



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 - 641048, Tamil Nadu, India
 Web: www.drngpasc.ac.in | Email: info@drngpasc.ac.in | Phone: +91-422-2369100

Regulations 2024-25 for Undergraduate Programme (Outcome Based Education model with Choice Based Credit System)

B.Sc Microbiology Degree

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

Programme : Microbiology

Eligibility:

A pass in Higher Secondary Examination with any Academic stream or Vocational stream with Biology/Zoology/Botany /Biotechnology/Microbiology/Life Science as one of the subject 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 (Microbiology)** Degree Examination of this College after a course study of three academic years.

Programme Objectives:

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

1. To inculcate practical knowledge in correlation with the theoretical knowledge.
2. To equip the students to meet the requirements of the current technology in Microbiology.
3. To motivate and train the students in various clinical and industrial sectors.
4. To encourage students to involve in research to explore microorganisms for the betterment of mankind.



PROGRAM OUTCOMES:

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

PO Number	PO Statement
PO1	To prepare microbiologists who are competent, creative, and highly valued professionals in academia, industry and private/public sector that is capable of excelling in careers of their choice.
PO2	To impart basic knowledge on the theoretical basis of the tools and techniques and to imbibe and demonstrate the practical skills in microbiology.
PO3	To disseminate knowledge in microbiological discipline and to promote and develop competency in microbiology that have enduring value beyond the classroom.
PO4	To instill a pattern of life-long learning and to translate the potentials of microorganisms to the welfare of biosphere.
PO5	To explore the scope of various branches of microbiology to become an entrepreneur.



Credit distribution

Credit distribution for all UG programmes

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)	17	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	



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B.Sc. Microbiology (Students admitted during the AY 2024-25)

CURRICULUM
B.SC. MICROBIOLOGY
A.Y. 2024-25

Course Code	Course Category	Course Name	L	T	P	Instruction Hours		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												
24MBU1CA	Core - I	Fundamentals of Microbiology	3	-	-	3	36	3	25	75	100	3
24MBU1CB	Core - II	Cell Biology	3	-	-	3	36	3	25	75	100	3
24MBU1CP	Core Practical - I	Fundamentals of Microbiology and Cell Biology	-	-	5	5	60	6	40	60	100	2
24CLU1IA	IDC - I	Biochemistry	3	-	-	3	36	3	25	75	100	3
24CLU1IP	IDC Practical - I	Biochemistry	-	-	4	4	48	4	40	60	100	2
Part - IV												
24MBU1AA	AECC-I	Environmental Studies	2	-	-	2	24	-	50	-	50	2
Part - V												
24MBU1XA	Extension Activity	NSS/NCC/YRC/RRC/Yoga/Sports	-	-	-	-	-	-	50	-	50	1
Total			19	1	10	30	360				800	22



Course Code	Course Category	Course Name	L	T	P	Instruction Hours		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												
24MBU2CA	Core - III	Microbial Physiology	4	-	-	4	48	3	25	75	100	4
24MBU2CB	Core - IV	Bioinstrumentation	3	-	-	3	36	3	25	75	100	3
24MBU2CP	Core Practical - II	Microbial Physiology and Bioinstrumentation	-	-	5	5	60	9	40	60	100	2
24CEU2IM	IDC - II	Basic Chemistry	2	-	4	4	48	3	40	60	100	4
Part - IV												
24TLU2AA 24TLU2AB 24CRU2AA	AECC-II	Basic Tamil/ Advanced Tamil/ Human Rights and Women's Rights	2	-	-	2	24	-	50	-	50	2
Part - V												
24MBU2XA	Extension Activity	NSS/NCC/YRC / RRC/Yoga/ Sports/ Club	-	-	-	-	-	-	50	-	50	1
Total			18	2	10	30	360				700	22



Course Code	Course Category	Course Name	L	T	P	Instruction Hours		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												
24MBU3CA	Core - V	Microbial Diversity	4	1	-	5	60	3	25	75	100	4
24MBU3CB	Core - VI	Microbial Genetics	3	1	-	4	48	3	25	75	100	3
24MBU3CP	Core Practical - III	Microbial Diversity and Microbial Genetics	-	-	6	6	72	9	40	60	100	3
24MTU3IF	IDC - III	Principles of Biostatistics	4	-	-	4	48	3	25	75	100	4
24MBU3SA	SEC - I	Food and Water Quality Analysis	2	1	-	3	36	3	25	75	100	2
Total			19	4	7	30	360				700	22



