NDE12C	Food Service Facilities / / Human Resource Management/ Management and Accounting in Hospitality Industry	5	4	1	-	-	3	3	25	75	100
	Part B(ii)	Non Major Elective-I			2	2	-	-	-	2	3	25	75	100
					TOTAL	30	18	04	06	02	21	-	-	-
II	Part A	Core Course–III	P25ND204	Advanced Dietetics	6	4	1	-	1	5	3	25	75	100
		Core Course–IV	P25ND205	Biochemical Changes in Diseases	6	4	1	-	1	5	3	25	75	100
		Core Practical–II	P25ND206P	Advanced Dietetics (P)	6	-	-	6	-	3	3	25	75	100
	Part B(i)	Elective Course–III	P25NDE23A/ P25NDE23B/ P25NDE23C	Functional Foods and Nutraceuticals/ Nutritional Assessment / Nutrition in Emergency and Disaster Management	5	4	1	-	-	3	3	25	75	100
		Elective Course–IV	P25NDE24A/ P25NDE24B/ P25NDE24C	Interior Design in Food Service / Hospital Administration / Life Style Management	5	4	1	-	-	3	3	25	75	100
	Part B(ii)	Non Major Elective-II			2	2	-	-	-	2	3	25	75	100
	Part B(iii)	Internship Dietary/Catering–Dietary Internship**				-	-	-	-	-	-	-	-	-
TOTAL					30	18	04	06	02	21	-	-	-	600

Sem	Part	Course	Course Code	Title of the Course	Ins. Hours /Week	Ins.Hours/Week				Credit	Exam Hours	Marks		Total
						L	T	P	S			CIA	ESE	
III	Part A	Core Course–V	P25ND307	Quantity Food Production and Service	6	4	1	-	1	5	3	25	75	100
		Core Course–VI	P25ND308	Research Methodology and Statistics	6	4	1	-	1	5	3	25	75	100
		Core Practical-III	P25ND309P	Quantity Food Production and Service (P)	6	-	-	6	-	3	3	25	75	100
		Core Industry Module	P25NDI31	Food Processing and Preservation	5	4	1	-	-	3	3	25	75	100
	Part B (i)	Elective Course–V	P25NDE35A/ P25NDE35B/ P25NDE35C	Dietary Guidance and Counseling/ Sports Nutrition/ Child Development	5	4	1	-	-	3	3	25	75	100
	Part B (ii)	Skill Enhancement Course	P25SEND31	Nutrition in Special condition	2	2	-	-	-	2	3	25	75	100
	Part B(iii)	Internship -Dietary/Catering –Catering Internship**			-	-	-	-	-	-	-	-	-	-
		Dietary Internship and Catering Internship			-	-	-	-	-	2	-	-	-	-
	TOTAL					30	18	04	06	02	23	-	-	-
IV	Part A	Core Course–VII	P25ND410	Advanced Food Service Management	5	4	1	-	-	5	3	25	75	100
		Core Course-VIII	P25ND411	Food Product Development and Marketing	5	4	1	-	-	5	3	25	75	100
		Core Practical–IV	P25ND412P	Food Product Development and Marketing (P)	6	-	-	6	-	3	3	25	75	100
		Core Project	P25NDPW	Project with Viva Voce	8	-	2	6	-	7	3	25	75	100
	Part B (i)	Elective Course–VI (Industry/ Entrepreneurship)	P25NDE46A/ P25NDE46B/ P25NDE46C	Food Safety and Quality Control/ Front Office Management/ Culinary Techniques	4	3	1	-	-	3	3	25	75	100
	Part B (ii)	Professional Competency Course	P25PCND41	Professional Development for Home Science	2	2	-	-	-	2	3	25	75	100
	Part C	Extension Activity			-	-	-	-	-	1	-	-	-	-
			TOTAL			30	13	05	12	-	26	-	-	-
		GRAND TOTAL			120	67	17	30	06	91				2400
		Extra Credit	MOOC/SWAYAM/NPTEL		-	-	-	-	-	2	-	-	-	-
			Value Added Courses (At least One /Year)		-	-	-	-	-	2	-	-	-	-

L-Lecture

T-Tutorial

P-Practical

S-Seminar

CREDIT DISTRIBUTION FOR M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS

S.No	Course Details	No. of Courses	Credit
Part A	Core Course	8	40
	Core Practical	4	12
	Project Work with Viva Voce	1	07
	Core Industry Module	1	03
Part B (i)	Elective Course	6	18
Part B (ii)	Non Major Elective	2	04
	Skill Enhancement Course	1	02
	Professional Competency Course	1	02
Part B (iii)	Internship	1	02
Part C	Extension Activity	1	01
	Total Credit	26	91

Part A component and Part B (i) will be taken into account for CGPA calculation for the postgraduate programme and the other components of Part B and Part C have to be completed during the duration of the programme as per the norms, to be eligible for obtaining the PG degree.

NON MAJOR ELECTIVE (NME) OFFERED BY THE DEPARTMENT

Semester	Part	Course	Course Code	Title of the Course
I	Part B(ii)	NME-I	P25NMEND11	Adolescent Nutrition
II		NME-II	P25NMEND22	Health and Weight Management

SEMESTER-III

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DEPARTMENT OF NUTRITION AND DIETETICS

M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS

Semester-III CC-V: Quantity Food Production and Service

Ins. Hrs./Week:6

Course Credit:5

Course Code:P25ND307

UNIT-I: Menu planning (20 Hours)

Definition, classifications of menu, techniques of writing a menu, menu presentation, menu evaluation, menus for different types of quantity food outlets. Courses of menu, Designing menu cards using ICT tools, uses of menu cards, Review of mechanics of menu planning. Menu format. Purchase and storage procedures. Procurement, product selection, specification, methods of purchasing, purchasing procedures, receiving, storage and inventory control.

UNIT-II: Production, Planning and Standardization of recipes (18 Hours)

Production forecasting, production scheduling, standardization of recipes, portion control, cost control, menu pricing, recipe files and adapting recipes. Quantity Food Transportation -Transportation, receipt and handling of foods, Review of food selection, use of processed and convenience foods.

UNIT III Quantity food production and Quantity control (20 Hours)

Methods of production, product standards, effective utilization of leftovers, waste disposal, service management and service equipment. Food preparations - main dishes and accompaniments. Temperature control and accurate recipe scaling. Dishes for special catering- Functions and festivals.

UNIT-IV: Food Service systems (14 Hours)

Types of food service systems- Conventional, Commissary, Assembly, Ready Prepared- Cook chill, cook freeze. Style of food service -North Indian, South Indian, Chinese, Italian, Mexican cuisines- role and influence of culture, ingredients and special equipment.

UNIT-V: Food Service (18 Hours)

Food Service techniques- Types of service – self service, waiter service, assisted service, vending, online food delivery applications. Styles of table service -silver, crockery, glassware, stainless steel, plastics and melamine ware. used Preparation of service- Linen - table cloths, table mats, napkins, flowers for the table, rules for laying a table, rules for waiting at a table, carving at a table, food and beverage service for special catering functions, like wedding receptions and outdoor catering.

Total lecture Hours-90

COURSEOUTCOME:

The students will be able to,

1. Formulate menu plans and designs.
2. Apply principles of recipe standardization and portion control.
3. Understand methods of food production and quality control.
4. Understand different food and beverage service systems.
5. Plan and implementation of large-scale production and service

TEXT BOOK(S)

1. Andrew Lockwood, Ioannis S. Pantelidis, Mark Ashton, Bernard Davis, 2026, Food and Beverage Management (7th Edition), Routledge.
2. Krishna Arora 2005. Theory of cookery. Fronk Bros and co. Publishers, New Delhi
3. Negi J. 2000. Professional Hotel Management. S. Chand and Company Limited, New Delhi.
4. Palacio JP, Harger V, Shugari G. 2001. West and Woods Introduction to Food Service. Mac Millan Pub Co., New York.
5. Singaravelavan R. 2006. Food & Beverage Service. Oxford University press.
6. Vijay Dhawan 2007. Food & Beverage Service. Frank Bros & co, New Delhi.

REFERENCE BOOK(S)

1. Cessarani V, Kinton R. 2002. Practical Cookery. Seventh edition. Hodder and Stoughton publishers.
2. Khan MA. 2003. Food Service Operations. AVI Publications Co., Connecticut.
3. Sethi M. and Malhan S. M. 2007. Catering Management - An Integrated Approach. Wiley Eastern Limited, Mumbai.
4. Thangam Philip 2005. Modern Cookery. Orient Longman Limited. Third edition.
5. Tharun Bansal 2015. Hotel Facility Planning, Oxford University Press

E-RESOURCES

1. [https://www.ihmbbs.org/upload/CHAPTER-%20\(MEALS%20&%20MENU%20PLANNING\).pdf](https://www.ihmbbs.org/upload/CHAPTER-%20(MEALS%20&%20MENU%20PLANNING).pdf)
2. <https://psu.pb.unizin.org/hmd329/chapter/chapter-6-standardized-recipes/>
3. <https://dpi.wi.gov/sites/default/files/imce/school-nutrition/pdf/recipe-standardization-steps.pdf>
4. <file:///C:/Users/svharishram/Downloads/Unit-7.pdf>
5. <https://psu.pb.unizin.org/hmd329/chapter/ch1/>
6. <https://opentextbc.ca/foodsafety/chapter/storage-temperatures-and-procedures/>
7. http://www.searo.who.int/entity/world_health_day/2015/whd-what-you-should-know/en/

MAPPING WITH PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	3	3	3	1	2	-	-	2	3	2	3	3	2	3
CO2	3	3	3	3	2	2	1	3	2	3	3	3	3	3	3
CO3	3	3	3	3	1	2	-	-	2	3	3	3	3	3	3
CO4	2	3	3	3	2	3	2	2	3	3	3	3	3	3	3
CO5	2	3	3	3	2	3	3	2	2	3	3	3	3	3	3

S-Strong(3)

M-Medium(2)

L-Low(1)

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DEPARTMENT OF NUTRITION AND DIETETICS



M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS

SEMESTER-III-CC-VI: Research Methodology and Statistics

Ins. Hrs./Week:6

Course Credit:5

Course Code: P25ND308

UNIT-I: Research Ethics

(20 Hours)

Philosophy- definition, nature, scope and concept. Ethics- definition, moral philosophy, nature of moral judgments and reactions. Ethics with respect to science and research - Scientific misconducts falsification, fabrication, and plagiarism- Use of plagiarism software - Turnitin, Urkund and other open source software tools. Redundant publications- duplicate and overlapping publications. Publication ethics- definition and importance. Publication misconduct- definition, concept, problems that lead to unethical behavior, types, Violation of publication ethics, authorship and contributor ship. Software tool to identify predatory publications developed by SPPU. Subject ethical issues- authorship, Conflicts of specific interest.

