



**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 OUTCOMES BASED CURRICULUM
FRAMEWORK (CBCS-LOCF)**

(For the candidates admitted in the academic year 2023-2024)

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- 3(Best 2 out of 3) = 50%

Seminar=10 %

Attendance= 10 %

Question Paper Pattern

Part A: includes two subsections

Part A 1 (10X1=10 marks)

One word question/ Fill in/ Match the following/True or False/ Multiple Choice Questions

Two Questions from Each unit

Part A 2(5X2=10 marks)

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)	20
II. (No choice, Two Mark) ONE question from each unit (5x2=10)	
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,Nochoice) (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:

$\text{GPA} = \frac{\sum_{i=1}^n C_i G_i}{\sum_{i=1}^n C_i}$	$\text{WAM(Weighted Average Marks)} = \frac{\sum_{i=1}^n C_i M_i}{\sum_{i=1}^n C_i}$
<p>Where,</p> <p style="margin-left: 40px;">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.</p>	

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
90andabove	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 below60	6	B
Below50	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
9.00andabove	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 Post Graduate 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 OUTCOMES BASED
CURRICULUM FRAMEWORK (CBCS-LOCF)**

(Applicable to the candidates admitted from the academic year 2023-2024)

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 are cognized University rules.

Sem	Part	Course	Course Code	Title of the Paper	Ins. Hours /Week	Ins.Hours/Week				Credit	Exam Hours	Marks		Total
						L	T	P	S			CIA	ESE	
I	PartA	Core Course–I	P23ND101	Advances in Food Science	6	4	1	-	1	5	3	25	75	100
		Core Course–II	P23ND102	Biochemical Changes in Diseases	6	4	1	-	1	5	3	25	75	100
		Core Practical–I	P23ND103P	Advances in Food Science	6	-	-	6	-	3	3	25	75	100
	PartB(i)	Elective Course–I	P23NDE11A/ P23NDE11B	Applied Food Microbiology/ Nutrition through Life Span	5	5	-	-	-	3	3	25	75	100
		Elective Course–II	P23NDE12A/P 23NDE12B	Management in Food Service Operations/ Nutritional Assessment	5	4	1	-	-	3	3	25	75	100
	PartB(ii)	Non Major Elective-I			2	2	-	-	-	2	3	25	75	100
	TOTAL					30	19	03	06	02	21	-	-	-
II	PartA	Core Course–III	P23ND204	Advanced Dietetics	6	4	1	-	1	5	3	25	75	100
		Core Course–IV	P23ND205	Applied Human Physiology	6	4	1	-	1	5	3	25	75	100
		Core Practical–II	P23ND206P	Advanced Dietetics	6	-	-	6	-	3	3	25	75	100
	PartB(i)	Elective Course–III	P23NDE23A/ P23NDE23B	Functional Foods and Nutrigenomics/ Interior Design	5	5	-	-	-	3	3	25	75	100
		Elective Course–IV	P23NDE24A/P 23NDE24B	Hospital Administration /Nutrition in Emergency and Disaster Management	5	4	1	-	-	3	3	25	75	100
	PartB(ii)	Non Major Elective-II			2	2	-	-	-	2	3	25	75	100
	Part B(iii)	Internship Dietary/Catering–Dietary Internship**				-	-	-	-	-	-	-	-	-

TOTAL					30	19	03	06	02	21	-	-	-	600	
Sem	Part	Course	Course Code	Title of the Paper	Ins. Hours /Week	Ins.Hours/Week				Credit	Exam Hours	Marks		Total	
						L	T	P	S			CIA	ESE		
III	PartA	Core Course–V		Quantity Food Production and service	6	4	1	-	1	5	3	25	75	100	
		Core Course–VI		Research Methodology and Statistics	6	4	1	-	1	5	3	25	75	100	
		Core Practical-III		Quantity Food Production and Service	6	-	-	6	-	3	3	25	75	100	
		Core Industry Module		Food Processing and Preservation	5	4	1	-	-	3	3	25	75	100	
	PartB(i)	Elective Course–V		Dietary Guidance and Counseling/ Sports Nutrition	5	4	1	-	-	3	3	25	75	100	
	PartB(ii)	Skill Enhancement Course		Nutrition in Clinical Critical Care	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	-	-	-	600
IV	Part A	Core Course–VII		Food Product Development	5	4	1	-	-	5	3	25	75	100	
		Core Course-VIII		Food Service Facilities	5	4	1	-	-	5	3	25	75	100	
		Core Practical–IV		Food Product Development	6	-	-	6	-	3	3	25	75	100	
		Core Project		Project with Viva Voce	8	-	2	6	-	7	3	25	75	100	
	PartB(i)	Elective Course–VI		Food Safety and Quality Control/ Front office management	4	3	1	-	-	3	3	25	75	100	
	PartB(ii)	Professional Competency Course		Competitive Examinations in Home Science for Professional Development	2	2	-	-	-	2	3	25	75	100	
	Part C	Extension Activity				-	-	-	-	1	-	-	-	-	-
TOTAL					30	13	05	12	-	26	-	-	-	600	
GRANDTOTAL					120	69	15	30	06	91				2400	
	Extra Credit	MOOC/SWAYAM/NPTEL			-	-	-	-	-	2	-	-	-	-	
		Value added Courses (At least One per Year)			-	-	-	-	-	2	-	-	-	-	

L-Lecture

T-Tutorial

P-Practical

S-Seminar

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

S.No	Course Details	Credit
Part A	Core Course [8 Courses X 5 Credits]	40
	Core Practical [4 Courses X 3 Credits]	12
	Project Work with Viva Voce	07
	Core Industry Module	03
Part B (i)	Elective Course [6 Courses X 3 Credits]	18
Part B (ii)	Non Major Elective[2 Courses X 2 Credits]	04
	Skill Enhancement Course [1 Courses X 2 Credits]	02
	Professional Competency Course [1 Courses X 2 Credits]	02
Part B (iii)	Internship	02
Part C	Extension Activity	01
Total Credit		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 Paper
I	PartB(ii)	NME-I	P23NMEND11	Community Nutrition
II		NME-II	P23NMEND22	Food Packaging

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

Semester –I- CC – I: Advances in Food Science

Ins. Hrs. /Week: 6

Course Credit: 5

Course Code: P23ND101

OBJECTIVES:

- Familiarize the students with changes occurring in various food stuffs as a result of processing and cooking
- Explain the principles and current practices of processing techniques and the effects of processing parameters on product quality.
- Apply and incorporate the principles of food science in practical, real- world situations and problems.

UNIT- I: Food constituents

(20 Hours)

Constituents of Foods: Structure and properties of water and ice; Types of water; Water solution interactions; Phase transition of foods containing water; heat transfer during processing; relationship between viscosity and temperature; Water activity and food spoilage; Food dispersion: Colloidal system, and rheology of food dispersions; Structure, formation and stability of gels, sols, emulsion and foams.

UNIT- II: Carbohydrates and Sugars

(20 Hours)

Starch and Polysaccharides: Structure and composition of starch; Properties and characteristics of food starches; Effect of heat on food starch properties and the factors influencing gelatinization and dextrinization changes; Modified food starches;

Structure, composition and characteristics of non-starch polysaccharides such as cellulose, hemicelluloses, pectin and gums; Role of starch and non-starch polysaccharides in food and industrial applications;

Properties of sugars and sweeteners: Sugars, syrups, sugar alcohols, potent sweeteners, sugar products; Role of sweetener in food products.

UNIT-III Proteins and Enzymes

(16 Hours)

Proteins and Enzymes: Amino acid - types and their properties; Structure and composition of proteins; Classification and properties of proteins; Effect of heat on physio-chemical properties of proteins; Role of proteins in food products; Texturized vegetable protein, protein concentrate and isolates preparation methods;

Enzymes: Classification and its nature; Mechanism of action; Factors influencing enzyme activity; Role of enzymes in food products; Immobilized enzymes and its application in food industries.

UNIT- IV: Fats and Oil

(15 Hours)

Structure and composition of fat; properties of fat; Method of oil extraction; oil composition and

the properties; Refining of oil and winterization; Methods to determine the quality of fats and oil; Effect of processing on physico-chemical properties of fat/oil; Sources of fat and its shelf life; Quality changes in fat and oil during storage and prevention of fat spoilage; Role of fats and oil in food products; Fat substitutes.

UNIT- V: Pigments and Flavour

(19 Hours)

Pigments: Pigments classification, structure and properties; Effects of processing on stability of pigments in foods and the factors influencing stability of colours in foods; Role of colours in food products.

Flavours: Taste and nonspecific vaporous sensations, Flavour compounds in vegetables, fruits and spices; Flavours produced from fermentation and volatiles on foods; Effect of processing on food flavours; Role of flavours in food products.

Total Lecture Hours-90

COURSE OUTCOME:

The students should be able to,

1. Recognize the characteristics and behaviour of food constituents during processing
2. Understand the changes in physiochemical and functional properties of carbohydrates and sugars
3. Identify the chemistry underlying the properties and reactions of various proteins and enzymes
4. Understand the knowledge on fats and oil and to control their interactions reactions with foods.
5. Criticize the role of applications and uses of pigments and flavours in food product development.

TEXT BOOK(S)

1. Julians BO, 1985. Rice Chemistry and Technology, 2nd edition, American Association Chemists, St. Paul Minnesota, USA.
2. Potter N. and Hotch Kiss JH, 1996. Food Science. 5th edition, CBS Publishers.
3. Shakuntala Manay N. Shadaksharaswamy M. 2001. Food Facts and Principles. Second Edition, New Age International.
4. Srilakshmi B. 2005. Food Science. New Age International (P) Ltd, Publishers, New Delhi.
5. Srilakshmi B. 2002. Food Science. New Age International (P) Ltd, New Delhi.
6. Swaminathan M. 2003. Advanced Textbook on Food and Nutrition. Second Edition, The Bangalore Printing and Publishing Co., Ltd, Bangalore.