Course Code	Course Category	Course Name	L	T	P	Instruction Hours		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												
24MBU4CA	Core - VII	Immunology	4	-	-	4	48	3	25	75	100	4
24MBU4CM	Core - VIII	Food Microbiology	2	-	4	6	72	6	40	60	100	4
24MBU4CP	Core Practical - IV	Immunology & Recombinant DNA Technology	-	-	6	6	72	6	40	60	100	3
24BTU4IC	IDC - IV	Bioinformatics	3	-	-	3	36	3	25	75	100	3
24MBU4SA	SEC-II	Recombinant DNA Technology	2	1	-	3	36	3	25	75	100	2
Total			17	2	1	30	360				700	22



Course Code	Course Category	Course Name	L	T	P	Instruction Hours		Exam (h)	Max Marks			Credits
						Week	Total		CIA	ESE	Total	
Fifth Semester												
Part - III												
24MBU5CA	Core - IX	Medical Bacteriology	4	-	-	4	48	3	25	75	100	4
24MBU5CB	Core - X	Virology	4	-	-	4	48	3	25	75	100	4
24MBU5CC	Core - XI	Mycology and Parasitology	4	-	-	4	48	3	25	75	100	4
24MBU5CD	Core - XII	Advanced Diagnostic Microbiology	3	-	-	3	36	3	25	75	100	3
24MBU5CP	Core Practical - V	Medical Microbiology	-	-	6	6	72	9	40	60	100	3
24MBU5SA	SEC-III	Microbial Fermentation	2	1	-	3	36	3	25	75	100	2
24MBU5DA	DSE-I	Microbial Products and Process	4	-	-	4	48	3	25	75	100	4
24MBU5DB		Dairy Microbiology										
24MBU5DC		Communicable Diseases										
24MBU5TA	IT	Industrial Training	-	-	-	-	-	-	40	60	100	2
Part - IV												
24MBU5GA	GE (AEEC)	Food Sanitation and Public Health	2	-	-	2	24	3	50	-	50	2
Total			23	1	6	30	360				850	28



Course code	Course category	Course name	L	T	P	Instruction Hours		Exam (h)	Max. Marks			Credits
						Week	Total		ESE	CIA	Total	
Sixth semester												
Part III												
24MBU6CA	Core-XIII	Environmental Microbiology	4	-	-	4	48	3	25	75	100	4
24MBU6CB	Core-XIV	Agricultural Microbiology	4	-	-	4	48	3	25	75	100	4
24MBU6CC	Core-XV	Downstreaming of Microbial Products	3	-	-	3	36	3	25	75	100	3
24MBU6CP	Core Practical - VI	Environmental, Agricultural and Industrial Microbiology	-	-	6	6	72	9	40	60	100	3
24MBU6SA	SEC-IV	Pharmaceutical Microbiology	2	1	-	3	36	3	25	75	100	2
24MBU6DA	DSE-II	Phytochemical Drug Discovery	4	-	-	4	48	3	25	75	100	4
24MBU6DB		Entrepreneurial Microbiology										
24MBU6DC		Medical Laboratory Techniques										
24MBU6DD	DSE-III	Microbial Fuel Technology	4	-	-	4	48	3	25	75	100	4
24MBU6DE		Perspectives on Microbiology Lab Accreditation										
24MBU6DF		Epidemiology and Public Health										
Part IV												
24BIU6AA	AECC-III	Innovation and IPR	2	-	-	2	24	-	50	-	50	2
Total			23	1	6	30	360				750	26
*Grand Total											4500	142



GENERIC ELECTIVE COURSES (GE)

The following are the courses offered under Generic Elective

Semester - V (GE)

