



University of Madras

Chepauk, Chennai 600 005

[Est.1857, State University, NAAC 'A***' Grade, CGPA 3.59, NIRF2019 Rank: 20]
website: www.unom.ac.in, Tel.:044-25399561

Under- graduate programme

Curriculum and syllabus for
B.Sc Microbiology
(With effect from the Academic Year 2023-2024)

JUNE 2023

Note: The Board of Studies in Microbiology (PG) designed the syllabus as per Common Model Syllabus provided by TANSICHE based on Learning Outcome based Curriculum Framework (LOCF) as prescribed by the UGC.

B.Sc. Microbiology Syllabus: 2023-2024

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Undergraduate Programme

Curriculum and Syllabus for

B.Sc. Microbiology

(With effect from the Academic Year 2023-24)

JUNE 2023

Note: The Board of Studies in Microbiology (Common) designed the syllabus as per Common Model Syllabus provided by TANSCHÉ and based on Learning Outcome based Curriculum Framework (LOCF) as prescribed by the UGC.

TANSCHÉ REGULATIONS ON LEARNING OUTCOMES- BASED CURRICULUM FRAME WORK FOR UNDER GRADUATE EDUCATION	
Programme :	B.Sc. MICROBIOLOGY
Programme code :	22UGMB
Duration :	3 years [UG]
Programme Outcomes	<p>PO1: Disciplinary Knowledge: Acquire detailed knowledge and expertise in all the disciplines of the subject.</p> <p>PO2: Communication skills: Able to communicate scientific information, concepts, experiments and significance.</p> <p>PO3: Ethical value: Apply knowledge on ethical and legal based issues</p> <p>PO4: Analytical reasoning: Familiarize to collect, analyze and interpret scientific data.</p> <p>PO5: Contribution to society: Solve public issues concerned with public health and safety for the welfare of the society.</p> <p>PO6: Scientific reasoning Solve problems understanding the issues, and find solutions, in day to day life.</p> <p>PO7 : Employability skill Equip with skills, based on current trends and future expectations for career development and placements.</p> <p>PO8: Entrepreneurial skill Equip with skills and competency to become a successful entrepreneur.</p> <p>PO9: Research related skill Proficient skills and competence to make a prospective career in Research & Development.</p>

	<p>PO10: Life long learning Identify the need for skills necessary to be successful in future.</p> <p>PO11: Instrumentation skill Handle laboratory experiments following safety precautions and standards.</p>
Programme Specific Outcome	<p>PSO-1: Placement Prepare the students in all disciplines like agriculture, industry- medical, pharma, dairy, hotel, food and food processing, immunologicals, cosmetics, vermitechnology and water treatment for effective and respectful placement.</p> <p>PSO-2:Entrepreneur To create effective entrepreneur by enhancing their critical thinking, problem solving, decision making and leadership skill that will facilitate startups and high potential organizations.</p> <p>PSO-3:Research and Development Design and implement HR systems that comply with good laboratory practices, following ethical values, leading the organization towards growth and development. .</p> <p>PSO-4:Contribution to society To contribute to the development of society and produce microbiological products, by collaborating with stake holders, related to the betterment of environment and mankind at the national and global level.</p>

FIRST SEMESTER

Course Category	Course Code	Course	Hours distribution				Credits	Hours/week	Marks		
			L	T	P	S			CIA	ESE	Total
Part –I	----	Language-I	L				3	6	25	75	100
Part –II	100L1Z	English Paper-I	L				3	6	25	75	100
Part -III	136C1A	Core-I: Fundamentals of Microbiology and Microbial Diversity	L				5	5	25	75	100
	136C11	Core-II: Practical I - Fundamentals Of Microbiology And Microbial Diversity			P		5	5	40	60	100
	136E1A	Elective-I: Basic And Clinical Biochemistry	L				3	4	25	75	100
Part –IV	136S1A	SEC-1 (NME): Social and Preventive Medicine *	L				2	2	25	75	100
	100L1L	Basic Tamil-I (Other Language Students) *									
	100L1M	Advanced Tamil-I (Other Language Students) *									
	136B1A	Foundation Course – Introduction to Microbial World	L				2	2	25	75	100
Total							23	30			

*** PART-IV: SEC-1 / Basic Tamil / Advanced Tamil (Any one)**

1. Students who have studied Tamil upto XII STD and also have taken Tamil in Part I shall take SEC-I.
2. Students who have **not** studied Tamil upto XII STD and have taken any Language other than Tamil in Part-I shall take **Basic Tamil** comprising of Two Courses (level will be at 6th Std.).
3. Students who have studied Tamil upto XII STD and have taken any Language other than Tamil in Part-I shall take **Advanced Tamil** comprising of Two Courses.

SECOND SEMESTER

Course Category	Course Code	Course	Hours distribution				Credits	Hours/week	Marks		
			L	T	P	S			CIA	ESE	Total
Part –I	----	Language – II	L				3	6	25	75	100
Part –II	100L2Z	English Paper-II	L				3	6	25	75	100
Part -III	136C2A	Core-III: Microbial Physiology and Metabolism	L				5	5	25	75	100
	136C21	Core-IV: Practical-II Microbial Physiology and Metabolism			P		5	5	40	60	100
	136E2A	Elective-II: Bio Instrumentation	L				3	4	25	75	100
Part –IV	136S2A	SEC-II (NME): Nutrition & Health Hygiene *	L				2	2	25	75	100
	100L2L	Basic Tamil-II (Other Language Students) *									
	100L2M	Advanced Tamil-II (Other Language Students) *									
	136S2B	SEC-III: Sericulture	L				2	2	25	75	100
Total							23	30			

THIRD SEMESTER

Course Category	Course Code	Course	Hours distribution				Credits	Hours/week	Marks		
			L	T	P	S			CIA	ESE	Total
Part –I	----	Language-III	L				3	6	25	75	100
Part –II	200L3Z	English Paper-III	L				3	6	25	75	100
Part -III	236C3A	Core-V: Molecular Biology and Microbial Genetics	L				5	5	25	75	100
	236C31	Core-VI: Practical-III – Molecular Biology and Microbial Genetics			P		5	5	40	60	100
	236E3A	Elective-III: Clinical Laboratory Technology	L				4	3	25	75	100
Part –IV	236S3A	SEC-IV: Organic Farming & Biofertiliser Technology (Entrepreneurial Skill)	L				1	1	25	75	100
	236S3B	SEC-V: Aquaculture	L				2	2	25	75	100
	---	E.V.S.	L					1			
Total							23	30			

FOURTH SEMESTER

Course Category	Course Code	Course	Hours distribution				Credits	Hours/week	Marks		
			L	T	P	S			CIA	ESE	Total
Part –I	----	Language-IV	L				3	6	25	75	100
Part –II	200L4Z	English Paper-IV	L				3	6	25	75	100
Part -III	236C4A	Core-VII: Immunology and Immunotechnology	L				5	5	25	75	100
	236C41	Core-VIII: Practical-IV - Immunology and Immunotechnology			P		5	5	40	60	100
	236E4A	Elective-IV: Food Processing Technology	L				3	3	25	75	100
Part –IV	236S4A	SEC-VI: Vaccine Technology	L				2	2	25	75	100
	236S4B	SEC-VII: Apiculture	L				2	2	25	75	100
	236V4A	E.V.S.	L				2	1	25	75	100
Total							25	30			

FIFTH SEMESTER

Course Category	Course Code	Course	Hours distribution				Credits	Hours/week	Marks		
			L	T	P	S			CIA	ESE	Total
Part -III	336C5A	Core-IX: Bacteriology And Mycology	L				4	5	25	75	100
	336C5B	Core-X: Virology And Parasitology	L				4	5	25	75	100
	336C51	Core-XI: Practical V- Medical Microbiology			P		4	5	40	60	100
	336C52	Core-XII: Group Project - Project with Viva-voce					4	5	40	60	100
	336E5A	Elective-V: Recombinant DNA Technology	L				3	4	25	75	100
	336E5B	Elective-VI: Biosafety& Bioethics	L				3	4	25	75	100
Part –IV	336V5A	Value Education					2	2	25	75	100
	336V5B	Internship/ Industrial visit/Field visit					2	--	25	75	100
Total							26	30			

SIXTH SEMESTER

Course Category	Course Code	Course	Hours distribution				Credits	Hours/week	Marks		
			L	T	P	S			CIA	ESE	Total
Part -III	336C6A	Core-XIII: Environmental And Agriculture Microbiology	L				4	6	25	75	100
	336C6B	Core-XIV: Food, Dairy And Probiotic Microbiology	L				4	6	25	75	100
	336C61	Core-XV: Practical VI -Applied Microbiology			P		4	6	40	60	100
	336E6A	Elective-VII: Pharmaceutical Microbiology	L				3	5	25	75	100
	336E6B	Elective-VIII: Entrepreneurship And Bio-Business	L				3	5	25	75	100
Part -IV	336S6A	Professional competency skill: Microbial Quality Control And Testing	L				2	2	25	75	100
Part-V	336V6A	Extension Activity					1	--	--	--	---
Total							21	30			

Credit Distribution for UG MICROBIOLOGY

S.No	Part	Course Details	Credit
1	III	Core(15x4/5)	68
2		Elective Generic/ Discipline Specific Elective(8x3=24)	24
3	I& II	Language & English (Lang - 4x3=12 Eng - 4x3=12)	24
4	IV	NME(2x2)	4
5		EVS(1x2)	2
6		Value Education(1x2)	2
7		Extension Activity(1x1)	1
8		• Skill Enhancement Course [4 Courses x 2 credits =8 credits] SEC-4 – 1 Credit	9
		• Summer internship/ Industrial training (2x1=2 credits)	2
		• Foundation course	2
	• Professional Competency Skill	2	
			140



**Dr. MGR-JANAKI COLLEGE
OF ARTS & SCIENCE FOR WOMEN**



SATHYABAMA MGR MALIGAI

11 & 13, Durgabai Deshmukh Road, R. A. Puram, Chennai - 28

Accredited with 'A' Grade by NAAC

An ISO 9001:2015 Certified Institution

Affiliated to the University of Madras

DEPARTMENT OF MICROBIOLOGY

SHIFT -I

SYLLABUS

FROM 2023-2024

SEMESTER-1

சென்னைப் பல்கலைக்கழகம்
University of Madras

Part-I

பொதுத் தமிழ் - பாடத்திட்டம்

General Tamil - Syllabus

4 பருவங்கள் (முதல் பருவம்)

(B.A., B.Sc., B.Com., BCA., BBA)

2023-24

பொதுத்தமிழ்-1

தமிழ் இலக்கிய வரலாறு -1

முதலாம் ஆண்டு – முதற் பருவம்

Course Code	Course Name	category	L	T	P	S	Credits	Ins.Hrs	CIA	Externa	Total
100L1AU	பொதுத்தமிழ் -1 தமிழ் இலக்கிய வரலாறு -1	Supportive	Y	-	-	-	3	6	25	75	100

Learning Objectives

- முதலாமாண்டுப் பட்ட வகுப்பு மாணவர்களுக்குத் தமிழ் மொழி இலக்கியங்களை அறிமுகம் செய்தல்
- தமிழ் இலக்கியப் போக்குகளையும், இலக்கணங்களையும் மாணவர் அறியுமாறு செய்து அவர்களின் படைப்பாற்றலைத் தூண்டுதல்
- தமிழ் இலக்கியம் சார்ந்த போட்டித் தேர்வுகளுக்கு ஏற்ப கற்பித்தல் நடைமுறைகளை மேற்கொள்ளுதல்

Expected Course Outcomes

On the Successful completion of the Course, Students will be able to

இப்பாடத்தைக் கற்பதால் பின்வரும் பயன்களை மாணவர் அடைவர்

CO 1	சங்க இலக்கியத்தில் காணப்பெறும் வாழ்வியல் சிந்தனைகளை அறிந்து கொள்வர்	K4
CO 2	அற இலக்கியம் மற்றும் தமிழ் காப்பியங்களின்வழி வாழ்வியல் சிந்தனையைப் பெறுவர்	K5, K6
CO 3	பக்தி இலக்கியங்களைக் கற்பதன் மூலம் பக்தி நெறியினையும், பகுத்தறிவு இலக்கியங்களைக் கற்பதன் வழி நல்லிணக்கத்தையும் தெரிந்து பின்பற்றுவர்	K3
CO 4	மொழியறிவோடு சிந்தனைத்திறனைப் பெறுவர்	K3
CO 5	மொழிப்பயிற்சிக்குத் தேவையான இலக்கணங்களைக் கற்பர்.	K2

K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create

அலகு-1 | தமிழ் இலக்கிய, இலக்கண வரலாறு அறிமுகம்.

1. இலக்கணம்;

அ.தொல்காப்பியம், இறையனார் களவியல் உரை , நம்பியகப் பொருள், புறப்பொருள் வெண்பா மாலை, நன்னூல், தண்டியலங்காரம், யாப்பருங்கலக்காரிகை நூல்கள்

ஆ.மொழிப் பயிற்சி- ஒற்றுப்பிழை தவிர்த்தல்

- வல்லினம் மிகும் இடங்கள்
- வல்லினம் மிகா இடங்கள்

- ஈரொற்று வரும் இடங்கள்
- ஒரு, ஓர் வரும் இடங்கள்
- அது, அஃது வரும் இடங்கள்
- தான், தாம் வரும் இடங்கள்

பயிற்சி : வல்லினம் மிகும் இடங்கள், மிகா இடங்கள் தவறாக வரும்வகையில் ஒரு பத்தி கொடுத்து ஒற்றுப் பிழை திருத்தி எழுதச் செய்தல்.

2. சங்க இலக்கியம் - எட்டுத்தொகை, பத்துப்பாட்டு
3. அற இலக்கியம்-பதினெண்கீழ்கணக்கு நூல்கள்
4. காப்பிய இலக்கியம் - ஐம்பெருங் காப்பியங்கள், ஐஞ்சிறு காப்பியங்கள், சமயக் காப்பியங்கள்
5. பக்தி இலக்கியமும் (பன்னிரு திருமுறைகள், நாலாயிர திவ்வியப் பிரபந்தம் -- பகுத்தறிவு

இலக்கியமும் (சித்தர் இலக்கியங்கள், புலவர் குழந்தையின் இராவண காவியம்)

அலகு-2

சங்க இலக்கியம்

எட்டுத்தொகை ;எ

1. நற்றிணை-முதல் பாடல் -நின்ற சொல்லர்
2. குறுந்தொகை 3 ஆம் பாடல் -நிலத்தினும் பெரிதே
3. ஐங்குறுநூறு -நெல் பல பொலிக! பொன் பெரிது சிறக்க!' (முதல் பாடல்)-வேட்கைப் பத்து
4. கலித்தொகை- 51 - சுடர்த்தொடிக் கேளாய் -குறிஞ்சிக் கலி
5. புறநானூறு -189 தெண்கடல் வளாகம் பொதுமையின்றி, நாடா கொன்றோ -187

பத்துப்பாட்டு;

1. முல்லைப்பாட்டு (முழுவதும்)

அலகு-3

அற இலக்கியம்

- 1.திருக்குறள் -அறன் வலியுறுத்தல் அதிகாரம்
- 2.நாலடியார்-பாடல்: 131 (குஞ்சியழகும்)
- 3.நான்மணிக்கடிகை-நிலத்துக்கு அணியென்ப
- 4.பழமொழி நானூறு- தம் நடை நோக்கார்
- 5.இனியவை நாற்பது- 37. இளமையை மூப்பு என்று

அலகு-4

காப்பிய இலக்கியம்

1. சிலப்பதிகாரம் - வழக்குரைகாதை
2. மணிமேகலை- பாத்திரம் பெற்ற காதை
3. பெரியபுராணம் - பூசலார் நாயனார்புராணம்
4. கம்பராமாயணம்- குகப் படலம்
5. சீறாப்புராணம் - மானுக்குப் பிணை நின்ற படலம்

6. இயேசு காவியம் -ஊதாரிப்பிள்ளை	
அலகு-5	பக்தி இலக்கியமும், பகுத்தறிவு இலக்கியமும்
பக்தி இலக்கியம்;	
<ol style="list-style-type: none"> 1. திருநாவுக்கரசர் தேவாரம் - நாமார்க்கும் குடியல்லேம் எனத் தொடங்கும் பாடல் மட்டும் 2. மாணிக்கவாசகர் திருவாசகம் - நமச்சிவாய வாழ்க நாதன்தாள் வாழ்க முதல் சிரம்குவிவார் ஓங்குவிக்கும் சீரோன் கழல் வெல்க வரை 3. பொய்கையாழ்வார்-வையந் தகளியா வார்கடலே 4. பூதத்தாழ்வார்-அன்பே தகளியா 5. பேயாழ்வார்-திருக்கண்டேன் பொன்மேனி கண்டேன் 6. ஆண்டாள் - திருப்பாவை மார்கழித் திங்கள் (முதல் பாடல்) 	
பகுத்தறிவு இலக்கியம்;	
<ul style="list-style-type: none"> • திருமூலர் - திருமந்திரம் (270,271, 274, 275 285) • பட்டினத்தார் -திருவிடை மருதூர் (காடே திரிந்து - எனத் தொடங்கும் பாடல் பா.எண் ;.279, 280) • கடுவெளி சித்தர் - பாபஞ்செய் யாதிரு மனமே (பாடல் முழுவதும்) • இராவண காவியம் - தாய்மொழிப் படலம் - 18. ஏடுகை யில்லா ரில்லை முதல் - 22. செந்தமிழ் வளர்த்தார். வரை 	
Text books	
•	.
Reference Books	
<ul style="list-style-type: none"> • மு. வரதராசன், தமிழ் இலக்கிய வரலாறு, சாகித்ய அக்காடெமி, புதுடெல்லி. • மது. ச. விமலானந்தன், தமிழ் இலக்கிய வரலாறு, மீனாட்சி புத்தக நிலையம், மதுரை. • தமிழண்ணல், புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு, மீனாட்சி புத்தக நிலையம், மதுரை. • தமிழ் இலக்கிய வரலாறு -முனைவர்.சிற்பி பாலசுப்ரமணியம், முனைவர்.சொ.சேதுபதி • புதிய தமிழ் இலக்கிய வரலாறு- முனைவர்.சிற்பி பாலசுப்ரமணியம்,நீல.பத்மநாபன் • தமிழ் இலக்கிய வரலாறு - டாக்டர்.அ.கா.பெருமாள் • தமிழ் இலக்கிய வரலாறு -முனைவர். ப.ச.ஏசுதாசன் • தமிழ் இலக்கிய வரலாறு - ஸ்ரீ குமார் • வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு-பாக்கியமேரி • தமிழ் பயிற்றும் முறை, பேராசிரியர் ந. சுப்புரெட்டியார் - மணிவாசகர் பதிப்பகம், சிதம்பரம் 	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]	
Web Sources	

