BACHELOR OF SCIENCE IN FOOD SCIENCE &NUTRITION

SYLLABUS 2018-19

(Outcome Based Education)



Dr. N.G.P. ARTS AND SCIENCE COLLEGE

(An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore) Approved by Government of Tamil Nadu and Accredited by NAAC with 'A' Grade (2nd Cycle) Dr. N.G.P.- Kalapatti Road, Coimbatore-641048, Tamil Nadu, India Web: <u>www.drngpasc.ac.in</u> | Email: <u>info@drngpasc.ac.in</u> | Phone: +91-422-2369100

1 Dr.N.G.P.Arts and Science College (Autonomous)

BACHELOR OF SCIENCE IN FOOD SCIENCE AND NUTRITION REGULATIONS

ELIGIBILITY

A candidate who has passed in Higher Secondary Examination with any Academic stream or Vocational stream as one of the subject under Higher Secondary Board of Examination and as per the norms set by the Government of Tamil Nadu or an Examination accepted as equivalent thereto by the Academic Council, subject to such conditions as may be prescribed thereto are permitted to appear and qualify for the **Bachelor of Science in Food Science And Nutrition Degree Examination** of this College after a course of study of three academic years.

PROGRAMME EDUCATIONAL OBJECTIVES

The Curriculum is designed to attain the following learning goals which students shall accomplish by the time of their graduation:

- 1. To enable the students to implement the basic food science in operation.
- 2. To provide basic knowledge and practice to enhance the quality of life though the improvement of human health and nutritional status.
- 3. To develop skill and techniques in food preparation with conservation of nutrients and palatability using cooking methods generally employed.
- 4. To help the students to contribute proper utilization of foods and prevent food ravages.
- 5. To understand the prevalence of malnutrition in Indian scenario and gain knowledge on effective methods to combat malnutrition.

B.Sc. FS&N (Students admitted for the A.Y. 2018-2019)

		TT	Max Marks				
Course Code	Course	Instruct ion	Exam Duration (Hrs)	CA	CE	Total	Credit Points
First Semeste	r	6-861-00 (C. 11		aritu. S	- (2.5	the second	innet?
Part – I							n in the second second
17UTL11T	Tamil-I						
17UHL11H	Hindi-I	5	3	25	75	100	3
17UML11M	Malayalam-I	0	0	20	10	100	0
17UFL11F	French-I						
Part - II							
17UEG12G	English-I	5	3	25	75	100	3
Part – III							
17UFN13A	Core- I : Basic Food Science	6	3	25	75	100	5
17UFN13B	Core -II : Chemistry of Foods	5	3	20	55	75	5
17UFN13P	Core Practical - I: Food Science	4	3	20	30	50	2
17UCY1AA	Allied- I : Chemistry- I	3	3	20	55	75	3
Part – IV	Binner († 1999) Millener († 1992)				en del		
17UFC1FA	Environmental Studies	2	2	-	50	50	2*
		30				550	23
Second Seme	ester						
Part – I							
17UTL21T	Tamil-II						
17UHL21H	Hindi-II	5	3	25	75	100	3
17UML21M	Malayalam-II			20	15	100	5
17UFL21F	French-II	h hong af					و مار وارو
Part – II	s esta por A presenta da seconda de las						
17UEG22G	English-II	5	3	25	75	100	3

SCHEME OF EXAMINATIONS

3 Dr.N.G.P.Arts and Science College (Autonomous) C Cour

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r.V. Rajentan CHAIRMAN

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20/12/19 Department of Food Science & Nutrition

Dr. N. G. P. Arts and Science College Coimbatore - 641 048

Part – III							
17UFN23A	Core - III : Human Physiology	5	3	20	55	75	4
17UFN23B	Core – IV: Principles of	6	3	25	75	100	6
17UCY2AA	Nutrition Allied-II : Chemistry -II	3	3	20	55	75	3
17UCY2AP	Allied Practical: Chemistry	4	3	20	30	50	2
Part – IV							
17UFC2FA	Value Education – Human Rights	2	2	-	50	50	2
		30				550	23
Third Semes	ter						
Part – I				1			
17UTL31T 17UHL31H 17UML31M 17UFL31F	Tamil-III Hindi-III Malayalam-III French-III	4	3	25	75	100	3
Part – II				Т	T	r	I
17UEG32G	English-III	4	3	25	75	100	3
Part – III				T			
17UFN33A	Core -V : Nutrition in Health	6	3	25	75	100	5
17UFN33P	Core practical- II : Nutrition in Health	4	3	40	60	100	2
17UBC3AA	Allied Paper – III: Biochemistry	4	3	20	55	75	3

17UFN3SA	Skill Based Course –I : Food Hygiene and Sanitation	4	3	20	55	75	4
Part – IV							
	NMEC: I	2	2	-	50	50	2
17UFC3FA 17UFC3FB/ 17UFC3FC/ 17UFC3FD 17UFC3FE	Basic Tamil/ Advanced Tamil(OR) Non-major elective-I (Yoga for Human Excellence)/ Women's Rights/Constit ution of India	2	2	-	50	50	2
	India	30				650	24
Fourth Seme	ster					000	
Part – I							
17UTL41T 17UHL41H 17UML41M 17UFL41F	Tamil-IV Hindi-IV Malayalam-IV French-IV	4	3	25	75	100	3
Part -II			_	1	I = -		-
17UEG42G	English-IV	4	3	25	75	100	3
Part - III							
17UFN43A	Core -VI : Dietetics	5	3	25	75	100	5
17UFN43P	Core Practical- III: Dietetics	4	3	40	60	100	2
17UBC4AA	Allied –IV: Biochemistry	3	3	20	55	75	3
17UBC4AP	Allied Practical-II: Biochemistry	4	3	20	30	50	2

17UFN4SA Kill Based Course-II : Health and fitness		2	3	20	55	75	2
Part - IV							
	NMEC: II	2	3	-	50	50	2
	Basic Tamil/Advance						
17UFC4FA/	d Tamil(OR)						
17UFC4FB/	Non-major	2	3	-	50	50	2
17UFC4FC/	elective -II (General Awareness)						
		30				700	24
Fifth Semes	ter	·	·				
Part - III							
17UFN53A	Core -VII: Food Preservation	6	3	20	55	75	5
17UFN53B	Core- VIII: Food Microbiology	5	3	20	55	75	3
17UFN53C	Core- IX : Food Processing	6	3	25	75	100	5
	Core Practical – IV : Food						
18UFN53P	Preservation and Quality Control	4	3	20	30	50	2
	Elective – I	5	3	20	55	75	4
	Skill Based Course-III :						
17UFN5SA	Basic Computer science in Nutrition	4	3	20	55	75	3
18UFN53T	Hospital Internship	Grade A to C				I	
		30				450	22

Sixth Semester								
Part III								
	Core -X:							
18UFN63A	Community	5	3	25	75	100	4	
	Nutrition							
	Core -XI: Food							
18UFN63B	Service	4	3	20	55	75	3	
	Management							
18UENI63P	Core Practical-	1	3	40	60	100	2	
100111031	V: Nutrition	4	5	40	60	100	2	
	Core Practical -							
181 JENI630	VI:	1	3	20	30	50	2	
10UFIN03Q	Food Product	T	5	20	50	50	2	
	Development							
	Elective – II	5	3	20	55	75	4	
	Elective – III	5	3	20	55	75	4	
	Skill Based							
	Course- IV :							
18UFN6SV	Project &	3	3	25	50	75	3	
	Viva							
Part – V								
	Extension			EO		50	2	
IOUFINDEA	Activity	-		50	-	50	2	
		30				600	24	
GRAND TOTAL						3500	140	

ELECTIVE - I

(Student shall select any one of the following Course as Elective-I in fifth semester)

S. No	Course Code	Name of the Course		
1	17UFN5EA	Food Safety and Quality Control		
2	17UFN5EB	Baking Technology		

ELECTIVE - II

(Student shall select any one of the following Course as Elective-II in Sixth semester)

S. No	Course Code	Name of the Course
1.	17UFN6EA	Food Product Development and Marketing
2.	17UFN6EB	Nutrition Care Process

ELECTIVE - III

(Student shall select any one of the following Course as Elective-III in Sixth semester)

S. No	Course Code	Name of the Course
1.	18UFN6EC	Clinical Nutrition and Counseling
2.	17UFN6ED	Food Packaging

NON MAJOR ELECTIVE COURSES (NMEC)

The Department offers the following two papers as Non Major Elective Course for other than the Nutrition and Dietetics students.

Student shall select the following subject as Non Major Elective Course during their third and fourth semester

S. No	NMEC	Course code	Name of the Course
1	Ι	17UNM34G	Fundamentals of Foods
2	II	17UNM44G	Food Preservation

Courses	Credits	Total		Credits	Cumula	ntive
Part I: Tamil	3	4x100=400		12	24	
Part II: English	3	4x100=400		12		
Part III:						
Core	6	1x100=100		06		
Core	5	4x100=400		30]	
		2X75=150	550			
Core	4	1x100=100	175	08	62	
		1X75=75				
Core	3	2x75=150		06		
Core Practical	2	3x50=150 3x100=300	450	12		102
Allied Paper	3	4x75=300	I	12		1
Allied Practical	2	2x50=100		04	16	
Elective	4	3x75=225		12	12	
Skill Based Course	4	1x75=75		04		
	3	1x75=75		03		
	2	1x75=75		02	12	
Skill Based Viva	3	1x75=75		03		
Part IV						
EVS	2*	1x50=50		02		
Value education – Human rights	2	1x50=50		02	12	
Foundational course	2	2x50=100		04		
NMEC	2	2 x 50 =100		04	1	
Part V:				L		

Total Credit Distribution

Extension Activity	2	1 x 50 =50	2	02
Total		3500	140	140

*Instruction hours- Placement

FOR PROGRAMME COMPLETION

Students have to complete the following Courses:

- Language papers (Tamil/Malayalam/French/Hindi, English) in I, II, III and IV semester.
- 2. Environmental Studies and Human Rights in I and II semester respectively.
- 3. Allied papers in I, II, III and IV semesters.
- 4. Two Non Major Elective Courses in III and IV semester.
- 5. Four Skill Based Courses in III, IV, V and VI semester.
- 6. Extension activity in VI semester
- 7. Elective papers in the Fifth and Sixth semesters.
- 8. Mini Project Viva: Subject code: 17UFN6SV

Students must undergo Hospital Internship for 30 days during IV Semester Summer Vacation. Evaluation of the Report done by the Internal Examiner in the V Semester. Based on their performance Grade will be awarded as A to C.

A- 75 marks and above B- 60-74 marks C- 40-59 marks Below 40 marks – Reappear (RA)

Earning Extra credits is not mandatory for programme completion Extra credits

S.no	Subject	Credit	Total credits
1	BEC/ Self study courses	1	1
2	Hindi / French/ Other foreign Language approved by certified Institutions	1	1

3	Type Writing / Short Hand Course	1	1
4	Diploma/certificate/CPT/ACS Inter/ NPTEL Course	1	1
5	Representation - Academic/Sports/SocialActivities/Curricular/Curricular/ActivitiesatUniversity/District/State/National/	1	1
Total			5

Rules:

The students can earn extra credits only if they complete the above during the programme period (I to V sem) and based on the following criteria. Proof of Completion must be submitted in the office of the Controller of Examinations before the commencement of the VI Semester. (Earning Extra credits are not mandatory for programme completion)

1. Student can opt BEC course/ Self study course to earn one credit. They have to Enroll and complete any one of the course during their programme period before fifth semester (I sem to V sem).

S. No.	Semester	Course Code	Course Title
1.		17UFNSS1	Food Fortification
2.	III	17UFNSS2	Nutrition Education

- 2. Student can opt Hindi/ French/ Other foreign Language approved by certified Institutions to earn one credit. The certificate (Hindi) must be obtained from **Dakshina Bharat Hindi Prachar Sabha** and He/ she has to enroll and complete during their programme period (**first to fifth semester**)
- 3. Student can opt for Type writing /short hand course to earn one extra credit. He/she has to enroll and complete the course during their

programme period to obtain certificate through Tamil Nadu Board of Technical Education

- 4. Student can opt for Diploma/certificate/CPT/ACS Foundation/ NPTEL Course to earn one extra credit. Student who opt for Diploma/ Certificate course have to enroll any diploma/certificate course offered by Bharathiar University through our Institution. Student who opt for CPT/ ACS/CMA have to enroll and complete the foundation level during the course period. Students who opt for NPTEL course should complete the course certificate through NPTEL.
- 5. Award Winners in Academic/ Representation in Sports /Social Activities/ Extra Curricular/ Co-Curricular Activities at University/ District/ State/ National/ International level can earn one extra credit.

B.SC FOOD SCIENCE AND NUTRITION

PROGRAMME OUTCOMES

On the successful completion of the programme, the following are the expected outcomes.

РО	PO Statement
Number	
PO1	Acquire knowledge and develop aptitude in Food Science and
	Nutrition intended for potential career opportunities.
PO2	Build self-empowerment in food Science and Nutrition and
	develop effective communication skills sufficient for entry in pre
	professional practice.
PO3	Apply skills by planning, implementing and evaluating diets to the
	community in the current scenario.
PO4	Interpret and utilize nutrition techniques in developing novel
	products to improve the health status of society and promote
	entrepreneurism.
PO5	Develop professional attributes and portfolio in Food Science and
	Nutrition that are adopted to serve in diverse professional and
	community organizations.

SEMESTER - I	தமிழ் - தாள் -1	17UTL11T
Total Credits: 3		
Hours per week: 5		

குறிக்கோள்:

மொழிப்பாடங்களின் வாயிலாக தமிழரின் பண்பாடு , பகுத்தறிவு, கலை மற்றும் மரபு ஆகியவற்றை அறிந்து மாணவர்களின் படைப்பாக்கத்திறன்களை ஊக்குவித்தல்

பாடத்திட்டப் பகுப்பு முறை	பாடத்திட்டத்தின் குறிக்கோள்	அறிவுத்திறன் வெளிப்படும் அளவு முறை	
CO1	வாழ்க்கைத் திறன்கள் (Life Skills) - மாணவனின் செயலாக்கத்திறனைத் தாய்மொழி வாயிலாக ஊக்குவித்தல்	K 1, K 2, K 3	
CO ₂	மதிப்புக்கல்வி (Attitude and Value educations)	K 2, K 4	
CO3	பாட இணைச்செயல்பாடுகள் (Co-curricular activities)	K 2, K 3, K 4	
CO4	சூழலியல் ஆக்கம் (Ecology)	K 4	
CO ₅	மொழி அறிவு (Tamil knowledge)	K5, K6	

பயனடைவுக்கல்வியின் விளைவாக ஏற்படும் பயன்பாடுகள்:

 $K_1\mbox{-}Remembering,$ $K_2\mbox{-}Understanding,$ $K_3\mbox{-}Applying,$ $K_4\mbox{-}Analysing,$ $K_5\mbox{-}Evaluating,$ K $_6\mbox{-}Creating$

Mapping with Programme outcomes

COs /POs	PO1	PO2	PO3	PO4	PO5
CO1	S	М	М	М	М
CO2	S	М	М	М	М
CO3	S	М	М	М	М
CO4	S	М	М	М	М
CO5	S	М	M	М	М

S – Strong, M – Medium, L – Low

17UTL11T	தமிழ் - தாள் -1	SEMESTER - I					
	·	Total Credits: 3 Hours per week: 5					
கவிதை – சிர	கவிதை – சிறுகதை – இலக்கிய வரலாறு – இலக்கணம்						
அலகு 1-கவிதைகள் - நாட்	டுப்பற்று						
1 . பாரததேசம் – பார	தியார்						
.2புத்தகசாலை,புதிய	ப உலகு செய்வோம்– பாரதி <u>த</u>	ாசன்					
.3ஒற்றுமையே உயி	ர்நிலை – கவிமணி						
.4அவனும் அவளும்	நாமக்கல் கவிஞர் –						
அலகு – சமூகமும் 2, இயர்	கையும்						
.1ஒப்பில்லாத சமுதா .2காகிகப்பக்கள் கா	ாயம்அப்துல் – ரகுமான் மாாசன்.நா -						
.3கரிக்கிறது தாய்ப்ப	ல்- ஆரூர் தமிழ்நாடன்						
.4மரங்கள்– மு மேத்	தா.						
.5ஹைகூ கவிதைக	ள் 10)கவிதைகள்(
அலகு – பெண்ணியம் 3							
1. தற்காத்தல்	– பொன்மணி வைரமுத்து						
2. மாங்கல்ய	மரமும் தொட்டில் மரமும் – ஆன்	ாடாள் பிரியாதர்சினி					
3. அம்மா – ெ	சல்வநாயகி						
4. நீரில் அலை	லயும் முகம் வெண்ணிலா.அ -						
அலகு 4 -சிறுகதைகள்							
1. பொன்னக	ரம் புதுமைப்பித்தன் –						
2. விடியுமா?	– கு.ரா.ப.						
3. குருபீடம்	– ஜெயகாந்தன்						
4. காய்ச்சமர	ம் ராஜநாராயணன்.கி –						
5. புதியபாலப்	 – நா பார்த்தசாரதி. . 						
6. ц. —G. 7. Селіст	மலாணமை பொனனுசாம் ்் _ ∹_						
ு வடகை- அலகு 5-லைக்கிய வாலாம	சூரயகாந்தன ற. வைக்கணம்						
. ாதமாழக கவாதையாக 2 சாதில்ச் சிவாச சைய	ைதோறறமும் வளாச்சியும் ம கொற்றமும் வளர்ச்சியல்	ரபு),புதுக்கவாதைகள் (
.∠தமாழச சாறுகதைய 3 பல்லினம் பிரும்	ண் தோறறமும் வளாச்சுயும் மிரா டெர்ர <i>்</i> ச						
. சமல்லாம் மகும்,	மனா துடங்கள்						
.4ர,ற ; ல, ழ, ள ; ண	r, ந,ன, வேறுபாடு 						
பாாவை நூல்கள்							
.1செய்யுள் திரட்டு – தமிழ்த்	துறை வெளியீடு						

.2இலக்கிய வரலாறு பேராசிரியர் முனைவர் பாக்யமேரி -

17UHL11H	HINDI-I	SEMESTER - I	
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Total Credits: 3 Hours Per Week: 5

Preamble:

- > To develop the writing ability and develop reading skill.
- To learn various concepts and techniques for criticizing literature, to learn the techniques for expansion of ideas and translation process.

Course Outcomes:

On the successful completion of the course, students will be able to

СО	CO Statements	Knowledge
Number	Number	
CO1	Learn the fundamentals of novels and stories	K1
CO2	Understand the principles of translation work	K2
CO3	Apply the knowledge writing critical views on fiction	K3
CO4	Build creative ability	K3
CO5	Expose the power of creative reading	K2

K1-Remembering, K2- Understanding, K3- Applying

Mapping with Programme Outcomes

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	Μ	Μ	Μ	S
CO2	S	Μ	Μ	Μ	S
CO3	S	Μ	S	Μ	S
CO4	S	Μ	S	Μ	S
CO5	S	Μ	S	Μ	S

S – Strong, M – Medium, L - Low

17UHL11H HINDI-I **SEMESTER - I Total Credits: 3** Hours Per Week: 5 **CONTENTS** UNIT – I गद्य – नूतन गद्य संग्रह (जय प्रकाश) पाठ 1- रजिया पाठ २- मकील पाठ 3- बहता पानी निर्मला पाठ ४- राष्ट्रपिता महात्मा गाँधी प्रकाशकः सुमित्र प्रकाशन 204 लीला अपार्ट्मेंट्स, 15 हेस्टिंग्स रोड' अशोक नगर इलाहाबाद-211001 UNIT – II कहानी कुंज- डाँ वी.पी. 'अमिताभ' (पाठ 1-4) प्रकाशकः गोविन्द प्रकाशन सदर बाजार, मथुरा उत्तर प्रदेश-281001 UNIT – III व्याकरण : श्ब्द विचार (संज्ञा, सर्वनाम, कारक, विशेश्ण) पुस्तकः व्याकरण प्रदिप – रामदेव प्रकाशकः हिन्दी भवन 36 टेगोर नगर इलाहाबाद-211024 UNIT - IV अनुवाद अभ्यास-III (केवल अंग्रेजी से हिन्दी में) (पाठ 1 to 10) प्रकाशकः दक्षिण भारत प्रचार सभा चेनैई -17

17UML11M	MALAYALAM-I	SEMESTER-I
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Total Credits: 3 Hours per week: 5

Preamble:

- > To develop the writing ability and develop reading skill.
- To learn various concepts and techniques for criticizing literature, to learn the techniques for expansion of ideas and translation process.

