E.M.G. YADAVA WOMEN'S COLLEGE, MADURAI – 625 014.

(*An Autonomous Institution – Affiliated to Madurai Kamaraj University*)

Re-accredited (3rd Cycle) with Grade A+ & CGPA 3.51 by NAAC

DEPARTMENT OF NUTRITION & DIETETICS

CBCS With OBE

BACHELOR OF SCIENCE

PROGRAMME CODE - N

COURSE STRUCTURE

(w.e.f. 2022 – 2023 Batch onwards)

CRITERION - I

1.1.3 Details of courses offered by the institution that focus on employability / entrepreneurship / skill development during the year.

Syllabus copies with highlights of contents focusing on Employability / Entrepreneurship / Skill Development

To be Noted:

HIGHLIGHTED COLORS	COURSES
	Employability
	Skill Development
	Entrepreneurship
	Skilled & Employability

Annexure – 16

E.M.G. YADAVA WOMEN'S COLLEGE, MADURAI -14.

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)
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DEPARTMENT OF NUTRITION AND DIETETICS – UG

(w.e.f. 2022– 2023 Batch onwards)
CBCS with OBE

Vision

The Department of Nutrition & Dietetics Serves National, Regional and Local Communities through discovery of the ways in which foods and their bioactive components contribute to health and the prevention of disease and through effective application of nutrition knowledge to improve human health and well being

Mission

- To become Self – sustaining individuals .
- By equipping them to take up entrepreneurial activities.
- To work towards the betterment of society.

Programme Educational Objectives (PEOs):B.Sc. Nutrition and Dietetics

Sl.No.	Programme Educational Objective
PEO1	To impart fundamental knowledge in Nutrition and Dietetics.
PEO2	To train students to acquire competencies required to excel in the field of Nutrition and Dietetics.
PEO3	To prepare students for higher degree with specialization.
PEO4	To promote students to venture into food based entrepreneurial activities.
PEO5	To enable students to take up professional carrier in Government / Non – Government sectors.
PEO6	To sensitise students to become socially responsible citizens.

Programme Outcomes for Science Graduates:

On completion of B.Sc., Programmes students will be able to

SL.No.	Programme Outcomes
PO1	Develop necessary foundation in fundamentals, aptitude, applications of sciences and other related subjects. Able to clear competitive examinations, appear with confidence and possess basic skills on the related subjects. Secure jobs in employment in Government / Private / Industry and entrepreneurship.
PO2	Receive basic experimental skills in the observation and study of nature, biological techniques, scientific research and demonstrate proficiency in critical analysis or creativity and provide scientific solutions to the problems of the society.
PO3	Enhance the digital knowledge of statistics and to understand its application in interpreting the obtained data.
PO4	Obtain knowledge with emerging trends in their disciplinary and inter-disciplinary areas. Usage of modern tools and software can also be put to use.
PO5	Lead lifelong learning & contribute sustainability to environment, equip students enough to take up higher studies up to research in various disciplines to become professionals.
PO6	Imbibe democratic, ethical, moral, social & spiritual values in the minds of the learners to become responsible citizens and build a healthy nation.

Programme Specific Outcomes (PSOs):

PSOs	Graduate Attributes	After completion of B.Sc Nutrition and Dietetics the students will be able to	PO Addressed
PSO-1	Knowledge& Proficiency	Demonstrate the acquired knowledge in Nutrition and Dietetics among family workplace and community.	PO1
PSO-2	Problem analysis	Employ critical thinking in identifying nutrition related problems with regard to individual family and society.	PO2
PSO-3	Problem Solving	Develop analytical skills and capabilities to resolve the problems.	PO2
PSO-4	Modern tool usage	Apply the acquired digital and analytical skills in professional environment.	PO4
PSO-5	Social responsibility	Address concern for the society with genuine sensitivity and transfer knowledge for the benefit of the society.	PO6
PSO-6	Lifelong learning	Motivate themselves to self paced and self diverted learning to achieve economic, social, cultural and personal development goals.	PO5
PSO-7	Ethical& Moral and Spiritual Values	Demonstrate ethical values in personal and professional setting.	PO6
PSO-8	Leadership, Team work & Communication	Collaborate in an organizational context ,exhibit leadership quantities and communicate effectively for the attirement of institutional goals	PO3

Qualification for Admission

Candidates should have passed the Higher Secondary Examination, Home Sciece Nutrition and Dietetics, Biology, Pure Science , Bio-Maths or Computer Science or any Vocational Groups as one of the subject, conducted by the Board of Higher Education, Government of Tamilnadu, CBSC & ICSE or any other examination approved by Madurai Kamaraj University as equivalent.

Duration of the Course

The students shall undergo this prescribed course of study for the period of three academic years under Choice Based Credit System (CBCS) semester pattern with Outcome Based Education (OBE).

Medium of Instruction: English

System: Choice Based Credit System with Outcome Based Education Model

Courses of Study with Credit Distribution for B.Sc Nutrition and Dietetics

Category	No.of Courses	No.of Credits
Part-I	4	12
Part –II	4	12
Major Core Paper	12	44
Discipline Specific Elective Course (DSEC)	3	15
Generic Elective Course (GEC) (Chemistry)	12	18+18
Skill Enhancement Course (SEC)	6	12
Inter Disciplinary Course (IDC)	2	4
Ability Enhancement Compulsory Course (AECC)	2	4
NSS/Physical Education	1	1
Total	46	140

Nature of the Course

Courses are classified according to the following nature

1. Knowledge and skill oriented
2. Employability oriented
3. Entrepreneurship oriented

Outcome Based Education (OBE) & Assessment

Students understanding must be built on and assessed for wide range of learning activities, which includes different approaches and are classified along several basis, such as

1. **Based on purpose:**
   - Continuous Assessment (Internal tests, Assignment, Seminar, Quiz, Documentation, Case lets,ICT based Assignment, Mini projects administered during the learning process)
   - External Assessment (Evaluation of students' learning at the end of instructional unit)
2. **Based on Domain Knowledge: (for UG Up to K4 levels)**
   Assessment through K1, K2, K3 & K4

EVALUATION (THEORY)
(PART I / PART II / PART III)

Internal (Formative) : 25 marks
External (Summative) : 75 marks
Total :100 marks

Formative Test (CIA-Continuous Internal Assessment) : 25 Marks

Components	**Marks**
Test (Average of three tests) (Conducted for 100 marks and converted into 20 marks)	**20**
Assignment(Quiz/ Documentation/ Case lets/ ICT based Assignment/ Mini Projects)	**5**
Total	**25**

- ✓ **Centralized system** of Internal Assessment Tests
- ✓ There will be **Three Internal Assessment** Tests
- ✓ Duration of Internal assessment test will be **1 hour for Test I and 2 hours for Test II and III** respectively.
- ✓ Students shall write **retest** with the approval of HOD on genuine grounds if they are absent.

Question Paper Pattern for Continuous Internal Assessment- Test I

Section		**Marks**
A-Multiple Choice Question	(3x1 mark)	3
B-Short Answer	(1x2 marks)	2
C-Either Or type	(1/2x 5 marks)	5
D-Open choice type	(1/2 x 10 marks)	10
Total		20

Question Paper Pattern for Continuous Internal Assessment -Test II and III

Multiple choice for Section		**Marks**
A- Multiple Choice Question	(6x1 mark)	6
B-Short Answer	(2x2 marks)	4
C-Either Or Type	(2/4 x5 marks)	10
D-Open Choice Type	(2/3 x 10 marks)	20
Total		40

Conducted for 100 marks and converted into 20 marks

Question Paper Pattern for Summative Examination

Section	Marks
A- Multiple choice Questions without Choice (10x1 mark)	10
B-Short Answer without choice (5x2 marks)	10
C-Either Or type (5/10 x5 marks)	25
D-Open Choice type (3out of 5x10 marks)	30
Total	75

In respect of Summative Examinations passing minimum is **36% for UG.**

Distribution of Marks in % with K Levels CIA I, II, III & External Assessment

Blooms Taxonomy	Internal Assessment			External Assessment
	I	II	III	
Knowledge (K1)	12%	12%	12%	13%
Understanding (K2)	44%	22%	22%	21%
Apply (K3)	44%	33%	33%	33%
Analyze (K4)	-	33%	33%	33%

Latest amendments and revision as per **UGC** and **TANSCHE** norms is taken into consideration in curriculum preparation.

BLUE PRINT FOR INTERNAL ASSESSMENT – I

Articulation Mapping - K Levels with Course Learning Outcomes (CLOs)

Sl. No	CLOs	K- Level	Section A		Section B		Section C	Section D	Total
			MCQs (No Choice)		Short Answers (No Choice)		(Either or Type)	(Open choice)	
			No. of Questions	K-Level	No. of Questions	K-Level			
1	CLO 1	Up to K3	3	(K1)	1	K1	2 (K2) (Each set of questions must be in the same level)	1 (K2) & 2 (K3)	
No. of Questions to be asked			3		1		2	3	9
No. of Questions to be answered			3		1		1	1	6
Marks for each question			1		2		5	10	-
Total Marks for each section			3		2		5	10	20

BLUE PRINT FOR INTERNAL ASSESSMENT – II

Articulation Mapping - K Levels with Course Learning Outcomes (CLOs)

Sl. No	CLOs	K- Level	Section A		Section B		Section C	Section D	Total
			MCQs (No Choice)		Short Answers (No Choice)		(Either or Type)	(Open choice)	
			No. of Questions	K-Level	No. of Questions	K-Level			
1	CLO 2	Up to K3	3	(K1/ K2)	1	(K1/ K2)	2 (K2) / 2 (K4) (Each set of questions must be in the same level)	2 (K3) & 1 (K4)	
2	CLO 3	Up to K4	3	(K1/ K2)	1	(K1/ K2)			
No. of Questions to be asked			6		2		4	3	15
No. of Questions to be answered			6		2		2	2	12
Marks for each question			1		2		5	10	-
Total Marks for each section			6		4		10	20	40

Annexure – 16

BLUE PRINT FOR INTERNAL ASSESSMENT – III

Articulation Mapping - K Levels with Choice Course Learning Outcomes (CLOs)

Sl. No	CLOs	K- Level	Section A		Section B		Section C	Section D	Total
			MCQs (No Choice)		Short Answers (No Choice)		(Either or Type)	(Open choice)	
			No. of Questions	K-Level	No. of Questions	K-Level			
1	CLO 4	Up to K3	3	(K1/ K2)	1	(K1/ K2)	2 (K2) / 2 (K4) (Each set of questions must be in the same level)	2 (K3) & 1 (K4)	
2	CLO 5	Up to K4	3	(K1/ K2)	1	(K1/ K2)			
No. of Questions to be asked			6		2		4	3	15
No. of Questions to be answered			6		2		2	2	12
Marks for each question			1		2		5	10	-
Total Marks for each section			6		4		10	20	40