UNIT-II: Introduction to Research

(16 Hours)

Introduction to research and types of research- Definition, Objectives and characteristics of research. Different Types of Research, Basic components of any research design. Data and methods of data collection -Types of data-Primary and secondary data. Data sources. Primary data collection methods- direct personal investigation, indirect oral investigations, schedules and questionnaires. Interviews and Type of Interviews. Pre-testing and Pilot study, Editing and coding of data.

UNIT-III: Tools of data collection and Sampling Techniques

(18 Hours)

Classification of data: types of classification, Formation of discrete and continuous probability distributions. Tabulation of data: parts of a table, general rules of tabulation, types of tables, Diagrammatic representation of data, Graphic representation of data.

Sampling Design - Census and sample survey- Steps in sampling design, Sample size and its determination, Types of sampling: Random Sampling, Simple random sampling, Stratified random sampling, Systematic sampling, Cluster sampling, Non random sampling methods: Judgment sampling, Convenience sampling, quota sampling, Benefits of sampling, Sampling errors, Non sampling errors

UNIT-IV: Statistical Methods

(18 Hours)

Measures of central tendency: mean, median and mode, the irrelative advantages and disadvantages, Measures of dispersion. Mean deviation, standard deviation Coefficient of variation, percentile, Types of correlation, coefficient of correlation and its interpretation-Rank correlation, Regression equations and predictions, Analysis of variance, Contingency tables, Chi-square test, *t*-test-Student's-test, paired *t*-test, unpaired *t*-test, F-test.

UNIT –V: Report Writing and Copyediting

(18 Hours)

Interpretation and Report writing, Meaning of Interpretation, need of Interpretation, Technique of Interpretation, precaution in Interpretation. Significance of report writing, Different steps in writing Report, Layout of the Research Report, Types of Report, Oral Presentation, Mechanics of writing a Research Report, Precautions for writing Research Reports ,Conclusions.

Introduction to copyediting, copyediting fiction, ways to sharpen the skills as a copy editor, proof reading, skills of the proof reader, Quality of good fiction copy editor. The art and science of indexing.

Total lecture Hours-90

COURSE OUTCOME:

The students will be able to,

1. Comprehend the Research ethics and different types of research
2. Translate the knowledge on types and tools of data collection in compiling editing and coding of data and hypothesis.
3. Perform Statistical analysis.
4. Interpret and justify the research findings.
5. Prepare the research report by using appropriate research methods and statistical tools.

TEXT BOOK(S)

1. Devadas RPA. 2000. Hand book on methodology of Research. Sri Ramakrishna Vidyalaya, Coimbatore.
2. GrumaniN.2014.Research Methodology for Biological Sciences. First Edition,
3. KothariGR.2004.Research Methodology, Methods and Techniques. Wiley Eastern Limited, Second Revised Edition .New Delhi,
4. MJP Publishers
5. SaravanavelP.2013.Research Methodology. Kitab Mahal Allahabad
6. WassermanL.2010.Allofstatistics.Aconcisecourse in statistical Inferences. Springer, Newyork.

REFERENCE BOOK(S)

1. Gosh BN. 2017.Scientific Methods and Social Research. Sterling Publishers Pvt.ltd. New Delhi.
2. Gupta SP.2002.Statistical Methods. Sultan Ch and & Sons, New Delhi,
3. Kulbir Singh Sidhu,2006. Methodology of Research in Education. Sterling Publishers Pvt. Ltd., New Delhi.
4. Ramadas Pand WilsonA.2014. Research and writing. MJP publishers.
5. Srivastava ABL and Sharma KK.2003.Elementary Statistics in Psychology and Education,. Sterling Publishers Pvt.ltd.
6. Vivek Kumar, 2023, Discover the Editor in You copyediting as a career. ISBN: 9789394887312

E-RESOURCES:

1. http://shodhganga.inflibnet.ac.in/bitstream/10603/2019/8/08_chapter-1.pdf
2. <https://swayam.gov.in/courses/5143-research-methodology>
3. <http://southcampus.uok.edu.in/Files/Link/DownloadLink/RM%20U2%20P2.pdf>
4. https://www.sheffield.ac.uk/polopoly_fs/1.96442!/file/graphical-presentation-06-07.pdf
5. <https://www.examrace.com/Study-Material/Research-Methodology/Types-of-Research-Methods-YouTube-Lecture-Handouts.html>

MAPPING WITH PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	2	2	3	2	2	2	2	2	3	2	3
CO2	3	2	3	2	2	2	1	3	2	3	3	3	3	3	3
CO3	3	3	3	3	1	2	3	2	2	3	3	3	3	3	3
CO4	2	3	3	3	2	3	2	2	3	3	3	3	3	3	3
CO5	2	3	3	3	2	3	3	2	2	3	3	3	3	3	3

S-Strong(3)

M-Medium(2)

L-Low(1)



**SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)**

SUNDARAKKOTTAI, MANNARGUDI-614016.

(For the candidates admitted in the academic year 2025-2026)

**DEPARTMENT OF NUTRITION AND DIETETICS
M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS**

SEMESTER -III- CP-III: Quantity Food Production and Service Practical

Ins. Hrs. /Week: 6

Course Credit:3

Course Code: P25ND309P

COURSE CONTENTS:

- Standardization of recipes,
- Portion control and Pricing.
- Planning and Preparation of South Indian cuisine
- Planning and Preparation of North Indian cuisine
- Planning and Preparation of Western cuisine
- Planning and Preparation of Chinese cuisine
- Planning and Preparation of Thai cuisine and
- Planning and Preparation of Continental cuisines
- Table Setting and Napkin folding

COURSE OUTCOME :

1. Standardize recipes and apply portion control and pricing techniques in quantity food production.
2. Plan and prepare South Indian and North Indian cuisines using standardized methods.
3. Plan and prepare Western and Continental cuisines for food service operations.
4. Plan and prepare Chinese and Thai cuisines following appropriate culinary practices.
5. Demonstrate table setting and napkin folding techniques for professional food service.

TEXTBOOK(S):

1. Krishna Arora 2005. Theory of cookery, Frank Bros and Co. Publishers, New Delhi.
2. Negi J, 2000. Professional Hotel Management. S. Chand and Company Limited, New Delhi.
3. Palacio JP, Harger VG, Shugart M. 2001. West and Woods. Introduction to Food Service, Millan Pub Company, New York.
4. Singaravelan R. 2006. Food and Beverage Service. Oxford University press.
5. Vijay Dhawan 2007. Food and Beverage Service. Frank Bros and company, New Delhi.

REFERENCEBOOK(S):

1. Bali, P.S, 2011, Quantity Food Production operations and Indian Cuisine, 1st edition, Oxford University Press, New Delhi.
2. Cessarani and Kinton. R, 2002. Practical Cookery, odder and Stoughton. Publishers
3. Krishna Arora, 2010, Theory of cookery, 6th edition, Frank brothers and company, New Delhi.
4. Mohini Sethi and Malhan. S.M, 2007, Catering Management—An Integrated Approach,
5. Thangam Philip, 2005. Modern Cookery. Orient Longman Limited, Bangalore Wiley Eastern Limited, Mumbai.

E-RESOURCES

1. [https://www.ihmbbs.org/upload/CHAPTER-%20\(MEALS%20&%20MENU%20PLANNING\).pdf](https://www.ihmbbs.org/upload/CHAPTER-%20(MEALS%20&%20MENU%20PLANNING).pdf)
2. <https://psu.pb.unizin.org/hmd329/chapter/chapter-6-standardized-recipes/>
3. <https://dpi.wi.gov/sites/default/files/imce/school-nutrition/pdf/recipe-standardization-steps.pdf>
4. <https://psu.pb.unizin.org/hmd329/chapter/ch1/>
5. <https://opentextbc.ca/foodsafety/chapter/storage-temperatures-and-procedures/>

MAPPING WITH PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	3	3	3	1	2	-	-	2	3	3	3	3	2	3
CO2	3	3	3	3	2	2	1	3	2	3	3	3	3	3	3
CO3	3	3	3	3	1	2	-	-	2	3	3	3	3	3	3
CO4	2	3	3	3	2	3	2	2	3	3	3	3	3	3	3
CO5	2	3	3	3	2	3	3	2	2	3	3	3	3	3	3

S-Strong(3)

M-Medium(2)

L-Low(1)



(AUTONOMOUS)

SUNDARAKKOTTAI. MANNARGUDI-614016.

(For the candidates admitted in the academic year 2025-2026)

DEPARTMENT OF NUTRITION AND DIETETICS

M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS

SEMESTER-III-CORE INDUSTRY MODULE: Food Processing and Preservation

Ins. Hrs. /Week: 5

Course Credit:3

Course Code: P25NDI31

UNIT- I: Processing and Preservation of Cereals and Pulses

(15 Hours)

Definition of Cereal Processing and Importance of preservation, Processing of Cereals (Rice, Wheat and Millets)- Pre-processing, Milling, Cooking, Fermentation, Extrusion. Processing of Pulse products-Preprocessing, De hulling, cooking, Fermentation, Sprouting. Fumigation of Pulses. Preservation Techniques- Drying, Canning, Freezing, Vacuum packing. Fortification of Cereals and Pulses.