Course Outcomes:

On the successful completion of the course, students will be able to

СО	CO Statemants	Knowledge	
Number	CO Statements	Level	
CO1	Learn the fundamentals of novels and stories	K1	
CO2	Understand the principles of translation work	K2	
CO3	Apply the knowledge writing critical views on	К3	
	fiction		
CO4	Build creative ability	K3	
CO5	Expose the power of creative reading	K2	

K1-Remembering, K2- Understanding, K3- Applying

Mapping with Programme Outcomes

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	М	М	М	S
CO2	S	М	М	М	S
CO3	S	М	S	М	S
CO4	S	М	S	М	S
CO5	S	М	S	М	S

S – Strong, M – Medium, L - Low

MALAYALAM-I

SEMESTER-I

Total Credits: 3 Hours Per Week: 5

CONTENTS

Paper I Prose, Composition & Translation

This paper will have the following five units:

1. UNIT	I &II	- Novel
2. UNIT	'III & IV	- Short story
3. UNIT	' V	- Composition & Translation

TEXT BOOKS:

- 1. Unit I &II -Naalukettu M.T. Vasudevan Nair (D.C. Books, Kottayam, Kerala)
- 2. Unit III & IV Manikkianum Mattu Prathana Kathakalum Lalithampika Antharjanam (D.C.Books, Kottayam, Kerala)
- 3. Unit V- Expansion of ideas, General Essay and Translation of a simple passage from English about **100** words) to Malayalam

REFERENCE BOOKS:

- 1. Kavitha Sahithya Charitram -Dr. M.Leelavathi (Kerala Sahithya Academy, Trichur)
- 2. Malayala Novel sahithya Charitram -K.M.Tharakan(N.B.S. Kottayam)
- 3. Malayala Nataka Sahithya Charitram-G.Sankarapillai(D.C.Books, Kottayam)
- 4. Cherukatha Innale Innu -M.Achuyuthan(D.C. Books, Kottayam)
- Sahithya Charitram Prasthanangalilude-Dr. K.M. George, (Chief Editor) (D.C. Books, Kottayam)

Total Credit: 3

Hours per week: 5

17UFL11F FI	FRENCH- I	SEMESTER- I
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Preamble

- To Acquire Competence in General Communication Skills Oral + Written - Comprehension & Expression
- To Introduce the Culture, life style and the civilization aspects of the French people as well as of France
- To help the students to acquire Competency in translating simple French sentences into English and vice versa

Course Outcomes:

On the successful completion of the course, students will be able to

CO	CO Statemante	Knowledge	
Number	CO Statements	Level	
CO1	Learn the Basic verbs, numbers and accents	K1	
cor	To learn the adjectives and the classroom	к?	
02	environment in France	K2	
CO3	Learn the Plural, Articles and the Hobbies	K3	
CO4	To learn the Cultural Activity in France	K3	
COF	To learn the Sentiments, life style of the French		
005	people and the usage of the conditional tense	K2	

K1-Remembering, K2- Understanding, K3- Applying

Mapping with Programme Outcomes

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	М	М	М	S
CO2	S	М	М	М	S
CO3	S	М	S	М	S
CO4	S	М	S	М	S
CO5	S	М	S	М	S

S - Strong, M - Medium, L - Low

17UFL11F	FRENCH- I	SEMESTER- I

Total Credit: 3 Hours per week: 5

Compétence	Compétence De	Compétence					
Culturelle	communication	grammaticale					
UNITÉ 1 – Ici, en France							
Moi et les AutresLa France Express	 INTERACTION: s'identifier RÉCEPTION ECRITE: Comprendre une annonce d'aeroport RÉCEPTION ORALE: comprendre l'ecrit de la rue (Panneaux, plaques, rues) PRODUCTION ÉCRITE: écrire un SMS 	 Le présent des verbes: Je suis, je reste, J'arrive Le lieu: (je suis) à (je suis) ici L'infinitif 					
UNITÉ 2 – Ici, en classe	2						
 Moi et le francais Le francais dane le monde 	 INTERACTION: Se présenter RÉCEPTION ORALE: Comprendre des consignes Orales RÉCEPTION ÉCRITE: Comprendre une fiche D''inscription PRODUCTION ÉCRITE: écrire un texte à 'impératif 	 Tu/vous Le present des Verbes en-er et de être:je, tu,vous La forme Impérative (tu ,vous) Des verbes en-er 					
UNITÉ 3 - Samedi							
• Le fil du temps	 INTERACTION: S'informer RÉCEPTION ORALE: Comprendre une annonce RÉCEPTION ÉCRITE: Comprendre un article 	 Les articles Défines:le,la,les A,de+le,la,les: Au,aux,du,des,à l', de l' Être(présent)l'heure Ll faut+nom 					

	PRODUCTION	• Pharses
	ÉCRITE:	verbe+complément,
	écrire des slogans	Complément+verbe
		-
UNITÉ 4 - Dimanche		
•Les activités Culturelles des Français	 INTERACTION: Acheter, demander des Informations RECEPTION ORALE: Comprendre les Titres du journal à la radio RÉCEPTION ÉCRITE: Comprendre les Informations PRODUCTION ÉCRITE: Inventer des noms de journaux 	 Faire, present Avior, present Ll y a Le présent des verbes en-er: Regarder Combien? Quand? Complément de nom: Tremblement de terre, les noms de pays Du,des,de la(reprise U2) Les adjectifs possessifs: Mon,ta,son, Ma,ta,sa Mes,tes,ses
UNITE 5 – Dommage!	I	Г
•Un baby-boom en 2000 et 2001 •L'amour, toujours	 INTERACTION: exprimer la tristesse, la peur, conseiller,encourager RÉCEPTION ORALE: Comprendre une émission De radio RÉCEPTION ÉCRITE: Comprendre un sondage PRODUCTION ÉCRITE: écrire des blogs 	 Est-ce que Le present des verbes pouvoir,Vouloir Le conditionnel des Verbs pouvoir, Vouloir Nepas

TEXT BOOK:

 Marcella Di Giura Jean-Claude Beacco, Alors I. Goyal Publishers Pvt Ltd 86,University Block Jawahar Nagar (Kamla Nagar),New Delhi – 110007

18UEG12G	English –I	SEMESTER - I
		Total Credits: 3
		Hours Per Week: 5

PREAMBLE:

To learn and teach English in a more relevant way through ecological issues and focus on environmental issues, a current problem that affects all lives. On successful completion of the course, students will be able to

Knowledge CO No. **CO Statement** Level **CO1** Identify the impact of nature on human lives **K**3 Experiment with ecofriendly ambience through CO₂ K 3 technical advancements Analyze and expose contemporary ecological K 4 CO3 issues Analyze the situational conversations created **CO4** K 4 based on ecological factors Improve grammar and related reading of CO5 K 6 ecological issues

COURSE OUTCOME

MAPPING WITH PROGRAMME OUTCOME

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	М	М	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	М	М

S – Strong, M – Medium, L - Low

18UEG12G	English –I	SEMESTER - I
		Tatal Craditar 2

Total Credits: 3 Hours Per Week: 5

CONTENTS

UNIT I – POETRY

To Nature – S. T. Coleridge

Sonnet 18 - Shall I Compare Thee To a Summer day? – W. Shakespeare

Stopping by Woods on a Snowy Evening – Robert Frost

UNIT II – PROSE

The Discovery of Radium – Eve Curie The Bihar Earthquake – Jawaharlal Nehru The Amazon Ants – F.W. Up de Graff

UNIT III – SHORT STORY

The Sound Machine – Roald Dahl The Lamp at Noon - Sinclair Ross The Last Leaf – O. Henry

UNIT IV - ONE ACT PLAY

Moonshine – Arthur Hopkins

UNIT V – FUNCTIONAL GRAMMAR AND COMPOSITION

Sentences Verbs – tenses and Voice Concord Letter Writing Dialogue Writing

TEXT BOOK:

1. Eco English

REFERENCE BOOKS:

- 1. Shakespeare, William. *Shakespeare's Sonnets*. Ed. Stephen Booth. New Haven: Yale University Press, 1977. Print.
- 2. Krishnaswamy. N., Modern *English: A Book of Grammar Usage and Composition*. Chennai: Macmillan, 1975. Print.
- Collocott. T.C., New Radiant Readers Book X. Chennai: Allied Pvt. Ltd, 2015. Print.
- 4. Dohl, Roald. The Sound Machine. UK: Penguin, 2012. Print.
- 5. Hopkins, Arthur. Moonshine. Los Angles: Hard press, 2012. Print.

17UFN13A	CORE I –	SEMESTED I
	BASIC FOOD SCIENCE	SEMIESIEK-I

PREAMBLE

• To enable students to obtain knowledge of different food groups, their composition, nutritive value and role in daily diet, gain knowledge on principles and various methods of cooking foods.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

СО	CO Statement	Knowledge	
Number	CO Statement	Level	
CO 1	List the basic food groups	V	
	Define various cooking methods	N 1	
	Interpret the nutritive value of food groups		
CO2	Outline the sources, structure, composition,	K.	
	methods and effects of cooking cereals, pulses,	N 2	
	fruits and vegetables		
	Demonstrate the methods of beverage preparation		
CO 3	Explain the types and functions of fats and oils	K ₂	
	Outline medicinal uses of Spices and Condiments		
	Illustrate milk processing and demonstrate		
CO 4	preparation of milk products	V	
04	Identify uses, methods and experiment with effects	K 2	
	of cooking egg		
CO 5	Choose the cooking methods appropriate for meat,		
	poultry and fish	K.	
	Solve the effects of cooking on meat, poultry and	IN 3	
	fish by applying the principles of cooking		

Mapping with Program Outcomes

CO s	PO 1	PO 2	PO 3	PO 4	PO 5
CO ₁	S	S	S	S	S
CO ₂	S	S	S	S	S
CO ₃	S	S	S	S	S
CO ₄	S	S	S	S	S
CO 5	S	S	S	S	S

S- Strong; M-Medium; L-Low

17UFN13A	CORE I -	CEMECTED I
	BASIC FOOD SCIENCE	SEMIESTEK-I

Total Credits: 5 Hours/Week: 6

CONTENTS

UNIT -I

Introduction to Food Science: Food groups- 4 (ICMR), 5 and 7, functional food groups-energy yielding, body building and protective foods (only sources), food pyramid.

Methods of cooking: Objectives of cooking. Boiling, steaming, stewing, frying, baking, roasting, broiling, cooking under pressure and microwave cooking.

Cereals: Structure and composition of rice and wheat, effects of cooking on parboiled and raw rice, **Cereal cookery**- Gluten and gelatinization, factors effecting gluten formation and gelatinization. **Millets:** Nutritive value of Ragi, Jowar and Maize.

UNIT -II

Pulses and legumes: Varieties of pulses, legumes and grams, composition, nutritive value, anti

nutritional factors (Trypsin and Tannins), cooking quality of pulses, germination and its effects.

Fruits: Composition, nutritive value, changes during ripening, methods and effects of cooking, enzymatic browning.

Vegetables: Classification, composition, nutritive value, selection and preparation for cooking, methods and principles involved in cooking.

UNIT –III

Beverages - Classification, nutritive value, milk based beverages- methods of preparing tea and coffee, fruit based beverages and preparation of carbonated non – alcoholic beverages. **Sugar:** Stages of sugar cookery.

Fats and Oils: Types of oils, function of fats and oils, shortening effects of oil, smoking point of oil, effect of heat on oil absorption and factors affecting absorption of oil

Spices and Condiments: Functions of spices, medicinal values of Cardamom, Cinnamon, Cloves, Fenugreek, Pepper, Onion, Turmeric, Ginger and Garlic.

UNIT -IV

Milk - Composition, nutritive value, kinds of milk, pasteurization and homogenization of milk, changes in milk during heat processing, role of milk and milk products, preparation of fermented (cheese) and non-fermented (milk powder)

Egg - Structure, composition, selection, nutritive value, uses of egg in cookery, methods of cooking, foam formation and factors affecting foam formation

UNIT -V

Meat -Structure, composition, nutritive value, selection of meat, post mortem changes in meat, aging, tenderness and curing. Methods of cooking meat and their effects.

Poultry: Classification, composition, nutritive value, selection, methods of cooking.

Fish - Structure, composition, nutritive value, selection of fish, methods of cooking and effects.

TEXT BOOKS:

1. *Srilakshmi, B.* (2015). Food Science. 3rd Edition. New Delhi: New Age International.

2. Shakunthala Manay and Shadakhraswamy M., 2008. Food Facts and

Principles, Third Edition, New Age International Publishers, New Delhi

REFERENCE BOOKS:

 Mudambi .R. Sumathi and Rajagopal M.V (2008), Food Science. New Age International Publishers, New Delhi.

Thangam E. Philip (1998). Modern Cookery Volume II, Orient
 Longman, II Edition., Hyderabad

17UFN13B	CORE II - CHEMISTRY OF FOODS	SEMESTER-I

PREAMBLE

- To understand the physico-chemical properties of foods
- To analyze the properties with advanced techniques protocols and instrumentation to explore its applications in the field of food science and nutrition.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

СО	CO Statement	Knowledge
Number		Level
CO1	Illustrate the physico-chemical properties of foods- Moisture in Foods, Hydrogen Bonding, Bound Water, Water Activity Demonstrate Moisture Content in Foods, True Solutions, Dispersions, Sols, Gels, Foams, Colloids and Emulsions	K ₁ , K ₂
CO2	List out the Components of Starch and treatment effects on starch Explain the Stages of Sugar Cookery, Crystal Formation Classify the types of Candies, Action of Acid, Alkali and Enzymes. Illustrate Chemistry of Milk Sugar, Non Enzymatic Browning.	K ₁ , K ₂
CO3	Explain Structure of wheat proteins, pulse proteins, egg proteins, vegetable proteins. Interpret the effect of treatments on various proteins.	K ₂
CO4	Identify the Physical and Chemical Properties of fats and oils Explain the techniques of processing fats and oils Summarize the factors affecting Fat Absorption in Foods	K2,K3
CO5	Identify the properties, importance of enzymes, enzymes involved in food reactions Choose the plant pigments and its abundant sources	K ₃

CO s	PO 1	PO 2	PO 3	PO 4	PO 5
CO ₁	М	М	М	S	S
CO 2	S	S	S	S	S
CO ₃	S	S	S	S	S
CO ₄	S	S	S	S	S
CO 5	S	S	S	S	S

Mapping with Program Outcomes

S- Strong; M-Medium; L-Low

17UFN13B	CORE II - CHEMISTRY OF FOODS	SEMESTER-I

Total Credits: 5 Hours/Week: 5

CONTENTS

UNIT -I

Physico-chemical properties of foods

Moisture in Foods, Hydrogen Bonding, Bound Water, Water Activity in Foods, Determination of Moisture Content in Foods, True Solutions, Dispersions, Sols, Gels, Foams, Colloids and Emulsions

UNIT- II

Chemistry of Starch and Sugars

Components of Starch, Swelling of Starch Granules, Gel Formation, Retro gradation, Syneresis, Effect of Sugar, Acid, Alkali, Fat and Surface Active Agents on Starch. **Sugar**: Types of Candies, Action of Acid, Alkali and Enzymes. Chemistry of Milk Sugar, Non Enzymatic Browning, Crystallization and factors affecting Crystallization of sugar.

UNIT- III

Chemistry of Proteins

Components of Wheat Proteins, Structure, Gluten Formation Effect of Soaking, Fermentation and Germination on Pulse Proteins Properties of Egg Protein, Chemistry of Milk Protein Changes in Milk, Egg and Meat Proteins during heat, action of heat, Acid, Alkalis on Vegetables Proteins and Animal Proteins

UNIT- IV

Chemistry of Fats and Oils

Physical and Chemical Properties of Fats and Oils Rancidity, Hydrogenation, Winterization, Decomposition of Triglycerides, Shortening Power of Fats, Changes in Fats and Oils during Heating, Factors Affecting Fat Absorption in Foods

UNIT -V

Chemistry of Pectic Substances, Plant Pigments

Enzymes – definition, chemical classification, properties of enzymes, importance of enzymes, enzymes involved in food reactions – beneficial and deterioration and its prevention, Pigments – classification, properties and food sources

TEXT BOOKS:

- 1. *Srilakshmi, B. (2003).* Food Science, III Edition, New Delhi: New Age International.
- Shakunthalamanay and Shadakhraswamy, 2008, Food Facts and Principles, Third Edition, New Age International Publishers, New Delhi.
- Potter, N. N., & Hotchkiss, J. H. (2012). Food science. Springer Science & Business Media.

REFERENCE BOOKS:

- 1. *Mudambi* .*R. Sumathi and Rajagopal M.V (2008),* **"Food Science",** New Age International Publishers, New Delhi.
- Sunetra Roday (2000), Food Science and Nutrition, Edition I, Mangal Deep Publications, New Delhi.
- 3. *Swaminathan*, M. (1974). Essentials of food and nutrition. Vol. II. Applied aspects. *Essentials of food and nutrition*. *Vol. II. Applied aspects*.

17UFN13PCORE PRACTICAL I - FOOD SCIENCESEMESTER I

Total Credits: 2 Hours/week: 4

EXPERIMENTS

- 1. Food group- Grouping of foods, discussion on nutritive value
- Measuring ingredients -Methods of measuring different types of foods – grains, flours and liquids
 - Edible portion Determination of edible portion percentage
- 3. Moist heat methods- Boiling, Simmering, Steaming and Pressure cooking
- 4. Dry heat methods- baking, Fat as a medium for cooking- shallow and deep fat frying
- 5. Cereals Methods of cooking fine and coarse cereals. Examination of starch
- 6. Pulses Cooking of soaked, un soaked, germination and fermentation of pulses. Common preparation with pulses
- 7. Vegetables Experimental cookery using vegetables of different colors and textures
- 8. Preparation of soups and salads, Common preparation with vegetables
- 9. Fruits Prevention of darkening in fruits and vegetables. Fruit salad
- 10. Experimental cookery cream of tomato soup, cheese curry and cooking vegetables in milk, common preparation with milk, cheese and curd.
- 11. Fleshy foods Fish, meat and poultry- preparations
- 12. Experimental cookery of Egg boiled egg, poached egg. Common preparations with egg
- 13. Beverages Preparation of hot beverages- coffee, tea, Preparation of cold beverages-fruit drinks and milk shake
- 14. Evaluation Development of score card
- 15. Developing value added foods (Cereals, Millets, Pulses and Vegetable based) any four

17UCY1AA ALLIED CHEMISTRY-I SEMESTER – I

PREAMBLE

• To gain knowledge in the basics of chemistry which helps bioscience students to understand chemical bonding in the biomolecules and the techniques involved in the biochemistry.

COURSE OUTCOMES

In the successful completion of the course, students will be able to

Course		Vnowladge
Outcome Course Outcome Statement		Laval
Number		Level
	To gain knowledge in the basics of chemistry	
	which helps the students to understand bonding	K1
CO1	in molecules, crystals structures and evaluate	
	their bonding characteristics.	
	Design a demonstration that enables the	
CO2	students to prepare laboratory solutions.	K2
	To apply the concepts of bondings in organic	
CO^{3}	molecules and relate their displacement	K2 K2
003	reactions with mechanism.	K2, K3
	To know the fundamentals of adsorption	
	techniques.	V1
	To study the adsorption process and to apply	
CO4	the concepts of chromatography in separation	V2 V2
	process.	N2, NJ
	To know the preparation and uses of synthetic	
CO5	dyes and their application in day today life.	K1, K2, K3

Mapping with Programme Outcomes

	U				
COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	М	S	S	S	S
CO3	S	S	S	S	S
CO4	М	М	S	S	S
CO5	М	М	S	S	S
S – Strong;	N	I - Medium;	Ι	L – Low	

17UCY1AA

ALLIED CHEMISTRY-I SEMESTER – I

Total Credits: 3 Hours/Week: 3

CONTENTS

UNIT – I

Chemical bonding

- Molecular Orbital Theory bonding, antibonding and nonbonding orbitals. MO configuration of H₂, N₂, O₂, F₂- bond order diamagnetism and paramagnetism.
- 2. Ionic Bond: Nature of ionic bond, structure of NaCl and CsCl, factors influencing the formation of ionic bond.
- 3. Covalent Bond: Nature of covalent bond, structure of CH₄, NH₃, H₂O, shapes of BeCl₂, BF₃, based on VSEPR theory and hybridization.

UNIT – II

Solutions

- 1. Normality, molarity, molality, mole fraction, mole concept.
- 2. Preparation of standard solutions primary and secondary standards.
- 3. Principle of Volumetric analysis.
- 4. Strong and weak acids and bases Ionic product of water- pH, pKa, pKb, Buffer solution, pH and pOH simple calculations.

UNIT-III

Basic Organic Chemistry

- Electron displacement effect in organic compounds Inductive effect

 Electromeric effect Resonance effect, Hyperconjugation and Steric effect.
- 2. Isomerism, Symmetry of elements (Plane, Centre and Axis of symmetry), Molecules with one chiral carbon and two adjacent chiral carbons –Optical isomerism of lactic acid and tartaric acid, Enantiomers, Diastereomers, Separation of racemic mixture (chemical, mechanical, biochemical and kinetic), Geometrical isomerism (maleic and fumaric acid)

UNIT – IV

1. Surface Chemistry

Adsorption – adsorbent and adsorbate, adsorption and absorption - chemisorption - physisorption - Difference between chemisorption and physisorption - applications of adsorption - Factors influencing adsorption, adsorption isobar, adsorption isostere.

2. Chromatography - Principles and applications of column, paper and thin layer Chromatography.

UNIT – V

Dyes

1. Terms used – chromophore, auxochrome, bathochromic shift, hypsochromic shift, hyperchromic shift and hypochromic shift. Classification of dyes based on chemical structure and application-Preparation of azo (Methyl orange) and triphenyl methane (Malachite green) dyes.

TEXT BOOKS

- 1. *R. D. Madan.* 2001. Modern Inorganic Chemistry. S. Chand & Company, New Delhi.
- 2. *Puri, Sharma, Pathania.* 2004. **Principles of Physical Chemistry**, Vishal Publishing Company, Jalandhar.
- 3. *B.S.Bhal , Arun Bhal,1997.* Advanced Organic Chemistry, S. Chand & Co Limited, New Delhi.
- 4. *M. K. Jain, S. C. Sharma.* 2001. **Organic Chemistry**, Shoban Lal Nayin Chand, Jalandhar.
- 5. *Gopalan R.* 1991.**Elements of Analytical Chemistry**, Sultan Chand & Sons, New Delhi.
17UFC1FA PART-IV: VALUE EDUCATION-ENVIRONMENTAL STUDIES

SEMESTER - I

Total Credits: 2 Hours per week: 2

CONTENTS

UNIT- I

The Multi Disciplinary Nature of Environmental Studies: Definition, scope and importance-Need for public awareness-Natural resources-Natural resources and associated problems-Role of an individual in conservation of natural resources-Equitable use of resources for sustainable lifestyle...

UNIT- II

Eco System: Concept of an eco system-structure and function of eco system-Producers, consumers and decomposers-Energy flow in the eco system-Ecological succession-Food chain, food webs and ecological pyramids-Forest ecosystem-Grassland eco system-Desert eco system-Aquatic eco system...