REFERENCE BOOK(S)

1. Arthey D. and Shurst PR, 1996. Fruit Processing. Blackie Academic and Professional, London.
2. Charley H. 1982. Food Science. Second Edition, John Wiley and Sons, New York.
3. Desrosier NW, and James N. 2007. Technology of food preservation. AVI Publishers.
4. Gopalan C. Ramasastry S.V. and Balasubramaniam SC. 2008. Nutritive Value of Indian Foods, National Institute of Nutrition, Hyderabad.
5. Manay S. and Shadaksharamasamy. Food: Facts and Principles. New Age International (P) Publishers, New Delhi.
6. Meyer LH. 1974. Food Chemistry. AVI Publishing Company. Inc,

E-RESOURCES

1. http://crystal.med.upenn.edu/sharp-lab-pdfs/sharp_EncLifeSci.pdf
2. <https://www.biotechnologynotes.com/food-biotechnology/food-chemistry/colloidal-systems-in-food-functions-types-and-stability-food-chemistry/14096>
3. <https://www.slideshare.net/NimishaK4/polysaccharides-in-foods>
4. <https://dravyagunatvpm.files.wordpress.com/2010/10/food-coloring-agents-pptnew.pdf>
5. <https://hmhub.me/classification-food-flavours-uses>.

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

Semester: I- CC-II: Biochemical Changes in Diseases

Ins. Hrs. /Week: 6

Course Credit: 5

Course Code: P23ND102

OBJECTIVES:

- To understand the metabolism of the nutrients and the associated diseases
- To know the organ specific function tests associated with the disease
- To comprehend the role of hormone in health.

UNIT- I: Disorders of carbohydrate metabolism (18 Hours)

Diabetes mellitus, glycosylated- haemoglobins and hypo-glycaemia, galactosemia and ketone bodies. Various types of glucose tolerance tests- Oral glucose tolerance, Intravenous glucose tolerance, cortisone stress glucose tolerance tests, multiple dose glucose tolerance tests Glycogen storage diseases- Glycogen storage diseases Type I -Von Gierke disease, Type II - Pompe's disease, acid maltase deficiency, Type III-Cori's disease, Type IV-Andersen's disease, Type V - McArdle's disease, VI GSD or Hers disease and Inborn errors of carbohydrate metabolism

UNIT- II: Protein and Fat metabolism (18 Hours)

Disorders of amino acid metabolism- Phenylalanemia, homocystinuria, tyrosinemia, MSUD, phenyl ketonuria, alkaptonuria, albinism and aminoaciduria. Disorders of nucleic acid metabolism- Disorders in purine/ pyrimidine metabolism. Disorders of fat metabolism- Dyslipidemia, Atherosclerosis, Coronary Artery Disease, Disorders of Lipoproteins and Steatorrhea.

UNIT-III: Evaluation of organ function tests (18 Hours)

Assessment and clinical manifestations of renal, hepatic, pancreatic, gastric and intestinal functions. Clinical importance of bilirubin .Enzymes of clinical importance, Enzymes of pancreatic origin and biliary tract.

UNIT- IV: Hormonal disturbances (20 Hours)

Protein hormones (anterior pituitary hormones, posterior pituitary hormones), Steroid hormones, Adreno Cortico Steroids, and Reproductive Endocrinology. Disturbances in thyroid function. Disorders of mineral metabolism: Hypercalcemia, Hypocalcemia, Hypophosphataemia and Hyper phosphataemia.

UNIT-V: Biochemical aspects of Haematology (16 Hours)

Disorders of erythrocyte metabolism, Hemoglobinopathies, Thalassemia Thrombosis and Anaemias. Detoxification in the body: enzyme system and phases of detoxification, regulation of detoxification.

Total lecture Hours-90

COURSE OUTCOME:

The students should be able to,

1. Gain knowledge on fundamental biochemistry related to health and better explain the clinical significance.
2. Evaluate the abnormalities which commonly occur with the deficiency disorders.
3. Evaluate critically clinical disorders by estimating biomarkers and determine various substances including substrates, enzymes, hormones, etc and their use in diagnosis and monitoring the diseases.
4. Review the information from each category of hormones and its related metabolic disorder.
5. Understand and create awareness on diseases/disorders of erythrocyte metabolism increasingly found in present day and also the detoxification mechanism.

TEXT BOOK(S)

1. Chatterjee MN and Rana Shinde, 2015. Textbook of Medical Biochemistry, Jaypee Brothers,
2. David A Bender and Shauna MC, Cunningham 2021. Introduction to Nutrition and Metabolism.
3. David L. Nelson and Michael M. Cox, Menninger 2008. Principles of Biochemistry 5th Ed WH Freeman and Company.
4. Gerhard Meisenberg and William H. Simmons 201 Principles of Medical Biochemistry: Publisher: Mosby
5. Sharma DC. 2017. Nutritional Biochemistry. CBS Publishers and Distributors private limited.

REFERENCE BOOK(S)

1. Allan Gaw, Michael Murphy, Robert Cowan, Denis O'Reilly, Michael Stewart, and James Shepherd, 2008. Clinical Biochemistry. An Illustrated Colour Text, 3rd Edition, Publisher: Churchill Livingstone.
2. Davidson LSP, MacLeod J. and Edwards CRW, Davidson's Principles and Practice of Medicine: A Textbook for Students and Doctors, 15th Edition, Publisher Churchill Livingstone
3. John W, Baynes and Marek Dominiczak 2010. Medical Biochemistry. Publisher: Mosby.
4. Richard Luxton, 2008. Clinical Biochemistry. Scion Publishing Limited.
5. Robert K, Murray Daryl K, Granner, Peter A, Mayes and Victor W, Rodwell 2012. Harper's Biochemistry. Publisher: Appelton and Lange.
6. Varley H. Gowenlock AH and Bell M. 1980. Practical clinical biochemistry. William Heinemann medical books limited, Vol. 1. 5th Edition.
7. William F. Ganong 2012. Review of Medical Physiology. Publisher: McGraw-Hill.

E-RESOURCES

1. <https://www.biologydiscussion.com/biochemistry/carbohydrate-metabolism/glucose-tolerance-test-types-utility-and-procedure/43370>.
2. <https://www.slideshare.net/ErhardRutashobya/disorders-amino-acids>.
3. https://www.iptsalipur.org/wp-content/uploads/2020/08/BP503T_PCOL_UNIT-IV.pdf.
4. <https://www.studocu.com/en-gb/document/university-of-nottingham/cardiovascular-respiratory-and-haematology/summaries/revision-notes-haematology-1-6/132921/view>.
5. <https://www.sciencedirect.com/science/article/pii/S2213231715000907>.

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



SUNDARAKKOTTAI, MANNARGUDI – 614016

(For the candidates admitted in the academic year 2023–2024)

DEPARTMENT OF NUTRITION AND DIETETICS

M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS

Semester: I-CP –I: Advances in Food Science Practical

Ins. Hrs. /Week: 6 Course Credit: 3

Course Code: P23ND103P

OBJECTIVES:

- To understand the sensory evaluation methods.
- To analyze the cooking quality of foods.
- To understand the scientific principles involved in food preparation.

PRACTICAL:

1. Starch- microscopic examination, gelatinization of starch, preparation of idli, dosai, appam, Chappathi , paratha and poori. Starch as binding and coating agent.
2. Pulse – effect of soaking (time and types of water), germination, Factors affecting the cooking quality of pulses.
3. Effect of acid and alkali. Effect of heat on pigments in vegetables and fruits
4. Fats-Smoking temperature, factors affecting absorption. Deep fat fried foods, preparation of pastries and Salad dressings.
5. Meat, fish and poultry. Changes in cookery. Tenderness, different methods of cooking
6. Coagulation of egg white and egg yolk. Boiled egg, poached egg, scrambled egg, custard, cake, emulsion, mayonnaise. Egg quality testing. Egg as binding and coating agent.
7. Principles involved in the preparation of tomato soup, cooking vegetables in milk, cheese setting of curds.
8. Sugar cookery, stages, preparation of fondant, fudge, caramel, pulled toffee and brittles. Preparation of syrup for gulab jamoon, coconut burfi, brittle
9. Evaluating the quality-acceptability of foods, subjective and objective methods

REFERENCE BOOK(S)

1. Avantina Sharma 2006. Textbooks of Food. International book science and technology distributing Company.
2. Krishna Arora 2011. Theory of Cookery. Frank Bros. and Co. publishers, Noida.
3. Parvinder.S.Bali., 2016. Food Production .Oxford University Press, Operations New Delhi.
4. Srilakshmi, B., 2015. Food Science. New Age International (P), Ltd, New Delhi.
5. Thangam E., 2015. Modern Cookery for Orient Blackswan Philip Teaching and the Trade Private Limited, New Delhi, Volume-I.

E-RESOURCES

1. <https://slideplayer.com/slide/4376430/>
2. http://epgp.inflibnet.ac.in/epgpdata/uploads/epgp_content/S000444FN/P000546/M011687/ET/1458042757et32.pdf
3. https://www.slideshare.net/ANSHIKA_SAXENA/cooking-methods-for-different-meat-cuts-103521626

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

Semester: I-EC –I: Applied Food Microbiology

Ins. Hrs. /Week: 5

Course Credit: 3

Course Code: P23NDE11A

OBJECTIVES:

- To understand the microorganisms related to food
- To know the beneficial effects of the microorganisms
- To evaluate the principles of sanitation
- To know the laws related to food safety

UNIT- I: Introduction to Microbiology

(15 Hours)

Structure, Growth and Multiplication of micro-organisms

Definition and History: Microscopy, General Morphology and Types of microorganisms Bacteria, Fungi, Algae, Yeast and Virus - Bacteriophage. Growth curve, batch and continuous culture, factors affecting growth: intrinsic factors, nutrient content, pH, redox potential, antimicrobial barrier and water activity; extrinsic factors: relative humidity, temperature and gaseous atmosphere.

UNIT- II: Microbiology of Foods, Benefits of Microbes

(15 Hours)

Contamination, spoilage and preservation of cereal and cereal products, sugar and sugar products vegetables and fruits, milk and milk products and canned foods, meat and meat products, egg and poultry, fish. Food fermentation- types; fermented food products.