S. No.	Course Code	Sem.	Course Name
1	24MBU5GA	V	Food Sanitation and Public Health


SELF STUDY COURSES

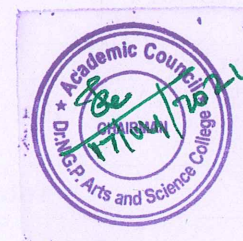
The following are the courses offered under self study

S. No.	Course Code	Sem	Course Name
1	24MBUSSA	III	Pedagogy for Biology
2	24MBUSSB	III	Bio- Marketing

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BoS Chairman/HOD
Department of Microbiology
Dr. N. G. P Arts and Science College
Coimbatore - 641 048

 Dr.N.G.P Arts and Science College		
APPROVED		
BoS- 17th	AC- 17th	GB-
05.04.24	17.04.2024	



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B.Sc. Microbiology (Students admitted during the AY 2024-25)

Semester – I							
TAMIL - I							
Semester	Course Code	Course Name	Category	L	T	P	Credits
I	24TLUITA	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 Taxonomy 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	<p>மறுமலர்ச்சிக் கவிதைகள்</p> <ol style="list-style-type: none"> இலக்கிய வரலாறு -மறுமலர்ச்சிக் கவிஞர்களின்தமிழ்ப்பணிகள் பாரததேசம்- பாரதியார் படி - பாரதிதாசன் தமிழரின் பெருமை- நாமக்கல்கவிஞர் தமிழ்க் கொலை புரியாதீர்- புலவர் குழந்தை திரைத்தமிழ் <p>அ) 'விஞ்ஞானத்த வளர்க்கப் போறண்டி' எனத்தொடங்கும் பாடல் - உடுமலை நாராயண கவி</p> <p>ஆ) 'சும்மா கிடந்த நிலத்தை' எனத்தொடங்கும் பாடல் - பட்டுக்கோட்டை கல்யாண சுந்தரனார்</p> <p>இ) 'சமரசம் உலாவும் இடமே' எனத்தொடங்கும் பாடல் - மருதகாசி</p> <p>ஈ) 'உன்னை அறிந்தால்' எனத்தொடங்கும் பாடல்-கண்ணதாசன்</p>	13	<p>தமிழ்மொழிப்பாடம் முதற்பருவம் 2024-2025 https://www.youtube.com/watch?v=Up55uhkk9zI</p>
2	<p>புதுக்கவிதைகள்</p> <ol style="list-style-type: none"> இலக்கிய வரலாறு- புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும் கடமையைச் செய்- மீரா ஓடு ஓடு சங்கிலி - சிற்பி பாலசுப்பிரமணியம் ஒப்பிலாத சமுதாயம் - அப்துல் ரகுமான் மரங்கள் - மு.மேத்தா கரிக்கிறது தாய்ப்பால்- ஆரூர் தமிழ்நாடன் ஐந்தாம் வகுப்பு 'அ' பிரிவு - நா. முத்துக்குமார் ஹைகூ கவிதைகள் - 10 கவிதைகள் 	13	<p>தமிழ்மொழிப்பாடம் முதற்பருவம் 2024-2025 https://www.youtube.com/watch?v=dX9ZaNJMaco</p>
3	<p>பெண்ணியம்</p> <ol style="list-style-type: none"> தொலைந்து போனேன் - தாமரை நீரில் அலையும் முகம் - அ. வெண்ணிலா தற்காத்தல் - பொன்மணி வைரமுத்து ஏனிந்த வித்தியாசங்கள்? - மல்லிகா புதையுண்ட வாழ்க்கை - சுகந்தி சுப்ரமணியன் 	10	<p>தமிழ்மொழிப்பாடம் முதற்பருவம் 2024-2025 https://www.youtube.com/watch?v=DLabokqWEdg</p>
4	<ol style="list-style-type: none"> இலக்கிய வரலாறு-சிறுகதையின் தோற்றமும் வளர்ச்சியும் கனகாம்பரம்- கு.ப.ராஜகோபாலன் கடிதம்- புதுமைப்பித்தன் பொம்மை - ஜெயகாந்தன் காய்ச்சமரம் - கி. ராஜநாராயணன் காட்டில் ஒருமான்- அம்பை வேட்கை - சூர்யகாந்தன் 	14	<p>தமிழ்மொழிப்பாடம் முதற்பருவம் 2024-2025 https://www.youtube.com/watch?v=78u7iTN3OU8</p>



