SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE
(An Autonomous Institution)
(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)
(Accredited by NBA-AICTE, New Delhi, ISO 9001:2000 Certified Institution &
Accredited by NAAC with "A" Grade)
Madagadipet, Puducherry - 605 107

SCHOOL OF ARTS AND SCIENCE

BACHELOR OF SCIENCE

IN

NUTRITION AND DIETETICS

ACADEMIC REGULATIONS 2020

(2020)

CURRICULUM AND SYLLABI

COLLEGE VISION AND MISSION

Vision

To be globally recognized for excellence in quality education, innovation and research for the transformation of lives to serve the society.

Mission

M1: Quality Education:

To provide comprehensive academic system that amalgamates the cutting-edge technologies with best practices.

M2: **Research and Innovation:**

To foster value-based research and innovation in collaboration with industries and institutions globally for creating intellectuals with new avenues.

M3: Employability and Entrepreneurship:

To inculcate the employability and entrepreneurial skills through value and skill-based training.

M4: Ethical Values:

To instill deep sense of human values by blending societal righteousness with academic professionalism for the growth of society.

DEPARTMENT OF NUTRITION AND DIETETICS

VISION AND MISSION

Vision

We seek to provide in depth knowledge about nutrition and dietetics and enable the students in understanding nutritional strategies and acquire skills in planning diet therapy .

Mission

M1: Quality Training:

To train and promote a sound comtemporary knowledge base for the students and equip them for entrepreneurial ventures in various areas of nutrition & dietetics.

M2: Understanding of media:

To provide practical experience and apply knowledge in all aspects of health promotive, preventive and curative.

M3: Develop technical skills:

To make academic programmes socially and technologically relevant.

STRUCTURE FOR UNDERGRADUATE PROGRAMME

S. No	Course Category	Breakdown of Credits
1	Language Modern Indian Language (MIL)	6
2	English (ENG)	6
3	Discipline Specific Core Courses(DSC)	79
4	Discipline Specific Elective Courses (DSE)	12
5	Inter-Disciplinary Courses(IDC)	20
6	Skill Enhancement Courses(SEC)	12
7	Employability Enhancement Courses(EEC*)	-
8	Ability Enhancement Compulsory Courses(AECC)	4
9	Open Elective(OE)	4
10	Extension Activity(EA)	1
	Total	**144**

SCHEME OF CREDIT DISTRIBUTION – SUMMARY

S. No	Course Category	Credits per Semester						Total Credits
		I	II	III	IV	V	VI	
1	Language Modern Indian Language (MIL)	3	3	-	-	-	-	6
2	English (ENG)	3	3	-	-	-	-	6
3	Discipline Specific Core Courses(DSC)	10	10	12	12	16	19	79
4	Discipline Specific Elective Courses (DSE)	-	-	3	3	3	3	12
5	Inter-Disciplinary Courses(IDC)	6	6	4	4	-	-	20
6	Skill Enhancement Courses(SEC)	2	2	2	2	2	2	12
7	Employability Enhancement Courses(EEC*)	-	-	-	-	-	-	-
8	Ability Enhancement Compulsory Courses(AECC)	2	2	-	-	-	-	4
9	Open Elective(OE)	-	-	2	2	-	-	4
10	Extension Activity(EA)	-	1	-	-	-	-	1
	Total	26	27	23	23	21	24	**144**

**** EEC will not be included for the computation of "Total of Credits" as well as "CGPA"***

SEMESTER – I											
Sl. No	Course Code	Course Title	Category	Periods			Credits	Max.Marks		
				L	T	P		CAM	ESM	Total
Theory											
1	A20TAT101/ A20HNT101/ A20FRT101	Tamil – I/ Hindi – I/ French - I	MIL	3	0	0	3	25	75	100
2	A20GET101	General English – I	ENG	3	0	0	3	25	75	100
3	A20NDT101	Nutrition Science - I	DSC	4	0	0	4	25	75	100
4	A20NDT102	Food Science – I	DSC	4	0	0	4	25	75	100
5	A20NDD101	Basic Chemistry for Food Science	IDC	3	1	0	4	25	75	100
Ability Enhancement Compulsory Course											
6	A20AET101	Environmental Studies	AECC	2	0	0	2	100	0	100
Practical											
7	A20NDL103	Nutrition Science - I and Food Science – I Practicals	DSC	0	0	4	2	50	50	100
8	A20NDD102	Basic Chemistry for Food Science Practical	IDC	0	0	4	2	50	50	100
Skill Enhancement Course											
9	A20NDS101	Communication Skill	SEC	0	0	4	2	100	0	100
Employment Enhancement Course											
10	A20NDC101	Certification Course I	EEC	2	0	2	0	100	0	100
							26	**525**	**475**	**1000**

SEMESTER– II										
Sl No	Course Code	Course Title	Category	Periods			Credits	Max.Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A20TAT201/ A20HNT201/ A20FRT201	Tamil – II/ Hindi – II / French -II	MIL	3	0	0	3	25	75	100
2	A20GET202	General English-II	ENG	3	0	0	3	25	75	100
3	A20NDT204	Nutrition Science – II	DSC	4	0	0	4	25	75	100
4	A20NDT205	Food Science – II	DSC	4	0	0	4	25	75	100
5	A20NDD203	Human Physiology	IDC	3	1	0	4	25	75	100
Ability Enhancement Compulsory Course										
6	A20AET202	Public Administration	AECC	2	0	0	2	100	0	100
Practical										
7	A20NDL206	Nutrition Science – II and Food Science - II Practicals	DSC	0	0	4	2	50	50	100
8	A20NDD204	Human Physiology Practical	IDC	0	0	4	2	50	50	100
Skill Enhancement Course										
9	A20NDS202	Food Preservation	SEC	0	0	4	2	100	0	100
Extension Activities										
10	A20EAL201	National Service Scheme	EA	0	0	2	1	100	0	100
Employment Enhancement Course										
11	A20NDC202	Certification Course II	EEC	2	0	2	0	100	0	100
							27	**625**	**475**	**1100**

SEMESTER – III										
S. No	Course Code	Course Title	Category	Periods			Credits	Max.Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A20NDT307	Food Microbiology	DSC	4	0	0	4	25	75	100
2	A20NDT308	Nutritional Biochemistry	DSC	4	0	0	4	25	75	100
3	A20NDE3XX	Food Safety and Sanitation	DSE	3	0	0	3	25	75	100
4	A20NDD305	Microbiology	IDC	3	1	0	4	25	75	100
5	A20XXO3XX	Open Elective–I	OE	2	0	0	2	25	75	100
Practical										
6	A20NDL309	Food Microbiology Practical	DSC	0	0	4	2	50	50	100
7	A20NDL310	Nutritional Biochemistry Practical	DSC	0	0	4	2	50	50	100
Skill Enhancement Course										
8	A20NDS303	Functional Foods	SEC	0	0	4	2	100	0	100
Employment Enhancement Course										
9	A20NDC303	Certification Course III	EEC	2	0	2	0	100	0	100
							23	**425**	**475**	**900**

SEMESTER– IV										
S. No	Course Code	Course Title	Category	Periods			Credits	Max.Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A20NDT411	Nutrition Through Life Cycle	DSC	4	0	0	4	25	75	100
2	A20NDT412	Functional Foods and Nutrigenomics	DSC	4	0	0	4	25	75	100
3	A20NDE4XX	Nutritional Assessment and Surveillance	DSE	3	0	0	3	25	75	100
4	A20NDD406	Software in Nutrition Analysis	IDC	3	1	0	4	25	75	100
5	A20XXO4XX	Open Elective	OE	2	0	0	2	25	75	100
Practical										
6	A20NDL413	Nutrition Through Life Cycle Practical	DSC	0	0	4	2	50	50	100
7	A20NDL414	Functional Foods and Nutrigenomics Practical	DSC	0	0	4	2	50	50	100
Skill Enhancement Course										
8	A20NDS404	Bakery and Confectionery	SEC	0	0	4	2	100	0	100
Employment Enhancement Course										
9	A20NDC404	Certification Course IV	EEC	2	0	2	0	100	0	100
							23	425	475	**900**

SEMESTER–V										
S. No	Course Code	CourseTitle	Category	Periods			Credits	Max.Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A20NDT515	Nutritional Therapy in Specific Disease	DSC	3	1	0	4	25	75	100
2	A20NDT516	Community Nutrition	DSC	3	1	0	4	25	75	100
3	A20NDT517	Food Service Management	DSC	3	1	0	4	25	75	100
4	A20NDE5XX	Food Packaging and Marketing	DSE	3	0	0	3	25	75	100
Practical										
5	A20NDL518	Nutritional Therapy in Specific Disease Practical	DSC	0	0	4	2	50	50	100
6	A20NDL519	Community Nutrition Practical	DSC	0	0	4	2	50	50	100
Skill Enhancement Course										
7	A20NDS505	In-Plant training/Internship	SEC	0	0	4	2	100	0	100
Employment Enhancement Course										
8	A20NDC505	Certification Course V	EEC	2	0	2	0	100	0	100
							21	400	400	**800**