UNIT- III: Food borne diseases

(14 Hours)

Food hazards, significance of food borne diseases, risk factors associated with food borne illness. Bacterial agents of food borne illness *Clostridium botulinum*, *clostridium per fringens*, *Escherichia coli*, *salmonella*, *shigella*, *vibrio* and *staphylococcus aureus*. Non-bacterial agents of food borne illness – Toxigenic fungi – Mycotoxins, ergotism and aflatoxins. Food borne viruses – Polio, Hepatitis and Gastroenteritis viruses.

UNIT- IV: Hygiene and sanitation

(16 Hours)

Importance of Personal hygiene of food handlers

General principles of hygiene – personal and environmental hygiene. Hygienic Practices in Handling and Serving Foods. Planning and implementation of training programme for health personnel.

Safety Measures: Safety in food procurement, storage, handling and preparation, control of spoilage, safety of leftover foods, disposal of food waste Control of Infestation and Cleaning Methods , Importance of pest control, various pests and their control measures, cleaning and sanitizing, need for efficient cleaning programme. Cleaning Agents, Equipments, and Methods to wash rinse and sanitize Food Contact Surfaces.

UNIT- V: Food Laws and Recent Concerns in Food Safety

(15 Hours)

International and National food laws, Essential Commodities Act (ECA). Indian Standards Institute (ISI), Bureau of Indian Standards (BIS), AGMARK, Prevention of Food Adulteration Act (PFA), Fruit

Products Order(FPO), Food Safety and Standards Bill 2005, Food and Agriculture Organization (FAO) , World Health Organization (WHO), Codex Alimentarius, World Trade Organization (WTO) , Joint Expert Committee for Food Additives (UN Food and Agriculture Organization and World Health Organization JECFA), Agricultural and Processed Food Products Export Development Authority (APEDA), ISO 22000 series. Hazard Analysis Critical Control Point (HACCP) - definition and principles.

Total Lecture Hour-75

COURSE OUTCOME:

The students should be able to,

1. Identify the types of microorganisms and explain the morphology of microorganisms
2. Classify beneficial effects and preservation of microbes in food products.
3. Determine the Food hazards, significance of food borne diseases, risk factors associated with food borne illness.
4. Evaluate the Importance of Personal hygiene of food handlers.
5. Compile the various food standards to maintain the quality of foods.

TEXT BOOK(S)

1. Adams MR, Moss MO. 2008. Food Microbiology. Third Edition, The Royal Society of Chemistry, Cambridge.
2. Pechkam GC. 1998. Foundations of Food Preparation. 3rd Edition, MacMillan Publishing Co., New Jersey.
3. Pelczar JR. 2014. Microbiology. McGraw Hill Education (India) Private Ltd.
4. Roday S. 1999. Hygiene and Sanitation in Food Industry. Tata McGraw Hill Publishing Co., New Delhi.
5. Sunetra Roday 2012. Food Hygiene and Sanitation with Case studies. Tata McGraw Hill companies.

REFERENCE BOOK (S)

1. Charley 1998. Hand Weaver Foods – A Scientific Approach. 3rd Edition, Prentice Hall Inc., New Jersey.
2. Fennema OR. 1996. Food Chemistry. 3rd Edition, Marcel Dekker Inc, New York.
3. Rajender Singh 2009. Food Microbiology and Food Processing. Arpit printer, New Delhi.
4. Sugandhar B. Apu R P. 2008. Food Microbiology. Daryaganj, New Delhi -2: Adhyayan Publishers and distributors.
5. Vijaya Ramesh K. 2009. Food Microbiology. New Delhi: New Age International Publishers.

E-RESOURCES

1. https://fac.ksu.edu.sa/sites/default/files/140_mbio-final_notes.pdf
2. <https://faculty.weber.edu/coberg/class/3853/3853%20mos%20and%20food%20spoilage%20notes.htm>
3. https://www.who.int/foodsafety/publications/foodborne_disease/Section_6.pdf
4. <https://nptel.ac.in/courses/102103015/pdf/mod5.pdf>
5. https://www.cartercenter.org/resources/pdfs/health/ephti/library/modules/finalmodule_food_borne_diseasediploma.pdf.

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DEPARTMENT OF NUTRITION AND DIETETICS

M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS

Semester: I- EC – I: Nutrition through Life Span

Ins. Hrs. /Week: 5 Course Credit: 3 Course Code: P23NDE11B

OBJECTIVES:

- Understand the importance of meal planning
- Comprehend the nutritional needs pertaining to different stages of life
- Know the nutrition related problems in life cycle & Plan diet for various age groups.
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UNIT- I: Principles of Meal Planning and Nutrition during pregnancy (15 Hours)

Basic principles of meal planning, balanced diet, RDA, food allowance for different age groups, factors affecting meal planning.

Nutrition during pregnancy – stages of foetal development, physiological changes, haematological changes, cardiovascular changes, respiratory changes, renal changes, gastrointestinal changes, metabolic changes, and weight gain in pregnancy, factors influencing the outcome of pregnancy, complications, nutritional requirements and diet planning for a pregnant woman.

UNIT- II: Nutrition for lactating women (15 Hours)

Nutrition for lactating women – Physiology and psychology of lactation, hormonal control, improving lactation performance- physical contact between mother and child, psychological support, good nutrition, galactogogues, colostrum – composition, composition of breast milk, factors affecting the volume and composition of breast milk, nutritional requirements of a nursing mother, diet planning, factors responsible for lactation failure.

UNIT- III: Nutrition in infancy and preschool age (15 Hours)

Nutrition in infancy – birth weight of infants, growth and development, milestones in development (only stages), immunization schedule, nutritional requirements of the infant, process of breast feeding, superiority of breast milk, advantages of breast feeding, comparison of human milk with cow's milk, artificial feeding, weaning and supplementary foods, problems in weaning, nutrition related health problems- diarrhoea, under nutrition, over nutrition/ obesity, preterm infants.

Nutrition in preschool age – growth and development, body composition, physical and motor development, language, cognitive development, emotional and social development, nutritional requirements, factors affecting nutritional status, food requirement, eating habits, low cost supplementary foods, nutrition related problems in childhood- under nutrition, micronutrient deficiencies, overweight and obesity, diet planning for the preschool child.

UNIT –IV: Nutrition in school age and adolescence (15 Hours)

Nutrition in school age – growth and development, changes in height and weight, changes in body composition, changes in social and psychological behaviour, nutritional and food requirement,

packed lunch – factors to be considered, sample menu, feeding problems, nutritional concerns- iron deficiency anaemia, malnutrition, diet plan for the school children.

Nutrition in adolescence - growth and development, – Physiological changes, sexual changes, psychosocial changes, dietary changes, body composition, nutritional requirements, nutritional problems- anaemia, iodine deficiency, calcium deficiency, zinc deficiency, obesity, eating disorders- bulimia nervosa, anorexia nervosa, binge eating, malnutrition due to early marriage, food habits and diet plan.

UNIT- V: Nutrition in adulthood and Nutrition in elderly (15 Hours)

Nutrition in adulthood – Physiological changes, reference man and reference women, activity classification, nutritional requirements of an adult man and women, body composition, nutrition and health issues- under nutrition, anaemia, iodine deficiency disorder, lifestyle related disorder, obesity, metabolic syndrome, hypertension, cardiovascular diseases, diabetes, cancer. Planning diet to suit different income levels.

Nutrition in elderly – definition of geriatrics, changes in body composition, physiological changes, psychological and socio- economic factors in relation to food intake, nutritional requirement, nutritional and health problems- under nutrition, obesity, osteoporosis, anaemia, diabetes, cardiovascular diseases, arthritis, constipation, Alzheimer disease, modification of diet in old age.

Total working Hours - 75

Course Outcome:

The students will be able to,

1. The knowledge on fundamental principles of meal planning and better explain the physiological and nutritional requirements for pregnancy
2. Retrieve, critically evaluate and apply scientific evidence for lactation & nutritional need for lactating mother.
3. Assess and compare diet and nutritional requirements relative to age, developmental and disease status of infancy and preschool
4. formulate a dietary intervention plan to address nutritional deficiencies or excesses according to the health needs of individuals relative to school age & adolescence, developmental and disease status
5. Understand and create awareness on nutritional need and requirements, diseases/disorders of adult and old age.

TEXT BOOK(S):

1. Gajalakshmi, R. 2014. Nutrition Science, CBS Publishers and Distributors, Pvt. Ltd.
2. Mahtab, S., Bamji., Kamala Krishnasamy., G.N.V., Brahmam, 2012. Text Book of Human Nutrition. Third Edition, Oxford and IBH Publishing Co. P. Ltd, New Delhi.
3. Raheena Begum, M. 2012. A Text Book of Foods, Nutrition and Dietetics.
4. Srilakshmi B. 2014. Dietetics, New Age International, New Delhi. Sterling publishers private Limited.
5. Swaminathan M. 2012. Advanced Textbook on Food and Nutrition, Vol. 1, Second Edition, Bangalore Printing and Publishing Co. Ltd, Bangalore.

REFERENCE BOOK(S)

1. Dietary Guidelines for Indians, 2013. ICMR, National Institute of Nutrition, Hyderabad.
2. Gopalan, C. Rama Sastri B.V. and Balasubramanian, 2014. Nutritive Value of Indian

Foods, NIN, ICMR, Hyderabad.

3. Gopalan,C. Rama Sastri,V.B. and Balasuramanian, S.C. 2016. Nutritive Value of Indian Foods, National Institute of Nutrition(ICMR), Hyderabad.
4. Krause, M.V. and Hunscher, M.A., 2014. Food, Nutrition and Diet Therapy, 14th Edition, W.B. Saunders.
5. Swaminathan, M. 2012. Handbook of Food and Nutrition, Bangalore Publishing Co Ltd, Bangalore.