5	<p>பயிற்சிப் பகுதி அ. இலக்கணம் 1. வல்லின ஒற்று மிகும், மிகா இடங்கள் - ஒற்றுப்பிழை நீக்கி எழுதுதல் 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)</p>	10	<p>தமிழ்மொழிப்பாடம் 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</p>
	Total	60	

Text book	1.	தமிழ் மொழிப்பாடம் - 2024-2025 தொகுப்பு: தமிழ்த்துறை, டாக்டர் என். ஜி. பி. கலை அறிவியல்கல்லூரி, 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	இலக்கிய இதழ்கள்
E-Resources and Website	https://www.tamilvu.org

Learning Method	Lecture/ Tutorial / Student Seminar/GD/Assignment
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Focus of the Course	Skill Development / Employability
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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 Taxonomy 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- डॉ.वी.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 लीलाअपाटर्मेंट्स, 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 चेन्नई -17
Reference Books		-

Journal and Magazines	-
E-Resources and Website	-

Learning Method	Lecture/ Tutorial / Student Seminar/GD/Assignment
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Focus of the Course	Skill Development / Employability
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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
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Focus of the Course	Skill Development / Employability
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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 Taxonomy 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
	<ul style="list-style-type: none"> • Saluer • Enter en contact • avec quelqu'un. • Se présenter. • S'excuser 	En cours de cuisine, premiers contacts avec les membres d'un groupe	<ul style="list-style-type: none"> • Comprendre des personnes qui se saluent. • Échanger pour entrer en contact, se présenter, saluer, s'excuser. • Communiquer avec <i>tu</i> ou <i>vous</i>. • Comprendre les consignes de classe • Épeler son nom et son prénom. Computer jusqu'à 10		
2	<ul style="list-style-type: none"> • Demander de se présenter. • Présenter quelqu'un 	Dans la classe de français, se présenter et remplir une fiche pour le professeur.	<ul style="list-style-type: none"> • Comprendre les informations essentielles dans un échange en milieu professionnel. Échanger pour se présenter et présenter quelqu'un	12	Text book Enchanté I Page 20
3	<ul style="list-style-type: none"> • Exprimer ses goûts. 	Dans un café, participer à une soirée de rencontres rapides et remplir de tâches d'appréciation	<ul style="list-style-type: none"> • Dans une soirée de rencontres rapides comprendre des personnes qui échangent sur elles et sur leurs goûts • Comprendre une personne qui parle 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 passées. Tu veux bien?	Organiser un programme d'activités pour accueillir une personne importante	Comprendre une personne demande un service à quelqu'un. Demander à quelqu'un de faire quelque chose. <ul style="list-style-type: none"> • 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, Imprime en Roumanie par Canale en Janvier
Reference book	1.	-



Journal and Magazines	-
E-Resources and Website	-

Learning Method	Lecture/ Tutorial / Student Seminar/GD/Assignment
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Focus of the Course	Skill Development / Employability
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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 <ul style="list-style-type: none"> 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's Taxonomy 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	<p>Genre Studies</p> <p>Mathew Arnold: Dover Beach- Author's Biography- title indications- outline- paraphrasing the poem- context of poem- form- poetic devices- enjambment- techniques- Annotations</p> <p>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</p> <p>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</p> <p>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</p> <p>Sheila Nayampalli Baruna: Alone - Author's Biography-narrative structure- passage analysis- insight of ideas-cohesion and context- style- language techniques</p>	12	Text Book
II	<p>Listening Skills</p> <p>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)</p>	13	Text Book
III	<p>Speaking Skills</p> <p>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</p>	11	Text Book
IV	<p>Reading Skills</p> <p>Study Skills: Skimming and Scanning- Reading different kinds of texts- Types of reading-Developing a good reading speed, reading aloud, Referencing skill- Word</p>	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: Fundamentals of Microbiology

Semester	Course Code	Course Name	Category	L	T	P	Credits
I	24MBU1CA	FUNDAMENTALS OF MICROBIOLOGY	CORE	36	-	-	3