SEMESTER–VI										
S. No	Course Code	CourseTitle	Category	Periods			Credits	Max.Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A20NDT620	Nutritional Therapy in Life Style Disorders	DSC	3	1	0	4	25	75	100
2	A20NDT621	Sports Nutrition	DSC	3	1	0	4	25	75	100
3	A20NDT622	Preventive Nutrition	DSC	3	1	0	4	25	75	100
4	A20NDE6XX	Food Analysis	DSE	3	0	0	3	25	75	100
Practical										
5	A20NDL623	Nutritional Therapy in Life Style Disorders Practical	DSC	0	0	4	2	50	50	100
6	A20NDP624	Project	DSC	0	0	10	5	40	60	100
Skill Enhancement Course										
6	A20NDS606	Patient Counseling Skills/	SEC	0	0	4	2	100	0	100
Employment Enhancement Course										
7	A20NDC606	Certification Course I	EEC	2	0	2	0	100	0	100
							24	**390**	**410**	**800**

DISCIPLINE SPECIFIC ELECTIVE COURSES

DISCIPLINE SPECIFIC ELECTIVES										
Sl.No	Course Code	CourseTitle	Category	Periods			Credits	Max.Marks		
				L	T	P		CAM	ESM	Total
Discipline Specific Electives (DSE - I) - offered in Third Semester										
1	A20NDE301	Nutritional Assessment & Surveillance	DSE	3	0	0	3	25	75	100
2	A20NDE302	Maternal & Child Health	DSE	3	0	0	3	25	75	100
3	A20NDE303	Nutrition for Women	DSE	3	0	0	3	25	75	100
Discipline Specific Electives (DSE - II) - offered in Fourth Semester										
1	A20NDE404	Sports Nutrition	DSE	3	0	0	3	25	75	100
2	A20NDE405	Fundamentals of Bakery & Confectionery	DSE	3	0	0	3	25	75	100
3	A20NDE406	Food Analysis	DSE	3	0	0	3	25	75	100
Discipline Specific Electives (DSE - III) - offered in Fifth Semester										
1	A20NDE507	Food Safety & Sanitation	DSE	3	0	0	3	25	75	100
2	A20NDE508	Food Service & Layout	DSE	3	0	0	3	25	75	100
3	A20NDE509	Special Care Nutrition	DSE	3	0	0	3	25	75	100
Discipline Specific Electives (DSE - IV) - offered in Sixth Semester										
1	A20NDE610	Dietary Guidance and Counseling	DSE	3	0	0	3	25	75	100
2	A20NDE611	Health Psychology	DSE	3	0	0	3	25	75	100
3	A20NDE612	Human Development	DSE	3	0	0	3	25	75	100

A20TAT101	மொழித்தாள்	L	T	P	C	Hrs
	தமிழ்-I	3	0	0	3	45

(B.A., B.Sc., B.Com., B.B.A., & B.C.A., பாடப்பிரிவுகளுக்குமான பொதுத்தாள்)

பாடத்திட்டத்தின் நோக்கம்

இரண்டாயிரம் ஆண்டுகால தமிழின் தொன்மையையும் வரலாற்றையும் அதன் விழுமியங்களையும் பண்பாட்டையு எடுத்துரைப்பதாக இப்பாடத்திட்டம் அமைக்கப்பட்டுள்ளது.

தமிழ் இலக்கியம் உள்ளடக்கத்திலும், வடிவத்திலும் பெற்ற மாற்றங்கள், அதன் சிந்தனைகள்,அடையாளங்கள் ஆகியவற்றைக் காலந்தோறும் எழுதப்பட்ட இலக்கியங்களின் வழியாகக் கூறுவதற்கு இப்பாடத்திட்டம் அமைக்கப்பட்டுள்ளது.

மொழியின் கட்டமைப்பைப் புரிந்து கொள்வதாக இப்பாடத்திட்டம் வடிவமைக்கப்பட்டுள்ளது.

வாழ்வியல் சிந்தனைகள், ஒழுக்கவியல் கோட்பாடுகள், சமத்துவம், சூழலியல் எனப் பல கூறுகளை மாணவர்களுக்கு எடுத்துரைக்கும் விதத்தில் இப்பாடத்திட்டம் உருவாக்கப்பட்டுள்ளது.

சிந்தனை ஆற்றலைப் பெருக்குவதற்குத் தாய்மொழியின் பங்களிப்பினை உணர்த்த இப்பாடத்திட்டம் அமைக்கப்பட்டுள்ளது.

பாடத்திட்டத்தின் வெளிப்பாடுகள்

CO1-இலக்கியங்கள் காட்டும் வாழ்வியல் நெறிமுறைகளைப் பேணிநடத்தல்.

CO2-நமது எண்ணத்தை வெளிப்படுத்தும் கருவியாகத் தாய்மொழியைப் பயன்படுத்துதல்.

CO3-தகவல் தொடர்புக்குத் தாய்மொழியின் முக்கியத்துவத்தை உணர்த்தல்.

CO4-தாய்மொழியின் சிறப்பை அறிதல்.

CO5-இலக்கிய இன்பங்களை நுகரும் திறன்களை வளர்த்தல்.

அலகு-1 **(9 Hrs)**

இக்காலக் கவிதைகள்-1

1. பாரதியார் – கண்ணன் என் சேவகன்
2. பாரதிதாசன் – தமிழ்ப்பேறு
3. அப்துல் ரகுமான் – அவதாரம்
4. மீரா – கனவுகள் + கற்பனைகள் = காகிதங்கள்
5. து.நரசிம்மன் – மன்னித்துவிடு மகனே

அலகு-2 **(9 Hrs)**

இக்காலக் கவிதைகள்-2

1. ராஜா சந்திரசேகர் – கைவிடப்பட்ட குழந்தை
2. அனார் – மேலும் சில இரத்தக் குறிப்புகள்
3. சுகிர்தராணி – அம்மா
4. நா.முத்துக்குமார் – தூர்

அலகு-3 **(9 Hrs)**

சிற்றிலக்கியங்கள்

1. கலிங்கத்துப் பரணி – பொருதடக்கை வாள் எங்கே... (பாடல்-485)
2. அழகர்கிள்ளைவிடு தூது – இதமாய் மனிதருடனே...(பாடல்-45)
3. நந்திக் கலம்பகம் – அம்பொன்று வில்லொடிதல்...(பாடல்-77)
4. முக்கூடற் பள்ளு – பாயும் மருதஞ் செழிக்கவே...(பாடல்-47)
5. குற்றாலக் குறவஞ்சி – ஓடக் காண்பதுமே...(பாடல்-9)

காப்பியங்கள்

1. மணிமேகலை–உலகறவி புக்க காதை– 'மாசுஇல் வால்ஒளி! –இந்நாள் போலும் இளங்கொடி கெடுத்தனை'. (28–அடிகள்

அலகு–4 **(9 Hrs)**

தமிழ் இலக்கிய வரலாறு

1. சிற்றிலக்கியம்– தோற்றமும் வளர்ச்சியும்
2. புதுக்கவிதை– தோற்றமும் வளர்ச்சியும்
3. சிறுகதை –தோற்றமும் வளர்ச்சியும்
4. புதினம் –தோற்றமும் வளர்ச்சியும்
5. உரைநடை – தோற்றமும் வளர்ச்சியும்

அலகு 5 **(9 Hrs)**

மொழிப்பயிற்சி

1. கலைச்சொல்லாக்கம்
2. அகரவரிசைப்படுத்துதல்
3. மரபுத்தொடர்/பழமொழி
4. கலை விமர்சனம்
5. நேர்காணல்

உரைநடைப் பகுதி

1. உ.வே.சாமிநாதையர் – சிவதருமோத்திரச் சுவடி பெற்ற வரலாறு.
2. தஞ்சாவூர் – கூஜாவின் கோபம்.
3. இரா. பச்சியப்பன் – மாடல்ல மற்றையவை.

உரைநடை நூல்கள்

1. சக்திவேல், சு., தமிழ் மொழி வரலாறு, மாணிக்கவாசகர் பதிப்பகம், சிதம்பரம், 1988.
2. சிற்பி பாலசுப்ரமணியம் மற்றும் நீலபத்மநாபன், புதிய தமிழ் இலக்கிய வரலாறு, தொகுதி–1, 2, 3,சாகித்திய அகாட, புதுடெல்லி,2013.
3. பாரதியார், பாரதியார் கவிதைகள், குமரன் பதிப்பகம், சென்னை, 2011.

பார்வை நூல்கள்

1. கைலாசபதி, க., தமிழ் நாவல் இலக்கியம், குமரன் பதிப்பகம், வடபழனி, 1968.
2. சுந்தரராஜன், பே.கோ. சிவபாதசுந்தரம். சோ., தமிழில் சிறுகதை வரலாறும் வளர்ச்சியும், க்ரியா, சென்னை, 1989.
3. பரந்தாமனார், அ.கி., நல்ல தமிழ் எழுத வேண்டுமா, பாரி நிலையம், சென்னை, 1998.
4. பாக்கியமேரி, வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு, என்.சி.எச். பதிப்பகம், சென்னை, 2011.
5. வல்லிக்கண்ணன், புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும், அன்னம், சிவகங்கை, 1992.

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1. http://www.tamilkodal.com
2. http://www.languagelab.com
3. http://www.tamilweb.com

	FRENCH - I	L	T	P	C	Hrs
A20FRT101	(Common to B.A., B.Sc., B.Com., B.B.A. & B.C.A)	**3**	**0**	**0**	**3**	**45**

OBJECTIVES

- To enable the students read, understand, and write simplesentences.
- To grasp relevant grammar forcommunication
- To learn about the land, people and culture ofFrance.

UNITÉ - 1

Je m'appelle Elise. Et Vous ?

Vous Dansez ? D'accord

Monica, Yukiko et compagnie

UNITÉ - 2

Les Voisins de Sophie

Tu vas au Luxembourg ?

