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

(An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore)
Approved by Government of Tamil Nadu & Accredited by NAAC with 'A^{++}' Grade (3rd Cycle - 3.64 CGPA)
Dr. N.G.P.-Kalapatti Road, Coimbatore-641 048, Tamil Nadu, India.
Website: www.drngpasc.ac.in | Email: info@drngpasc.ac.in. | Phone: +91-422-2369100

REGULATIONS 2024-25 for Under Graduate Programme

(Outcome Based Education model with Choice Based Credit System)

B.Sc. FOOD SCIENCE AND NUTRITION

(For the students admitted during the academic year 2024-25 and onwards)

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

PROGRAMME OUTCOMES

On the successful completion of the programme, the following are the expectedoutcomes.

PO Number	PO Statement
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 preprofessional 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.

Guidelines for Programmes offering Part I & Part II for Four Semesters:

Part	Subjects	No. of Papers	Credit	Semester No.
I (12 Credits)	Tamil / Hindi / French/Malayalam	4	4 x 3 = 12	I & IV
II (12 Credits)	English	4	4 x 3 = 12	I & IV
III (108 Credits)	Core (Credits 2,3,4,5)	16-19	70	I to VI
	Inter Departmental Course (IDC)	4	16	I to IV
	Discipline Specific Elective (DSE)	3	3 x 4 =12	V & VI
	Skill Enhancement Course(SEC)	4	8	III ,IV,V& VI
	Industrial Training	1	2	V
IV (8 Credits)	Environmental Studies(AECC)	1	2	I
	Basic Tamil/ Advance Tamil /Human Rights &Women's Rights(AECC)	1	2	II
	Innovation & IPR/Innovation, IPR &Entrepreneurship (AECC)	1	2	VI
	Generic Elective(GE) (AEEC)	1	2	V
V (2 Credits)	NSS/NCC/YRC/RRC/Yoga/Sports/Clubs	-	2	I -II
TOTAL CREDITS			**142**	

CURRICULUM

B.Sc. Food Science and Nutrition
A.Y
24-25

Course Code	Course Category	Course Name	L	T	P	Duration		Exam (h)	Max Marks			Credits
						Week	Total		CIA	ESE	Total	
First Semester												
Part-I												
24TLU1TA	Language-I	Tamil-I	4	1	-	5	60	3	25	75	100	3
24TLU1HA		Hindi-I										
24TLU1MA		Malayalam – I										
24TLU1FA		French-I										
Part-II												
24ELU1EA	Language-II	English–I	4	-	1	5	60	3	25	75	100	3
Part-III												
24FNU1CA	Core-I	Fundamentals of Food Science	4	1	-	5	60	3	25	75	100	4
24FNU1CB	Core-II	Chemistry of Foods	4	1	-	5	60	3	25	75	100	4
24FNU1CP	Core practical-I	Food Science	-	-	5	5	60	3	40	60	100	2
24CEU1IA	IDC-I	Chemistry	3	-	-	3	36	3	25	75	100	3
Part-IV												
24MBU1AA	AECC-I	Environmental Studies	2	-	-	2	24	-	50	-	50	2
Part – V												
24FNU1XA	Extension Activity	NSS/NCC/YRC /RRC/Yoga/ Sports/Club	-	-	-			-	50		50	1
Total			**21**	3	6	**30**	**360**	-	-	-	**700**	**22**

Course Code	Course Category	Course Name	L	T	P	Duration		Exam (h)	Max Marks			Credits
						Week	Total		CIA	ESE	Total	
Second Semester												
Part-I												
24TLU2TA	Language-I	Tamil-II	4	1	-	5	60	3	25	75	100	3
24TLU2HA		Hindi-II										
24TLU2MA		Malayalam – II										
24TLU2FA		French-II										
Part- II												
24ELU2EA	Language-II	English– II	4	-	1	5	60	3	25	75	100	3
Part-III												
24FNU2CA	Core-III	Principles of Nutrition	4	1	1	6	72	3	25	75	100	4
24FNU2CP	Core Practical-II	Qualitative Nutrient Analysis		-	5	5	60	3	40	60	100	2
24CEU2IM	IDC Practical-I	Applied Chemistry	3	-	4	7	84	3	40	60	100	5
Part-IV												
24TLU2AA/ 24TLU2AB/ 24CRU2AA	AECC-II	Basic Tamil/ Advance Tamil /Human Rights and Women's Rights	2	-	-	2	24	-	50	-	50	2
Part-V												
24FNU2XA	Extension Activity	NSS/NCC/YRC/ RRC/Yoga/Sports							50	-	50	1
Total			**17**	**2**	**11**	**30**	**360**				**600**	**20**

Course Code	Course Category	Course Name	L	T	P	Duration		Exam (h)	Max Marks			Credits
						Week	Total		CIA	ESE	Total	
Third Semester												
Part-I												
24TLU3TA	Language-I	Tamil-III	3	1	-	4	48	3	25	75	100	3
24TLU3HA		Hindi-III										
24TLU3MA		Malayalam – III										
24TLU3FA		French-III										
Part- II												
24ELU3EA	Language-II	English–III	3	1	-	4	48	3	25	75	100	3
Part-III												
24FNU3CA	Core -IV	Nutrition Through Life Span	4	1	-	5	60	3	25	75	100	4
24FNU3CB	Core -V	Human Physiology	3	1	-	4	48	3	25	75	100	3
24FNU3CC	Core -VI	Institutional Management	3	1	-	4	48	3	25	75	100	3
24FNU3CP	Core Practical-III	Nutrition Through Life Span	-	-	4	4	48	3	40	60	100	2
24BCU3IA	IDC-III	Biochemistry - I	3	-	-	3	36	3	25	75	100	3
24FNU3SA	SEC- I	Basics of Research Techniques-Computer Application	2	-	-	2	24	3	25	75	100	2
Total			**21**	**5**	**4**	**30**	**360**				**800**	**23**