Preamble	This course has been designed for students to learn and understand <ul style="list-style-type: none"> the history of Microbiology the handling of microscope and aseptic techniques the cultivation of microbes 	
Prerequisite	Knowledge on types and characteristics of microorganisms	
Course Outcomes (Cos)		
CO Number	Course Outcomes (Cos) Statement	Bloom's Taxonomy Knowledge Level
CO1	Describes the history and scope of microbiology	K2
CO2	Comprehend routes of handling of microscopes and bacteriological study	K2
CO3	Recognize the methods of sterilization	K3
CO4	Identify the various types of culture media and its preservation	K3
CO5	Emphasize on the general characteristics of algae, fungi and protozoa	K2

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



Syllabus

Unit	Content	Hours	E-Contents / Resources
I	History and Scope of Microbiology – Spontaneous generation theory and its disproval – Contribution of Leuwenhoek, Louis Pasteur, Robert Koch, Edward Jenner, Joseph Lister, John Tyndall, Salmon A .Waksman, Martinus W.Beijerinck, Elie Metchnikoff, Fannie Eilshmius Hesse, Paul Ehrlich. Scope of Microbiology.	8	Text book Reference Book Journals
II	Microscopy – Principles and application – Bright field, Dark field, Phase contrast, confocal, Fluorescence, SEM & TEM. Stains - Staining reactions – Types of staining – Simple, Differential (Gram's, Spore, AFB), Capsule and fungal staining.	7	Text book Reference Book
III	Sterilization and Disinfection- Principles- Methods of Sterilization – Physical methods: Dry Heat, Moist heat, Filtration and Radiation. Chemical methods - Formaldehyde, Alcohol, Phenol and Gaseous sterilizing agents. Sterility Testing.	7	Text book Reference Book
IV	Culture Media - Types of Media – Enriched, Selective, Differential and Special Purpose Media, Transport media (Stuart's medium), Media for Anaerobes(Robertson cooked meat medium) – Pure culture techniques - Maintenance and Preservation of microbial cultures.	7	Text book Reference Book
V	Morphology, General Characteristics, and economic importance of Fungi (Aspergillus, Penicillium), Algae (Anabena, Spirogyra), Protozoa – (Euglena and Nostoc).	7	Text book Reference Book Journals
	Total	36	



Text Book	1.	<i>Joanne Wiley, Linda Sherwood, Christopher J Woolverton, 2016, Prescott's Microbiology, 10th Edition, McGraw Hill Company & New York, United States</i>
Reference Books	1.	<i>Salle AJ, 2014, Fundamental Principles of Bacteriology, 7th edition, Tata Mcgraw-Hill Publishing Company & New York, United States.</i>
	2.	<i>Michael Madigan, John Martinko, Kelly Bender, Daniel Buckley and David Stahl, 2015, Brock Biology of Microorganisms, 14th edition, Pearsons Education Ltd & London, United Kingdom.</i>
	3.	<i>Atlas RM, 1997, Principles of Microbiology, 2nd edition, Tata Mcgraw-Hill Publishing Company & New York, United States.</i>
	4.	<i>Jeffrey C Pommerville, 2013, Alcamo's Fundamentals of Microbiology, 10th Edition, Blackwell Publications & New Jersey, United States. Dr. NGPASC COIMBATORE INDIA</i>

Journal and Magazines	https://www.nature.com
	https://www.the-scientist.com › tag › microbiology
E-Resource and Websites	https://usiu-ke.libguides.com/c.php?g=943666&p=6802092
	https://microbe.net/resources/microbiology-web-resources/

Learning Methods	Chalk and Talk/ Seminar/ Assignment
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Focus of the Course	Skill Development/Employability
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Semester – I
CORE: CELL BIOLOGY

Semester	Course Code	Course Name	Category	L	T	P	Credits
1	24MBU1CB	CELL BIOLOGY	Core	36	-	-	3