UNIT-II: Processing and Preservation of Milk, Meat and Poultry

(15 Hours)

Milk: Quality standardization of milk, Processing of milk and milk Products. Meat: Quality standards of meat, Processing of meat and meat products- sausages, burger patties, cutlets. Poultry: Quality standards of poultry, Processing of Poultry and Poultry products - Sanitation and hygiene practice in Slaughter houses, Steps involved in slaughtering. Egg: Quality standards of egg, Processing of egg and egg products- pickled eggs and egg-based sauces. Fish: Quality standards of Fish, processing of fish and fish products.

UNIT-III: Processing and Preservation of Fruits and Vegetables

(15 Hours)

Quality standards for raw materials used in processing. - Standardization of raw material, primary processing-grading, sorting, cleaning, washing, peeling, slicing and blanching. Preservation of fruits and vegetables – Canning, Food Irradiation. Types of drying and dryers - Tray dryers, Freeze dryers, Spray dryers. General principles and manufacturing processes of preserves, candied fruits, glazed fruits, crystallized fruits.

UNIT- IV: Processing and Storage of Spices and Oilseeds

(15 Hours)

Types of spices grown in India. Pre and Post-harvest problems during processing, properties, drying, storage. Health and culinary benefits of spices. Manufacturing process of Indian spice powders and pastes- processing, quality standard, storage. Quality standards and Pre Processing of oilseeds for oil extraction. Types of oil extraction: Mechanical and Solvent extraction methods. Steps followed in Oil refining, Hydrogenation, Utilization of de-oiled cakes, Quality Control and Testing of oils.

UNIT-V: Packaging Solutions for Processed and Preserved Foods

(15 Hours)

Definition, Role of packaging in food processing and marketing. Functions of packaging, Materials and Methods of Packaging: Materials-Overview of different packaging materials - Glass, Metal, Plastic, Paper/Paperboard, Aluminium Foil Methods- Aseptic, Vacuum, MAP (Modified Atmosphere Packaging), Retort, Shrink Wrap, Canning, Bottling, Tetra Pak, Flexible, Biodegradable and specific applications in perishable products.

Total Lecture Hours-75

COURSE OUTCOME

The students will be able to

1. Explain the principles and methods of processing and preserving cereals and pulses.
2. Demonstrate the knowledge of quality standards and processing techniques for meat, poultry, fish and eggs.
3. Apply the suitable preservation and processing methods for fruits and vegetables while maintaining quality and safety.
4. Analyse the processing techniques, extraction methods, and storage requirements for spices and oilseeds.
5. Evaluate the functions and materials used in food packaging and apply appropriate packaging solutions for preserved foods.

TEXT BOOK(S)

1. Avantina Sharma.2019 Text book of Food Science and Technology, 3rd edition, CBS publishers,ISBN-10: 9789386478009,ISBN-13:978-9386478009.
2. Neelam Khetarpaul, 2026, *Food Processing and Preservation*, Daya Publishing House.
3. Sivasankar.2002.Food Processing and Preservation, Prentice Hall India Learning Private Limited. ISBN-10: 8120320867; ISBN-13:978-8120320864
4. Subbulakshmi G. 2006.Food Processing and Preservation. First edition. New age publishers; ISBN-10: 8122412831, ISBN-13:978-8122412833
5. Warris DS.2020. Food Processing and Preservation.2 –Vol,ISBN-10: 9389688590 ISBN-13:978-9389688597.

REFERENCE BOOK(S)

1. Arthey D and Ashurst PR.1996.Fruit processing, Blackie academic and professional. London.
2. Fellows PJ. 2016. Food Processing Technology. Second edition, Principles and Practice, CRC Wood head publishing Ltd, Cambridge.
3. John, Kingslee. 2014.A professional text to Bakery and Confectionary, New Age International (P) Limited.
4. Neelam Khetarpaul, Raj Bala Grewal and Sudesh Jood. 2013. Bakery science and cereal technology, Daya publishing house.
5. Zuhaib F. Bhat, Alaa El-Din A. Bekhit, 2026, *Advances in Edible Packaging Systems for Food Preservation*, Elsevier.

E-RESOURCES:

1. <http://labgraos.com.br/manager/uploads/arquivo/cap--26-handbook-of-food-preservation-pd>
2. <http://www.uop.edu.pk/ocontents/Lecture%20no%202.pdf>
3. https://www.canr.msu.edu/smprv/uploads/files/Safe_Practices_for_Food_Processes_Chpt._3_Factors_that_Influence_Microbial_Growth.pdf
4. <https://www.medicalnewstoday.com/articles/318630>
5. <https://www.ifst.org/resources/information-statements/food-irradiation>
6. <https://www.fao.org/4/x5573e/x5573e0e.htm>

MAPPING WITH PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
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CO2	3	3	1	3	3	2	1	3	3	1	1	3	3	1	3
CO3	3	3	1	3	3	3	2	3	3	1	1	3	3	2	3
CO4	3	3	1	3	2	2	2	3	3	1	1	2	3	2	2
CO5	3	3	1	3	3	2	3	3	3	2	2	3	3	3	3

S-Strong(3)

M-Medium(2)

L-Low(1)



SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE

(AUTONOMOUS)

SUNDARAKKOTTAI. MANNARGUDI-614016.

(For the candidates admitted in the academic year 2025-2026)

DEPARTMENT OF NUTRITION AND DIETETICS

M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS

SEMESTER-III-EC-V: Dietary Guidance and Counseling

Ins. Hrs./Week:5

Course Credit:3

Course Code:P25NDE35A

UNIT- I: Counselling and Role of a Dietitian (15 Hours)

Definition, Goals, Ethics, Scope of diet counseling, Counselling in India, Characteristics of counsellor, types of counselling, objectives of counseling in healthcare, tools of counselling, sources of counselling, e - resources in counseling.

Role of a dietitian in a hospital and community, team approach to nutritional care, ethical code and responsibilities.

UNIT- II: Diet Counseling Skills (15 Hours)

Tactics and techniques of counseling- evaluating and understanding the clients attitude, identification of clients feelings, utilizing the proper counselling techniques- non verbal behavior, verbal behavior, covert behavior.

UNIT-III: Communication Skills (15 Hours)

Concepts and principles of communication and their application in developing skills in counseling. Use of communication aids, communication and interviewing skills. Strategies and communication skills, Rapport building and opening techniques, Questioning, listening, reflecting, acceptance, silence, leading, reassurance, non-verbal behavior, terminating skills.

UNIT- IV :Therapeutic Relationships and Techniques (15 Hours)

Psychology of feeding the patients- Assessment of needs, education of the patient and follow up and establishing rapport with the patient and the family member. Therapeutic Techniques - Psychoanalytic therapy, group therapy, psychodrama, behavior therapy, Gestalt therapy, Cognitive therapy. Nutrition counselling protocols- Involving phase, Exploration and education, resolving, closing. Exploring emotional expressions, use of art in therapy.

UNIT- V:Diagnosis and Assessment (15 Hours)

Eliciting clinical information- medical history, assessment of diet profile, techniques of obtaining relevant information; dietary diagnosis- 24 hour recall method, food diary, list of food likes and dislikes, lifestyle; interpreting clinical information, case study assessment and evaluation.

Total Lecture Hours-75

COURSE OUTCOME:

The students will be able to

1. Understand the psychology of the patient
2. Develop diet counseling skills
3. Develop the communication and interviewing skills
4. Create awareness in communities about the importance of diet and good health.
5. Assess the Nutritional status

TEXT BOOK(S)

1. Gopalan S.C Balasubramanian S.V.Ramestri and Visweswara Rao Diet Atlas. 1971, ICMR New Delhi, India.
2. Kathleen D. Bauer, Doreen Liou, 2026, *Nutrition Counseling & Education Skill Development (5th Edition)*, Cengage.
3. Shubhangini A.Joshi.2011.Nutrition and Dietetics, 3rd edition, Tata Mc Graw Hill Education private limited, New Delhi.
4. Srilakshmi B.2010. Dietetics, New Age International Publishers, New Delhi.
5. Sumati R.Mudambi MV. Rajagopal. 2015. Fundamental of food, nutrition and diet therapy. New age international publishers, New Delhi.

REFERENCE BOOK(S)

1. Krause MV & Mahan MA.1992. Food Nutrition and Diet Therapy.W.B.Sunders company, Philadelphia London.
2. Maurice E.Shils,James A.Olson,Moshe Shike.1994.Modern Nutrition in health and disease. eighth edition, VolI & II Lea & Febiger Philadelphia, A waverly company.
3. Micheal J. Gibney IA. Macdonald and Helan M. Roche. 2004. Nutrition and Metabolism. Blackwell Publishing Company, Bangalore.
4. Robinson CH. Lawles MR. Chenoweth WL. Garwic AE.1990. Normal and Therapeutic Nutrition. The Macmillan Co.
5. *Staci Nix*, 2026, Williams' Basic Nutrition & Diet Therapy (17th Edition), Elsevier.

E-RESOURCES:

1. <https://article1000.com/characteristics-of-counseling/>
2. <https://www.caluniv.ac.in/academic/Education/Study/Techniques.pdf>
3. <https://pubmed.ncbi.nlm.nih.gov/6787227/>
4. https://www.researchgate.net/publication/332318698_Counselling_Skills_for_a_Dietitian
5. <https://carringmindsinternational.com/old-age-diet-counselling/>

MAPPING WITH PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
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CO2	3	3	-	3	3	1	2	1	3	1	2	2	3	1	2
CO3	3	3	-	3	3	1	2	1	3	1	2	2	3	1	2
CO4	3	3	2	2	2	3	2	1	3	3	3	3	3	3	3
CO5	3	3	2	2	2	3	2	1	3	3	3	3	3	3	3

S-Strong(3)

M-Medium(2)

L-Low(1)

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE

(AUTONOMOUS)

SUNDARAKKOTTAI. MANNARGUDI-614016.