Course Code	Course Category	Course Name	L	T	P	Duration		Exam (h)	Max Marks			Credits
						Week	Total		CIA	ESE	Total	
Fourth Semester												
Part-I												
24TLU4TA	Language-I	Tamil-IV	3	1	-	4	48	3	25	75	100	3
24TLU4HA		Hindi-IV										
24TLU4MA		Malayalam – IV										
24TLU4FA		French-IV										
Part- II												
24ELU4EA	Language-II	English–IV	3	1	-	4	48	3	25	75	100	3
Part-III												
24FNU4CA	Core-VII	Dietetics	4	-	-	4	48	3	25	75	100	4
24FNU4CP	Core Practical-IV	Dietetics	-	-	4	4	48	3	40	60	100	2
24FNU4CB	Core - VIII	Perspective Psychology	4	-	-	4	48	3	25	75	100	4
24BCU4IA	IDC-IV	Biochemistry -II	3	-	-	3	36	3	25	75	100	3
24BCU4IP	IDC Practical-II	Biochemistry	-	-	4	4	48	3	40	60	100	2
24FNU4SA	SEC-II	Functional Foods	2	1	-	3	36	3	25	75	100	2
Total			**19**	**3**	**8**	**30**	**360**				**800**	**23**

Course Code	Course Category	Course Name	L	T	P	Duration		Exam (h)	Max Marks			Credits
						Week	Total		CIA	ESE	Total	
Fifth Semester												
Part-III												
24FNU5CA	Core-IX	Food Preservation	4	-	-	4	48	3	25	75	100	4
24FNU5CB	Core-X	Fundamentals of Food Microbiology	4	-	-	4	48	3	25	75	100	4
24FNU5CC	Core- XI	Food Processing	4	-	-	4	48	3	25	75	100	4
24FNU5CD	Core - XII	Food Safety and Quality Control	4	-	-	4	48	3	25	75	100	4
24FNU5CV	Core-XIII	Project work and viva voce	-	-	-			3	25	75	100	2
24FNU5CP	Core Practical -V	Food Preservation	-	-	4	4	48	3	40	60	100	2
24FNU5SP	SEC-III	Quantitative Nutrient Analysis	-	-	4	4	48	3	40	60	100	2
24FNU5DA	DSE-I	Post-Harvest Technology	4	-	-	4	48	3	25	75	100	4
24FNU5DB		Clinical Nutrition										
24FNU5DC		Food Commodities										
24FNU5TA	IT	IndustrialTraining	-	-	-			3	40	60	100	2
Part – IV												
	GE		2	-	-	2	24	3	50	-	50	2
Total			**22**	**-**	**8**	**30**	**360**				**950**	**30**

CourseCode	Course Category	Course Name	L	T	P	Duration		Exam	Max Marks			Credits
						Week	Total	(h)	CIA	ESE	Total	
Sixth Semester												
Part-III												
24FNU6CA	Core-XIV	Community Nutrition	4	-	-	4	48	3	25	75	100	4
24FNU6CB	Core-XV	Food Product Development & Marketing	4	-	-	4	48	3	25	75	100	4
24FNU6CP	Core Practical-VI	Community Nutrition	-	-	5	5	60	3	40	60	100	2
24FNU6CQ	Core Practical -VII	Food Product Development	-	-	5	5	60	3	40	60	100	2
24FNU6SA	SEC-IV	Indigenous Foods	2	-	-	2	24	3	25	75	100	2
24FNU6DA	DSE-II	Food Handling and Storage	4	-	-	4	48	3	25	75	100	4
24FNU6DB		Nutrition Care Process										
24FNU6DC		Unit operation in Food Industry										
24FNU6DD	DSE-III	Basics of Food Packaging	4	-	-	4	48	3	25	75	100	4
24FNU6DE		Diet Counseling										
24FNU6DF		Entrepreneurship In Food Industry										
Part-IV												
24BIU6AA	AECC-III	Innovation and IPR	2	-	-	2	24	-	50	-	50	2
Total			**20**	-	10	**30**	**360**				**750**	**24**
		Grand Total									**4600**	**142**

BoS Chairman/HoD
Department of Food Science & Nutrition
Dr. N. G. P. Arts and Science College
Coimbatore – 641 048

Dr.N.G.P. Arts and Science College
APPROVED
BoS-I 7th 05-04-24 | AC-17th 17-04-24 | GB -

Academic Council CHAIRMAN Dr.N.G.P. Arts and Science College

DISCIPLINE SPECIFIC ELECTIVE

Students shall select the desired course of their choice in the listed elective course during Semesters V & VI

Semester V (Elective I)

List of Elective Courses

S. No.	Course Code	Name of the Course
1	24FNU5DA	Post-Harvest Technology
2	24FNU5DB	Clinical Nutrition
3	24FNU5DC	Food Commodities

Semester VI (Elective II)

List of Elective Courses

S. No.	Course Code	Name of the Course
1	24FNU6DA	Food Handling andstorage
2	24FNU6DB	Nutrition CareProcess
3	24FNU6DC	Unit operation in Food Industry

Semester VI (Elective III)

List of Elective Courses

S. No.	Course Code	Name of the Course
1	24FNU6DD	Basics of FoodPackaging
2	24FNU6DE	Diet Counseling
3	24FNU6DF	Entrepreneurship In Food Industry

GENERIC ELECTIVE COURSE (GE)

The following are the course offered under Generic Elective Course

Semester V

S. No.	Course Code	Course Name
1	24FNU5GA	Food Preservation

EXTRA CREDIT COURSES

The following are the courses offered under self-study to earn extra credits:

Semester III

S. No.	Course Code	Course Name
1	24FNUSSA	Food Fortification
2	24FNUSSB	Nutrition Education

Semester – I TAMIL - I							
Semester	**Course Code**	**Course Name**	**Category**	**L**	**T**	**P**	**Credits**
I	24TLU1TA	TAMIL - I	LANGUAGE- I	48	12	-	3

Preamble	மொழிப்பாடங்களின் வாயிலாக தமிழரின் பண்பாடுநாகரீகம், பகுத்தறிவு ஆகியவற்றை அறியச் செய்தல்
	கலை மற்றும் மரபுகளை அறியச் செய்தல்
	மாணவர்களின் படைப்பாக்கத்திறன்களை ஊக்குவித்தல்
Prerequisite	தமிழ் மொழி எழுதி படிக்கும் திறன்