Preamble	This course has been designed for students to learn and understand <ul style="list-style-type: none"> • The complexity and harmony of cell structure and functions of prokaryotic and eukaryotic life forms • The cellular changes occur during different phases of life cycle • To understand the different modes of cellular differentiation and division 	
Prerequisite	Knowledge on bioinstrumentation	
Course Outcomes (Cos)		
CO Number	Course Outcomes (Cos) Statement	Bloom's Taxonomy Knowledge Level
CO1	Understand the structure and functioning of the internal organelles of an prokaryotic cell	K2
CO2	Decipher the structure and functioning of the internal organelles of an eukaryotic cell	K2
CO3	Cognize the interactions in an eukaryotic and prokaryotic system and the changes that occurs inside the cell upon receiving a chemical / hormonal signal	K2
CO4	Understand the mode of transport of extracellular proteins from the cytoplasm to the exterior	K2
CO5	Decipher the reproduction methods or cell division strategies in a prokaryotic and eukaryotic system	K3

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



Syllabus

Unit	Content	Hours	E-Contents / Resources
I	Definition - Shape, arrangement and Size - Cell Organization - Structure and function - Cell wall Gram positive and Gram negative – Cell membrane - Nuclear material - plasmids - ribosomes - inclusion bodies– Flagella – Pili – Capsule - Slime - Endospore formation	8	Text book Reference Book
II	Eukaryotic Cell Organization - Structure and Function of – Cell wall - Cell membrane – Nucleus (organization of genetic material) – Mitochondria – Endoplasmic reticulum – Ribosomes - Golgi Apparatus - Lysosomes - Extra cellular matrix - Chloroplast & Cytoskeleton - actin filaments, intermediate filaments, microtubules - flagella - cilia	7	Text book Reference Book
III	Cell-cell interactions in eukaryotes - adhesion junctions, tight junctions, gap junctions, and plasmodesmata - Quorum sensing (in prokaryotes) Cell Signaling - Signalling molecules and their receptors Function of cell surface receptors, Cyclic AMP pathway	7	Text book Reference Book
IV	Extracellular protein transport - targeting and insertion of proteins in the ER, export of proteins to Golgi apparatus, Protein sorting and export from Golgi apparatus to Lysosomes	7	Text book Reference Book
V	Prokaryotes - Binary fission in Bacteria – Eukaryotic Cell cycle and Cell division - Mitosis: Mitotic Spindle - Centromere - Centrioles (Prophase - Metaphase - Anaphase- Telophase). Meiosis: Stages and Synapsis (Crossing Over).	7	Text book Reference Book E- content
	Total	36	



Text Book	1.	Karp G, 2010, Cell and Molecular Biology: Concepts and Experiments. 6th edition. John Wiley & Sons. Inc.
Reference Books	1.	Joanne Wiley, Linda Sherwood, Christopher J Woolverton, 2017, Prescott's Microbiology, 10th edition, McGraw Hill Company, New Delhi, India
	2.	Hardin J, Bertoni G and Kleinsmith LJ, 2010, Becker's World of the Cell, 8th edition, Pearson, New Delhi, India
	3.	De Robertis, EDP and De Robertis EMF. 2006, Cell and Molecular Biology, 8th edition. Lipincott Williams and Wilkins, Philadelphia
	4.	Cooper, G.M. and Hausman, R.E. 2009, The Cell: A Molecular Approach, 5th Edition. ASM Press & Sunderland, Washington, D.C.; Sinauer Associates, MA.

Journal and Magazines	Journal of Cell Biology (JCB) Rockefeller University Press (rupress.org)
E-Resource and Websites	Bolsover2004CellBiology.pdf (bio-nica.info)

Learning Methods	Chalk and Talk/ Seminar/ Assignment
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Focus of the Course	Skill Development/ Employability
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24MBU1CP	CORE PRACTICAL: FUNDAMENTALS OF MICROBIOLOGY AND CELL BIOLOGY	SEMESTER I
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Total Credits: 3
Total Instructions Hours: 60 h