E-RESOURCES:

1. <https://www.pdfdrive.com/nutrition-through-the-life-cycle-e187862410.html>
2. https://ocw.ui.ac.id/pluginfile.php/12209/mod_resource/content/1/Nutrition%20Through%20the%20Life%20Cycle%20by%20Judith%20E.%20Brown%20%2028z-lib.org%29.pdf
3. http://www.freebookcentre.net/medical_text_books_journals/nutrition_ebook_online_texts_download.html
4. <https://vdoc.pub/documents/nutrition-through-the-life-cycle-3rd-edition-6krnmbdqjeq0>

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DEPARTMENT OF NUTRITION AND DIETETICS

M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS

Semester: I-EC –II: Management in Food Service Operations

Ins. Hrs. /Week: 5 Course Credit: 3 Course Code: P23NDE12A

OBJECTIVES:

- Gain knowledge on the role of front office and housekeeping operations in hotels.
- Develop skills in food handling equipment and in space allocation of food plants.
- Compile the functions of front house and back house operations in food service

UNIT-I: Front Office

(15 Hours)

Scope of hospitality industry and classification of hotels Objectives and Functions of front office, Duties and qualities of front office staff and Importance of efficient front desk Room types and rates, categories, rate factor, room rate code and classification, special and miscellaneous rate policies. Basic reservation procedures, Individual and group reservations, on line reservations and check –in and check – out procedures and settlement of bills Linkages of Tourism and hospitality industry.

UNIT-II: Housekeeping

(15 Hours)

Objectives and Functions of housekeeping, Duties and qualities of housekeeping staff and their etiquettes, Importance of efficient house keeping department. Rules, procedures and principles of Daily, periodic and spring cleaning, List of standard room supplies. Cleaning equipment – types, selection, purchasing and its use, Cleaning agents – types and uses. Linen – types, storage, control of linen and bed making procedures Laundry – their functional design, selection, operation, use, care, maintenance and market trends , Pest and rodent control.

UNIT-III: Materials

(15 Hours)

Used Electrical and non –Electrical equipment Strength and limitation of material Is used. Finishes used for Equipment. Equipment –receiving, storage, pre-preparation , preparation, holding, serving, and dish washing area Fabrication of equipments and customized equipment Care and maintenance of equipment.

UNIT-IV: Kitchen Planning

(15 Hours)

Different types of kitchen, Finishes for walls and floors, Modular and customized kitchen Principles of designing, Space analysis at different work areas and work heights and storage heights for equipment Wiring and insulation.

UNIT-V: Engineering and Maintenance

(15 Hours)

Principles of maintenance, Importance of lighting, types of lighting, lighting fixtures, customized

lighting and ventilation Basic concepts of electricity, Safety and Security. Types of fire accident, fire prevention and control, security measures, first aid and pest control.

Total Lecture Hours - 75

COURSE OUTCOME:

The students should be able to,

1. Realize and understand more about each department in hotel industry
2. Understand the importance of housekeeping department
3. Comprehend different types of equipment applicable for use in food service operations
4. Understand the work areas, floor finishes, and kitchen layout at catering establishment
5. Compile the ways of handling pest control measures, disasters

TEXT BOOK(S)

1. Alline Ismail, Front office Operations and Management, 2002.
2. Sudhir Andrews, Textbook of Front office Management and Operations, third edition, 2008.
3. Matt, A. Casado, Housekeeping management, second edition, 2012
4. Thomas, J.A.Jones, Professional management of housekeeping operation, fifth edition, 2008.
5. Borsenik, F.D and Stutts, A.D, The Management of maintenance and engineering systems in the hospitality industry, John Wiley and sons Inc. 4th edition, 1997.

REFERENCE BOOK (S)

1. Palacio, P.J. Theis, M. West and Woods, Introduction to Food Service, Prentice Hall, 8th Edition, 1997.
2. Barrows, W.C., Powers, T. and Reynolds, D.R., Study Guide to accompany Introduction to Management in the Hospitality Industry, John Wiley and Sons, 2012.
3. Payne, P. Palacio, and Monica, Theis., Foodservice Management: Principles and Practices, Pub. Harlow : Pearson, 13th Edition, 2016.

E-RESOURCES

1. <https://www.uou.ac.in/sites/default/files/slm/HM-202.pdf>
2. <https://www.uou.ac.in/sites/default/files/slm/DHA-102.pdf>
3. <http://www.egyankosh.ac.in/bitstream/123456789/33508/1/Unit-16.pdf>
4. https://dgfasli.gov.in/sites/default/files/inlinefiles/rlikolkta_uncovered_pdis20192
5. https://gcwgandhinagar.com/econtent/document/1587705639Unit_IV_Frank_Moerman.pdf

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

SEMESTER-I- EC – II: Nutritional Assessment

Ins. Hrs. /Week: 5

Course Credit: 3

Course Code: P23NDE12B

OBJECTIVES:

- Develop skills in using epidemiologic concepts and methods to examine nutritional aspects of health and disease in population.
- Understand the definition and uses of epidemiology and appreciate its role in public health.
- Learn the techniques and tools to assess the nutritional status of a community.

UNIT- I: Assessment of Nutritional Anthropometry (15 Hours)

Introduction, Definition of Nutritional Status, Objective and Classification of Methods- Nutritional Anthropometry

Definition, Instruments, Standard of Reference, Age Assessment, Measurement Techniques, Weight, Linear Measurement, Circumferences, Soft Tissue Subcutaneous Fat, Anthropometric indicators.

UNIT- II: Clinical Examination and Dietary Survey (15 Hours)

Clinical Examination – Specific Deficiency, Signs that Need Further Investigation, Need not related to Nutrition, Grouping of Signs.

Different Types of Dietary Survey, General Survey, Special Survey, Comparison with Nutritional Requirement.

UNIT –III: Biochemical Tests and Biophysical Methods (15 Hours)

Definition of Biochemical tests, Collection of Samples. Test for Specific Nutrients – Protein, Vitamin A, D, Ascorbic Acid, Thiamine, Riboflavin, Niacin, Iron, Folic Acid, and Vitamin B12. Definition of Biophysical Method – Test for Physical Functions, Radiographic Examination, functional tests, Cytological Tests.

UNIT- IV: Nutritional Epidemiology in Public Health (15 Hours)

Introduction to Nutritional Epidemiology, Nutritional monitoring and surveillance, Community based epidemiological studies. Basic concepts and applications of Epidemiology in public health, Measurement of disease frequency, Person – Time exposure, Measures of Association and Impact of Health and Non Health related outcomes

UNIT –V: Indirect Nutritional Assessment (15 Hours)

Vital Statistics, Age Specific Mortality Rate, Morbidity and Cause of Specific Mortality, Ecological Factors, Methods of Obtaining Information, Background Data, General Survey Data, Special Survey, Conditioning Infection, Nutritionally Relevant infection, food production, food consumption, cultural factors, socio economic profile and medical and educational service.

Total Lecture Hours - 75

Course Outcome:

The students will be able to,

1. Evaluate critically the methodologies for nutritional assessment.
2. Describe the current state of epidemiological evidence for relationships of diet to the development of selected diseases.
3. Identify and apply the diagnostic tools in the evaluation of diseases.
4. Interpret and evaluate epidemiological data in relation to nutrition and health.
5. Create a database on nutritional assessment and epidemiology for target groups.

TEXT BOOK(S):

1. Mahtab, S. Bamji, 2016, Textbook of Human Nutrition, Oxford and IBM PublishingCo. Pvt. Ltd., New Delhi.
2. Rothman .K.J., 2016. Modern Epidemiology, Little Brown and Co, Bosten.
3. Srilakshmi, B. 2016, Nutrition Science, New Age International Pvt. Publishers, NewDelhi.
4. Willett, W 2013, Nutritional Epidemiology, 3rd Edition, Oxford University Press.

REFERENCE BOOK(S)

1. Beaton GH. 1994. Criteria of an adequate diet 8th edition. Philadelphia: Lea & Febiger .
2. Kennedy JF., 2000. Quality in nutritional assessment: the role of the Nutrition Nurse in the implementation of a nutritional assessment tool.
3. Park, K. 2015, Parks Textbook of Preventive and Social Medicine, Banarsi de Bhanot Publishers, Jabalpur.

E-RESOURCES

1. <https://www.biologydiscussion.com/biochemistry/carbohydrate-metabolism/glucose-tolerance-test-types-utility-and-procedure/43370>.
2. <https://www.slideshare.net/ErhardRutashobya/disorders-amino-acids>.
3. https://www.iptsalipur.org/wp-content/uploads/2020/08/BP503T_PCOL_UNIT-IV.pdf.
4. <https://www.studocu.com/en-gb/document/university-of-nottingham/cardiovascular-respiratory-and-haematology/summaries/revision-notes-haematology-1-6/132921/view>.
5. <https://www.sciencedirect.com/science/article/pii/S2213231715000907>.

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

Semester –I -NME – I: Community Nutrition

Ins. Hrs. /Week: 2

Course Credit: 2

Course Code:P23NMEND11

OBJECTIVES:

1. Gain knowledge about nutritional policies, programs and agencies involved in combating malnutrition.
2. Create awareness on improving health and nutrition of the community at large.
3. To describe the expanding role of the community dietitian and Health Economics status.
4. To understand and articulate nutrition problems and practices in the community.
5. To discuss and understand the various nutrition monitoring and surveillance methodologies and how they are used

Unit-I: Health Economics & Economics of Malnutrition (6 Hours)

Health Economics & Economics of Malnutrition – Introduction, Health Economics, Malnutrition and its Economic Consequences, Economics in Nutrition Economic Evaluation of Malnutrition

Unit-II: Nutritional Problems-I (5 Hours)

Nutritional Problems-I – Introduction, Protein Energy Malnutrition(PEM), Micronutrient Deficiencies. Nutritional Problems-II– Introduction, Vitamin Deficiencies, Fluorosis, Lathyrism

Unit-III: Assessment of Nutritional Status In Community Settings-I (7 Hours)

Assessment of Nutritional Status In Community Settings-I – Introduction, Nutritional Assessment - Goals and Objectives, Methods of Nutritional Assessment, Indirect Assessment of Nutritional Status, Direct Assessment of Nutritional Status, Nutritional Anthropometry, Methods of Assessing Nutritional Status in Individuals, Methods of Assessment of Nutritional Status of Community.