Course Outcomes (Cos)		
CO.No.	**Course Outcomes (COs) Statement**	**Bloom's Tax anomy Knowledge Level**
CO1	வாழ்க்கைத்திறன்கள் (Life Skills)- மாணவர்களின் செயலாக்கத்திறனை ஊக்குவித்தல்	K2
CO2	மதிப்புக்கல்வி (Attitude and Value education)	K3
CO3	பாடஇணைச்செயல்பாடுகள் (Co-curricular activities)	K3
CO4	சூழலியல் ஆக்கம் (Ecology)	K4
CO5	மொழி அறிவு (Tamil knowledge)	K4

Mapping with Program Outcomes:					
Cos / POs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1		✓	✓		✓
CO2	✓			✓	
CO3		✓			✓
CO4			✓		
CO5	✓			✓	✓

Syllabus:

Unit	Content	Hrs	Resources
1	**மறுமலர்ச்சிக் கவிதைகள்** 1. இலக்கிய வரலாறு -மறுமலர்ச்சிக் கவிஞர்களின்தமிழ்ப்பணிகள் 2. பாரததேசம்- பாரதியார் 3. படி - பாரதிதாசன் 4. தமிழரின் பெருமை- நாமக்கல்கவிஞர் 5. தமிழ்க் கொலை புரியாதீர்- புலவர் குழந்தை 6. **திரைத்தமிழ்** அ) 'விஞ்ஞானத்த வளர்க்கப் போறண்டி' எனத்தொடங்கும் பாடல் - உடுமலை நாராயண கவி ஆ) 'சும்மா கிடந்த நிலத்தை' எனத்தொடங்கும் பாடல் - பட்டுக்கோட்டை கல்யாண சுந்தரனார் இ) 'சமரசம் உலாவும் இடமே' எனத்தொடங்கும் பாடல் -மருதகாசி ஈ) 'உன்னை அறிந்தால்' எனத்தொடங்கும் பாடல்- கண்ணதாசன்	13	தமிழ்மொழிப் பாடம் முதற்பருவம் 2024-2025 https://www.youtube.com/watch?v=Up55uhkk9zI
2	**புதுக்கவிதைகள்** 1. இலக்கிய வரலாறு- புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும் 2. கடமையைச் செய்- மீரா 3. ஓடு ஓடு சங்கிலி - சிற்பி பாலசுப்பிரமணியம் 4. ஒப்பிலாத சமுதாயம் - அப்துல் ரகுமான் 5. மரங்கள் - மு.மேத்தா 6. கரிக்கிறது தாய்ப்பால்- ஆரூர் தமிழ்நாடன் 7. ஐந்தாம் வகுப்பு 'அ' பிரிவு - நா. முத்துக்குமார் 8. ஹைகூ கவிதைகள் - 10 கவிதைகள்	13	தமிழ்மொழிப் பாடம் முதற்பருவம் 2024-2025 https://www.youtube.com/watch?v=dX9ZaNJMaco
3	**பெண்ணியம்** 1. தொலைந்து போனேன் - தாமரை 2. நீரில் அலையும் முகம் - அ. வெண்ணிலா 3. தற்காத்தல் - பொன்மணி வைரமுத்து 4. ஏனிந்த வித்தியாசங்கள் ? - மல்லிகா 5. புதையுண்ட வாழ்க்கை - சுகந்தி சுப்ரமணியன்	10	தமிழ்மொழிப்பாடம் முதற்பருவம் 2024-2025 https://www.youtube.com/watch?v=DLabokqWEdg
4	1.இலக்கிய வரலாறு-சிறுகதையின் தோற்றமும் வளர்ச்சியும் 2. கனகாம்பரம்- கு.ப.ராஜகோபாலன் 3. கடிதம்- புதுமைப்பித்தன்	14	தமிழ்மொழிப் பாடம் முதற்பருவம்

	4. பொம்மை - ஜெயகாந்தன் 5. காய்ச்சமரம் - கி. ராஜநாராயணன் 6. காட்டில் ஒருமான்- அம்பை 7.வேட்கை - சூர்யகாந்தன்		2024-2025 https://www.youtube.com/watch?v=78u7iTN3OU8
5	**பயிற்சிப் பகுதி** **அ. இலக்கணம்** 1. வல்லின ஒற்று மிகும், மிகா இடங்கள் - ஒற்றுப்பிழை நீக்கிஎழுதுதல் 2. ர,ற-ல,ழ,ள - ண,ந,னவேறுபாடு - ஒலிப்பு நெறி, சொற்பொருள் வேறுபாடு அறிதல் **ஆ. படைப்பாக்கம்** 1. கவிதை- எழுதுதல் (15 வரிகள் முதல் 30 வரிகள் வரை) 2.சிறுகதை - எழுதுதல் (குறைந்தது 3 பக்கங்கள்)	10	தமிழ்மொழிப் பாடம் முதற்பருவம் 2024-2025 https://www.youtube.com/watch?v=B3wfM0QL6N8 https://www.youtube.com/watch?v=FchTlqAtwBU https://www.youtube.com/watch?v=gCP3gC-JQU4 https://www.youtube.com/watch?v=p9QOHD12Yeo
	Total	60	

Text book	1.	தமிழ் மொழிப்பாடம் – 2024-2025தொகுப்பு: தமிழ்த்துறை, டாக்டர்என்.ஜி.பி. கலைஅறிவியல்கல்லூரி, கோயம்புத்தூர் – 641048.
Reference Books	1.	பேராசிரியர் புலவர் சோம. இளவரசு, தமிழ் இலக்கிய வரலாறு, எட்டாம் பதிப்பு – 2024, மணிவாசகர் பதிப்பகம், சென்னை – 600 108.
	2.	பேராசிரியர் முனைவர் பாக்கியமேரி, முதற் பதிப்பு – 2023, இலக்கணம், இலக்கியவரலாறு , மொழித்திறன் – பூவேந்தன் பதிப்பகம், சென்னை – 600 004.