Distribution of Marks with K Levels CIA I, CIA II and CIA III

CIA	K Levels	Section -A MCQ (No choice)	Section -B Short Answer (No choice)	Section -C (Either or Type)	Section –D (Open choice)	Total Marks	% of Marks
I	K1	3	2	-	-	5	12
	K2	-	-	10	10	20	44
	K3	-	-	-	20	20	44
	K4	-	-	-	-	-	-
	Marks	**3**	**2**	**10**	**30**	**45**	**100**
II	K1	5	2	-		7	12
	K2	1	2	10	-	13	22
	K3	-	-	-	20	20	33
	K4	-	-	10	10	20	33
	Marks	**6**	**4**	**20**	**30**	**60**	**100**
III	K1	5	2	-		7	12
	K2	1	2	10	-	13	22
	K3	-	-	-	20	20	33
	K4	-	-	10	10	20	33
	Marks	**6**	**4**	**20**	**30**	**60**	**100**

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Annexure – 16

Articulation Mapping - K Levels with Course Learning Outcomes (CLOs) for External Assessment

Sl. No	CLOs	K- Level	Section A		Section B		Section C (Either/ or Type)	Section D (open choice)	Total
			MCQs (No choice)		Short Answers (No choice)				
			No. of Questions	K-Level	No. of Questions	K-Level			
1	CLO 1	Up to K3	2	K1/K2	1	K1/K2	2 (K3 & K3)	1(K2)	
2	CLO 2	Up to K3	2	K1/K2	1	K1/K2	2(K2 & K2)	1(K3)	
3	CLO 3	Up to K4	2	K1/K2	1	K1/K2	2 (K4 &K4)	1(K4)	
4	CLO 4	Up to K 3	2	K1/K2	1	K1/K2	2 (K3 & K3)	1(K3)	
5	CLO 5	Up to K 4	2	K1/K2	1	K1/K2	2 (K4 & K4)	1(K4)	
No. of Questions to be asked			10		5		10	5	30
No. of Questions to be answered			10		5		5	3	23
Marks for each question			1		2		5	10	
Total Marks for each section			10		10		25	30	75 (Marks)

Distribution of Section-wise Marks with K Levels for External Assessment

K Levels	Section A (MCQ'S) (No choice)	Section B (Short Answer) (No choice)	Section C (Either or Type)	Section D (Open Choice)	**Total Marks**	% of Marks
K1	9	6	-	--	**15**	13
K2	1	4	10	10	**25**	21
K3	-	-	20	20	**40**	33
K4	-	-	20	20	**40**	33
Total Marks	10	10	50	50	**120**	100

K1- Remembering and recalling facts with specific answers
K2- Basic understanding of facts and stating main ideas with general answers
K3- Application oriented- Solving Problems, Justifying the statement and deriving inferences
K4- Examining, analyzing, presentation and make inferences with evidences

Annexure – 16

EVALUATION (THEORY)

(PART IV - SEC & IDC)

Internal (Formative) : 25 marks
External (Summative) : 75 marks
Total :100 marks

Formative Test (CIA-Continuous Internal Assessment) : 25 Marks

Components	Marks
Test (Conducted for 50 marks and converted into 25 marks)	**25**

- ✓ There will be Only one Internal Assessment Test
- ✓ Duration of Internal assessment test will be 2 hour for Test
- ✓ Students shall write retest with the approval of HOD on genuine grounds if they are absent.

Question Paper Pattern for Continuous Internal Assessment- Test

Section	Marks
A-Multiple Choice Question (5x1 mark)	5
B-Short Answer (5x2 marks)	10
C-Either Or type (3x 5 marks)	15
D-Open choice type (2/3 x 10 marks)	20
Total	**50**

Conducted for 50 marks and converted into 25 marks

Question Paper Pattern for External Examination

Section	Marks
A-Multiple Choice Question (10x1 mark)	10
B-Short Answer (5x2 marks)	10
C-Either Or type (5x 5 marks)	25
D-Open choice type (3/5 x 10 marks)	30
Total	**75**

BLUE PRINT FOR INTERNAL ASSESSMENT

Articulation Mapping - K Levels with Course Learning Outcomes (CLOs)

Sl. No	CLOs	K- Level	Section A		Section B		Section C	Section D	Total
			MCQs (No Choice)		Short Answers (No Choice)		(Either or Type)	(Open Choice)	
			No. of Questions	K-Level	No. of Questions	K-Level			
1.	CLO1	Up to K 3	1	K1	1	K1	4(K2) & 2(K3) (Each set of questions must be in the same level)	1(K2) & 2(K3)	
2.	CLO2	Up to K 3	1		1				
3.	CLO3	Up to K 3	1		1				
4	CLO4	Up to K 3	1		1				
5	CLO5	Up to K 3	1		1				
No. of Questions to be asked			5		5		6	3	19
No. of Questions to be answered			5		5		3	2	15
Marks for each question			1		2		5	10	
Total Marks for each section			**5**		**10**		**15**	**20**	**50**

Distribution of Marks with K Levels - CIA

CIA	K Levels	Section A MCQ	Section B (Short Answers)	Section C (Either/Or Choice)	Section D (Open Choice)	Total Marks	% of Marks
I	K1	5	10	-	-	15	20
	K2	-	-	20	10	30	40
	K3	-	-	10	20	30	40
	K4	-	-	-	-	-	-
	Marks	**5**	**10**	**30**	**30**	**75**	**100**

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Annexure – 16

Articulation Mapping - K Levels with Course Learning Outcomes (CLOs) for External Assessment

Sl. No	CLOs	K-Level	Section A		Section B		Section C (Either/or Choice)	Section D (Open Choice)	Total
			MCQs		Short Answers				
			No. of Questions	K-Level	No. of Questions	K-Level			
1	CLO 1	Up to K3	2	K1	1	K1	3(K2) & 2(K3) (Each set of questions must be in the same level)	2(K2) & 3(K3)	
2	CLO 2	Up to K3	2		1				
3	CLO 3	Up to K3	2		1				
4	CLO 4	Up to K 3	2		1				
5	CLO 5	Up to K 3	2		1				
No. of Questions to be asked			10		5		10	5	30
No. of Questions to be answered			10		5		5	3	23
Marks for each question			1		2		5	10	
Total Marks for each section			10		10		25	30	75

Distribution of Section-wise Marks with K Levels for External Assessment

K Levels	Section A (MCQ'S)	Section B (Short Answer)	Section C (Either/or)	Section D (Open Choice)	**Total Marks**	% of Marks without choice
K1	10	10	-	--	**20**	16
K2	-	-	30	20	**50**	42
K3	-	-	20	30	**50**	42
Total Marks	10	10	50	50	**120**	100

Annexure – 16

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DEPARTMENT OF NUTRITION AND DIETETICS – UG

(with Allied Chemistry)

CBCS with OBE

COURSE STRUCTURE

(w.e.f. 2022 – 2023 Batch onwards)

Semester	Part	Course Code	Title of the Course	Teaching hrs (per week)	Duration of Exam	Marks Allotted			Credits
						CIA	SE	Total	
I	I	22OU1TA1	**Part I** :Tamil	6	3	25	75	100	3
	II	22OU2EN1	**Part II** : English	6	3	25	75	100	3
	III	22OUND11	**Core :** Food Science - I	4	3	25	75	100	4
	III		**Core** : Lab – in - Food Science - I & II	2	-	-	-	-	-
	III	22OUNDGEND1	**GEC :** Human Physiology	6	3	25	75	100	4
	IV	22OUNDSE11	**SEC :** Spices and Herbal Nutrition	2	3	25	75	100	2
	IV	22OUNDSE12	**SEC** : Community Nutrition	2	3	25	75	100	2
	IV	22OUNDID1	**IDC :** Basic Nutrition	2	3	25	75	100	2
II	I	22OU1TA2	**Part I :** Tamil	6	3	25	75	100	3
	II	22OU2EN2	**Part II :** English	6	3	25	75	100	3
	III	22OUND21	**Core :** Food Science – II	4	3	25	75	100	4
	III	22OUND2P	**Core** : Lab – in - Food Science - I & II	2	3	40	60	100	2
	III	22OUNDGEND2	**GEC :** Food Microbiology	6	3	25	75	100	5
	IV	22OUNDSE21	**SEC :** Extension Education	2	3	25	75	100	2
	IV	22OUNDSE22	**SEC :**Textiles and Clothing	2	3	25	75	100	2
	IV	22OUNDID2	**IDC :** Food Preservation	2	3	25	75	100	2
III	I	22OU1TA3	**Part I :** Tamil	6	3	25	75	100	3
	II	22OU2EN3	**Part II :** English	6	3	25	75	100	3
	III	22OUND31	**Core :** Fundamentals of Nutrition	4	3	25	75	100	4
	III		**Core :** Lab – in – Nutritional Biochemistry	2	-	-	-	-	-
	III	22OUNDGEND3	**GEC :** Bakery	6	3	25	75	100	4
	III	22OUNDGECH3	**GEC : Chemistry – I** Bio Chemistry	4	3	25	75	100	4
	III		**GEC : ChemistryPractical – I** Inorganic Qualitative Analysis	2	-	-	-	-	-