UNIT- III

Bio Diversity and its Conservation Introduction Definition: Genetic, Species and Eco System Diversity-Bio Geographical Classification Of India: Value of bio diversity: conceptive use, productive use, social, ethical and option values-bio diversity at global, national and local levels-India as a mega diversity nation, hot spots-threats: habitat loss, poaching of wild life-man wild life conflicts-endangered and endemic species of India, conservation of bio diversity....

UNIT-IV

Environmental Pollution: Definition-causes, effects and control measures of air, water, soil, noise, thermal pollution-soil waste management: causes, effects and control measures of urban and industrial wastes-prevention of pollution-pollution case studies-disaster management: floods, earthquake, cyclone and landslides...

UNIT- V

Social Issues and the Environment: Sustainable development-urban problems related to energy-water conservation, rain water harvesting, watershed management-resettlement and rehabilitation of people ;its problems and concerns-environmental ethics: issues and possible solutions-climate change, global warming, ozone layer, depletion, acid rain, nuclear accidents and holo caust-consumerism and waste products-environmental protection act-air, water act-wild life protection act-forest conservation act-issues involved in enforcement of environmental legislation-public awareness-human population and the environment.

TEXT BOOK:

1. *Kumaraswamy. K, A. Alagappa Moses and M. Vasanthy.* 2001, **Environmental Studies.** Thanjavur- National Offset Printers.

17UTL21T	தமிழ் - தாள் - 2	SEMESTER - II
		Total Credits: 3
		Hours per week: 5
குறிக்கோள்:		

மொழிப்பாடங்களின் வாயிலாக தமிழரின் பண்பாடு , பகுத்தறிவு, கலை மற்றும் மரபு ஆகியவற்றை அறிந்து மாணவர்களின் படைப்பாக்கத்திறன்களை ஊக்குவித்தல்

பாடத்திட்டப்	பாடக்கிட்டக்கின் குறிக்கோன்	அறிவுத்திறன் வெளிப்படும்	
பகுப்பு முறை		அளவு முறை	
	வாழ்க்கைத் திறன்கள் (Life Skills) -		
CO1	மாணவனின் செயலாக்கத்திறனைத்	K 1, K 2, K 3	
	தாய்மொழி வாயிலாக ஊக்குவித்தல்		
<u> </u>	மதிப்புக்கல்வி (Attitude and Value	KoKi	
	educations)	N 2, N 4	
	பாட இணைச்செயல்பாடுகள்		
CO3	(Co-curricular activities)	K 2, K 3, K 4	
CO4	சூழலியல் ஆக்கம் (Ecology)	K 4	
CO ₅	மொழி அறிவு (Tamil knowledge)	K5, K6	

பயனடைவுக்கல்வியின் விளைவாக ஏற்படும் பயன்பாடுகள்:

 $K_1\mbox{-}Remembering,$ $K_2\mbox{-}Understanding,$ $K_3\mbox{-}Applying,$ $K_4\mbox{-}Analysing,$ $K_5\mbox{-}Evaluating,$ K $_6\mbox{-}Creating$

Mapping with Programme outcomes

COs /POs	PO1	PO2	PO3	PO4	PO5
CO1	S	М	М	М	М
CO2	S	М	М	М	М
CO3	S	М	М	М	М
CO4	S	М	М	М	М
CO5	S	М	М	М	М

S – Strong, M – Medium, L – Low

17UTL21T	தமிழ் 2- தாள் -	SEMESTER - II		
		Total Credits: 3		
		Hours per week: 5		
செய்யுள் – உரைநடை – இலக்கிய வரலாறும் இலக்கணமும்				
அலகு – 1				
.1திருக்குறள் -அ(83 எண்.	அ) கூடா நட்பு .			
ஆ (93 எண். _e	அ) கள்ளுண்ணாமை.			
இ (110 எண்.அ) குறிப்பறிதல் .				
ஈ (113 எண்.	அ) காதல் சிறப்புரைத்தல் .			
.2மூதுரை 10) ஔவையார்	–பாடல்கள்6 -,7,9,10,14,16,	17,23,26,30(

அலகு – 2

.1புரட்சிக்கவி –பாரதிதாசன்

அலகு – உரைநடை 3

- 1. சங்க நெறிகள் மாணிக்கம்.சுப.வ -
- 2. கர்ணனும் கும்பகர்ணனும் சேதுப்பிள்ளை.பி.ரா -
- 3. அறிவியலும் கலையும்வரதராசன்.மு -

அலகு – உரைநடை 4

- 1. வாழ்வியல் இயக்கம் குன்றக்குடி அடிகளார்
- 2. பெரியார் உணர்த்தும் சுயமரியாதையும் சமதர்மமும் ஆனைமுத்து.வே -
- 3. போதைப்பொருள் அமுதன்

அலகு 5 -இலக்கிய வரலாறும் இலக்கணமும்(பாடத்திட்டம் தழுவியது)

- 1. பதினெண்கீழ்க்கணக்கு நூல்கள்
- 2. தமிழ் உரைநடையின் தோற்றமும் வளர்ச்சியும்
- 3. வழு, வழுவமைதி,வழாநிலை
- 4. பிறமொழிச் சொற்களைத் தமிழில் மொழிபெயர்த்தல்

பார்வை நூல்கள்:

- .1செய்யுள் திரட்டு தமிழ்த்துறை வெளியீடு
- .2இலக்கிய வரலாறு பேராசிரியர் முனைவர் பாக்யமேரி -

17UHL11H	HINDI-II	SEMESTER - II

Total Credits: 3 Hours per week: 5

Preamble:

- > To develop the writing ability and develop reading skill.
- To learn various concepts and techniques for criticizing literature, to learn the techniques for expansion of ideas and translation process.

Course Outcomes:

On the successful completion of the course, students will be able to

СО	CO Statements	Knowledge
Number		Level
CO1	Learn the fundamentals of novels and stories	K1
CO2	Understand the principles of translation work	K2
CO3	Apply the knowledge writing critical views on fiction	K3
CO4	Build creative ability	K3
CO5	Expose the power of creative reading	K2

K1-Remembering, K2- Understanding, K3- Applying

Mapping with Programme Outcomes

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	Μ	Μ	Μ	S
CO2	S	Μ	Μ	Μ	S
CO3	S	Μ	S	Μ	S
CO4	S	М	S	М	S
CO5	S	Μ	S	Μ	S

S – Strong, M – Medium, L – Low

17UHL21H	HINDI-II	SEMESTER - II
		Total Credits: 3
		Hours Per Week: 5
	CONTENTS	
UNIT – I		
आधुनिक पर्य	– शबरी (श्री नरेश मेहता)	
प्रकाशक: लोक	भारती प्रकाशन	
पहली	मंजिल, दरबारी बिल्डिंग,	
	महात्मा गाँधी मार्ग, इलाहाबाद-211001	
UNIT – II		
उपन्यास	: सेवासदन-प्रेमचन्द	
प्रकाशव	n: सुमित्र प्रकाशन	
204	ोला अपार्ट्मेंट्स, 15 हेस्टिंग्स रोड'	
अशोक	जनगर इलाहाबाद-211001	
UNIT – III		
अनुवाट	५ अभ्यास-III (केवल हिन्दी से अंग्रेजी में)	
(पाठ 1	to 10)	
प्रकाशव	n: दक्षिण भारत प्रचार सभा चेनैई -17	

UNIT - IV

पत्र लेखनः (औपचारिक या अनौपचारिक)

	17UML21M	MALAYALAM-II	SEMESTER-II
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Total Credits: 3 Hours per week: 5

Preamble:

- > To develop the writing ability and develop reading skill.
- To learn various concepts and techniques for criticizing literature, to learn the techniques for expansion of ideas and translation process.

Course Outcomes:

On the successful completion of the course, students will be able to

СО	CO Statements	Knowledge	
Number	CO Statements	Level	
CO1	Learn the fundamentals of novels and stories	K1	
CO2	Understand the principles of translation work	K2	
CO3	Apply the knowledge writing critical views on	K3	
03	fiction	N 5	
CO4	Build creative ability	K3	
CO5	Expose the power of creative reading	K2	

K1-Remembering, K2- Understanding, K3- Applying

Mapping with Programme Outcomes

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	М	М	М	S
CO2	S	М	М	М	S
CO3	S	М	S	М	S
CO4	S	М	S	М	S
CO5	S	М	S	М	S

S - Strong, M - Medium, L - Low

17UML21M	MALAYALAM-II	SEMESTER- II

Total Credit: 3 Hours per week: 5

PAPER II PROSE: NON-FICTION

This Paper will have the following five units: **UNIT I & II**

Biography

UNIT III, IV & V

Travelogue

TEXT BOOKS:

- 1. Unit III, IV & V Kappirikalude Nattil *S.K. Pottakkadu* (D.C. Books, Kottayam)
- 2. Kannerum Kinavum *V.T. Bhatathirippadu* Autobiography (D.C. Books, Kottayam)

REFERENCE BOOKS:

- 1. Jeevacharitrasahithyam Dr. K.M. George(N.B.S. Kottayam)
- 2. Jeevacharitrasahithyam Malayalathil Dr. Naduvattom Gopalakrishnan (Kerala Bhasha Institute, Trivandrum)
- 3. Athmakathasahithyam Malayalathil Dr. Vijayalam Jayakumar (N.B.S. Kottayam)
- 4. **Sancharasahithyam Malayalathil** *Prof. Ramesh Chandran. V,* (Kerala Bhasha Institute, Trivandrum)

Total Credit: 3 Hours per week: 5

Preamble

- To Acquire Competence in General Communication Skills Oral + Written - Comprehension & Expression
- To Introduce the Culture, life style and the civilization aspects of the French people as well as of France
- To help the students to acquire Competency in translating simple French sentences into English and vice versa

Course Outcomes:

On the successful completion of the course, students will be able to

СО	CO Statements	Knowledge
Number	CO Statements	Level
CO1	Learn the Basic verbs, numbers and accents	K1
CO2	To learn the adjectives and the classroom environment in France	K2
CO3	Learn the Plural, Articles and the Hobbies	K3
CO4	To learn the Cultural Activity in France	К3
CO5	To learn the Sentiments, life style of the French people and the usage of the conditional tense	К2

K1-Remembering, K2- Understanding, K3- Applying

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	М	М	М	S
CO2	S	М	М	М	S
CO3	S	М	S	М	S
CO4	S	М	S	М	S
CO5	S	М	S	М	S

Mapping with Programme Outcomes

S – Strong, M – Medium, L – Low

17UFL21F	FRENCH-II	SEMESTER- II
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Total Credit: 3 Hours per week: 5

Compétence	Compétence De Compétence				
Culturelle	communication grammaticale				
UNITÉ 1 – Super!					
 INTERACTION: Exprimer des sentiments, exprimer la joie, le plaisir, le bonheur RÉCEPTION ORALE: Comprendre un jeu radiophonique RÉCEPTION ÉCRITE: Comprendre des announces PRODUCTION ÉCRITE: Écrire des cartes postales 		 Les noms de professions masculine/feminine Le verb finir et less Verbes du groupe en-ir Le present de l'impératif Savoir(present) Le participle passé: Fini, aimé, arrive, dit,écrit Quel(s), quelle(s): Interrogatifet Exclamatif À + infinitive Les articles: n,une,des 			
UNITÉ 2 - Quoi?					
• Le 20 siécle: Petits progrés Grand progrés	 INTERACTION: Decrire quelque chose, une personne RECEPTION ORALE: Comprendre un message publicitaire RÉCEPTION ÉCRITE: Comprendre un dépliant touristique PRODUCTION ÉCRITE: Écrire des petites annonces 	 On Plus, moins Le verbe aller: Present, impératif Aller + infinitife Le pluriel en -x 			
UNITÉ 3 – Et aprés					
• Nouvelles du jour	• INTERACTION: Raconteur,situer un récit dans le temps	• L'imparfait:: quel-Ques forms pour introduire le récit:Il faisait, il y avait, il			

	RÉCEPTION ORALE:	Était
	Comprendre une description	• Un peu, beaucoup,
	RÉCEPTION ÉCRITE:	trop,Assez
	Comprendre un test	• Trés
	PRODUCTION ÉCRITE:	• Le verbe venir:
	écrire des cartes postales	Présent, impératif
		• En Suisse, au Maroc, aux
		Etats-Unis
UNITÉ 4- Mais oui!		
	• INTERACTION:	
	Donner son opinion,	
	Expliquer pourquoi	· Pápandra prondra:
	• RÉCEPTION ORALE:	Précent impératif part
• La génération des	Comprendre des	Passá
20-30 ans	informations à la radio	
	• RÉCEPTION ÉCRITE:	• Tarte que pourquoi
	Comprendre un texte	• Tout/ tous, toute/ s
	informatif	(némétilien entire)
	• PRODUCTION ÉCRITE:	(repetition action)
	éncrire un mél de	
	protestation	
UNITÉ 5- Mais non!		
	• INTERACTION:	
	Débat:: exprimer l'accord,	
	exprimer le Désaccord	. T
	• RECEPTION ORALE:	• Le verbe devoir:
•De la ville à la	Comprendre un message sur	Present et participe passe
campagne	un répondeur téléphonique	• Le verbe vivre, present
	RÉCEPTION ÉCRITE:	• Aller + infinitive
	Comprendre un témoignage	• venir+ infinitive
	• PRODUCTION ECRITE:	• Etre pour/contre
	Rediger des petites	
	Announces immobilieres	

TEXT BOOK:

1. *Marcella Di Giura Jean-Claude Beacco,* **Alors I.** Goyal Publishers Pvt Ltd 86, University Block Jawahar Nagar (Kamla Nagar) New Delhi – 110007

18UEG22G	English – II	SEMESTER - II
		Total Credits: 3

Hours per week: 5

PREAMBLE:

To learn and teach English in a more relevant way through ecological issues

and to focus on environment issues, a current problem that affect all lives.

COURSE OUTCOMES:

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Take part in improving the eco system through eco literature	K 4
CO2	Apply conventional and new methods of learning speech and vocabulary	К 3
CO3	Analyze contemporary situation through current ecological issues	K 4
CO4	Interpret the situational Conversations created based on ecological factors	K 2
CO5	Develop spelling, punctuation, Grammar and related reading	К 3

MAPPING WITH PROGRAMME OUTCOME

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	М	S	S	S	М
CO2	S	S	S	S	S
CO3	S	S	S	S	S
CO4	S	S	S	S	S
CO5	М	S	S	S	М

S - Strong, M - Medium, L - Low

18UEG22G	English – II	SEMESTER – II

Total Credits: 3 Hours per week: 5

CONTENTS

UNIT I – POETRY

Nature The Gentlest Mother is – Emily Dickinson

To Autumn – John Keats

The Boat – Rabindranath Tagore

UNIT II – PROSE

Literature and Science – John Middleton Murry

Ecology – Barry Commoner

Town by the Sea – Amitav Ghosh

UNIT III – SHORT STORY

How the Camel Got His Hump – Rudyard Kipling

A Day in the Country – Anton Chekhov

The tale of Peter Rabbit – Beatrix Potter

UNIT IV – ONE ACT PLAY

Riders to the sea – J. M. Synge

UNIT V – FUNCTIONAL GRAMMAR AND COMPOSITION

Relative Pronoun

Degrees of Comparison

Reported speech

Correction of Sentences

Picture Composition

TEXT BOOK:

1. Eco English

REFERENCE BOOKS:

- 1. Synge J.M., Riders to the Sea. Delhi: Unique, 2014. Print.
- Ross, Sinclair. *The Lamp at Noon*, Toronto: Mc Cleland and Stewart, 1968. Print.
- 3. Ghosh, Amitav. The Town by the Sea. India: Penguin, 2017. Print.
- Faulkner, Julia. *Twelve Poems of Emily Dickinson*. Melbourne: Boston, 1820. Print.
- 5. Krishnaswamy. N., Modern *English: A Book of Grammar Usage and Composition*. Chennai: Macmillan, 1975. Print.

17UFN23A	CORE III - HUMAN	SEMESTED II
	PHYSIOLOGY	SEIVIESTER-II

PREAMBLE

- Understand the structure and functions of various organs of the body.
- Obtain a better understanding of the principles of nutrition through the study of physiology.

COURSE OUTCOMES

In the successful completion of the course, students will be able to

СО	CO Statement	Knowledge
Number		Level
CO1	Define terms specific to the human body	
	Demonstrate knowledge of cellular function	K1,K2
	Explain the role of body systems and mechanisms	
	Summarize the structure and functions of the blood	
CO2	& blood components and demonstrate laboratory	
02	experiments.	K ₂
	Identify the major organs of the cardiovascular	
	system and understand their functions	
	Explain the structure and functions of Sense	
CO3	organs.	
	Illustrate the structure and mechanism of	K ₂
	respiratory system functioning, exchange and	
	transportation of gases	
	Illustrate about the reproductive organ and	
CO4	puberty cycle	K ₂ K ₂
	Identify basic components and functions of the	
	endocrine systems	
	Identify the major structures and function of the	
	gross anatomy of the central nervous system	
CO5	List the major skeletal muscles, their actions and	K.
	origins	13
	Examine how the nervous system controls the	
	body mechanism	

CO s	PO 1	PO 2	PO 3	PO 4	PO 5
CO ₁	S	М	S	S	М
CO ₂	S	М	S	S	М
CO ₃	S	М	S	S	М
CO ₄	S	М	S	S	М
CO 5	М	М	М	М	М

Mapping with Program Outcomes

S-Strong; M-Medium; L-Low

17UFN23A CORE III -HUMAN PHYSIOLOGY

SEMESTER-II

Total Credits: 4 Hours/Week: 5

CONTENTS

UNIT-I

Cell: Structure and functions,

Tissues: Structure and functions of epithelial, connective, muscular and nervous tissue.

Digestive system: structure and functions, digestion, absorption of food. Accessory organs of digestion- salivary gland, liver, gall bladder, pancreas

UNIT-II

Blood: Composition of blood and plasma, blood volume, Red Blood cells: Formation and functions, hemoglobin, anemia, Thalessemia . White Blood cells: Types and functions, Importance of Haemogram, Leukaemia . Platelets-function.

Blood group, blood coagulation , haemorrhagic disorders (Haemophilia and thrombocytopenia) and Rh factor. Lymph -Structure and its functions.

Circulatory system: Heart structure and functions - cardiac cycle, blood pressure and ECG.

UNIT-III

Sense organs: Structure and functions of eye, ear and skin.

Common problems - Eye - conjunctivitis, trachoma, glaucoma, cataract, Ear -deafness, vertigo, motion sickness.

Respiratory system: Basic anatomy of the respiratory system, process of respiration, transport and exchange of oxygen and carbon dioxide in the body

UNIT-IV

Reproductive system - Anatomy of the male and female reproductive organs, menstrual cycle

Endocrine glands - Structure and function of pituitary, thyroid, islets of langerhans and adrenal gland

UNIT-V

Excretory system - Excretory organs - structure of kidney and functions, formation of urine, composition of urine.

Muscles - physiology of muscular action.

Central nervous system - Physiology of the nerve cell, parts of the central nervous system and function.

ACTIVITY:

- 1. Identification of tissues
- 2. Bleeding time and Clotting time
- 3. Blood groups identification
- 4. Measuring Pulse Rate
- 5. Demonstration of measurement of Hemoglobin
- 6. Demonstration of Measuring Blood Pressure
- 7. Demonstration of RBC, WBC

TEXT BOOKS:

- 1. *Chatterjee C.C.* (1987): **Human Physiology,** Vol. I and II, Medical Allied Agency, Calcutta.
- 2. Wilson, K.J.W and Waugh, A. (1996):Ross and Wilson, Anatomy and

Physiology in Health and Illness, 8thEdition, Churchill Livingstone.

REFERENCE BOOKS:

- 1. Guyton, A.G. and Hall, J.B. (1996): Text Book of Medical Physiology,
- (9th Edition, W.B. Sanders Company, Prism Books (Pvt.) Ltd., Bangalore.
- Meyer B J, Meij H S and Meyer A C., (1997):Human Physiology, AITBS Publishers and Distributors.

17UFN23B	CORE IV -	CEMECTED II
	PRINCIPLES OF NUTRITION	SEIVIESIEK-II

PREAMBLE

• To enable students to understand the vital link between nutrition and health, gain knowledge on functions, metabolism and effects of deficiency of nutrients.

COURSE OUTCOMES

On the successful completion of the course, students will able to

CO	CO Statement	Knowledge
Number	CO Statement	Level
CO1	Understand the general introduction and history of Nutrition, energy value of foods, Basal metabolic rate., Recommended Dietary Allowances, Classification, functions, digestion, absorption and utilization of carbohydrates and Dietary fiber Intricate the determination and factors influencing of physiological fuel values, SDA of foods.	K ₁ ,K ₂
CO2	Elucidate the Classification, functions, sources and requirements, digestion, absorption and utilization of protein, Fats and essential fatty acids Analyze the Protein quality and digestibility coefficient. Construct the calculation Reference protein, essential amino acids and mutual supplementation of dietary protein.	K ₂ ,K ₃
CO3	Explicate and evaluate the functions, source, requirements, deficiency disorders of Vitamins	K ₂ ,K ₃
CO4	Infer the general functions of minerals in the body and classification of macro and micro minerals. Execute the functions, absorption, utilization, requirements, deficiency and toxicity of Macro and Micro minerals Evaluate the functions of water, water distribution,	K ₃
CO5	maintenance of water and regulation of acid-base balance in the body and electrolyte balance.	K ₃

CO s	PO 1	PO 2	PO 3	PO 4	PO 5
CO ₁	S	S	М	М	М
CO ₂	S	S	М	М	М
CO ₃	S	S	S	S	М
CO ₄	S	S	S	S	S
CO 5	S	S	S	S	S

Mapping with Program Outcomes

S- Strong; M-Medium; L-Low

17UFN23B	CORE IV -PRINCIPLES OF	CEMECTED II
	NUTRITION	SEIVIESIEK-II

Total Credits: 6 Hours/Week: 6

CONTENTS

UNIT-I

Introduction to Nutrition - History of Nutrition , Energy - Definition of Kilocalories, Joule, energy value of foods, determination, and physiological fuel values, SDA of foods, Basal Metabolic Rate- definition, factors influencing BMR. Recommended Dietary Allowances for energy.