Journal and Magazines	இலக்கியஇதழ்கள்
E-Resources and Website	https://www.tamilvu.org

Learning Method	Lecture/ Tutorial / Student Seminar/GD/Assignment

Focus of the Course	Skill Development / Employability

Semester – I HINDI – I							
Semester	**Course Code**	**Course Name**	**Category**	**L**	**T**	**P**	**Credits**
I	24TLU1HA	HINDI – I	LANGUAGE- I	48	12	-	3

Preamble	The writing ability and develop reading skill
	The various concepts and techniques for criticizing literature
	The techniques for expansion of ideas and translation process
Prerequisite	To understand the language Hindi for communication

Course Outcomes (Cos)		
CO. No.	**Course Outcomes (COs) Statement**	**Bloom's Tax anomy Knowledge Level**
CO1	Learn the fundamentals of novels and stories	K2
CO2	Understand the principles of translation work	K3
CO3	Expose the knowledge writing critical views on fiction	K3
CO4	Build creative ability	K3
CO5	Apply the power of creative reading	K4

Mapping with Program Outcomes:					
Cos / POs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1		✓	✓		✓
CO2	✓			✓	
CO3		✓			✓
CO4			✓		
CO5	✓			✓	✓

Syllabus:

Unit	Content	Hrs	Resources
1	गद्य – नूतनगद्यसंग्रह (जयप्रकाश)पाठ1- रजियापाठ2- मक्रीलपाठ3- बहतापानीनिर्मला पाठ4- राष्ट्रपितामहात्मागाँधी	13	Text Book
2	कहानीकुंज- डॉवी.पी. 'अमिताभ'(पाठ 1-4)	13	Text Book
3	व्याकरण : शब्दविचार (संज्ञा, सर्वनाम,विशेषण)	12	Text Book
4	अनुच्छेदलेखन	12	Text Book
5	अनुवादअभ्यास-III (केवलअंग्रेजीसेहिन्दीमें) (पाठ1 to 10)	10	Text Book
	Total	60	

Text books	1.	प्रकाशक: सुमित्रप्रकाशन 204 लीलाअपार्ट्मेंट्स, 15 हेस्टिंग्सरोड'अशोकनगरइलाहाबाद-211001
	2.	प्रकाशक: गोविन्दप्रकाशनसदरबाजार, मथुराउत्तरप्रदेश-281001
	3.	पुस्तक: व्याकरण प्रदिप – रामदेवप्रकाशक: हिन्दी भवन 36 टेगोर नगर इलाहाबाद-211024
	4.	पुस्तक: व्याकरण प्रदिप – रामदेवप्रकाशक: हिन्दी भवन 36 इलाहाबाद-211024
	5.	प्रकाशक: दक्षिण भारत प्रचार सभा चेनैई -17
Reference Books		-

Journal and Magazines	-
E-Resources and Website	-

Learning Method	Lecture/ Tutorial / Student Seminar/GD/Assignment

Focus of the Course	Skill Development / Employability

Semester – I MALAYALAM- I							
Semester	**Course Code**	**Course Name**	**Category**	**L**	**T**	**P**	**Credits**
I	24TLU1MA	MALAYALAM- I	LANGUAGE- I	48	12	-	3

Preamble	The writing ability and develop reading skill
	The various concepts and techniques for criticizing literature, to learn the techniques for expansion of ideas and translation process
	The competency in translating simple Malayalam sentences into English and vice versa
Prerequisite	To understand the language Malayalam for communication

Course Outcomes (Cos)		
CO. No.	**Course Outcomes (COs) Statement**	**Bloom's Tax anomy Knowledge Level**
CO1	Learn the fundamentals of novels and stories	K2
CO2	Understand the principles of translation work	K3
CO3	Expose the knowledge writing critical views on fiction	K3
CO4	Apply creative ability	K3
CO5	Build the power of creative reading	K4

Mapping with Program Outcomes:					
Cos / POs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1		✓	✓		✓
CO2	✓			✓	
CO3		✓			✓
CO4			✓		
CO5	✓			✓	✓

Syllabus:

Unit	Content	Hrs	Resources
1	**Novel** PathummayudeAdu	14	Text book
2	**Novel** PathummayudeAdu	10	Text book
3	**Short Story** Nalinakanthi	14	Text book
4	**Short Story** Nalinakanthi	10	Text book
5	**Practical Application** Expansion of ideas, General Essay and Translation	12	Text book
	Total	60	

Text books	1.	Vaikkam Muhammed Basheer, "PathummayudeAdu" (NOVEL), DC Books & Kottayam
	2.	T.Padmanabhan, "Nalinakanthi" (Short Story), DC Books & Kottayam.
Reference Books	1.	MalayalaNovel Sahithyam.
	2.	MalayalaCherukathaInnale Innu.

Journal and Magazines	-
E-Resources and Website	-

Learning Method	Lecture/ Tutorial / Student Seminar/GD/Assignment

Focus of the Course	Skill Development / Employability

Semester – I FRENCH - I							
Semester	**Course Code**	**Course Name**	**Category**	**L**	**T**	**P**	**Credits**
I	24TLU1FA	FRENCH - I	LANGUAGE- I	48	12	-	3

Preamble	The competence in general communication skills with oral, written and comprehension & expression
	The culture, life style and the civilization aspects of the French people as well as of France
	The students to acquire competency in translating simple French sentences into English and vice versa
Prerequisite	To understand the language French for communication

Course Outcomes (Cos)		
CO. No.	**Course Outcomes (COs) Statement**	**Bloom's Tax anomy Knowledge Level**
CO1	Learn the Basic verbs, numbers and accents	K2
CO2	Apply the adjectives and the classroom environment in France	K3
CO3	Select the Plural, Articles and the Hobbies	K3
CO4	Measure the Cultural Activity in France	K3
CO5	Evaluate the sentiments, life style of the French people and the usage of the conditional tense	K4

Mapping with Program Outcomes:					
Cos / POs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1		✓	✓		✓
CO2	✓			✓	
CO3		✓			✓
CO4			✓		
CO5	✓			✓	✓

Syllabus:

Unit	Content			Hrs	Resources
1	**Objectifs de Communication**	**Tâche**	**Activités de réception et de production orale**	14	Text book Salut I Page 10
	• Saluer • Enter en contact • avec quelqu'un. • Se presenter. • S'excuser	En cours de cuisine, premiers contacts avec les members d'un groupe	• Comprendre des personnes qui se saluent. • Ēchanger pour entrer en contact, se présenter, saluer, s'excuser. • Communiquer avec *tu* ou *vous*. • Comprendre les consignes de classe • Ēpeler son nom et son prénom. Computer jusqu'à 10		
2	• Demander de se presenter. • Présenter quelqu'un	Dans la classe de français, se presenter et remplir une fiche pour le professeur.	• Comprendre les informations essentielles dans un échange en milieu professionnel. Ēchanger pour se presenteret présenterquelqu'un	12	Text book Enchanté I Page 20
3	• Exprimers es gouts.	Dans un café, participer à une soirée de rencontres rapides et remplir de taches d'appréciation	• Dans une soirée de recontresrapid comprendre des personnes qui échangent sur elles et sur leurs goût • Comprendre une personne qui parler des goûts de quelqu'un d'autre	14	Text book J'adore I Page 30
4	Demander à quelqu'un de faire quelque chose. Demander poliment. Parler d'actions passes. Tu veux bien?	Organiser un programme d'activités pour accueillir une personne importante	Comprendre une personne demande un service à quelqu'un. Demanderà quelqu'un de faire quelque chose. • Imaginer et raconter au passé à partir de situations dessinées.	10	Text book Autoévaluation du module I Page 40 – Préparation au DELF A1 page 42 Tu veux bien page 46
5	**Practical Application** Make in Own Sentences			10	-
	Total			60	

Text book	1.	Regine Merieux, Yves Loiseau. 2012. LATITUDES – 1: Méthode de français (Page No: 9-55) Les Editions Dider, Paris, ImprimeenRoumanie par Canale en Janvier
Reference Book	1.	-

Journal and Magazines	-
E-Resources and Website	-

Learning Method	Lecture/ Tutorial / Student Seminar/GD/Assignment

Focus of the Course	Skill Development / Employability

Semester – I

ENGLISH – I

Semester	Course Code	Course Name	Category	L	T	P	Credits
I	24ELU1EA	ENGLISH - I	LANGUAGE- II	48	-	12	3

Preamble	This course has been designed for students to learn and understand • the effect of dialogue, imagery and varied genres • any spontaneous spoken discourse and respond to them with proper sentence structure • the transactional concept of English language
Prerequisite	Basic comprehension of Language Skills

Course Outcomes (COs)

CO Number	Course Outcomes (COs) Statement	Bloom'sTaxonomy Knowledge Level
CO1	Identify the various aspects in poetry	K2
CO2	Infer linguistic and non-linguistic features of the context for understanding and interpreting	K3
CO3	Construct sentences and convey messages effectively in real life situations	K3
CO4	Apply different reading strategies with varying speed	K3
CO5	Prepare modules with their own ideas and present them coherently in a grammatically correct form	K3

Mapping with Program Outcomes:

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

Syllabus

Unit	Content	Hours	E-Contents / Resources
I	Genre Studies Mathew Arnold: Dover Beach- Author's Biography- title indications- outline- paraphrasing the poem- context of poem- form- poetic devices- enjambment- techniques– Annotations Niyi Osundare: Our Earth Will Not Die- Author's Biography- title indications-outline- paraphrasing the poem- context of poem- form- poetic devices- enjambment- techniques– Annotations Charles Lamb: Christ's Hospital Five and Thirty Years Ago- Author's biography- Narrative structure- Exploration of the text- passage analysis- insight of ideas- cohesion and context- style- language techniques- Annotation James Hanson: A Famed Life - Ten Minute Comedy for Two Women - Author's Biography- Plot Summary- Detailed summary and Analysis- Themes- Important Quotations- Characters- Description - analysis- Terms- Symbols- Critical analysis Sheila Nayampalli Baruna: Alone - Author's Biography- narrative structure- passage analysis- insight of ideas- cohesion and context- style- language techniques	12	Text Book
II	Listening Skills Listening vs. hearing- Types of listening, Tips to enhance Listening Skills, Non-verbal and Verbal signs of active listening- Comprehensive Listening- Listening to pre-recorded audios on speeches, interviews and conversations- Listening Activities- Listening and responding to complaints (formal situation), Listening to problems and offering solutions (informal)	13	Text Book
III	Speaking Skills Formal occasions- Introducing oneself, Introducing others, Enquiries and Seeking permission, neural speaking -Making short presentations- Informal occasions- Requests, Offering help, Congratulating, Farewell party, graduation speech- Giving instructions to do a task and to use a device, Giving and asking directions	11	Text Book
IV	Reading Skills Study Skills: Skimming and Scanning- Reading different kinds of texts- Types of reading-Developing a good reading speed, reading aloud, Referencing skill- Word	12	Text Book

	Power (Denotation and Connotation) - Reading comprehension, Data interpretation –Charts, Graphs, Advertisements - Cognitive Skills- Inference Making - Interpretation		
V	Writing Skills Sentence patterns, Note- making and note taking- Strategies - Paragraph writing: Structure and Principles - Academic Writing - Formal and Informal Letters, Report, Book /Movie Review - Infographics Writing	12	Text Book
	Total	60	

Text Books	**1.**	https://www.poetryfoundation.org/poems/43588/dover-beach.
	2.	https://portal.abuad.edu.ng/lecturer/documents/1586771577our_earth_will_not_die.doc
	3.	http://l-adam-mekler.com/chucktwo.pdf.
	4.	https://offthewallplays.com/wp-content/uploads/2017/04/1_pdfsam_A-famed-life-full-with-title-page.pdf.
	5.	Nation, I. S. P and Jonathan Newton. 2009. Teaching ESL/EFL Listening and Speaking. Routledge, New York, United States of America.
	6.	Prabha, Dr. R. Vithya& S. Nithya Devi. 2019. Sparkle. (1st Edn.) McGraw - Hill Education, Chennai, India.
Reference Books	**1.**	Rudzka, Brygida -Ostyn, 2003. Word Power: Phrasal Verbs and Compounds: A Cognitive Approach, Mouton de Gruyter, New York, United States of America..
	2.	Swales, John M. & Feak, Christine B. 2012. Academic Writing for Graduate Students: Essential Tasks and Skills, University of Michigan Press, Michigan, United States of America.
	3.	Sen, Leena. 2007. Communication Skills, Second Edition, Prentice Hall India Learning Private Limited, New Delhi, India.
	4.	O. Greene, John. 2021. Essentials of Communication Skill and Skill Enhancement: A Primer for Students and Professionals, Routledge publishers, United Kingdom.