IV	I	**22OU1TA4**	**Part I :** Tamil	6	3	25	75	100	3
	II	**22OU2EN4**	**Part II :** English	6	3	25	75	100	3
	III	**22OUND41**	**Core :** Nutritional Biochemistry	4	3	25	75	100	4
	III	**22OUND4P**	**Core :**Lab – in -Nutritional Biochemistry	2	3	40	60	100	2
	III	**22OUNDGEND4**	**GEC :** Food Preservation	4	3	25	75	100	4
	III	**22OUNDGEND4P**	**GEC I :** Practical - I Bakery and Food Preservation	2	3	40	60	100	1
	III	**22OUNDGECH4**	**GEC : Chemistry – II** Environmental and Organic Chemistry	4	3	25	75	100	4
	III	**22OUNDGECH4P**	**GEC : Chemistry Practical - I** Inorganic Qualitative Analysis	2	3	40	60	100	1
V	III	**22OUND51**	**Core :** Nutrition Through Life Cycle	4	3	25	75	100	4
	III		**Core :** Lab – in - Nutrition Through Life Cycle	3	-	-	-	-	-
	III	**22OUND52**	**Core :** Dietetics - I	4	3	25	75	100	4
	III		**Core :** Lab – in -Dietetics – I & II	3	-	-	-	-	-
	III		**DSEC I**	4	3	25	75	100	5
	III		Dietetic Internship Project	2	-	-	-	-	-
	III	**22OUNDGECH5**	**GEC : Chemistry – III** Applied Chemistry	4	3	25	75	100	4
	III		**GEC : Chemistry Practical - II** Volumetric Analysis	2	-	-	-	-	-
	IV	**22OUAECEV5**	**AECC :** Environmental Studies	2	3	25	75	100	2
	IV	**22OUNDSE5**	**SEC :** Family Resource Management	2	3	25	75	100	2
VI	III	**22OUND61**	**Core :** Food Processing	4	3	25	75	100	4
	III	**22OUND62**	**Core :** Dietetics - II	4	3	25	75	100	4
	III		**DSEC II**	4	3	25	75	100	5
	III	**22OUND61P**	**Core :** Lab – in -Nutrition Through Life Cycle	3	3	40	60	100	4
	III	**22OUND62P**	**Core :** Lab – in -Dietetics –I &II	3	3	40	60	100	4
	III		**DSEC III**	2	3	20	80	100	5
	III	**22OUNDGECH6**	**GEC : Chemistry – IV** Applied and Medicinal Chemistry	4	3	25	75	100	4
	III	**22OUNDGECH6P**	**GEC : Chemistry Practical - II** Volumetric Analysis	2	3	40	60	100	1
	IV	**22OUNDSE6**	**SEC :** Child development	2	3	25	75	100	2
	IV	**22OUAECVE6**	**AECC:** Value Education	2	3	25	75	100	2
	V	**22OU5NS4 / 22OU5PE4**	Extension Activities - NSS/Physical Education	-	3	25	75	100	1
			Total						140

GEC : Generic Elective Course
SEC : Skill Enhancement Course
DSEC : Discipline Specific Elective Course
AECC: Ability Enhancement Compulsory Course
IDC : Inter Disciplinary Course

DSEC: Discipline Specific Elective Course:

Semester - V (DSEC– I & II – Choose any one)

1. Food Service Management – 22OUNDDSE5A
2. Functional Foods and Nutraceuticals – 22OUNDDSE5B

Semester – VI DSEC – II (Choose any one)

1. Food Safety and Quality control –22OUNDDSE6A
2. Post Harvest Technology –22OUNDDSE6B

Semester – VI DSEC– III

Dietetic Internship Project **– 22OUNDDSEPR6**

NOTE:

The students are permitted to obtain additional credits (Optional)

1. MOOCs / SWAYAM / NPTEL Courses (Online)

Compulsory Courses:

Year	Semester	Nature of Course	Course code	Title of the Course	Hours	Offered to students of
I	I	Add on Course	22NDAOC 22NDAOCP	Food Product Development Lab in Food Product Development	30	I B.Sc., Nutrition & Dietetics
II	III & IV	Diploma Course	22NDD1 22NDD2 22NDDP	Fundamentals of Food Science. Principles of Basic Nutrition Fundamentals of Food Science Practicals	90 / Per Year	II year students of all other disciplines
II	III & IV	Certificate Course	22NDDC 22NDCP	Food Preservation. Food Preservation Practicals	90 / Per Year	II year students of all other disciplines
III	V	Value Added Course	22NDVAC	Cake Making. Internship Training.	30	III B.Sc., Nutrition & Dietetics

Department of N&D				Class : I N&D				
Sem	**Category**	**Course Code**	**Course Title**	**Credits**	**Contact Hours / Week**	**CIA**	**SE**	**Total**
I	Core	22OUND11	Food Science - I	4	4	25	75	100

Nature of the Course		
Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship oriented
✓		

Course Objectives

To enable students to

1. Acquire knowledge on the structure of food , its composition, processing and changes during cooking.
2. Understand the importance of various foods and composition of their nutrients.
3. Familiarize with different methods of cooking.
4. Characterize the basis for toxin production, to determine the mode of action and Prevention of selected toxins.
5. Study the different types of pigments.

Course Content:

Unit – I Food : Meaning, Functions. Various food groups- basic seven , five and four .Preliminary Preparations- cleaning, peeling and stringing, cutting and grating, sieving, coating, blanching, marinating, sprouting or germination, fermentation, grinding, drying, filtering and roasting. Cooking- objectives, Methods - moist heat, dry heat. other cooking methods - microwave cooking , solar cooking and their merits and demerits.

Unit – II Cereals And Millets : Classification of cereals and millets, Structure of wheat, and finger millet, Nutritional composition - wheat, rice, maize or corn, jowar, ragi and bajra. Processing- parboiling, parching, puffing , malting, extrusion -merits and demerits. Cereal cookery – Effect of cooking - gelatinization, retrogradation and dextrinisation , gluten formation , Types of food starches – amylose, amylopectin, resistant and modified starch Role of cereals in cookery.

Unit – III Pulses: Classification, Nutritional Composition, Processing-soaking, germination, fermentation, decortication, parching and extrusion. Effect of cooking, Role of pulses in cookery. Antinutrients -lathyrogens, trypsin inhibitors, haemagglutinins and cyanogenic glycoside, favism, goitrogens, tannins, saponins. Factors affecting cooking quality of pulses.

Unit –IV Nuts And Oil Seeds: Classification, Nutritional composition - almonds, coconut, pistachio,groundnut, cashewnut, butternut, pinenut, walnut and gingelly seeds. processing of oilseed – gingelly seed. Toxic constituents - aflatoxins and gossypol. Role of nuts and oilseeds in cookery .

Unit –V Vegetables & Fruits: Classification, Selection, Nutritional composition, Pigments - water soluble and fat soluble , maturation and ripening. Browning reaction – types, and prevention. Effect of cooking , losses of nutrients during cooking, Role of vegetable & fruit cookery .

Books for Study:

1. Shakuntala Manay and Shada Sharaswamy, *Food; Facts and Principles*, New Age International Pub., New Delhi, 2010.
2. Srilakshmi. B *Food Science* (7 ed.), New Age International Pub., New Delhi, 2020.

Books for Reference:

1. Norman N.Potter ,Joseph H.Hotchkiss *Food Science* (5 ed) CBS Published & Distributors Pvt.Ltd,2007.
2. Raheena Begum .M *A Text Book of Foods, Nutrition and Dietetics* ,Sterling Pub.Pvt.Ltd , New Delhi 2010.
3. Shrinandan Bansal *Food and Nutrition* AITBS Publishers., New Delhi 2012.
4. Sumati R.Mudambi et al *Food Science* New age International (P)Ltd., New Delhi 2008.
5. Sunetra Roday.*Food Science & Nutrition* (2 ed) Published in India by Oxford University Press, 2012.

Web Resources / E.Books:

1.https://images.app.goo.gl/jkjT4B2bgD5Y91vH9

2.https://images.app.goo.gl/wGZwMyw13gi4GY28A

3.https://images.app.goo.gl/RRAhWLWS2FZtYoEc9

4.https://images.app.goo.gl/jkjT4B2bgD5Y91vH9

5.https://images.app.goo.gl/K6KMFEuCaxUodF7E6

6.https://byjus.com/biology/pigments/

Pedagogy:

Chalk and Talk, PPT, group discussion , OHP presentations, quiz, on the spot test and Virtual Labs.

Rationale for nature of Course:

Knowledge and Skill:

To gain knowledge regarding the methods of cooking.

To know about the nutritional composition and their nutrients of foods.

Activities to be given:

Innovation recipes. Assignment, ppt, Quiz, Group discussion, collect different cereals and pulses.

Course learning Outcomes (CLO's):

CLO	Course Outcomes Statement	Knowledge (According to Bloom's Taxonomy)
CLO1	List different food groups and their functions.	K1 to K3
CLO2	Describe various methods of Processing techniques of foods.	K1 to K3
CLO3	Summarize the culinary uses and role of different food groups in Indian cookery	K1 to K4
CLO4	Apply the knowledge on different methods of cooking in day to life .	K1 to K3
CLO5	Analyse different nutrients present in foods.	K1 to K4

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	1	2	3	1	2	3
CLO2	2	2	2	3	2	3
CLO3	1	3	3	3	2	3
CLO4	3	2	2	3	2	2
CLO5	2	3	3	3	2	2

1-Basic Level 2- Intermediate Level 3- Advanced Level

LESSON PLAN : TOTAL HOURS(60 HRS)

Unit	Description	Hrs	Mode
1	**Unit – I** Food : Meaning, Functions. Various food groups- basic seven ,five and four .Preliminary Preparations- cleaning, peeling and stringing, cutting and grating, sieving, coating, blanching, marinating, sprouting or germination, fermentation, grinding, drying, filtering and roasting. Cooking- objectives, Methods - moist heat, dry heat. other cooking methods - microwave cooking , solar cooking and their merits and demerits.	12	Chalk and talk, Group Discussions, Quiz
2	**Unit – II** Cereals And Millets : Classification of cereals and millets, Structure of wheat, and finger millet, Nutritional composition - wheat, rice, maize or corn, jowar, ragi and bajra. Processing- parboiling, parching, puffing , malting, extrusion -merits and demerits. Cereal cookery – Effect of cooking - gelatinization, retrogradation and dextrinisation , gluten formation , Types of food starches – amylose, amylopectin, resistant and modified starch Role of cereals in cookery.	9	Chalk and talk, Quiz
3	**Unit – III** Pulses: Classification, Nutritional Composition, Processing-soaking, germination, fermentation, decortication, parching and extrusion. Effect of cooking, Role of pulses in cookery. Antinutrients -lathyrogens, trypsin inhibitors, haemagglutinins and cyanogenicglycoside, favism,goitrogens, tannins, saponins. Factors affecting cooking quality of pulses.	15	Chalk and talk, PPT, On the spot Test
4	**Unit –IV** Nuts And Oil Seeds: Classification, Nutritional composition - almonds, coconut,pistachio,groundnut, cashewnut, butternut, pinenut, walnut and gingelly seeds.processing of oilseed – gingelly seed. Toxic constituents - aflatoxins and gossypol. Role of nuts and oilseeds in cookery .	9	Chalk and talk, PPT, On the spot Test
5	**Unit –V** Vegetables & Fruits: Classification, Selection, Nutritional composition, Pigments - water soluble and fat soluble , maturation and ripening. Browning reaction – types, and prevention. Effect of cooking , conservation of nutrients during cooking, Role of vegetable & fruit cookery .	15	Chalk and talk, PPT, On the spot Test, Assignment

Course Designers:

(MRS).K.GOWSALYA (MRS). B. RUBARANI

Department of N&D				Class : I N&D				
Sem	**Category**	**Course Code**	**Course Title**	**Credits**	**Contact Hours / Week**	**CIA**	**SE**	**Total**
I	Generic Elective Course	22OUNDGEND1	Human Physiology	4	6	25	75	100

Nature of the Course		
Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship oriented
✓		

Course Objectives

To enable students to

1. Understand the integrated structure and functions of all systems.
2. Gain knowledge on human physiology.
3. Understand some of the relevant issues and topics of human physiology.
4. Learn the knowledge about reproductive and excretory system.
5. Study the mechanism of sensory organs.