Carbohydrates - Classification, functions, sources, digestion, absorption and utilization. Dietary fiber and health.

UNIT-II

Protein - Classification, functions, sources and requirements, digestion, absorption and utilization, definition and calculation of Protein quality – PER, BV, NPU, digestibility coefficient, reference protein, essential amino acids and mutual supplementation of dietary protein.

Fats and Lipids - Classification, functions, sources and requirement.Importance of essential fatty acids, their requirements and deficiency

UNIT-III

Vitamins – Fat soluble vitamins –A, D, E and K- functions, source, requirements, deficiency **Water soluble vitamins** –The B-complex vitamins (Thiamine, Riboflavin, Niacin, Folic acid, Biotin, pantothenic acid) and Vitamin C - functions, source, requirements and deficiency.

UNIT-IV

Minerals - General functions in the body, classification- macro and micro minerals.

Micro minerals – Iron, Fluorine, Zinc, copper, Iodine -functions, absorption, utilization, requirements, deficiency and toxicity .

Macro minerals – Calcium and phosphorus - functions, absorption, utilization, requirements, deficiency and toxicity

UNIT-V

Water Balance – Functions of water, water distribution, maintenance of water and regulation of acid-base balance in the body. Electrolyte balance

TEXT BOOKS:

- 1. *Srilakshmi B, 2014,* **Nutrition Science,** Fourth Edition, New Age International Publishers, New Delhi.
- Shubhangini A. Joshi, (2014)'"Nutrition and Dietetics", Tata Mc Grow Hill publishing Company Ltd, New Delhi.

REFERENCE BOOKS:

- 1. *Swaminathan M, (1996),* **Hand Book of Food and Nutrition,** Bangalore Printing Publishing Company, Bangalore
- 2. *Vijay Kaushik, (2000)*,**Food Science and Nutrition**,Mangal Deep Publications, New Delhi.

17UCY2AA ALLIED CHEMISTRY-II SEMESTER – II

PREAMBLE

• To gain knowledge in the basics of chemistry which helps bioscience students to understand the periodic table, IUPAC nomenclature of organic compounds, enzyme kinetics and water technology.

COURSE OUTCOMES

In the successful completion of the course, students will be able to

Course Outcome Number	Course Outcome Statement	Knowledge Level
	To know the position of the elements in the periodic table and their properties.	K1
CO1	To compare and correlate the periodic behavior of elements and their properties.	K2, K3
CO2	To study the preparation, properties, structures and uses of Biomolecules.	K1,K2
CO3	To study and apply the concepts involved in naming organic compounds. To understand the substitution reactions of aromatic heterocyclic compounds.	K1, K2, K3
CO4	To study the spontaneity of the reaction, the nature of catalyst and reaction pathway.	K1, K2
CO5	To know the techniques involved in the purification of water.	K2, K3

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	М	S	S	S	S
CO3	S	S	S	S	S
CO4	М	М	S	S	S
CO5	М	М	S	S	S
S – Strong;	Ν	I - Medium;	Ι	L – Low	

Mapping with Programme Outcomes

17UCY2AA ALLIED CHEMISTRY-II SEMESTER - II

Preamble

To gain knowledge in the basics of chemistry which helps bioscience students to understand the periodic table, IUPAC nomenclature of organic compounds, enzyme kinetics and water technology.

Course Outcomes

In the successful completion of the course, students will be able to

Course Outcome Number	Course Outcome Statement	Knowledge Level
	To know the position of the elements in the periodic table and their properties.	K1
CO1	To compare and correlate the periodic behavior of elements and their properties.	K2, K3
CO2	To study the preparation, properties, structures and uses of Biomolecules.	K1,K2
CO3	To study and apply the concepts involved in naming organic compounds. To understand the substitution reactions of aromatic heterocyclic compounds.	K1, K2, K3
CO4	To study the spontaneity of the reaction, the nature of catalyst and reaction pathway.	K1, K2
CO5	To know the techniques involved in the purification of water.	K2, K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	М	S	S	S	S
CO3	S	S	S	S	S
CO4	М	М	S	S	S
CO5	М	М	S	S	S
S – Strong;	Μ	I - Medium;	Ι	L – Low	

17UCY2A	ł
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ALLIED PAPER – CHEMISTRY II

SEMESTER II

Total Credits: 3 Hours/Week: 3

CONTENTS

UNIT - I Periodic Table

 Long form of periodic table – Classification of elements on the basis of electronic configuration – Periodicity in properties – Causes of periodicity and factors affecting the magnitude of atomic and ionic radii, electron affinity, ionization energy, electronegativity.

UNIT - II

- 1. Carbohydrates Classification, preparation, properties and structure of glucose, fructose, inter conversion of glucose to fructose and fructose to glucose, mutarotation.
- 2. Vitamins Sources of vitamins, diseases caused by the deficiency of vitamins.

UNIT - III

- 1. IUPAC Nomenclature of organic compounds alkanes, alkenes, alcohols, aldehydes, ketones, carboxylic acids (mono and dicarboxylic), benzene and naphthalene derivatives.
- 2. Heterocyclic Compounds Preparation and properties (physical, chemical and electrophilic substitution reactions) of furan, pyrrole, pyridine and thiophene.

UNIT – IV

Chemical Kinetics

- 1. Rate of reaction, rate law, order, molecularity, first order rate law, half life period of first order equation, pseudo first order reaction, zero and second order reactions. Derivation of rate expression for I and II order kinetics.
- 2. Catalysis homogenous, heterogeneous and enzyme catalysis (definition only), enzymes used in industry, characteristics of catalytic reactions.

UNIT - V Water Technology:

- 1. Introduction- dissolved impurities in water hard water disadvantages of hard water, hardness, estimation of hardness by EDTA titration.
- 2. Softening methods zeolite ,demineralization process, reverse osmosis purification of drinking water, biological oxygen demand (BOD) and chemical oxygen demand (COD).

TEXT BOOKS:

- 1. *R. D. Madan.* 2001. **Modern Inorganic Chemistry**. S. Chand & Company, New Delhi,.
- 2. *Puri , Sharma, Pathania.* 2004.**Principles of Physical Chemistry**, Vishal Publishing Company, Jalandhar.
- 3. *M. K. Jain, S. C. Sharma.* 2001. **Organic Chemistry**, Shoban Lal Nayin Chand, Jalandhar.
- 4. *Gopalan R.* 1991.**Elements of Analytical Chemistry**, Sultan Chand & Sons, New Delhi.
- 5. *N Krishnamurthy, K Jeyasubramanian, P Vallinayagam*.2000. Applied chemistry, Tata McGraw-Hill Publishing Company limited, New Delhi.

ALLIED PRACTICAL I

SEMESTER II

Total Credits: 2 Hours/Week: 4

I Volumetric analysis

- 1. Estimation of Sodium Hydroxide using standard Sodium Carbonate.
- 2. Estimation of Hydrochloric acid using standard Oxalic acid.
- 3. Estimation of Oxalic acid using standard Sulphuric acid.
- 4. Estimation of Ferrous sulphate using standard Mohr salt solution.
- 5. Estimation of Oxalic acid using standard Ferrous sulphate solution.
- 6. Estimation of Ferrous ions using Mohr salt solution.

II Organic Analysis

- 1. To distinguish between aliphatic & aromatic.
- 2. To distinguish between saturated & unsaturated.
- 3. Detection of Elements (N, S, Halogens).
- 4. Functional group tests for phenols, acids (mono & di), aromatic primary amine, monoamide, diamide, carbohydrate. Functional group characterized by Confirmatory test.

TEXT BOOK:

1. V. Venkateswaran, R. Veeraswamy& A. R. Kulandaivelu. 2004. Basic

Principles of practical chemistry, Sultan Chand & Co.

17UFC2FA	PART-IV:VALUE EDUCATION-	CEMECTED II
	HUMAN RIGHTS	SEIVIESTER - II

Total Credits: 2 Hours per week: 2

CONTENTS

UNIT- I

Concept of Human Values, Value Education Towards Personal Development

Aim of education and value education; Evolution of value oriented education; Concept of Human values; types of values; Components of value education.

Personal Development: Self analysis and introspection; sensitization towards gender equality, physically challenged, intellectually challenged. Respect to - age, experience, maturity, family members, neighbours, co-workers.

Character Formation towards Positive Personality: Truthfulness, Constructivity, Sacrifice, Sincerity, Self Control, Altruism, Tolerance, Scientific Vision.

UNIT - II

Value Education Towards National and Global Development National and International Values: Constitutional or national values - Democracy, socialism, secularism, equality, justice, liberty, freedom and fraternity.

Social Values - Pity and probity, self control, universal brotherhood. Professional Values - Knowledge thirst, sincerity in profession, regularity, punctuality and faith.

Religious Values - Tolerance, wisdom, character.

Aesthetic values - Love and appreciation of literature and fine arts and respect for the same.

National Integration and International understanding.

UNIT - III

Impact of Global Development on Ethics and Values: Conflict of cross-cultural influences, mass media, cross-border education, materialistic values, professional challenges and compromise.

Modern Challenges of Adolescent Emotions and behave or; Sex and spirituality: Comparison and competition; positive and negative thoughts.

Adolescent Emotions, arrogance, anger, sexual instability, selfishness, defiance.

UNIT – IV

Therapeutic Measures

Control of the mind through

- a. Simplified physical exercise
- b. Meditation Objectives, types, effect on body, mind and soul
- c. Yoga Objectives, Types, Asanas
- d. Activities:
 - (i) Moralisation of Desires
 - (ii) Neutralisation of Anger
 - (iii) Eradication of Worries
 - (iv) Benefits of Blessings

UNIT- V

Human Rights

- 1. Concept of Human Rights Indian and International Perspectives
 - a. Evolution of Human Rights
 - b. Definitions under Indian and International documents
- 2. Broad classification of Human Rights and Relevant Constitutional

Provisions.

- a. Right to Life, Liberty and Dignity
- b. Right to Equality
- c. Right against Exploitation
- d. Cultural and Educational Rights
- e. Economic Rights
- f. Political Rights
- g. Social Rights

3. Human Rights of Women and Children

- a. Social Practice and Constitutional Safeguards
 - (i) Female Foeticide and Infanticide
 - (ii) Physical assault and harassment
 - (iii) Domestic violence
 - (iv) Conditions of Working Women
- 4. Institutions for Implementation
 - a. Human Rights Commission
 - b. Judiciary

- 5. Violations and Redressel
 - a. Violation by State
 - b. Violation by Individuals
 - c. Nuclear Weapons and terrorism
 - d. Safeguards.

REFERENCE BOOKS:

- 2. *Dey A. K*, 2002, Environmental Chemistry. New Delhi Vile Dasaus Ltd.
- 3. Gawande . E.N. Value Oriented Education. Vision for better living.
- New Delhi, Saruptsons.
 - Brain Trust Aliyar, 2008, Value Education for health, happiness and harmony. Vethathiri publications, Erode.
 - 5. Ignacimuthu S. J. S, 1999, Values for life. Bombay Better Yourself.
 - 6. *Seetharam. R. (Ed),* 1998 , **Becoming a better Teacher** Madras Academic Staff College.
 - Grose. D. N , 2005, A text book of Value Education. Dominant Publishers and Distributors, New Delhi.
 - 8. *Shrimali K. L*, 1974, **A Search for Values in Education**. Vikas Publishers, Delhi.
 - 9. Yogesh Kumar Singh & Ruchika Nath , 2005, Value Education.

P. H Publishing Corporation, New Delhi.

10. Venkataram & Sandhiya. N, 2001, Research in Value Education.

APH Publishing Corporation, New Delhi.

- 11. *Ruhela S. P.* **Human Value and Education.** Sterling publishers, New Delhi.
- 12. *Brain Trust Aliyar*, 2004, **Value Education for Health, Happiness and Harmony.** Vethathiri publications , Erode.
- 13. *Swami Vivekananda* , 2008, **Personality Development.** Advaita Ashrama,Kolkata.
- 14. Swami Jagadatmananda, Learn to Live. Sri Ramakrishna Math, Chennai.

17UTL31T CORE-PART I TAMIL	SEMESTER-3
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Total Credits: 3 Hours Per Week: 4

குறிக்கோள்

மொழிப்பாடங்களின் வாயிலாக தமிழரின் பண்பாடு ,பகுத்தறிவு, கலை மற்றும் மரபு ஆகியவற்றை அறிந்து மாணவர்களின் படைப்பாக்கத்திறன்களை ஊக்குவித்தல்

பயனடைவுக்கல்வியின் விளைவாக ஏற்படும் பயன்பாடுகள்

பாடத்திட்டப் பகுப்பு முறை	பாடத்திட்டத்தின் குறிக்கோள்	அறிவுத்திறன் வெளிப்படும் அளவு முறை
CO1	வாழ்க்கைத் திறன்கள் (Life Skills) - மாணவனின் செயலாக்கத்திறனைத் தாய்மொழி வாயிலாக ஊக்குவித்தல்	K 1, K 2, K 3
CO ₂	மதிப்புக்கல்வி (Attitude and value educations).	K 2, K 4
CO₃	பாட இணைச்செயல்பாடுகள் (Co-curricular activities)	K 2, K 3, K 4
CO4	சூழலியல் ஆக்கம் (ecology)	K 4
CO ₅	மொழி அறிவு (tamil knowledge)	K5, K6

K 1-Remembering, K 2-Understanding, K 3-Applying, K 4-Analysing, K 5-Evaluating, K 6-Creating

<u> </u>	0				
COs/POs	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	S	Μ	Μ	Μ	Μ
CO 2	S	Μ	Μ	Μ	Μ
CO 3	S	Μ	Μ	Μ	Μ
CO 4	S	Μ	Μ	Μ	Μ
CO 5	S	Μ	Μ	Μ	Μ

Mapping with Programme outcomes

S-Strong, M-Medium, L-Low

17UTL31T	தமிழ் தாள் 3	SEMESTER - III
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Total Credits: 3 Hours Per Week: 4

காப்பியம் – சிற்றிலக்கியம் – நாடகம் – இலக்கிய வரலாறு – இலக்கணம்

அலகு 1-காப்பியங்கள்

.1சிலப்பதிகாரம் – மனையறம் படுத்த காதை

.2மணிமேகலை – வஞ்சிமாநகர் புக்க காதை

.3கம்பராமாயணம் – கும்பகர்ணன் வதைப்படலம் பா). எண் (100 – 60 :

4 . பெரிய புராணம் – அதிபத்தநாயனார் புராணம்

அலகு – சிற்றிலக்கியங்கள் 2

.1முத்தொள்ளாயிரம் (சேரனைப்பற்றியது எண் .பா (:20 -1

.2கலிங்கத்துப்பரணி – களம் பாடியது – போர்க்களக் காட்சி) பா(503 –472 :எண்.

.3திருக்குற்றாலக்குறவஞ்சி – வசந்தவல்லி பந்தாடிய சிறப்பு 6):(கண்ணிகள்4

அலகு – நாடகம் 3

.1குறிஞ்சிப்பாட்டு - இன்குலாப்

அலகு 4 -இலக்கிய வரலாறு

.1காப்பியங்களின் தோற்றமும் வளர்ச்சியும்

.2சிற்றிலக்கியத்தின் தோற்றமும் வளர்ச்சியும்

.3நாடகத்தின் தோற்றமும் வளர்ச்சியும்

5 -அலகுஇலக்கணம்

 'பா' வகைகள் : வெண்பா, ஆசிரியப்பா, கலிப்பா, வஞ்சிப்பா - பொது இலக்கணம்

2 அணி. – உவமையணி, உருவக அணி, இல்பொருள் உவமையணி

.3அலுவலகம் சார்ந்த கடிதம் – விண்ணப்பங்கள், வேண்டுகோள், முறையீடு

பார்வை நூல்கள்:

.1 செய்யுள் திரட்டு தமிழ்த்துறை வெளியீடு –

.2 குறிஞ்சிப்பாட்டு - இன்குலாப் – அன்னம் வெளியீடு

.3 தமிழ் இலக்கிய வரலாறு பேராசிரியர் முனைவர் பாக்யமேரி –

17UHL31H	Part I- HINDI-III
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SEMESTER - III

Total Credits: 3 Hours Per Week: 4

CONTENTS

UNIT – I

पद्य – काव्य पराशर (भोलानाथ)

(प्राचीन- कबीर, तुलसी, सुर, मीरा, आधुनिक- गुप्त, प्रसाद, पंत, निरारा,

दिनकर, अज्ञेय)

प्रकाशकः जवाहर पुस्तकालय

सदर बाजार, मथुरा

उत्तर प्रदेश-281001

UNIT – II

हिन्दी साहित्य का इतिहास : (केवल आदिकाल और भक्तिकाल - साधारण ज्ञान)

अलंकार:अनुप्रास,यमक, श्लेष, वक्रोक्ति, उपमा,रूपक प्रकाशक: विनोद पुस्तक मंदिर आगरा-282002

17UML31M	PART I - MALAYALAM-III	SEMESTER III

Total Credits: 3 Hours Per Week: 4

Preamble

> To develop the writing ability and develop reading skill.

To learn various concepts and techniques for criticizing literature, to learn the techniques for expansion of ideas and translation process.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statements	Knowledge Level
CO1	Learn the fundamentals of novels and stories.	K1
CO2	Understand the principles of translation work.	K2
CO3	Apply the knowledge writing critical views on fiction.	K3
CO4	Build creative ability.	K3
CO5	Expose the power of creative reading.	K2

K1-Remembering K2- Understanding K3- Applying

Mapping with Programme Outcomes

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	Μ	Μ	Μ	S
CO2	S	Μ	М	М	S
CO3	S	Μ	S	М	S
CO4	S	Μ	S	Μ	S
CO5	S	Μ	S	Μ	S

➤ S: Strong M: Medium L: Low

17UML31M	PART-I:	MALAYALAM-III	SEMESTER III

Total Credits: 3 Hours Per Week: 4

CONTENTS

PAPER III- POETRY

This Paper will have the following five units:

Unit I, II & III A part of Ezuthachan's Work

Unit IV & V A Khandakavya of Vallathol

Text Books prescribed:

Unit I, II & III Karnnaparvam – Ezuthachan (Poorna Publications, Calicut)

Unit IV & V

Achanum Makalum - Vallathol (D.C. Books, Kottayam)
17UFL31F	FRENCH-III	SEMESTER -III

Total Credits: 3 Hours Per Week: 4

Preamble

- To Acquire Competence in General Communication Skills Oral + Written
 Comprehension & Expression.
- > To Introduce the Culture, life style and the civilization aspects of the French people as well as of France.
- To help the students to acquire Competency in translating simple French sentences into English and vice versa.

Course Outcomes

On the successful completion of the course, students will be able to

СО	CO Statemente	Knowledge
Number	CO Statements	Level
CO1	Learn the Basic verbs, numbers and accents.	K1
CO2	To learn the adjectives and the classroom environment in France.	K2
CO3	Learn the Plural, Articles and the Hobbies.	К3
CO4	To learn the Cultural Activity in France.	К3
CO5	To learn the Sentiments, life style of the French people and the usage of the conditional tense.	K2

K1-Remembering K2- Understanding K3- Applying

Mapping with Programme Outcomes

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	Μ	Μ	Μ	S
CO2	S	Μ	Μ	Μ	S
CO3	S	Μ	S	Μ	S
CO4	S	Μ	S	Μ	S
CO5	S	Μ	S	Μ	S

S: Strong M: Medium L: Low

17UFL31F	FRENCH-III	SEMESTER -III

Total Credits: 3 Hours Per Week: 4

CONTENTS

Compétence	Compétence	Compétence			
Culturelle	de Communication	Grammatical			
UNITÉ 1- Excuses et vœux					
•Convivialité (lieux et société, l'apéritif)	 INTERACTION ORALE: Accueillir quelqu'un, s'excuser,remercier RÉCEPTION ORALE: Comprendre des announces enregistrées RÉCEPTION ÉCRITE: Compremdre une affiche PRODUCTION ÉCRITE:Écrire des cartes de 	 Pronoms personnels toniques <i>moi,je;toitu</i> Pronoms personnels objets <i>Me,te,le</i> Lesverbsen-ercomme appeler,acheter Lesadjectives possessives <i>nos,vos,leurs</i> 			
UNITÉ 2 – Bravo et	merci				
•Communication et technologies (leportable, internet)	 INTERACTION ORALE: Interagir au téléphone , féliciter RÉCEPTION ORALE: Comperendre une emission à la radio RÉCEPTION ORALE: Comprendre une définition PRODUCTION ECRITE: Écrire des plaques commemoratives 	 •Oui,que • Le passé composé • Le participe passé J'ai eu,ella a été • Longtemps,pendant , de à 			
UNITÉ 3 – Faire et dire					
• Jeunes : enquête	• INTERACTION ORACE: Demander de l'aide, donner des instructions	 Ce/<i>cet,cette,ces</i> Le verbe voir Envoyer,appuyer 			

	RÉCEPTION ORALE:	• Les articles
	Comprendre un message	partitifs
	enregistré	du,de la (de l)',des,de
	RÉCEPTION ÉCRITE :	
	Comprendre un article	
	d'un magazine de	
	consommateurs	
	• PRODUCTION ÉCRITE :	
	Écrire un règlement	
UNITÉ 4 – Faire ci	ou faire ça	
	•INTERACTION ORALE :	•S'il y a du soleil :
	Proposer quelque	L'hypothèse
	chose,accepter,refuser	(supposition,
	•RÉCEPTION ORALE :	Condition) la
	Comprendre une émission de	préposition <i>S i</i> +
•Les vacances	cuisine	indicatif
des Français	•RECEPTION ÉCRITE :	•Sinon ou + indicatif
	Comprendre une brochure	• Sortir,partir
	d'informations	•Quelques, plusieurs
	•PRODUCTION ÉCRITE :	•Le long de
	Ecrire un'texte de promotion	•Au milieu de
	touristique	•Au sommet de
UNITÉ 5 – Cœur et	santé	
	•INTERACTION ORALE:	
	Exprimer son intérêt pour	
	quelqu'un, exprimer	
	l'affection	
	• RECEPTION ORALE:	• J'étaisL'imparfait(1)
•Author du	Comprendre une	• Aussi brilliant que
Couple	chanson	•Le plus beau, le
	•RECEPTION ÉCRITE:	moins cher
	Lire un horoscope	• Le verbe connaître
	• PRODUCTION ÉCRITE:	
	Écrire une letter au	
	courrier du cœur	

TEXT BOOK:

 Marcella Di Giura Jean-Claude Beacco, Alors II. Goyal Publishers Pvt Ltd 86, University Block ,Jawahar Nagar (Kamla Nagar), New Delhi – 110007.