Journal and Magazines	https://academic.oup.com/journals
E-Resources and Website	https://learnenglish.britishcouncil.org/ https://www.cambridgeenglish.org/learning-english/activities-for-learners/

Learning Method	Chalk and Talk/ Assignment/Seminar/ Interactive session

Focus of the Course	Skill Development/ Employability

Semester – I

CORE - I : FUNDAMENTALS OF FOOD SCIENCE

Semester	Course Code	Course Name	Category	L	T	P	Credits
I	24FNU1CA	FUNDAMENTALS OF FOOD SCIENCE	CORE	48	12	-	4

Preamble	This course has been designed for students to learn and understand • Principles and various methods of cooking foods • composition of various foodstuffs • apply food science knowledge to describe functions of ingredients in food
Prerequisite	Basic knowledge on Food Science

Course Outcomes (COs)

CO Number	Course Outcomes (COs) Statement	Bloom's Taxonomy Knowledge Level
CO1	Describe the various sustainable food practices like energy and nutrient conservation methods	K3
CO2	Interpret the physical , chemical changes occurring in the nutritive constituents of different foods during various cooking processes	K2
CO3	Demonstrate the methods of beverage preparation. Outline medicinal uses of Spices and Condiments	K3
CO4	Illustrate milk processing Identify uses, methods and experiment with effects of cooking egg	K3
CO5	Analyze and understand the principles in cooking and its effect on sensory attributes and nutrients	K4

Mapping with Program Outcomes:

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

Syllabus

Unit	Content	Hours	E-Contents / Resources
I	Food Groups &Cereal Introduction to Food Science: Food groups- 4 (ICMR), 5, 7 and 11, functional food groups-energy yielding, body building protective and regulatory foods (only sources), food pyramid and my plate. Methods of cooking: Objectives of cooking. Cooking methods – Dry heat and moist heat methods, microwave and solar cooking Cereals: Structure and composition of rice and wheat, parboiled rice, Fermentation of Cereal- Mechanism of fermentation and changes occurring during fermentation. Indian fermented foods (idly, dhokla, and bread), role of cereals in cookery Millets: Classification, Nutritive value of Ragi, Jowar and Maize.	12	Textbook
II	Pulses, Fruits and Vegetables Pulses and legumes: Varieties of pulses, legumes and grams, composition, nutritive value, germination and malting of grain, anti-nutritional factors, cooking quality of pulses. Fruits: Classification, composition and nutritive value, changes during ripening, enzymatic browning and its prevention methods. Vegetables: Classification, composition and nutritive value, selection and preparation for cooking, changes and loss of nutrients during cooking	12	Textbook
III	Beverages, Fats and Spices Beverages - Classification, milk-based beverages-methods of preparing tea and coffee, fruit-based beverages, malted beverages and carbonated non–alcoholic beverages. Fats and Oils: Types of oils, function of fats and oils, fat substitutes Spices and Condiments: Functions and medicinal values of Cumin, Pepper, Fenugreek, Cinnamon, Cloves, Cardamom, Onion, Turmeric, Ginger and Garlic spices, active principle of spices. Herbs – Basil, Wheat grass, Aloevera, Oregano – An overview	12	Textbook

	Difference test-paired comparison and duo –trio test, Rating test –ranking, hedonic, composite scoring test.		
IV	Milk and Egg Milk – Composition and nutritive value, kinds of milk, physical properties of milk, pasteurization and homogenization of milk, changes in milk during heat processing, preparation of fermented (cheese) and non-fermented (milk powder), role of milk and milk products Egg - Structure, composition, selection, nutritive value, anti-nutrients, Effect of cooking on eggs. Evaluation of egg quality uses of egg in cookery, foam formation and factors affecting foam formation	12	Textbook
V	Non-Vegetarian Foods 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	12	Textbook
	Total	**60**	

Text Books	**1.**	Srilakshmi B, 2015, "Food Science", 3rd Edition, New Age International, New Delhi
	2.	ShakunthalaManay and Shadakhraswamy M., 2008, "Food Facts and Principles ", Third Edition, New Age International Publishers, New Delhi
Reference Books	**1.**	Mudambi .R. Sumathiand Rajagopal M.V, 2008, "Food Science, New Age International Publishers, New Delhi.
	2.	Thangam E. Philip, 1998, "Modern Cookery", Volume II, Orient Longman, II Edition, Hyderabad

Journal and Magazines	International Journal of Food Science
E-Resources and Website	www.fao.org www.wfp.org

Learning Method	Chalk and Talk / Interactive session/ Assignment

Focus of the Course	Skill Development/ Employability/ Entrepreneurial Development

Semester – I

CORE - II: CHEMISTRY OF FOODS

Semester	Course Code	Course Name	Category	L	T	P	Credits
I	24FNU1CB	CHEMISTRY OF FOODS	CORE	48	12	-	4

Preamble	This course has been designed for students to learn and understand • Composition and chemistry involved in properties of foods. • Physico chemical changes in foods during preparation. • Principles that underly the biochemical - enzymatic techniques in food analysis and instrumentation.
Prerequisite	To learn the chemical and physical properties of foods.

Course Outcomes (COs)

CO Number	Course Outcomes (COs) Statement	Bloom's Taxonomy Knowledge Level
CO1	Emphasize the physico - chemical properties of foods - water activity, types of water, colloidal system.	K1
CO2	Enumerate the changes in the properties of starch, stages of stages of sugar cookery and crystallization.	K2
CO3	Endetail on changes in wheat proteins, pulse proteins, milk proteins, egg proteins and vegetable proteins	K3
CO4	Determine the physical and chemical properties of fats and oils, changes in fat during cooking.	K4
CO5	Distinguish the properties of enzymes, pigments, pectins , spices and condiments.	K5

Mapping with Program Outcomes:

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

Syllabus

Unit	Content	Hours	E-Contents / Resources
I	Physico-chemical Properties of Foods Moisture in foods, Hydrogen Bonding ,Structure of water and Ice, States of water, Types of Water - Free Water, Bound Water, Entrapped water, water Activity in Foods - Measurement and control of Water Activity, Determination of Moisture Content in Foods, Dispersion, Sols, Gels, Foams, Colloids and Emulsions.	12	Textbook
II	Chemistry of Starch and Sugars Components of Starch, Swelling of Starch Granules, Gel Formation, Factors affecting Gel Formation, Retro gradation, Syneresis, Dextrinization and Hydrolysis of Starch. Effect of Sugar, Acid, Alkali, and Surface Active Agents on Starch. Sugar - Physical and Chemical Properties of Sugars - Hygroscopicity, Solubility , Sweetness, Chemical Properties - Hydrolysis, Caramelization and Maillard Reaction - Non Enzymatic Browning, Types of Candies, Crystallization, Factors affecting Crystallization of Sugar, Sugar products and Stages of Sugar Cookery.	12	Textbook
III	Chemistry of Proteins Chemistry of Wheat Proteins, Structure, Gluten Formation, Factors affecting gluten formation, Effect of Soaking, Fermentation and Germination of Pulse Proteins, Malting of Pulse Proteins, Protein Denaturation, Properties of Egg Protein, Chemistry of Milk Protein, Protein Changes in Milk, Egg and Meat Proteins during action of heat, Changes in Vegetable Proteins due to Action of Acid, Heat and Alkali.	12	Textbook
IV	Chemistry of Fats and Oils Physical Properties of Fats and Oils - Melting Points, Plasticity and Isomerisation Chemical Properties of Fats and Oils - Rancidity and Polymerization, Modification of Fats - Hydrogenation, Winterization, Emulsification, Tenderization Decomposition of Triglycerides, Shortening Power of Fats, Changes in Fats and Oils during Heating, Smoking Point of oil, Factors Affecting Fat Absorption in Food, Fat Deterioration, Fat Replacers.	12	Textbook
V	Chemistry of Pectic Substances , Plant Pigments, Spices and Condiments Enzymes -Definition, Chemical Classification, Properties of Enzymes, Importance of Enzymes, Enzymatic	12	Textbook

	Browning, Pectins and Phenolic Compounds. Pigments - Types of Plant Pigments - Water and Fat Soluble Pigments, Properties and Food Sources. Properties and Active Principles of Spices and Condiments. Flavour Enhancers.		
	Total	**60**	

Text Books	**1.**	Usha Chandrasekar, 2002 "Food Science and Applications in Indian Cookery", Phoenix Publishing House PVT LTD., New Delhi.
	2.	Lillian Hoagland Meyer, 2004, "Food Chemistry "CBS Publishers & Distributors Pvt. Ltd., Delhi.
Reference Books	**1.**	Srilakshmi, 2021, "Food Science", Eighth Edition, New Age International Publishers, New Delhi.
	2.	Shakunthalamanay and Shadakhraswamy, 2008, "Food Facts and Principles" Third Edition, New Age International Publishers, New Delhi.
	3.	Belitz H.D. Grosch W, Schieberle. P, 2009, "Food Chemistry" Springer Publishers, Berlin.
	4.	Alex V Ramani, 2002, "Food Chemistry" MJP Publishers, Chennai.
	5.	Mudambi, R. Sumathi and Rajagopal M.V. 2008, "Food Science" New Age International Publishers, New Delhi.

Journal and Magazines	https://pubs.acs.org/journal/joceah https://www.sciencedirect.com/journal/food-chemistry
E-Resources and Website	http://foodb.ca

Learning Method	Chalk and Talk/ Interactive session /Assignment

Focus of the Course	Skill Development/ Employability

24FNU1CP	FOOD SCIENCE	SEMESTER I

Total Credits: 2
Total Instructions Hours: 60 h

S.No	Contents
1	Food group - Grouping of foods, discussion on nutritive value.
2	Measuring ingredients - Methods of measuring different types of foods – grains, flours and liquids, Determination of edible portion percentage.
3	Moist heat methods - Boiling, Simmering, Steaming and Pressure cooking.
4	Dry heat methods - Saueting, braising, baking. Fat as a medium for cooking - shallow and deep fat frying.
5	Cereals - Methods of cooking fine and coarse cereals. Examination of starch. Common preparation with Cereals.
6	Pulses - Cooking of soaked, unsoaked pulses, germination and fermentation of pulses. Common preparation with pulses.
7	Vegetables - Principles of cooking vegetables, Experimental cookery using vegetables pigments of different colors and textures. Common preparation with vegetables.
8	Preparation of beverages, soups and salads.
9	Fruits - Prevention of darkening in fruits and vegetables. Fruit salad, Common preparation with Fruits.
10	Milk - Experimental cookery – cheese curry and cooking vegetables in milk, Coagulation of milk proteins, preparation of paneer and curd common preparations with milk.
11	Fleshy foods - Fish, meat and poultry - preparations.
12	Experimental cookery of Egg - boiled egg, poached egg. Common preparations with egg.

List of DBT Experiments

1	Determination of juiciness of meat.
2	Determination of over boiling of eggs and Formation of Hydrogen Sulphide.

Note: Out of 12 - 10 Mandatory

Reference Books	**1.**	Mohini Sethi, Eram. S. Rao, 2021, "Food Science - Experiments and Applications," CBS Publishers, India.
	2.	Usha Chandrasekhar, 2002, "Food Science and its Applications in Indian Cookery, Phoenix Publishing House PVT. LTD., New Delhi.

Semester - I
IDC 1: CHEMISTRY

Semester	Course Code	Course Name	Category	L	T	P	Credits
I	24CEU1IA	CHEMISTRY	IDC	36	-	-	3

Preamble	This course has been designed for students to learn and understand • The concept of expressing concentration of solutions • The concepts of chemical kinetics and catalysis • About the bonding and basic organic chemistry
Prerequisite	Knowledge on Basic Chemistry

Course Outcomes (COs)

CO Number	Course Outcomes (COs) Statement	Bloom's Taxonomy Knowledge Level
CO1	Understand the concept of concentration of the solutions	K2
CO2	Infer the acid and basic properties of solutions	K2
CO3	Interpret the concept of the bonding in molecules	K2
CO4	Summarize the basic concepts of the stereo chemistry	K2
CO5	Explain the Chemical kinetics and catalysis	K2

Mapping with Program Outcomes:

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

Syllabus

Unit	Content	Hours	E-Contents / Resources
I	**Solutions** Normality, molarity, molality, mole fraction, mole concept. Primary and secondary standards – Preparation of standard solutions. Principle of Volumetric analysis (with simple problems) Indicators – Theory of indicators - Ostwald and quinonoid theory	07	Text Book
II	**Acids and Bases** Acid base theories – Strength of acids and bases – Equilibrium constant and ionic constant of water- pH, pKa, pKb, Buffer solution, pH and pOH simple calculations	07	Reference Book
III	**Chemical Bonding** Types of bonding - Ionic Bond: Nature of ionic bond, factors influencing the formation of ionic bond, Covalent and coordinate bond - Molecular Orbital Theory (MO) – MO configuration of H_2, N_2, O_2 - Bond order – diamagnetism and paramagnetism	08	Text Book
IV	**Stereo Chemistry** Isomerism, Structural isomerism - Symmetry of elements (Plane, Centre and Axis of symmetry), Optical isomerism of lactic acid and tartaric acid, Enantiomers, Diastereomers – Separation of racemic mixture, Geometrical isomerism (maleic and fumaric acid). R/S and E/Z configuration assignments for simple molecules	07	NPTEL
V	**Chemical Kinetics and Catalysis** 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. Catalysis – homogenous, heterogeneous and enzyme catalysis, Industrial applications of enzyme catalysis	07	You Tube Videos
	Total	**36**	

Text Book	**1.**	Puri. B.R, Sharma. L.R and Pathania. M.S, 2017, "Principles of Physical Chemistry", 47th edition, John Wiley and Sons & USA.
Reference Books	**1.**	Lee. J.D, 2002, "A New Concise Inorganic Chemistry", 5th edition, ELBS & UK.
	2.	Jain. M.K and Sharma. S.C, 2012, "Modern Organic Chemistry", Vishal publishing Co & New Delhi.
	3.	Puri. B.R, Sharma. L.R and Kalia. K.C, 2016, "Principles of Inorganic Chemistry", Vishal Publishing & Co & New Delhi
	4.	Glasstone. S and Lewis. D, 2014, "Elements of Physical Chemistry", 2nd Edition, Macmillan Ltd, London.

Journal and Magazines	https://onlinelibrary.wiley.com/journal/10974601
E-Resources and Website	https://www.uou.ac.in/lecturenotes/science/MSCCH-17/CHEMISTRY%20LN%201%20STERIOCHEMISTRY.pdf

Learning Method	Chalk and Talk/Assignment/Seminar

Focus of the Course	Skill Development/Employability

Semester – I

AECC I: ENVIRONMENTAL STUDIES

Semester	Course Code	Course Name	Category	L	T	p	Credits
I	24MBU1AA	ENVIRONMENTAL STUDIES	AECC	24	-	-	2

Preamble	This course has been designed for students to learn and understand • Multi-disciplinary aspects of Environmental studies • Importance to conserve the biodiversity • Causes of Pollution and its control
Prerequisite	Aware the basics of environmental components

Course Outcomes (Cos)

CO Number	Course Outcomes (Cos) Statement	Bloom's Taxonomy Knowledge Level
CO1	To understand the importance of natural resources in order to conserve for the future	K1
CO2	To impart knowledge on Natural resources and its conservation	K2
CO3	To impart knowledge on Biodiversity and its conservation	K3
CO4	To create awareness on effects, causes and control of air, water, soil and noise pollution etc.,	K4
CO5	To build awareness about sustainable development and Environmental protection	K1

Mapping with Programme Outcomes

Cos/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓	✓	✓	✓	✓
CO2	✓	✓	✓	✓	✓
CO3	✓	✓	✓	✓	✓
CO4	✓	✓	✓		
CO5	✓	✓	✓	✓	✓

Syllabus

Unit	Content	Hours	E-Contents / Resources
I	Introduction to Environmental studies& Ecosystems: components of environment – atmosphere, hydrosphere, lithosphere and biosphere. Scope and importance - Energy flow in an ecosystem: food chain, food web and ecological succession.	5	Text book and Website
II	Natural Resources: Renewable and Non-renewable Resources: Land Resources and land use - Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations. Conflicts over water (international & inter-state). Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs.	5	Text book and Website
III	Biodiversity and Conservation: Global biodiversity hot spots. India as a mega-biodiversity nation; Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.	4	Text book and Website
IV	Environmental Pollution: types, causes, effects and controls; Air, water, soil, chemical and noise pollution. Nuclear hazards and human health risks. Environment Laws: Environment Protection Act; Prevention & Control of Pollution Act – Air & Water. Wildlife Protection Act; Forest Conservation Act;	5	Text book and Website
V	Environmental ethics: Role of Indian and other religions and cultures in environmental conservation. Role of Information Technology i n Environment and human health. Role of the Colleges, Teachers and Students in village adoption towards clean, green and make in villages in various aspects.	5	Text book and Website
	Total	**24**	

Text Book	1.	*Carson, R.* 2002. **Silent Spring.** *Houghton Mifflin Harcourt*
	2.	*Gadgil, M., & Guha, R.*1993. **This Fissured Land: An Ecological History of India**. *Univ. of California Press.*
Reference Books	1.	*Gleeson, B. and Low, N. (eds.)* 1999. **Global Ethics and Environment, London, Routledge**.
	2.	*Gleick, P.H.* 1993. **Water in Crisis. Pacific Institute for Studies in Dev., Environment & Security.** *Stockholm Env. Institute, Oxford Univ. Press.*
	3.	*Groom, Martha J. Gary K. Meffe, and Carl Ronald carroll.* 2006, **Principles of Conservation Biology**. *Sunderland: Sinauer Associates.*
	4.	*Grumbine, R. Edward, and Pandit, M.K.* 2013. **Threats from India's Himalaya dams. Science,** *339: 36-37.*

Journal and Magazines	https://www.hzu.edu.in/bed/E%20V%20S.pdf
E-Resource and Websites	https://www.ugc.gov.in/oldpdf/modelcurriculum/env.pdf

Learning Methods	Chalk and Talk/ Seminar/ Assignment

Focus of the Course	Skill Development/Employability/Social Awareness and Environment

BoS Chairman/HoD
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Dr.N.G.P. Arts and Science College
APPROVED
BoS- 17th 05-04-24 | AC - 17th 17-04-24 | GB -

Academic Council
CHAIRMAN
Dr.N.G.P. Arts and Science College