S.No	Contents
1	Preparation of cleaning solutions - Chromic acid
2	Media preparation - Nutrient Broth, Nutrient Agar (Plate, Deep, Slant and semisolid media)
3	Preparation of differential medium and selective medium
4	Decimal Dilution Technique
5	Pure culture techniques - Streak plate, Pour plate and Spread plate method.
6	Isolation and Enumeration of bacteria, fungi and actinomycetes from soil
7	Bacterial staining Techniques - Simple Staining & Differential staining - Gram's Staining, Acid Fast, Capsule and Spore staining
8	Fungal staining - Lacto phenol Cotton Blue Mount
9	Slide culture Technique (DBT Star Scheme)
10	Fungal Cell Observation by Stereo Microscope (DBT Star Scheme)
11	Screening of PHB production (DBT Star Scheme)
12	Microscopic studies of cell organelles - Plant and Animal cells
13	Observation of permanent slide for stages of mitosis and meiosis, Algae, Fungi and Protozoa

Note: 12 Experiments mandatory out of 14



References

- 1 James.C.Cappuccino. 2017. **Microbiology A laboratory manual. 11th edition**, Pearson education publishers.
- 2 Aneja. K.R. 2012. **Experiments in Microbiology, plant pathology and biotechnology, 4th Edition**. New age publishers.
- 3 Kannan, N. 2003. **Hand book of Laboratory culture media. 1st edition**, Panima publishing house.



Semester - I
IDC : BIOCHEMISTRY

Semester	Course Code	Course Name	Category	L	T	P	Credits
I	24CLU1IA	BIOCHEMISTRY	IDC	36	-	-	3

Preamble	This course has been designed for students to learn and understand <ul style="list-style-type: none"> • The structure and properties of carbohydrates and lipids. • The structure and properties of amino acids, proteins and nucleic acids. The essentials of minerals and vitamins and role of hormones. 	
Prerequisite	Knowledge on biological sciences	
Course Outcomes (COs)		
CO Number	Course Outcomes (COs) Statement	Bloom's Taxonomy Knowledge Level
CO1	Outline carbohydrate structure, classification and function.	K3
CO2	Know the structure and properties of lipids.	K1
CO3	Understand the structural and functional aspects of amino acids and proteins.	K3
CO4	Describe the structure, types and properties of nucleic acids.	K2
CO5	Understand the types and significance of vitamins, minerals and hormones.	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	Carbohydrates – classification, structure, properties and chemical reactions of monosaccharide – Glucose, Fructose, Galactose, Mannose, Arabinose. Disaccharides – Maltose, Lactose and Sucrose. Polysaccharides – Homo polysaccharides – Starch, Glycogen and Cellulose and Hetero polysaccharides – Hyaluronic acid, Heparin, Chondroitin sulphate and Bacterial cell wall polysaccharides.	08	Text Book
II	Lipids -Definition, classification of lipids, physiochemical properties. Storage lipids – types. Structural lipids – phospholipids, glycolipids and sphingolipids. Structure and biological role of cholesterol.	06	Reference Book
III	Aminoacids - Classification of amino acids, general properties, non protein amino acids. Peptide bond – structure and conformation, Proteins - classification and physiochemical properties. Organization of protein Structure–Primary, secondary tertiary, quaternary structure and Protein denaturation.	07	Text Book
IV	Nucleic acids - Structures of Purines, Pyrimidines, Nucleoside and Nucleotides. Properties of nucleic acids. DNA - Double helical structure, Isoforms of DNA Denaturation and Renaturation. RNA – Types structure and function. Enzymes - Concepts of enzymes, classification, characteristic features, coenzymes, cofactors clinical and industrial applications.	08	NPTEL
V	Micronutrients - Minerals in biological system and their importance – Iron, calcium, phosphorous, iodine, copper, zinc. Vitamins – Definition, classification -Fat soluble Vitamins - A, D, E and K. Water Soluble vitamins –Vitamin B Complex, Vitamin C- sources, functions and deficiencies. Hormones involved in regulatory metabolism-Insulin, Glucagon and Thyroid hormones.	07	You Tube Videos
	Total	36	



Text Book	1.	Satyanarayana U and Chakrapani U, 2013, "Biochemistry", 4rth Edition, , Elsevier, India.
Reference Books	1.	[Deb AC, 2001, "Fundamentals of Biochemistry", 7th Edition New central Agency, Calcutta.]
	2.	[Cooper, G M and Hausman R E, 2013, The cell: A Molecular Approach, 6th Edition, Sinauer Associates, Inc.Publishers, Sunderland, Massachusetts.]
	3.	[DM. Vasudevan, Sreekumari S., Kannan Vaidyanathan , 2019. Textbook Of Biochemistry For Medical Students, 9th Edition, Jaypee Brothers Medical Publishers, India].
	4.	Jain J L, Jain S and Jain N, 2012, "Biochemistry", 1st Edition, S. Chand and Company Pvt Ltd, New Delhi..