Course Content:

Unit – I Cells, Tissue and Endocrine Glands : Cells - meaning, types and functions - bone, cartilage, nerve, epithelial, muscle, secretary, adipose, blood Tissues- meaning, types and functions. Endocrine glands – structure and functions of pituitary, thyroid, parathyroid, adrenal.

Unit –II Digestive System: Structure and functions of stomach, GI tract - small intestine and large intestine pancreas and gall bladder**.** Process of digestion and absorption of food. Role of liver.

Unit – III Circulatory and Respiratory System : Blood- function, composition, blood coagulation, blood grouping, blood transfusion. structure and functions of heart, cardiac cycle. structure and functions of respiration, transport of gases in lungs, mechanism of respiration.

Unit – IV Excretory and Reproductive System : Structure and functions of excretory system, formation of urine, composition of urine**.** Structure of male and female reproductive organs, menstrual cycle, ovulation and hormones.

Unit – V Nervous System and sensory organs: Nervous system –sympathetic, parasympathetic. central nervous system - structure and functions of brain and spinal cord. structure of eye, ear, nose, skin ,tongue - mechanism of vision and hearing.

Books for study :

1. Arumugam et al., *Animal Physiology*, Saras Publications, 2013.
2. Umamaheswari B, Sampath. K.,*A Text Book of: Human Anatomy &Physiology* (12 *ed)*,Birla Publication Pvt .Ltd. 2018.

Books for Reference :

1. Chatterjee's C.C *Human Physiology*,Volume I,II (11^{th}) coloured edition CBS Publishers & Distributors Pvt.Ltd.2016.
2. Elaine N.Marieb ,*Essentials of human anatomy and physiology ,(10^{th})* Pearson India education services Pvt.ltd South Asia 2017.
3. Padma. B Sanghani *Human Anatomy and Physiology with Health Education* Tata Mc Graw Hill education Private Limited, New Delhi ,2012.
4. Suresh R *Essentials of human physiology (1^{st})* Books and Allied (P)Ltd 2013
5. Wilson, K.J.W and Waugh, A *Anatomy and Physiology in health and illness*, 8^{th} Edition, Churchill living stone, 1996.

Web Resource / E.Books:

1. **https://bio.libretexts.org/Bookshelves/Human_Biology/Book%3A_Human_Biology_(Wakim_and_Grewal)/10%3A_Introduction_to_the_Human_Body**
2. **https://www.niddk.nih.gov/health-information/digestive-diseases**
3. **https://opentextbc.ca/biology/chapter/11-3-circulatory-and-respiratory-systems/**
4. **https://my.clevelandclinic.org/health/articles/9117-male-reproductive-system**
5. **https://kidshealth.org/en/teens/female-repro.html**
6. **https://my.clevelandclinic.org/health/articles/21202-nervous-system**
7. **https://emedicodiary.com/book/view/303/cc-chatterjee-s-human-physiology-volume-1**

Pedagogy:

Chalk and Talk, PPT, group discussion , OHP presentations, quiz, on the spot test and Virtual Labs.

Rationale for nature of Course:

Knowledge and Skill:

Gain knowledge on human Anatomy.

To know about clinical abbreviations.

Activities to be given:

Assignment, ppt, Quiz, Group discussion, Drawing.

Course learning Outcomes (CLO's):

CLO	Course Outcomes Statement	Knowledge (According to Bloom's Taxonomy)
CLO1	Explain the fundamentals of human anatomy and physiology.	K1 to K3
CLO2	Describe the process of digestion of foods.	K1 to K3
CLO3	Differentiate various blood groups.	K1 to K4
CLO4	Apply the knowledge on reproductive health in real life situations.	K1 to K3
CLO5	Explore the interactions between sense organs.	K1 to K4

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Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	1	2	2	2	2	2
CLO2	2	2	1	1	2	3
CLO3	2	2	3	3	3	3
CLO4	1	2	2	1	2	2
CLO5	2	3	3	3	2	3

1-Basic Level 2- Intermediate Level 3- Advanced Level

Annexure – 16

LESSON PLAN : TOTAL HOURS (90 hrs)

Unit	Description	Hrs	Mode
1	**Unit – I** Cells, Tissue and Endocrine Glands : Cells - meaning, types and functions - bone, cartilage, nerve, epitheilial, muscle, secretory, adipose, blood Tissues- meaning, types and functions. Endocrine glands – structure and functions of pituitary, thyroid, parathyroid, adrenal.	18	Chalk and talk, Group Discussions, Quiz
2	**Unit –II** Digestive System: Structure and functions of stomach, GI tract - small intestine and large intestine pancreas and gall bladder**.** Process of digestion and absorption of food. Role of liver.	18	Chalk and talk, Quiz
3	**Unit – III** Circulatory and Respiratory System : Blood- function, composition, blood coagulation, blood grouping, blood transfusion. structure and functions of heart, cardiac cycle. structure and functions of respiration, transport of gases in lungs, mechanism of respiration	18	Chalk and talk, PPT, On the spot Test
4	**Unit – IV** Excretory and Reproductive System : Structure and functions of excretory system, formation of urine, composition of urine**.** Structure of male and female reproductive organs, menstrual cycle, ovulation and hormones.	18	Chalk and talk, PPT, On the spot Test
5	**Unit – V** Nervous System and sensory organs: Nervous system –sympathetic, parasympathetic. central nervous system - structure and functions of brain and spinal cord. structure of eye, ear, nose, skin ,tongue - mechanism of vision and hearing.	18	Chalk and talk, PPT, On the spot Test, Assignment

Course Designers:

(MRS). B. RUBARANI& (MRS).K.JANAKI

Department of N&D				Class : I N&D				
Sem	**Category**	**Course Code**	**Course Title**	**Credits**	**Contact Hours / Week**	**CIA**	**SE**	**Total**
I	Skill Enhancement Course	22OUNDSE11	Spices and Herbal Nutrition	2	2	25	75	100

Nature of the Course		
Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship oriented
✔		

Course Objectives:

To enable the students to

1. Gain basic knowledge of spices and herbs.
2. Understanding about culinary uses.
3. Acquire Knowledge on therapeutic value of spices and herbs.

Course Content:

Unit – I Spices and Herbs –meaning , functions, and classification

Unit – II Major spices of India- pepper , cardamom, chillies ,turmeric and ginger - nutritional composition ,culinary uses and therapeutic value.

Unit – III Minor spices of India – garlic, onion ,asafoetida, fenugreek, cinnamon , cumin, omum, mustard ,and clove- nutritional composition, culinary uses and therapeutic value.

Unit – IV Herbs- stevia, coriander leaves ,mint, curry leaves ,celery, aloe vera, basil and rosemary -nutritional composition , culinary uses and therapeutic value**.**

Unit – V Preparation of herbal products -herbal Tea , juices, soups .

Books for study :

1. Shakuntala Manay and Shada Sharaswamy, *Food; Facts and Principles*, New Age International Pub., New Delhi, 2010.
2. Srilakshmi. B *Food Science* (7 ed.), New Age International Pub., New Delhi, 2018.

Books for Reference:

1. Arunabha Ray Kavita Gulati *Recent Advantages in Herbal Drug Research and Therapy* I.K.International Publishing House Pvt.Ltd, New Delhi, 2010.
2. Bakhru Dr. H.K. *Healing Through Natural Foods* ,(14th ed) Jaico Publishing House Mumbai, 2013.
3. Bakhru .H.K *Natural Home Remedies for Common Ailments* Published by Orient Paperbacks, New Delhi, 2014.
4. Gajalakshmi R *Nutrition Science* (1ed) CBS Publishers &Distributors Pvt, Ltd, New Delhi, 2015.
5. Shakuntala Manay and Shada Sharaswamy, *Food; Facts and Principles*, New Age International Pub., New Delhi, 2010.

Web Resource / E.Books :

1. **https://www.fs.fed.us/wildflowers/ethnobotany/food/spices.shtml**
2. **https://www.britannica.com/topic/spice-food**
3. **https://www.embibe.com/exams/spices-and-condiments/**
4. **https://www.sciencedirect.com/science/article/pii/S1756464615001127**
5. **https://www.researchgate.net/publication/342591176_Medicinal_uses_of_spices_used_in_our_traditional_culture_World_wide**
6. **https://thatsugarmovement.com/functional-food-super-hero-3-spices/**
7. **https://www.amazon.in/Spices-Herbs-Beginners-Creative-Success-ebook/dp/B087JWP9LH**

Pedagogy:

Chalk and Talk, PPT, group discussion , OHP presentations, quiz, on the spot test and Virtual Labs.