UNITÉ – 3

Nous Venons pour l'inscription

A Vélo, en tain, en avoin

Pardon, monsieru,le BHV s'il vous plait ?

UNITÉ - 4

Au marche

On déjeune ici ?

UNITÉ - 5

On va chez ma copine ?

Chez Susana

TextBook

PrescribedTextbook : *FESTIVAL 1* - Méthode de Français
Authors : Sylvie POISSON-QUINTON
Michèle MAHEO-LE COADIC
Anne VERGNE-SIRIEYS
Edition : CLE International, Nouvelle Édition révisée : 2009.

Reference Book : Festival 1

A20GET101	GENERAL ENGLISH I	L T P C Hrs
		3 0 0 3 45

(Common to B.A., B.Sc. B.C.A.)

Course Objectives

- To recognize the rhythms, metrics and other musical aspects of poetry.
- To read a variety of texts critically and proficiently.
- To enable the students to enjoy the flair of literature through the work of great writer.
- To make the students to know the functions of basic grammar and frame sentences without grammatical error.
- To enable the understanding the intrinsic nuances of writing in English language.

Course Outcomes

After the completion of this course, the students will be able to

CO1–Comprehend and discuss the various facets of selected poems.
CO2–Analyze and interpret texts written in English.
CO3–Read drama with graduate-level interpretive and analytical proficiency.
CO4–Improve the fluency and formation of grammatically correct sentence.
CO5–Enhance the writing skills for specific purposes.

UNIT I Poetry (9Hrs)

1. John Milton: On His Blindness
2. William Words worth: Daffodils
3. Percy Bysshe Shelly: Ozymandias
4. Emily Dickinson: BecauseI could not stop for Death
5. Sarojini Naidu: The Queen's Rival

UNIT II Prose (9Hrs)

1. Francis Bacon: Of Love
2. Charles Lamb: A Dissertation upon Roast Pig

UNIT III Drama (9Hrs)

1.Oscar Wilde: Lady Windermere's Fan

UNIT IV Grammar (9Hrs)

1. Parts of Speech
2. Tenses
3. Subject-Verb Agreement

UNIT V Composition (9Hrs)

1. Essay Writing
2. Email

Text Books:

1. James Barrett, “Brookside Musings: A Selection of Poems and Short Stories: Board of Editors”, Orient LongmanLimited,2009.
2. WildeOscar,“LadyWindermere'sFan.PublishedinTheImportanceofBeingEarnestandOtherPlays”,London:Penguin,1940.
3. Wren & Martin,“ High School English Grammar & Composition”. Blackie ELT Books, 2017.

Reference Books:

1. LalithaNatarajanandSasikalaNatesan,"EnglishforExcellence:Poetry”,AnuradhaPublications,2015.
2. CharlesLamb,“SelectedProse”,PenguinClassics.UnitedKingdom,2013.
3. UshaMahadevan,“Sunbeams:EmpowerwithEnglish”,EmeraldPublishers,Chennai.2016.

Web References:

1. https://www.englishcharity.com/of-love-by-francis-bacon-explanation/
2. https://www.poetry-archive.com/n/the_queens_rival.html
3. https://www.gradesaver.com/lady-windermeres-fan/study-guide/summary-act-i

A20NDT101 **NUTRITION SCIENCE - I**

L	T	P	C	Hrs
4	0	0	4	60

Course Objectives

To enable students to:

- Know the basic concepts and definitions related to Nutrition and Health.
- Determine the Energy value of foods.
- Understand the functions, sources and requirements of Carbohydrates.
- Understand the functions, sources and requirements of Proteins.
- Understand the functions, sources and requirements of Fats.

Course Outcomes

After the completion of the course, the students will be able to

CO1-Obtain the basic knowledge about Nutrition and its relation to health.CO2-Understand the Energy value of foods and its utilization.

CO3-To obtain the in depth knowledge of Carbohydrate and its role in human health.CO4-To obtain the in depth knowledge of Proteins and its role in human health.

CO5-To obtain the in depth knowledge of Fat and its role in human health.

UNIT I: Introduction (12Hrs)

- History of Nutrition, Concepts and definitions – Nutrition, Health, Nutrients, Macro and Micro Nutrients, Nutritional Status, Malnutrition – Under Nutrition, Over Nutrition, Imbalance, Specific Deficiency.
- Inter relationship between Nutrition and Health, Vicious Cycle, Virtuous Cycle.
- Factors Affecting RDA, General Principles of Deriving RDA, Determination of RDA of Different Nutrients. Requirements and RDA, Indian Standards for Height and Weight, Reference Man andWomen.

Unit II: Energy (12Hrs)

- Energy Units, Direct and Indirect Calorimetry , Determination of Energy Value of Food (BombCalorimeter), Benedict's Oxy-Calorimeter.
- Total Energy requirement ,Basal Metabolic Rate, Factors affecting BMR .
- Measurement of Basal Metabolism - Direct Calorimetry, Indirect CalorimetryThermic Effect of Food, Factors affecting TEF.

UNIT III: Carbohydrates (12Hrs)

- Composition, Properties, Classification, Functions, Sources & Requirements.
- Digestion and Absorption of carbohydrates.
- Dietary Fiber –Sources, Types and Functions of Dietary Fibre..

UNIT IV: Proteins (12Hrs)

- Composition, Classification, Functions, Sources & Requirements
- Nutritional Classification of Amino Acids,
- Digestion, Absorption and Deficiency - PEM : Types and Dietary Treatrment.
- Factors affecting protein utilisation ,Methods of Protein Evaluation – PER, BV,
- NPU and NPR, chemical score.

UNIT V: Lipids **(12Hrs)**

- Composition, Classification, Functions, Sources & Requirements.
- Digestion, absorption and deficiency of lipids .
- Significance of SFA, MUFA, PUFA, & EFA

Text Books :

1. Roday. S, Food Science and Nutrition, OUP India, II Edition, 2012.
2. Yadav.S, Textbook of Nutrition and Health, Anmol Publishers 2002.
3. Smolin.A, Grosvenor, M.B, Basic Nutrition, Infobase Publishing, 2009.

Reference Books :

1. Whitney. E, Rolfes R.S, Understanding Nutrition, Cengage Learning, 2010.
2. Robinson, C.H, Marilyn Lawler. M Normal and Therapeutic Nutrition Paperback Macmillan USA; XVII Revised edition 1990.
3. Schlenker. E, Roth S.L, WILLIAM'S Essentials of Nutrition and Diet Therapy, Mosby Publishers, X Edition, 2010.

Web References :

1. https://www.open.edu/openlearncreate/mod/oucontent/view.php?id=315&printable=1
2. https://mynutrition.wsu.edu/nutrition-basics
3. https://www.getsmarter.com/blog/market-trends/what-are-macronutrients-and-micronutrients/

A20NDT102	FOOD SCIENCE - I	L	T	P	C	Hrs
		4	0	0	4	60

Course Objectives

To enable students to:

- Know about the principles and chemistry of foods.
- Understand the food chemistry of Cereals.
- Understand the food chemistry of Pulses.
- Understand the food chemistry of Fats.
- Understand the food chemistry of Sugar, Spices and Condiments.

Course Outcomes

After the completion of the course, the students will be able to

CO1-Obtain the knowledge in making food choices and obtaining an adequate diet.
CO2-Obtain an insight into the composition, structure and nutritive value of Cereals.
CO3-Obtain an insight into the composition, structure and nutritive value of Pulses.
CO4-Gain knowledge about the role of Fats in cookery.
CO5-Understanding the different stages of Sugar Cookery

UNIT I Food (10Hrs)

- Meaning, definition & functions of food.
- Food groups – Basic Five, classification of foods.Asian food pyramid
- Properties of Food - a) Colloids, Sols, Gels, Foam, b) Emulsion Formation
  c)Bound on free water d) ph value, Osmosis and Osmotic Pressure
  e) Sensory Evaluation- Subjective and Objective

UNIT II Cereals (15 Hrs)

- Cereals: Structure, composition, nutritive value, processing and effects of
- processing of rice, wheat &ragi.
- Gluten formation, gelatinization, dextrinisation and factors affecting it.
- Cereal cookery- fermented and unfermented products of cereals, millets, breakfast cereals.

UNIT III Pulses (15 Hrs)

- Pulses: Nutritive value, processing and effects of processing, toxic constituents of pulses. Highlighting soya beans.Nutritional implication of germination.
- Nuts and oilseeds – nutritive value of commonly used nuts (Groundnut, cashew nut, almond) processing of oilseeds (groundnut, sesame).

UNIT IV Fats and Oils (10Hrs)

- Fats and oils: Types and nutritive value, processing, changes during storage, Absorption of fat during cooking.
- Meaning of Hydrogenation, Rancidity, Winterization,Smoking Point, Emulsification. Role of fat/oil in cookery.

UNIT V Spices and Condiments (10Hrs)

- Spices and Condiments: Types, Medicinal value, uses in Indian cookery.
- Sugar: Properties, types, sugar related products, artificial sweeteners.
- Sugar Cookery - Crystallization, Factors affecting Crystallization.

Text Books :

1. Manay N.S., and Shadaksharaswamy, M (2001): Foods, facts and principles,
2. New Age International Pvt. Ltd., publishers, New Delhi.
3. Mudambi S.R and Rajagopal V.M: Fundamentals of Foods and Nutrition,
4. Wiley Eastern Ltd., New Delhi.
5. Srilakshmi B, (2005): Food Science, New Age International Publishers, New Delhi.