18UEG32G	PART II- ENGLISH III	SEMESTER - III

Total Credits: 3 Hours Per Week: 4

PREAMBLE:

To develop and enrich the language competencies of the students with the

Functional English

COURSE OUTCOMES:

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Develop knowledge on behavioral pattern and morale through prose	К3
CO2	Extend focus on Ecology through poetry	K2
CO3	Educate on Illustrating the significance of Short Stories	К2
CO4	Build knowledge on One-Act plays	K3
CO5	Test for descriptive Functional Grammar	K4

MAPPING WITH PROGRAMME OUTCOME

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	S	М	М	S	S
CO2	S	S	М	М	S
CO3	S	S	М	S	S
CO4	М	S	S	S	S
CO5	М	S	М	S	S

S – Strong, M – Medium, L – Low

18UEG32G	PART II- ENGLISH- III	SEMESTER- III
10010020		OLIVILOI LIX III

Total Credit: 3 Hours Per Week: 4

CONTENTS

UNIT I -PROSE

- 1. Mobile and Mixed Up Anil Dharker
- 2. Good Manners J.C. Hill
- 3. Chasing Celebrities R.K. Narayan

UNIT II - POETRY

- 1. The Stolen Boat William Wordsworth
- 2. Money Madness D.H. Lawrence
- 3. On Killing a Tree Gieve Patel

UNIT III - SHORT STORIES

- 1. The Scorn Bama
- 2. The Dying Detective Sir Authur Canon Doyle
- 3. The Refugees Pearl.S.Buck

UNIT IV - ONE ACT PLAY

- 1. Refund Fritz Karinthy
- 2. Mother's Day J.B. Priestley

UNIT V – FUNCTIONAL ENGLISH

- 1. Agenda, Minutes & Notice
- 2. Report Writing
- 3. Electronic Correspondence

TEXT BOOK:

1. Board of Editors, *Melody*. Department of English. Dr. N.G.P. Arts and Science College (Autonomous), Coimbatore.

REFERENCE BOOKS:

- 1. Syamala.V., *Effective English Communication for You.*, Emerald Publishers., Chennai.
- 2. N. Krishnaswamy., *Modern English: A Book of Grammar, Usage And Composition.*, Macmillan India Ltd-New Delhi.
- 3. Wren and Martin, *High School English Grammar and Composition*. S. Chand Publishing 2006, New Delhi.

17UFN33A	CORE V - NUTRITION IN HEALTH	SEMESTER - III

PREAMBLE

• To enable the students to understand the nutritional demands in various stages of life cycle and acquire skills in planning adequate meals in different stages of life cycle.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO	CO Statement	Knowledge
Number	CO Statement	Level
CO 1	Understand the basic principles and factors to be considered while planning menu for different age groups, Illustrate the recommended Dietary Allowance - RDA for Indians, basic requirement for various activities.	K ₁ ,K ₂
CO 2	Explain the stages of pregnancy, Normal growth and weight change, complications, Nutritional requirements and meal planning. Analyze the physiology of lactation, hormonal control and relaxation. Examine the nutritional components of colostrum and mature milk, Nutritional requirements of lactating women, Meal planning	K ₂ ,K ₃
CO 3	Assess the growth and development, factors influencing growth, difference between breast feeding and bottle feeding, factors to be considered in bottle feeding. Distinguish the different types of milk formulae. Design the preparation of Weaning foods and compare commercially and other organization foods. Compare the uses of growth chart to monitor	K ₂ ,K ₃

	growth and development, Nutritional	
	requirements of infants' up to one year, Problems	
	of feeding in normal and premature infants.	
	Elaborate the nutritional requirements of toddlers	
	and school going children,	
	Originate the factors to be considered while	
CO 1	planning meals for pre-school children.	
004	Rate the eating problems of children and their	N ₂ , N ₃
	management,	
	Develop packed lunches for toddlers and school	
	going children.	
	Evaluate the physical growth - changes, nutritional	
	requirement, and nutritional problems in	
	adolescence- iron deficiency anemia, obesity,	
	anorexia nervosa and bulimia nervosa.	
	Explain the nutritional needs in relation to	
	occupation, Discuss the nutrition in menopausal	
CO 5	women, hormonal changes.	K ₃
	Design low cost balanced food	
	Infer the physiological changes in ageing- psycho-	
	social and economic factors affecting eating	
	behavior, Originate the nutritional problems of	
	aged and their management	

Mapping with Program Outcomes

CO s	PO 1	PO 2	PO 3	PO 4	PO 5
CO ₁	S	S	М	М	М
CO 2	S	S	М	М	М
CO ₃	S	S	S	S	М
CO ₄	S	S	S	S	S
CO 5	S	S	S	S	S

S- Strong; M-Medium; L-Low

Total Credits: 5 Hours/Week: 6

CONTENTS

UNIT I

Basic Principles of Meal Planning – Basic Principles and factors to be considered while planning menu for different age groups, Recommended Dietary Allowance - RDA for Indians, basis for requirement, energy allowance for different growth pattern of children, energy allowance for various activities. Low cost balanced diet and its dietary guidelines.

UNIT II

Nutritional needs during Pregnancy – Stages of pregnancy, Physiological changes during pregnancy, Normal growth and weight change, complications, Dietary problems, Nutritional requirements and meal planning **Nutrition during Lactation** – physiology of lactation, hormonal control and relaxation, nutritional components of colostrums and mature milk, Nutritional requirements of lactating women and Meal planning

UNIT III

Nutrition during Infancy - Growth and development, factors influencing growth, difference between breast feeding and bottle feeding, factors to be considered in bottle feeding. Different types of milk formulae. Uses of growth chart to monitor growth and development, Nutritional requirements of infants' up to one year, Problems of feeding in normal and premature infants. **Supplementary and Weaning Foods** – Guidelines for formulation of weaning foods- Commercially and other institutions..

UNIT IV

Nutritional needs of toddlers and School children – Nutritional requirements of toddlers and school going children, Factors to be considered while planning meals , significance of packed lunch for pre-school & school children. Eating problems of children and their management

UNIT V

Nutrition during Adolescence - Physical Growth - changes, Nutritional requirement, Nutritional problems in adolescence- Iron deficiency anemia, obesity, anorexia nervosa and bulimia nervosa.

Nutritional needs of adults – In relation to occupation, Nutrition needs in women during menopause.

Geriatric Nutrition - Physiological changes during aging- psycho-social and economic factors affecting eating behavior, Geriatric Nutritional problems and their management

TEXT BOOKS:

- B. Srilakshmi, Dietetics, 2014, Edition VII, New Age International Pvt. Ltd, New Delhi
- 2. ICMR- Nutritive value of Indian Foods, 2014.
- Ravinder Chadha& Pulkit Mathur, Nutrition A lifecycle approach,
 2015. Edition-I, Orient Blackswan Pvt ltd, New Delhi

REFERENCE BOOKS:

- Shills, E.M. Olson, A.J. and Shike, Lea and Febiger *Modern Nutrition in Health and Diseases*, 1994
- 2. Bonnie S. Worthinton, Roberts, Sue Rod well Williams, Nutrition throughout the life cycle, 1996. The McGraw-Hill company

17UFN33P	CORE PRACTICAL II -	SEMESTED III
	NUTRITION IN HEALTH	<u> 3 EIVIE3 I EK - III</u>

Total Credits: 2 Hours/Week: 4

PREAMBLE

• To enable the students to prepare and serve the planned menu and determine the nutrient content of the menu per meal and per portion.

CONTENTS

- 1. Food groups
- 2. Planning a menu for a pregnant mother and display a prepared items
- 3. Planning a menu for a lactating mother and display prepared items and calculate nutritive value for the prepared menu.
- 4. Preparation of low cost supplementary and weaning foods
- 5. Planning and preparing diet for infants
- 6. Planning and preparing diet for preschool children
- 7. Planning and preparing diet for school going children and
- 8. Planning and preparing diet for adolescent girls and boys
- 9. Planning and preparing diet for low, medium, high income groups and based on sedentary, moderate and heavy workers Adult (Men and Women).
- 10. Planning and preparing diet for Geriatrics.

17UBC3AA	ALLIED - III: BIOCHEMISTRY	SEMESTER - III

Preamble:

- 1. This course provides an overview of nature of biological macromolecules namely carbohydrate, lipids, proteins and nucleic acids.
- 2. Students can gain basic knowledge and key understanding of the role of Vitamins, Minerals and Hormones in the functioning of cell.

Course Outcome:

On successful completion of the course, students will be able to

СО	CO Statement	Knowledge
number	CO Statement	Level
	Outline the chemical characteristics, types and	
CO1.	importance of carbohydrates.	K1 & K2
	Define and classify lipids. List and compare	
CO2.	saturated and unsaturated fatty acids. Summarize the physiochemical properties of lipids.	K1 & K2
	Compare the different structural levels &	
	Organization of proteins with suitable examples.	
CO3.	Classify the standard amino acids and list the non	K1 K7 &
	protein aminoacids	K1, K2 &
	Experiment with aminoacids.	K5
	Define Nucleic acids. Identify the structures of	
CO4	purines, pyrimidines, nucleoside and nucleotides.	K1 K2 &
04.	Classification and identification different forms of	K1, K2 &
	DNA and RNA.	K5
	Define and classify vitamins. Explain the functions	
CO5.	of minerals in biological system. Illutrate the role of	K1 & K2
	hormones in metabolic regulation.	

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	S	М	S	S	S
CO2	S	М	S	М	S
CO3	S	М	S	М	S
CO4	S	М	S	М	S
CO5	S	Μ	S	S	S

Mapping with Programme Outcomes:

L-Low; M-Medium and S-Strong.

17UBC3AA	ALLIED - III: BIOCHEMISTRY	SEMESTER - III

Total Credits: 3 Hours Per Week: 4

CONTENTS

UNIT - I

Carbohydrate – classification, structure, properties & chemical reactions of monosaccharide – Glucose, Fructose, Galactose, Mannose, Arabinose. Disaccharides – Maltose, Lactose and Sucrose. Polysaccharides – Homo polysaccharides – Starch, Glycogen and Cellulose & Hetero polysaccharides – Hyaluronic acid, Heparin, Chondroitin sulphate. Biological importance of sugar derivates – glycosaminoglycan, proteoglycan & glycoprotein – Blood group & Bacterial cell wall polysaccharides.

UNIT - II

Lipids: Definition classification of lipids, physiochemical properties. Storage lipids – fatty acids – types. Structural lipids – phospholipids, glycolipids & sphingolipids. Structure & Biological role of cholesterol.

UNIT - III

Classification of amino acids, general properties, Non protein amino acids. Peptide bond – structure & conformation, Protein classification, Physiochemical properties of proteins. Organization of protein Structure – Primary, Secondary (Keratin, Collagen) Tertiary (Myoglobin), Quaternary structure (Hemoglobin).

UNIT - IV

Structures of Purines, Pyrimidines, Nucleoside & Nucleotides. Properties of nucleic acids. DNA Double helical structure – Isoform. RNA – Types – mRNA, tRNA, rRNA - structure & function.

UNIT - V

Minerals in biological system & their importance – Iron, Calcium, Phosphorous, Iodine, Copper, Zinc. Vitamins – Definition, classification: Fat soluble (Vitamin A,D,E,K) and Water Soluble vitamins (Vitamin B)-Sources, functions and deficiencies. Role of vitamins as antioxidants & cofactors. Hormones involved in regulatory metabolism: Insulin, Glucagon and thyroid.

TEXT BOOKS:

- 1. *J.L.Jain.* 2016. Fundamentals of Biochemistry, 7th edition. S. Chand and company Ltd.
- 2. *Sathyanarayana U.* 2013. **Biochemistry,** 4th Edition. Books and Allied (P) Ltd.
- *3. Stryer L.* 2011. Biochemistry, 7th Edition. W. H. Freeman and Company, New york.

REFERENCE BOOKS:

1. *Zubay*, 1999. **Biochemistry**, 4th edition. William.C.Brain publishers.

	SKILL BASED COURSE I-	
17UFN3SA	FOOD HYGIENE AND	SEMESTER - III
	SANITATION	

PREAMBLE

• To understand and apply hygienic and sanitation measure to control the spread of micro organisms in the food premises.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

СО	CO Statement	Knowledge
Number		Level
CO1	Plan the layout and design the physical kitchen layout to maintain the food sanitation and hygienic techniques for developing industrial sectors to current scenario	K ₁ , K ₂
CO2	Choose and demonstrate the Safe and effective insect and pest control methods to maintain the quality standards in sanitation and hygiene at House hold level	K1, K2
CO3	Experiment the Standardization on Purification and disinfection of water to improve the food safety and health of the community and recycle the waste water to free from communicable diseases	K ₃
CO4	Apply and find the effective cleaning technology to maintain the sanitation standards of the environmental household level	K ₃
CO5	Identify and plan the sanitary evaluation of food processing unit to maintain the sanitation and hygienic practices to prevent health issues among the personnel	K ₃

Cos	PO1	PO2	PO3	PO4	PO5
CO 1	S	М	S	S	S
CO 2	S	М	S	S	S
CO 3	S	М	S	S	S
CO 4	S	М	S	S	S
CO 5	S	М	S	S	S

Mapping with programme outcomes

S-Strong;M-Medium;L-Low

SKILL BASED COURSE I-17UFN3SAFOOD HYGIENE ANDSEMESTER - IIISANITATIONSEMESTER - III

Total Credits: 4 Hours/week: 4

CONTENTS

UNIT-I Food hygiene

General principle of food hygiene, Hygiene in rural and urban areas in relation to food preparation, personal hygiene and food handling habits, Place of sanitation in food plants, Sanitary aspects of building and equipment: Plant layout and design, studies on sanitary fabrication of different types of processing equipments.

UNIT-II

Safe and effective insect and pest control

Extraneous materials in foods, Principles of Insects and pests control, Physical and chemical methods of control, Effective control of microorganisms: micro-organisms as indicator of sanitary quality

UNIT-III

Sanitary aspects of water supply

Source of water, quality of water, water supply and its uses in food processing unit, Purification and disinfection of water, preventing contamination of potable water supply

UNIT-IV

Cleaning practices

Effective detergency and cleaning practices: Importance of cleaning practices, physical and chemical factors in cleaning, classification and uses of detergents and sanitizers.

UNIT-V

Sanitation practices

Sanitary aspects of solid and liquid waste disposal system, maintaining sanitary practices in food processing unit, sanitation principle and the requirements for a food sanitation program, role of sanitation, general sanitary consideration and sanitary evaluation of food plants

TEXT BOOKS:

- 1. *David ME. S.* Essential of Food Safety and Sanitation, 1998, Edition I, Prentice Hall, New Jercy
- 2. *S. Roday.*, **Food Hygiene and Sanitation in Food Industry, 1999**, edition I, TMH, New Delhi

REFERENCES:

- 1. Asmita T., Catering Science and Food Safety, 2011, Edition I, Anthor
- 2. *Roger Y. S.* **Basic Food Microbiology, 1989,** Edition I, CBS, New Delhi (Swaminathan book) added

171 ININ/2/C	NMEC I-	SEME
17UNW154G	FUNDAMENTALS OF FOODS	SEIVIE

EMESTER -III

Total Credits: 2 Hours/week: 2

PREAMBLE

Obtain knowledge of different food groups, their composition and role in day's diet.

CONTENTS

UNIT – I

Food group: Basic 4 food groups; functional food groups-energy yielding, body building and protective foods, food pyramid, Classification of nutrients

Cereals - Nutritive value of rice, wheat.

UNIT –II

Pulses and grams – Varieties of pulses and grams, composition, nutritive value of pulses, germination and its benefits

Vegetables - Selection, Classification, nutritive value

Fruits - Selection, Classification, nutritive value and enzymatic browning

UNIT -III

Beverages - Classification, nutritive value

Spices and Condiments – medicinal benefits (ginger, garlic, turmeric, pepper)

Fats and Oils - Types and function of oils

UNIT -IV

Milk - nutritive value, kinds of milk, Egg - selection, nutritive value,

UNIT -V

Meat - nutritive value, selection of meat Poultry – types, nutritive value, selection Fish - nutritive value, selection of fish

TEXT BOOKS:

1. *Srilakshmi, B.* (2003). **Food Science**, III Third Edition, New Delhi: New Age International.

2. Shakunthala Manay and Shadakhraswamy M, 2008, Food Facts andPrinciples, Third Edition, New Age International Publishers, New Delhi.

REFERENCE BOOKS:

1. Mudambi. R. Sumathi and Rajagopal M.V (2008), "Food Science", New

- Age International Publishers, New Delhi.
- 2. Thangam E. Philip (1998): Modern Cookery Volume II, II Edition.

Orient Longman, Hyderabad

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17UFC3FA	பகுதி: 4 –அடிப்படைத்தமிழ் தாள் 1: (Basic Tamil)	SEMESTER- III		
இளங்க	5லைஆம் கல்வியாண்டு முதல் சேர்வோர்க்	குரியது 2018 – 2017		
10)மற்றுப்	ை– 12 ஆம் வகுப்பு வரை தமிழ் மொழிப்பா	ட ம் பயிலாதவர்களுக்கு		
	(பருவத் தேர்வு உண்டு)			
அலகு .தமிழ் அ) எழுத்துக	மொழியின் அடிப்படைக் கூறுகள் .1 : ள் :			
	 உயிர் எழுத்துக்கள் - குறில் , நெ 	டில் எழுத்துகள்		
	 மெய் எழுத்துக்கள் - வல்லினம் 	, மெல்லினம், இடையினம்		
	● உயிர்மெய் எழுத்துக்கள்			
ஆ) சொற்களின் வகைகள் : பெயர்ச்சொல், வினைச்சொல் – விளக்கம் (எ.கா.)				

அலகு குறிப்பு எழுதுதல் .2 :

- பெயர், முகவரி, பாடப்பிரிவு , கல்லூரியின் முகவரி
- தமிழ் மாதங்கள்(12), வாரநாட்கள்(7), எண்கள் (ஒன்று முதல் பத்து வரை), வடிவங்கள், வண்ணங்கள்
- ஊர்வன, பறப்பன, விலங்குகள், மனிதர்களின்
 உறவுப்பெயர்கள்
- இந்திய மாநிலங்கள், நதிகள், தேசத் தலைவர்கள் பற்றிய குறிப்புகள்

வினாத்தாள் அமைப்பு முறை –					
	மொத்த மதிப்பெ	பண்கள்50 -	•		
பாரி – வ	சரியான விடையைத் தேர்வு	10x2=20			
பகுது –அ	செய்தல்	1072-20	அனைத்து அலகுகளில்		
பகுதி –ஆ	அரைப்பக்க அளவில்	5v15-3	இருந்தும் வினாக்கள்		
	விடையளிக்க	5710-5	அமைதல் வேண்டும்		
	இரண்டு பக்க அளவில்	1x1=515			
பகுதாது-	விடையளிக்க	121-010			

17UEC3EB	பகுதி –2சிறப்புத் தமிழ் : தாள் :1	SEMESTER- III					
	(Advanced Tamil)	SEWLSTER- III					
இளங்க	 இளங்கலைஆம் கல்வியாண்டு முதல் சேர்வோர்க்குரியது 2018 – 2017						
(10 மற்றும் –	12 ஆம் வகுப்புகளில் தமிழ் மொழிப்பாட	் ம் பயின்றவர்களுக்கு உரியது					
	(பருவக் கேர்வ உண்டு)						
அலகு :1 –மர	rபுக் கவிதைகள்						
ා ල அ	் பாரதியார் கவிதைகள்(
-	● தமிழ்நாடு						
	∙ மனதில் உறுதி வேண்டும்						
	∙ வருகின்ற பாரதம் (பா.எண்.5-8)						
ஆ)	பாரதிதாசன் கவிதைகள்						
	● இன்பத்தமிழ்						
	● நீங்களே சொல்லுங்கள்						
	● உலக ஒற்றுமை						
	∙ வாளினை எடடா!						
அலகு – 2 : பு	துக்கவிதைகள்						
	 கம்பன் கவியரங்கக் கவிதை - மு.பே 	மத்தா					
	● தமிழா! நீ பேசுவது தமிழா! - காசியானந்தன்						
 நட்புக் காலம் (10 கவிதைகள்) - அறிவுமதி கவிதைகள் 							
அலகு : 3 – இ	லக்கணம்						
	• வல்லினம் மிகும் மற்றும் மிகா இட	ங்கள்					
	• ர, ற, - ல, ழ, ள - ந, ண, ன - வேற	பாடு அறித ல்					
வலாக · 4 – சுப	ுகங்கள் எமுகுக ்)						
9	• பாாாட்டுக் கடிகம்						
	ு — குன் கடித் ●நன்றிக் கடிகம்						
	● அழைப்புக் கடிகம்						
	● அலுவலக விண்ணப்பங்கள்						
	- 10						
அலக :5 –பா	வலக :5 –பாடம் கமுவிய வாலாற						
	 ∙ பாரதியாரின் இலக்கியப் பணி						
	● பாரதிதாசனின் இலக்கியப்பணி						
	• மரபுக்கவிகை. பதுக்கவிகை - விளச்	கம்					

வினாத்தாள் அமைப்பு முறை –				
	மொத்த மதிப்(பெண்கள்-	50	
0	சரியான விடையைத் தேர்வு	10×10-1	ஒவ்வொரு அலகிலும்	
பகுது –அ	செய்தல்	10,10-1	இரண்டு வினாக்கள்	
0	அரைப்பக்க அளவில்	5x15=3	ஒவ்வொரு அலகிலும் ஒரு	
பகுது –ஆ	விடையளிக்க	5715-5	வினா	
	இரண்டு பக்க அளவில்	5x25=5	ஒவ்வொரு அலகிலும் ஒரு	
பகுது – ஆ	விடையளிக்க	5725-5	வினா	
குறிப்பு பகுதி :ஆ மற்றும் இ – க்கான வினாக்கள் இது அல்லது அது என்ற				
அடிப்படையில்				
அந்தந்த அலகுகளில் அமைதல் வேண்டும்				

17UFC3FC	PART-IV: YOGA FOR HUMAN	SEMESTED III
	EXCELLENCE	SEIVIESTEK - III

Total Credits: 2 Hours Per Week: 2

CONTENTS

UNIT – I

Yoga and Physical Health

- 1.1 Physical Structure-Three bodies-Five limitations
- 1.2 Simplified physical Exercise Hand Exercises Leg Exercises Breathing Exercises – Eye Exercises –Kapalapathi
- 1.3 Maharasanas 1-2 Massages puncture-Relaxation
- 1.4 Yogasanas Padmasana- Vajrasanas-Chakrasanas (side) Viruchasanas –Yoga muthra – Patchimothasanas – Ustrasanas –

Vakkarasanas - Salabasanas

UNIT - II

Art of Nurturing the life force and Mind

- 2.1 Maintaing the youthfulness –Postponing the ageing process
- 2.2 Sex and Spirituality Significancew of sexual vital fluid Married life Chastity
- 2.3 Ten stages of Mind
- 2.4 Mental frequency Methods for concentration

UNIT - III

Sublimation

- 3.1 Purpose and Philosophy of life
- 3.2 Introspection Analysis of Thought
- 3.3 Moralization of Desires
- 3.4 Neutralization of Anger

UNIT IV

Human Resources Development

- 4.1 Eradication of worries
- 4.2 Benefits of Blessings
- 4.3 Greatness of Friendship
- 4.4 Individual Peace and World Peace

UNIT V

Law of Nature

- 5.1 Unified force Cause and Effect system
- 5.2 Purity of Thought and Deed and Genetic Centre
- 5.3 Love and Compassion
- 5.4 Cultural Education Fivefold Culture

17UEC3ED	PART-IV. WOMEN'S RIGHTS	SEMESTER - III
1/UFC5FD	FART-IV: WOMEN 5 RIGHT5	SEIVIESTEK - 111

Total Credits: 2 Hours Per Week: 2

CONTENTS

UNIT- I

Laws, Legal Systems and Change: Definition - Constitutional law, CEDAW and International Human Rights – Laws and Norms – Laws and Social Context – Constitutional and Legal Framework.