(For the candidates admitted in the academic year 2025-2026)



DEPARTMENT OF NUTRITION AND DIETETICS

M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS

SEMESTER-III-EC-V: Sports Nutrition

Ins. Hrs./Week:5

Course Credit:3

Course Code: P25NDE35B

UNIT I: Advanced Concepts in Sports Nutrition

(15 Hours)

Sports nutrition: Definition, scope, evolution and relationship between physical activity, exercise and sports; types of physical activity and sports participation. Components of physical fitness: health-related fitness and body composition, Importance of nutrition in exercise performance, Sports nutrition professionals: roles and responsibilities of sports nutritionists and dietitians, multidisciplinary sports science support teams, ethical considerations, communication and counselling skills. FITT principle and its application in exercise prescription. Physical Activity Pyramid: concept, levels and lifestyle applications. National and international physical activity recommendations with reference to WHO and Indian guidelines. Alternative and emerging fitness approaches including yoga, Pilates, functional training, High-Intensity Interval Training (HIIT), CrossFit and wearable technologies in fitness monitoring.

UNIT II: Exercise Physiology and Metabolism

(15 Hours)

Exercise physiology: skeletal muscle structure and function, muscle fibre types, sarcomere organization, motor units and recruitment patterns, neuromuscular junction. Adaptations to aerobic and resistance training. Cardiovascular and respiratory responses to exercise. Energy metabolism during exercise: ATP structure and function, bioenergetics and energy transfer. ATP production systems- phosphagen system, anaerobic glycolysis and aerobic metabolism. Carbohydrate, fat and protein metabolism during exercise, fuel utilization at different intensities and durations, lactate production and lactate threshold.

UNIT III: Assessment of Athletes

(15 Hours)

Nutritional and fitness assessment of athletes: anthropometric measurements, body composition assessment methods- bioelectrical impedance analysis (BIA), dual-energy X-ray absorptiometry (DEXA), hydrostatic weighing and air displacement plethysmography; somatotyping and its applications in sports. Dietary assessment techniques - 24-hour dietary recall, food frequency questionnaire, food records and digital dietary assessment tools. Biochemical evaluation - haemoglobin, ferritin, vitamin D status, blood glucose, lipid profile, electrolytes and markers of exercise stress. Clinical evaluation - medical history, injury assessment, menstrual history and physical examination. Performance assessment - assessment of energy expenditure, direct and indirect calorimetry and doubly labelled water method, fitness assessment, sport-specific performance tests - VO₂ max testing, agility and sprint tests, Wingate anaerobic test, functional movement screening, evaluation of functional capacity and interpretation of assessment data for individualized nutrition and training interventions.

UNIT IV: Nutritional Requirements for Sports Performance

(15 Hours)

Energy requirements of athletes, energy balance and energy availability. Macronutrient requirements in sports: carbohydrate requirements, glycogen metabolism, carbohydrate periodization and glycogen loading strategies; protein requirements for exercise adaptation, muscle protein synthesis and recovery, protein quality and amino acid considerations; dietary fats in sports performance including essential fatty acids and omega-3 fatty acids. Nutrient timing strategies before, during and after exercise to optimize performance and recovery. Micronutrients and hydration: functions of vitamins and minerals

in athletic performance - iron, calcium, vitamin D, magnesium, zinc and antioxidant nutrients; fluid and electrolyte balance, thermoregulation, sweat composition, hydration assessment and evidence-based hydration recommendations before, during and after exercise. Nutritional considerations for exercise under environmental extremes including heat, cold and altitude, and travel nutrition with management of jet lag in athletes.

UNIT V: Applied Sports Nutrition

(15 Hours)

Sports-specific nutrition planning- nutritional strategies before, during and after exercise, recovery nutrition and development of individualized meal plans for training and competition. On-season and off-season meal planning and nutritional considerations. Recovery strategies for glycogen restoration, muscle repair and reduction of exercise-induced fatigue. Contemporary issues in sports nutrition-ergogenic aids and dietary supplements, classification, efficacy and safety of supplements. Anti-doping regulations - World Anti-Doping Agency (WADA) guidelines, prohibited substances, supplement contamination and Therapeutic Use Exemptions (TUE). Female Athlete Triad and Relative Energy Deficiency in Sport (RED-S), eating disorders and evidence-based weight management practices in athletes. Nutrition considerations for adolescent athletes, masters athletes and para-athletes. Emerging trends and evidence-based practices in sports nutrition including precision nutrition, nutrigenomics, artificial intelligence applications, wearable technologies and current advances in sports nutrition research.

Total Lecture Hours-75

COURSE OUTCOME:

The students will be able to

1. Explain the basic concepts of sports nutrition and physical fitness.
2. Describe the exercise physiology and energy metabolism.
3. Assess the nutritional and performance status of athletes.
4. Apply the nutritional guidelines to enhance sports performance and recovery.
5. Develop the sports nutrition plans and evaluate current issues in sports nutrition.

TEXT BOOK(S)

1. Anita Bean ,2022, The Complete Guide to Sports Nutrition (9th Edition) Bloomsbury Publishing, Australia
2. Chandrasekar, K 2005 Fitness, Health and Nutrition Khel Sahitya Kendra New Delhi.
3. Gleeson, Jeukendrup (2004), Sports Nutrition: An Introduction to Energy Production and Performance, Human Kinetics.
4. Melissa L. Brown, Hope Barkoukis, 2026, *Sports Nutrition: A Handbook for Professionals (7th Edition)*, Academy of Nutrition and Dietetics.
5. Shrawan Kumar Ed., 2009 Ergonomics for Rehabilitation for Rehabilitation Professionals CRC Press Boca Raton .
6. Vastrad, BGE., 2003 Encyclopedia of Sports Science and Medicine Khel Sahitya Kendra New Delhi .

REFERENCE BOOK(S)

1. Bourns, Fred, 2002, Essentials of Sports Nutrition, 2nd Ed. John and Wiley.
2. Burke, Louise, 2007, Practical Sports Nutrition, Human Kinetics
3. Deakin, Burke, 2006, 3rd Ed, Clinical Sports Nutrition, Mc Graw-Hill Australia.
4. Gleeson, Jeukendrup (2004), Sports Nutrition: An Introduction to Energy Production and Performance, Human Kinetics
5. Judy A. Driskell, Ira Wolinsky, 2026, *Sports Nutrition: Vitamins and Trace Elements (2nd Edition)*, CRC Press.
6. Suzanne Girard Eberle (2000), Endurance Sports Nutrition, Human Kinetics.

E-RESOURCES:

1. <https://openoregon.pressbooks.pub/>
2. <http://www.aco.org.nz/pdf/nutrition-for-sports>
3. https://www.researchgate.net/publication/258630492_Sports_Nutrition_Book2013http://themedicalbiochemistrypage.org
4. <https://www.betterhealth.vic.gov.au/health/healthyliving/sporting-performance-and-food>
5. https://stillmed.olympics.com/media/Documents/Athletes/Medical-Scientific/Consensus-Statements/2018_dietary-supplements-high-performance-athlete.pdf

MAPPING WITH PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
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CO2	3	3	3	3	3	3	2	2	2	1	3	3	3	3	3
CO3	3	3	3	3	3	3	2	2	2	1	3	3	3	3	3
CO4	3	3	3	3	3	3	2	2	2	1	3	3	3	3	3
CO5	3	3	3	3	3	3	2	2	2	1	3	3	3	3	3
S-Strong(3)					M-Medium(2)					L-Low(1)					

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE

(AUTONOMOUS)

SUNDARAKKOTTAI. MANNARGUDI-614016.

(For the candidates admitted in the academic year 2025-2026)

DEPARTMENT OF NUTRITION AND DIETETICS

M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS



SEMESTER-III-EC-V: Child Development

Ins. Hrs./Week:5

Course Credit:3

Course Code: P25NDE35C

Unit I: Foundations of Child Development

(20 Hours)

Definition, scope, and importance of child development, Principles and stages of development (infancy to adolescence), Developmental domains: physical, cognitive, emotional, social, and moral, Influences on development: heredity, environment, culture, and socio-economic status, Theories of child development: Piaget, Erikson, Vygotsky, and Bronfenbrenner.

Unit II: Prenatal to Early Childhood Development

(10 Hours)

Prenatal development: stages, risk factors, and maternal health, Birth process and neonatal care, Developmental milestones (0–6 years): motor, language, cognitive, and socio-emotional, Early stimulation and learning, Role of caregivers and parenting styles.

Unit III: Middle Childhood and Adolescence

(15 Hours)

Developmental characteristics of middle childhood (6–12 years), Peer relationships, self-concept, and academic adjustment, Puberty and its impact on physical and psychological development, Emotional regulation and identity formation in adolescence, Challenges: stress, peer pressure, and risk behaviors.

Unit IV: Assessment and Intervention in Child Development

(15 Hours)

Tools and techniques for developmental assessment, Identifying developmental delays and disorders (e.g., ADHD, autism spectrum disorders, learning disabilities), Role of early intervention programs, Counseling strategies for children and families, Creating inclusive and supportive environments.

Unit V: Policies, Programs, and Emerging Issues

(15 Hours)

National and international child welfare policies (e.g., ICDS, RTE, POCSO Act), Government and NGO-led child development programmes, Child rights and protection, Impact of media, digital exposure, and technology on children, Current research trends and ethical issues in child development.

Total Lecture Hours-75

COURSE OUTCOME:

The students will be able to,

1. Analyze key theories and principles of child development across various stages.
2. Evaluate the influence of biological, psychological, and environmental factors on child growth and development.
3. Apply developmental assessment tools to identify typical and atypical development.
4. Design appropriate intervention strategies and learning environments for holistic child development.
5. Critically review policies, programmes and current research related to child welfare and development.