- <https://www.chennailibrary.com/>
- <https://www.sirukathaigal.com>
- <https://www.tamilvirtualuniversity.org>
- <https://www.noolulagam.com>
- <https://www.katuraitamilblogspot.com>

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	1.
CLO1	3	2	3	3	3	2	2	2	3	2	3	2	
CLO2	3	3	2	2	2	3	2	3	3	2	2	2	
CLO3	3	2	3	3	2	2	2	3	2	3	3	2	
CLO4		3	3	2	2	2	3	2	3	2	3	3	
CLO5	3	3	2	2	2	3	3	2	2	2	3	3	

Strong -3,Medium-2,Low-1

UNIVERSITY OF MADRAS
UG & 5 YR INTEGRATED DEGREE – FOUNDATION COURSE
 EXISTING SYLLABUS (22-23) FOLLOWED FOR THE ACADEMIC YEAR 2023-2024

FOUNDATION COURSE: PART-I HINDI PAPER-I

100L1E

Inst.Hrs. : 6
Credits : 3

Year : I
Semester : I

Programme:	U.G. – FOUNDATION COURSE – PART-I HINDI	
Programme Outcomes:	1. Identify the literary trends, prose forms and nature of functional Hindi and its applications 2. Understand the roll of literature and importance of Functional Hindi 3. Obtain the practical knowledge of critical study of Literature, thinking, writing and expressional skills. 4. Obtain official noting, drafting and Business and personal, semi official letter writing methods and techniques 5. Employ the evaluating, summerising and differentiate contextual meanings.	
Programme Specific Outcomes:	1. Basic knowledge for higher studies 2. Obtain Basic professional skills i.e. business and official Correspondence and applications 3. Language application and writing skills 4. Basic idea of evaluation critical and analytical study of literature. 5. Develops ideas of creative thinking and writing	
Course Objectives	1. Identify the theme and aims of prose lessons and functional Hindi	K1
	2. Understand and summarise the theme	K2
	3. Explain the ideology of literary works and writers	K3
	4. Interpret the contextual meaning and differentiation	K4
	5. Evaluate on the basis of elements, features and trends of prose	K5
	6. Conceive the knowledge of literary themes and practice of functional Hindi	K6
Title of the Course:	PAPER – I - PROSE, FUNCTIONAL HINDI & LETTER WRITING	
Pre-requisites, if any:	Basic Knowledge of Hindi Prose forms and prose writers	
UNITS		
I	1. Sabhyata ka Rahasya 2. Personal Applications 3. Leave Letters 4. Introduction to office procedures 5. Official letter 6. Demi Official Letter	
II	1. Mitrata 2. Letter to the Editor 3. Opening an A/C	

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	<ol style="list-style-type: none"> 4. Demi Official Letter 5. Office Order 6. Administrative Terminology English to Hindi (30 Words)
III	<ol style="list-style-type: none"> 1. Yuvavon Se 2. Application for Withdrawal 3. Circular 4. Memo 5. Enquiry 6. Administrative Terminology Hindi to English (30 Words)
IV	<ol style="list-style-type: none"> 1. Paramanu Oorja evam Khadya Padarth Sanrakshan 2. Transfer of an A/C 3. Missing of Pass Book / Cheque Leaf 4. Official Memo 5. Resolution and Notice 6. Administrative Terminology English to Hindi (30 Words)
V	<ol style="list-style-type: none"> 1. Yougyata aur Vyavasay ka Chunav 2. Complaints 3. Ordering for Books 4. Notification 5. Official Noting Hindi to English (25 Phrases) 6. Official Noting English to Hindi (25 Phrases)
Course Outcomes	<ol style="list-style-type: none"> 1. Explains the nature, features, elements of prose forms and Functional Hindi 2. Understand the theme, aim of lessons and obtain application skills. 3. Evaluate the thought, ideology, expressional and artistic skills of writers. 4. Obtain skills of critical analysis of Literary forms and drafting skills of personal letters, business letters, noting and drafting skills 5. Learn to Employ the obtained skills in enriching the bright future.
Reading List (Print and Online)	<ol style="list-style-type: none"> 1. Sarkari karyalayon mein Hindi ka Prayog, Written by Gopinath Srivatav, Lokbharati Prakashan, 15,A, Gandhi Mrag, Allabad – 1 2. Hi.wikipedia.org/wiki.आधुनिक_हिन्दी_गद्य_का_इतिहास 3. https://www.infosrf.com/blog-single.php?MnBv=494
Recommended Texts	<ul style="list-style-type: none"> • HINDI GADHYA MALA Ed. by Dr. Syed Rahamathulla, Poornima Prakashan 4/7-B, Begum III Street, Royapettah, Chennai – 14. • Karyalayeen Tippaniya :Kendriya Hindi Sansthan, Agra • Prayojan Moolak Hindi : Dr. Syed Rahamathulla, Poornima Prakashan, 4/7, Begum III Street, Royapettah, Chennai – 14

Method of Evaluation:

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Internal Assessment	End Semester Examination	Total	Grade
25	75	100	

	POS1	POS 2	POS 3	POS 4	POS 5
CO 1	S	S	M	S	M
CO 2	S	S	S	S	S
CO 3	S	S	S	S	S
CO 4	S	S	S	S	S
CO 5	S	S	S	S	S

UNIVERSITY OF MADRAS

FOUNDATION COURSE: FRENCH
SYLLABUS WITH EFFECT FROM 2023-2024

UG & 5 Year PG Integrated - SEMESTER – I

Foundation Course in French: Prescribed Text and Grammar-I

Course Outcomes	<ol style="list-style-type: none"> 1. Introduce oneself and talk about one's likes and dislikes 2. Invite someone, to accept or deny an invitation 3. Making purchases at the market 4. Recall and remember the usage of grammatical tenses in constructing sentences in a dialogue. 5. Apply the learnt grammar rules in practice exercises to improve their understanding 		
Course	Foundation Course in French	Course Code	100L1K
Title of the Course:	Prescribed Text and Grammar-I		
Credits:	3		
Pre-requisites, if any:	---		
Course Objectives	Identify the basic French sentence structure		K1
	Define and describe the various grammatical tenses and use them to communicate in French		K2
	Examine the various documents presented and discuss and reply to the questions asked on it		K2 and K3
	Analyze and interpret expressions used to convey the cause, the effect, the purpose, and the opposition in French		K4
	Evaluate the grammatical nature present in passages		K5
Units			
I	Unité 1: Salut ! Unité 2: Enchanté!		
II	Unité 3: J'adore !		
III	Unité 4: Tu veux bien ?		
IV	Unité 5: On se voit quand ?		
V	Unité 6: Bonne idée !		
Prescribed Text	Régine Mérieux & Yves Loiseau, Units 1-6 of <i>Latitudes 1</i> (A1 /A2), méthode de français, Didier, 2017 (Indian Edition)		

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	M	M	L	S	M	L	S	S	S	M	S	M
CO2	S	M	M	L	M	M	L	S	S	S	S	S	M
CO3	M	S	S	M	M	M	L	S	M	M	M	S	M
CO4	S	M	M	L	S	M	L	S	S	S	M	S	M
CO5	S	M	M	L	M	M	L	S	S	S	S	S	M

S-Strong M-Medium L-Low

UNIVERSITY OF MADRAS

FOUNDATION COURSE: FRENCH
SYLLABUS WITH EFFECT FROM 2023-2024

SEMESTER I

Title of the Paper : Prescribed Text and Grammar-I

Prescribed textbook : Régine Mérieux & Yves Loiseau, **Units 1-6 of *Latitudes 1*** (Indian Edition), Paris, Didier, 2017.

Questions not to be asked from the Autoévaluation and Préparation au DELF

Paper setters are to strictly adhere to the syllabus and ask questions only from the pages included in the syllabus. Questions should cover the entire syllabus.

QUESTION PAPER PATTERN

Time : 3 Hours

Maximum Marks : 75

Section A (10 x 2 = 20 Marks)

Answer any TEN questions

15 questions to be asked on cultural / civilisational aspects found in the prescribed textbook

Section B (5 x 5 = 25 Marks)

Answer any FIVE questions

8 Grammar exercises to be given from the prescribed textbook

Section C (3 x 10 = 30 Marks)

Answer any THREE

3 must be answered out of 5 topics (1 dialogue writing, 1 letter /email writing, 1 composition, 1 comprehension, 1 translation)

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EXISTING SYLLABUS (22-23) FOLLOWED FROM THE ACADEMIC YEAR 2023-2024

Programme:	I & II UG – Second Language - SANSKRIT
Programme Code:	BFC-LS22
Duration:	2 years
Programme Outcomes:	<p>After successful completion of the course, learners will be able to:</p> <ol style="list-style-type: none"> 1. Create simple sentences using different grammatical tenses 2. Sensitize the students to the functioning of the language 3. Know the historical and cultural perspective of literary trends and movements in Sanskrit and in its literature 4. Define the origin of Sanskrit Literature 5. Demonstrate different teaching methodologies 6. Translate simple passages 7. Consolidate their communication skills in both spoken and written Sanskrit.
Programme Specific Outcomes:	<ol style="list-style-type: none"> 1. Understand and appreciate the aesthetical, social, political, cultural, etc., values expressed in various prescribed texts 2. Apply different grammatical rules to their reading and writing assignments 3. Identify the base words of nouns and different tenses 4. Read, understand, write and speak in simple Sanskrit 5. Translate simple sentences related to the themes given

List of Courses:

Semester	Course Code	Title of the Course	Core/Elective/ Soft Skill	Credits
I	BFC-LS001	Paper I – Poetry, Grammar and History of Sanskrit Literature	C	3
II	BFC-LS002	Paper II – Prose, Grammar and History of Sanskrit Literature	C	3
III	BFC-LS003	Paper III – Drama, Grammar and History of Sanskrit Literature	C	3
IV	BFC-LS004	Paper IV – Alankara, Didactic & Modern literatures and Translation	C	3

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SYLLABUS WITH EFFECT FROM 2022-2023
EXISTING SYLLABUS (22-23) FOLLOWED FROM THE ACADEMIC YEAR 2023-2024

100L1G

FOUNDATION COURSE: PART-I SANSKRIT PAPER-I

Inst.Hrs. : 6
Credits : 3

Year : I
Semester : I

Paper I – Poetry, Grammar and History of Sanskrit Literature

Course Outcomes	1. Remember the usage of grammatical tenses in constructing sentences in dialogue. 2. Apply the rules of usage in practice exercises and identify errors 3. Explain the nuances in the usage of various grammatical tenses and aspects 4. Demonstrate knowledge of various expressions of opinion, emotions, cause, effect, purpose, and hypothesis in French 5. Communicate in French and summarize the given text	
Course Objectives	Understand the basic Sanskrit sentence structure	K1
	To provide the glimpses of the rich Sanskrit literary tradition through reading the literary composition	K2
	Explain the language of this Mahakavya which is highly elaborate and polished with continual play upon words and variety of metres	K3
	Analyse and interpret expressions of cause, effect, purpose, and opposition in Sanskrit	K4
	Evaluate grammatical nature of verses	K5
Units		
I	Introduction to Sanskrit (Alphabets, Two letter words and three letter words) Grammar: <i>akārāntaḥ puṁliṅgaḥ śabda-s</i> - 1. बाल (<i>Bāl a</i>) and 2. देव (<i>Deva</i>) <i>ākārāntaḥ strīliṅgaḥ śabda-s</i> - 1. बाला (<i>Bāl ā</i>) and 2. लता (<i>Lat ā</i>) <i>akārāntaḥ napuṁsakaliṅgaḥ śabda-s</i> - 1. फल (<i>Phal a</i>) and 2. वन (<i>Vana</i>)	
II	Introduction to <i>Rāmāyana</i> , <i>Kālidāsa</i> and his poetic works Text: <i>Raghuvamśa</i> (Canto I) Verses 1-15	
III	Introduction to the works of <i>Bhāravi</i> - Text: <i>Raghuvamśa</i> (canto I) Verses 16-30	
IV	Introduction to the works of <i>Śrī Harṣha</i> - Text: <i>Raghuvamśa</i> (Canto I) Verses 31-45	
V	Grammar: Conjugations - <i>Laṭ lakāra-s</i> – (Present tense) (i) गच्छति (<i>Gacchat i</i>) (ii) तिष्ठति (<i>Ti ṣṭhat i</i>) (iii) पठति	

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	<p>(<i>Paṭ hat i</i>) (i v) नृत्यति (<i>Ṇṭ yat i</i>) (v) कुप्यति (<i>Kupyat i</i>) (vi) कथयति (<i>Kat hayat i</i>) (vi i) गणयति (<i>Ḡanayat i</i>) (vi i i) अस्ति (<i>Ast i</i>) (i x) करोति (<i>Kar ot i</i>) (x) शृणोति (<i>Śṛ not i</i>) Indeclinables (Avyayaani) - अपि (<i>api</i>), कदा (<i>kadā</i>), च (<i>ca</i>), अद्य (<i>adya</i>), विना (<i>vi nā</i>), सह (<i>saha</i>), तत्र (<i>t at ra</i>), किम् (<i>ki m</i>), यदि (<i>yadi</i>) - तर्हि (<i>t ar hi</i>), यथा (<i>yat hā</i>) - तथा (<i>t at hā</i>) Prefixes (<i>Upasargas</i>) - आङ् (<i>āṅ</i>), वि (<i>vi</i>), परि (<i>pari</i>), अनु (<i>anu</i>), अधि (<i>adhi</i>), उत् (<i>ut</i>), प्रति (<i>pr at i</i>), उप (<i>upa</i>), प्र (<i>pr a</i>) निर् (<i>ni r</i>)</p>
Book recommended for Reference	<p><i>Kalāśālā-Saṁskṛta-Sukhabodhinī - I</i> To be Published by: University of Madras, Chennai - 5</p>

Mapping with Programme Outcomes:

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	S	M	S	S
CO 2	S	S	S	S	S
CO 3	S	S	M	M	S
CO 4	S	S	M	S	S
CO 5	S	S	S	S	S

S-Strong M-Medium L-Low

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UG & 5 YR INTEGRATED DEGREE – FOUNDATION COURSE
SYLLABUS WITH EFFECT FROM 2022-2023
EXISTING SYLLABUS (22-23) FOLLOWED FROM THE ACADEMIC YEAR 2023-2024

100L2G

FOUNDATION COURSE: PART-I SANSKRIT PAPER-II

Inst.Hrs. : 6
Credits : 3

Year : I
Semester : II

Paper II – Prose, Grammar and History of Sanskrit Literature

Course Outcomes	<ol style="list-style-type: none">1. Understand and apply grammatical concepts in drafting sentences and paragraphs2. Apply the rules and regulations in handling usage of Lrt lakara and Asmad Sabdah, practice exercises and identify errors3. Form an idea of the aesthetic expressions that make Sanskrit composition get the position of pride in world literature4. Demonstrate knowledge of various expressions of opinion, emotions, cause, effect, purpose, and hypothesis in Sanskrit5. Appreciate the art of employment of Alankaras in a prose form of poetry	
Course Objectives	Provide acquaintance with prose literature in Sanskrit through a study of one of the best texts of prose, which would pave the way for gaining sufficient grounding in the language	K1
	Enumerate various grammatical tenses and use them to communicate in Sanskrit language	K2
	Summarize the stories of Panchatantra and discuss in	K3
	Analyze and interpret expressions of cause, effect, purpose, and opposition in Sanskrit	K4
	Evaluate and comprehend text passages	K5
Units		
I	Introduction to Prose literature in Sanskrit Grammar: <i>ikārāntaḥ puṁliṅgāḥ śabdāḥ</i> - 1. कवि (<i>Kavi</i>) and 2. रवि (<i>Ravi</i>) <i>ikārāntaḥ strīliṅgāḥ śabdāḥ</i> - 1. मति (<i>Mati</i>) <i>ikārāntaḥ strīliṅgāḥ śabdāḥ</i> - 1. नदी (<i>Nadi</i>) <i>ikārāntaḥ napuṁsakaliṅgāḥ śabdāḥ</i> 1. वारि (<i>Vari</i>)	
II	Introduction to <i>Māhābhārata</i> , the author of बालरामायणम् (<i>Bālarāmāyaṇam</i>) and his works Text: <i>Bālakāṇḍam</i> of <i>Bālarāmāyaṇam</i>	
III	Introduction to the works of <i>Baṇa</i> (<i>Kādambarī</i> and <i>Harṣacaritam</i>), <i>Daṇḍin</i> (<i>Daśakumāracaritam</i> and <i>Avantisundarīkathā</i>) and <i>Subandhu</i> (<i>Vāsavadattā</i>)	
IV	Introduction to Historical <i>Kāvyas</i> in Sanskrit - The works of <i>Kalhaṇaḥ</i> , <i>Bilhaṇaḥ</i> , <i>Bāṇaḥ</i> and <i>Pravarasenaḥ</i>	

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UG & 5 YR INTEGRATED DEGREE – FOUNDATION COURSE
SYLLABUS WITH EFFECT FROM 2022-2023