Reference Books :

1. Belitz H.D (2005): Food Chemistry, Springer Veriag.
2. Potter, N. and Hotchikiss, J.H. (1996): Food Science, Fifth edition, CBS.
3. Van Garde. J &Woodbush M. (1999): Food Preservation-Safety, Principles and Practice, Surabhi Publications, Jaipur.
4. Usha Chandrasekhar, Food Science and Application in Indian Cookery, Phoenix Publishing House P. Ltd., New Delhi, 2002.

Web References :

1. https://www.futurelearn.com/info/courses/eating-while-enjoying-life/0/steps/75494
2. http://www.iea.usp.br/midiateca/apresentacao/singhbiofuels2.pdf
3. https://www.hsph.harvard.edu/nutritionsource/legumes-pulses/
4. https://www.heartuk.org.uk/low-cholesterol-foods/fats-and-oils
5. https://www.embibe.com/exams/spices-and-condiments/

A20NDD101	BASIC CHEMISTRY FOR FOOD SCIENCE	L	T	P	C	Hrs
		4	0	0	4	60

Course Objectives

To enable students to:

- Make the student to know about the structure of atom and chemical bonding.
- Learn the basic concepts of acids, base and salts.
- Study the underlying concepts of chemistry of Carbohydrates .
- Understand the basic chemistry of Proteins.
- Understand the chemistry of Fats, Plant Pigments.

Course Outcomes

After the completion of the course, the students will be able to

CO1-Recognize the structure of atom and chemical bonding.
CO2-Obtain an insight into the concepts of acids, base and salts.
CO3-Acquire underlying concepts of chemistry of Carbohydrates.
CO4-Gain knowledge about the role of Chemistry of Protein.
CO5-Determine the physical and chemical properties of fats, plant pigments and pectic substances.

UNIT I – Atomic Structure and Chemical Bonding (12 Hrs)

- Structure of atom: Discovery of atomic nucleus, Rutherford's atomic model, concept of Stationary orbit, Electronic arrangement of elements (Hydrogen to calcium),
- Atomic number, Isotopes, Chemical bonds – Electrovalent, Covalent and coordinate – covalent bonds, Hydrogen bonds.

UNIT II – Acids, Bases and Salts (12 Hrs)

- General concept of acids, bases and salts, conjugate acids and bases,
- Classification of salts, Hydrolysis of salts, pH, and Buffer solution.
- Equivalent weight of acids bases and salts neutralization,
- Acid - Base indicators, Molar solution, Normal solution and Formula solution.

UNIT-III : Chemistry Of Carbohydrate (12 Hrs)

- Classification , Preparation and reactions of glucose and fructose.
- Discussion of open and ring structure of glucose, mutarotation.
- Inter conversion of glucose to fructose and vice versa-properties of sucrose
- Properties of Starch, cellulose and derivatives of cellulose.

UNIT-IV : Chemistry Of Proteins (12 Hrs)

- Amino acids-classification, preparation and properties of alpha amino acids-
- Preparation of dipeptide using Bergman method Proteins-classification according to composition-biological functions and shape- Nucleic acids- Elementary idea of DNA and RNA.

UNIT-V :Chemistry Of Fats , Pectic Substances And Plant Pigments (12Hrs)

- Physical and Chemical Properties of Fats and Oils
- .Pectins - Phenolic components, Enzymatic Browning in Fruits and Vegetables.
- Volatile Compounds in Cooked Vegetables,
- Different types of Plant Pigments, Water and Fat Soluble Pigments.

Textbooks:

1. Basic Principles of practical Chemistry Venkateswaran, Veerasamy&Kulandaivel, S.Chand& co.
2. ShakuntalaManay, Shadaksharaswamy. M (2000) Foods, Facts and Principles, New Age International PvtLtd Publishers, 2nd Edition.
3. Chandrasekhar, U. Food Science and applications in Indian Cookery (2002) Phoenix Publishing House, New Delhi.
4. Swaminathan, M. Food Science, (2005) Chemistry and Experimental Foods, Bappco Publishers, Bangalore. Reference Books 1. Meyer, L.H, Food Chemistry, (2004) CBS Publishers and Distributors, 4th edition 2. Paul, P.C. and Palmer, H.H. Food Theory and Applications(2000) JohnWiley and Sons, New York, (Revised Edition) .
5. Chopra H.K, Panesar, P.S, Food Chemistry (2010) Narosa Publishing House, New Delhi.

References:

1. Srilakshmi, B. Food Science, New Age International Publishers, New Delhi, 2010.
2. Brow, A., Understanding Food, Thomson Learning Publications, Wadsworth, 2000.
3. Mehas, K.Y. and Rodgers, S.L. Food Science and You, McMillan McGraw Company, New York, 2000.
4. Parker, R. Introduction to food Science, Delmer, Thomson Learning Co., Delma, 2000.

Web References:

1. https://medcraveonline.com/AOWMC/biochemical-functions-of-micronutrients.html
2. https://chem.libretexts.org/Courses/Brevard_College/CHE_301_Biochemistry/07%3A_Nutrition/7.01%3A_Nutrients
3. https://www.sciencedirect.com/topics/chemistry/macronutrient

A20AET101	ENVIRONMENTALSTUDIES	L	T	P	C	Hrs
	(Common for all B.A., B.Sc., B.Com., B.B.A, B.C.A.)	2	0	0	2	20

Course Objectives

- To gain knowledge on the importance of natural resources and energy.
- To know the structure and function of an ecosystem
- To imbibe anaesthetic value with respect to biodiversity, understand the threats and its conservation and appreciate the concept to finter dependence
- To know the cause softy of pollution and disaster management
- To observe and discover the surrounding environment through field work.

Course Outcomes

After completion of the course, the students will be able to

CO1 – Understand about the various resources
CO2 – Learn about the biodiversity
CO3 – Learn the different types of pollution and to prevent the pollution
CO4 – Know about the pollution Act
CO5 – Observe various environmental issues in surroundings

UNIT I : Introduction to Environmental Sciences: Natural Resources (6hrs)

- Environmental Sciences-Relevance-Significance –Publicawareness-
- Forest resources-Water resources-Mineral resources-Food resources-conflicts over sources haring-Exploitation- Landuse pattern-
- Environmental impact-fertilizer-Pesticide Problems- case studies.

UNIT II: Ecosystem, Biodiversity and Its Conservation (6 Hrs)

- Ecosystem-concept - structure and function- producers, consumers and decomposers-
- Food chain- Food web-Ecological pyramids-Energy flow- Forest ,Grassland ,desert and aquatic ecosystem.
- Biodiversity- Definition-genetic, species and ecosystem diversity - Values and uses of biodiversity - biodiversity at global, national (India) and local levels - Hotspots, threats to biodiversity-conservation of biodiversity–Insitu&Exsitu.

UNIT III : Environmental Pollution and Management (6 Hrs)

- Environmental Pollution - Causes - Effects and control measures of Air, Water, Marine, soil, solid waste,
- Thermal, Nuclear pollution and Disaster Management - Floods, Earth quake, Cyclone and Landslides. Role of individuals in prevention of pollution-pollution case studies.

UNIT IV : Social Issues – Human Population **(6 Hrs)**

- Urban issues-Energy-water conservation-Environmental Ethics-Global warming-
- ResettlementandRehabilitation issues - Environmental legislations - Environmental production Act. 1986 - Air, Water, Wildlife and forest conservation Act –
- Population growth and Explosion - Human rights and Value Education – Environmental Health - HIV/AIDS – Role of IT in Environment and Human Health - Women and child welfare - Public awareness –Case studies.

UNIT V : FIELDWORK **(6 Hrs)**

Visit to a local area / local polluted site/ local simple ecosystem-Report submission

Text Books:

1. BharuchaErach,"TextbookofEnvironmentalStudiesforUndergraduateCourses",Telangana,India:OrientBlackSwan,2rd Edition,2013,
2. BasuMahua,SavarimuthuXavier,"SJFundamentalsofEnvironmentalStudies".Cambrid ,UnitedKingdom:CambridgeUniversityPress,2017.
3. Agarwal,K.C"EnvironmentalBiology",NidiPubl.Ltd.Bikaner,2001.

Reference Books:

1. Kumarasam.K.,A.AlagappaMosesANDM.Vasanthy,"Environmentalstudies", Bharathidasanuniversitypub,1,trichy2004.
2. Rajamannar,"Environmentalstudies",EVRCollegePUB,Trichy2004
3. Kalavathy,S.(ED.),"EnvironmentalStudies",BishopHeberCollegePUB.,Trichy2004.

Web References:

1. https://www.youtube.com/watch?v=78prsPYm98g
2. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2792934/
3. https://www.frontiersin.org/articles/505570

NUTRITION SCIENCE – I AND FOOD SCIENCE – I PRACTICAL

A20NDL103

L	T	P	C	Hrs
0	0	4	2	30

NUTRITION SCIENCE – I PRACTICAL

Objectives:

- To understand the functions and role of nutrients, their requirements and the effect of deficiency and excess (in brief)
- To understand the concept of an adequate diet and the importance of nutrients in recommended Dietary Allowances.

1. Weights and measures.
2. Standardization of recipes.
3. Introduction to Recommended Dietary Allowances/Nutritive value of foods.
4. Calculation of energy balance among college going girls.
5. Enhancing the traditional recipes with specific nutrients (protein, carbohydrate, fat, vitamin A,vitamin C, calcium and iron).
6. Visit to analytical lab for demonstration of protein and fat estimation.