TEXT BOOK(S)

1. Barbara M. Newman , 2017, Development Through Life: A Psychosocial Approach, 13th Edition, Cengage Learning Publisher, **ISBN:** 9781337098144.
2. Helen Bee and Denise Boyd , 2013, The Developing Child, 13th Edition, Pearson Education, **ISBN:** 9780205957606.
3. John W. Santrock, 2013, Child Development: An Introduction, McGraw-Hill Education Publisher, **ISBN:** 9780078035128.
4. John W. Santrock, Kirby Deater-Deckard, Jennifer Lansford, 2026, *Child Development (16th Edition)*, McGraw Hill.
5. Laura E. Berk, 2012, Child Development, 9th Edition, Pearson Education, Publisher, **ISBN:** 9780205149766.
6. Robert V. Kail, 2017, Children and Their Development, 7th Edition, Pearson Education Publisher, **ISBN:** 9780134081502.

REFERENCE BOOK(S)

1. David R. Shaffer & Katherine Kipp, 2013, Developmental Psychology: Childhood and Adolescence, 9th Edition, Cengage Learning Publisher, **ISBN:** 9781111834524.
2. Elizabeth Hurlock, Child Growth and Development, Latest Indian Reprint, various editions, McGraw-Hill Education India Publisher, **ISBN:** 9780070993631.
3. Mangal, S. K., 2016, Childhood and Growing Up, PHI Learning Publishing Pvt. Ltd, **ISBN:** 9788120352218.
4. Ross D. Parke & Alison Clarke-Stewart, 2010, Child Psychology: A Contemporary Viewpoint, 7th Edition, McGraw-Hill Education Publisher, **ISBN:** 9780078035128.
5. William Crain, 2010, Theories of Development: Concepts and Applications, 6th Edition, Pearson Education Publisher, **ISBN:** 9780205810468.

E-RESOURCES

1. <https://www.structural-learning.com/post/child-development-theories>
2. <https://www.verywellmind.com/stages-of-prenatal-development-2795073>
3. <https://open.maricopa.edu/devpsych/chapter/chapter-6-middle-childhood/>
4. <https://www.unicef.org/early-childhood-development>
5. <https://www.who.int/teams/maternal-newborn-child-adolescent-health-and-ageing/child-health/child-development>

MAPPING WITH PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	2	2	3	2	2	3	2	2	2	2	3
CO2	2	3	3	3	3	2	2	1	3	2	3	3	3	3	3
CO3	3	3	2	2	2	1	3	2	2	3	2	2	1	1	3
CO4	2	3	3	3	2	3	2	2	3	3	3	3	3	3	3
CO5	2	3	3	3	2	3	2	2	3	3	3	3	3	3	3

S-Strong(3)

M-Medium(2)

L-Low(1)

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE

(AUTONOMOUS)

SUNDARAKKOTTAI. MANNARGUDI-614016.

(For the candidates admitted in the academic year 2025-2026)

DEPARTMENT OF NUTRITION AND DIETETICS

M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS



SEMESTER-III-Skill Enhancement Course-I: Nutrition in Special condition

Ins. Hrs./Week:2

Course Credit:2

Course Code:P25SEND31

UNIT - I : Fundamentals of Nutrition in Special Conditions (6 Hours)

Concept, scope, and significance of nutrition in special environments, Physiological and metabolic adaptations to stress (thermal, physical, psychological), Nutritional assessment methods in special populations and environments, Energy metabolism, hydration, and electrolyte balance under stress conditions, Role of macro- and micronutrients in adaptation and recovery.

UNIT -II : Space Nutrition (6 Hours)

Physiological changes during space flight, Nutritional requirements and metabolic alterations in astronauts, Types of space foods, Quality criteria for space food, Functional foods, nutraceuticals, and supplementation in space missions.

UNIT - III : Nutrition in Extreme Conditions (6 Hours)

Physiological responses to extreme environments, Nutritional requirements in cold, hot, polar regions and tropical climates, Nutrition during desert survival conditions, Role of antioxidants and specialized food supplements, Strategies to prevent dehydration and nutrient deficiencies.

UNIT- IV: Nutrition During Sea voyage (6 Hours)

Occupational stress and lifestyle factors in seafarers, Legal and regulatory aspects of ship catering (IMO/ILO guidelines), Causes and prevention of malnutrition during sea voyages, Nutritional requirements for long-duration voyages, Limitations in food availability and dietary patterns on board, Food preservation, storage, and safety challenges at sea, Role of nutrition in fatigue management and work performance.

UNIT -V : Military Nutrition (6 Hours)

Nutritional requirements for defence personnel under varying conditions, Dietary guidelines and meal planning for military operations, Military rations (MREs) – composition, development, and evaluation, Role of nutrient supplementation in endurance and combat performance, psychological stress, trauma, and its impact on nutritional status in survival and emergency situations.

Total Lecture Hours - 30

COURSE OUTCOME:

The students should be able to,

1. Analyse the nutritional adaptations and requirements under special stress conditions.
2. Evaluate and design appropriate nutrition for space travel conditions.
3. Assess and plan diets for individuals in extreme environmental conditions.
4. Examine and manage nutritional challenges during long sea voyages.
5. Develop effective nutrition strategies for military performance and survival.

TEXT BOOK (S)

1. Geetha Khanna, V. Passi, 2026, *Textbook of Nutrition and Dietetics (Revised Edition)*, Phoenix Publishing House.
2. Heer, M.; Titze, J.; Smith, S.M.; Baecker, N., *Nutrition Physiology and Metabolism in Spaceflight and Analog Studies – 1st ed. (2015) – Springer International Publishing, Cham, Switzerland.*
3. Lane, H.W.; Smith, S.M.; Zwart, S.R., *Nutritional Biochemistry of Space Flight – 1st ed. (2000) – National Academies Press, Washington, DC, USA.*
4. Mahan, L.K.; Raymond, J.L., *Krause's Food & the Nutrition Care Process – 14th ed. (2017) – Elsevier, St. Louis, Missouri, USA.*
5. World Health Organization (WHO) *Diet, Nutrition and the Prevention of Chronic Diseases – Report (2003) – WHO Press, Geneva, Switzerland.*

REFERENCE BOOK (S)

1. Aleta L. Meyer and Thomas P. Gullotta., Physical Activity Across the Lifespan: Prevention and Treatment for Health and Well-Being (Issues in Children's and Families' Lives), 2012, Springer.
2. Antia, F.P., 1992, Clinical Dietetics and Nutrition Oxford University Press, New Delhi.
3. Corinne, R.H., 1996, Normal and therapeutic nutrition, Mcmillian Co., New York.
4. Jacalyn J. McComb, Reid Norman, et al., The Active Female: Health Issues Throughout the Lifespan 2010, Human press.
5. Srilakshmi B., 2026, *Dietetics (9th Edition)*, New Age International Publishers.

E- RESOURCES

1. <https://www.nasa.gov/stem-content/space-nutrition-ebook/>
2. <https://www.fao.org/nutrition/emergencies/en/>
3. <https://www.who.int/health-topics/nutrition>.
4. <https://www.nin.res.in/dietaryguidelines.html>
5. https://usariem.health.mil/index.cfm/research/divisions/military_nutrition

MAPPING WITH PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	2	2	3	2	2	3	2	2	2	2	3
CO2	2	3	3	3	3	2	2	1	3	2	3	3	3	3	3
CO3	3	3	2	2	2	1	3	2	2	3	2	2	1	1	3
CO4	2	3	3	3	2	3	2	2	3	3	3	3	3	3	3
CO5	2	3	3	3	2	3	2	2	3	3	3	3	3	3	3
S-Strong(3)					M-Medium(2)					L-Low(1)					

SEMESTER-IV

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE



(AUTONOMOUS)

SUNDARAKKOTTAL. MANNARGUDI-614016.

(For the candidates admitted in the academic year 2025-2026)

DEPARTMENT OF NUTRITION AND DIETETICS

M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS

Semester-IV CC-VII: Advanced Food Service Management

Ins. Hrs. /Week:5

Course Credit:5

Course Code:P25ND410

UNIT-I: Introduction to Advanced Food Service Operations (17 Hours)

Role and scope of food service management, Types of food service systems, Cloud kitchens, Organizational structure and leadership in food service, Industry standards and certifications, Challenges in modern food service operations. Franchise, chain, contract and outdoor catering services-Current trends in facility design, regulatory requirements and special considerations for each specific type of food services.

UNIT-II: Organization and Management (10 Hours)

- a) Organization-Definition and types.
- b) Approaches to management-classical, neoclassical, systems approach, behavioral and human relations approach, contingency approach, Just in time (JIT) approaches.
- c) Principles, functions and tools of management and their application in the food service industry.

UNIT-III: Equipment design, selection, Installation and use (18 Hours)

- a) Importance and Classification of equipment, Trends in modern equipment technology, Sustainability and smart kitchens
- b) Principles of food service equipment design and construction standards, Ergonomics and user-centered design
- c) Factors influencing selection of equipment; Technological considerations -automation, smart features, Trends in equipment available in the market.
- d) Installation- Layout planning for optimized workflow, principles of operation and care of major equipment.

UNIT-IV: Hygiene and Sanitation in the Food Service (15 Hours)

- a) Personal hygiene and employee health practices, proper food handling – precautions for safe food production.
- b) Hygiene of plant and equipment Principles of cleaning and sanitation. Dishwashing – types and uses. Protocol according to FSSAI for food production.

UNIT-V: Safety and Sustainability (15 Hours)

- a) Safety in Food Service Units – causes and prevention of accidents, 3Es of safety and action for emergencies.
- b) Sustainable practices and green initiatives
 - i. Conservation of natural resources –water and energy conservation.
 - ii. Green design and energy saving in electrical equipment.
 - iii. Integrated solid waste management –sources, reduction, reuse/up cycle and recycle; facility waste assessment; pest control.