V	<p>Grammar: Conjugations - <i>Lañ lakārah</i> (Past tense) (i) अगच्छत् (<i>Agacchat</i>) (ii) अतिष्ठत् (<i>Atiṣṭhat</i>) (iii) अपठत् (<i>Apaṭhat</i>) (iv) अनृत्यत् (<i>Anṛtyat</i>) (v) अकुप्यत् (<i>Akupyat</i>) (vi) अकथयत् (<i>Akat hayat</i>) (vii) अगणयत् (<i>Aganayat</i>) (viii) आसीत् (<i>Asit</i>) (ix) अकरोत् (<i>Akarot</i>) (x) अशृणोत् (<i>Aśṛnot</i>)</p> <p>Indecl i nabl es: (a) तुमुन् (<i>Tumun</i>) suffix ended words (Infinitive forms) (i) गन्तुम् (<i>Gantum</i>) (ii) स्थातुम् (<i>Stahātum</i>) (iii) पठितुम् (<i>Paṭhitum</i>) (iv) नर्तितुम् (<i>Nartitum</i>) (v) कोपितुम् (<i>Kopitum</i>) (vi) कथयितुम् (<i>Kat hayitum</i>) (vii) गणयितुम् (<i>Ganayitum</i>) (viii) भवितुम् (<i>Bhavitum</i>) (ix) कर्तुम् (<i>Kartum</i>) (x) श्रोतुम् (<i>Śrotum</i>) (b) क्त्वा (<i>Kṛvā</i>) suffix ended words (Past passive participles) (i) गत्वा (<i>Gatvā</i>) (ii) स्मृत्वा (<i>Smṛtvā</i>) (iii) गणयित्वा (<i>Ganayitvā</i>) (iv) पठित्वा (<i>Paṭitvā</i>) (v) कृत्वा (<i>Kṛtvā</i>) (c) ल्यप् (<i>Lyap</i>) suffix ended words (Past passive participles) (i) आगत्य (<i>Āgatya</i>) (ii) विस्मृत्य (<i>Vismṛtya</i>) (iii) विगणय्य (<i>Viganayya</i>) (iv) प्रपठ्य (<i>Prapaṭhya</i>) (v) अनुकृत्य (<i>Anukṛtya</i>)</p>
Book recommended for Reference	<p><i>Kalāsālā-Saṃskṛta-Sukhabodhinī - II</i> To be Published by: University of Madras, Chennai - 5</p>

Mapping with Programme Outcomes:

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	M	S	M	S
CO 2	S	M	S	S	S
CO 3	S	S	S	M	S
CO 4	S	S	M	S	S
CO 5	S	S	S	S	S

S-Strong M-Medium L-Low

UNIVERSITY OF MADRAS
UG & 5 YR INTEGRATED DEGREE – FOUNDATION COURSE
SYLLABUS WITH EFFECT FROM 2022-2023
EXISTING SYLLABUS (22-23) FOLLOWED FROM THE ACADEMIC YEAR 2023-2024

200L3G

FOUNDATION COURSE: PART-I SANSKRIT PAPER-III

Inst.Hrs. : 6
Credits : 3

Year : II
Semester : III

Paper III – Drama, Grammar and History of Sanskrit Literature

Course Outcomes	<ol style="list-style-type: none"> 1. Be familiar with the style of the great Sanskrit Dramatist Bhasa 2. Be able to appreciate the aesthetical, social, political, cultural, etc., values expressed in prescribed composition 3. Understand the structural patterns of Sanskrit dramatic composition 4. Develop the finer and minor nuances of Nataka form of drama 5. Analyze the literary texts
UNITS	
I	Introduction to Dramaturgy – Ten types of Drama - Characteristics and features (<i>Nāndī, Sūtradhāra, Sthāpanā</i> and <i>Bharatavākyam</i>) of Sanskrit Dramas. Prose Text: <i>Karṇabhāram</i> - Page. 01 - 10 (till 10 <i>Slokās</i>)
II	Characteristics and features (<i>Vastu, Netā</i> and <i>Rasas</i>) of Sanskrit Drama - Prose Text: <i>Karṇabhāram</i> - Page. 11 - 20 (till 17 <i>Slokās</i>)
III	Authorship of 13 Trivandrum play of <i>Bhāsa</i> - Introduction to the Dramas of <i>Kālidāsa, Bhavabhūti, Harṣavardhana</i> and <i>Rājaśekhara</i> Text: <i>Karṇabhāram</i> - Page. 21 - 32 (Upto the end)
IV	Introduction to the dramatic works of <i>Viśākhadatta, Śūdraka, Bhaṭṭanārāyaṇa</i> and <i>Murāri</i> - Introduction to Allegorical dramas 1. <i>Prabodhacandrodaya</i> and 2. <i>Saṅkalpasūryodaya</i>
V	Introduction to <i>Campū</i> literature 1. <i>Bhojacampū</i> 2. <i>Viśvaguṇādarśacampū</i> and 3. <i>Nalacampū</i> Grammar – <i>Lṛṭ lakārāḥ</i> (Future tense) (i) गमिष्यति (<i>Gami śyat i</i>) (ii) स्थास्यति (<i>St hāsyat i</i>) (iii) पठिष्यति (<i>Paṭ hi śyat i</i>) (iv) नर्तिष्यति (<i>Nart i śyat i</i>) (v) कोपिष्यति (<i>Kopi śyat i</i>) (vi) कथयिष्यति (<i>Kat hayi śyat i</i>) (vii) गणयिष्यति (<i>Ganayi śyat i</i>) (viii) भविष्यति (<i>Bhavi śyat i</i>) (ix) करिष्यति (<i>Kari śyat i</i>) (x) श्रोष्यति (<i>Ś rośyat i</i>) Declensions: (<i>Sar vanānāśabdāḥ</i>) - 1. तद् शब्दः (<i>Tad śabdah</i>) i n al I gender s 2. अस्मद् शब्दः (<i>Asnad śabdah</i>) 3. युष्मद् शब्दः (<i>Yuśmad śabdah</i>)

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SYLLABUS WITH EFFECT FROM 2022-2023

Course Objectives	Understand the structure and use of different phrases and Idioms in Sanskrit Drama and grammatical aspects of <i>Karṇabhāram</i>	K2
	Enhance one's ability to converse freely in the language, which is considered to be a specialized skill as far as the Sanskrit Language goes	K2
	Draft and summarize the literary texts	K3
	Identify and apply different grammatical peculiarities	K3
	Analyze and critically assess the literary texts	K4

Book recommended for Reference	<p><i>Kalāśālā-Saṃskṛta-Sukhabodhinī - III</i></p> <p>To be Published by: University of Madras, Chennai - 5</p>
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Mapping with Programme Outcomes:

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	M	M	S	S
CO 2	S	S	S	S	S
CO 3	S	M	M	S	S
CO 4	S	S	M	S	S
CO 5	S	S	S	S	S

S-Strong M-Medium L-Low

UNIVERSITY OF MADRAS
UG & 5 YR INTEGRATED DEGREE – FOUNDATION COURSE
SYLLABUS WITH EFFECT FROM 2022-2023
EXISTING SYLLABUS (22-23) FOLLOWED FROM THE ACADEMIC YEAR 2023-2024

200L4G

FOUNDATION COURSE: PART-I SANSKRIT PAPER-IV

Inst.Hrs. : 6
Credits : 3

Year : II
Semester : IV

Paper IV – Alankara, Didactic & Modern literatures and Translation

Course Outcome	<ol style="list-style-type: none"> 1. Apply the usage of compound words 2. Differentiate the alankaras 3. Translate the prose passages prescribed 4. Identify and apply different grammatical tenses of “Mahabharata” related translation 5. Analyze and critically assess the literary texts
UNITS	
I	Introduction to Didactic literature (<i>Pañcatantram</i> and <i>Hitopadeśah</i>) Text: The lion and the hare शशकसिंहकथा (<i>Śaśakasimhakathā</i>) from <i>Pañcatantram</i> and The jackal and the elephant शृगालहस्तिकथा (<i>Śrgālahastikathā</i>) a story from <i>Mitralābhaḥ</i> of <i>Hitopadeśah</i>
II	<i>Alaṅkārah</i> - i. <i>Upamā</i> , ii. <i>Rūpakam</i> , iii. <i>Ullekhaḥ</i> , iv. <i>Utprekṣā</i> and v. <i>Vyatirekaḥ</i>
III	Introduction to Modern literature - Introduction to अर्थशास्त्रम् (<i>Artha śāstram</i>) of चाणक्यः (<i>Cāṇakyaḥ</i>) - Introduction to मयमतम् (<i>Mayamatam</i>) - Introduction to नीतिद्विषष्टिका (<i>N t i d v i ṣ a ṣ ṭ h i k ā</i>) - <i>S l o k ā s</i> - 1 t o 10 - I n t r o d u c t i o n t o t h e l i f e h i s t o r y o f श्रीआदिशङ्कराचार्यः (<i>Śrī -Ādi śaṅkar ācār yaḥ</i>), श्रीरामानुजाचार्यः (<i>Śrī Rāmānuj ācār yaḥ</i>) and श्रीमध्वाचार्यः (<i>Śrī Mādhvācār yaḥ</i>)
IV	Introduction to Modern literature in Sanskrit - Text: तिरुक्कुरळ् संस्कृतानुवादः (Sanskrit translation of Tirukkural) <i>Slokās</i> 1 to 10 ईश्वरवन्दनम् (<i>Kaḍavul Vāzhththu</i>) by कलियन् रामानुजजीयर् (<i>Kaliyan Rāmānujajīyar</i>) नालडियार् (<i>Nālaḍiyār</i>) translated by श्री एस्. एन्. रामदेशिकः (<i>Śrī S N Rānadeśi ka</i>) - <i>S l o k ā s</i> : 1 t o 5
V	Translation from prose section Unit - I stories Grammar: Conjugation - <i>Loṭ lakārāḥ</i> (Imperative mood) (i) गच्छतु (<i>Gacchat u</i>) (i i) तिष्ठतु (<i>Ti ṣ ṭ hat u</i>) (i i i) पठतु (<i>Paṭ hat u</i>) (i v) शृणोतु (<i>Śr ṇ ot u</i>) (v) करोतु (<i>Kar ot u</i>)

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UG & 5 YR INTEGRATED DEGREE – FOUNDATION COURSE
SYLLABUS WITH EFFECT FROM 2022-2023

Course Objectives	Demonstrate the usage of connecting words	K2
	Understand the alankaras which are used in devotional lyrics	K2
	Draft and summarize the literary texts	K3
	Identify the meaning, types of figure of speech of the prescribed text	K3
	Analyze and critically assess the literary texts	K4

Book recommended for Reference	<i>Kalāsālā-Saṃskṛta-Sukhabodhinī - IV</i> To be Published by: University of Madras, Chennai - 5
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Mapping with Programme Outcomes:

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	M	S	S
CO2	S	S	M	S	S
CO3	S	S	M	S	S
CO4	S	M	S	S	S
CO5	S	S	S	S	M

S-Strong M-Medium L-Low

UNIVERSITY OF MADRAS U.G. AND FIVE YEAR INTEGRATED PG DEGREE PROGRAMS FOUNDATION COURSE: PART I – ARABIC <small>(EXISTING SYLLABUS (22-23) FOLLOWED FROM THE ACADEMIC YEAR 2023-2024)</small>	
Programme:	U.G. AND FIVE YEAR INTEGRATED P.G. DEGREE PROGRAMS FOUNDATION COURSE: PART I – ARABIC
Programme Code:	BFC-LA23
Duration:	4 Semesters
On successful completion of this program, the graduates are expected to achieve the following:	
Programme Outcomes:	<ol style="list-style-type: none"> 1. Acquire the knowledge of the structure of Arabic words 2. Acquaint with the knowledge of basic Arabic grammar 3. Become familiar with the knowledge of phonetic system of Arabic language 4. Able to communicate in Arabic 5. Have the knowledge of moral values in the light of Quran and Hadith
Programme Specific Outcomes:	<ol style="list-style-type: none"> 1. Understand the sounds and phrasing of Arabic language. 2. Learn the basic Arabic grammar 3. Develop communication skills in Arabic 4. Acquire new vocabulary in Arabic 5. Learn the moral values of the Holy Quran and Sunnah

List of Courses:

Semester	Course Code	Title of the Course	Foundation Course	Credits
I	100L1H	Paper I : Prose	FC	3
II	100L2H	Paper II : Grammar	FC	3
III	200L3H	Paper III : Communication Skill in Arabic	FC	3
IV	200L4H	Paper IV : Quran and Hadith	FC	3

Course I	Course Code	Title of the Course	Credits
FC	100L1H	Paper I : Prose	3
Course Outcomes	<ol style="list-style-type: none"> 1. Understand the correct pronunciation of Arabic letters 2. Understand the structure-based composition. 3. Acquire new vocabulary in Arabic 4. Read the Arabic sentences without diacritical marks 5. Able to write the simple sentences in Arabic without errors. 		
Pre-requisites, if any:	Nil		
Course Objectives	<ol style="list-style-type: none"> 1. Understand basic Arabic grammar. 2. Understand the structure of Arabic language. 3. Employ sentence making. 4. Enhance vocabulary. 5. Improve reading and writing skills. 		
Units			
I	(دروس اللغة العربية لغير الناطقين بها، الجزء الأول، الدكتور ف. عبد الرحيم) من الدرس الأول إلى الدرس الرابع		
II	من الدرس الخامس إلى الدرس الثامن		
III	من الدرس التاسع إلى الدرس الثالث عشر		
IV	من الدرس الرابع عشر إلى الدرس الثامن عشر		
V	من الدرس التاسع عشر إلى الدرس الثالث والعشرين		

Prescribed Text Book	دروس اللغة العربية لغير الناطقين بها، الجزء الأول، الدكتور ف. عبد الرحيم Duroos Al-Lugha Al-Arabiyya – Part I, By Dr. V. Abdur Rahim
Reading List (Print and online)	معجم الكلمات الواردة في دروس اللغة العربية لغير الناطقين بها مفتاح دروس اللغة العربية لغير الناطقين بها القراءة الراشدة – الشيخ أبو الحسن علي الحسيني الندوي القراءة المفيدة – الدكتور محمد يوسف كوكن العمري منهاج العربية – السيد النبي حيدرآبادي www.alnahw.com

Method of Evaluation:

Internal Assessment	End Semester Examination	Total	Grade
25	75	100	

Methods of assessment:

Recall (K1) - Simple definitions, MCQ, Recall steps, Concept definitions

Understand/ Comprehend (K2) - MCQ, True/False, Short essays, Concept explanations, Short summary or overview

Application (K3) - Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain

Analyse (K4) - Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge

Evaluate (K5) - Longer essay/ Evaluation essay, Critique or justify with pros and cons

Create (K6) - Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5
CO	3	3	3	2	1

3-Strong 2-Medium 1-Low

Course II	Course Code	Title of the Course	Credits
FC	100L2H	Paper II : Grammar	3
Course Outcomes	<ol style="list-style-type: none"> 1. Able to use basic grammatical structure. 2. Develop reading skills and reading speed 3. Acquire new vocabulary in Arabic 4. Understand the different types of sentences. 5. Able to construct simple sentences in Arabic 		
Pre-requisites, if any:	Nil		
Course Objectives	<ol style="list-style-type: none"> 1. Understand basic Arabic grammar. 2. Understand the correct usage of Arabic grammar. 3. Employ sentence making. 4. Enhance vocabulary. 5. Improve reading and writing skills. 		
Units			
I	(قواعد اللغة العربية الأساسية، الدكتور سيد رحمة الله) من الدرس الأول إلى الدرس الرابع		
II	من الدرس الخامس إلى الدرس الثامن		
III	من الدرس التاسع إلى الدرس الثاني عشر		

IV	من الدرس الثالث عشر إلى السادس عشر
V	من الدرس السابع عشر إلى الدرس العشرين
Prescribed Text Book	قواعد اللغة العربية الأساسية، الدكتور سيد رحمة الله Basic Arabic Grammar, By Dr. Syed Rahmathullah
Reading List (Print and online)	النحو الواضح – علي الجارم ومصطفى أمين دليل النحو الواضح – الدكتور بشير أحمد جمالي سهل العوامل – الدكتور تاج الدين المناني النحو الميسر للكبار والصغار – علي محمود عقيلي القواعد التطبيقية في اللغة العربية – الدكتور نديم دعكور www.alnahw.com

Method of Evaluation:

Internal Assessment	End Semester Examination	Total	Grade
25	75	100	

Methods of assessment:

Recall (K1) - Simple definitions, MCQ, Recall steps, Concept definitions

Understand/ Comprehend (K2) - MCQ, True/False, Short essays, Concept explanations, Short summary or overview

Application (K3) - Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain

Analyse (K4) - Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge

Evaluate (K5) - Longer essay/ Evaluation essay, Critique or justify with pros and cons

Create (K6) - Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5
CO	3	3	3	3	1

3-Strong 2-Medium 1-Low

Course III	Course Code	Title of the Course	Credits
FC	200L3H	Paper III : Communication Skill in Arabic	3
Course Outcomes	<ol style="list-style-type: none"> 1. Understand the basics of Arabic language. 2. Learn the structure of Arabic words. 3. Familiarize with the phonetic system of Arabic. 4. Able to communicate in Arabic 5. Able to translate from Arabic to English and vice versa 		
Pre-requisites, if any:	Nil		
Course Objectives	<ol style="list-style-type: none"> 1. Understand the sounds and phrasing of Arabic language. 2. Acquire new vocabulary and apply in context. 3. Develop communication skills in Arabic. 4. Understand the different aspects of communication. 5. Learn to communicate in everyday interactions. 		
Units			
I	(الكتاب الأساسي في تعليم اللغة العربية لغير الناطقين بها، الجزء الأول – السعيد محمد بدوي وفتحي علي يونس) التعارف – في المطار (١)		
II	في الفندق – في المطعم		
III	في البنك – عند الطبيب (١)		

IV	في الطريق - في مكتب البريد
V	في السوق (١) - في السوق (٢)
Prescribed Text Book	<p>الكتاب الأساسي في تعليم اللغة العربية لغير الناطقين بها، الجزء الأول - السعيد محمد بدوي وفتحي علي يونس</p> <p>Al Kitaab Al Asaasi Fi Taleem Al Lughha Al Arabiyya Li Ghair An Naatiqeena Biha - Part I, By Sayeed Muhaamad Badawi and Fathi Ali Yunus</p>
Reading List (Print and online)	<p>A Practice Book on Gulf Arabic, By Dr. Abdul Jaleel. T</p> <p>Arabic Conversation Book, By Mohd. Harun Rashid and Khalid Perwez</p> <p>A Hand book of Commercial Arabic by Dr. Aboobacker K.P</p> <p>العربية لغير العرب - د. مصطفى حسن الريس، الأزهر</p> <p>العربية للحياة - جامعة الملك سعود</p> <p>القراءة العربية لغير العرب - وزارة التربية بالكويت</p> <p>www.talkinarabic.com</p>

Method of Evaluation:

Internal Assessment	End Semester Examination	Total	Grade
25	75	100	

Methods of assessment:

Recall (K1) - Simple definitions, MCQ, Recall steps, Concept definitions

Understand/ Comprehend (K2) - MCQ, True/False, Short essays, Concept explanations, Short summary or overview

Application (K3) - Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain

Analyse (K4) - Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge

Evaluate (K5) - Longer essay/ Evaluation essay, Critique or justify with pros and cons

Create (K6) - Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5
CO	3	3	3	2	1

3-Strong 2-Medium 1-Low

Course IV	Course Code	Title of the Course	Credits
FC	200L4H	Paper IV : Quran and Hadith	3
Course Outcome	<ol style="list-style-type: none"> 1. Know the principal textual sources of the Islamic tradition: The Qur'an and the Hadith. 2. Know the role of Quran and Hadith in the synthesis of Islamic faith and practice. 3. Understand the structure of Arabic grammar through Quran and Hadith. 4. Understand the methodology of translation of Quran and Hadith. 5. Understand the moral values of Quran and Hadith 		
Pre-requisites, if any:	Nil		
Course Objectives	<ol style="list-style-type: none"> 1. Know the importance of Quran and Hadith. 2. Understand the style of Quran and Hadith. 3. Understand the role of Quran and Hadith in the Islamic faith and law. 		