Text books

1. Antia F.P., Philip Abraham, Clinical Dietetics and Nutrition, Oxford University Press; 4th edition.
2. Kathleen Mahan L., SylniaEscott-Stump, Krause's food, nutrition and diet therapy (11th edition). Saunders company, London.
3. Passmore R. and Davidson S. (1986) Human nutrition and Dietitics. Liming stone publishers.

FOOD SCIENCE – I PRACTICAL

Objectives:

- To enable the students to understand the composition and chemistry of foods in relation to food preparation
- To use appropriate methods of cooking for preparation of specific food products.

1. Familiarization with different kitchen gadgets.
2. Methods of measuring dry ingredients and liquids.
3. Cereal cookery
    a. Methods of combining flour with liquid eg. Powdered cereal coarse (eg. Phirnee, broken wheat uppuma) and fine (eg. Ragi porridge, wheat halwa).
    b. Cereal Grains: different methods of cooking rice – straining, absorption – cooking over slow heat, pressure cooking, addition of fat, microwave and electric rice cooker.
    c. Recipes with rice.
4. Pulse Cookery
    a. Different methods of cooking pulses – hard water, soft water, soaking, addition of soda bicarbonate,
    b. Recipes with pulses-Mixed dhal payasam, adai, salad.

Textbooks:

1 ShakuntalaManay, Shadaksharaswamy. M (2000) Foods, Facts and Principles, New Age International Pvt Ltd Publishers, 2nd Edition
2 Chandrasekhar, U. Food Science and applications in Indian Cookery (2002) Phoenix Publishing House, New DelhI.

A20NDD102	BASIC CHEMISTRY FOR FOOD SCIENCE PRACTICAL	L	T	P	C	Hrs
		0	0	4	2	30

Course Objectives

- To identify the functional groups of unknown organic compounds.
- To know the elements present in the compounds
- To understand saturated / unsaturated compounds
- To realize the nature of aliphatic / aromatic compounds
- To visualize confirmatory tests of various functional groups

Course Outcomes

After completion of this course, the students will be able to

CO1- Learn to approach a problem systematically and to interpret the result logically
CO2- Detect various functional groups present in an organic compound. **CO3**- Understand about saturation and unsaturation nature of compounds**CO4**- Identify aliphatic and aromatic compounds
CO5- Visualize confirmatory tests of various functional groups

ORGANIC ANALYSIS

1. Preliminary tests
2. Detection of special Elements (N,S, Halogens)
3. To distinguish between aliphatic and aromatic compounds.
4. To distinguish between Saturated and unsaturated compounds.
5. Functional group tests for phenol, acids (mono, di) aromatic primary amine, aliphatic amide& Carbohydrate Glucose. Systematic analysis of organic compounds containing one functional group and characterization by confirmatory test.

Text Books:

1. Rageeb Md. Usman, Dr.Sunila T, “Practical Hand Book of Systematic Organic Qualitative Analysis”, Unicorn Publication Pvt. Ltd,1st Edition, 2015.
2. Israel Arthur Vogel , “Vogel's Textbook of Practical Organic Chemistry”, Wiley Edition: 1st Edition, 1989.
3. Arthur Israel Vogel, “Elementary Practical Organic Chemistry” Prentice Hall Press; 3rd Edition, 1980.

Reference Books:

1. Venkateswaran. V, Veeraswmay. R, Kulandaivelu. A.R., “Basic Principles of Practical Chemistry”, New Delhi, Sultan Chand and Sons.2nd Edition, 1997.
2. Mendham. J, Denney. R.C, Bames. J.D, and Thomas, M. “Vogel’s Text book of Quantitative Analysis”,Pearson Education,1st Edition,1989.
3. Gopalan.R, Subramaniam.P.S and Rengarajan.K, “Elements of Analytical Chemistry”, Sultan Chand and Sons, 1st Edition, 2004.

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1. https://assets.cambridge.org/97805212/91125/frontmatter/9780521291125_frontmatter.pdf
2. https://www.csub.edu/chemistry/organic/manual/Lab14_QualitativeAnalysis.pdf
3. http://rushim.ru/books/praktikum/Mann.pdf

A20NDS101	COMMUNICATION SKILLS LAB	L	T	P	C	Hrs
	(Common to B.A., B.Sc., B.Com.,B.B.A.& B.C.A.)	0	0	4	2	30

CourseObjectives

- Toimprovethestudents'speedinreading.
- Todecodethecorrespondencebetweensoundandspellinginenglish.
- Totrainstudentstoorganize,reviseandeditideasto writeclearlyandeffectively.
- Toenhancethesenseof socialresponsibilityand accountabilityof thestudents.
- Toexpoundthesignificanceof timeandstressmanagement.

CourseOutcomes

Afterthecompletionofthe course,thestudentswillbe ableto

CO1–Understandthepatternto communicateeffectively.
CO2–ImpartSpeakingskillswithconfidence.
CO3–Usewritingstrategies toimprovetheirdraftingskillsandcomprehendingofarticles.
CO4–DemonstrateleadershipqualitiestoParticipateinGroupDiscussionandInterviewefficiently.
CO5–ExpertiseinManagerialskills.

UNITICOMMUNICATIONSKILLSSPEAKING (6Hrs)

Aspects of speaking - Process and techniques of effective speech – Presentations - topic to be given to students forshortspeech.

UNITIISELF-MANAGEMENTSKILLS (6Hrs)

Time Management - Stress management – Perseverance – Resilience - Mind mapping–Self-confidence

UNITIIICOMMUNICATIONSKILL-READING (6Hrs)

Phonics– Self-Introduction –Vocabulary–Comprehension-skimmingandscanning.

UNITIVSOCIALSKILLS (6Hrs)

NegotiationandPersuasion –Leadership–Teamwork–Problemsolving –Empathy–Decisionmaking.

UNITVCOMMUNICATIONSKILL-WRITING (6Hrs)

Descriptive –Narrative–Persuasive–Expository–Picturecomposition

TextBooks

1. Syamala,V,"EffectiveEnglishCommunicationforyou",Chennai:EmeraldPublishers,2002
2. Balasubramanian, T," A Textbook of English Phonetics for Indian Students",New Delhi: TrinityPress 1981
3. Sardana,C.K.,"TheChallengeofPublicRelations",NewDelhi: Har-AnandPublications,1995.

ReferenceBooks

1. Morley, David and Philip Neilson, editors", The Cambridge Companion to Creative Writing",Cambridge:2012.
2. Eastwood,John,"OxfordGrammar",Oxford UniversityPress,1999.
3. Prasad,HariMohan,"AHandbookofSpottingErrors:"McGrawHillEducation, 2010.
4. Murphy,JohnJ,"PullingTogether:10RulesforHigh-PerformanceTeamwork", SimpleTruths,2016.

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1. www.softwaretestinghelp.com›how-to-crack-the-gd
2. www.businessballs.com›communication-skills›prese...
3. www.teachingenglish.org.uk›article›public-speaking...
4. www.teachingenglish.org.uk›article›public-speaking...
5. www.monster.com›career-advice›article›boost-you...

A20TAT202 **மொழித்தாள்** **L T P C Hrs**

தமிழ்–II **3 0 0 3 45**

(B.A., B.Sc., B.Com., B.B.A., & B.C.A., பாடப்பிரிவுகளுக்குமான பொதுத்தாள்)

பாடத்திட்டத்தின் நோக்கம்

இரண்டாயிரம் ஆண்டுகால தமிழின் தொன்மையையும் வரலாற்றையும் அதன் விழுமியங்களையும் பண்பாட்டையும் எடுத்துரைப்பதாக இப்பாடத்திட்டம் அமைக்கப்பட்டுள்ளது.

தமிழ் இலக்கியம் உள்ளடக்கத்திலும், வடிவத்திலும் பெற்ற மாற்றங்கள், அதன் சிந்தனைகள்,அடையாளங்கள் ஆகியவற்றைக் காலந் தோறும் எழுதப்பட்ட இலக்கியங்களின் வழியாகக் கூறுவதற்கு இப்பாடத்திட்டம் அமைக்கப்பட்டுள்ளது.

மொழியின் கட்டமைப்பைப் புரிந்து கொள்வதாகவும் பாடத்திட்டம் வடிவமைக்கப்பட்டுள்ளது.

வாழ்வியல் சிந்தனைகள், ஒழுக்கவியல் கோட்பாடுகள், சமத்துவம், சூழலியல் எனப் பல கூறுகளை மாணவர்களுக்கு எடுத்துரைக்கும் விதத்தில் இப்பாடத்திட்டம் உருவாக்கப்பட்டுள்ளது.

சிந்தனை ஆற்றலைப் பெருக்குவதற்குத் தாய்மொழியின் பங்களிப்பினை உணர்த்த இப்பாடத்திட்டம் அமைக்கப்பட்டுள்ளது.

பாடத்திட்டத்தின் வெளிப்பாடுகள்

CO1-இலக்கியங்கள் காட்டும் வாழ்வியல் நெறிமுறைகளைப் பேணிநடத்தல்.

CO2-நமது எண்ணத்தை வெளிப்படுத்தும் கருவியாகத் தாய்மொழியைப் பயன்படுத்துதல்.

CO3-தகவல் தொடர்புக்குத் தாய்மொழியின் முக்கியத்துவத்தை உணர்தல்.

CO4-தாய்மொழியின் சிறப்பை அறிதல்.

CO5-இலக்கிய இன்பங்களை நுகரும் திறன்களை வளர்த்தல்.