Assessment of Nutritional Status In Community Settings-II – Introduction, Clinical Assessment, Biochemical Assessment, Dietary Assessment

Unit-IV: Nutrition Monitoring & Nutrition Surveillance (6 Hours)

Nutrition Monitoring & Nutrition Surveillance – Introduction Monitoring, Nutrition Monitoring, Nutrition Surveillance System(NSS) , Nutrition Policy & Programmes – Introduction, National Nutrition Policy(NNP)Nutrition Programmes - Anemia, Iodine and Malnutrition Integrated Child Development Services (ICDS) Programme, Nutrient Deficiency Control Programmes, Supplementary Feeding Programmers, Food Security Programmes, Self Employment and Wage Employment Schemes

Unit-V: Strategies To Combat Public Nutrition Problems (6 Hours)

Strategies To Combat Public Nutrition Problems Introduction, Immunization, Supplementary Feeding Programmes, Improving the Quality of Food Produced by Genetic Approaches, Clean Water, Sanitation and Street Foods and Strategies to Improve the Street Foods, Improving Food and Nutrition Security, Fortification of Food. Conceptualization & The Process of Nutrition Education – Introduction, Understanding the Need and Scope of Nutrition Education, Importance of Nutrition Education, Potential Challenges and the Constraints of Nutrition Education, Theories of Nutrition Education, Process of Nutrition Education Communication.

Total Lecture Hours - 30

Course Outcome:

1. Acquire the concept of Health Economics, deficiency diseases Nutritional Assessment, Nutrition Monitoring & Nutrition Surveillance, Nutrition Policy & Programmes and Nutrition Education.
2. Find out the scope, need, importance and role of Health Economics, Nutritional Assessment, Nutrition Monitoring & Nutrition Surveillance, Nutrition Policy & Programmes and Nutrition Education to promote the health status of the community.
3. Identify the causes for deficiency diseases and focus the methods of assessing nutritional status, nutrition education, intervention Programmes.
4. Assess the consequences of deficiency diseases and nutritional intervention programmes to promote the overall development of the community.
5. Predict the nutritional problems and develop the nutrition programmes and strategies to overcome the existing nutritional problems.

TEXTBOOK(S)

1. Maity SP. 2016. Pharmacology for Second Professional Students. Books and Allied Pvt.Ltd.
2. Robinson CH. 1987. Normal and Therapeutic Nutrition. Oxford and IBH, publishing Calcutta, Bombay.
3. Shils EM, Olson AJ, and Shike MC. 1994. Modern Nutrition in Health and Diseases. Vol.II, Lea and Febiger Philadelphia.
4. Srilakshmi B. 2002. Dietetics .New Age International, New Delhi.
5. Swaminathan M. 1995. Essentials of Food and Nutrition. Vol.I and II, Ganesh and Company, Madras.

REFERENCE BOOK(S)

1. Wadhwa A and Sharma S (2003). Nutrition in the Community- A textbook. Elite Publishing House Pvt. Ltd. New Delhi.
2. Park K (2011). Park's Textbook of Preventive and Social Medicine, 21st Edition. M/s Banarasisdas Bhanot Publishers, Jabalpur, India.
3. Jelliffe DB, Jelliffe ERP, Zervas A and Neumann CG (1989). Community nutritional assessment with special reference to less technically developed countries. Oxford University Press. Oxford.
4. WHO (2006). Child Growth Standards: Methods and development: height- for-age, weight- for-age, weight-for-length, weight-for-height and body mass index-for-age
5. Gupta, MC. And Mahajan BK. (2003) Textbook of Preventive and Social Medicine 3rd Ed Jaypee brothers, Medical Publishers (p) Ltd.

E-RESOURCES:

1. <https://www.who.int/health-topics/malnutrition>
2. Mohfw.nic.in/NRHM/NIDD
3. www.nrhmorissa.gov.in/NIDDCP.html
4. www.Scripts.mit.edu

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

SUNDARAKKOTTAI, MANNARGUDI – 614016

(For the candidates admitted in the academic year 2023–2024)



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

Semester: II- CC-III: Advanced Dietetics

Ins. Hrs. /Week: 6

Course Credit: 5

Course Code: P23ND204

OBJECTIVES:

- To understand the role of dietitian and to Gain knowledge about the principles of diet therapy and different therapeutic diets
- To develop aptitude for taking up dietetics as a profession.
- To provide comprehensive knowledge on principles and planning of therapeutic diets and acquire knowledge on nutritional needs of normal and sick persons.

**UNIT- I: Nutritional Screening, Nutritional Intervention and Special Feeding Techniques
(20 Hours)**

Nutritional screening/ assessment and identification of nutritional problem. Nutritional Intervention and Diet Modification based on interpretation of Patient data- clinical, biochemical and other relevant data. Role of dietician in the hospital and community- Types of dietician, education and personal qualifications- Professional ethics and obligations Feeding the patients – Psychology of feeding the patients, assessment of patient's needs. Routine hospital diets- regular diet, soft diet, full fluid diet, clear fluid diet Special feeding methods- Parenteral and enteral nutrition.

UNIT- II: Diet in fevers and Disease of Gastrointestinal tract (20 Hours)

Causes, symptoms, dietary management for febrile conditions- Acute, chronic and recurrent fevers- typhoid, influenza, rheumatic fever, tuberculosis, malaria and poliomyelitis. Causes, symptoms, dietary management of Gastrointestinal tract -Chron's, Celiac Disease, Irritable bowel syndrome (IBS), Acid Reflux (Gastroesophageal reflex (GER) and Gastroesophageal reflex diseases (GERD) in Infants, Children and adult, Zollinger-Ellison Syndrome (peptic ulcer with pancreatic cancer) and Hirschsprung disease (constipation - surgery)

UNIT- III: Hepato /Biliary Diseases and Diseases of Excretory System (17 Hours)

Causes, symptoms, dietary management of Disease of liver and Gall bladder- Hepatitis, Leptospirosis (liver failure) Amoebiasis (hepatomegaly, liver abscess) cirrhosis, cholecystitis, cholelithiasis, pancreatitis. hepatocellular carcinoma, Gilbert's syndrome, and polycystic liver disease. Causes, symptoms, dietary management of renal disorders acute and chronic glomerulonephritis, nephrosis, nephrosclerosis, uremia, nephrolithiasis. Kidney Cancer.

UNIT- IV: Diet in Metabolic disorders, and Cancer (15 Hours)

Causes, symptoms, dietary management of Diabetes mellitus, obesity, underweight, hypothyroidism and hyperthyroidism, gout, arthritis and osteoporosis.

Nutritional Care in Inborn Errors of Metabolism- Nutritional care for the patients with inborn errors of metabolism- prognosis, symptoms, dietary management - phenylketonuria, galactosemia. Pathogenesis, aetiology, types, grading, symptoms, treatment and dietary modification for cancer.

UNIT- V: Life Style Disorders, Diet in food allergy and Palliative Care (18 Hours)

Causes, symptoms, dietary management of Obesity and eating disorders (Anorexia, and Bulimia nervosa), Dementia and Alzheimer, Polycystic Ovarian Diseases (PCOD) and Polycystic Ovarian Syndrome (PCOS).

Cardio vascular diseases – Hypertension, atherosclerosis, hyperlipidemia, hypercholesterolemia, acute and chronic cardiac diseases, congestive cardiac failure

Diet in food Allergies – food allergy and intolerance – mechanism, factors influencing, symptoms, tests for allergy, nutritional care and elimination diet. Basics of palliative care- definition, types, objectives and principles of palliative care.

Total Lecture Hours-90

COURSE OUTCOME:

The students should be able to,

1. Understand the nature and scope of Nutrition care process and Therapeutic Nutrition; and identify circumstances where diet may need modification.
2. Infer knowledge on aetiology, incidence, nature, clinical symptoms, diagnosis, and medical and dietary management of fevers and gastrointestinal tract.
3. Apply appropriate knowledge on dietary adjustments that should be made for people with hepatobiliary, disorders and to gain experience in preparing and serving therapeutic diet for person suffering from Diseases of excretory system.
4. Deliberate and evaluate the dietary requirements of a client or patient suffering from metabolic disorders, and Cancer and to identify responsible options for diet planning in response to the situation.
5. Exemplify the dietary requirements of a client or patient suffering from Diet in food allergy and Palliative Care and to identify responsible options for diet planning in response to the situation.

TEXT BOOK(S)

1. Maity SP. 2016. Pharmacology for Second Professional Students. Books and Allied Pvt.Ltd.
2. Robinson CH. 1987. Normal and Therapeutic Nutrition. Oxford and IBH, publishing Calcutta, Bombay.
3. Shils EM, Olson AJ, and Shike MC. 1994. Modern Nutrition in Health and Diseases. Vol.II, Lea and Febriger Philadelphia.
4. Srilakshmi B. 2002. Dietetics .New Age International, New Delhi.
5. Swaminathan M. 1995. Essentials of Food and Nutrition. Vol.I and II, Ganesh and Company, Madras.

REFERENCE BOOK(S)

1. Antia FP, Philip Abraham, 1998. Clinical Dietetics and Nutrition. Oxford, University Press, New Delhi.
2. Cooper Et. Al., 1963. Nutrition in health and disease. 4th edition, Pitman Medical Publishing Co.
3. Davidson Passmore P, and Breck JP. 1986. Human Nutrition and Dietetics. The English Language Book Society, Livingstone.
4. Gopalan C, Ramasastri BV, and Balasubramaniam SC. 2010. Nutritive value of Indian Foods National Institute of Nutrition. Hyderabad.
5. Krause MV, Horsch MA. 1993. Food Nutrition and Diet Therapy. W.B. Saunders Company, Philadelphia.
6. Mahan LK, Raymond JL, and Krause's 2016. Food and the Nutrition Care Process (Krause's Food and Nutrition Therapy). New York.