	<p>4. Know the structure of Arabic grammar through the examples from Quran and Hadith.</p> <p>5. Learn the cultural and moral values.</p>
Units	
I	<p>(١. سورة لقمان من القرآن الكريم ٢. أحاديث سهلة للدكتور ف. عبد الرحيم)</p> <p style="text-align: right;">سورة لقمان</p> <p style="text-align: right;">من الآية ١ إلى الآية ١٠</p>
II	من الآية ١١ إلى ٢٠
III	من الآية ٢١ إلى ٣٤
IV	<p style="text-align: right;">أحاديث سهلة</p> <p style="text-align: right;">من الحديث ١ إلى الحديث ١٠</p>
V	من الحديث ١١ إلى الحديث ٢٠
Prescribed Text Book	<p style="text-align: right;">١. سورة لقمان من القرآن الكريم</p> <p style="text-align: right;">٢. أحاديث سهلة للدكتور ف. عبد الرحيم</p> <p>1) Sooratu Luqman</p> <p>2) Ahadeeth Sahlah By Dr. V. Abdur Rahim</p>
Reading List (Print and online)	<p>Tafsir Al-Jalalain</p> <p>The Noble Quran, Dr. Muhammad Muhsin Khan and Muhammad Taqi-Ud-Dhin Al-Hilali</p> <p style="text-align: right;">الأربعون النووية</p> <p style="text-align: right;">نصوص من الحديث النبوي الشريف، الدكتور ف. عبد الرحيم</p>

شرح أحاديث سهلة، الدكتور ش. عبد المالك

<https://quran.com/>

<https://sunnah.com/nawawi40>

Method of Evaluation:

Internal Assessment	End Semester Examination	Total	Grade
25	75	100	

Methods of assessment:

Recall (K1) - Simple definitions, MCQ, Recall steps, Concept definitions

Understand/ Comprehend (K2) - MCQ, True/False, Short essays, Concept explanations, Short summary or overview

Application (K3) - Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain

Analyse (K4) - Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge

Evaluate (K5) - Longer essay/ Evaluation essay, Critique or justify with pros and cons

Create (K6) - Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5
CO	1	2	3	3	3

3-Strong

2-Medium

1-Low

UNIVERSITY OF MADRAS

FOUNDATION COURSE: ENGLISH
SYLLABUS WITH EFFECT FROM 2023-2024

FIRST YEAR - SEMESTER I PAPER II –GENERAL ENGLISH

Subject Code	Category	L	T	P	S	Credits	Inst. Hours	Marks		
								CIA	External	Total
100L1ZU	Part II	Y	Y	-	-	3	6	25	75	100
Learning Objectives										
LO1	To enable learners to acquire self awareness and positive thinking required in various life situations.									
LO2	To help them acquire the attribute of empathy									
LO3	To assist them in acquiring creative and critical thinking abilities									
LO4	To enable them to learn the basic grammar									
LO5	To assist them in developing LSRW skills									
Unit No.	Unit Title & Text							No. of Periods for the Unit		
I	SELF-AWARENESS(WHO)&POSITIVE THINKING(UNICEF) Life Story 1.1 Chapter 1 from Malala Yousafzai, I am Malala 1.2 An Autobiography or The Story of My Experiments with Truth (Chapters 1, 2 & 3) M.K.Gandhi Poem 1.3 Where the Mind is Without Fear – Gitanjali 35 – Rabindranath Tagore 1.4 Love Cycle – Chinua Achebe							20		
II	EMPATHY Poem 2.1 Nine Gold Medals – David Roth 2.2 Alice Fell or poverty – William Wordsworth Short Story 2.3 The School for Sympathy – E.V. Lucas 2.4 Barn Burning – William Faulkner							20		
III	CRITICAL & CREATIVE THINKING Poem 3.1 The Things That Haven't Been Done Before – Edgar Guest 3.2 Stopping by the Woods on a Snowy Evening – Robert Frost							20		

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	Readers Theatre 3.3 The Magic Brocade – A Tale of China 3.4 Stories on Stage – Aaron Shepard (Three Sideway Stories from Wayside School” by Louis Sachar)	
IV	Part of Speech 4.1 Articles 4.2 Noun 4.3 Pronoun 4.4 Verb 4.5 Adverb 4.6 Adjective 4.7 Preposition	15
V	Paragraph and Essay Writing 5.1 Descriptive 5.2 Expository 5.3 Persuasive 5.4 Narrative Reading Comprehension	15
Course Outcomes		
Course Outcomes	On completion of this course, students will:	
CO1	Acquire self awareness and positive thinking required in various life situations	PO1,PO7
CO2	Acquire the attribute of empathy.	PO1,PO2,PO10
CO3	Acquire creative and critical thinking abilities.	PO4,PO6,PO9
CO4	Learn basic grammar	PO4,PO5,PO6
CO5	Development and integrate the use of four language skills i.e., listening, speaking, reading and writing.	PO3,PO8
Text books (Latest Editions)		
1.	Malala Yousafzai. I am Malala, Little, Brown and Company, 2013.	
2.	M.K. Gandhi. An Autobiography or The Story of My Experiments with Truth (Chapter – I), Rupa Publications, 2011.	
3.	Rabindranath Tagore. "Gitanjali 35" from Gitanjali (Song Offerings): A Collection of Prose Translations Made by the Author from the Original Bengali. MacMillan, 1913.	
4.	N.Krishnasamy. Modern English: A Book of Grammar, Usage and Composition Macmillan, 1975.	
5.	Aaron Shepard. Stories on Stage, Shepard Publications, 2017.	
6.	J.C. Nesfield. English Grammar Composition and Usage, Macmillan, 2019.	

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Web Resources	
1	Malala Yousafzai. I am Malala (Chapter 1) https://archive.org/details/i-am-malala
2	M.K Gandhi. An Autobiography or The Story of My Experiments with Truth(Chapter-1)- Rupa Publication, 2011 https://www.indiastudychannel.com/resources/146521-Book-Review-An-Autobiography-or-The-story-of-my-experiments-with-Truth.aspx
3	Rabindranath Tagore. "Gitanjali 35" from Gitanjali (Song Offerings) https://www.poetryfoundation.org/poems/45668/gitanjali-35
4	Aaron Shepard.Stories on Stage, Shepard Publications, 2017 https://amzn.eu/d/9rVzINv
5	J C Nesfield. Manual of English Grammar and Composition. https://archive.org/details/in.ernet.dli.2015.44179

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	2	3	2
CO2	2	3	3	3	2	3	3	2	2	2
CO3	3	3	3	2	3	3	3	2	3	2
CO4	3	3	3	3	3	3	3	2	2	2
CO5	3	2	3	3	3	3	3	2	2	3

Mapping with Programme Specific Outcomes:

CO /PO	PSO1	PSO2	PSO3	PSO4
CO1	3	3	3	3
CO2	3	3	3	3
CO3	3	3	3	3
CO4	3	3	3	3
CO5	3	3	3	3
Weightage	15	15	15	15
Weighted percentage of Course Contribution to POS	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

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FIRST YEAR - SEMESTER I PAPER II –GENERAL ENGLISH

Subject Code	Category	L	T	P	S	Credits	Inst. Hours	Marks		
								CIA	External	Total
100L1ZU	Part II	Y	Y	-	-	3	6	25	75	100
Learning Objectives										
LO1	To enable learners to acquire self awareness and positive thinking required in various life situations.									
LO2	To help them acquire the attribute of empathy									
LO3	To assist them in acquiring creative and critical thinking abilities									
LO4	To enable them to learn the basic grammar									
LO5	To assist them in developing LSRW skills									
Unit No.	Unit Title & Text							No. of Periods for the Unit		
I	SELF-AWARENESS(WHO)&POSITIVE THINKING(UNICEF) Life Story 1.1 Chapter 1 from Malala Yousafzai, I am Malala 1.2 An Autobiography or The Story of My Experiments with Truth (Chapters 1, 2 & 3) M.K.Gandhi Poem 1.3 Where the Mind is Without Fear – Gitanjali 35 – Rabindranath Tagore 1.4 Love Cycle – Chinua Achebe							20		
II	EMPATHY Poem 2.1 Nine Gold Medals – David Roth 2.2 Alice Fell or poverty – William Wordsworth Short Story 2.3 The School for Sympathy – E.V. Lucas 2.4 Barn Burning – William Faulkner							20		
III	CRITICAL & CREATIVE THINKING Poem 3.1 The Things That Haven't Been Done Before – Edgar Guest 3.2 Stopping by the Woods on a Snowy Evening – Robert Frost							20		

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	Readers Theatre 3.3 The Magic Brocade – A Tale of China 3.4 Stories on Stage – Aaron Shepard (Three Sideway Stories from Wayside School” by Louis Sachar)	
IV	Part of Speech 4.1 Articles 4.2 Noun 4.3 Pronoun 4.4 Verb 4.5 Adverb 4.6 Adjective 4.7 Preposition	15
V	Paragraph and Essay Writing 5.1 Descriptive 5.2 Expository 5.3 Persuasive 5.4 Narrative Reading Comprehension	15
Course Outcomes		
Course Outcomes	On completion of this course, students will:	
CO1	Acquire self awareness and positive thinking required in various life situations	PO1,PO7
CO2	Acquire the attribute of empathy.	PO1,PO2,PO10
CO3	Acquire creative and critical thinking abilities.	PO4,PO6,PO9
CO4	Learn basic grammar	PO4,PO5,PO6
CO5	Development and integrate the use of four language skills i.e., listening, speaking, reading and writing.	PO3,PO8
Text books (Latest Editions)		
1.	Malala Yousafzai. I am Malala, Little, Brown and Company, 2013.	
2.	M.K. Gandhi. An Autobiography or The Story of My Experiments with Truth (Chapter – I), Rupa Publications, 2011.	
3.	Rabindranath Tagore. "Gitanjali 35" from Gitanjali (Song Offerings): A Collection of Prose Translations Made by the Author from the Original Bengali. MacMillan, 1913.	
4.	N.Krishnasamy. Modern English: A Book of Grammar, Usage and Composition Macmillan, 1975.	
5.	Aaron Shepard. Stories on Stage, Shepard Publications, 2017.	
6.	J.C. Nesfield. English Grammar Composition and Usage, Macmillan, 2019.	

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Web Resources	
1	Malala Yousafzai. I am Malala (Chapter 1) https://archive.org/details/i-am-malala
2	M.K Gandhi. An Autobiography or The Story of My Experiments with Truth(Chapter-1)- Rupa Publication, 2011 https://www.indiastudychannel.com/resources/146521-Book-Review-An-Autobiography-or-The-story-of-my-experiments-with-Truth.aspx
3	Rabindranath Tagore. "Gitanjali 35" from Gitanjali (Song Offerings) https://www.poetryfoundation.org/poems/45668/gitanjali-35
4	Aaron Shepard.Stories on Stage, Shepard Publications, 2017 https://amzn.eu/d/9rVzINv
5	J C Nesfield. Manual of English Grammar and Composition. https://archive.org/details/in.ernet.dli.2015.44179

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	2	3	2
CO2	2	3	3	3	2	3	3	2	2	2
CO3	3	3	3	2	3	3	3	2	3	2
CO4	3	3	3	3	3	3	3	2	2	2
CO5	3	2	3	3	3	3	3	2	2	3

Mapping with Programme Specific Outcomes:

CO /PO	PSO1	PSO2	PSO3	PSO4
CO1	3	3	3	3
CO2	3	3	3	3
CO3	3	3	3	3
CO4	3	3	3	3
CO5	3	3	3	3
Weightage	15	15	15	15
Weighted percentage of Course Contribution to POS	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

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SYLLABUS WITH EFFECT FROM 2023-2024

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
136C1A	FUNDAMENTALS OF MICROBIOLOGY AND MICROBIAL DIVERSITY	Core-1	Y	-	-	-	5	5	25	75	100
Course Objectives											
CO1	Learn the fundamental principles about different aspects of Microbiology including recent developments in the area.										
CO2	Describe the structural organization, morphology and reproduction of microbes.										
CO3	Explain the methods of cultivation of microbes and measurement of growth.										
CO4	Understand the microscopy and other basic laboratory techniques – culturing, disinfection and sterilization in Microbiology.										
CO5	Compare and contrast the different methods of sterilization.										
UNIT	Details								No.of Hours	Course Objectives	
I	History and Evolution of Microbiology, Classification – Three kingdom, five kingdom, six kingdom and eight kingdom. Microbial biodiversity: Introduction to microbial biodiversity- ecological niche. Basic concepts of Eubacteria, Archaeobacteria and Eucarya. Conservation of Biodiversity.								12	CO1	
II	General characteristics of cellular microorganisms (Bacteria, Algae, Fungi and Protozoa) and acellular microorganisms - (Viruses, Viroids, Prions), Differences between prokaryotic and eukaryotic microorganisms. Structure of Bacterial cell wall, cell membrane, capsule, flagella, pili, mesosomes, chlorosomes, phycobilisomes, spores, and gas vesicles. Structure of fungi (Mold and Yeast), Structure of microalgae.								12	CO2	
III	Bacterial culture media and pure culture techniques. Mode of cell division, Quantitative measurement of growth. Anaerobic culture techniques.								12	CO3	
IV	Microscopy – Simple, bright field, dark field, phase contrast, fluorescent, electron microscope – TEM & SEM, Confocal microscopy, and Atomic Force Microscopy. Stains and staining methods.								12	CO4	
V	Sterilization–moist heat - autoclaving, dry heat – Hot air oven, radiation – UV, Ionization, filtration – membrane filter and disinfection, antiseptic; Antimicrobial agents.								12	CO5	
	Total								60		

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Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Study the historical events that led to the discoveries and inventions and understand the Classification of Microorganisms.	PO5, PO6, PO10
CO2	Gain Knowledge of detailed structure and functions of prokaryotic cell organelles.	PO10
CO3	Understand the various microbiological techniques, different types of media, and techniques involved in culturing microorganisms.	PO11
CO4	Explain the principles and working mechanism of different microscopes/Microscope, their function and scope of application.	PO4, PO11
CO5	Understand the concept of asepsis and modes of sterilization and disinfectants.	PO4, PO11
Text Books		
1	Pelczar.M. J., Chan E.C.S. and Noel. R.K. (2007). Microbiology. 7 th Edition.,McGraw – Hill, New York.	
2	Willey J., Sherwood L., and Woolverton C. J., (2017). Prescott’s Microbiology. 10 th Edition., McGraw-Hill International edition.	
3	Tortora, G.J., Funke, B.R., Case,C.L. (2013). Microbiology. An Introduction 11 th Edition., A La Carte Pearson.	
4	Salle. A.J (1992). Fundamental Principles of Bacteriology. 7 th Edition., McGraw Hill Inc.New York.	
5	Boyd, R.F. (1998). General Microbiology,2 nd Edition., Times Mirror, Mosby CollegePublishing, St Louis.	
References Books		
1	Jeffrey C. Pommerville., Alcamo’s Fundamentals of Microbiology (9 th Edition). Jones &Bartlett learning 2010.	
2	Stanier R.Y, Ingraham J. L., Wheelis M. L., and Painter R. R. (2010). General Microbiology, 5 th Edition., MacMillan Press Ltd	
3	Tortora, G.J., Funke, B.R. and, Case, C.L (2013). Microbiology-An Introduction, 11 th Edition., Benjamin Cummings.	
4	Nester E., Anderson D., Roberts C. E., and Nester M. (2006). Microbiology-A Human Perspective, 5 th Edition. McGraw Hill Publications.	
5	Madigan M.T., Martinko J.M., Stahl D.A, and Clark D. P. (2010). Brock - Biology of Microorganisms, 13 th Edition Benjamin-Cummings Pub Co.	