அலகு–1 **(9 Hrs)**

எட்டுத்தொகை:

1. குறுந்தொகை (பாடல்–130).
2. நற்றிணை (பாடல்–27).
3. அகநானூறு (பாடல்–86)
4. ஐங்குறுநூறு (பாடல்–203)
5. கலித்தொகை– பாலைத்திணை (பாடல்–9)
6. புறநானூறு (பாடல்–235)

பத்துப்பாட்டு:

1. சிறுபாணாற்றுப்படை (அடிகள்–126–143)
2. முல்லைப்பாட்டு (6–21)

அலகு–2 **(9 Hrs)**

பதினெண் கீழ்க்கணக்கு:

1. திருக்குறள்– வெகுளாமை (அதிகாரம்–31), காதல் சிறப்புரைத்தல் (அதிகாரம்–113)
2. நாலடியார் – நல்லார் எனத்தான் (221)
3. திரிகடுகம்– கோலஞ்சி வாழும் குடியும் (33)
4. இனியவை நாற்பது– குழவி தளர்நடை (14)
5. கார் நாற்பது– நலமிகு கார்த்திகை (26)
6. களவழி நாற்பது–கவளங்கொள் யானை (14)

அலகு–3 **(9 Hrs)**

சைவம்– பன்னிரு திருமுறைகள்

1. திருஞானசம்பந்தர் – வேயுறு தோளிபங்கன் (இரண்டாம் திருமுறை)
2. திருநாவுக்கரசர் – மனமெனும் தோணி (நான்காம் திருமுறை)
3. சுந்தரர் – ஏழிசையாய் இசைப்பயனாய் (ஏழாம் திருமுறை)

4. மாணிக்கவாசகர் – ஆதியும் அந்தமும் இல்லா (திருவெம்பாவை)
5. திருமூலர் – அன்பு சிவம் இரண்டு (திருமந்திரம்)

வைணவம் – நாலாயிரத் திவ்வியப் பிரபந்தம்

1. பேயாழ்வார் – திருக்கண்டேன் பொன்மேனி....
2. பெரியாழ்வார் – கருங்கண் தோகை மயிற் பீலி....
3. தொண்டரடிப்பொடிஆழ்வார் – பச்சைமாமலை போல்....
4. ஆண்டாள் – கருப்பூரம் நாறுமோ? கமலப்பூ....
5. திருமங்கையாழ்வார் – வாடினேன் வாடி வருந்தினேன்....

இஸ்லாமியம்

சீறாப்புராணம்– பாடல் நின்ற பிணை மானுக்குப்...5 பாடல்கள் (பாடல் எண்கள் 61–65)

கிறித்துவம்

இரட்சண்ய யாத்ரீகம்– கடைதிறப்புப் படலம் –5 பாடல்கள் (பாடல் எண்கள்: 3,9,10,15,16)

அலகு – 4 **(9 Hrs)**

தமிழ் இலக்கிய வரலாறு

1. சங்க இலக்கியங்கள்
2. நீதி இலக்கியங்கள்
3. பக்தி இலக்கியங்கள்
4. காப்பியங்கள்

அலகு–5 **(9 Hrs)**

சிறுகதைகள்

1. புதுமைப்பித்தன் – அகலிகை
2. நா. பிச்சமூர்த்தி – வேப்பமரம்
3. அகிலன் – ஒரு வேளைச்சோறு
4. ஜி.நாகராஜன் – பச்சக் குதிரை
5. கி.ராஜநாராயணன் – கதவு
6. சா.கந்தசாமி – தக்கையின் மீது நான்கு கண்கள்
7. ஆண்டாள் பிரியதர்ஷினி – மாத்திரை
8. வண்ணதாசன் – ஒரு உல்லாசப் பயணம்
9. சு. தமிழ்ச்செல்வன் – வெயிலோடு போய்
10. பாரததேவி – மாப்பிள்ளை விருந்து

பார்வை நூல்கள் :

1. அரசு, வீ., இருபதாம் நூற்றாண்டு சிறுகதைகள் நூறு, அடையாளம் பதிப்பகம், திருச்சி, 2013.
2. அருணாச்சலம், பா., பக்தி இலக்கியங்கள், பாரி நிலையம், சென்னை, 2010.
3. தமிழண்ணல், புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு, மீனாட்சி புத்தக நிலையம், மதுரை, 2000.
4. பாக்கியமேரி, வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு, என்.சி.பி.எச். பதிப்பகம், சென்னை, 2011.
5. பசுபதி, மா. வே., செம்மொழித் தமிழ் இலக்கண இலக்கியங்கள், தமிழ்ப் பல்கலைக்கழகம், 2010 .

உரைநடை நூல்கள் :

1. அன்பு, பா., மா.பொ.சி யின் ஒரு இலக்கிய நூல்கள் ஒரு மதிப்பீடு, உலகத் தமிழ் ஆராய்ச்சி நிறுவனம், சென்னை, 1983.
2. பிள்ளை, கே.கே., தமிழக வரலாறும் மக்களும் பண்பாடும், உலகத் தமிழ் ஆராய்ச்சி நிறுவனம், சென்னை, 2000.
3. ஜெயமோகன், நவீன இலக்கிய அறிமுகம், உயிர்மெய் பதிப்பகம், சென்னை, 1995.

இணையத்தளங்கள் :

1. http://www.tamilkodal.com
2. http://www.languagelab.com
3. http://www.tamilweb.com

	FRENCH – II	L	T	P	C	Hrs
A20FRT202	(Common to B.A., B.Sc., B.Com., B.B.A. & B.C.A)	**3**	**0**	**0**	**3**	**45**

OBJECTIVES

- To enable the students read, understand, and write simplesentences.
- To grasp relevant grammar forcommunication
- To learn about the land, people and culture ofFrance.

UNITÉ - 1

Qu'est -ce qu'on leur offre ?

On solde !

Découvrir Paris en bus avec l'open Tour

UNITÉ - 2

Si vous gagne vous ferez quoi

Parasol ou parapluie ?

UNITÉ - 3

Quand il est midi á Paris

Vous allez Vivre

L'avenir du Français

UNITÉ - 4

Souvenirs d'enfance

j'ai fait mes études á Lyon 2

UNITÉ – 5

Retour des Antilles

Au voleur ! Au voleur

TextBooks

PrescribedTextbook : *FESTIVAL 1* - Méthode de Français

Authors : Sylvie POISSON-QUINTON

Michèle MAHEO-LE COADIC

Anne VERGNE-SIRIEYS

Edition : CLE International, Nouvelle Édition révisée : 2009.

Reference Book Festival 1

		L	T	P	C	Hrs
A20GET202	**GENERAL ENGLISH- II** **(Common to B.A, B.Sc. and BCA)**	**3**	**0**	**0**	**3**	**45**

Course Objectives

To recognize poetry from a variety of cultures,languages and historic periods

- To develop the intensive study of language by critical reading
- To identify the various genres and analyze the works of writers in English
- To expand the basic understanding of targeted grammatical structures
- To understand the conventions of writing in English

CourseOutcomes

After the completion of this course,the students will be able to

CO1–Understand and appreciate poetry as aliterary artform.
CO2–Comprehend and recognize relationship between ideas, events and facts.
CO3–Learn to explorecharacters and theirconflicts,dilemmas and extend their response to stories.
CO4–Apply grammatical structures meaningfully and appropriately in or land written form.
CO5–Write effectively and coherently.

UNITIPOETRY (9 Hrs)

1. LordByron: SheWalksinBeauty
2. RobertFrost: StoppingbyWoods onaSnowyEvening
3. NissimEzekiel:NightoftheScorpion
4. RabindranathTagore:Wherethe Mind isWithoutFear

UNITIIPROSE (9 Hrs)

ErnestHemingway-ADay'sWait

1. AntonChekhov:TheLotteryTicket

UNITIII FICTION (9 Hrs)

JaneAusten- PrideandPrejudice

UNITIVGRAMMAR (9 Hrs)

1.Voice–Conditionals -Coherence

UNITV COMPOSITION **(9 Hrs)**

1. LetterWriting
2. ReportWriting

TextBooks

1. WisdomandExperience:AnAnthologyforDegreeClasses.BoardofEditors",OrientLongmanLimited,2007
2. "TheApproach toLife:ASelection of EnglishProse",OrientLongmanLimited,2009.
3. "Brookside Musings: A Selection of Poems and Short Stories: Board of Editors", Orient, Longman Limited,2009.

ReferenceBooks

1. LalithaNatarajanandSasikalaNatesan,"EnglishforExcellence:Poetry",AnuradhaPublicationsLiteraryPursuits: BoardofEditors,OrientLongmanLimited,2015.
2. S.C.Gupta,"EnglishGrammar&Composition",Arihant,2014
3. RabindranathTagore,Wherethemindis withoutfear",London :TheIndiaSociety,1912.
4. RaymondMurphyandSuraiPongtongcharoen,"EnglishGrammarinUse",CambridgeUniversity,1985.

Web References

1. https://poets.org/poem/she-walks-beauty
2. https://www.poetryfoundation.org/poems/46467/the-flea
3. https://www.classicshorts.com/stories/lottery.html
4. http://short-storylovers.blogspot.com/2012/07/thief-by-ruskin-bond.html

http://www.gutenberg.org/files/1342/1342-h/1342-h.htm

A20NDT204 **NUTRITION SCIENCE - II**

L	T	P	C	Hrs
4	0	0	4	60

Course Objectives

To enable students to:

- Learn about the functions,sources and requirements of Fat Soluble Vitamins.
- Understand the functions, sources and requirements of Water Soluble Vitamins.
- Know about the functions, sources and requirements of Macro Minerals.
- Understand the functions, sources and requirements of Ultra Trace Minerals.
- Learn about the Water and Electrolyte Balance.