E-RESOURCES

1. http://llnutrition.com/mod_III/TOPI3/m31.htm#:~:text=Nutritional%20screening%20is%20a%20rapid,patients%20at%20risk%20of%20malnutrition.
2. https://youtu.be/_dcwRBh-5iM
3. <https://youtu.be/bVjFP8LTa6c>
4. <https://youtu.be/JvLykvVV2sk>
5. <https://youtu.be/2aCT4Kk2P5U>
6. <https://youtu.be/5UBhRgRyxi8>
7. https://www.researchgate.net/publication/41651190_Fancy_yarns_-_An_appraisal
8. <https://link.springer.com/content/pdf/10.1186/s40691-015-0027-8.pdf>

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



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

Semester: II- CC-IV: Applied Human Physiology

Ins. Hrs. /Week: Week: 6

Course Credit: 5

Course Code: P23ND205

OBJECTIVES

- Advance their understanding of some of the relevant issues and topic of human physiology.
- Enable the students to understand the integrated functions of all systems and the grounding of nutritional science in physiology.
- Understand alterations of structure and functions in various organs and systems in diseases conditions.

Unit- I: Cell Structure and Function

(18 Hours)

Cell Structure and Function - Levels of cellular organisation and Function- Organelles, tissues, organs and systems- Cell membrane , transport across cell, membrane and intercellular communication, Regulation of cell multiplication. Nervous System - Structure and function of neuron, conduction of nerve impulse, synapses, role of neurotransmitters Organisation of central nervous system, structure and functions of brain, spinal cord, afferent and efferent nervous, blood brain barrier, CSF, Hypothalamus and its role in various body functions- obesity, sleep, memory.

Unit –II: Endocrine system

(18 Hours)

Endocrine system-Endocrine glands - Structure, functions, role of hormones, regulations of hormonal secretion. The neuro endocrine axis, disorders of endocrine glands, emphasis of physiology on physiology of diabetes and stress hormone. Sense Organs - Structure and function Secretory, Digestive and Absorptive functions, role of liver, pancreas and gall

Unit-III: Digestive System

(18 Hours)

Digestive System- Structure and function- Role of lungs in the exchanges of gases, Transport of Oxygen and CO₂, Role of hemoglobin and buffer systems, Cardio- respiratory response to exercise and physiological effects of training. **The Circulatory System** - Structure and function of heart and blood vessels, Regulation of cardiac output and blood pressure, heart failure, hypertension. Blood formation, composition, blood clotting and haemostasis: Formation and function of plasma protein, Erythropoiesis, Blood groups and histocompatibility indices. Use of blood for investigation and diagnosis of specific disorders, Anemia

Unit –IV: The excretory system

(18 Hours)

The excretory system - Structure and function of Nephron, Urine formation, role of kidney in maintaining P^H, pf blood. Water, electrolyte and acid base balance, diuretics. The Musculo- Skeletal system- Structure and function of bone, cartilage and connective tissue, Disorders of the Skeletal system. Types of muscles, Structure and Function

Unit–V Immune System

(18 Hours)

Immune System - Cell mediated and humoral immunity, Activation of WBC and production of antibodies , Role in inflammation and defence. **Reproduction** - Menstrual cycle, Spermatogenesis, physiological changes in pregnancy.

Total Lecture Hours - 90

COURSE OUTCOME:

The students will be able to,

1. Know the role and importance of circulatory system and its regulation in body function
2. Gain knowledge on mechanism of digestive system, respiratory and excretory function and their role in body regulation.
3. Understand the importance of endocrine system and its role in biological process.
4. Comprehend the reproductive system.
5. Gain knowledge about nervous system and sense organs.

TEXT BOOK(S)

1. Arumugam N.Mariakuttikan A.2016. Animal Physiology. Saras Publication. ISBN: 9789382459873, 9382459871.Nagarcoil.
2. Chatterjee CC .2004. Human Physiology. Volume I, Medical Allied Agency, Kolkata
3. Chatterjee CC. 2004. Human Physiology. Volume II, Medical Allied Agency, Kolkata.
4. Sembulingam K. 2000. Essentials of Medical Physiology.Jaypee Brothers MedicalPublishers (P) Ltd, New Delhi.
5. Subramanyam, Sarada . 2018. Textbook of Human Physiology. S.Chand and companyLtd,New Delhi.

REFERENCE BOOK(S)

1. Best and Taylor.1992. The Physiological Basis for Medical Practice, Saunders Company.Canada.
2. Chaudhri K. 1993. Concise Medical Physiology. New Central Book Agency Parentra ltd,Calcutta, Churchill Livingston, NewYork.
3. Dr.Goyal R, Dr.Natvar M, Patel M.2018.Practical Anatomy and Physiology.B.S.Shah Prakashan.Gujarat.
4. Murugesh N.2014.Anatomy and Physiology.Sathya Publishers, Madurai
5. Waugh Anne Ross. 2003. Anatomy and Physiology in Health and Illness. Reed Elsevier IndiaPrivate Limited, New Delhi.

E - RESOURCES

1. <https://nptel.ac.in/content/storage2/courses/122103039/pdf/mod3.pdf>
2. <https://lba.ku.edu/sites/lba.drupal.ku.edu/files/docs/Courses/chapter%204d.pdf>
3. <https://globex.coe.pku.edu.cn/file/upload/201807/05/092547601064.pdf>
4. <https://courses.lumenlearning.com/suny-ap2/chapter/anatomy-and-physiology-of-the-female-reproductive-system/>
5. <https://www.khanacademy.org/science/health-and-medicine/human-anatomy-and-physiology>
6. <https://youtu.be/RHW-KDDKypo>
7. https://youtu.be/XXBiVBO_Jws
8. <https://youtu.be/S1hdq8ugaQY>

**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: II -CP-II: Advanced Dietetics Practical

Ins. Hrs. /Week: 6

Course Credit: 3

Course Code: P23ND206P

OBJECTIVES:

- To develop skills in planning and preparing therapeutic diets.
- To learn techniques in diet counselling and feeding of patients.
- To Plan and prepare appropriate diets for therapeutic conditions.

Advanced Dietetics Practical:

1. Practical experience in weighing and measuring food items
2. Preparation of clear and full liquid diets and soft diet
3. Planning and preparing diets for:

- **Febrile conditions:** Preparation of diets in acute, chronic and recurrent fevers.
- **Conditions/ Disease of Gastrointestinal tract:** Preparation of diets in Irritable Bowel Syndrome, GERD, Zollinger- Ellison Syndrome (peptic ulcer with pancreatic cancer), Hirschsprung disease (constipation - surgery).
- **Hepato /Biliary Diseases and Diseases of Excretory System-** Disease of liver and Gallbladder- Hepatitis, cirrhosis, cholecystitis, cholelithiasis, pancreatitis. hepatocellular carcinoma, Gilbert's syndrome, Polycystic liver disease.
- **Renal disorders-** acute and chronic glomerulonephritis, nephrosis, nephrosclerosis, uremia, nephrolithiasis. Kidney Cancer
- **Diet in Metabolic disorders, and Cancer-** Diabetes mellitus, obesity, underweight, hypothyroidism and hyperthyroidism, gout, arthritis and osteoporosis, Nutritional Care in Inborn Errors of Metabolism, cancer
- **Life style disorders/diseases:** Anorexia and Bulimia nervosa Alzheimer, Polycystic Ovarian Diseases(PCOD)/ Polycystic Ovarian Syndrome(PCOS), Congestive heart failure

TEXT BOOK(S)

1. Frances Sienkiewicz Sizer 2009. Nutrition-concept and controversies .Peter VIII edition, Marshall Publishers.
2. Passmore DP, Break JP. 2008. Human Nutrition and Dietetics. EnglishLanguage Book Society, Livingston.
3. Shils EM, Olson AJ.and Shike MC. 1994. Modern Nutrition in Health and Diseases. Vol. II, Lea and Febriger Philadelphia.
4. Srilakshmi B. 2002. Dietetics. New Age International, New Delhi.

5. Swaminathan M. 1995. Essentials of Food and Nutrition. Vol. I and II, Ganesh and Company, Madras.

REFERENCE BOOK(S)

1. Burtis J, Davis J and Martin S. 2010. Applied Nutrition and Diet Therapy. WB Saunders Co, Philadelphia.
2. Garrow J, James WPT. and Ralph A. 2008. Human Nutrition and Dietetics. Churchill Livingstone.
3. Garrow J, James WPT, Ralph A. 2009. Human Nutrition and Dietetics. 10th Edition, Harcourt Publishers.
4. Jame B. Morgan 2011. Nutrition in early life. John Wiley and Son Publishers.
5. Lori A. Smolin 2007. Nutrition, Science and applications. 3rd edition, Sunders College publisher.
6. Mahan LK. and Stump SE. 2015. Krause's Food Nutrition and Diet Therapy. 11th Edition, W.B. Sunders Co.
7. Rose MS. 2007. A Laboratory handbook for Dietetics. 4th edition, Mc Millan publishing
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E-RESOURCES

1. http://nutrition.com/mod_III/TOPI3/m31.htm#:~:text=Nutritional%20screening%20is%20a%20rapid,patients%20at%20risk%20of%20malnutrition.
2. https://youtu.be/_dcwRBh-5iM
3. <https://youtu.be/bD8KCcipGaY>
4. https://www.researchgate.net/publication/320299103_Inborn_Errors_of_Metabolism

**SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
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(For the candidates admitted in the academic year 2023-2024)

DEPARTMENT OF NUTRITION AND DIETETICS

M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS

Semester- II- EC- III: Functional foods and Nutrigenomics

Ins. Hrs. /Week: 5

Course Credit: 3

Course Code: P23NDE23A

OBJECTIVES:

- To understand the basic principles of packaging.
- To use the technique in the processing, preservation, distribution and promotion of food products.
- To familiarize themselves with the available packaging materials, to understand how to link materials to safety, quality and shelf life of foods.
- To compare packaging materials to each other and understand their differences and similarities.