Rationale for nature of Course:
Knowledge and Skill:
To create the new preparation method of spices and herbal products.
Learn about medicinal values of spices and herbs.
Activities to be given:
Assignment, Ppt, Quiz, Group discussion, Drawing.
Course learning Outcomes (CLO's):

CLO	Course Outcomes Statement	Knowledge (According to Bloom's Taxonomy)
CLO1	Describe the major functions of spices and herbs.	K1 to K3
CLO2	Summarize the nutritional composition of various spices and herbs.	K1 to K3
CLO3	Demonstrate the therapeutic values of spices and herbs.	K1 to K3
CLO4	Identify the culinary uses of spices and herbs.	K1 to K3
CLO5	Develop various novel products using spices and herbs.	K1 to K3

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	2	3	3	3	3	3
CLO2	2	3	3	1	3	2
CLO3	3	2	2	1	2	3
CLO4	3	3	3	1	2	3
CLO5	3	3	3	3	3	3

1-Basic Level 2- Intermediate Level 3- Advanced Level

Annexure – 16

LESSON PLAN : TOTAL HOURS (30 hrs)

Unit	Description	Hrs	Mode
1	**Unit – I** Spices and Herbs –meaning , functions, and classification	4	Chalk and talk, Group Discussions, Quiz
2	**Unit – II** Major spices of India- pepper , cardamom, chillies ,turmeric and ginger - nutritional composition ,culinary uses and therapeutic value.	6	Chalk and talk, Quiz
3	**Unit – III** Minor spices of India – garlic, onion ,asafoetida, fenugreek, cinnamon , cumin, omum, mustard ,and clove- nutritional composition, culinary uses and therapeutic value.	10	Chalk and talk, PPT, On the spot Test
4	**Unit – IV** Herbs- stevia, coriander leaves ,mint, curry leaves ,celery, aloe vera, basil and rosemary -nutritional composition , culinary uses and therapeutic value.	4	Chalk and talk, PPT, On the spot Test
5	**Unit – V** Preparation of herbal products - herbal Tea , juices, soups	6	Chalk and talk, PPT, On the spot Test, Assignment

Course Designer:

(MRS). K.GOWSALYA

Department of N&D				Class : I N&D				
Sem	**Category**	**Course Code**	**Course Title**	**Credits**	**Contact Hours / Week**	**CIA**	**SE**	**Total**
I	Skill Enhancement Course	22OUNDSE12	Community Nutrition	2	2	25	75	100

Nature of the Course		
Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship oriented
✔		

Course Objectives:

To enable the students to

1. Understand the concept of community nutrition.
2. To know about the various health intervention programmes in the community .
3. To understand national nutritional problems and their implications.

Course Content:

Unit – I Concept and scope of community nutrition - Meaning and Scope Determinants of health status. Mortality, Morbidity, IMR, MMR, sex ratio and life expectancy.

Unit – II Epidemiology of deficiency diseases - Nutritional deficiency diseases- vitamin A deficiency, anaemia, goiter and PEM.

Nutritional Intervention Programmes - ICDS: Objectives and services, Noon meal programme, poshan abhiyaan, annapoorna, antyodaya anna yojana (AAY)

Unit – III Role of National and International organizations – ICMR, NIN, NNMB**,** NIIPCID, CFTRI**,** FAO, WHO, UNICEF.

Unit – IV Nutrition education – meaning, importance and methods**.**

Unit – V National Nutritional Policy – Objectives, direct and indirect interventions.

Books for study :

1. Park and Park, *Preventive and Social Medicine* (17 edn), Ms Banarsidas Bhanot, Jabalpur, 2003.
2. Srilakshmi B., *Nutrition Science* (7 Edn.), New Age International Publishers, New Delhi, 2018.

Books for Reference:

1. Bamji etal *Text book of Human Nutrition* (4th)CBS Publishers &Distributors Pvt Ltd, New Delhi,2016 .
2. Gajalakshmi R *Nutrition Science* (1ed) CBS Publishers &Distributors Pvt, Ltd, New Delhi, 2015.
3. Srilakshmi B., *Dietetics* (7 Edn.), New Age International Publishers, New Delhi, 2014.
4. Srilakshmi B., *Nutrition Science* (5 Edn.), New Age International Publishers, New Delhi, 2016.
5. Varinder Karu *Textbook of Nutrition for GNM students*) CBS Publishers &Distributors Pvt, Ltd, New Delhi, 2018.

Web Resource / E.Books :

1. **https://nursingenotes.com/objectives-of-community-nutrition/**
2. **https://en.wikipedia.org/wiki/Nutritional_epidemiology**
3. **https://www.researchgate.net/publication/333866257_National_Nutrition_Programmes_in_India**
4. **https://www.brainkart.com/article/Nutrition-intervention-programmes_34048/**
5. **http://ecoursesonline.iasri.res.in/mod/page/view.php?id=111054**
6. **https://books.google.co.in/books?id=o5CxDAAAQBAJ&lpg=PP1&pg=PA2#v=onepage&q&f=false**

Pedagogy:

Chalk and Talk, PPT, group discussion , OHP presentations, quiz, on the spot test and Virtual Labs.

Rationale for nature of Course:

Knowledge and Skill:

To know about various rules and regulation of national , international programmes. To gain knowledge about communicable diseases and nutrition intervention programmes.

Activities to be given:

Assignment, ppt, Quiz, Group discussion.

Course learning Outcomes (CLO's):

CLO	Course Outcomes Statement	Knowledge (According to Bloom's Taxonomy)
CLO1	Define the concept and scope of community nutrition	K1 to K3
CLO2	Summarize the epidemiology of communicable diseases.	K1 to K3
CLO3	Articulation of nutritional intervention programmes.	K1 to K3
CLO4	Categorize the role of national and international organizations.	K1 to K3
CLO5	Organise nutritional education programmes.	K1 to K3

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	1	2	3	1	3	3
CLO2	2	3	3	3	3	3
CLO3	3	3	3	2	3	2
CLO4	2	2	2	3	3	2
CLO5	2	3	3	2	3	3

1-Basic Level 2- Intermediate Level 3- Advanced Level

Annexure – 16

LESSON PLAN : TOTAL HOURS (30 hrs)

Unit	Description	Hrs	Mode
1	**Unit – I** Concept and scope of community nutrition - Meaning and Scope Determinants of health status. Mortality, Morbidity, IMR, MMR, sex ratio and life expectancy.	6	Chalk and talk, Group Discussions, Quiz
2	**Unit – II** Epidemiology of deficiency diseases - Nutritional deficiency diseases- vitamin A deficiency, anaemia, goiter and PEM. Nutritional Intervention Programmes - ICDS: Objectives and services, Noon meal programme, poshan abhiyaan, annapoorna, antyodaya anna yojana (AAY)	10	Chalk and talk, Quiz
3	**Unit – III** Role of National and International organizations – ICMR, NIN, NNMB, NIIPCID, CFTRI, FAO, WHO, UNICEF.	6	Chalk and talk, PPT, On the spot Test
4	**Unit – IV** Nutrition education – meaning, importance and methods.	4	Chalk and talk, PPT, On the spot Test
5	**Unit – V** National Nutritional Policy Objectives, direct and indirect interventions.	4	Chalk and talk, PPT, On the spot Test, Assignment

Course Designer:

(MRS). B.RUBARANI

Department of N&D				Class : I N&D				
Sem	**Category**	**Course Code**	**Course Title**	**Credits**	**Contact Hours / Week**	**CIA**	**SE**	**Total**
I	Inter Disciplinary Course	22OUNDID1	Basic Nutrition	2	2	25	75	100

Nature of the Course		
Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship oriented
✔		

Course Objectives:

To help the students to

1. Understand the functions and sources of nutrients.
2. Acquire skills in the maintenance of good health
3. Know about the various deficiency disorders.

Course Content:

Unit – I Basic concepts - Meal planning , factors and principles of meal planning, food groups, food pyramid, my plate. **n**utrition, nutrients, health, nutritional status, malnutrition, under nutrition, over nutrition, balanced diet and RDA.

Unit – II Carbohydrate – definition, classification, function, sources and RDA for different age groups.

Unit – III Protein- definition, classification, functions, sources, deficiency and RDA. **Lipids-**definition, functions, types, sources, deficiency and RDA.

Unit – IV Vitamins - water soluble (thiamine,riboflavin,niacin,B12), fat soluble (A,D,E, and K) ,functions, sources, deficiency and RDA.

Unit –V Minerals – functions, sources, deficiency and RDA of calcium , iron, iodine, zinc and sodium**.**

Books for study:

1. Srilakshmi.B , *Nutrition Science* (5th edn), New Age International Publications, New Delhi, 2016
2. Sunetra Roday.*Food Science & Nutrition* (2 ed) Published in India by Oxford University Press, 2012.

Books for Reference :

1. Monika Sharma *Textbook of Nutrition for Bsc Nursing Students* CBS Publishers &Distributors Pvt, Ltd, New Delhi, 2017.
2. Pooja Verma *Food Nutrition and Dietetics* CBS Publishers &Distributors Pvt, Ltd, New Delhi, 2015.
3. Shrinandhan *Bansal Food and Nutrition* AITBS Publishers India New Delhi 2012.
4. Shubhangini A Joshi *Nutrition and Dietetics with Indian Case studies* ,Tata Mc Graw –Hill Pvt.Ltd 2011.
5. Varinder Karu *Textbook of Nutrition for GNM students*) CBS Publishers &Distributors Pvt, Ltd, New Delhi, 2018.

Web resources / E.Books:

1. **https://byjus.com/biology/nutrients/**
2. **https://www.healthline.com/health/balanced-diet**
3. **https://www.slideshare.net/DhakaGaurav/carbohydrates-classification-functions-source-rda**
4. **https://www.medicalnewstoday.com/articles/196279**
5. **https://www.hsph.harvard.edu/nutritionsource/vitamins/**
6. **https://www.mea.elsevierhealth.com/nursing-midwifery/nutrition**

Pedagogy:

Chalk and Talk, PPT, group discussion , OHP presentations, quiz, on the spot test and Virtual Labs.

Rationale for nature of Course:
Knowledge and Skill:
To articulate the various nutritional deficiency disorders.
To acquire knowledge on balanced diet and maintenance of good health.
Activities to be given:
Assignment, ppt, Quiz, Group discussion,

Course learning Outcomes (CLO's):

CLO	Course Outcomes Statement	Knowledge (According to Bloom's Taxonomy)
CLO1	Explain the basic concepts of nutrition and health.	K1 to K3
CLO2	Classify major and minor nutrients	K1 to K3
CLO3	Identify major and minor nutrients in the food sources.	K1 to K3
CLO4	Choose food sources rich in nutrients.	K1 to K3
CLO5	Apply the knowledge on nutrients to maintain their health.	K1 to K3

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs) (SCIENCE)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	2	2	2	3	3	2
CLO2	2	2	2	2	1	3
CLO3	2	2	2	3	2	2
CLO4	2	3	3	3	3	3
CLO5	2	3	3	3	3	3

1-Basic Level 2- Intermediate Level 3- Advanced Level

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs) (ARTS)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	2	2	2	2	3	2
CLO2	2	1	1	2	1	2
CLO3	2	2	2	3	2	2
CLO4	2	1	1	2	3	3
CLO5	2	2	2	2	2	2

1-Basic Level 2- Intermediate Level 3- Advanced Level

Annexure – 16

LESSON PLAN : TOTAL HOURS (30 hrs)

Unit	Description	Hrs	Mode
1	**Unit – I** Basic concepts - Meal planning , factors and principles of meal planning, food groups, food pyramid, my plate. nutrition, nutrients, health, nutritional status, malnutrition, under nutrition, over nutrition, balanced diet and RDA.	4	Chalk and talk, Group Discussions, Quiz
2	**Unit – II** Carbohydrate – definition, classification, function, sources and RDA for different age groups.	4	Chalk and talk, Quiz
3	**Unit – III** Protein- definition, classification, functions, sources, deficiency and RDA. Lipids-definition, functions, types, sources, deficiency and RDA.	6	Chalk and talk, PPT, On the spot Test
4	**Unit – IV** Vitamins - water soluble (thiamine,riboflavin,niacin,B12), fat soluble (A,D,E, and K) ,functions, sources, deficiency and RDA.	10	Chalk and talk, PPT, On the spot Test
5	**Unit –V** Minerals – functions, sources, deficiency and RDA of calcium , iron, iodine, zinc and sodium**.**	6	Chalk and talk, PPT, On the spot Test, Assignment

Course Designers:

(**MRS). K.GOWSALYA & (MRS). K. JANAKI**

Department of N&D				Class : I N&D				
Sem	**Category**	**Course Code**	**Course Title**	**Credits**	**Contact Hours / Week**	**CIA**	**SE**	**Total**
II	Core	22OUND21	Food Science - II	4	4	25	75	100

Nature of the Course		
Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship oriented
✔		

Course Objectives

To enable students to

1. Learn the structure, composition, selection of different food and their changes during cooking.
2. Gain knowledge on evaluation of food quality.
3. Know about the food adulteration and tests for detection.