Total lecture Hours-75

COURSE OUTCOME:

The students will be able to,

1. Apply knowledge of food service classifications, systems, facility design trends, and regulations in food service operations.
2. Demonstrate management principles, organizational approaches, and management tools in food service administration.
3. Select, operate, and maintain food service equipment using appropriate standards and SOPs.
4. Implement cleaning, sanitation, personal hygiene, and HACCP principles to ensure food safety.
5. Analyze accident prevention, energy conservation, resource management, and zero-waste strategies in food service facilities.

TEXT BOOK(S):

1. Arora RK.(2007).Food Service and Catering Management. A.P.H Publishing Corporation. New Delhi.
2. David K. Hayes, Jack D. Ninemeier, 2026, *Successful Management in Foodservice Operations* Wiley.
3. Glew,G.,‘Catering Equipment and systems Design’ Applied Science Publishers Ltd., London 1977. John Wilel and Sons.
4. Malhotra R.K.(2005).Food Service and Catering Management. Anmol publications Pvt Ltd. New Delhi.
5. West, B.B., Wood, L., Harger, V.F. and Schugart –Food Service in Institutions, John Wiley &Sons., N.Y., 1972.

REFERENCE BOOK(S)

1. Michael Holik, Danielle Platt,2026, *Lessons in Foodservice Management: Case Studies for Nutrition and Dietetics Practitioners*, Academy of Nutrition and Dietetics.
2. Negi J.,2006,Food and Beverage: Management and Cost control. Kanishka publishers distributors
3. Payne-Palacio J and Theis M.,2019, Food Service Management-Principles and Practices. Pearson India Education Services Pvt. Ltd. Noida, India.
4. Sethi, M.2016.Institutional Food Management,(2nd ed).New Age International Pvt. Ltd., New Delhi.
5. West B.B, Wood L, Harger V.P.,2006, Food Service in Institutions. John Willey and Sons, Inc., New York .

E -RESOURCES:

1. <https://fssai.gov.in/>
2. https://www.brainkart.com/article/Definition-and-Types-of-Equipment_35155/
3. <http://www.ignouhelp.in/ignou-mscdfsm-study-material/>
4. <https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=Cdnwi2LUCCLzrJZ76d/o1A==>
5. <https://www.mooc-list.com/course/innovation-food-industry-futurelearn>

MAPPING WITH PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	2	3	3	2	2	3	3	3	3	2	3	3
CO2	2	3	3	2	3	2	2	2	3	1	2	2	2	3	3
CO3	3	3	3	2	3	3	2	2	3	3	3	3	2	3	3
CO4	3	3	3	2	3	3	2	2	3	3	3	3	2	3	3
CO5	3	3	3	2	3	3	2	2	3	3	3	3	2	3	3

S-Strong(3)

M-Medium(2)

L-Low(1)

**SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
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SUNDARAKKOTTAI. MANNARGUDI- 614016.

(For the candidates admitted in the academic year 2025-2026)

DEPARTMENT OF NUTRITION AND DIETETICS

M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS

SEMESTER-IV CC -VIII: Food Product Development and Marketing

Ins. Hrs./Week:5 Course Credit:5

Course Code:P25ND411

UNIT-I: Introduction, Consumer needs and preferences of New Product Development (15 Hours)

Definition, significance of product development, food needs and consumer preferences. Steps involved in food product development, Basic principles and concept of food product development, Trends in food consumption pattern. Trends in social change as a base for new product development. Scope of growth in future, principles and purpose of new product development, product design and specifications. Developing a Product to Meet the Requirements. Product life cycle. Creating brand value for the Product. The SWOT analysis.

UNIT-II: Product Development (15 Hours)

Product Development use of traditional recipe and modification, customer involvement, selection of materials and ingredients for specific purpose, cost effectiveness, nutritional needs or uniqueness, use of novel food ingredients and novel processing technologies. Steps in product development, standardization methods involved in product development. Portion size and portion control; Calculation of nutritive value, evaluation procedure of developed food products, Development of Score Card and analysis and interpretation of data, Cost of production, shelf life of packaging and storage stability.

UNIT- III: Formulation of new food product (15 Hours)

Formulation of new food products for infants, preschool children, adolescents, pregnant and nursing mothers, old age, sports persons, armed forces personnel and its related therapeutic uses. Convenience foods, Ready-to-eat (RTE), Ready-to-Serve (RTS), extruded foods, Intermediate moisture foods (IMF) foods, specialty products, health foods, nutritional supplements, functional foods, nutraceuticals and designer foods, sports foods, foods for defense services, space foods. General guidelines on giving declarations – Food Safety and Standards Authority of India (FSSAI). Approval for proprietary products.

UNIT- IV: Financial Assistance and Product Commercialization (15 Hours)

Institutional support (Training and Finance) for entrepreneurship development. Financial Institutions (Central and State Government) banks/ funding agencies, Centralized Online Real-time Exchange (CORE) financial accounting procedures, book keeping/ record keeping system.

Product Commercialization, Launch, Evaluation Outcomes and activities in product commercialization, Steps in product launch, Evaluation of the Launch, product performance testing, developing test market strategies,

UNIT-V: Concept of market and marketing (15 Hours)

Approaches to marketing and marketing functions, market structure, marketing efficiency and market integration, Role of Government in promoting agricultural marketing. Market promotion and positioning of food products. Role of advertisement and technologies in promotion of new products. Conditions for sale, license and identification and quality processing, conditions for distribution, storage and sanitation, Role of export promoting agencies, Economic feasibility of new products.

Total Lecture Hours-75

COURSE OUTCOME

The students will be able to,

1. Understand the principles and elements of food product development.
2. Explain the steps involved in food product development and the product development cycle.
3. Apply and analyze the screening and feasibility tests for a products potential launch.
4. Better evaluate the financial resources and commercialization of the product.
5. Distinguish profitable ideas and market opportunities by assessing the saturation of regional market.

TEXT BOOK(S):

1. Aaron L. Brody, John B. Lord 2005. Developing New Food Products for a Changing Market Place. 2nd Edition, Publisher : CRC Press
2. Avantina Sharma 2006. Text books of Food science and technology. International book distributing Company.
3. Gordon W. Fuller 2011. New Food Product Development. From Concept to Market place, Third Edition, Publisher: CRC Press
4. M. Earle, R. Earle, A. Anderson, 2026, *Food Product Development: Maximising Success (3rd Edition)*, Elsevier.
5. Shakunthala Manay N.Shadaksharaswamy M.2008. Food Facts and Principles. New Age International Publishers, New Delhi.
6. SunetraRoday2012.FoodHygieneandSanitation.TataMcGrawHillEducationPrivateLimited,New Delhi.

REFERENC BOOK(S):

1. Debases Bagchi and Sreejayan Nair 2016.Developing New Functional Food and Nutraceutical Products. ISBN-13: 978-0128027806 Academic Press.
2. Debasish Biswas, Debarun Chakraborty, Atanu Manna, 2026, *Food Marketing and Labelling: A Practical Guide*, CRC Press.
3. RaoDG.2016. Fundamentals of Food Engineering. PHI Learning Private Limited, New Delhi
4. Robert C Baker 1988. Fundamentals of New Food Product Development (Developments in Food Science).Elsevier Science Ltd. ISBN-13 :978- 0444429155
5. Schaffner DJ. Schroder WR.2000.Food Marketing and International Perspectives. Web/Mc Graw Hill Publication.

E-RESOURCES:

1. <https://nzifst.org.nz/resources/foodproductdevelopment/Chapter-3.htm>
2. <https://nzifst.org.nz/resources/creatingnewfoods/documents/CreatingNewFoodsCh5.pdf>
3. <https://www.fao.org/food-systems/en/>
4. <https://www.eufic.org/en/food-production/article/processed-food>
5. <https://www.destechpub.com/wp-content/uploads/2015/01/Methods-for-Developing-New-Food-Products-preview.pdf>

MAPPING WITH PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	2	3	3	2	2	3	3	3	3	2	3	3
CO2	2	3	3	2	3	2	2	2	3	1	2	2	2	3	3
CO3	3	3	3	2	3	3	2	2	3	3	3	3	2	3	3
CO4	3	3	3	2	3	3	2	2	3	3	3	3	2	3	3
CO5	3	3	3	2	3	3	2	2	3	3	3	3	2	3	3

S-Strong(3)

M-Medium(2)

L-Low(1)

**SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)**



SUNDARAKKOTTAI. MANNARGUDI- 614016.
(For the candidates admitted in the academic year 2025-2026)

**DEPARTMENT OF NUTRITION AND DIETETICS
M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS**

SEMESTER-IV CP-IV: Food Product Development and Marketing Practical

Ins. Hrs./Week:6

Course Credit:3

Course Code: P25ND412P

Course Contents:

Development of New Product:

Definition, Importance, objectives and Need of product development, Reasons of failure, Types and Steps of product development, Product development Tools and their use.

Each team/ group of students would develop a food product on the basis of above-mentioned lines/steps and would submit a project report.

Practical on:

1. Market and literature survey to identify the concepts of new products based on special dietary requirements, functionality, convenience and improvisation of existing traditional Indian foods.
2. Screening of product concept on the basis of techno – economic feasibility.
3. Development of proto type product and Standardization of formulation process.
4. Proximate Analysis of New Product
5. Packaging, labeling and shelf-life studies
6. Cost analysis and
7. Final Report & record Submission.

COURSE OUTCOME:

The students will able to,

1. Explain the principles, importance, types, steps, and tools involved in food product development.
2. Conduct market and literature surveys to identify and evaluate innovative food product concepts.
3. Assess product concepts based on techno-economic feasibility for product selection.
4. Develop, standardize and analyze prototype food products including packaging, labeling, and shelf-life evaluation.
5. Perform cost analysis and prepare a comprehensive project report on new food product development.