UNIT-I: Functional Foods and Nutraceuticals

(15 Hours)

Definition and History-Functional foods, traditional foods, nutraceuticals-teleology, designer foods and pharma foods, history of functional foods, components of functional foods, stages involved in development of functional foods.

UNIT-II: Categorization of Nutraceuticals

(15 Hours)

Classification - Based on food source, mechanism of action and chemical nature- isoprenoid, phenolic substances, fatty acids and structural lipids, terpenoids –saponins, tocotrienols and simple terpenes, carbohydrates and amino acid based derivatives, isoflavones.

UNIT-III: Functional Foods and Nutraceuticals of Microbial Origin

(15 Hours)

Functional foods of Microbial origin- Human gastrointestinal tract and its microbiota, functions, probiotic microflora and functions- Lactobacillus and Bifidobacterium, concept of probiotics and prebiotics with examples, role of probiotics in health and disease, spirulina as bioactive component.

UNIT – IV: Functional foods and Nutraceuticals in Health and Disease

(15 Hours)

Sources and role of Functional foods and Nutraceuticals - Role of functional foods and Nutraceuticals in diseases, concept of dietary supplements, phytochemicals, phytosterols, omega 3 and 6 fatty acids, dietary fiber, role of nutraceuticals in health and disease management – diabetes mellitus, hypertension, CVD, cancer; non essential nutrients as dietary supplements, FOSHU foods.

UNIT- V: Nutrigenomics

(15 Hours)

Basic concepts of Genomics and Functional Genomics, Proteomics, Metabolomics, Epigenetics and Personalized nutrition. Nutrients and gene expression with its regulation. Scope and Importance to Human Health and Industry, Transporter gene polymorphisms -interaction with effects of macro and micronutrients in humans. The intestinal microbiota - role in nutrigenomics. Nutrigenomics approaches to unraveling physiological effects of complex foods.

Modifying Disease Risk through Nutrigenomics

Modulating the risk of diseases through Nutrigenomics – Cardiovascular disease, Diabetes, Cancer, Inflammatory bowel disease, Obesity.

Total Lecture hours - 75

TEXT BOOK(S)

1. Bamji (2003), Textbook of Human Nutrition, 3rd edition, Oxford & IBH Publishing Co Pvt Ltd, New Delhi
2. Srilakshmi.B (2012), Nutrition Science, 4th edition, New Age International Pvt Ltd.

REFERENCE BOOK(S)

1. Webb G.P (2006), Dietary Supplements and Functional Foods, Blackwell Publishing Ltd, New York.
2. Tamine. A (2005), Probiotic Dairy Products, Blackwell Publishing Ltd, United Kingdom.
3. Pomeranz, Y (2000). *Food Analysis Theory and Practice*. CBS Publishers & Distributors Pvt.Ltd, New Delhi.
4. Edward.R, Farnworth (2008). *Handbook of Fermented Functional Foods*. CRC Press. New York.
5. Medwin Gale (2018). *Nutrigenomics*. Random Publications, New Delhi.
6. Wildman, E.C Robert (2007). *Handbook of Nutraceuticals and Functional Foods* (2nd ed). CRC Press.

E- Resources

- 1 <https://www.nutritionociety.org/blog/nutrigenomics-basics>
- 2 https://faculty.ksu.edu.sa/sites/default/files/lectute_1_457_0.pdf
- 3 <https://egyankosh.ac.in/bitstream/123456789/38355/1/Uint-9.pdf>



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

SUNDARAKKOTTAL. MANNARGUDI - 614016.

(For the candidates admitted in the academic year 2020-2021)

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

SEMESTER-II- EC- III: Interior Design

Ins. Hrs. /Week: 5 Course Credit: 3 Course Code:P23NDE23B

OBJECTIVES:

- Increase ability to solve personnel management problems.
- Recognise the importance of wise use of resources to achieve one's goals.
- Knowledge and understanding of the principles and methods of creating beautiful interiors.
- Learn skills in using the basic principles of art at home, in commercial situations and other occasions.
- Apply theoretical knowledge interior decoration to practical situations.

UNIT – I: Elements involved in management process (15 H ours)

Elements involved in management process – planning, controlling and evaluating. Decision making – Habitual Vs Conscious decisions making, individual and group decisions – Factors aiding in good decision. Goals and values – Their relation to decision making. Resources – Human and non-human resources – Utilization of resources to achieve family goals.

UNIT –II: Family Income and budget (15 Hours)

Family Income – Money income and real income, Source of income. Family expenditure, Family budget – Main items, Budget studies, financial records of the house hold, their purpose and nature.

UNIT- III: Elements of Design (15 Hours)

Interior Decoration – Place of art in everyday life. Good taste and the consumer. Design: Elements of Design. Types of designing, characteristics of good design. Principles of design: Harmony, Proportion, Balance, Emphasis, Rhythm, Colour – Qualities of colour. Hue, value, Intensity colours and emotions, Advancing and receding colours, Effect of colours upon each other, Effect of coloured lights upon coloured materials. Using design and colours in interior decoration.

UNIT- IV: Furniture Arrangement (15 Hours)

Selection, arrangement and care of furniture in the living area, Dining area, study area, and bedroom. Furnishings - selection use and care of furnishing materials, Draperies and curtains, floor coverings.

UNIT – V Accessories and Home illumination (15 Hours)

Accessories – Selection, use and care of accessories, Picture and wall hanging, Flower arrangement, other art objects. Home illumination – Functions, Factors to be considered types of illumination, planning for illumination for various areas.

Total lecture Hours-75

COURSE OUTCOME:

The students will be able to,

1. Understand the role of elements of design .
2. Gain knowledge about the fundamental concepts in income.
3. Understand the functioning of the drawing commands and tools in drawing in designing Interiors.
4. Develop confidence in drafting drawings related to Interior objects, furniture and Interior plans.
5. Gain knowledge about the accessories and illumination

TEXT BOOK(S):

1. Devadas RP. 2010.Text Book of Home Science. Macmillan Publishers India. Ltd, New Delhi,
2. Goldstein H and Goldstein V.1966Art in everyday Life. Macmillan and Company, NewYork,
3. Graig HT.and Rush CH. 1965. Homes with character. Health and Company, Boston.
4. Nickell P, and Dorsey JM. 1960. Management in Family Living. John Wiley and Sons, Inc,New York.
5. Roy Day, 1976. All About Decorating your home Hamlyn, London,
6. Rutt AH. 1961. Home Furnishings. John Wiley and Sons, New York.

REFERENCE BOOK (S):

1. Alexander MJ.1972. Designing Interior Environment. Har court Brace Jauaroui Inc., NewYork.
2. Evans HM.1976. Man the Designer. The Macmillian Co., New York,
3. Laver DA. 1979. Design Basis. Holt Rinchart Winston, New York,
4. Sherwood, R.F. 1972.Homes Today and Tomorrow. Publisher: Chart Bannet Peoric, Illinois
5. Stepot DD. 1979.Introduction to Home Furnishing. The Macmillan Company, New York.
6. Sulahria, J. and Diamond.R.1977 .Inside Design creating your environment. Carfield Press,Sanfrancisco.

E-RESOURCES:

1. <https://www.epi.org/publication/bp165/>
2. https://mrspinteriordesignclass.weebly.com/uploads/3/7/7/6/37768995/fs_housing_living.pdf
3. <http://www.uvm.edu/~pmardeus/theat/designprinciples.pdf>
4. <http://i-rep.emu.edu.tr:8080/jspui/bitstream/11129/251/1/Erguden.pdf>
5. <https://www.toptal.com/designers/ui/principles-of-design>
6. http://epgp.inflibnet.ac.in/epgpdata/uploads/epgp_content/S001827/P001833/M029453/ET/15245669636.27Q1.pdf
7. <https://www.ideals.illinois.edu/bitstream/handle/2142/28106/flowerarranging1154culb.pdf?sequence=1>
8. <https://core.ac.uk/download/pdf/249334603.pdf>
9. <https://interiordesignstudent.com/study-notes/colour-in-interior-design/>

**SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
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SUNDARAKKOTTAL, MANNARGUDI – 614016

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

Semester –II- EC – IV: Hospital Administration

Ins. Hrs. /Week: 5 Course Credit: 3 Course Code: P23NDE24A

OBJECTIVES:

- To gain knowledge in hospital functions and administration.
- To acquire skills in maintaining medical records.
- To understand the management of resources in hospitals.

UNIT-I: Hospital based health care and its changing scenario (15 Hours)

Effects of globalization on health care, concepts of corporate hospitals in developing countries, infrastructure and layout of an ideal corporate hospital, functioning of modern hospital and changing needs of patients, hospitality in hospital care.

UNIT-II: Patient Care Services (15 Hours)

Patient Admission – Purpose, Policy and Procedure, Discharge - Process, Discharge Protocol and Discharge Summaries, Cafeteria and Dietary services, Front Office Services, Housekeeping Services, Blood Bank, Diagnostic services, Laboratory – scope, equipment, reagents and materials, Physiotherapy, Pharmacy – Objectives, Functions and Scope, Operation theatre, Outpatient ward admission and Inpatient ward admission.

UNIT-III: Principles of Hospital management (15 Hours)

Managerial activities for effective hospital functioning, duties and responsibilities of hospital managers, qualities of office managers and effective inter and intra departmental co-ordination. National Accreditation Board for Hospital (NABH) standards.

UNIT-IV: Marketing and Material management (15 Hours)

Human Resource Management– Process, Performance Appraisal System, Managerial accounting and Financial Management, Material management – Objectives and Process and Inventory management – Systems and Methods, Marketing principles and methods. Basics of Computer: Components of computer, Knowledge about computer software and programmes commonly used in healthcare sector.

UNIT-V: Management of dietary units (15 Hours)

Management of dietary department- diet planning for hospital diets, purchasing, storage, quantity food production, serving to patient- tray and trolley service, plate waste management, washing and garbage disposal.

Total Lecture Hours- 75

COURSE OUTCOME:

The students should be able to,

1. Identify the functions of modern hospital.
2. Illustrate the infrastructure and layout of modern hospital.
3. Classify various patient care services administered in hospitals.
4. Determine the managerial activities of hospital Functioning
5. Evaluate the significance of marketing, materials, and financial management in hospitals. Integrate the importance of hospitality services for patient support.