UNIT- II

Politics Of Land And Gender In India: Introduction – Faces of Poverty – Land as Productive Resources – Locating Identities – Women's Claims to Land – Right to Property - Case Studies.

UNIT- III

Women's Rights: Access to Justice: Introduction – Criminal Law – Crime Against Women –Domestic Violence – Dowry Related Harassment and Dowry Deaths – Molestation –Sexual Abuse and Rape – Loopholes in Practice – Law Enforcement Agency.

UNIT- IV

Women's Rights: Violence Against Women – Domestic Violence - The Protection of Women from Domestic Violence Act, 2005 - The Marriage Validation Act, 1982 - The Hindu Widow Re-marriage Act, 1856 - The Dowry Prohibition Act, 1961.

UNIT -V

Special Women Welfare Laws: Sexual Harassment at Work Places – Rape and Indecent Representation – The Indecedent Representation (Prohibition) Act, 1986 - Immoral Trafficking – The Immoral Traffic (Prevention) Act, 1956 - Acts Enacted for Women Development and Empowerment - Role of Rape Crisis Centers.

REFERENCES BOOKS:

- 1. *Nitya Rao.* 2008. "**Good Women do not Inherit Land**" Social Science Press and Orient Blackswan.
- 2. *International Solidarity Network* , 2006 ,"**Knowing Our Rights**" An imprint of Kali for Women.
- 3. Kaushik. P.D. 2007. "Women Rights" Bookwell Publication.

- Aruna Goal. 2004. "Violence Protective Measures for Women Development and Empowerment." Deep and Deep Publications Pvt.
- Monica Chawla. 2006. "Gender Justice". Deep and Deep Publications Pvt Ltd.
- Preeti Mishra. 2007. "Domestic Violence Against Women". Deep and Deep Publications Pvt.
- ClairM.Renzetti, Jeffrey L.Edleson, and Raquel Kennedy Bergen. 2001. Source Book on "Violence Against Women". Sage Publications.

17UFC3FE	PART-IV: CONSTITUTION OF INDIA	SEMESTER - III
I/ OI COI L		

Total Credits: 2 Hours Per Week: 2

CONTENTS

UNIT I

Making of Constitution - Constituent Assembly- Dr.RajendraPrasath-Dr.B.R.Ambedkar - Salient features - Fundamental Rights.

UNIT II

Union Executive - President of India - Vice-President - Prime Minister - Cabinet - Functions

UNIT III

Union Legislature - Rajiya Sabha - Lok Sabha - Functions and Powers

UNIT IV

Union Judiciary - Supreme Court - Functions - Rule of law

UNIT V

State - Executive - Legislature - Judiciary - Role of Tamilnadu Public Service Commission.

REFERENCE BOOKS:

- 1. *Agharwal.R.C.* 1977, National Moment and Constitutional Development. New Delhi.
- 2. Chapra B.R., 1970, Constitution of India. New Delhi.
- 3. *Rao B.V*, 1975. Modern Indian Constitution. Hyderabad.
- 4. Nani Palkhivala ,1970, Constitution of India, New Delhi.
- 5. *Krishna Iyer, V.R.*, 2009, Law and Justice. New Delhi.
- 6. Reference Manual from the Govt. of Tamilnadu

17UFNSS1SELF STUDY PAPER-
FOOD FORTIFICATION

SEMESTER III

Total Credits: 1

PREAMBLE

Obtain knowledge on different food fortificants, technologies in fortification, special fortified foods

CONTENTS

Unit-I

Food fortification – Needs, objectives, principles and rationale, selection and basis of Fortificants.

Unit-II

Technology of fortifying cereal products

Characteristics of nutrients used in cereal fortification; Types and levels of micronutrients to be added; Fortification methods; Fortification premixes, Design and composition of premixes and quality control; Fortification of bread, pasta, noodles, biscuits, and breakfast cereals.

Unit-III

Technology of fortifying beverages, candies, snack products

a) Technology of fortifying beverages - Importance of beverage fortification, Health benefits of fortification, Selection of nutrients for fortification, Levels to be added, Characteristics of fortificants and method of fortification, Bioavailability, Organic Vs inorganic salts.

b) Technology of fortifying candies - Product formulation, Factors to be considered in selecting fortificants, Nutrient bioavailability and its interactions, Packaging, storage, shelf life and cos. c) Snack products - Rationale for micronutrient fortification of snack products, Merits and demerits of fortification, Choice of products and selection of micronutrients, Setting level of fortification, Safety limits, Technological and cost limits, Challenges in fortifying snack products, Nutrient interaction and bioavailability.

Unit-IV

Other special fortified products - salt, sugars, oils, Nutri-bars, Granola bars.

a) Salt -Technology of fortifying salt with iron and iodine, Iodine stability and quality of double fortified salt, Safety issues, Levels to be added.

b) Sugars - Fortification with iron and vitamin A, Premix formulation, Fortification level, Packaging.

c) Oils- Fortification with vitamin A, Rationale of vitamin A fortification, Stability of vitamin A in oil during storage and cooking, Effects of frying on Vitamin A content, Efficacy and safety of vitamin A added to oil, Technology of fortifying, Packaging.

d) Nutri bars - Selection of nutrient, Advantages and disadvantages of fortification, Technology of fortification, Packaging.

e) Granola bars- Production of the product, Physical parameters of bars, Incorporation of

fortificants, Technology of fortification, Packaging.

Unit-V

Health foods - Selection of nutrients, Technology of incorporation, Bioavailability, Packaging.

TEXT BOOKS:

- Subbulakshmi and Udipi.S., 2001., "Food processing and Preservation Technology"., New Age Publications., New Delhi, India.
- Khader.V, 2001., "A Textbook of Food Processing Technology", ICAR, New Delhi, India

REFERENCE BOOKS:

- 1. *Sivashankar*. *B.*, 2002 ., "Food Processing and Preservation", PHI, New Delhi, India.
- 2. Modern Technology of Food Processing and Agro Based Industry, 2nd Edition, NIIR Board, Asia Pacific Business Press, 2002.

17UFNSS2SELF STUDY PAPER-
NUTRITION EDUCATIONSEMESTER - III

Total Credits: 1

CONTENTS

UNIT -I

Nutrition education: definition, rational, history, need and effectiveness. Role of nutrition educators.

UNIT -II

Needs assessment -educational assessment Assessing patients and family needs, coping techniques

UNIT -III

Theories of human behavior and health choices. Health belief model, Theory of planned behavior and motivation. Stages of change. Social Cognitive Theory, Tran theoretical model and stages of change, Diffusion of Innovations Theory

UNIT -IV

Public health nutrition and Health promotion. Planning nutrition education. Competencies and skills of nutrition education and nutrition education specialists.

UNIT -V

Health communication, Communication skills. Information Education Communication approaches to improve health and nutrition : Concepts – Scope- Elements- Models of communication - Communication Process - Approaches and Barriers to communication,

Communication for Extension Education and Development.

TEXT BOOKS:

- 1. *Reddy.V., Rao.P, Sastry .G. J and Kashinath K.C.,* 1993., "**Nutrition Trends in India**", N1N, Hyderabad, India.
- 2. *Park and Park*, 1995., **"Text Book of Preventive and Social Medicine**", Banarsidas Published by Jahalpu.

REFERENCE BOOKS:

- 1. *Gibney.M.J*, 2004., "**Public Health Nutrition**", 1st Edition, Black Well Scientific Publications, Oxford.
- 2. *Wadhwa.A*, 2003, "**Nutrition in the Community**", 1st Edition, Elite Publications, New Delhi.

17UFN43A	CORE VI - DIETETICS	SEMESTER- IV
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PREAMBLE

To understand significance of diet therapy for various diseases and to appreciate the science of dietetics

COURSE OUTCOMES

On the successful completion of the course, students will be able to

СО	CO Statement	Knowledge		
Number	CO Statement	Level		
	Recall the principles of diet therapy and explain the			
CO1	role of dietitian, Nutrition Care Process Identify	V1 V.		
	different diets for various disease stages	K1, K2		
	Infer the signs, symptom and causes and nutritional			
CO2	management of underweight, obesity, gastrointestinal	K. K2		
	diseases and nutrient deficiency	N _{2,,} NJ		
CO3	Infer the signs, symptom and causes of diseases and			
	explain the nutritional management for liver, gall	K2, K ₃		
	bladder and cardio vascular system and diet plan			
	Infer the signs, symptom and causes and explain the			
CO4	nutritional management for Diabetes mellitus and the	VO V		
	diseases of the kidney and urinary tract and diet plan	Ν 2, Ν 3		
	Infer the signs, symptom and causes and explain the			
CO5	nutritional management for Cancer, Food Allergy,	K2 K.		
	Infections and Fever and diet plan	Ν ₂ , Ν ₃		

Mapping with Program Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	S	S

S - Strong; M - Medium; L- Low

17UFN43ACORE VI - DIETETICSSEMESTER -IV	17UFN43A	CORE VI - DIETETICS	SEMESTER -IV
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Total Credits: 5 Hours/Week: 5

CONTENTS

UNIT I

Objectives of diet therapy - Role of a dietitian, Principles of diet preparation and counseling Normal diet in the hospitals – liquid, semi liquid, light, soft diet, bland diet and regular diet. Nutrition Care process. Different types of feeding - Basic concepts of oral feeding, tube feeding, IV feeding, gastrostomy feeding. Diet in infection and fever.

UNIT- II

Therapeutic diets for the disorders: Under weight and Obesity - definition, etiology, treatment. Diseases of the gastro intestinal tract- ulcer, constipation, diarrhea and malabsorption syndrome. Diet in relation to nutrient deficiencies -Protein energy malnutrition, vitamin A deficiency and anemia

UNIT-III

Diseases of the liver and gall bladder (risk factors and diet therapy) - Jaundice, Hepatitis,

Cirrhosis, Fatty liver, Cholecystisis and Cholelithiasis

Diseases of the cardio vascular system (risk factors and diet therapy) Atherosclerosis, Arteriosclerosis, Hypertension and Heart Failure

UNIT- IV

Diabetes mellitus – Types, causes, symptoms, diagnosis, bio-chemical changes, insulin and

hypo- glycemic drugs (types only), food exchange list, dietary management Diseases of the kidney and urinary tract - Acute and chronic nephritis, Nephrotic syndrome

Renal failure, Urinary calculi

Causes and dietary treatment of kidney diseases and dialysis

UNIT- V

Nutrition and cancer - Dietary guidelines for management Diet in Allergy - Definition, classification, common food allergy, test of allergy, diet therapy.
Text Books

- Srilakshmi B. , Dietetics, 2014, VII Edition. New Age International (P) Limited Publishers, New Delhi
- Shubhangini. A. Joshi (2002) Nutrition and dietetics, Tata Mc Graw-Hill publishing Company limited, New Delhi

REFERENCE BOOKS:

- Carolynn E.Town send and Ruth A. Roth (2002) Nutrition and Diet Therapy, Delmar Publisher
- Sue Rod Williams, Nutrition and diet Therapy, Times Mirror Mosby College publishing, Boston, 1989.

17UFN43P

CORE PRACTICAL III-DIETETICS

SEMESTER - IV

Total Credits: 2 Hours/Week: 4

PREAMBLE

• To enable students to plan, prepare and serve different therapeutic diets and assess the nutritive value of the diets

CONTENTS

- 1. Weights and measures of foods.
- 2. Menu planning, prescription and preparation of
 - a. Normal diet, regular diet, light diet, soft diet, full liquid diet, clear liquid diet and bland diet.
 - b. Diet for obesity
 - c. Diet for under weight
 - d. Diet for anemia
 - e. Diet for diseases of the GI tract peptic ulcer, diarrhoea, constipation
 - f. Diet for Cardio-vascular diseases- atherosclerosis, hypertension
 - g. Diet for diseases of the kidney nephritic and nephrotic syndrome, Diet before and after dialysis
 - h. Diet for diabetes Type I and II, Diabetes with CVD disease
 Diet in febrile conditions- Short duration typhoid; long
 duration tuberculosis
 - i. Diet in liver diseases Viral hepatitis and cirrhosis
- 3. Observation of a dietary department in a hospital.
- 4. Preparation of power point presentations on diet and disease conditions.

17UBC4AA	
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SEMESTER - IV

Preamble:

- 1. This course provides an overview of information related to carbohydrate, fat and protein metabolism that takes place in our body and know the interrelationship between carbohydrate, fat and protein metabolism.
- 2. Students can gain basic knowledge and key understanding on principles underlying chromatography and electrophoresis methods.

Course Outcome:

On successful completion of the course, students will be able to

СО	CO Statement	Knowledge
number	CO Statement	Level
	Tell the basic concepts of pH and Buffers and explain	
CO1	the role of buffers system in our body fluids.	
COI.	Demonstrate the importance of the various	K1 & K2
	chromatographic techniques.	
	Outline the various electrophoretic techniques. Compare	
CO2	colorimetry and spectrophotometry.	
CO2.	Define radioactivity and summarize the applications of	K1 & K2
	isotopes.	
	Understand and apply concepts involved in	
CO3.	thermodynamics.	K1 K2 & K3
	Recall respiratory chain and oxidative phosphorylation.	K1, K2 & K3
	Describe what happens during glycolysis, glycogenesis,	
	and glycogenolysis. Explain the events that make up the	
CO4.	process of TCA cycle and HMP shunt.	V1 $V2$ $V2$
	Understand the chemical logic of lipid metabolic	\mathbf{N}
	pathways.	
	Explain how amino acids are synthesized and degraded.	
CO5.	Outline their interrelations of carbohydrate, lipid and	K1 & K2
	protein metabolism.	

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	S	Μ	S	S	S
CO2	S	Μ	S	S	S
CO3	Μ	Μ	Μ	Μ	Μ
CO4	S	Μ	S	S	S
CO5	S	Μ	S	S	S

Mapping with Programme Outcomes:

L-Low; M-Medium and S-Strong.

17UBC4AA	ALLIED - IV: BIOCHEMISTRY	SEMESTER - IV

Total Credits: 3 Hours Per Week: 3

CONTENTS

UNIT I

Buffers: Concept of acid base indicators, buffer systems of blood and body fluids, Components of the pH meter and the concept of pH

Chromatography: Paper, TLC, molecular sieve and affinity chromatography - their applications.

UNIT II

Electrophoresis: Paper and Gel electrophoresis.

Principles and applications of colorimetry and spectrophotometry.

Isotopes: Definition and units of radioactivity: examples of natural and heavy isotopes in biological investigations.

UNIT III

Bioenergetics: Basic principles of thermodynamics – entropy, enthalpy and free energy; highenergy phosphates, oxidation-reduction reactions. Mitochondria: - Respiratory chain and oxidative phosphorylation.

UNIT IV

Metabolic pathways:

Carbohydrate metabolism: Glycolysis, TCA cycle, HMP shunt, Glycogenesis and glycogenolysis.

Lipid metabolism: Beta-oxidation, biosynthesis of saturated fatty acids - Palmitic acid

UNIT V

Protein metabolism: General pathway of amino acid metabolism – deamination, transamination and decarboxylation. Urea cycle. Glycine and phenylalamine metabolism (structures not required).

Inter-relationship of carbohydrate, fat and protein metabolism (Flow chart only).

TEXT BOOKS:

1. *Deb A.C.* (2001). Fundamentals of Biochemistry, 9th edition, New Central Book Agency, Kolkatta.

2. *Chatterjea M. N.* (2012), **Textbook of Medical Biochemistry**, 8th edition, *Jaypee Brothers*, New Delhi.

REFERENCE BOOKS:

1. *Nelson, D.L., Cox, M.M.* 2008. Lehninger **Principles of Biochemistry**, 5th edition, W.H. Freeman and Company, New York.

2. *Murray R.K., Granner D.K, Mayes P.A and Rodwell U. W.,* (2015), Harper's Biochemistry, 30th edition, Lange Medical Publications.

3. *D.T. Plummer*, (2006), **An Introduction to Practical Biochemistry**, 3rd edition, TMH, New Delhi.

17UBC4AP ALLIED PRACTICAL - II: BIOCHEMISTRY SEMESTER - IV

Total Credits: 2 Hours Per Week: 4

CONTENTS

1. Analysis of Carbohydrates:

- a. Monosaccharide Pentose- Arabinose. Hexoses- Glucose, Fructose,
- b. Disaccharides Sucrose, Maltose and Lactose
- c. Polysaccharide Starch.

2. Analysis of Amino acids:

- a. Histidine
- b. Tyrosine.
- c. Tryptophan
- d. Arginine

3. Characterization of lipids

- 1. Determination of acid number.
- 2. Determination of iodine number.

4. Quantification technique

- a. Quantification of Protein by Lowry *et al* method
- b. Quantification of Carbohydrate by DNSA method

REFERENCE BOOKS:

- **1.** *D.T. Plummer*, (2006), **An Introduction to Practical Biochemistry**, 3rd edition, TMH, New Delhi.
- **2.** *Pattabiraman T. N and Sitarama Acharya U.* (2015)**. Laboratory Manual in biochemistry,** 4th Edition. All India Traveller Book Seller.
- 3. *J Jayaraman,* (2015). Laboratory manual in Biochemistry. 5th Edition. New Age International (P) Ltd.

17UFN4SA	SKILL BASED COURSE II-	CEMECTED IV
	HEALTH AND FITNESS	SEIVIESTER - IV

PREAMBLE

To understand the importance of health for quality living of foods and to appreciate the significance of food and exercise for good health.

COURSE OUTCOMES

In the successful completion of the course, students will be able to

СО	CO Statement	Knowledge
Number	CO Statement	Level
	Define health	
CO1	List the functions of food	
COI	Explain the constituents of foods and their functions	K1, K ₂
	Explain the importance of health education	
CO2	Demonstrate personal hygiene	
002	Explain the scope of physical education	K ₂
	Compare yoga with other gymnastic exercises	
CO3	Explain kinanthropometry	
	Identify the nutrition requirements during training and	K2, K ₃
	performance for athletes and endurance games	
	Contrast Aerobic and anaerobic exercise	
	Explain carbohydrate loading	
CO4	Illustrate the exercises to maintain fitness	VO V.
	Identify the Ergogenic aids in Sports and Exercise.	Ν 2, Ν 3
	Plan the energy need of sports persons	
CO5	Identify the health club equipments and activities	K ₃

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	S	S

Mapping with Program Outcomes

S - Strong; M - Medium; L- Low

17UFN4SA SKILL BASED COURSE II-HEALTH AND FITNESS

SEMESTER - IV

Total Credits: 2 Hours/week: 2

CONTENTS

UNIT I

Health – Definition, concept/ meaning of health and factors affecting health. Health promotion: Definition of food, Nutrition, Nutrients and Nutritional status. Functions of food – Physiological, psychological and socio - cultural functions, constituents of food and their functions

UNIT- II

Physical Fitness Assessment: Simple, Intermediary and combined Health education – Definition, importance of health education, personal hygiene Physical education – Meaning and scope, role of gymnastic exercises and yoga in improving health, Difference between yoga and other gymnastic exercises

UNIT- III

Sports nutrition –Introduction to kinanthropometry, Requirements during training and performance for athletes and endurance games

UNIT-IV

Aerobic and anaerobic exercise, fuel for exercise, glycogen load Exercise to maintain fitness – demand in exercise and sports. Ergogenic aids in Sports and Exercise. Determination of Energy Expenditure in Sports and Exercise

UNIT- V

Health club equipments and activities – Tread mill, hammer strength, steppers, cycles, body sculpting, kick boxing, Reebok ridge rocker, hanging, hand grips, swing, climbing and lifting weight.