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Web Resources	
1	https://www.cliffsnotes.com/study-guides/biology/microbiology/introduction-to-microbiology/a-brief-history-of-microbiology
2	https://www.keyence.com/ss/products/microscope/bz-x/study/principle/structure.jsp
3	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6604941/#
4	https://bio.libretexts.org/@go/page/9188
5	https://courses.lumenlearning.com/boundless-microbiology/chapter/microbial-nutrition/

Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks

Methods of Assessment	
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain
Analyze (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1					M	M				M	
CO2										M	M
CO3											S
CO4				M							S
CO5				M							S

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Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
136C11	Practical I - Fundamentals of Microbiology and Microbial Diversity	Core-II: Practical I	-	-	Y	-	5	5	40	60	100
Course Objectives											
CO1	Acquire knowledge on Cleaning of glass wares, GLP and sterilization.										
CO2	Gain knowledge on media preparation and cultural characteristics.										
CO3	Learn the pure culture technique										
CO4	Learn the microscopic techniques and staining methods.										
CO5	Acquire knowledge on stain and staining methods										
UNIT	Details								No.of Hours	Course Objectives	
I	Cleaning of glass wares, Microbiological good laboratory practice and safety. Sterilization and assessment of sterility– Autoclave, hot air oven, and membrane filtration.								12	CO1	
II	Media preparation: Liquid media, solid media, semi-solid media, agar slants, agar deeps, agar plates.								12	CO2	
III	Preparation of basal, differential, enriched, enrichment, transport, and selective media preparation - Quality control of media, growth supporting properties, sterility check of media. Pure culture techniques: Streak plate, pour plate, decimal dilution.								12	CO3	
IV	Culture characteristics of microorganisms: Growth on different media, growth characteristics, and description. Demonstration of pigment production. Microscopy: Light microscopy and bright field microscopy.								12	CO4	
V	Staining techniques: Smear preparation, simple staining, Gram's staining and endospore staining. Study on Microbial Diversity using Hay Infusion Broth-Wet mount to show different types of microbes and hanging drop.								12	CO5	
	Total								60		

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Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Practice sterilization methods; learn to prepare media and their quality control.	PO4, PO7, PO8, PO9, PO11
CO2	Learn streak plate, pour plate and serial dilution and pigment production of microbes.	PO4, PO7, PO8, PO9
CO3	Understand Microscopy methods, different Staining techniques and motility test.	PO4, PO7, PO8, PO9, PO11
CO4	Observe culture characteristics of microorganisms.	PO4, PO7, PO8, PO9
CO5	Study on Microbial Diversity using Hay Infusion Broth-Wet mount	PO4, PO7, PO8, PO9
Text Books		
1	James G Cappucino and N. Sherman MB(1996). A lab manual Benjamin Cummins, New York 1996.	
2	Kannan. N (1996). Laboratory manual in General Microbiology. Palani Publications.	
3	Sundararaj T (2005). Microbiology Lab Manual (1 st edition) publications.	
4	Gunasekaran, P. (1996). Laboratory manual in Microbiology. New Age International Ld., Publishers, New Delhi.	
5	R C Dubey and D K Maheswari (2002). Practical Microbiology. S. Chand Publishing.	
References Books		
1	Atlas.R (1997). Principles of Microbiology, 2 nd Edition, Wm.C.Brown publishers.	
2	Amita J, Jyotsna A and Vimala V (2018). Microbiology Practical Manual. (1 st Edition). Elsevier India	
3	Talib VH (2019). Handbook Medical Laboratory Technology. (2 nd Edition). CBS	
4	Wheelis M, (2010). Principles of Modern Microbiology, 1st Edition. Jones and Bartlett Publication.	
5	Lim D. (1998). Microbiology, 2 nd Edition, WCB McGraw Hill Publications.	
Web Resources		
1	http://www.biologydiscussion.com/micro-biology/sterilisation-and-disinfection-methods-and-principles-microbiology/24403 .	
2	https://www.ebooks.cambridge.org/ebook.jsf?bid=CBO9781139170635	
3	https://www.grsmu.by/files/file/university/cafedry//files/essential_microbiology.pdf	
4	https://microbiologyinfo.com/top-and-best-microbiology-books/	

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5	https://www.cliffsnotes.com/studyguides/biology/microbiology/introduction-to-microbiology/a-brief-history-of-microbiology	
Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview	
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
Analyze (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1				M			L	M	L		M
CO2				S			L	L	L		
CO3				S			M	M	L		M
CO4				S			M	L	L		
CO5				S			M	L	L		

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Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
136E1A	Basic And Clinical Biochemistry	Elective Generic / Discipline Specific Elective-I	Y	-	-	-	3	4	25	75	100
Course Objectives											
CO1	Attain thorough knowledge on carbohydrates and lipids, their characteristic properties and organization in carrying out all the living functions which constitute the life.										
CO2	Explain the biological activity of amino acids and proteins.										
CO3	Identify the metabolic errors in enzymes of carbohydrates and lipids.										
CO4	Describe the disorders in amino acid metabolism.										
CO5	Interpret the consequences, biochemical, clinical features, diagnosis and treatment of metabolic diseases of day today life.										
UNIT	Details								No.of Hours	Course Objectives	
I	Biomolecules - Carbohydrate – General properties, function, structure, classification – monosaccharides (Glucose, Fructose, Galactose), oligosaccharides (Sucrose, Maltose, Lactose) and polysaccharides (Starch, Glycogen,) and biological significance. Lipids – General properties, functions, structure, classification (Simple, Derived and Complex), Cholesterol-LDL, HDL – biological significance.								12	CO1	
II	Biomolecules - Amino acids – General properties, functions, structure, classification and biological significance. Proteins– General structure, properties, functions, classification and biological significance.								12	CO2	
III	Disorders of Metabolism: Disorders of carbohydrate metabolism: Diabetes mellitus, ketoacidosis, hypoglycemia, glycogen storage diseases, galactosemia and lactose intolerance. Disorders of lipid metabolism: hyperlipidemia, hyperlipoproteinemia, hypercholesterolemia, hypertriglyceridemia, sphingolipidosis.								12	CO3	
IV	Disorders of Metabolism: Disorders of amino acid metabolism - alkaptonuria, phenylketonuria, phenylalaninemia, homocystineuria, tyrosinemia, aminoacidurias.								12	CO4	
V	Evaluation of organ function tests: Assessment and clinical manifestations of renal, hepatic, pancreatic, gastric and intestinal functions. Diagnostic enzymes: Principles of diagnostic enzymology.								12	CO5	

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	Clinical significance of aspartate aminotransferase, alanine aminotransferase, creatine kinase, aldolase and lactate dehydrogenase.		
	Total	60	
Course Outcomes			
Course Outcomes	On completion of this course, students will;		
CO1	Explain the structure, classification, biochemical functions and significance of carbohydrates and lipids	PO1	
CO2	Differentiate essential and non-essential amino acids, biologically important modified amino acids and their functions, Illustrate the role, classification of Proteins and recognize the structural level organization of proteins, its functions and denaturation.	PO1	
CO3	Assess defective enzymes and Inborn errors. Recognize diseases related to carbohydrate and lipid metabolism.	PO4, PO5, PO6	
CO4	Discuss and evaluate the pathology of amino acid metabolic disorders.	PO4, PO5, PO6	
CO5	Appraise the imbalances of enzymes in organ function and relate the role of Clinical Biochemistry in screening and diagnosis.	PO5, PO6, PO9	
Text Books			
1	Satyanarayana, U. and Chakrapani, U(2014).Biochemistry,4 th Edition, Made Simple Publisher.		
2	Jain J L, Sunjay Jain and Nitin Jain (2016).Fundamentals of Biochemistry, 7 th Edition, S Chand Company.		
3	AmbikaShanmugam's (2016). Fundamentals of Biochemistry for Medical Students, 8 th Edition. Wolters Kluwer India Pvt Ltd.		
4	Vasudevan. D.M.Sreekumari.S, Kannan Vaidyanathan (2019). Textbook Of Biochemistry For Medical Students. Kindle edition, Jaypee Brothers Medical Publishers		
5	Jeremy M. Berg, LubertStryer, John L. Tymoczko, Gregory J. Gatto (2015). Biochemistry, 8 th edition. WH Freeman publisher.		
References Books			
1	AmitKessel&Nir Ben-Tal (2018). Introduction to Proteins: structure, function and motion. 2 nd Edition, Chapman and Hall.		
2	David L. Nelson and Michael M. Cox (2017).Lehninger Principles of Biochemistry, 7 th Edition W.H. Freeman and Co., NY.		
3	LupertStyrer, Jeremy M. Berg, John L. Tymaczko, Gatto Jr., Gregory J (2019). Biochemistry. 9 th Edition ,W.H.Freeman& Co. New York.		

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4.	Donald Voet, Judith Voet, Charlotte Pratt (2016). Fundamentals of Biochemistry: Life at the Molecular Level, 5 th Edition, Wiley.	
5.	Joy PP, Surya S. and AswathyC (2015). Laboratory Manual of Biochemistry, Edition 1., Publisher: Kerala agricultural university.	
Web Resources		
1	https://www.abebooks.com › plp	
2	https://kau.in/document/laboratory-manual-biochemistry	
3	https://metacyc.org	
4	https://www.medicalnewstoday.com	
5	https://journals.indexcopernicus.com	
Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview	
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
Analyze (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	M										
CO2	M										
CO3				S	S	S					
CO4				S	S	S					
CO5					S	S			S		

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Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CI A	External	Total
136S1A	Social and Preventive Medicine	SEC - 1 (NME)	Y	-	-	-	2	2	25	75	100
Course Objectives											
CO1	Describe the concepts of health and disease and their social determinants										
CO2	Summarize the health management system										
CO3	Know about the various health care services										
CO4	Outline the goals of preventive medicine										
CO5	Gain knowledge about alternate medicine										
UNIT	Details								No.of Hours	Course Objectives	
I	Introduction to Social Medicine: History of social medicine-concepts of health and disease-social determinants of health and disease-health and quality of life-Health information system- measures of population health-health policies.								6	CO1	
II	Health Management: Applications of behavioural sciences and psychology in health management - nutritional programs for health management - water and sanitation in human health. National programs for communicable and non-communicable diseases- environmental and occupational hazards and their control.								6	CO2	
III	Health Care and Services: Health care of the community-information, education, communication and training in health-maternal & child health-school health services- Geriatrics-care and welfare of the aged-mental health-health services through general practitioners.								6	CO3	
IV	Preventive Medicine: Introduction- Role of preventive medicine- levels of prevention-Risk assessment in communities and vulnerable population – surveillance, monitoring and reporting of disease outbreaks - forecasting and control measures in community setting – early detection methods.								6	CO4	
V	Prevention through Alternate Medicine: Unani, Ayurveda, Homeopathy, Naturopathy systems in epidemic								6	CO5	

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	and pandemic outbreaks. International health regulations. Infectious disease outbreak case studies and precautionary response during SARS and MERS coronavirus, Ebola and novel SARS-COV2 outbreaks.		
	Total	30	

Course Outcomes

Course Outcomes	On completion of this course, students will;		
CO1	Identify the health information system	PO1,PO5, PO6	
CO2	Associate various factors with health management system	PO1,PO2, PO3,PO5, PO6, PO9	
CO3	Choose the appropriate health care services	PO1,PO5, PO6	
CO4	Appraise the role of preventive medicine in community setting	PO4,PO5, PO6	
CO5	Recommend the usage of alternate medicine during outbreaks	PO1,PO5, PO6	

Text Books

1.	Park.K (2021). Textbook of preventive and social medicine, 26 th edition. Banarsidas Bhanot publishers.
2.	Mahajan& Gupta (2013). Text book of preventive and social medicine, 4 th edition. Jaypee brothers medical publishers.
3.	Chun-Su Yuan, Eric J. Bieber, Brent Bauer (2006). Textbook of Complementary and Alternative Medicine. Second Edition. Routledge publishers.
4.	Vivek Jain (2020). Review of Preventive and Social Medicine: Including Biostatistics. 12 th edition, Jaypee Brothers Medical Publishers.
5.	Lal Adarsh Pankaj Sunder (2011). Textbook of Community Medicine: Preventive and Social Medicine, CBS publisher.

References Books

1	Howard Waitzkin, Alina Pérez, Matt Anderson (2021). Social Medicine and the coming Transformation. First Edition. Routledge publishers.
2	GN Prabhakara (2010). Short Textbook of Preventive and Social Medicine. Second Edition. Jaypee publishers.
3	Jerry M. Suls, Karina W. Davidson, Robert M. Kaplan (2010). Handbook of Health Psychology and Behavioral Medicine. Guilford Press.
4	Marie Eloïse Muller, Marie Muller, MarthieBezuidenhout, KarienJooste (2006). Health Care Service Management. Juta and Company Ltd.
5	Geoffrey Rose (2008). Rose's Strategy of Preventive Medicine: The Complete. OUP Oxford.

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Web Resources		
1	https://www.omicsonline.org/scholarly/social--preventive-medicine-journals-articles-ppts-list.php	
2	https://www.teacheron.com/online-md_preventive_and_social_medicine-tutors	
3	https://www.futurelearn.com	
4	https://www.healthcare-management-degree.net	
5	https://www.conestogac.on.health-care-administration-and-service-management	
Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview	
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
Analyze (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	S				S	S					
CO2	S	S		M	S	S			M		
CO3				M	S	S					
CO4	S			S	S	M					
CO5	S				S	S					

**சென்னைப் பல்கலைக்கழகம்
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Part-IV

அடிப்படைத் தமிழ் - பாடத்திட்டம்

Basic Tamil - Syllabus

2 பருவங்கள் (முதல் பருவம்)

(B.A., B.Sc., B.Com., BCA., BBA)

2023-24

பருவம் - I (Semester - I)
அடிப்படைத் தமிழ் - I (Basic Tamil - I)

Course Code	Course Name	Category	L	T	P	S	Credit	Ins. Hours	Marks		
									CIA	External	Total
100S1A	அடிப்படைத் தமிழ் - I Basic Tamil - I	Supportive	2		-	-	2	2	25	75	100
Pre requisite	- தமிழ் கற்கும் ஆர்வம்.									SV 2023	
Learning Objectives - கற்றல் நோக்கங்கள்											
<ul style="list-style-type: none"> பிறமொழி மாணவர்களுக்குத் தமிழ்மொழி பயிற்றுவித்தல். தமிழ் எழுத்துகளின் வரிவடிவங்களை அறிவதோடு உச்சரிக்கவும் எழுதவும் பயிற்றுவித்தல். கற்றுக்கொண்ட சொற்களைக் கொண்டு தொடர்களை அமைத்துப் பேசக் கற்றுக்கொள்ளச் செய்தல். தமிழ்பேசும் மக்களிடையே அவர்கள் கலந்துபழகி, தங்கள் வாழ்வைச் சிறப்பாக நடத்தத் தேவையான மொழிவளத்தைப் பெறச் செய்தல். 											
Expected Course Outcomes - எதிர்பார்க்கப்படும் கற்றல் அடைவுகள்											
On the successful completion of the course, students will be able to இப் பாடத்தைக் கற்பதால் பின்வரும் பயன்களை மாணவர் அடைவர்.											
CO 1	தமிழ் உயிரெழுத்து வடிவங்களையும் மெய்யெழுத்து வடிவங்களையும் அறிந்துகொள்வர்.									K1,K2	
CO 2	உயிர், மெய், உயிர்மெய்த் துணைக் குறியீடுகளை அறிந்து அவற்றை எழுதும் திறன் பெறுவர்.									K2	
CO 3	ஒரு எழுத்துக்கு ஒரு ஒலி, ஒரு ஒலிக்கு ஒரு எழுத்து என்ற தமிழின் உச்சரிப்பு - வரிவடிவத் தொடர்பை உணர்வர்.									K3,K4	
CO 4	சில அடிப்படையான மொழி இலக்கண விதிகளை அறிந்து பயன்படுத்துவர்.									K3,K5	
CO 5	தமிழ்நாட்டுச் சூழலில் அன்றாடத் தேவைகளை நிறைவேற்றிக்கொள்ள ஏற்ற மொழிப் பயன்பாடுகளை அறிவர்.									K4,K6	
K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create											
Unit - I	உயிரெழுத்துகள், மெய்யெழுத்துகள், உயிர்மெய் எழுத்துகள்										
	உயிர், மெய், உயிர்மெய்த் துணைக் குறியீடுகள், குறில்-நெடில், வல்லினம்-மெல்லினம்-இடையினம் - எழுத்துகளின் ஒலிப்பு முறையையும் எழுதும் முறையையும் கற்றல்.										
Unit - II	ஒரெழுத்து ஒருமொழியும் இன்றியமையாத பெர்றசொற்களும்										
	ஒரெழுத்துச் சொற்கள் - பல எழுத்துச் சொற்கள் - சொற்பொருள் அறிதல் - நாள், மாதம், எண் பெயர்கள் அறிதல் - பருவங்கள் அறிதல் - விலங்குகள், தாவரங்கள், உடல் உறுப்புகள், உறவுப் பெயர்கள், ஊர்ப் பெயர்கள், போன்றவற்றை அறிதல்.										
Unit - III	சொல் வகைகளும் சொற்பயன்பாடும்										
	எண் அடை, பெயரடை, வினையடை, இடைச்சொற்கள் இணைப்பு, வேற்றுமை உருபு இணைப்பு போன்ற மொழி விதிகளைக் கற்பித்தல்.										
Unit - IV	பிழையின்றிப் பேசுதலும் எழுதுதலும்										
	திணை-பால்-எண்-இடம்-காலம் ஆகியவற்றை அறிதல். பொதுவாக இவற்றில் ஏற்படும் பிழைகளை உணர்த்திச் சரிசெய்தல்.										