TEXT BOOK(S)

1. Dr. D.K.Sharma & Goyal R C (2017). Hospital Administration and Human Resource Management, Phi Learning, New Delhi.
2. Francis C M, (1995). Hospital Administration, Jaypee Brothers Medical Pubs, New Delhi.
3. Llewellyn Davis R and Macaulay H M C (1995). Jaypee Brothers Publications, New Delhi.
4. S.L.Goel & Dr.R.Kumar, (2007). Hospital Administration and Management
5. Sue Grossbauer, RD (2001), Managing Food Service Operations, A System Approach for Healthcare and Institutions, Kendall/Hunt Publishing Company, Iowa, USA.

REFERENCE BOOK(S)

1. Goel S L, (2009). Health Care System and Hospital Administration, Vol.7, Deep Publications Pvt.Ltd.
2. Jan Abel Olsen, (2009). Principles in Health Economics and Policy Oxford University Press.
3. Mohinder Chand, (2009). Managing Hospitality Operations, 1st Edition, Anmol Publications Pvt.Ltd. New Delhi.
4. Savitha Sharma, (1996), Hospital Management, Commonwealth Publishers, New Delhi.
5. Sherry Glied and Peter Smith, (2011). The Oxford Handbook of Health Economics.

E-RESOURCES

1. <https://www.ibef.org/download/Healthcare-January-2017.pdf>
2. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1299207/>
3. https://www.who.int/hiv/pub/imai/om_5_infrastructure.pdf
4. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1208931/>
5. https://www.researchgate.net/publication/259389319_hospital_administration

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DEPARTMENT OF NUTRITION AND DIETETICS

M.Sc., FOOD SERVICE MANAGEMENT AND DIETETICS

SEMESTER – II EC – IV- Nutrition in Emergency and Disaster Management
Ins. Hrs. /Week: 5 Course Credit: 3 Course Code: P23NDE24B

OBJECTIVES:

- To identify and contribute to the prevention of public health/ social health problems in the country.
- To combat various National nutritional emergencies and epidemic diseases and effectively manage disaster situations.

UNIT- I: Category of emergency Situations (15 Hours)

Definition of emergency situation /disaster and Factors leading to emergency conditions during disaster. Classification of emergencies– natural -Famine, drought, flood, earthquake, cyclone and manmade - war, civil and political emergencies.

UNIT- II: Health-related emergencies (15 Hours)

Epidemic diseases – Dengue & chikungunya. Endemic diseases - Cholera and Plague.
Pandemic diseases – SARS, COVID-19.

UNIT- III: Nutritional management during emergencies (15 Hours)

Nutritional relief and rehabilitation- Assessment of food needs, food distribution strategy, targeting food aid, mass and supplementary feeding, special foods/ rations for nutritional relief.

UNIT-IV: Assessment and surveillance (15 Hours)

Malnutrition in emergency affected populations- Indicators of malnutrition during emergencies classification of malnutrition body measurement indicators, clinical and other impacts, Malnutrition assessment, indicators and simple screening methods.

UNIT- V: Disaster management programmes (15 Hours)

Disaster/emergency Management programmes in India & International - Disaster management acts & policies - United nation disaster management team- assessment and humanitarian affairs.

COURSE OUTCOME:

The students will be able to,

1. Understand a comprehensive overview of the major emergency situations and its impact on health that likely to be encountered in such circumstances.
2. Also learn the prevention, treatment, and control of the communicable diseases that are common in emergencies.
3. understand the nutritional implications of an emergency situation and the need to include nutrition in plans for emergency preparedness

4. Achieve a thorough knowledge on the Methods for assessment and surveillance of the nutritional status of the population affected
5. Better analyse and identify the Disaster management programmes for humanitarian affairs.

TEXT BOOK(S):

1. World Health Education 2000. The Management of Nutrition in Major Emergencies.
2. Arulsamy 2016. Disaster Management Publisher: Neelkamal; First Edition
3. Ramesh, R., Rao., Jon Eisenberg, and Ted Schmitt, 2007. Improving Disaster Management.
4. Bruce Clements, 2009. Disasters and Public Health, 1st Edition.
5. Rebecca Katz, Jim Banaski, Essentials of Public Health Preparedness and Emergency Management.

REFERENCE BOOK(S)

1. Gibney 2004. Public Health Nutrition. 5th Edition, Blackwell Publishing,
2. Hari Niwas Mishra 2016. Functional foods, New India Publishing Rajesh Kapur, Agency, Navneet Singh, New Delhi.
3. Khanna. 2014. Textbook of Nutrition and Dietetics. 3rd Edition, Phoenix Publisher.
4. Sharma, S., Wadhwa, A. 2003. "Nutrition in the Community- A textbook", Elite Publishing House Pvt. Ltd.
5. Srilakshmi B. 2016. "Dietetics" Seventh Edition, New Age International (P) Ltd.
6. Wisner B., Adams, J. 2002. Environmental health in emergencies and disasters.

E- Resources

1. <https://www.who.int/health-topics/malnutrition>
2. mohfw.nic.in/NRHM/NIDD
3. www.nrhmorissa.gov.in/NIDDCP.html
4. www.Scripts.mit.edu
5. <https://vladimircvetkovic.upravljajnerizicima.edu.rs/wpcontent/uploads/2021/05/Classificationofemergencysituations.pdf>

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



SUNDARAKKOTTAI, MANNARGUDI – 614016

(For the candidates admitted in the academic year 2023–2024)

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

Semester- II- NME II: Food Packaging

Ins. Hrs. /Week: 2

Course Credit: 2

Course Code: P23NMEND22

OBJECTIVES:

- To understand the basic principles of packaging.
- To use the technique in the processing, preservation, distribution and promotion of food products.
- To familiarize themselves with the available packaging materials, to understand how to link materials to safety, quality and shelf life of foods .
- To compare packaging materials to each other and understand their differences and similarities.

UNIT-I: Introduction of Food packaging

(6 Hours)

Definition; Scope/ Need of food packaging; importance of food packaging

Role of packaging in extending shelf life of foods. Objectives and functions and purpose of packaging and packaging materials, types of packaging materials: paper: glass, methods of bottle making; metals: tinsplate containers, tinning process, components of tinsplate, types of cans, aluminium containers, lacquers; plastics: types of plastic films laminated plastic materials. Techniques of food packaging.

UNIT –II: Properties and testing of packaging material

(6 Hours)

Characteristics of good Packaging, Properties of packaging materials - tensile strength, bursting strength, tearing resistance, puncture resistance, impact strength, tear strength, methods of testing and evaluation; theory of permeability, factors affecting permeability, permeability coefficient, gas transmission rate and its measurement, water vapor transmission rate and its measurement.

UNIT- III: Equipments and packaging advancement

(6 Hours)

Equipment and Packaging Type - vacuum machine; gas packaging machine; seal and shrink-packaging machine; form and fill sealing machine; aseptic packaging systems; bottling machine; carton making machine; Package printing machines.

UNIT- IV: Packaging Systems & Methods

(6 Hours)

Introduction of food packaging system, Food packaging systems, product characteristics and package requirements. Different forms of packaging: Rigid, semi-rigid, flexible forms of packaging. Retort-able pouches, tetra pack. Different packaging system for-Dehydrated foods, Frozen foods, Dairy products, Fresh fruits, Vegetables, Meat, Poultry, Sea foods.

UNIT- V: Laws and Regulations of Food packaging

(6 Hours)

Standard packages - package laws and regulation – general guidelines on giving declarations – FSSAI Label, types of label, importance of Nutritional Labeling. Functions and Regulations.

Total Lecture Hours-30

COURSE OUTCOME:

The students should be able to,

1. Analyse and synthesize the data and information on packaging methods, with the use of the necessary technology.
2. Gain proficiency in the testing methods of packaging material.
3. Choose the appropriate packaging materials and types in relation to the food that is to be packaged.
4. Understand the problems that may occur due to inappropriate packaging.
5. Gain knowledge on nutritional labelling and regulatory affairs.

TEXT BOOK(S)

1. Coles R. Mc Dowell D. and Kirwan, M.J. (Eds.) 2003 Food Packaging Technology, CRC Press.
2. Eiri Board 2008. Hand Book Of Food Packaging Technology. Engineers India Research Institute ISBN-13 : 978-8186732908
3. Fakunle ZA (Ed.) 2018. Novel Food Packaging Techniques. AGRI HORTI Press,
4. Han JH. 2005. Innovations in Food Packaging. Elsevier Academic Press. ISBN:9789387642720.
5. Parry RT. and Blakistone B A. 1999. Principles and Applications of MAP – Springer, New York.
6. Robertson GL. 2006. Food Packaging: Principles and Practice, 2nd Taylor & Francis.

REFERENCE BOOK(S)

1. Gordon L. Robertson 2010. Food Packaging and Shelf Life. A Practical Guide.
2. Gordon L. Robertson, 2013. Food Packaging: Principles and Practice, Third Edition.
3. Ruben Hernandez, Susan E. M. Selke, John Culter, John D. Culter, 2000. Plastics Packaging: Properties, Processing, Applications, and Regulations.
4. Sattegari VD. 2016. Packaging materials and packaging commodities – Law and Regulation. Food safety quality control laboratory, CFTRI, Mysore-570020.
5. Walter Soroka 2002. Fundamentals of Packaging Technology. Fourth Edition.

E-RESOURCES

1. <http://bcas.du.ac.in/wp-content/uploads/2020/04/week-1.pdf>
2. <http://icpe.in/Plastics%20in%20Food%20Packaging/pdf/13-Final.pmd.pdf>
3. <https://www.pdfdrive.com/food-packaging-materials-testing-quality-assurance-d158188465.html>
4. <https://www.pdfdrive.com/packaging-essentials-100-design-principles-for-creating-packages-e157786945.html>
5. <http://www.ucarecdn.com/ad92a553-a70b-442a-8256-b905b39c466c/>