TEXT BOOKS

- Kathleen M. L. Krause's- Food, Nutrition and Diet therapy, 2004, 11th Edition, WB Saunders Company, Philadelphia
- Williams M. H., Nutrition for Health, Fitness and Sports, 2002, Edition 5, Mc Craw Hill Book Company, New Delhi

REFERENCE BOOKS

- 1. Judy A. D. Nutritional assessment for Athletes, 2002, Edition I, CRC Press, New York
- 2. Liane M. S. Nutrition, Exercise and Behaviour, 2001, Edition I, Wordsworth, Australia

17UNM44G	NMEC II -	CENTER IV
	FOOD PRESERVATION	SEMESTEK - IV

Total Credits: 2 Hours/week: 2

PREAMBLE

- To enable students to understand the principles of food preservation.
- Acquire skills in methods of food preservation.

CONTENTS

UNIT- I

Fruits and Vegetables - General Principles of selection for processing, global production versus Indian production, SWOT in food industry

UNIT- II

Food Preservation – Definition, General Principle and Methods of Preservation.

Preservation by Addition of Sugar – General Principle, Preparation of Jam and Squash

UNIT –III

Preservation by Addition of Salt - General Principle, Preparation of Pickles and fermented pickles -Sauerkraut and Dill Pickles. Preservatives –class I and II Preservatives.

UNIT- IV

Preservation Using High Temperature: definition, application - Pasteurization, canning, bottling & dehydration

UNIT- V

Preservation Using Low Temperature: Refrigeration and Freezing Advantages and Disadvantages

Preservation by Radiation – Microwave heating, Application in Food Processing and Preservation

TEXT BOOKS:

1. Manoranjan Kalia, Sangita Sood, Food Preservation and Processing,

2012, Edition II, Kalyani Publishers, Ludhiana, India

Vijaya Khader, Preservation of Fruits and vegetables, 1999, Edition I,
 Kalyani Publishers, Ludhiana, India

REFERENCE BOOKS:

 Sivasankar B., Food Processing and Preservation, 2002, Edition I, PHI, New Delhi

2. The Complete Technology book on Processing, Dehydration, Canning, Preservation of Fruits and Vegetables, 2008.

17UFN53A	CORE VII - FOOD PRESERVATION	SEMESTER - V

PREAMBLE

• Enable students to understand the principles of food preservation and acquire skills in methods of food preservation and their applications in food industries

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	List the general principles and methods of food preservation Recall about the preservation by addition of sugar and salt	K1
CO2	Explain about the preservation by Use of High Temperature.Illustrate about thermal death curve, calculation of process time, methods of heat transfer Compare the steps, merits and demerits and of canning and bottling. Explain about principle of dehydration, types, merits and demerits of driers	К2
CO3	Explain about the preservation by use of low temperature – Illustrate about the types- refrigeration, freezing and its merits and demerits. Outline the requirement of refrigerated storage, characteristic of refrigerant, refrigeration during transport, defects in cold storage	K2,K3
CO4	Explain about the preservation with chemicals Classify and summarize the role of the chemicals in preservation - Inorganic and Organic preservatives, Antibiotics, Mold inhibitors, Antioxidants and its role in preservation	K2,K3
CO5	Explain about the Food irradiation and Ohmic heating Techniques Illustrate about the Semi moist foods	K2,K3

CO s	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	S	S	S	S	S
CO 2	S	S	S	S	S
CO 3	S	S	S	S	S
CO ₄	S	S	S	S	S
CO 5	S	S	S	S	S

Mapping with Program Outcomes

S- Strong; M-Medium; L-Low

17UFN53A

CORE VII - FOOD PRESERVATION

SEMESTER - V

Total Credits: 5 Hours/Week: 6

CONTENTS

UNIT- I

Food preservation - Definition, General Principles and Methods of Food Preservation - Classification of foods for processing, Preservation by addition of **sugar-** General principles and preparation of chemical preserves - jams, jellies, Marmalades, squashes and syrups, Preparation of candies theories of gel formation, **Preservation by addition of salt** – Pickling, Preparation of Indian Pickles, Sauerkraut.

UNIT – II

Preservation by Use of High Temperature – Condensation, Evaporation, methods of sterilization and pasteurization.

Canning - steps, types of cans, advantages, disadvantages, thermal death curve, calculation of process time, methods of heat transfer. Techniques-Ohmic heating of foods and pulse electric field

Bottling - steps, advantages, disadvantages.

Food dehydration - concept of dehydration and sun drying, Types of driers- advantages, Disadvantages, **Principle of dehydration**-heat and mass transfer

UNIT – III

Preservation by use of Low Temperature- Types - Common types of cold storage, refrigeration- requirement of refrigerated storage, characteristic of refrigerant, refrigeration during transport, defects in cold storage.

Freezing - Principles and methods of freezing, Freeze drying. Advantages and disadvantages

UNIT – IV

Preservation with chemicals

Mechanism of microbial inhibition, mechanism and action of preservatives in processed food, Inorganic and Organic preservatives. Antibiotics, Mold inhibitors, Antioxidants and its role in preservation.

UNIT – V

Food irradiation-Types, Sources and units of radiation, Applications and Effect of irradiation on food components.

Preservation of Semi moist foods - Principles, Method involved in preservation of Intermediate moist foods

TEXT BOOKS:

- Manoranjan Kalia, Sangita Sood, Food Preservation and Processing, 2012, Edition II, Kalyani Publishers, Ludhiana, India
- Vijaya Khader, Preservation of Fruits and vegetables, 1999, Edition I, Kalyani Publishers, Ludhiana, India

REFERENCE BOOKS:

- Sivasankar B., Food Processing and Preservation, 2002, Edition I, PHI, New Delhi
- 2. **The Complete Technology book on Processing,** *Dehydration, Canning, Preservation of Fruits and Vegetables, 2008*

17LIENIE2D	CORE VIII -	CEMECTED V
1/UFIN55D	FOOD MICROBIOLOGY	SEIVIESTER - V

PREAMBLE

• To enable students to understand the The nature of foods and the causes of deterioration and the principles underlying food processing and the improvement of foods for the consuming public.

COURSE OUTCOMES

On the successful completion of the course, students will able to

СО	CO Statement	Knowledge	
Number	CO Statement	Level	
	Understand the general importance of		
	microorganisms in food.		
	Intricate the Factors affecting the growth of		
CO 1	microorganisms in food- pH, temperature,	K ₁ ,K ₂	
	moisture, oxidation - Reduction potential, ,		
	Nutrient content and Inhibitory substances and		
	biological structure.		
CON	Illustrate the role of Microorganism in Food Safety	V.	
	Outline the GMP and Explain HACCP	N 2	
	Summarize and Identify the Fermented food –		
CO 3	Bread, dairy products, Fermented beverage,	K ₂ ,K ₃	
	fermented fish and meat products		
CO 4	Explain the Spoilage of food - cereals, vegetables,	K. K.	
04	fruits, egg and milk – canned foods.	K ₂ , K ₃	
CO 5	Evaluate the Food borne diseases - Food poisoning		
	and Food borne infections .	V.	
	Investigation of food poisoning outbreaks of	N 3	
	Bacterial and Mycotoxins		

Mapping with Program Outcomes

CO s	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	S	S	Μ	Μ	Μ
CO 2	S	S	Μ	М	Μ
CO 3	S	S	S	S	Μ
CO ₄	S	S	S	S	S
CO 5	S	S	S	S	S

S- Strong; M-Medium; L-Low

FOOD MICROBIOLOGY

CORE-VIII -

SEMESTER - V

Total Credits: 3 Hours/Week: 5

CONTENTS

UNIT – I

Food and Microorganisms – Important microorganisms in food (Bacteria, Mold and yeasts); Factors affecting the growth of microorganisms in food– pH, moisture, temperature, oxidation – Reduction potential, Nutrient content and Inhibitory substances and biological structure.

UNIT – II

Microbiology in Food Sanitation – Role of micro organisms in waste water management – Sewage and waste treatment Disposal.

Food microbiology – Good Manufacturing Practices – Hazard Analysis – Critical Control Points –Health of Employees.

UNIT -III

Fermented food – Bread, fermented fish and meat products – Fermented dairy products – Yoghurt and cheese. Fermented beverages: Wine and beer

UNIT – IV Spoilage of food - cereals, vegetables, fruits, egg and milk – canned foods.

UNIT- V

Food borne diseases – Food poisoning and Food borne infections –Bacterial and Mycotoxins- Investigation of food poisoning outbreaks

TEXT BOOKS:

 Frazier. W.C and D.C Westhoff. 1978. Food Microbiology. 3rd ed.Tata Macgraw Hill publishing Co., New Delhi.
 Adams M.R. and Moss M. O., 2000. Food Microbiology 2ndedition.

Panima Publishers.

REFERENCE BOOKS:

 Roger.Y.Stainer. 2003. Basic Food Microbiology. 2nd edition, CBSPublishers.
 Jay,J.M. 1991. Modern Food Microbiology 4th edition. Van Nostra and Rainhokdd Co.

17UFN53C	CORE IX - FOOD PROCESSING	SEMESTER -V

PREAMBLE

• To enable students to learn processing of foods and preservation methods and to understand the significance of non-thermal food processing techniques.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

СО	CO Statement	Knowledge
Number		Level
CO1	List the processing techniques of cereals and their by products Recall the millet processing	K ₁
CO2	Explain the pulse processing techniques Outline the processing steps for edible oil production	K ₂
CO3	Explain the processing of dairy products and Identify the Indigenous milk products Illustrate the processing of meat and poultry Demonstrate the methods of manufacturing of egg and fish products	K ₂
CO4	Explain the dehydration methods in vegetables Demonstrate the method of mushroom processing and its utilization.	K ₂ ,K ₃
CO5	Identify and make use of the latest non - thermal technologies in food processing	K ₃

Mapping with Program Outcomes

CO s	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	Μ	Μ	Μ	S	S
CO 2	S	S	S	S	S
CO 3	S	S	S	S	S
CO ₄	S	S	S	S	S
CO 5	S	S	S	S	S

S- Strong; M-Medium; L-Low

17UFN53C	CORE IX - FOOD PROCESSING	SEMESTER V

Total Credits: 5 Hours/Week: 6

CONTENTS

UNIT I

Milling technology of cereals

Paddy processing Technology - Processing, types and milling of rice, by products of rice milling and their utilization

Wheat Technology - Processing, extruded products

Millets - Processing and Types of minor and major millets,

UNIT II

Legumes and Pulses – wet and dry processing, protein concentrates and isolates, snack foods, development of low cost protein foods.

Technology of oil seeds - Processing of edible oil, Fats from non-traditional oil seeds, rice bran oil, processing of vegetable oils and hydrogenation of fats.

UNIT III

Processing of milk and milk products

Milk – Processing of different types of cheese, Probiotic milk products - yoghurt, and ice-cream, Indigenous milk products - khoa, paneer, ghee and lassi

Meat - Processing .Poultry - preparing poultry for consumption, packaging.

Fish and Egg - Whole egg powder, egg yolk powder, fish protein concentrate and fish oil. packaging of fish and egg products

UNIT IV

Vegetables - Drying techniques –drum drying, vacuum puffing, foam mat drying, freeze drying, accelerated freeze drying. Mushroom - processing, utilization.

Fruits- Sun drying and mechanical dehydration – use of kiln drier and tunnel drier.

UNIT V

Latest technologies in food Processing – Principles, advantages and disadvantages only - Non - thermal processes, ultrasound method, nanotechnology, oscillating magnetic field, High pressure processing and hydrostatic pressure technique

TEXT BOOKS:

- Subbulakshmi and Shobha Udipi, Food Processing and Preservation Technology2001, Edition I, New Age International Publications, New Delhi
- 2. Fellows P. J. Food Processing Technology, 2000, Edition II, Wood

Head Publishing Limited, England.

REFERENCE BOOKS:

- Sivasankar B., Food Processing and Preservation, 2002, Edition I, PHI, New Delhi
- 2. *Mridulla Mirajkar*, Food Science and Processing Technology, Volume I and II, Edition I, 2002, Kanishka Publishers, New Delhi

18UFN53PCORE PRACTICAL -IVSEMESTER - VCONTROLCONTROLSEMESTER - V

Total Credits: 2 Hours/Week: 4

EXPERIMENTS

- 1. Methods of Food Preservation using salt and sugar.
 - a) Pickles
 - b) Chutney
 - c) Sauce
 - d) Ketchup
 - e) Jams
 - f) Jellies
 - g) Marmalades
 - h) Preserves
 - i) Squashes and cordial
- 2. Drying and Dehydration
 - a) Vadams and vathal
 - b) Ready Mixes
- 3. Food Adulteration tests for some common foods.
 - a) Milk
 - b) Honey
 - c) Turmeric powder
 - d) Chilli powder
 - e) Pepper
 - f) Coffee powder
 - g) Tea Powder
 - h) Butter and ghee
 - i) Edible oil
 - j) Green peas
 - k) Jaggery
 - 1) Wheat flour

List of Practicals under DBT star college scheme

- 1. Formulation of value added Toffee
- 2. Extraction of natural pigments from Vegetables

17UFN5SASKILL BASED COURSE III-
BASIC COMPUTER SCIENCE IN
NUTRITIONSEMESTER - V

PREAMBLE

To enable students to gain knowledge on computer applications and

to design and use computer based health and nutrition applications.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

СО	CO Statement	Knowledge	
Number	CO Statement	Level	
CO1	Learn the concepts of windows	K1	
CO2	Ability to Understanding MS Word documents	K)	
02	and its tools	K2	
CO3	Demonstration of different operations and views	K2	
	on MS Excel and MS PowerPoint		
COA	Illustrates the working principles of tables and	K)	
04	queries in MS Access.	KZ	
COE	Ability to identify the computer applications in the	K3	
	field of nutrition	IX.J	

Mapping with Program Outcomes

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	Μ	S	Μ	Μ	Μ
CO2	S	S	Μ	Μ	S
CO3	S	S	S	S	Μ
CO4	Μ	Μ	S	S	Μ
CO5	S	S	S	S	S

S - Strong; M - Medium; L- Low

	SKILL BASED COURSE III-	
17UFN5SA	BASIC COMPUTER SCIENCE IN	SEMESTER- V
	NUTRITION	

Total Credits: 3 Hours/Week: 4

CONTENTS

UNIT – I

Introduction to the world of computers

Basic concepts on computer - history, types of computers, input and output devices, peripheral devices, meaning of software and hardware

Ms Windows – Introduction, basic concepts on a windows, windows explorer, control panel, configuration, editor, Accessories – Paint brush

UNIT -II

Ms Word – concepts of document and template, creating documents and saving, concepts of editing, formatting, working with tables and tabs, tools, spell check, grammar check, file printing, mail merge, word art.

UNIT – III

Ms Excel – Concepts of spread sheet, creating, work sheet, work space, formatting a work sheet, basic operations on data, sorting, total and subtotal, creating link between documents, programming in macros, working with charts, printing worksheets.

Ms PowerPoint – concepts of PowerPoint, creating, opening, saving presentations, working with different views, working with slides – make a new slide, move, copy, go to a specific slide, layout, adding and formatting text, adding clipart and other pictures, designing slide show, tools – meeting minds, presentation conference.

UNIT – IV

Ms Access – Introduction to Access, working with databases, queries, tables, forms, reports, macros and charts Internet – Basics of internet, basics of e mail, browsing

UNIT – V

Computer applications in nutrition, dietetics, nutritional assessment, menu planning and counseling

TEXT BOOKS:

 Balagurusamy E., (1986), Introduction to Computers Fundamentals of Computer Science, TMH, New Delhi.

REFERENCE BOOK:

- 1. Saravanan N., (2002), Computer Fundamentals with MS Office Applications, Scitech, Chennai
- Kathleen Mahan L., (2000), Krause Food Nutrition and Diet Therapy, Saunders Publications, USA

10TIENICOA	CORE X – COMMUNITY	CEMECTED VI
IOUFINOSA	NUTRITION	SEIVIESTER - VI

Preamble

• To know about the application of basics of nutrition in the community and to gain knowledge of community nutrition programmes of national and international organization.

Course outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
	Define Community, family, village and block. Know the meaning of optimum nutrition and	
CO1	malnutrition. Outline the factors contributing to malnutrition in the community.	K ₁ , K ₂
CO2	List the direct and indirect nutritional status assessment methods. Illustrate the nutritional problems of women and men.	K ₂
CO3	Identify and explain the nutritional problems of infants and children.	K ₂ , K ₃
CO4	Outline the nutrition intervention programmes Identify the national and international organization and other health care involved in nutrition intervention.	K ₂ , K ₃
CO5	Identify the role of Home-Scientists in rural development. Illustrate adult education and nutrition education methods.	K ₂ , K ₃

Mapping with Program Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	Μ	S
CO2	S	S	S	Μ	S
CO3	S	S	S	Μ	S
CO4	S	S	S	Μ	S
CO5	S	S	Μ	Μ	S

S - Strong; M - Medium; L- Low

181 JEN 63 A	CORE X - COMMUNITY	SEMESTER - VI
IOUTINUSA	NUTRITION	SENTESTER - VI

Total Credits: 4 Hours/Week: 5

CONTENTS

UNIT I

Definition - Community, family, village and block

Meaning of optimum Nutrition, **Malnutrition**- Under nutrition and over nutrition, Characteristics of community, IMR, MMR, morbidity

Causes of malnutrition-Factors contributing to malnutrition in the community –, availability of food, poverty and Socio-economic factors.

UNIT II

Assessment of the nutritional status of the community – functional assessment, direct and indirect methods - Anthropometry, Clinical and Biochemical, Diet Surveys.

Nutritional problems of women and men- Anemia, Vitamin A deficiency, B-complex Deficiency,

UNIT III

Nutritional problems of infants and children- PEM - Marasmus and Kwashiorkor, Vitamin A deficiency, B-complex deficiency diseases, anemia **other problems-** Goitre, fluorosis Lathyrism

UNIT IV

Nutrition intervention programmes - ICDS: Objectives and services, Noon meal programme, TINP, SNP, prophylaxis. National Organization- Role of ICMR, NIN International organization- WHO, FAO, UNICEF

Health Care - PHC, ESI

UNIT V

Home Science - Meaning and Objectives, Role of Home-Scientists in rural development with reference to ongoing programmers like Family Welfare Programme, **Adult Education for community** - different methods, advantages and disadvantages, **Nutrition education**- merits and demerits of different methods of education

TEXT BOOKS:

- 1. Vinodini Reddy, Praihad Rao, Gowrinath Sastry, J. and Kashinath, K.C., (1993). Nutrition Trends in India, N1N, Hyderabad,
- 2. *Park and Park,* (1995), **Text book of Preventive and Social Medicine**, Banarsidas Published by Jahalpu,.
- 3. *Suryatapa das, (2018)*,**Text Book of Community Nutrition,** Academic Publishers, Kolkatta.

REFERENCE BOOKS:

- 1. *Michael J. Gibney*, (2004), **Public Health Nutrition**, Edition I, Black Well Scientific Publications, Oxford
- Arvind Wadhwa, (2003), Nutrition in the Community, Edition 1,
 Elite Publications, New Delhi

10LIENICOD	CORE XI -	CEMECTED VI	
18UFIN03D	FOOD SERVICE MANAGEMENT	SEMIESTER -VI	

PREAMBLE

• To understand the principles of planning, organizing and controlling in food service institutions and sanitation and hygiene develop skills in meal planning to catering institutions

COURSE OUTCOMES

On the successful completion of the course, students will be able to

СО	CO Statement	Knowledge	
Number	CO Statement	Level	
	List the types of catering institutions and services	K ₃	
CO1	Name the food service institutions according to the		
	methods of processing		
	Outline the types of menu and service of food		
CON	Tell the types and principles of organization	K ₂	
02	State the principles and tools of management		
	Outline the activities of personnel management	K ₂	
CO 3	Discuss the importance of human relations and ethics of		
	employees and employers		
	Illustrate the cost control techniques and financial	K2	
CO 4	management strategies		
04	Explain the sanitation and safety measures in health care		
	food service institutions		
CO 5	Use the principles of art and color in food service	Ka	
	institutions		
	Explain the application of art in table service and home	N 3	
	furnishing techniques.		

Mapping with Program Outcomes

CO s	PO 1	PO 2	PO 3	PO 4	PO 5
CO ₁	S	S	S	S	S
CO 2	S	S	S	S	S
CO ₃	S	S	М	Μ	S
CO ₄	S	S	Μ	Μ	S
CO 5	S	S	Μ	Μ	S

S- Strong; M-Medium; L-Low

18UFN63B

CORE XI -FOOD SERVICE MANAGEMENT

SEMESTER -VI

Total Credits: 3 Hours/Week: 4

CONTENTS

UNIT I

Food Service Institutions

Different types of catering institutions and services, classifications of food service institutions according to

a. Function: Profit oriented, service oriented and public health facility oriented.

b. **Method of processing**: Conventional systems, Commissary system, fast food service system.

c. Types of menu

d.**Service of food**: Self service, tray service, waiter-waitress services, Single point service, Buffet service English service, American service, French service, Gueridon service, Silver service, Russian service.

UNIT II

Organization - Types and principles, organizational structure for catering institutions. Management - Definition, principles and techniques of effective management, leadership and managerial abilities. Tools of management-organizational chart, work study and work improvement. **UNIT III**

Personnel Management - Methods of selection, orientation, training, supervision and motivation of employees, importance of good human relations, legal aspects of catering, Professional ethics for employees and employers.

UNIT IV

Financial management – Book keeping, Cost control - Principles and methods of food cost control.

Factors affecting food, labor, operating and overhead cost, budget, inventories.

Sanitation and safety-significance of hygienic management in food preparation and service, sterilization, pest control, garbage disposal.