Unit - V	மொழிப் பயன்பாட்டு பயிற்சி
	<ul style="list-style-type: none"> • ஆர்வமுட்டும் நிகழ்ச்சி அல்லது சிறிய கதையைச் சொல்லச் செய்தல் / படிக்கச் செய்தல். • சூழல்சார் (கல்லூரி, நூலகம், உணவகம், பேருந்து-இரயில்-விமான நிலையங்கள், அங்காடிகள்) உரையாடல்களை மாணவர்களிடையே நிகழ்த்துதல். • கதையினைச் சொல்லச் சொல்ல எழுதச் சொல்லுதல். • திரைப்படம் அல்லது திரைப்படப் பாடல் குறித்து மாணவர்களிடையே குழுக் கலந்துரையாடல் செய்யச் சொல்லல்.
Text book (s)	
•	அடிப்படைத் தமிழ்-1 (Basic Tamil-I)
Reference Books / Websites	
•	தமிழில் நாமும் தவறில்லாமல் எழுதலாம் - பொற்கோ, பாரி நிலையம், சென்னை, 2003.
•	www.tamilvu.org/ta/content/சான்றிதழ்
•	www.thamizham.net/kal/ttenglish/cards32-u8.htm
•	www.thamizham.net/kal/ttenglish/index-u8.htm
•	www.ilearntamil.com
•	www.wikihow.com/Learn-Tamil
•	www.ilovelanguages.org/tamil.php
•	www.ling-app.com/learn-tamil
•	www.ilearntamilnow.com
•	www.17-minute-languages.com/en/learn-tamil
•	www.hindustanitongue.com/learn-tamil
•	www.duolingo.com/course/ta/en/Learn-Tamil
•	www.mylanguages.org/learn_tamil.php
•	www.learn101.org/tamil.php
•	www.goethe-verlag.com/book2/EN/ENTA/ENTA002.HTM
•	www.karky.in/payilcourses/index.html
•	www.tamilvu.org/ta/பயணியர்-தமிழ்
•	www.languagetrainers.com/blog/tamil-words/
•	www.thamizham.net/kal/tamil.htm
•	www.worldtamilacademy.com
•	www.outsourcingtranslation.com/resources/phrases/tamil-sentences.php
•	www.ling-app.com/ta/basic-words-in-tamil/
•	www.thirutamil.com/article/20-easy-thirukkural-in-tamil/
•	www.chennaiLibrary.com/avvai/kondraivendan.html
•	www.tamilvu.org/ta/content/புதிய-பாடத்திட்டம்-2022
•	www.tamilvu.org/ta/content/மின்-கற்றலுக்கான-இணையத்தளம்
•	www.ling-app.com/ta/tamil-culture
•	www.caleidoscope.in/art-culture/tamil-nadu-culture-3

Apps

- www.kaniyantamil.com/best-mobile-apps-tamil-learning/
- Tamil 101 - Learn to Write
- <https://payil.app/tva/ta/>
- <https://tamil-101.en.aptoide.com/app>
- Ling - Learn Tamil Language
- Tamil by Nemo
- Learn Tamil Quickly

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2
CLO 1	3	2	3	2	2	3	2	2	2	2	3	3
CLO 2	2	2	2	3	3	2	2	3	3	2	2	2
CLO 3	3	3	3	2	2	3	3	2	3	3	3	3
CLO 4	3	2	3	3	3	3	2	2	2	2	3	2
CLO 5	2	2	3	3	2	2	3	3	2	3	3	2

Strong - 3, Medium - 2, Low - 1

**சென்னைப் பல்கலைக்கழகம்
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Part-IV

வளர்நிலைத் தமிழ் - பாடத்திட்டம்

Advanced Tamil - Syllabus

2 பருவங்கள் (முதல் பருவம்)

(B.A., B.Sc., B.Com., BCA., BBA)

2023-24

பருவம் - 1 (Semester - 1)
வளர்நிலைத் தமிழ் - I (Advanced Tamil - I)

Course Code	Course Name	Category	L	T	P	S	Credit	Ins. Hours	Marks		
									CIA	External	Total
100S1B	வளர்நிலைத் தமிழ் - I Advanced Tamil - I	Supportive	2	-	-	-	2	2	25	75	100
Pre-requisite	பத்தாம் வகுப்பு வரை தமிழை மொழிப்பாடமாகப் படித்திருக்க வேண்டும்.										SV 2023
Learning Objectives - கற்றல் நோக்கங்கள்											
<ul style="list-style-type: none"> இக்கால இலக்கியங்களில் இன்றியமையாத சில வகைமைகளை மாணவர்கள் அறியுமாறு செய்தல். அழியும் நிலையில் உள்ள நாட்டுப்புறப் பாடல்கள் குறித்த விழிப்புணர்வை ஏற்படுத்துதல். உரைநடை வடிவத்தின் குறிப்பிடத்தக்க கூறான கட்டுரை இலக்கியம் பற்றியும் அதன் சிறப்புகள் குறித்தும் அறியச் செய்தல். தம் உள்ள கருத்துகளை நடப்பு இலக்கிய வடிவங்களைப் பயன்படுத்திச் சமூகத்துக்குப் படைத்தளிக்கத் தூண்டுதல். மொழிப் பிழைகள் நேராமல் தவிர்த்து , பல்வகை ஊடகங்களிலும் வேலை வாய்ப்பு பெற ஊக்கமளித்தல். 											
Expected Course Outcomes - எதிர்பார்க்கப்படும் கற்றல் அடைவுகள்											
On the successful completion of the course, students will be able to											
இப் பாடத்தைக் கற்பதால் பின்வரும் பயன்களை மாணவர் அடைவர்											
CO 1	சமகால இலக்கியங்களின் நோக்குகள்- போக்குகள் குறித்து மாணவர்கள் அறிந்துகொள்வர்.										K2
CO 2	நாட்டுப்புற மக்களின் வாழ்வியல் , அறிவாற்றல், இன்றைய நிலை ஆகியவை குறித்துச் சிந்திப்பர்.										K1,K2
CO 3	தங்கள் கற்பனை வளத்தை மாணவர்கள் பெருக்கிக் கொள்வர்.										K2,K4,K6
CO 4	மொழியில் பிழைகள் நேரா வண்ணம் எழுதக் கற்றுக் கொள்வதோடு , திறனாய்வு செய்யும் ஆற்றல் பெறுவர்.										K5,K4
CO 5	திரைப்படம், சின்னத்திரை, தொலைக்காட்சி உள்ளிட்ட ஊடகங்களில் பாடல், இசை, எழுத்து எனப் பல்வேறு வேலைவாய்ப்புகள் பெறுவர்.										K5,K4,K6
K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create											
Unit - I	நாட்டுப்புறப் பாடலும் கவிதையும்										
	<ol style="list-style-type: none"> 1. கி.வ.ஜா.வின் மலையருவி அல்லது ஏதேனும் ஒரு நாட்டுப்புறத் தொகுப்பிலிருந்து தேர்ந்தெடுத்துத் தாலாட்டுப் பாடல், சிறுவர் விளையாட்டுப் பாடல், தொழில் பாடல், ஒப்பாரிப் பாடல் ஆகியவற்றை மாணவர்களுக்கு அறிமுகப்படுத்துதல். 2. தமிழ்த்தாய் வாழ்த்து முதல் பாடல் மட்டும். 3. பாரதியாரின் “செந்தமிழ் நாடென்னும் போதினிலே” பாடல். 										
Unit - II	புதுக்கவிதையும் சிறுகதையும்										
	<ol style="list-style-type: none"> 1. “நிலத்தை ஜெயித்த விதை” - வைரமுத்து 2. “தீக்குச்சி” (பித்தன் தொகுப்பு) - அப்துல் ரஹ்மான் 3. “கட்டை விரல்” - கா.ந. அண்ணாதுரை 4. “சனிக்கிழமை” (காகித உறவு தொகுப்பு) - சு.சமுத்திரம் 										

Unit - III	கட்டுரையும் குறிப்புகளைக்கொண்டு கட்டுரை எழுதுதலும்											
	1. மு.வ.வின் “நல்வாழ்வு” தொகுப்பிலிருந்து ஏதேனும் ஒரு கட்டுரை. 2. குறிப்புகளைக் கொடுத்துக் கட்டுரை எழுதச் செய்தல்.											
Unit - IV	ம் நேர்காணலும் திறனாய்வு											
	இலக்கியநயம் பாராட்டுதல், நூல் திறனாய்வு, திரைப்படத் திறனாய்வு. நேர்காணல்											
Unit - V	மொழிப் பயிற்சி											
	1. திணை, பால், எண், இடப் பயன்பாடு அறிதல். 2. பொருந்திய சொல் தருதல். 3. பிழை நீக்கி எழுதுதல்.											
Text book (s)												
•												
Reference Books / Websites												
•												
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2
CLO 1	3	2	3	2	2	3	2	2	2	2	3	3
CLO 2	2	2	2	3	3	2	2	3	3	2	2	2
CLO 3	3	3	3	2	2	3	3	2	3	3	3	3
CLO 4	3	2	3	3	3	3	2	2	2	2	3	2
CLO 5	2	2	3	3	2	2	3	3	2	3	3	2
Strong - 3, Medium - 2, Low - 1												

UNIVERSITY OF MADRAS
B.Sc. DEGREE PROGRAMME IN MICROBIOLOGY
 SYLLABUS WITH EFFECT FROM 2023-2024

FOUNDATION COURSE –SEM 1

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
136B1A	INTRODUCTION TO MICROBIAL WORLD	FC	Y	-	-	-	2	2	25	75	100

Objectives of the Course:

- To create awareness about scope of microbiology and carrier opportunities..
- To stimulate interest and curiosity in microbial science
- To increase student motivation to learn science

Course Outcome:

- Learners will develop interest in the subject of Microbiology and it will also be useful to fill the gap.
- Stimulating interest and curiosity in Microbiology will increase student motivation to learn applied areas of microbiology.

Unit I: Importance of Microbiology

Need for microbiology literacy in society. -Microbiology in the 21 st Century. Importance of microbiology in daily life.

Unit II: Basics of Microbiology:

Comparison of General Biology and Microbiology, Definition, Branches of Microbiology, and its Importance in Science. Building block molecules: Discussion of four major biomolecules studied in general biology and their importance in microbiology, metabolism, and enzymes

Unit III: Relationship of microbes between plants and animals:

Role of microbes in plant growth, photosynthesis, nitrogen fixation, biofertilizer, Normal flora, and infectious bacteria (typhoid, dysentery, food poisoning, etc.) Response of human immune system- natural and artificial immunity.

Unit IV: Applications of Microbiology Microbes in human welfare: Microbes in household food processing, microbes in industries, and microbes in waste management, in brief, Microbes as biocontrol agents, Microbes in biogas production. Carrier opportunities in Microbiology.

UNIT V: Introduction to Basic Instruments and Glassware:

Glassware: conical flask, volumetric flask, beaker, pipette, burette, measuring cylinder, etc., their ranges, uses, and calibrations Instruments: Incubator, oven, balance (single pan and digital),

BOD incubator, microscope, water bath, pH metre, colorimeter, autoclave, etc., uses, handling, and calibrations

Preparation of reagents and media: percent, normal, and molar solution preparations, broth and media preparations, slant and plate preparations, storage and maintenance of culture.



**Dr. MGR-JANAKI COLLEGE
OF ARTS & SCIENCE FOR WOMEN**



SATHYABAMA MGR MALIGAI

11 & 13, Durgabai Deshmukh Road, R. A. Puram, Chennai - 28

Accredited with 'A' Grade by NAAC

An ISO 9001:2015 Certified Institution

Affiliated to the University of Madras

DEPARTMENT OF MICROBIOLOGY

SHIFT -I

SYLLABUS

FROM 2023-2024

SEMESTER-II

சென்னைப் பல்கலைக்கழகம்
University of Madras

Part-I

பொதுத் தமிழ் - பாடத்திட்டம்

General Tamil - Syllabus

4 பருவங்கள் (இரண்டாம் பருவம்)

(B.A., B.Sc., B.Com., BCA., BBA)

2023-24

பொதுத்தமிழ்- 2
தமிழ் இலக்கிய வரலாறு -2
முதலாம் ஆண்டு – இரண்டாம் பருவம்

Course Code	Course Name	Category	L	T	P	S	Credits	Ins.Hrs	CIA	Externa	Total
100L2AU	பொதுத்தமிழ் -2 தமிழ் இலக்கிய வரலாறு -2	Supportive	Y	-	-	-	3	6	25	75	100

Learning Objectives

- முதலாமாண்டுப் பட்ட வகுப்பு மாணவர்களுக்குத் தமிழ் மொழி இலக்கியங்களை அறிமுகம் செய்தல்
- தமிழ் இலக்கியப் போக்குகளையும், இலக்கணங்களையும் மாணவர் அறியுமாறு செய்து அவர்களின் படைப்பாற்றலைத் தூண்டுதல்
- தமிழ் இலக்கியம் சார்ந்த போட்டித் தேர்வுகளுக்கு ஏற்ப கற்பித்தல் நடைமுறைகளை மேற்கொள்ளுதல்

Expected Course Outcomes

On the Successful completion of the Course, Students will be able to

இப்பாடத்தைக் கற்பதால் பின்வரும் பயன்களை மாணவர் அடைவர்

CO 1	சிற்றிலக்கியங்களின்வழி இலக்கியச் சுவையினையும் பண்பாட்டு அறிவினையும் பெறுவர்	K4
CO 2	புதுக்கவிதை வரலாற்றினை அறிந்து கொள்வர்	K5, K6
CO 3	திராவிட இயக்க இலக்கியங்களைக் கற்பதன் மூலம் மொழி உணர்வு , இன உணர்வு, சமத்துவம் சார்ந்த சிந்தனைகளைப் பெறுவர்	K3
CO 4	தமிழ்மொழியைப் பிழையின்றி எழுதவும், புதிய கலைச்சொற்களை உருவாக்கவும் அறிந்து கொள்வர்	K3
CO 5	போட்டித் தேர்வுகளில் வெற்றி பெறுவதற்குத் தமிழ்ப் பாடத்தினைப் பயன்கொள்ளும் வகையில் பயிற்சி பெறுவர்.	K2

K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create

அலகு-1 தமிழ் இலக்கிய வரலாறு அறிமுகம்.

1. சிற்றிலக்கியம்; குறவஞ்சி, கலம்பகம், உலா, பரணி, பள்ளு, பிள்ளைத்தமிழ், தூது, அந்தாதி.
2. தனிப்பாடல் அறிமுகம்
3. இக்கால இலக்கியம் ;கவிதை, சிறுகதை,நாடகம், உரைநடை. , திராவிட இயக்கம் வளர்த்த தமிழ்.

அலகு-2 சிற்றிலக்கியக்கமும்,தனிப்பாடலும்

சிற்றிலக்கியம்;

- கலிங்கத்து பரணி- விருந்தினரும் வறியவரு நெருங்கி யுண்ணரும் - முதல் - கேட்பாரைக் காண்மின் காண்மின் - வரை
- திருக்குற்றாலக் குறவஞ்சி - வானரங்கள் கனிகொடுத்து
- முக்கூடற் பள்ளு - ஆற்று வெள்ளம் நாளை வரத்
- அபிராமி அந்தாதி- கலையாத கல்வியும் குறையாத வயதும் (பதினாறு செல்வங்கள்)
- திருவரங்கக் கலம்பகம் - மறம் -பிள்ளைப் பெருமாள் ஐயங்கார்-பேசுவந்த தூத செல்லரித்த ஓலை செல்லுமோ
- தமிழ்விடு தூது முதல் பத்து கண்ணிகள்

தனிப்பாடல்;

- வான்குருவி யின்கூடு -ஒளவையார்
- ஆமணக்குக்கும் யானைக்கும் சிலேடை ;முத்திருக்கும் கொம்பசைக்கும் மூரித்தண்டே - காளமேகப் புலவர்
- இம்பர் வான் எல்லை இராமனையே பாடி -வீரராகவர்
- நாராய் நாராய் -சத்தி முத்தப் புலவர்

அலகு-3

இக்கால இலக்கியம்- 1

1. பாரதியார் பாரத சமுதாயம் வாழ்கவே
2. பாரதிதாசன் - சிறுத்தையே வெளியில் வா
3. நாமக்கல் கவிஞர்-கத்தியின்றி
4. தமிழ் ஒளி - மீன்கள் (அந்தி நிலா பார்க்க வா)
5. ஈரோடு தமிழன்பன் - எட்டாவது சீர் (வணக்கம் வள்ளுவ)

சிறுகதைகள், _

1. புதுமைப்பித்தன் - கடிதம்
2. ஜெயகாந்தன் -வாய்ச் சொற்கள் (மாலை மயக்கம் தொகுப்பு)
3. ஆர். சூடாமணி - அந்நியர்கள்

உரைநடை ;

1. மு வ கடிதங்கள் - தம்பிக்கு நூலில் முதல் இரண்டு கடிதங்கள்

அலகு-4

இக்கால இலக்கியம்- 2

1. தந்தை பெரியார் - திருக்குறள்(மாநாட்டு) உரை
2. பேரறிஞர் அண்ணா - இரண்டாம் உலகத் தமிழ் மாநாட்டு உரை
3. கலைஞர் மு. கருணாநிதி - தொல்காப்பிய பூங்கா -எழுத்து -முதல் நூற்பா கட்டுரை

நாடகம் / திரைத்தமிழ் :

1. வேலைக்காரி -திரைப்படம்
2. ராஜா ராணி -சாக்ரடீஸ் -ஓரங்க நாடகம்

இதழியல் தமிழ் ;

முரசொலி கடிதம்

1. செம்மொழி வரலாற்றில் சில செப்பேடுகள்

அலகு-5

மொழிப் பயிற்சி

சொல் வேறுபாடு / பிழை தவிர்த்தல்

- வாசிப்பது – வாசிப்பவர்
- சுவர்- சுவரில்
- வயிறு - வயிற்றில்
- கோயில்- கோவில்
- கறுப்பு – கருப்பு
- இயக்குநர்-இயக்குனர்
- சில்லறை-சில்லரை
- முறித்தல் – முரித்தல்
- மனம்-மனசு- மனது
- அருகில்-அருகாமையில்
- அக்கரை- அக்கறை
- மங்கலம்- மங்களம்.

பயிற்சி :

- பிழையான சொற்களை ஒரு பத்தியில் கொடுத்து அந்தப் பிழையான சொற்களைச் சரியாக எழுதச் செய்தல்
- சிறிய பத்தி ஒன்றை ஆங்கிலத்தில் கொடுத்து அதனைத் தமிழில் மொழிபெயர்க்க வைத்தல்.

Text books

- .