Course Content:

Unit - I Milk - Nutritional composition, types, processing - pasteurization, homogenization, standardization. milk products - butter, ghee, cheese. role of milk in cookery, problems encountered in cooking milk.

Unit - II Fleshy Foods - Egg ,Poultry, Meat and Fish- structure of meat, classification, nutritional composition, changes during cooking and tenderization.

Unit - III Fats and oils- Nutritional composition, rancidity – types and role of fat in cookery. Sugars: Classification, stages of sugar cookery and role of sugar in cookery Beverages - Definition, classification and function.

Unit – IV Sensory Evaluation- Definition , sensory characteristics of food, need for testing food quality, trained panel members .Testing laboratory – preparation of samples, smelling and testing , testing time , evaluation card.

Unit - V Food Adulteration- Meaning , types- intentional and incidental, simple methods of detection – Intentional - asafoetida, black pepper , cinnamon, common salt, dhal, ghee, honey, milk.

Books for Study:

1. Shakuntala Manay and Shada Sharaswamy, *Food; Facts and Principles*, New Age International Pub., New Delhi, 2010.
2. Srilakshmi. B *Food Science* (6 ed.), New Age International Pub., New Delhi, 2015.

Books for Reference:

1. Alex Ramani .V *Food Chemistry*, Mjp publishers Chennai ,2014 .
2. Raheena Begum .M *A Text Book of Foods, Nutrition and Dietetics* ,Sterling Pub.Pvt.Ltd ., New Delhi 2010.
3. Shakuntala Manay and Shada Sharaswamy, *Food; Facts and Principles*, New Age International Pub,, New Delhi, 2010
4. Shrinandan Bansal *Food and Nutrition* AITBS Publishers., New Delhi 2012.
5. Srilakshmi. B *Food Science* (6 ed.), New Age International Pub., New Delhi, 2015.

Web Resources / E.Books:

1. **https://www.britannica.com/topic/milk**
2. **https://www.myvmc.com/lifestyles/**
3. **https://www.pearsonhighered.com/assets/samplechapter/0/1/3/4/0134204581.pdf**
4. **https://www.biotechnologynotes.com/**
5. **https://www.linkedin.com/pulse/sensory-evaluation-eirini-christodoulaki**
6. **https://byjus.com/biology/food-adulteration/**
7. **https://byjus.com/biology/pigments/**

Pedagogy:

Chalk and Talk, PPT, Group discussion , OHP presentations, quiz, on the spot test and Virtual Labs.

Rationale for nature of Course:

Knowledge and Skill:

To gain knowledge nutritional composition and their nutrients of foods.

To know about the evaluation of food quality & food adulteration and tests for detection

Activities to be given:

Innovation recipes. Assignment, ppt, Quiz, Group discussion.

Course learning Outcomes (CLO's):

CLO	Course Outcomes Statement	Knowledge (According to Bloom's Taxonomy)
CLO1	List different food groups and their functions.	K1 to K3
CLO2	Describe various methods of Processing techniques of foods.	K1 to K3
CLO3	Summarize the culinary uses and role of different food groups in Indian cookery	K1 to K4
CLO4	Apply the knowledge on different methods of cooking in day to life .	K1 to K3
CLO5	Analyse different nutrients present in foods.	K1 to K4

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	1	2	3	1	2	3
CLO2	2	2	2	3	2	3
CLO3	1	3	3	3	2	3
CLO4	3	2	2	3	2	2
CLO5	2	3	3	3	2	2

1-Basic Level 2- Intermediate Level 3- Advanced Level

Annexure – 16

LESSON PLAN : TOTAL HOURS(60 HRS)

Unit	Description	Hrs	Mode
1	**Unit - I** Milk - Nutritional composition, types, processing - pasteurization, homogenization, standardization. milk products - butter, ghee, cheese. role of milk in cookery, problems encountered in cooking milk.	12	Chalk and talk, Group Discussions, Quiz
2	**Unit - II** Fleshy Foods - Egg ,Poultry, Meat and Fish- structure of meat, classification, nutritional composition, changes during cooking and tenderization.	9	Chalk and talk, Quiz
3	**Unit - III** Fats and oils- Nutritional composition, rancidity – types and role of fat in cookery. Sugars: Classification, stages of sugar cookery and role of sugar in cookery Beverages - Definition, classification and function.	15	Chalk and talk, PPT, On the spot Test
4	**Unit – IV** Sensory Evaluation- Definition , sensory characteristics of food, need for testing food quality, trained panel members .Testing laboratory – preparation of samples, smelling and testing , testing time , evaluation card.	15	Chalk and talk, PPT, On the spot Test
5	**Unit - V** Food Adulteration- Meaning , types- intentional and incidental, simple methods of detection – Intentional - asafoetida, black pepper , cinnamon, common salt, dhal, ghee, honey, milk.	9	Chalk and talk, PPT, On the spot Test, Assignment

Course Designer:

(MRS).K.GOWSALYA& (MRS). B. RUBARANI

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Department of N&D				Class : I N&D				
Sem	**Category**	**Course Code**	**Course Title**	**Credits**	**Contact Hours / Week**	**CIA**	**SE**	**Total**
II	Core	22OUND2P	Lab in Food science I & II	2	2	40	60	100

Nature of the Course		
Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship oriented
✔		

Course Contents:

Unit - I Cereal cookery - Microscopic examination of starches, measurement of raw and cooked rice, gelatinization of starch, gluten formation, methods of cooking coarse and fine cereals, quality of raw and parboiled rice cooked by different methods, preparation of selected recipes.

Unit - II Pulse cookery - Germination, factors affecting cooking quality – hard water, soft water, soaked, unsoaked, sodium chloride, sodium bicarbonate. Preparation of selected recipes.

Unit - III Vegetable and fruit cookery - Measurement of weight of fruits and vegetables, determination of edible portions , browning reaction, colour and textural changes on cooking, preparation of selected recipes. **Milk cookery –** problems in milk cookery and their prevention, preparation of selected recipes.

Unit - IV Egg cookery – Boiled egg, poached egg , omelet, custard and egg nog preparation.

Meat, Fish and Poultry - Methods of cooking, preparation of selected recipes.

Unit - V Beverages - Preparation of hot and cold beverages.

Oils : Smoking temperature of different oils. Stages of sugar cookery.

Sugar : Stages of sugar cookery.

Books for Study :

1.Mohini sethi etal *Food science Experiments and Applications* (2 nded) CBS Publishers & Distributors Pvt.Ltd,2013.

2.Srilakshmi. B *Food Science* (7 ed.), New Age International Pub., New Delhi, 2018.

Books for Reference:

1.Avantina Sharma *Text book of Food science &Technology* International Book Distributing Co, Lucknow, 2006.

2.Reddy SM *Basic Food Science and Technology* New age International Publishers New Delhi,2015.

3.Raheena Begum .M *A Text Book of Foods, Nutrition and Dietetics* ,Sterling Pub.Pvt.Ltd , New Delhi 2010.

4.Shrinandan Bansal *Food and Nutrition* AITBS Publishers., New Delhi 2012.

5.Sunetra Roday.*Food Science & Nutrition* (2 ed) Published in India by Oxford University Press, 2012.

Web Resources:

1. **https://youtube.com/playlist?list=PL_a1TI5CC9RE9WQVsu7-iLQPuTSTNRKUO**

Pedagogy

Articulate, demo, method of cooking and prepration.

Annexure – 16

LESSON PLAN : TOTAL HOURS(30 HRS)

Unit	Description	Hrs	Mode
1	**Unit - I** Cereal cookery - Microscopic examination of starches, measurement of raw and cooked rice, gelatinization of starch, gluten formation, methods of cooking coarse and fine cereals, quality of raw and parboiled rice cooked by different methods, preparation of selected recipes.	10	Demonstration & Preparation
2	**Unit - II** Pulse cookery - Germination, factors affecting cooking quality – hard water, soft water, soaked, unsoaked, sodium chloride, sodium bicarbonate. Preparation of selected recipes.	4	Demonstration & Preparation
3	**Unit - III** Vegetable and fruit cookery - Measurement of weight of fruits and vegetables, determination of edible portions , browning reaction, colour and textural changes on cooking, preparation of selected recipes. Milk cookery – problems in milk cookery and their prevention, preparation of selected recipes.	6	Demonstration & Preparation
4	**Unit - IV** Egg cookery – Boiled egg, poached egg , omelet, custard and egg nog preparation. Meat, Fish and Poultry - Methods of cooking, preparation of selected recipes.	4	Demonstration & Preparation
5	**Unit - V** Beverages - Preparation of hot and cold beverages. Oils : Smoking temperature of different oils. Stages of sugar cookery. Sugar : Stages of sugar cookery.	6	Demonstration & Preparation

Course Designer:

(MRS). B. RUBARANI

Annexure – 16

EVALUATION (PRACTICAL)

Internal (Formative) : 40 marks

External (Summative) : 60 marks

Question Paper Pattern for Internal Practical Examination : 40 marks

S. No	Components	Marks
1.	Menu Planning	5
2.	Experimental Cookery	5
3.	Menu Preparation	5
4.	Menu Display	10
5.	Observation Note Book	5
6.	Model Exam	10
	Total	**40**

Question Paper Pattern for External Practical Examination (Major) : 60 marks

S. No	Components	Marks
1.	Menu Planning	10
2.	Experimental Cookery	10
3.	Menu Preparation	15
4.	Menu Display	10
5.	Record	10
6.	Viva	5
	Total	**60**

In respect of External Examinations Passing Minimum is **35 %for Under Graduate** Courses and in total , **aggregate of 40%**

Annexure – 16

Department of N&D				Class : I N&D				
Sem	**Category**	**Course Code**	**Course Title**	**Credits**	**Contact Hours / Week**	**CIA**	**SE**	**Total**
II	Generic Enhancement Course	22OUNDGEND2	Food Microbiology	5	6	25	75	100

Nature of the Course		
Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship oriented
✔		

Course Objectives

To enable students to

1. Acquire knowledge on the nature of microorganisms involved in food spoilage.
2. Understand the importance of microorganisms in food biotechnology.
3. Distinguish between food poisoning and infection.