Health care of food service personnel, safety measures to be adopted in food service.

UNIT V

Art in food service - Design selection-structural and decorative, Elements of design, principles of design, their application in food service institutions.

Factors to be considered in selection of furniture and accessories in food service industry.

Color - Qualities of color, color schemes, flower arrangement-application of art principles in arranging flowers, styles and types.

Table service - Application of art in table service.

TEXT BOOKS:

- Sushma Gupta, Textbook of Family Resource Management, 2013, Edition 9, Kalyani – New Delhi
- 2. Sethi and Mahan S.-Catering Management and integrated approach, John Wiley and Sons, New York.

REFERENCE BOOKS:

- Joan C. Branson, Hotel, Hostel and Hospital House Keeping, 2004, Edition 5, Book Power – London
- 2. *Sudhir Andrews*, **Textbook of Hotel**, **House Keeping Management and Operations**, 2008, Edition I, TMH, New Delhi

18UFN63P	CORE PRACTICAL V-	SEMESTED VI
	NUTRITION	SEMIESTEK - VI

Total Credits: 2 Hours/Week: 4

EXPERIMENTS

Qualitative Analysis

- 1. Total protein
- 2. Minerals Calcium, Iron, phosphorus, magnesium and sulphur

Demonstration Quantitative Analysis

- 1. Demonstration of Bomb Colorimeter, Soxhlate.
- 2. Demonstration of Nitrogen estimation and kjeldhal methods in foods.

Quantitative Analysis

- 1. Estimation of moisture content in one food
- 2. Determination of carbohydrates by Anthrone method
- 3. Estimation of fibre content in food.
- 4. Estimation of Ascorbic Acid content in Citrus fruit juice.
- 5. Estimation of ash content in food
- 6. Determination of Calcium content in milk
- 7. Estimation of Iron content in food.
- 8. Estimation of Phosphorous content in food.
- 9. Determination of acid number of oils.
- 10. Determination of saponification number

List of practicals under DBT star college scheme

1. Estimation of PH content in fruits

2. Estimation of calcium and iron by using UV visible spectro photometer.

18UFN63Q CORE PRACTICAL VI -FOOD PRODUCT DEVELOPMENT

SEMESTER -VI

Total Credits: 2 Hours/week: 4

EXPERIMENTS

S.No. Practical

A Product Development and Standardization

- 1. Cereal and Millets based foods
- 2 Pulse based foods
- 3. Vegetable based foods
- 3 Fruit based foods
- 4 Milk and milk products
- 5. Nuts and seeds based products
- 6. Weaning and supplementary foods
- 7. Convenience foods, RTS and RTE foods

B Marketing of a Food Product

- 1. Selection, Preparation and Standardization of a Product.
- 2. Selection of Packaging Material, Labeling, Cost Calculation and Marketing
- 3. Presentation of Report

List of practicals under DBT star college scheme

- 1. Formulation of vegetable power fortified extruded products
- 2. Production of natural flavoured ice cream

18UFN6SV SKILL BASED COURSE IV-PROJECT & VIVA

SEMESTER -VI

Hours/week: 3 Total Credits: 3

OBJECTIVES

To initiate research work and gain knowledge in industrial and community sector

CONTENT

Project can be done in any specialized area

- 3. Food Processing
- 4. Food Analysis
- 5. Clinical nutrition
- 6. Community nutrition
- 7. The students could work with NGOs / Government agencies / International agencies/ Hospitals / Food Industries etc.

RULES

- The students should submit the research work in soft and hard copy with minimum 25 pages, group project- 5 in a group, Times new roman, font size 12, 1.15 line spacing.
- The students will be guided and supervised by a member of the teaching faculty of the concerned department. The dissertation in which the research culminates should reflect the student's own work.
- Research work should be presented during External Viva voce.

	ELECTIVE I-	
17UFN5EA	FOOD SAFETY AND QUALITY	SEMESTER -V
	CONTROL	

PREAMBLE

Enable students to gain knowledge on food safety and food laws and to

study about quality control and common food standards

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Define food safety and principles of quality control in food industry List the practices to prevent food spoilage	K1
CO2	List the food laws and standards to be followed in industry Demonstrate the tests for food adulterants	K1, K2
CO3	Illustrate the food laws and standards followed by government	К2
CO4	Explain the methods for determining the quality of foods Select the sensory scores to assess the food products	K2,K3
CO5	Experiment with microbial analysis to enhance the shelf life of the food product Apply HACCP principles to maintain the standard of industrial sector	К3

Mapping with a Outcomes

CO s	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	S	Μ	S	S	S
CO 2	S	Μ	S	S	S
CO 3	S	Μ	S	S	S
CO ₄	S	Μ	S	S	S
CO 5	S	Μ	S	S	S

S- Strong; M-Medium; L-Low
	ELECTIVE I-	
17UFN5EA	FOOD SAFETY AND QUALITY	SEMESTER V
	CONTROL	

Total Credits: 4 Hours/week: 5

CONTENTS

UNIT-I

Food Safety - definition of food safety and food spoilage, factors affecting food safety and food spoilage: GMP, GAP, SOP, and GHP.

Principles of Quality control of food -Raw material control, processed control and finished product inspection.

UNIT-II

Standardization systems for quality control of foods- National and International standardization system, Food grades, Food laws-compulsory and voluntary standards. FSSAI.

Food adulteration - Common adulterants in foods and tests to detect common adulterants

UNIT-III

Standards for foods – Cereals and pulses, sago and starch, milk and milk products, Coffee, tea, sugar and sugar products

UNIT-IV

Methods for determining quality - Subjective and objective methods Sensory assessment of food quality-appearance, color, flavour, texture and taste, different methods of sensory analysis, preparation of score card, panel criteria, sensory evaluation room

UNIT-V

Food safety, Risks and hazards: Food related hazards, Microbial consideration in food safety, HACCP-principles and structured approach. Chemical hazards associated with foods.

TEXT BOOKS:

- 1. Mahindru S.N. Food Safety, 2000, Edition I, TMH, New Delhi
- 2. Philip R. A., Food Flavorings, 1999, Edition I, An Aspen Publications,

Mary Land

REFERENCE BOOKS:

Sriramakanna, Food Standards and Safety in Globalised World,
2003, Edition I, New Central Book Agencies Private Limited, New Delhi

2. Mahindru S. N., Food Additives, 2000, Edition I, TMH, New Delhi

17UFN5EB	ELECTIVE I-	SEMESTER - V
	BAKING TECHNOLOGY	SEIVIESTER - V

- To enable the students to understand the science and technology of baking
- Understand the role of different ingredients in baking
- Develop skills in planning and maintenance of a bakery institution.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO		Knowledge	
Number	CO Statement	Level	
	Define baking and its principles		
CO1	Classify baked foods and the types of equipment and	K. K.	
COI	operation techniques in baking industry with cleaning	$\mathbf{K}_1, \mathbf{K}_2$	
	and sanitizing methods		
	Relate the ingredients and their role in baking		
CO2	List the standard coloring & flavoring agents	gents K_1, K_2	
	Explain on leavening agents		
CO3	Make use of the previous knowledge and categorize the	V	
003	preparation of all kinds of baked foods	K 3	
CO1	List the decoration of baked foods and the types of icing	<i>V</i> .	
004	and the role of other ingredients in icing	K 3	
CO5	Explain the sanitation & hygiene of baking unit/plant		
	layout & its design	K.	
	Compare the types of packaging materials used for	N 3	
	bakery products, methods of packaging		

Mapping with programme outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	М	S
CO 2	S	S	S	Μ	S
CO 3	S	S	S	Μ	S
CO 4	S	S	S	Μ	S
CO 5	S	S	S	Μ	S

S-Strong; M-Medium; L-Low

17I IENIEED	ELECTIVE I-
I/UFINSED	BAKING TECHNOLOGY

SEMESTER - V

Total Credits: 4 Hours/week: 5

CONTENTS

UNIT I

Baking - Definition, Principles of baking, classification of baked foods. Types of equipments in baking industry, cleaning and sanitizing methods of baking equipments, baking temperature of different products, operation techniques of different baking equipments.

UNIT II

Ingredients and their role in baking – Flour, sugar, egg, shortenings, salt, baking powder, colouring, flavouring agents. List of standard colouring and flavouring agents. Leavening Agents.

UNIT III

Preparation of baked foods –Yeast Leavened breads, cakes and its varieties, different types of biscuits, cookies and pastries. Faults and remedies in bread and cake making

UNIT IV

Decoration of baked foods - Icing- Types of Icing used in different bakery product, Role of other ingredients used in icing

UNIT V

Baking unit/ plant layout and design of a baking unit sanitation and hygiene, Types of packaging materials used for bakery products, method of packaging.

TEXT BOOKS:

- 1. NIIR New Delhi, NIIR Board, Complete Technology Book on Bakery Products, 2005,
- 2. *Yogambal A.,* **Theory of Bakery and Confectionery, 2009**, Edition I, PHI, New Delhi.

REFERENCE BOOKS:

1. *Friberg B.*, **Modern Pastry Chef, 2002,** Edition IV, John- Wiley and Son, New York

2. Cerrole C. Essential Baking, 2000, Edition I, Hermes House, New Delhi.

17UFN6EA	ELECTIVE II - FOOD PRODUCT DEVELOPMENT AND MARKETING	SEMESTER - VI
	MARKETING	

Preamble

• To enable students to develop new marketable, nutritionally and economically viable food products, develop entrepreneurship skills for setting up small scale food industries and to understand packaging of different food products

Course Outcomes

On the successful completion of the course, students will be able to

СО	CO Statement	Knowledge
Number		Level
CO 1	Know the trends in food consumption pattern	K1
001	State the change for new product development	
	Outline the status of food processing industry in	K ₂
CO^{2}	India	
	Tell the principles and purpose of new product	
	development	
CON	Relate various foods for new recipe development	K ₂
03	Discuss on foods for space and defense services	
	Illustrate evaluation analysis, and testing of	K ₂
CO4	processed foods	
	Describe the packaging materials for processed	
	foods	
	Use the financial management techniques in food	K_3
CO5	product development	
	Construct marketing strategies for developed food	
	products.	

Mapping with Program Outcomes

CO s	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	S	S	S	S	S
CO 2	S	S	S	S	S
CO 3	S	S	S	S	S
CO ₄	S	S	S	S	S
CO ₅	S	S	S	S	S

S- Strong; M-Medium; L-Low

	ELECTIVE II -	SEMESTED
17UFN6EA	FOOD PRODUCT DEVELOPMENT AND	$\frac{3EWIE51EK}{VI}$
	MARKETING	V I

Total Credits: 4 Hours/week: 5

CONTENTS

UNIT I Unit I Food consumption pattern

Trends in Food Consumption pattern. Economical, Psychological and Sociological Dimensions of Food Consumption patterns.

Trends in Social Change as a Base for New Product Development

UNIT II

Introduction to Food Processing and Product Development

Food Components, Types of Food Processing, Status of Food Processing Industry in India and Scope of Growth in Future Principles and Purpose of New Product Development, Product Design and Specifications.

UNIT III

Recipe Development

Traditional Foods, Weaning Foods, Convenience Foods, RTE, RTS, Extruded foods, IMF Foods, Speciality Products, Health foods, Nutritional Supplements, Functional Foods, Nutraceuticals and Designer Foods, Sports Foods, Foods for Defence Services, Space foods.

UNIT IV

Testing, Evaluation and Packaging of Products

Standardization, Portion size, Portion Control, Quantity Cooking, Shelf Life Evaluation- Sensory and Microbial Testing of Processed Foods, Nutrient Analysis.

Suitable Packaging Materials for Different Foods, SWOT Analysis **UNIT V**

Financial Management and Marketing of Food Products

Institutional Support (Training and Finance) for Entrepreneurship Development.

Financial Institutions (Central and State Government) banks/Funding Agencies, Financial Accounting Procedures, Market Research, Marketing Strategies, Cost Calculation, GST, Advertising Methods, Product sales, Product License, Legal specifications, Consumer Behavior and Food Acceptance.

Textbooks

- 1. Sudhir Gupta (2007) Handbook of Packaging Technology, Engineers India Research Institute, New Delhi
- 2. Khanaka, S.S., Entrepreneurial Development, S. Chand and Company Ltd, New Delhi, 2006.

Reference Books :

- 1. **Suja, R. Nair(2004) Consumer Behaviour and Marketing Research**, 1st Edition, Himalaya Publishers.
- 2. **Hmacfie**,(2007) Consumer led Food Product Development, Weedhead Publishing Ltd., UK
- Fuller, Gordon, W(2005) New Food Product Development, 2nd Edition, CRC Press, Boca Raton, Florida, Schaffner .D,J, Schroder, W.R.(2000)Food Marketing and International Perspectives, Web/McGraw Hill Publication

17UFN6EB	ELECTIVE II-	CEMECTED VI
	NUTRITION CARE PROCESS	SEMIESTEK - VI

To understand the importance of health for quality living of foods and to appreciate the significance of food and exercise for good health.

COURSE OUTCOMES

In the successful completion of the course, students will be able to

СО	CO Statement	Knowledge		
Number		Level		
	Define Nutrition Care Process			
CO1	Explain the Introduction, Definition, Purpose and			
COI	the steps in NCP(Assessment, Diagnosis,	K1, K ₂		
	Intervention, Monitoring and Evaluation)			
	Explain the Nutrition care process for			
COD	Underweight, overweight and Obesity, Diabetes			
002	Mellitus (T1DM, T2DM and Gestational Diabetes)	K ₂		
	a case study approach.			
CO3	Explain Nutrition care process for Cardiovascular			
005	Diseases	K2 K.		
	Identify the (Hypertension and hyperlipidemia),	N2, N3		
	Cancer a case study approach.			
	Contrast Nutrition care processes for			
CO4	Gastrointestinal Diseases, HIV/AIDS and Critically			
	ill patients- a case study approach.	K2, K3		
CO5	Identify Case report writing, case presentation and			
	medical record.	K ₃		

Mapping with Program Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	S	S

S - Strong; M - Medium; L- Low

17UFN6EB ELECTIVE II-NUTRITION CARE PROCESS

SEMESTER - VI

Total Credits: 4 Hours/week: 5

PREAMBLE

• The Nutrition Care Process is a systematic approach to providing high-quality nutrition care. Use of the NCP does not mean that all patients/clients get the same care; the process provides a framework to individualize care, taking into account the patient/client's needs and values and using the best evidence available to make decisions.

EXPERIMENTS

UNIT I

Nutrition Care Process and Model: Introduction, Definition, Purpose and the steps in NCP (Assessment, Diagnosis, Intervention , Monitoring and Evaluation)

UNIT- II

Nutrition care process for Underweight, overweight and Obesity, Diabetes Mellitus (T1DM, T2DM and Gestational Diabetes) a case study approach.

UNIT- III

Nutrition care process for Cardiovascular Diseases (Hypertension and hyperlipidemia), Cancer a case study approach.

UNIT- IV

Nutrition care processes for Gastrointestinal Diseases, HIV/AIDS and Critically ill patients- a case study approach.

UNIT- V

Case report writing, case presentation and medical record.

18UFN6EC	ELECTIVE III-	SEMESTER - VI
	CLINICAL NUTRITION AND	
	COUNSELLING	

To develop skills in assessing the nutritional status of patients, menu planning, nutrient calculation and feeding techniques.

COURSE OUTCOMES

In the successful completion of the course, students will be able to

СО	CO Statement	Knowledge
Number		Level
CO1	Use the advanced techniques to assess the health	
	and nutritional status of the community and give	K ₁ , K ₂ , K ₃
	implication through nutritional counseling	
CO2	Apply the principles of menu planning in	
	therapeutic condition	$K_{2_{\prime\prime}}K_{3}$
	Identify the psychological and nutritional factors	
	and educate for betterment of health	
CO3	Use food guide and determine the Diet calculation	K _{2,,} K ₃
	to meet the requirement of the individual.	
	Apply educational tools for nutrition intervention	
CO4	Interpret and Identify the biochemical and clinical	$K_{2_{\prime\prime}}K_{3}$
	parameters of the patients to free from deficiency	
	and diseases	
CO5	Identify the condition of ICU patients and to apply	
	nutritional administrative techniques to overcome	K _{2,,} K ₃
	the diseases	

Mapping with Program Outcomes

	0 - 0				
COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	S	S

S - Strong; M - Medium; L- Low

18UFN6EC	ELECTIVE III-	
	CLINICAL NUTRITION AND	1
	COUNSELLING	1

SEMESTER -VI

Total Credits: 4 Hours/week: 5

CONTENTS

UNIT I

Patient Assessment –Pre and Post treatment- Anthropometric assessment, SGA, Biochemical assessment, immunity assessment, Clinical observations, Medication history, Dietary assessment methods-24 hour recall method, Plate wastage daily. Day to day recording of patient's diet and fluid intake and its implications. Day to day weight changes.

UNIT- II

Therapeutic Menu Planning - Definition of diet therapy, factors to be considered while planning therapeutic diet, Principles of menu planning, Uses of food groups, food guide pyramid

Diet Modifications - Principles of diet modification, modification of the normal diet, impact of psychological factors in improving patient's health, **UNIT-III**

Diet calculation – Definition, objectives and types of exchange list, recommended dietary allowance, use of food consumption assessment, calculation of nutrient intake.

UNIT-IV

Normal and abnormal physiological and biochemical parameters and their interpretation

Blood pressure, pulse rate, **Urine and stools-** routine, albumin, sugar and urine culture, **Blood-** sugar (fasting, post-prandial, random),HbA1C, urea, creatinine, lipid profile, protein, A:G ratio, bilirubin, SGPT, SGOT, uric acid, calcium phosphate, alkaline phosphatase, Hb, CBC, PCV, ESR, Peripheral smear, serum iron and ferritin, TIBC. Imaging and endoscopy tests –X ray, ultrasound scan, CT scan, endoscopy, MRI, colonoscopy, biopsy.

UNIT- V

Diet Counseling- Definition and purpose, Client responsibility, principle of giving dietary advice, Steps in the diet counselling process, calculation of energy expenditure, Educational tools used for diet counseling, Group counseling.

New Counseling Techniques- cognitive behavioral therapy, motivational interviewing, stages of change and counseling guidelines.

Text Books

- Shubhangini.A.Joshi, 2nd Edition (2002), Nutrition and Dietetics, Tata McGraw-Hill Publishing Company Ltd.
- Jacqueline C., 1st Edition (2011), Dietitians Guide Assessment and Documentation, Jones and Bartlett, London.

Reference Books

- Kathleen Mahan.L., Janice L Raymond, 10th Edition, (2000), Krause, Food, Nutrition and diet therapy, W.B.Sauders Company.
- Joshi Y. K. 1st Edition (2003), Basic Clinical Nutrition, J. P. Brothers, New Delhi.

17UFN6ED	ELECTIVE III -	CEMECTED VI
	FOOD PACKAGING	SEIVIESTEK- VI

- To understand the need for food packaging and the recent trends in packaging materials and labeling
- Learn and gain knowledge on food packaging and its applications.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

СО	CO Statement	Knowledge	
Number		Level	
CO1	Illustrate the functions of packaging materials for		
	different foods,	K ₁ , K ₂	
	List out the characteristics of packaging material.		
	Outline the purpose and requirements of		
CO2	packaging materials Classify the modern	K ₁ , K ₂	
	packaging materials and forms		
	Explain rigid containers, flexible containers		
	Interpret the general methods for establishing		
CO3	radiation stabilization	K ₂	
	Demonstrate the importance of biodegradable		
	packaging material		
	Identify the techniques in packages of dehydrated		
CO1	products	V.V.	
04	Outline the package forms and components of	N 2, N 3	
	plastics		
CO5	Apply the packaging techniques for finished goods		
	and fulfill the standards of Labeling	K.	
	Make use of the types of labels and apply with	N 3	
	labeling regulation in food packaging		

Mapping with Program Outcomes

CO s	PO 1	PO 2	PO 3	PO 4	PO 5
CO ₁	Μ	Μ	Μ	S	S
CO 2	S	S	S	S	S
CO 3	S	S	S	S	S
CO ₄	S	S	S	S	S
CO 5	S	S	S	S	S

S- Strong; M-Medium; L-Low

17UFN6ED ELECTIVE III -FOOD PACKAGING

SEMESTER VI

Total Credits: 4 Hours/week: 5

CONTENTS

UNIT I

Food packaging

Definition, functions of packaging materials for different foods, characteristics of packaging material. Food packages – bags, pouches, wrappers, tetra packs-applications.

UNIT II

Packaging materials

Packaging materials - Introduction, purpose, requirements, types of containers. Modern packaging materials and forms-Glass containers, metal cans, composite containers, aerosol containers, rigid plastic packages, semi rigid packaging, flexible packaging.

UNIT – III

Packages of radiation stabilized foods

Introduction, rigid containers, flexible containers, general methods for establishing radiation stabilization, Radiation- measurement of radiations Biodegradable packaging material – biopolymer based edible firm.

UNIT – IV

Packages of dehydrated products

Orientation, metallization, co-extrusion of multilayer films, stretch, package forms and techniques, Aspectic packaging, retortable containers, modified and controlled atmosphere packaging, skin, shrink and cling film packaging, micro-oven able containers, other package forms and components of plastics

UNIT – V

Packaging of finished goods

Weighing, filling, scaling, wrapping, cartooning, labeling, marking and trapping

Labeling: Standards, purpose, description types of labels, labeling regulation barcode, nutrition labeling, health claims, and mandatory labeling provision

TEXT BOOKS:

1. *Vijaya Khader*, **Text book of food science and technology**, Indian council of Agricultural research New Delhi, 2001.

2. *Srilakshmi*, **2007Food Science**, Edition 4, New Age International Publishers, New Delhi,

REFERENCE BOOKS:

1. NIIR Board, Food Packaging Technology Handbook, 2008, NIIR, Delhi.

2. NIIR Board, Handbook on Modern Packaging Industries, 2008, NIIR, Delhi

20/12/2019 1 BoS Chairman/HoD

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