Reference Books

- மு. வரதராசன், தமிழ் இலக்கிய வரலாறு, சாகித்ய அக்காதெமி, புதுடெல்லி.
- மது. ச. விமலானந்தன், தமிழ் இலக்கிய வரலாறு, மீனாட்சி புத்தக நிலையம், மதுரை.
- தமிழண்ணல், புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு, மீனாட்சி புத்தக நிலையம், மதுரை.
- தமிழ் இலக்கிய வரலாறு –முனைவர்.சிற்பி பாலசுப்ரமணியம், முனைவர்.சொ.சேதுபதி
- புதிய தமிழ் இலக்கிய வரலாறு– முனைவர்.சிற்பி பாலசுப்ரமணியம்,நீல.பத்மநாபன்
- தமிழ் இலக்கிய வரலாறு - டாக்டர்.அ.கா.பெருமாள்
- தமிழ் இலக்கிய வரலாறு –முனைவர். ப.ச.ஏசுதாசன்
- தமிழ் இலக்கிய வரலாறு - ஸ்ரீ குமார்
- வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு–பாக்கியமேரி
- தமிழ் பயிற்றும் முறை, பேராசிரியர் ந. சுப்புரெட்டியார் - மணிவாசகர் பதிப்பகம், சிதம்பரம்

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

Web Sources

- <https://www.chennailibrary.com/>
- <https://www.sirukathaigal.com>
- <https://www.tamilvirtualuniversity.org>
- <https://www.noolulagam.com>
- <https://www.katuraitamilblogspot.com>

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	1.
CLO1	3	2	3	3	3	2	2	2	3	2	3	2	
CLO2	3	3	2	2	2	3	2	3	3	2	2	2	
CLO3	3	2	3	3	2	2	2	3	2	3	3	2	
CLO4		3	3	2	2	2	3	2	3	2	3	3	
CLO5	3	3	2	2	2	3	3	2	2	2	3	3	

Strong -3,Medium-2,Low-1

UNIVERSITY OF MADRAS
UG & 5 YR INTEGRATED DEGREE – FOUNDATION COURSE
 EXISTING SYLLABUS (22-23) FOLLOWED FOR THE ACADEMIC YEAR 2023-2024

FOUNDATION COURSE: PART-I HINDI PAPER-II

100L2E

Inst.Hrs. : 6
Credits : 3

Year : I
Semester : II

Paper – II- ONE ACT PLAY, SHORT STORY & TRANSLATION		
Duration:	1 Semester	
Programme Outcomes:	1. Identify the features, elements of literary forms i.e. Drama, one act play, Novel and Short Stories, techniques of Translation 2. Understand the Ideology, message and aims of the literary works and writers 3. Obtain the knowledge of method of critical study of Literary works. 4. Obtain the skills of summarise, interpretation of contexts, and practice of translation 5. Employ the knowledge of translation and language and professional skills.	
Programme Specific Outcomes:	1. Basic knowledge for higher studies 2. Basic Knowledge of Hindi literature and its trends 3. Language skills spoken and writing skills 4. Basic idea of critical and analytical study of literature. 5. Obtains knowledge of Translation of different subjects	
Course Objectives	1. Identifies the writers, theme and aims of literary works	K1
	2. Understand and summarise the theme of one act plays and short stories and their techniques	K2
	3. Explains the methods and techniques of Translation of different fields	K2
	4. Evaluate the theme and artistic skills of One Act Plays and short stories and writers	K5
	5. Conceive the basic knowledge of literary themes and translation	K6
Pre-requisites, if any:	Basic Knowledge of Hindi Fiction and Translation	
UNITS		
I	1. Auranzeb ki Aakhiri Raat 2. Mukthidhan 3. Practice of Annotation Writing 4. Practice of Summary and Literary evaluation Writing	
II	1. Laksmi ka Swagat 2. Mithayeewala 3. Practice of Summary and Literary evaluation Writing 4. Translation Practice. (English to Hindi)	

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III	<ol style="list-style-type: none"> 1. Basant Ritu ka Natak 2. Seb Aur Dev 3. Practice of Summary and Literary evaluation Writing 4. Introduction to Translation Practice
IV	<ol style="list-style-type: none"> 1. Bahut Bada Sawal 2. Vivah ki Teen Kathayen 3. Practice of Summary and Literary evaluation Writing 4. Translation Practice. (English to Hindi)
V	<ol style="list-style-type: none"> 1. Translation Practice. (English to Hindi)

Course Outcomes	<ol style="list-style-type: none"> 1. Identifies the nature, features, elements of One Act Plays and Short Stories and skills of Translation 2. Understand the theme, aim of lessons and obtain skills of Evaluation. 3. Evaluate the thought, ideology, expressional and artistic skills of writers and contextual meanings 4. Obtain skills of summarizing, evaluating and critical study 5. Employ the techniques and skills of Literature and Translation.
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Reading List (Print and Online)	<ol style="list-style-type: none"> 1. https://hindisarang.com/hindi-ekaanki-ekaankikar/ 2. https://hi.wikipedia.org/wiki/हिन्दी_कहानी
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Recommended Texts	<ol style="list-style-type: none"> 1. ONE ACT PLAY (Detailed Study): AATH EKANKI Edited By: Devendra Raj Ankur, Mahesh Anand Vani prakashan, 4695, 21-A Dariyagunj, New Delhi – 110 002 2. SHORT STORIES (Non-Detailed Study): SWARNA MANJARI Edited by: Dr. Chitti. Annapurna, Rajeswari Publications, 21/3, Mothilal Street, (Opp.Ranganathan St.), T.Nagar, Chennai–600017. 3. Prayojan Moolak Hindi : Dr. Syed Rahamathulla, Poornima Prakashan, 4/7 B Begum III Street, Royapettah, Chennai – 14. 4. Anuvad Abhyas Part III : Dakshin Bharat Hindi Prachar Sabha, T. Nagar, Chennai-17.
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Method of Evaluation:

Internal Assessment	End Semester Examination	Total	Grade
25	75	100	

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	M	S	S	S
CO 2	S	S	S	S	L
CO 3	M	S	S	S	L
CO 4	M	S	S	S	L
CO 5	S	S	S	S	S

UNIVERSITY OF MADRAS

FOUNDATION COURSE: FRENCH
SYLLABUS WITH EFFECT FROM 2023-2024

UG & 5 Year PG Integrated – SEMESTER – II

Foundation Course in French: Prescribed Text and Grammar-II

Course Outcomes	<ol style="list-style-type: none"> To ask for and give directions. To give orders or commands using <i>Impératif</i> To narrate events from the past using <i>Passé Composé</i> Cite the ordinal numbers in French Indicate the position of something using prepositions of place 		
Course	Foundation Course in French	Course Code	100L2K
Title of the Course:	Prescribed Text and Grammar-II		
Credits:	3		
Pre-requisites, if any:	-		
Course Objectives	Revise and recall the French sentence structure	K1	
	Enumerate the various grammatical tenses and use them to communicate better in French	K2	
	Summarize and develop ideas from the documents after discussing it in detail	K2 and K3	
	Write and understand dialogues based on the themes done in class	K4	
	Evaluate and comprehend text passages	K5	
Units			
I	Unité 7: C'est où?		
II	Unité 8: N'oubliez pas !		
III	Unité 9: Belle vue sur la mer !		
IV	Unité 10: Quel beau voyage !		
V	Unité 11: Oh ! joli ! Unité 12: Et après ?		
Prescribed Text	Régine Mérieux & Yves Loiseau, Units 7-12 of <i>Latitudes 1</i> (A1 /A2), méthode de français, Didier, 2017 (Indian Edition)		

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	M	L	M	M	L	S	S	S	M	M	M
CO2	S	M	M	L	M	M	L	S	S	S	S	M	M
CO3	M	S	S	M	S	M	M	S	S	S	M	S	S
CO4	S	S	M	L	S	M	L	S	S	S	S	S	S
CO5	S	S	S	L	M	M	L	S	S	S	M	S	S

S-Strong M-Medium L-Low

UNIVERSITY OF MADRAS

FOUNDATION COURSE: FRENCH
SYLLABUS WITH EFFECT FROM 2023-2024

SEMESTER II

Title of the Paper : Prescribed Text and Grammar-II

Prescribed textbook: Régine Mérieux & Yves Loiseau, **Units 7-12** of *Latitudes 1* (Indian Edition), Paris, Didier, 2017.

Questions not to be asked from the Autoévaluation and Préparation au DELF

Paper setters to strictly adhere to the syllabus and ask questions only from the pages included in the syllabus. Questions should cover the entire syllabus.

QUESTION PAPER PATTERN

Time : 3 Hours

Maximum Marks : 75

Section A (10 x 2 = 20 Marks)

Answer any TEN questions

15 questions to be asked on cultural / civilisational aspects found in the prescribed textbook

Section B (5 x 5 = 25 Marks)

Answer any FIVE questions

8 Grammar exercises to be given from the prescribed textbook

Section C (3 x 10 = 30 Marks)

Answer any THREE

3 must be answered out of 5 topics (1 dialogue writing, 1 letter /email writing, 1 composition, 1 comprehension, 1 translation)

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Programme:	I & II UG – Second Language - SANSKRIT
Programme Code:	BFC-LS22
Duration:	2 years
Programme Outcomes:	<p>After successful completion of the course, learners will be able to:</p> <ol style="list-style-type: none"> 1. Create simple sentences using different grammatical tenses 2. Sensitize the students to the functioning of the language 3. Know the historical and cultural perspective of literary trends and movements in Sanskrit and in its literature 4. Define the origin of Sanskrit Literature 5. Demonstrate different teaching methodologies 6. Translate simple passages 7. Consolidate their communication skills in both spoken and written Sanskrit.
Programme Specific Outcomes:	<ol style="list-style-type: none"> 1. Understand and appreciate the aesthetical, social, political, cultural, etc., values expressed in various prescribed texts 2. Apply different grammatical rules to their reading and writing assignments 3. Identify the base words of nouns and different tenses 4. Read, understand, write and speak in simple Sanskrit 5. Translate simple sentences related to the themes given

List of Courses:

Semester	Course Code	Title of the Course	Core/Elective/ Soft Skill	Credits
I	BFC-LS001	Paper I – Poetry, Grammar and History of Sanskrit Literature	C	3
II	BFC-LS002	Paper II – Prose, Grammar and History of Sanskrit Literature	C	3
III	BFC-LS003	Paper III – Drama, Grammar and History of Sanskrit Literature	C	3
IV	BFC-LS004	Paper IV – Alankara, Didactic & Modern literatures and Translation	C	3

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EXISTING SYLLABUS (22-23) FOLLOWED FROM THE ACADEMIC YEAR 2023-2024

100L1G

FOUNDATION COURSE: PART-I SANSKRIT PAPER-I

Inst.Hrs. : 6
Credits : 3

Year : I
Semester : I

Paper I – Poetry, Grammar and History of Sanskrit Literature

Course Outcomes	1. Remember the usage of grammatical tenses in constructing sentences in dialogue. 2. Apply the rules of usage in practice exercises and identify errors 3. Explain the nuances in the usage of various grammatical tenses and aspects 4. Demonstrate knowledge of various expressions of opinion, emotions, cause, effect, purpose, and hypothesis in French 5. Communicate in French and summarize the given text	
Course Objectives	Understand the basic Sanskrit sentence structure	K1
	To provide the glimpses of the rich Sanskrit literary tradition through reading the literary composition	K2
	Explain the language of this Mahakavya which is highly elaborate and polished with continual play upon words and variety of metres	K3
	Analyse and interpret expressions of cause, effect, purpose, and opposition in Sanskrit	K4
	Evaluate grammatical nature of verses	K5
Units		
I	Introduction to Sanskrit (Alphabets, Two letter words and three letter words) Grammar: <i>akārāntaḥ puṁliṅgaḥ śabda-s</i> - 1. बाल (<i>Bāl a</i>) and 2. देव (<i>Deva</i>) <i>ākārāntaḥ strīliṅgaḥ śabda-s</i> - 1. बाला (<i>Bāl ā</i>) and 2. लता (<i>Lat ā</i>) <i>akārāntaḥ napuṁsakaliṅgaḥ śabda-s</i> - 1. फल (<i>Phal a</i>) and 2. वन (<i>Vana</i>)	
II	Introduction to <i>Rāmāyana</i> , <i>Kālidāsa</i> and his poetic works Text: <i>Raghuvamśa</i> (Canto I) Verses 1-15	
III	Introduction to the works of <i>Bhāravi</i> - Text: <i>Raghuvamśa</i> (canto I) Verses 16-30	
IV	Introduction to the works of <i>Śrī Harṣha</i> - Text: <i>Raghuvamśa</i> (Canto I) Verses 31-45	
V	Grammar: Conjugations - <i>Laṅ lakāra-s</i> – (Present tense) (i) गच्छति (<i>Gacchat i</i>) (ii) तिष्ठति (<i>Ti ṣṭhat i</i>) (iii) पठति	

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	<p>(<i>Paṭ hat i</i>) (i v) नृत्यति (<i>Ṇṭ yati</i>) (v) कुप्यति (<i>Kupyati</i>) (vi) कथयति (<i>Kat hayati</i>) (vi i) गणयति (<i>Ḡanayati</i>) (vi i i) अस्ति (<i>Asti</i>) (i x) करोति (<i>Karoti</i>) (x) शृणोति (<i>Śṛṇoti</i>) Indeclinables (Avyayaani) - अपि (<i>api</i>), कदा (<i>kadā</i>), च (<i>ca</i>), अद्य (<i>adya</i>), विना (<i>vi nā</i>), सह (<i>saha</i>), तत्र (<i>tatra</i>), किम् (<i>ki m</i>), यदि (<i>yadi</i>) - तर्हि (<i>t ar hi</i>), यथा (<i>yat hā</i>) - तथा (<i>t at hā</i>) Prefixes (<i>Upasargas</i>) - आङ् (<i>āṅ</i>), वि (<i>vi</i>), परि (<i>pari</i>), अनु (<i>anu</i>), अधि (<i>adhi</i>), उत् (<i>ut</i>), प्रति (<i>prati</i>), उप (<i>upa</i>), प्र (<i>pra</i>) निर् (<i>ni r</i>)</p>
Book recommended for Reference	<p><i>Kalāśālā-Saṁskṛta-Sukhabodhinī - I</i> To be Published by: University of Madras, Chennai - 5</p>

Mapping with Programme Outcomes:

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	S	M	S	S
CO 2	S	S	S	S	S
CO 3	S	S	M	M	S
CO 4	S	S	M	S	S
CO 5	S	S	S	S	S

S-Strong M-Medium L-Low

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EXISTING SYLLABUS (22-23) FOLLOWED FROM THE ACADEMIC YEAR 2023-2024

100L2G

FOUNDATION COURSE: PART-I SANSKRIT PAPER-II

Inst.Hrs. : 6
Credits : 3

Year : I
Semester : II

Paper II – Prose, Grammar and History of Sanskrit Literature

Course Outcomes	<ol style="list-style-type: none">1. Understand and apply grammatical concepts in drafting sentences and paragraphs2. Apply the rules and regulations in handling usage of Lrt lakara and Asmad Sabdah, practice exercises and identify errors3. Form an idea of the aesthetic expressions that make Sanskrit composition get the position of pride in world literature4. Demonstrate knowledge of various expressions of opinion, emotions, cause, effect, purpose, and hypothesis in Sanskrit5. Appreciate the art of employment of Alankaras in a prose form of poetry	
Course Objectives	Provide acquaintance with prose literature in Sanskrit through a study of one of the best texts of prose, which would pave the way for gaining sufficient grounding in the language	K1
	Enumerate various grammatical tenses and use them to communicate in Sanskrit language	K2
	Summarize the stories of Panchatantra and discuss in	K3
	Analyze and interpret expressions of cause, effect, purpose, and opposition in Sanskrit	K4
	Evaluate and comprehend text passages	K5
Units		
I	Introduction to Prose literature in Sanskrit Grammar: <i>ikārāntaḥ puṁliṅgāḥ śabdāḥ</i> - 1. कवि (<i>Kavi</i>) and 2. रवि (<i>Ravi</i>) <i>ikārāntaḥ strīliṅgāḥ śabdāḥ</i> - 1. मति (<i>Mati</i>) <i>ikārāntaḥ strīliṅgāḥ śabdāḥ</i> - 1. नदी (<i>Nadi</i>) <i>ikārāntaḥ napuṁsakaliṅgāḥ śabdāḥ</i> 1. वारि (<i>Vari</i>)	
II	Introduction to <i>Māhābhārata</i> , the author of बालरामायणम् (<i>Bālarāmāyaṇam</i>) and his works Text: <i>Bālakāṇḍam</i> of <i>Bālarāmāyaṇam</i>	
III	Introduction to the works of <i>Baṇa</i> (<i>Kādambarī</i> and <i>Harṣacaritam</i>), <i>Daṇḍin</i> (<i>Daśakumāracaritam</i> and <i>Avantisundarīkathā</i>) and <i>Subandhu</i> (<i>Vāsavadattā</i>)	
IV	Introduction to Historical <i>Kāvyas</i> in Sanskrit - The works of <i>Kalhaṇaḥ</i> , <i>Bilhaṇaḥ</i> , <i>Bāṇaḥ</i> and <i>Pravarasenaḥ</i>	

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V	<p>Grammar: Conjugations - <i>Lañ lakārah</i> (Past tense) (i) अगच्छत् (<i>Agacchat</i>) (ii) अतिष्ठत् (<i>Atiṣṭhat</i>) (iii) अपठत् (<i>Apaṭhat</i>) (iv) अनृत्यत् (<i>Anṛtyat</i>) (v) अकुप्यत् (<i>Akupyat</i>) (vi) अकथयत् (<i>Akat hayat</i>) (vii) अगणयत् (<i>Aganayat</i>) (viii) आसीत् (<i>Asit</i>) (ix) अकरोत् (<i>Akarot</i>) (x) अशृणोत् (<i>Aśṛnot</i>)</p> <p>Indecl i nabl es: (a) तुमुन् (<i>Tumun</i>) suffix ended words (Infinitive forms) (i) गन्तुम् (<i>Gantum</i>) (ii) स्थातुम् (<i>Stahātum</i>) (iii) पठितुम् (<i>Paṭhitum</i>) (iv) नर्तितुम् (<i>Nartitum</i>) (v) कोपितुम् (<i>Kopitum</i>) (vi) कथयितुम् (<i>Kat hayitum</i>) (vii) गणयितुम् (<i>Ganayitum</i>) (viii) भवितुम् (<i>Bhavitum</i>) (ix) कर्तुम् (<i>Kartum</i>) (x) श्रोतुम् (<i>Śrotum</i>) (b) क्त्वा (<i>Kṛvā</i>) suffix ended words (Past passive participles) (i) गत्वा (<i>Gatvā</i>) (ii) स्मृत्वा (<i>Smṛtvā</i>) (iii) गणयित्वा (<i>Ganayitvā</i>) (iv) पठित्वा (<i>Paṭitvā</i>) (v) कृत्वा (<i>Kṛtvā</i>) (c) ल्यप् (<i>Lyap</i>) suffix ended words (Past passive participles) (i) आगत्य (<i>Āgatya</i>) (ii) विस्मृत्य (<i>Vismṛtya</i>) (iii) विगणय्य (<i>Viganayya</i>) (iv) प्रपठ्य (<i>Prapaṭhya</i>) (v) अनुकृत्य (<i>Anukṛtya</i>)</p>
Book recommended for Reference	<p><i>Kalāsālā-Saṃskṛta-Sukhabodhinī - II</i> To be Published by: University of Madras, Chennai - 5</p>