Course Content :

Unit – I Introduction to Micro Organism - Brief history of food microbiology, primary sources of microorganisms in foods, physical and chemical methods of destruction of micro organisms in food, extrinsic and intrinsic parameters affecting growth and survival of microbes.

Unit – II Contamination and spoilage of cereal and cereal products, vegetables and fruits – sources , types of contamination and microorganism involved in spoilage.

Unit – III Contamination and spoilage of fish and other sea foods, meat and meat products, egg and poultry, milk and milk products - sources , types of contamination and microorganism involved in spoilage **.**

Unit – IV Food Infection and Intoxication - meaning and difference , bacterial , – salmonella, staphylococcus, clostridium, perfringens, pseudomonas. fungal food borne diseases and prevention.

Unit – V New Trends in Food Microbiology –genetically modified foods , transgenic plants , fermented foods and significance, concepts of synbiotics, prebiotics and probiotics.

Books for study:

1. Anna K. Joshua, *Microbiology* (4th Edn), Popular Book Depot, Madras, 1988.
2. Frazier, W C and Westhoff D C., *Food Microbiology* (4th Edn), MC Graw Hill Inc. 2017.

Books for Reference :

1. Arumugam etal, *Microbiology*, Saras Publication, Tamilnadu, 2011.
2. Foster WM *Food Microbiology* CBS Publishers & Distributors Pvt.Ltd, New Delhi,2016.
3. Monika matlani *Microbiology* CBS Publishers & Distributors Pvt.Ltd, New Delhi,2016.
4. Neha charan *Advances in Microbiology* Green leaf Publication Varanasi India,2013.
5. Viswanath.B *Textbook of Microbiology* Biotech Pharma Publications, Hyderabad,2012.

Web Resources / E.Book :

1. **https://www.biotechnologynotes.com/food-biotechnology/microorganisms-in-food/growth-of-microorganisms-in-food-intrinsic-extrinsic-factors-biotechnology/14135**
2. **http://egyankosh.ac.in/bitstream/123456789/31098/1/Unit-1.pdf**
3. **https://www.slideshare.net/poshadri/contamination-preservation-and-spoilage-of-cereals**
4. **https://www.slideshare.net/SuganthiA4/contamination-spoilage-and-preservation-of-fruits-and-vegetables**
5. **http://ecoursesonline.iasri.res.in/mod/page/view.php?id=5126**
6. **https://pdfcoffee.com/food-microbiology-by-wc-frazier-pdf-free.html**

Pedagogy:

Chalk and Talk, PPT, Group discussion , OHP presentations, quiz, on the spot test.

Rationale for nature of Course:

Knowledge and Skill:

To acquire knowledge on the nature of microorganisms involved in food spoilage.

To understand the importance of microorganisms in food biotechnology, poisoning and infection.

Activities to be given:

Innovation recipes. Assignment, ppt, Quiz, Group discussion.

Course learning Outcomes (CLO's):

CLO	Course Outcomes Statement	Knowledge (According to Bloom's Taxonomy)
CLO1	Describe the factors affecting growth and survival of microbes.	K1 to K3
CLO2	Identify the source of contamination of various foods.	K1 to K3
CLO3	Explain various types of spoilage in foods.	K1 to K4
CLO4	Distinguish between food poisoning and food intoxication.	K1 to K3
CLO5	Promote the benefits of fermented foods.	K1 to K4

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	2	2	2	3	2	3
CLO2	2	3	3	3	3	3
CLO3	2	2	2	2	2	2
CLO4	3	3	3	2	3	3
CLO5	3	3	3	3	2	3

1-Basic Level 2- Intermediate Level 3- Advanced Level

Annexure – 16

LESSON PLAN : TOTAL HOURS(90 HRS)

Unit	Description	Hrs	Mode
1	**Unit – I** Introduction to Micro Organism - Brief history of food microbiology, primary sources of microorganisms in foods, physical and chemical methods of destruction of micro organisms in food, extrinsic and intrinsic parameters affecting growth and survival of microbes.	18	Chalk and talk, Group Discussions, Quiz
2	**Unit – II** Contamination and spoilage of cereal and cereal products, vegetables and fruits – sources , types of contamination and microorganism involved in spoilage.	18	Chalk and talk, Quiz
3	**Unit – III** Contamination and spoilage of fish and other sea foods, meat and meat products, egg and poultry, milk and milk products - sources , types of contamination and microorganism involved in spoilage.	18	Chalk and talk, PPT, On the spot Test
4	**Unit – IV** Food Infection and Intoxication - meaning and difference , bacterial , – salmonella, staphylococcus, clostridium, perfringens, pseudomonas. fungal food borne diseases and prevention .	18	Chalk and talk, PPT, On the spot Test
5	**Unit – V** New Trends in Food Microbiology – genetically modified foods , transgenic plants , fermented foods and significance, concepts of synbiotics, prebiotics and probiotics.	18	Chalk and talk, PPT, On the spot Test, Assignment

Course Designer:

(MRS).K.GOWSALYA (MRS).K.JANAKI

Department of N&D				Class : I N&D				
Sem	**Category**	**Course Code**	**Course Title**	**Credits**	**Contact Hours / Week**	**CIA**	**SE**	**Total**
II	Skill Enhancement Course	22OUNDSE21	Extension Education	2	2	25	75	100

Nature of the Course		
Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship oriented
✔		

Course Objectives :

To enable the students to

1. Understand the principles of extension and community development.
2. Prepare for higher studies in extension education.
3. Become effective home science extension worker.

Course Content :

Unit – I Extension education and community development - Introduction of extension education and community development, philosophy and principle of extension education. origin, history, organization and functions of community development and extension services in India.

Unit - II Home science extension -Role of home science in developing a community, Home Science extension - concept, philosophy, objectives. Qualities and activities of Home Science extension workers, origin and activities of nutrition extension unit.

Unit – III Audio Visual aids - Principles and methods, audio visual aids, motion pictures, radios, slides, flannel graphs, flash cards, graphs and puppet shows**.**

Unit – IV Communication and leadership – meaning, types and problems in communication, SMCRE model. Classification of social groups, leadership classification, role and training of a good leader.

Unit – V Health planning and management - objectives, planning cycle, management methods, management techniques.

Books for study :

1. Adivi Reddy, *Extension Education* (I Edn.) Sri Lakshmi Press, Andhra Pradesh, 1971.
2. Park K., *Textbook of Preventive Social Medicine*, Banarasidas Bhanot Publishing, Jabalpur, 2002.

Books for Reference:

1. Dahama O.P and Bhatnagar, O.P, *Extension and Communication for Development*, Oxford and IBH Publishing Co. New Delhi, 1985.
2. Devdas R.P., *Introduction to Home Science*, Saradalaya Press, Coimbatore, 1976.
3. Gopalan, C. Food and Nutrition Board, *Community Food and Nutrition Extension Unit*, Rajaji Bhavan, Chennai, 1998.
4. Gopalan, C. Food and Nutrition Board, *Department of Women and Child Development*, Ministry of HRD, Government of India, New Delhi, 2004.
5. MA Varghese etall, *Home Management* (II Edn) New Age International Publishers (P) Ltd. 2017.

Web Resources / E.book :

1. **https://www.magadhuniversity.ac.in/download/econtent/pdf/Extension%20Education-Meaning,Scope,philosophy%20and%20principles.pdf**
2. **https://www.yourarticlelibrary.com/india-2/community-development-programmes-in-india-objectives-features-and-other-details/35008**
3. **http://www.krishiexpert.com/extension/QUALITIES%20AND%20ROLE%20OF%20EXTENSION%20WORKER.pdf**
4. **http://studylecturenotes.com/audio-visual-aids-in-education-definition-types-objectives/**
5. **https://emeritus.org/in/learn/different-types-of-leadership/**
6. **https://www.cartercenter.org/resources/pdfs/health/ephti/library/lecture_notes/health_extension_trainees/ln_hew_hlth_plng_final.pdf**
7. **https://www.iaritoppers.com/2019/06/fundamentals-of-extension-education-icar-ecourse-pdf-download-e-krishi-shiksha.html**

Pedagogy:

Chalk and Talk, PPT, group discussion , OHP presentations, quiz, on the spot test and Virtual Labs.

Rationale for nature of Course:

Knowledge and Skill:

To understand the principles of extension and community development.

To Prepare for higher studies in extension education.

Activities to be given:

Assignment, ppt, Quiz, Group discussion.

Course learning Outcomes (CLO's):

CLO	Course Outcomes Statement	Knowledge (According to Bloom's Taxonomy)
CLO1	Explain the principle of extension education.	K1 to K3
CLO2	Summarize the role of extension workers.	K1 to K3
CLO3	Develop audio – visual aids for extension education.	K1 to K3
CLO4	Comprehend communication problems.	K1 to K3
CLO5	Organise health camps for community.	K1 to K3

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	1	2	2	2	2	2
CLO2	1	2	2	3	2	2
CLO3	2	3	3	3	2	3
CLO4	2	3	3	2	2	2
CLO5	2	3	3	2	2	3

1-Basic Level 2- Intermediate Level 3- Advanced Level

Annexure – 16

LESSON PLAN : TOTAL HOURS (30 hrs)

Unit	Description	Hrs	Mode
1	**Unit – I** Extension education and community development - Introduction of extension education and community development, philosophy and principle of extension education. origin, history, organization and functions of community development and extension services in India.	6	Chalk and talk, Group Discussions, Quiz
2	**Unit - II** Home science extension -Role of home science in developing a community, Home Science extension - concept, philosophy, objectives. Qualities and activities of Home Science extension workers, origin and activities of nutrition extension unit.	10	Chalk and talk, Quiz
3	**Unit – III** Audio Visual aids - Principles and methods, audio visual aids, motion pictures, radios, slides, flannel graphs, flash cards, graphs and puppet shows.	4	Chalk and talk, PPT, On the spot Test
4	**Unit – IV** Communication and leadership – meaning, types and problems in communication, SMCRE model. Classification of social groups, leadership classification, role and training of a good leader.	6	Chalk and talk, PPT, On the spot Test
5	**Unit – V** Health planning and management - objectives, planning cycle, management methods, management techniques.	4	Chalk and talk, PPT, On the spot Test, Assignment

Course Designer:

(MRS). K. GOWSALYA

Annexure – 16

Department of N&D				Class : I N&D				
Sem	**Category**	**Course Code**	**Course Title**	**Credits**	**Contact Hours / Week**	**CIA**	**SE**	**Total**
II	Skill Enhancement Course	22OUNDSE22	Textiles and Clothing	2	2	25	75	100

Nature of the Course		
Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship oriented
✔		

Course Objectives:

To enable the students to

1. Understand properties and their uses of textile fibres
2. Know the concept of fabric finishes.
3. Gain basic knowledge of planning family clothing.