Journal and Magazines	https://ocw.mit.edu/courses/5-07sc-biological-chemistry-i-fall-2013/pages/module-i/
E-Resources and Website	https://www.khanacademy.org/search?page_search_query=biochemistry

Learning Method	Chalk and Talk/Assignment/Seminar
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Focus of the Course	Skill Development/Employability
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24CLU1IP	IDC PRACTICAL - I BIOCHEMISTRY	SEMESTER I
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Total Credits: 2
Total Instructions Hours: 48 h

S.No	Contents
1	Qualitative analysis of Monosaccharides - Pentose - Arabinose
2	Qualitative analysis of Hexoses - Glucose, Fructose
3	Qualitative analysis of Disaccharides - Sucrose, Maltose and Lactose
4	Qualitative analysis of Polysaccharide - Starch
5	Qualitative analysis of Histidine
6	Qualitative analysis of Tyrosine
7	Qualitative analysis of Tryptophan
8	Qualitative analysis of Arginine
9	Estimation of Acid Number
10	Estimation of Iodine Number
11	Quantification of Protein by Lowry's method
12	Quantification of Carbohydrate by DNSA method

References

- 1 Sadasivam S and Manikam A, 1996, "Biochemical methods ", 2nd Edition, New Age International publishers, New Delhi
- 2 Plummer D T, 2004, " An Introduction to practical Biochemistry", 3rd Edition, Tata McGraw-Hill Education Pvt. Ltd, New Delhi
- 3 Jayaraman J, 2015, "Laboratory manual in Biochemistry" 5th Edition, New Age International (P) Ltd.
- 4 Pattabiraman T N and Sitarama Acharya U, 2015, "Laboratory Manual in Biochemistry", 4th Edition. , All India Traveller Book Seller



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 <ul style="list-style-type: none"> • 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 in 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.	<i>Carson, R. 2002. Silent Spring. Houghton Mifflin Harcourt</i>
	2.	<i>Gadgil, M., & Guha, R. 1993. This Fissured Land: An Ecological History of India. Univ. of California Press.</i>
Reference Books	1.	<i>Gleeson, B. and Low, N. (eds.) 1999. Global Ethics and Environment, London, Routledge.</i>
	2.	<i>Gleick, P.H. 1993. Water in Crisis. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.</i>
	3.	<i>Groom, Martha J. Gary K. Meffe, and Carl Ronald carroll. 2006, Principles of Conservation Biology. Sunderland: Sinauer Associates.</i>
	4.	<i>Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. Science, 339: 36-37.</i>

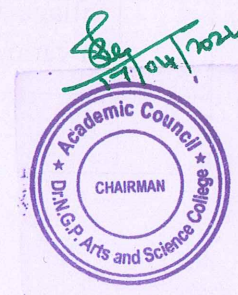
Journal and Magazines	https://www.hzu.edu.in/bed/E%20V%20S.pdf
E-Resource and Websites	https://www.ugc.gov.in/oldpdf/modelcurriculum/env.pdf

Learning Methods	Chalk and Talk/ Seminar/ Assignment
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Focus of the Course	Skill Development/Employability/Social Awareness and Environment
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Amr
5/4/24
BoS Chairman/HOD
Department of Microbiology
Dr. N. G. P Arts and Science College
Coimbatore - 641 048

 Dr.N.G.P. Arts and Science Co.		
APPROVED		
BoS- 17th 05.04.24	AC - 17th 17.04.24	GB -



Dr. NGPASC
COIMBATORE | INDIA

B.Sc. Microbiology (Students admitted during the AY 2024-25)