TEXT BOOK(S)

1. AaronL. Brody ,John B.Lord 2005. Developing New Food Products for a Changing Market Place. 2nd Edition, Publisher : CRC Press
2. Avantina Sharma 2006.Textbooks of Food science and technology. International book distributing Company.
3. Gordon W. Fuller 2011. New Food Product Development. From Concept to Marketplace, Third Edition, Publisher: CRC Press
4. Shakunthala Manay N. Shadakshara swamy M. 2008.Food Facts and Principles. New Age International Publishers, New Delhi.
5. SunetraRoday2012. Food Hygiene and Sanitation. Tata Mc Graw Hill Education Private Limited, New Delhi

REFERENCE BOOK(S):

1. Debasis Bagchi and Sreejayan Nair 2016. Developing New Functional Food and Nutraceutical Products. ISBN-13: 978-0128027806 Academic Press.
2. Fuller Gordon 2005. New Food Product Development. 2nd Edition, CRC Press, Boca Raton, Florida,
3. Rao DG .2016.Fundamentals of Food Engineering.PHI Learning Private Limited, New Delhi
4. Robert C Baker 1988. Fundamentals of New Food Product Development (Developments in Food Science). Elsevier Science Ltd. ISBN-13 :978- 0444429155
5. SchaffnerDJ.SchroderWR.2000.FoodMarketingandInternationalPerspectives. Web/McGraw Hill Publication.

E-RESOURCES

1. <https://nzifst.org.nz/resources/foodproductdevelopment/Chapter-3.htm>
2. <https://nzifst.org.nz/resources/creatingnewfoods/documents/CreatingNewFoodsCh5.pdf>
3. <https://cwsimons.com/steps-in-food-product-development/>
4. <https://www.eufic.org/en/food-production/article/processed-food>
5. <https://www.destechpub.com/wp-content/uploads/2015/01/Methods-for-Developing-New-Food-Products-preview.pdf>

MAPPING WITH PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	2	3	3	2	2	3	3	3	3	2	3	3
CO2	2	3	3	2	3	2	2	2	3	1	2	2	2	3	3
CO3	3	3	3	2	3	3	2	2	3	3	3	3	2	3	3
CO4	3	3	3	2	3	3	2	2	3	3	3	3	2	3	3
CO5	3	3	3	2	3	3	2	2	3	3	3	3	2	3	3

S-Strong(3)

M-Medium(2)

L-Low(1)

**SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
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SUNDARAKKOTTAI. MANNARGUDI- 614016.
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**DEPARTMENT OF NUTRITION AND DIETETICS
M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS**

SEMESTER IV:EC-VI Food Safety and Quality Control

Ins. Hrs./Week:4

Course Credit:3

Course Code:P25NDE46A

UNIT- I: Spoilage and Safety

(12 Hours)

Food Spoilage: definition, factors influencing food spoilage, Types of food spoilage - microbes, enzymes and insects; Changes in food quality due to spoilage, Methods for detection of food spoilage, principles and Concept of food preservation .

Food Safety: Need and importance of food safety in food industries, Factors affecting food safety, Role of kitchen-hygiene, employee health and food plant hygiene in prevention of food spoilage and contamination, Regulatory authorities at local, district and national levels ensuring food safety in food industries.

UNIT-II: Additives and Adulteration

(12 Hours)

Food Additives: Definition, Common food additives and its function and usage, Permissible limits of additives in foods, Implications of additives on consumers health, Food adulteration: definition; Types of food adulterants, Methods used for detection of food adulterants.

UNIT-III: Testing of Food Quality

(12 Hours)

Testing of Food Quality: Food Quality meaning and need of food quality testing, Types of evaluation -Subjective and objective. Subjective evaluation methods based on difference rate, sensitivity etc; Objective evaluation methods – tools and instruments used, quality standards for cereal, pulses and legumes, vegetables and fruits, milk, egg and flesh foods, fat and sugar and related products.

UNIT-IV: Food Quality Control and Assurance

(12 Hours)

Current concepts of quality control and assurance, Need and importance of quality control programmes, quality plan, documentation of records, product standards, Product purchase specifications and process control, Principles of Hazards Analysis Critical Control Point (HACCP) and its role in total quality process, Duties and responsibilities of food quality controller.

UNIT-V: Laws and Standards

(12 Hours)

Need and importance, National food legislation- Food Safety and Standards Authority of India (FSSAI), Essential Commodities Act, Indian Standards Institution (ISI), Bureau of Indian Standards (BIS), AGMARK, Fruit Products Order (FPO) and Prevention of Food Adulteration Act (PFA): International Organization- Food and Agriculture Organization (FAO), World Health Organization (WHO), Codex Alimentarius, and Agricultural and Processed Food Products Export Development Authority (APEDA).

Total Lecture Hours-60

COURSEOUTCOME:

The students will be able to,

1. Be familiar with food safety hazards and analyze hazards that might contaminate foods and causes of food borne illnesses.
2. Capable of identifying additives and their permissible limit and adulterants.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	1	1	2	1	3	2	2	3	2	2	1	1	3
CO2	2	3	3	3	3	2	2	1	3	2	3	3	3	3	3
CO3	3	3	2	2	2	1	3	2	2	3	2	2	1	1	3
CO4	2	3	3	3	2	3	2	2	3	3	3	3	3	3	3
CO5	2	3	3	3	2	3	2	2	3	3	3	3	3	3	3
S-Strong(3)					M-Medium(2)					L-Low(1)					

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE

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DEPARTMENT OF NUTRITION AND DIETETICS

M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS



Semester: IV-EC-VI: Front Office Management

Ins. Hrs./Week:4

Course Credit:3

Course Code: P25NDE46B

UNIT- I: Introduction to Front Office Management

(12 Hours)

Classification of hotels and other departments and Scope of hospitality industry , Front Office organization, layout, planning, furniture and equipment, staffing pattern-according to hotel sizes and types, rules for Front Office staff, duties and attributes of different levels of staff, coordination and communication between the Front Office and the other departments. Linkages of Tourism and hospitality industry.

UNIT-II: Guest Rooms

(11 Hours)

Hotel - Definition, Classification based on star Category, size and location. Hotel Organization – Organization Pattern in a large, medium and small sized hotel. Categorizing the guest room- Room types, Room configuration, Room Designations, Room Numbering, Room status reconciliation, Key control systems .

UNIT-III: Room Rates , Room Rate Designations

(13 Hours)

Rack rate, Corporate rate Volume account rates, Government rate, seasonal rates week day/ Weekend rates, membership rates, Industry rates, Walk-in rates, Premium rates, half day rates, Advance Purchase rates, Package rates, Per-person rates, group rates. Pricing systems and methods, Handling of Guest queries, problem, request, General operations of control desk

UNIT-IV: Reservation

(12 Hours)

Reservation - Definition, modes of room reservation and source of reservation, system of room reservation, Basic reservation procedures, Individual and group reservation, Forecasting, computerized reservation system. Check – in check – out procedures.

Settlement of bills, dealing with walk-in guests with scanty baggage, change of guest rooms, handling of guest mail, key handling and control, use and function of the key rack, handling guest messages and enquiries, calculating room occupancy reports. Role of lobby manager

UNIT -V Communication and Care of Guest

(12 Hours)

Communications, guest care and billings – Knowledge of PBX, EPABX, handling the telephone, reading of directories, phonograms, method of operation of e-mail, fax, facsimile, mobile communication systems, public address system and accessing web sites.

Caring for guests-Greeting, Transition, Registration. Accounts and Records, Revenue control – handling of credit cards, travellers cheques, travel agents coupons and airline vouchers, foreign exchange regulations in the hotels regarding payment of hotel bills by foreigners and NRIs, handling of guest valuables.

Total Lecture Hours-60

COURSE OUTCOME:

The students will be able to,

1. Identify the independent components of the lodging front desk/front office system.
2. Identify and explain the impacts of the front desk/ front office on the overall lodging operation.
3. Apply and explain skills necessary to seek employment in front desk/ front office supervision and management.
4. Infer knowledge on guest care and communication.
5. Understand and apply the procedures typically in room rates and reservation

TEXT BOOK(S)

1. Deepak Singh Negi, and Dr. Shiv Mohan Verma, 2020. Fundamentals of Hotel Housekeeping: Operations and Management. 1st New Edition, Bharti Publications, ISBN- 13: 978-9389657210.
2. Jatashankar R. Tewari, 2026, Hotel Front Office: Operations and Management, OUP India.
3. Raghubalan G. and Smritee Raghubalan. 2015. Hotel Housekeeping-Operations and Management. 3rd edition, Oxford University Press, India. ISBN-13:978-0199451746.
4. Sudhir Andrews 2017. Hotel House keeping: A Training Manual. Third edition, Mc Graw Hill Education, ISBN-13: 978-1259004988.
5. Westand Wood BB.1996.Food service in institutions. Jone wiley and sons.

REFERENCE BOOK(S)

1. BardiJA. 1982. Hotel Front Office Management. Van No strand Rein hold Publishing Company Limited, New Delhi.
2. Michael L. Kasavana, Richard M. Brooks, 2026, *Managing Front Office Operations (9th Edition)*, American Hotel & Lodging Educational Institute.
3. Ravi Aggarwal (2010). Hotel Front Office–Systems & Procedures, sublime publications.
4. S.K.Bhatnagar (2005) Front Office Management, FrankBros .&Co. (Publishers) Limited.
5. Schneider M. and Tucker G.1985. The Professional Housekeeper. Van Nostrand Reinhold, New York.

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1. <https://setupmyhotel.com/train-my-hotel-staff/hk/255-hk-dep-chart.html>
2. <https://www.slideshare.net/SunilKumar148/5-cleaning-agents>
3. <https://www.slideshare.net/GautamKumar143/linen-uniform-tailor-room>
4. <https://www.ihmnotes.in/assets/Docs/Sem-2/Accommodation/Ch-2%20AREA%20CLEANING.pdf>
5. <https://www.harpercollege.edu/about/directory/ehs/pdf/Section%2026%20-%20Housekeeping%20Procedures.pdf>.