Course Outcomes

After the completion of the course, the students will be able to

CO1-Obtain the in depth knowledge of Fat Soluble Vitamins.CO2-Gain knowledge of Water Soluble Vitamins.
CO3-Get acquainted with complete Macro Minerals.
CO4-Understand clearly the nutritional aspects of Ultra Trace Minerals.CO5-To obtain the in depth Water and Electrolyte Balance.

UNIT I: Fat Soluble Vitamins (10 Hrs)

Functions, Food sources, Requirement ,Deficiency & Excess of Vitamin - A,D,E and K

UNIT II: Water Soluble Vitamins (10 Hrs)

Functions, Food sources, Requirement, Deficiency & Excess of water soluble vitamins-Vitamin B - B1, B2, B3, B6, B9 and B12.
Vitamin C - Functions, Food sources, Requirement, Deficiency & Excess.

UNIT III: Macro Minerals (15 Hrs)

1. Macro Minerals- Calcium, Phosporous, Magnesium, Potassium, Sodium and Chloride.
   Distribution in the body; functions, effects of deficiency, food sources and RDA..
2. Micro/Trace Minerals - Iron, Zinc, Fluoride and Copper.
   Distribution in the body; functions, effects of deficiency, food sources and requirementsfor different age groups.

UNIT IV: Ultra trace Minerals (10 Hrs)

Ultra trace Minerals - Iodine, Selenium, Manganese, Chromium, Molybdenum and Cobalt.
Distribution in the body; functions, effects of deficiency, food sources and requirements. Of Selenium and Vitamin E relationship. Chromium and glucose tolerance factor..

UNIT V: Water and Electrolyte Balance (15 Hrs)

1. **Water**

Distribution of water ,Functions& Requirements, Sources.
Water Balance ,Water Depletion ,Effect of Water Deprivation.Water Intoxication (Excess).

2. **Electrolyte Balance**

Electrolyte concentration in ECF and ICF.Significance and disorders.

Textbooks:

1. Swaminathan, M., Essentials of food and Nutrition, Vol I & II, Bappco Publishers, Madras 2000.
2. Srilakshmi. B., Nutrition Science, New age International (p) ltd, publishers, 2004.
3. Roday. S, Food Science and Nutrition, OUP India, II Edition, 2012.
4. Yadav.S, Textbook of Nutrition and Health, Anmol Publishers 2002.
5. Smolin.A, Grosvenor, M.B, Basic Nutrition ,Infobase Publishing, 2009.

References :

1. Whitney. E, Rolfes R.S, Understanding Nutrition, Cengage Learning, 2010.
2. Robinson, C.H, Marilyn Lawler. M Normal and Therapeutic Nutrition Paperback Macmillan USA; XVII Revisededition 1990.
3. Insel, Ross. D, Bernstein. M, K McMahon. K, Discovering Nutrition, Jones & Bartlett Publishers, 2015.
4. Schlenker. E, Roth S.L , WILLIAM'S Essentials of Nutrition and Diet Therapy, Mosby Publishers, X Edition, 2010.

Web References :

1. https://www.cdc.gov/nutrition/micronutrient-malnutrition/micronutrients/index.html
2. https://mynutrition.wsu.edu/nutrition-basics
3. https://www.who.int/health-topics/micronutrients#tab

A20NDT205	FOOD SCIENCE - II	L	T	P	C	Hrs
		4	0	0	4	60

Course Objectives
To enable students to:

- Learn about the Composition and Nutritive Value of Milk
- Understand the Structure, composition and nutritive value of Meat, Poultry and Fish
- Understand the food chemistry of Vegetables and Fruits
- Learn about the various methods of Preservation, Types of Additives used in Food
- Learn about the term Organic Foods and Food Technology

Course Outcomes
After the completion of the course, the students will be able to

CO1 - Obtain the knowledge of milk cookery and underlying changes.
CO2 - Get acquainted with the composition, nutritive value of animal foods.
CO3 - Get acquainted with the composition, nutritive value of Vegetables and fruits.
CO4 - Understand and use of various methods of food preservation.
CO5 - Gain knowledge of organic foods and the term food technology.

UNIT I Milk (10 Hrs)

Milk: Composition, properties, nutritive value and processing of milk. Effect of heat, acid, enzymes and salt on milk. Milk Products – Fermented and unfermented. Milk cookery.

UNIT II Meat (15 Hrs)

1. Meat: Structure, composition and nutritive value. Post – mortem changes, aging, tenderising and curing of meat. Meat cookery – changes during cooking.
2. Poultry: Classification, composition and nutritive value. Eggs – structure, composition, nutritive value. Evaluation of quality.Egg cookery.
3. Fish: Classification, composition, nutritive value. Selection, factors affecting spoilage. Fish cookery.

UNIT III Vegetables and Fruits (15 Hrs)

1. Vegetables& Fruits: Classification, selection, composition, pigments, enzymes, flavor compounds, nutritive value.
   Effect of cooking on color, texture, flavor, appearance and nutritive value.Storage of vegetables.
2. Fruits: Classification, selection, pigments, enzymes and nutritive value, post harvest changes and storage. Browning reactions – enzymatic and non-enzymatic..

UNIT IV Food Preservation, Additives And Adulteration (10 Hrs)

Preservation: Principles and methods (in brief).
Food Additives: Types and uses.
Food Adulteration: Definition, types, intentional and incidental adulterants.
Food laws and Standards (in brief).

UNIT V (10 Hrs)

Organic foods: Organic farming, its advantages and limitations, certification.
Genetically modified foods: Meaning and process of GM foods (in brief), its advantages and limitations.
Food technology: Principles and importance of Fortification and enrichment, HACCP, nutraceuticals, and space foods.

Textbooks :

1. Manay N.S., and Shadaksharaswamy, M (2001): Foods, facts and principles, New Age International Pvt. Ltd., publishers, New Delhi.
2. Mudambi S.R and Rajagopal V.M: Fundamentals of Foods and Nutrition, Wiley Eastern Ltd., New Delhi.
3. Srilakshmi B, (2005): Food Science, New Age International Publishers, New Delhi.

References :

1. Belitz H.D (2005): Food Chemistry, Springer Veriag.
2. Potter, N. and Hotchikiss, J.H. (1996): Food Science, Fifth edition, CBS.
3. VanGarde. J &Woodbush M. (1999): Food Preservation-Safety, Principles and Practice, Surabhi Publications, Jaipur.
4. Sood S and Khetar Paul N. (2002), Food Preservation, Agrotech Pub. Co., Udaipur.

Web References

1. https://www.intechopen.com/chapters/61245
2. https://www.hsph.harvard.edu/nutritionsource/what-should-you-eat/vegetables-and-fruits/
3. https://www.tutorialspoint.com/food_and_beverage_services/food_and_beverage_services_hygiene_and_safety.htm
4. https://www.tutorialspoint.com/food_production_operations/food_production_operations_vegetarian_cookery.htm
5. http://ecoursesonline.iasri.res.in/mod/page/view.php?id=4127

A20NDD203	HUMAN PHYSIOLOGY	L	T	P	C	Hrs
		4	0	0	4	60

Course Objectives

To enable students to:

- Know about the Structure and Functions of Digestive System.
- Learn about the Composition, Functions and Properties of Circulatory System.
- Understand the basic knowledge of Respiratory and Excretory System.
- Know about the Anatomy of Endocrine and Reproductive System.
- Learn the Classification of Nervous System.

Course Outcomes

After the completion of the course, the students will be able to

CO1 - Understand the digestion process and role of various organs of the Human System.
CO2 - Enable the students to know about the Composition of Blood and Functions of Circulatory System.
CO3 - Know the in depth knowledge of Respiratory and Excretory System.
CO4 – Obtain the Reproductive Cycle and Functions of Endocrine System.
CO5 – Get acquainted about the Structure and Functions of Sense Organs and Nervous System.

UNIT I: Cell and Digestive System (10 Hrs)

General Anatomy; Digestion in the mouth, stomach and intestines. Movements of the intestine; Role of Liver and Pancreas – Structure and Functions.

UNIT II: Blood and Circulatory System (15 Hrs)

a) Blood – Composition and Functions; White Blood Cells – Types and function; Red Blood Cells – Structure and functions; Haemoglobin – erthropoiesis, Blood coagulation, Reticulo Endothelial System – Definition and functions; Blood group – ABO, Rh factor.

b) Heart and Circulation – Structure of heart and blood vessels; Properties of cardiac muscle; cardiac cycle; origin and conduction of heart beat; measurement of arterial blood pressure.

UNIT III : Respiratory and Excretory System (15 Hrs)

a) Respiratory System – Structure of Respiratory organs; Sub – divisions of lung air; Chemistry of Respiration.

b) Excretory system – Physiology of the Urinary System- Structure of kidney and nephron; Formation of urine, micronutrition.
Skin – Structure and functions, Regulations of body temperature

UNIT IV: Endocrine and Reproductive System (10 Hrs)

a) Endocrine System – Structure and functions of thyroid, pituitary, parathyroid, adrenals, islets of langerhans of pancreas
b) Reproductive System – anatomy of the male and female reproductive organs;

menstrual cycle; mammary glands; Fertilisation; Development of Embryo; Pregnancy and parturition.