Course Content:

Unit – I Classification of textiles fibres , types of yarn , tests for fibre identification.

Unit – II Weaving – Parts and functions of simple loom. Types of weaves – Basic (Plain , Twill , Satin , Fancy – Pile jacquard)

Unit – III Basic finishes – Singeing , mercerizing kier boiling , bleaching, tentering sizing, calendaring. Functional finishes - Water proof , water repellent , fire proof, moth proof, crease resistance.

Unit – IV Factors influencing selection of clothes Principles of wardrobe planning. – 4hrs

Unit – V Care of clothes - Laundering – soap ,properties of a good laundry soap, detergents, and dry cleaning.

Books for study :

1. Dantyagi, S., *Fundamentals of textiles and their Care*, Orient Longman Ltd., New Delhi, 1983.
2. Deulkar, D., *Household Textiles and Laundry Work*, Atma Ram and Sons, New Delhi, 1995.

Books for Reference :

1. Dantyagi, S., *Fundamentals of textiles and their Care*, Orient Longman Ltd., New Delhi, 1983.
2. Deulkar, D., *Household Textiles and Laundry Work*, Atma Ram and Sons, New Delhi, 1995.
3. Padmavati, B. *Couture and Fashion Drafting*, Atlantic Publishers and Distributers Pvt. Ltd., 2009.
4. Padmavati, B. *Drafting and Pattern Making*, Atlantic Publishers and Distributers Pvt. Ltd., 2009.
5. Pooja Khurana and Monika Sethi, *Introduction to Fashion Technology*, Firewall media, New Delhi, 2009.

Web Resources/ E.book :

1. **http://gpktt.weebly.com/classification-of-textile-fibers.html**
2. **https://ncch.gov.mn/Files/Method/identification_of_fibres_and_fabrics_SCHWENCK.PDF**
3. **https://www.fibre2fashion.com/industry-article/3343/different-types-of-weaves**
4. **https://www.brainkart.com/article/Fabric-Finishes---Types---Basic-finishes,-Functional-finishes_1847/**
5. **https://anuschkarees.com/blog/2014/03/16/how-to-build-the-perfect-wardrobe-10-basic-principles**
6. **https://www.nytimes.com/guides/tmagazine/how-to-take-care-of-your-clothes**
7. **https://cbseacademic.nic.in/web_material/Curriculum/Vocational/2018/Textile%20DesignT&P_XI_829.pdf**

Pedagogy:

Chalk and Talk, PPT, group discussion , OHP presentations, on the spot test

Rationale for nature of Course:

Knowledge and Skill:

To gain basic knowledge of planning the family clothing needs.

To know about the basic concept of fabric production and finishing and their uses of textile fibres.

Activities to be given:

Assignment, ppt ,Group discussion.

Course learning Outcomes (CLO's):

CLO	Course Outcomes Statement	Knowledge (According to Bloom's Taxonomy)
CLO1	Identify the textile fibres and yarns.	K1 to K3
CLO2	Classify different weaves.	K1 to K3
CLO3	Articulate the uses of basic finishes.	K1 to K3
CLO4	Analyse the selection of clothes and wardrobe plan.	K1 to K3
CLO5	Demonstrate care of clothes .	K1 to K3

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	1	2	1	2	2	2
CLO2	1	1	2	2	2	2
CLO3	2	2	2	3	2	3
CLO4	3	3	3	2	3	3
CLO5	2	3	3	2	2	2

1-Basic Level 2- Intermediate Level 3- Advanced Level

Annexure – 16

LESSON PLAN : TOTAL HOURS (30 hrs)

Unit	Description	Hrs	Mode
1	**Unit – I** Classification of textiles fibres , types of yarn , tests for fibre identification.	4	Chalk and talk, Group Discussions, Quiz
2	**Unit – II** Weaving – Parts and functions of simple loom. Types of weaves – Basic (Plain , Twill , Satin , Fancy – Pile jacquard)	10	Chalk and talk, Quiz
3	**Unit – III** Basic finishes – Singeing , mercerizing kier boiling , bleaching, tentering sizing, calendaring. Functional finishes - Water proof , water repellent , fire proof, moth proof, crease resistance.	6	Chalk and talk, PPT, On the spot Test
4	**Unit – IV** Factors influencing selection of clothes Principles of wardrobe planning.	4	Chalk and talk, PPT, On the spot Test
5	**Unit – V** Care of clothes - Laundering – soap ,properties of a good laundry soap, detergents, and dry cleaning.	6	Chalk and talk, PPT, On the spot Test, Assignment

Course Designer:

(MRS). K.JANAKI

Department of N&D				Class : I N&D				
Sem	**Category**	**Course Code**	**Course Title**	**Credits**	**Contact Hours / Week**	**CIA**	**SE**	**Total**
II	Inter Disciplinary Course	22OUNDID2	Food preservation	2	2	25	75	100

Nature of the Course		
Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship oriented
	✔	

Course Objectives:

To enable students to

1. Understand the basic principles underlying food preservation.
2. Develop the ability in preserving foods.

Unit-I Introduction to Food Preservation - meaning, importance, principles, types of preservation and preservatives – natural and chemical.

Unit-II Preservation by use of Low Temperature - principles, types of refrigeration,cold storage, freezing its methods of freezing.

Unit-III Preservation by use of High Temperature - principles, pasteurization, sterilization, canning and bottling.

Unit-IV Drying and dehydration – definition, principles, types- sun drying, mechanical drying , freeze drying , vacuum drying , factors affecting drying.

Unit-V Preserved foods preparation of jam, jelly, squashes , syrups, marmalades, ketchups, pickle, rice vadgam , and vegetable vatthal.

Books for study:

1. Srilakshmi. B *Food Science* (7 ed.), New Age International Pub., New Delhi, 2018.
2. Jagmohan Negi . Dr , *Food Presentation Techniques* (1 ed.), S. Chand & Company Pvt. Ltd, 2013.

Books for Reference:

1. Mohini Sethi & Eran S.Rao (2001) food science – experiments and applications. CBS publishers,New Delhi.
2. Shakuntala Manay & Shada Sharaswamy (2014) Food; Facts and Principles, Wiley Eastern Co, New Delhi.
3. Sunetra Roday.*Food Science & Nutrition* (2 ed) Published in India by Oxford University Press, 2012.
4. Srivastava. R. P etal., *Fruit and Vegetale Preservation* Revised and Enlarged(3 ed) CBS publishers,New Delhi, 2017
5. Usha Chandrasekaran *Food Science and its application to Indian Cookery*, Phoenix Pub, New Delhi2002.

Web Resources / E.books:

1. **https://www.vedantu.com/biology/food-preservation-methods**
2. **https://www.brainkart.com/article/Preservation-of-Foods-with-LoTemperature_33478/**
3. **https://biologyease.com/preservation-by-high-temperature/**
4. **https://extension.missouri.edu/publications/gh1562**
5. **https://www.rrc.k-state.edu/preservation/recipes.html**
6. **http://www.cold.org.gr/library/downloads/Docs/Handbook%20of%20Food%20Preservation.PDF**

Rationale for nature of Course

Knowledge and Skill:

Understand the basic principles underlying food preservation. To develop the ability in preserving foods.

Activities to be given:

Assignment, ppt ,Group discussion.

Course learning Outcomes (CLO's):

CLO	Course Outcomes Statement	Knowledge (According to Bloom's Taxonomy)
CLO1	Define food preservation techniques.	K1 to K3
CLO2	Classify the methods of low temperature preservatives.	K1 to K3
CLO3	Explain the canning process.	K1 to K3
CLO4	Distinguish between sun drying and mechanical drying	K1 to K3
CLO5	Create and evaluate preserved foods.	K1 to K3

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs) (SCIENCE)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	2	2	2	3	3	2
CLO2	2	2	2	2	1	3
CLO3	2	2	2	3	2	2
CLO4	2	3	3	3	3	3
CLO5	2	3	3	3	3	3

1-Basic Level 2- Intermediate Level 3- Advanced Level

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs) (ARTS)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	2	2	2	2	3	2
CLO2	2	1	1	2	1	2
CLO3	2	2	2	3	2	2
CLO4	2	1	1	2	3	3
CLO5	2	2	2	2	2	2

1-Basic Level 2- Intermediate Level 3- Advanced Level

Annexure – 16

LESSON PLAN : TOTAL HOURS (30 hrs)

Unit	Description	Hrs	Mode
1	**Unit-I** Introduction to Food Preservation - meaning, importance, principles, types of preservation and preservatives – natural and chemical.	4	Chalk and talk, Group Discussions, Quiz
2	**Unit-II** Preservation by use of Low Temperature - principles, types of refrigeration,cold storage, freezing its methods of freezing.	6	Chalk and talk, Quiz
3	**Unit-III** Preservation by use of High Temperature - principles, pasteurization, sterilization, canning and bottling.	4	Chalk and talk, PPT, On the spot Test
4	**Unit-IV** Drying and dehydration – definition, principles, types- sun drying, mechanical drying , freeze drying , vacuum drying , factors affecting drying.	10	Chalk and talk, PPT, On the spot Test
5	**Unit-V** Preserved foods preparation of jam, jelly, squashes , syrups, marmalades, ketchups, pickle, rice vadgam , and vegetable vatthal.	6	Chalk and talk, PPT, On the spot Test, Assignment

Course Designer:

(MRS). P.TAMILARASI