MAPPING WITH PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	2	3	3	2	2	3	3	3	3	2	3	3
CO2	2	3	3	2	3	2	2	2	3	1	2	2	2	3	3
CO3	3	3	3	2	3	3	2	2	3	3	3	3	2	3	3
CO4	3	3	3	2	3	3	2	2	3	3	3	3	2	3	3
CO5	3	3	3	2	3	3	2	2	3	3	3	3	2	3	3

S-Strong(3)

M-Medium(2)

L-Low(1)

**SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)**



SUNDARAKKOTTAI. MANNARGUDI- 614016.
(For the candidates admitted in the academic year 2025-2026)

**DEPARTMENT OF NUTRITION AND DIETETICS
M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS**

Semester: IV-EC–VI: Culinary Techniques

Ins.Hrs./Week:4

CourseCredit:3

Course Code: P25NDE46C

Unit I: Introduction to Culinary Arts and Kitchen Organization (12 Hours)

History and evolution of culinary arts, Classical kitchen brigade system, Roles and responsibilities of culinary professionals, Types of kitchen equipment and safety standards, Hygiene and sanitation protocols.

Unit II: Cooking Methods and Techniques (11 Hours)

Moist heat methods: boiling, poaching, simmering, steaming, braising, stewing, Dry heat methods: roasting, baking, grilling, broiling, sautéing, frying, Combination methods, Effects of heat on nutrients and flavor, Time-temperature relationships and doneness indicators

Unit III: Knife Skills, Cuts and Ingredient Preparation (12 Hours)

Types of knives and their uses, Precision cuts: julienne, brunoise, chiffonade, etc., Handling and storage of fresh ingredients, Preparation techniques for meats, poultry, fish, and vegetables, Marination, fermentation, and pre-prep techniques

Unit IV: Plating, Presentation, and Sensory Evaluation (12 Hours)

Principles of food presentation: color, texture, balance, symmetry, Garnishing techniques and plating tools, Contemporary plating styles, Sensory evaluation: taste, aroma, texture, appearance, Culinary critiques and feedback techniques

Unit V: Global Cuisines and Modern Culinary Innovations (12 Hours)

Techniques from major global cuisines: French, Italian, Asian, Mediterranean, Indian, Fusion cooking and molecular gastronomy basics, Use of modern kitchen technologies (sous-vide, smoking guns, siphons), Sustainable and zero-waste cooking techniques.

Total Lecture Hours- 60

COURSE OUTCOME:

The students will be able to,

1. Demonstrate advanced knowledge of classical and modern culinary techniques.
2. Apply scientific principles in cooking methods to ensure food quality and safety.
3. Create and present dishes using professional standards of flavor, texture, and plating.
4. Innovate and experiment with ingredients, tools, and techniques from various cuisines.
5. Evaluate and critique culinary preparations based on sensory and technical parameters.

TEXT BOOK(S)

1. Nathan Myhrvold, 2011, Modernist Cuisine: The Art and Science of Cooking (Vol. 1–5), || The Cooking Lab Publisher, ISBN: 9780982761007
2. Sarah R. Labensky, Alan M. Hause, Priscilla A. Martel, 2026, *On Cooking: A Textbook of Culinary Fundamentals (7th Edition)*, Pearson.
3. Sarah R. Labensky, 2018, *On Cooking: A Textbook of Culinary Fundamentals*, 6th Edition, Pearson Education Publisher, ISBN: 9780134441900.
4. The Culinary Institute of America (CIA), 2011, *The Professional Chef*, 9th Edition, Wiley Publisher, ISBN: 9780470421352.
5. Wayne Gisslen, 2018, *Professional Cooking*, 9th Edition, Wiley Publisher, **ISBN:** 9781119399613.

REFERENCE BOOK(S)

1. Anthony Bourdain, 2000, *Kitchen Confidential: Adventures in the Culinary Underbelly (For Culinary Culture & Insights)*, Bloomsbury Publisher, ISBN: 9781582340821.
2. Cook's Illustrated Editors, 2012, *The Science of Good Cooking*, America's Test Kitchen Publisher, ISBN: 9781933615981.
3. Karen Page, 2008, *The Flavor Bible*, Little, Brown and Company Publisher, **ISBN:** 9780316118408.
4. Nathan Myhrvold, 2012, *Modernist Cuisine at Home*, The Cooking Lab Publisher, **ISBN:** 9780982761014.
5. Prosper Montagné, 2009, *Larousse Gastronomique: The World's Greatest Culinary Encyclopedia*, Clarkson Potter Publisher, **ISBN:** 9780307464910.

E-RESOURCES

1. <https://www.lightspeedhq.com/blog/kitchen-brigade/>
2. https://www.webrestaurantstore.com/article/454/types-of-cooking-methods.html?srsId=AfmBOorfKBTJF1fZJD71J2qBofz20z3Pj3cZOvaUtQ2OIcPNb_vkLFIQ
3. https://www.webrestaurantstore.com/article/796/types-of-knife-cuts.html?srsId=AfmBOoqBnOpvzCP_5I6Y0EJEZgukXnblITUA_nCW6FscpRFCWQOAbVd_w
4. <https://www.theculinarypro.com/plate-presentations>
5. <https://www.masterclass.com/articles/molecular-gastronomy-guide>

MAPPING WITH PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
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CO2	2	3	3	3	3	2	2	1	3	2	3	3	3	3	3
CO3	3	2	2	2	2	1	3	2	2	2	2	2	1	1	3
CO4	2	3	3	3	2	3	2	2	3	3	3	3	3	3	3
CO5	2	3	3	2	2	3	2	2	3	3	3	3	3	3	3

S-Strong(3)

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**DEPARTMENT OF NUTRITION AND DIETETICS
M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS**

Semester: IV PCC: Professional Development for Home Science

Ins. Hrs./Week:2

Course Credit:2

Course Code:P25PCND41

.UNIT-I: Textiles

(06 Hours)

Textile terminologies- fibre, yarn, weave and fabric, classification of fibres, Identification of fibres and weaves. The manufacturing process of major natural and man-made fibres and their properties, Different methods of fabric construction-woven, knitted and non-woven fabrics, Textile finishes-classification, processing and purposes of finishes.

UNIT-II: Apparel Designing

(06 Hours)

Body measurements- procedure, needs, figure types and anthropometry, Equipment and tools used for manufacturing garments-advancements and attachments used for sewing Types of machines used and their parts. Elements and principles of design and its application to apparel. Illustrations and parts of Garments. Fashion Terminologies- fashion cycle, fashion theories, fashion adoption, fashion forecasting and factors affecting fashion. Pattern making-drafting, draping and flat pattern-making techniques, pattern alteration and dart manipulation techniques..

UNIT-III: Family Studies

(06 Hours)

Dynamics of marriage and family relationships. Family welfare approaches, programmes and challenges, role in national Development. Domestic violence, marital disharmony, conflict, resolution of conflicts. Parent education, positive parenting, community education, Family disorganization, single parent families.

UNIT-IV: Child/ Human Development

(06 Hours)

Principles of growth and development care during pregnancy and prenatal and neonatal development. Theories of human development and behaviour. Early childhood care and education – activities to promote holistic development. Influence of family, peers, school, community and culture on personality development.

UNIT-V: Extension Management and Community Development

(06 Hours)

Historical perspectives of extension–genesis of extension education and extension systems in India and other countries, objectives of extension education and extension service, philosophy and principles of extension programme development. Programme management- need assessment, situation analysis, planning, organization, implementation, monitoring and evaluation. Extension methods and materials- interpersonal, small and large group methods, audiovisual aids-need, importance, planning, classification, preparation and field testing, use and evaluation of audio-visual materials. Curriculum development and planning for extension education and development activities, Bloom's taxonomy of educational objectives and learning.

Total Lecture Hours-30

COURSE OUTCOME:

The students should be able to,

1. Acquire knowledge about different types of fabric and manufacturing process.
2. Analyze the apparel design and manufacturing
3. Develop a theoretical understanding of families and children.
4. Describe principles and theories of human development and factors influencing growth and personality development.
5. Understand the extension systems in India and community development.

TEXT BOOK(S):

1. Addivi,Reddy.1987. Extension Education. Sreelakshmi press, Andrapradesh.
- 2.AjitK.Singh.2011.Family and Child Welfare Publisher, Centrum PressISBN-10:9381293708, ISBN-13:978-9381293706
- 3.BernardP.Corbman.2005.Textiles Fiber to Fabric. Sixth edition, McGraw Hill International Editions, New Delhi.
4. HurlockE.B.,(1972).ChildDevelopment,NewYork:McGrawHillBookcompany
5. Krathwohl, D.R.(2002)A Revision of Bloom's Taxonomy. (PDF)in Theory into Practice. V41. #4. Autumn, 2002. Ohio State University. Retrieved @

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1. Dahama OP and Bhat Nagar OP. 1985. Extension and Communication for Development. Oxford and IBH Publishing Company. New Delhi.
2. Gohl E and Pand vilensky LD. 1983. Textile Science. 2nd Ed., Publishers, New Delhi.
3. Mc Curdy Karen and Jones, Elizabet. 2000. Supporting Families Lessons from the Field. Sage Publications, USA.
4. Oswal Editorial Board, 2026, *NTA CUET (UG) Home Science Question Bank with MCQs & PYQs*, Oswal Publishers.
5. Varghese MA. Ogale, Srinivasan K. 1992. Home Management. Wiley Eastern Ltd.

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1. <https://egyankosh.ac.in/bitstream/123456789/92818/1/Block-2.pdf>
2. <https://egyankosh.ac.in/bitstream/123456789/42204/1/Unit-1.pdf>
3. https://en.wikipedia.org/wiki/Family_studies
4. https://en.wikipedia.org/wiki/Child_development
5. <https://egyankosh.ac.in/bitstream/123456789/62177/1/Unit-1.pdf>
6. <https://textilelearner.net/classification-of-textile-fibers/>

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CO3	3	3	2	2	3	2	2	2	3	3	3	2	3	3	3
CO4	3	3	2	2	3	2	2	2	3	3	3	3	1	3	3
CO5	3	3	2	2	3	2	2	1	2	1	3	2	1	3	3
S-Strong(3)					M-Medium(2)					L-Low(1)					