UNIT V: Nervous System and Sense Organs (10 Hrs)

a) Nervous System –General classification of nervous system ; Structure of nerve cell and Spinal cord; Basic Knowledge of different parts of the brain – anatomy and functions of cerebrum, cerebellum and medulla oblongata
b) Sense Organs – Structure and function of eye and ear; taste, smell and cutaneous sensations.

Text Books

1. Chatterjee C.C (2004), Human Physiology Volume I,Medical Allied Agency, Kolkata .
2. Chatterjee C.C (2004), Human Physiology Volume II, Medical Allied Agency, Kolkata.
3. Sembulingam, K. (2000) Essentials of Medical Physiology,Jaypee Brothers Medical Publishers (P) Ltd., New Delhi.

Reference Books

1. Bestand Taylor, (1992) The Physiological Basis for Medical Practice,Saunders Company.
2. Chaudhri, K. (1993) Concise Medical Physiology,New Central Book Agency (Parentral) Ltd., Calcutta.

Web References :

1. https://www.registerednursing.org/teas/general-anatomy-physiology-human/
2. https://kidshealth.org/en/teens/heart.html
3. https://www.tutorialspoint.com/excretory_system/index.asp
4. https://www.endocrine.org/topics/edc/what-edcs-are/common-edcs/reproduction
5. https://www.tutorialspoint.com/what-is-the-function-of-nervous-system

A20AET202 **PUBLIC ADMINISTRATION** **L T P C Hrs**
2 0 0 2 30

CourseObjectives

- Tointroducetheelementsofpublicadministration
- Tohelpthestudentsobtainasuitableconceptualperspectiveof public administration
- Tointroducethemthegrowthofinstitutiondevicestomeettheneedofchangingtimes
- Toinstillandemphasizetheneedof ethicalseriousnessincontemporaryIndianPublicAdministration

CourseOutcomes

Aftercompletion ofthecourse,thestudentswillbe ableto

CO1–UnderstandtheconceptsandevolutionofPublicAdministration.

CO2–Be awareofwhatishappeninginthePublicAdministrationin the country.

CO3–ExplaintheTerritoryAdministrationintheStateandtheCentre.
CO4–AppreciateemergingissuesinIndianPublicAdministration.

UNITIINTRODUCTIONTOPUBLICADMINISTRATION(7Hrs)

Meaning, nature and Scope of Public Administration and its relationship with other disciplines- Evolution of PublicAdministration as a discipline – Woodrow Wilson, Henry Fayol , Max Weber and others - Evolution of PublicAdministrationinIndia–Arthashastra–ColonialAdministrationupto1947

UNITIIPUBLICADMINISTRATIONININDIA (8Hrs)

Enactment of Indian Constitution - Union Government – The Cabinet – Central Secretariat -– All India Services –Training of Civil Servants – UPSC – NitiAyog – Statutory Bodies: The Central Vigilance Commission – CBI -NationalHumanRightsCommission–NationalWomen'sCommission–CAG

UNITIIISTATEANDUNIONTERRITORYADMINISTRATION (8 Hrs)

Differential Administrative systems in Union Territories compared to States Organization of Secretariat: -Position ofChief Secretary, Functions and Structure of Departments, Directorates – Ministry of Home Affairs supervision ofUnion Territory Administration — Position of Lt.Governor in UT — Government of Union Territories Act 1963 –ChangingtrendinUTAdministrationinPuducherryandAndamanandNicobarIsland

UNITIVEMERGINGISSUESININDIANPUBLICADMINISTRATION (7Hrs)

ChangingRoleofDistrictCollector–CivilServants–Politiciansrelationship–CitizensCharter-PublicGrievanceRedressalmechanisms—TheRTIAct2005–SocialAuditingandDecentralization–PublicPrivatepartnership.

Text Books:

1. AvasthiandMaheswari,"PublicAdministration",LakshmiNarainAgarwal,1st Edition,2016.
2. RameshK.Arora,"IndianPublicAdministration:InstitutionsandIssues",NewAgeInternationalPublishers,3rd Edition,2012.
3. RumkiBasu,"PublicAdministration:ConceptandTheories",Sterling,1st Edition,2013.

ReferenceBooks:

1. SiuliSarkar,"PublicAdministrationinIndia",PrenticeHallofIndia,2nd Edition,2018.
2. M.Laxmikanth,"PublicAdministration",McGrawHillEducation,1st Edition,2011.
3. R.B.Jain, "Public Administration in India, 21st Century Challenges for Good Governance", Deep andDeepPublications,2002.

Web References:

1. http://cic.gov.in/
2. http://www.mha.nic.in/
3. http://rti.gov.in/
4. http://www.cvc.nic.in/

NUTRITION SCIENCE – II AND FOOD SCIENCE - II PRACTICAL

A20NDL206

L	T	P	C	Hrs
0	0	4	2	30

Course Objectives:

- To observe the qualitative analysis of nutrients.
- To observe the stages of sugar cookery.
- To prepare the fruits and vegetables with different methods of cooking.
- To prepare the dairy products and animal foods with different methods of cooking.
-

Course Outcomes:

After completion of the course, the students able to

- Understand and identify procedure to analyze the nutrients.
- Understand and observe the different stages of sugar cookery.
- Acquainted the preparation fruits and vegetables with different methods of cooking.
- Understand the preparation of dairy products and animal foods with different methods of cooking.

1. Qualitative analysis of Nutrients
2. Sugar cookery: Stages of sugar cookery – Caramelisation, Crystalisation.
3. Vegetables – Selecting, cleaning, coring, pitting and chopping of fruits and vegetables. Avial, porriyal, pugath, stew, kuruma, cutlet, fry, chips, podimas, pachadi, stuffed chapathi, koottu.
4. Fruits – Fritters, Halwa, Salad, Stuffed items, Jelly, Payasam, Thokku, Sauce and Jams.
5. Milk – Cottage Cheese, Paneer, Phirnee, Payasam, Ice cream, kova, Buttermilk curry, Basanthi and Jamun.
6. Egg – Boiled, Scrambled, Poached, Curry, Masala, Omelette.
7. Visit to a modern rice mill
8. Visit to a Dairy farm/ Milk processing unit

Text Books:

1. Potter, N. and Hotchkiss, J.H. Food Science,5th Ed., CBS Publications and Distributors, Daryaganji, New Delhi, 1998.
2. Shakuntala Manay, Shadaksharaswamy. M (2000) Foods, Facts and Principles,New Age International Pvt Ltd Publishers, 2nd Edition
3. *Usha* Chandrasekhar, Food Science and Application in Indian Cookery,Phoenix Publishing House P. Ltd., New Delhi, 2002.
4. Srilakshmi, B. Food Science,New Age International Publishers, New Delhi, 2010
5. Swaminathan, M, Hand Book of Food Science and Experimental Foods, BAPPCO, Bangalore, 1992

Reference Books

1. Brow, A., Understanding Food**,** Thomson Learning Publications, Wadsworth, 2000.
2. Mehas, K.Y. and Rodgers, S.L. Food Science and You, McMillan McGraw Company, New York, 2000.
3. Parker, R. Introduction to food Science, Delmer, Thomson Learning Co., Delma, 2000.

A20NDD204	HUMAN PHYSIOLOGY PRACTICAL	L	T	P	C	Hrs
		0	0	4	2	30

Course Objectives:

Obtain a better understanding of the principles of nutrition through the study of physiology.

1. Microscopic Examination of Fresh Blood Mount, Blood Smear and Stained, Blood Smear
2. Estimation of Haemoglobin using Haemometer
3. Identification of Blood Groups, Rh factor
4. Determination of Bleeding and Coagulation time
5. Counting Blood cells using Haemocytometer (Demonstration of RBC,WBC)
6. Determination of Arterial Blood pressure using Sphygmomanometer
7. Recording of Pulse rate – Before and after exercise
8. Recording of Glucose Level using Glucometer.

Text Book

1. Applied Physiology – S. Wright.

A20NDS202	FOOD PRESERVATION	L	T	P	C	Hrs
		0	0	4	2	30

Objectives

- The course is designed to provide the foundation of various techniques involved in food preservation.
- Acquire skills in developing preservation techniques.

Course Outcomes

CO1 - Understand the importance, principles and techniques.
CO2 – Know the difference methods used to preserve food using high temperature.
CO3 – Know the difference methods used to preserve food using low temperature.
CO4 - Understand the different preservation methods using sugar as a preservative.
CO5 -Understand the different preservation methods using salt as a preservative.

Unit I: Introduction (6 Hrs)

Introduction-importance, principles and techniques of food preservation.

Unit II: Preservation – Use of High Temperature (6 Hrs)

Preservation by use of high temperature- drying & sterilization, caning, pasteurization & blanching.

Unit III: Preservation – Use of Low Temperature (6 Hrs)

Preservation by use of low temperature--refrigeration, freezing & irradiation.

Unit IV: Preservation by using sugar (6 Hrs)

Preservation by using sugar-Preparation of jams, jelly, marmalades, sauce, candied fruits & preserves.Fruit juice beverages-preparation & preservation.

Unit V: Preservation by using salt fermentation (6 Hrs)

Preservation by using salt fermentation-Definition,Types of Fermentation, Principles of pickling and types of pickles.

Text Books:

1. Srilakshmi, N., (2016) 6th Edition, Food Science, New Age International Private Ltd., New Delhi, 2002.
2. Sivasankar, B. (2013) Food Processing and Preservation 2nd edition, prentice Hall, Pvt, Ltd.
3. Srivastava R.P. (2013) Fruit and Vegetable Preservation – Principles and Practices, International Book Distributing Co., (IBDC), New Delhi.