Mapping with Programme Outcomes:

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	M	S	M	S
CO 2	S	M	S	S	S
CO 3	S	S	S	M	S
CO 4	S	S	M	S	S
CO 5	S	S	S	S	S

S-Strong M-Medium L-Low

UNIVERSITY OF MADRAS
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200L3G

FOUNDATION COURSE: PART-I SANSKRIT PAPER-III

Inst.Hrs. : 6
Credits : 3

Year : II
Semester : III

Paper III – Drama, Grammar and History of Sanskrit Literature

Course Outcomes	<ol style="list-style-type: none"> 1. Be familiar with the style of the great Sanskrit Dramatist Bhasa 2. Be able to appreciate the aesthetical, social, political, cultural, etc., values expressed in prescribed composition 3. Understand the structural patterns of Sanskrit dramatic composition 4. Develop the finer and minor nuances of Nataka form of drama 5. Analyze the literary texts
UNITS	
I	Introduction to Dramaturgy – Ten types of Drama - Characteristics and features (<i>Nāndī, Sūtradhāra, Sthāpanā</i> and <i>Bharatavākyam</i>) of Sanskrit Dramas. Prose Text: <i>Karṇabhāram</i> - Page. 01 - 10 (till 10 <i>Slokās</i>)
II	Characteristics and features (<i>Vastu, Netā</i> and <i>Rasas</i>) of Sanskrit Drama - Prose Text: <i>Karṇabhāram</i> - Page. 11 - 20 (till 17 <i>Slokās</i>)
III	Authorship of 13 Trivandrum play of <i>Bhāsa</i> - Introduction to the Dramas of <i>Kālidāsa, Bhavabhūti, Harṣavardhana</i> and <i>Rājaśekhara</i> Text: <i>Karṇabhāram</i> - Page. 21 - 32 (Upto the end)
IV	Introduction to the dramatic works of <i>Viśākhadatta, Śūdraka, Bhaṭṭanārāyaṇa</i> and <i>Murāri</i> - Introduction to Allegorical dramas 1. <i>Prabodhacandrodaya</i> and 2. <i>Saṅkalpasūryodaya</i>
V	Introduction to <i>Campū</i> literature 1. <i>Bhojacampū</i> 2. <i>Viśvaguṇādarśacampū</i> and 3. <i>Nalacampū</i> Grammar – <i>Lṛt lakārāḥ</i> (Future tense) (i) गमिष्यति (<i>Gami śyat i</i>) (ii) स्थास्यति (<i>St hāsyat i</i>) (iii) पठिष्यति (<i>Paṭ hi śyat i</i>) (iv) नर्तिष्यति (<i>Nart i śyat i</i>) (v) कोपिष्यति (<i>Kopi śyat i</i>) (vi) कथयिष्यति (<i>Kat hayi śyat i</i>) (vii) गणयिष्यति (<i>Ganayi śyat i</i>) (viii) भविष्यति (<i>Bhavi śyat i</i>) (ix) करिष्यति (<i>Kari śyat i</i>) (x) श्रोष्यति (<i>Ś rośyat i</i>) Declensions: (<i>Sar vanānāśabdāḥ</i>) - 1. तद् शब्दः (<i>Tad śabdah</i>) i n al I gender s 2. अस्मद् शब्दः (<i>Asnad śabdah</i>) 3. युष्मद् शब्दः (<i>Yuśmad śabdah</i>)

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Course Objectives	Understand the structure and use of different phrases and Idioms in Sanskrit Drama and grammatical aspects of <i>Karṇabhāram</i>	K2
	Enhance one's ability to converse freely in the language, which is considered to be a specialized skill as far as the Sanskrit Language goes	K2
	Draft and summarize the literary texts	K3
	Identify and apply different grammatical peculiarities	K3
	Analyze and critically assess the literary texts	K4

Book recommended for Reference	<p style="text-align: center;"><i>Kalāśālā-Saṃskṛta-Sukhabodhinī - III</i></p> <p style="text-align: center;">To be Published by: University of Madras, Chennai - 5</p>
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Mapping with Programme Outcomes:

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	M	M	S	S
CO 2	S	S	S	S	S
CO 3	S	M	M	S	S
CO 4	S	S	M	S	S
CO 5	S	S	S	S	S

S-Strong M-Medium L-Low

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200L4G

FOUNDATION COURSE: PART-I SANSKRIT PAPER-IV

Inst.Hrs. : 6
 Credits : 3

Year : II
 Semester : IV

Paper IV – Alankara, Didactic & Modern literatures and Translation

Course Outcome	1. Apply the usage of compound words 2. Differentiate the alankaras 3. Translate the prose passages prescribed 4. Identify and apply different grammatical tenses of “Mahabharata” related translation 5. Analyze and critically assess the literary texts
UNITS	
I	Introduction to Didactic literature (<i>Pañcatantram</i> and <i>Hitopadeśah</i>) Text: The lion and the hare शशकसिंहकथा (<i>Śaśakasimhakathā</i>) from <i>Pañcatantram</i> and The jackal and the elephant शृगालहस्तिकथा (<i>Śrgālahastikathā</i>) a story from <i>Mitralābhaḥ</i> of <i>Hitopadeśah</i>
II	<i>Alaṅkārah</i> - i. <i>Upamā</i> , ii. <i>Rūpakam</i> , iii. <i>Ullekhaḥ</i> , iv. <i>Utprekṣā</i> and v. <i>Vyatirekaḥ</i>
III	Introduction to Modern literature - Introduction to अर्थशास्त्रम् (<i>Artha śāstram</i>) of चाणक्यः (<i>Cāṇakyaḥ</i>) - Introduction to मयमतम् (<i>Mayamatam</i>) - Introduction to नीतिद्विषष्टिका (<i>N t i d v i ṣ a ṣ ṭ h i k ā</i>) - <i>S l o k ā s</i> - 1 t o 10 - I n t r o d u c t i o n t o t h e l i f e h i s t o r y o f श्रीआदिशङ्कराचार्यः (<i>Śrī -Ādi śaṅkar ācār yaḥ</i>), श्रीरामानुजाचार्यः (<i>Śrī Rāmānuj ācār yaḥ</i>) and श्रीमध्वाचार्यः (<i>Śrī Mādhvācār yaḥ</i>)
IV	Introduction to Modern literature in Sanskrit - Text: तिरुक्कुरळ् संस्कृतानुवादः (Sanskrit translation of Tirukkural) <i>Slokās</i> 1 to 10 ईश्वरवन्दनम् (<i>Kaḍavul Vāzhththu</i>) by कलियन् रामानुजजीयर् (<i>Kaliyan Rāmānujajīyar</i>) नालडियार् (<i>Nālaḍiyār</i>) translated by श्री एस्. एन्. रामदेशिकः (<i>Śrī S N Rānadeśi ka</i>) - <i>S l o k ā s</i> : 1 t o 5
V	Translation from prose section Unit - I stories Grammar: Conjugation - <i>Loṭ lakārāḥ</i> (Imperative mood) (i) गच्छतु (<i>Gacchat u</i>) (ii) तिष्ठतु (<i>Ti ṣ ṭ hat u</i>) (iii) पठतु (<i>Paṭ hat u</i>) (iv) शृणोतु (<i>Śr ṇ ot u</i>) (v) करोतु (<i>Kar ot u</i>)

UNIVERSITY OF MADRAS
UG & 5 YR INTEGRATED DEGREE – FOUNDATION COURSE
SYLLABUS WITH EFFECT FROM 2022-2023

Course Objectives	Demonstrate the usage of connecting words	K2
	Understand the alankaras which are used in devotional lyrics	K2
	Draft and summarize the literary texts	K3
	Identify the meaning, types of figure of speech of the prescribed text	K3
	Analyze and critically assess the literary texts	K4

Book recommended for Reference	<i>Kalāsālā-Saṃskṛta-Sukhabodhinī - IV</i> To be Published by: University of Madras, Chennai - 5
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Mapping with Programme Outcomes:

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	M	S	S
CO2	S	S	M	S	S
CO3	S	S	M	S	S
CO4	S	M	S	S	S
CO5	S	S	S	S	M

S-Strong M-Medium L-Low

UNIVERSITY OF MADRAS U.G. AND FIVE YEAR INTEGRATED PG DEGREE PROGRAMS FOUNDATION COURSE: PART I – ARABIC <small>(EXISTING SYLLABUS (22-23) FOLLOWED FROM THE ACADEMIC YEAR 2023-2024)</small>	
Programme:	U.G. AND FIVE YEAR INTEGRATED P.G. DEGREE PROGRAMS FOUNDATION COURSE: PART I – ARABIC
Programme Code:	BFC-LA23
Duration:	4 Semesters
On successful completion of this program, the graduates are expected to achieve the following:	
Programme Outcomes:	<ol style="list-style-type: none"> 1. Acquire the knowledge of the structure of Arabic words 2. Acquaint with the knowledge of basic Arabic grammar 3. Become familiar with the knowledge of phonetic system of Arabic language 4. Able to communicate in Arabic 5. Have the knowledge of moral values in the light of Quran and Hadith
Programme Specific Outcomes:	<ol style="list-style-type: none"> 1. Understand the sounds and phrasing of Arabic language. 2. Learn the basic Arabic grammar 3. Develop communication skills in Arabic 4. Acquire new vocabulary in Arabic 5. Learn the moral values of the Holy Quran and Sunnah

List of Courses:

Semester	Course Code	Title of the Course	Foundation Course	Credits
I	100L1H	Paper I : Prose	FC	3
II	100L2H	Paper II : Grammar	FC	3
III	200L3H	Paper III : Communication Skill in Arabic	FC	3
IV	200L4H	Paper IV : Quran and Hadith	FC	3

Course I	Course Code	Title of the Course	Credits
FC	100L1H	Paper I : Prose	3
Course Outcomes	<ol style="list-style-type: none"> 1. Understand the correct pronunciation of Arabic letters 2. Understand the structure-based composition. 3. Acquire new vocabulary in Arabic 4. Read the Arabic sentences without diacritical marks 5. Able to write the simple sentences in Arabic without errors. 		
Pre-requisites, if any:	Nil		
Course Objectives	<ol style="list-style-type: none"> 1. Understand basic Arabic grammar. 2. Understand the structure of Arabic language. 3. Employ sentence making. 4. Enhance vocabulary. 5. Improve reading and writing skills. 		
Units			
I	(دروس اللغة العربية لغير الناطقين بها، الجزء الأول، الدكتور ف. عبد الرحيم) من الدرس الأول إلى الدرس الرابع		
II	من الدرس الخامس إلى الدرس الثامن		
III	من الدرس التاسع إلى الدرس الثالث عشر		
IV	من الدرس الرابع عشر إلى الدرس الثامن عشر		
V	من الدرس التاسع عشر إلى الدرس الثالث والعشرين		

Prescribed Text Book	دروس اللغة العربية لغير الناطقين بها، الجزء الأول، الدكتور ف. عبد الرحيم Duroos Al-Lugha Al-Arabiyya – Part I, By Dr. V. Abdur Rahim
Reading List (Print and online)	معجم الكلمات الواردة في دروس اللغة العربية لغير الناطقين بها مفتاح دروس اللغة العربية لغير الناطقين بها القراءة الراشدة – الشيخ أبو الحسن علي الحسيني الندوي القراءة المفيدة – الدكتور محمد يوسف كوكن العمري منهاج العربية – السيد النبي حيدرآبادي www.alnahw.com

Method of Evaluation:

Internal Assessment	End Semester Examination	Total	Grade
25	75	100	

Methods of assessment:

Recall (K1) - Simple definitions, MCQ, Recall steps, Concept definitions

Understand/ Comprehend (K2) - MCQ, True/False, Short essays, Concept explanations, Short summary or overview

Application (K3) - Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain

Analyse (K4) - Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge

Evaluate (K5) - Longer essay/ Evaluation essay, Critique or justify with pros and cons

Create (K6) - Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5
CO	3	3	3	2	1

3-Strong 2-Medium 1-Low

Course II	Course Code	Title of the Course	Credits
FC	100L2H	Paper II : Grammar	3
Course Outcomes	<ol style="list-style-type: none"> 1. Able to use basic grammatical structure. 2. Develop reading skills and reading speed 3. Acquire new vocabulary in Arabic 4. Understand the different types of sentences. 5. Able to construct simple sentences in Arabic 		
Pre-requisites, if any:	Nil		
Course Objectives	<ol style="list-style-type: none"> 1. Understand basic Arabic grammar. 2. Understand the correct usage of Arabic grammar. 3. Employ sentence making. 4. Enhance vocabulary. 5. Improve reading and writing skills. 		
Units			
I	(قواعد اللغة العربية الأساسية، الدكتور سيد رحمة الله) من الدرس الأول إلى الدرس الرابع		
II	من الدرس الخامس إلى الدرس الثامن		
III	من الدرس التاسع إلى الدرس الثاني عشر		

IV	من الدرس الثالث عشر إلى السادس عشر
V	من الدرس السابع عشر إلى الدرس العشرين
Prescribed Text Book	قواعد اللغة العربية الأساسية، الدكتور سيد رحمة الله Basic Arabic Grammar, By Dr. Syed Rahmathullah
Reading List (Print and online)	النحو الواضح – علي الجارم ومصطفى أمين دليل النحو الواضح – الدكتور بشير أحمد جمالي سهل العوامل – الدكتور تاج الدين المناني النحو الميسر للكبار والصغار – علي محمود عقيلي القواعد التطبيقية في اللغة العربية – الدكتور نديم دعكور www.alnahw.com

Method of Evaluation:

Internal Assessment	End Semester Examination	Total	Grade
25	75	100	

Methods of assessment:

Recall (K1) - Simple definitions, MCQ, Recall steps, Concept definitions

Understand/ Comprehend (K2) - MCQ, True/False, Short essays, Concept explanations, Short summary or overview

Application (K3) - Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain

Analyse (K4) - Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge

Evaluate (K5) - Longer essay/ Evaluation essay, Critique or justify with pros and cons

Create (K6) - Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5
CO	3	3	3	3	1

3-Strong 2-Medium 1-Low

Course III	Course Code	Title of the Course	Credits
FC	200L3H	Paper III : Communication Skill in Arabic	3
Course Outcomes	<ol style="list-style-type: none"> 1. Understand the basics of Arabic language. 2. Learn the structure of Arabic words. 3. Familiarize with the phonetic system of Arabic. 4. Able to communicate in Arabic 5. Able to translate from Arabic to English and vice versa 		
Pre-requisites, if any:	Nil		
Course Objectives	<ol style="list-style-type: none"> 1. Understand the sounds and phrasing of Arabic language. 2. Acquire new vocabulary and apply in context. 3. Develop communication skills in Arabic. 4. Understand the different aspects of communication. 5. Learn to communicate in everyday interactions. 		
Units			
I	(الكتاب الأساسي في تعليم اللغة العربية لغير الناطقين بها، الجزء الأول – السعيد محمد بدوي وفتحي علي يونس) التعارف – في المطار (١)		
II	في الفندق – في المطعم		
III	في البنك – عند الطبيب (١)		

IV	في الطريق - في مكتب البريد
V	في السوق (١) - في السوق (٢)
Prescribed Text Book	<p>الكتاب الأساسي في تعليم اللغة العربية لغير الناطقين بها، الجزء الأول - السعيد محمد بدوي وفتحي علي يونس</p> <p>Al Kitaab Al Asaasi Fi Taleem Al Lughha Al Arabiyya Li Ghair An Naatiqeena Biha - Part I, By Sayeed Muhaamad Badawi and Fathi Ali Yunus</p>
Reading List (Print and online)	<p>A Practice Book on Gulf Arabic, By Dr. Abdul Jaleel. T</p> <p>Arabic Conversation Book, By Mohd. Harun Rashid and Khalid Perwez</p> <p>A Hand book of Commercial Arabic by Dr. Aboobacker K.P</p> <p>العربية لغير العرب - د. مصطفى حسن الرئيس، الأزهر</p> <p>العربية للحياة - جامعة الملك سعود</p> <p>القراءة العربية لغير العرب - وزارة التربية بالكويت</p> <p>www.talkinarabic.com</p>

Method of Evaluation:

Internal Assessment	End Semester Examination	Total	Grade
25	75	100	

Methods of assessment:

Recall (K1) - Simple definitions, MCQ, Recall steps, Concept definitions

Understand/ Comprehend (K2) - MCQ, True/False, Short essays, Concept explanations, Short summary or overview

Application (K3) - Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain

Analyse (K4) - Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge

Evaluate (K5) - Longer essay/ Evaluation essay, Critique or justify with pros and cons

Create (K6) - Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5
CO	3	3	3	2	1

3-Strong 2-Medium 1-Low

Course IV	Course Code	Title of the Course	Credits
FC	200L4H	Paper IV : Quran and Hadith	3
Course Outcome	<ol style="list-style-type: none"> 1. Know the principal textual sources of the Islamic tradition: The Qur'an and the Hadith. 2. Know the role of Quran and Hadith in the synthesis of Islamic faith and practice. 3. Understand the structure of Arabic grammar through Quran and Hadith. 4. Understand the methodology of translation of Quran and Hadith. 5. Understand the moral values of Quran and Hadith 		
Pre-requisites, if any:	Nil		
Course Objectives	<ol style="list-style-type: none"> 1. Know the importance of Quran and Hadith. 2. Understand the style of Quran and Hadith. 3. Understand the role of Quran and Hadith in the Islamic faith and law. 		

	<p>4. Know the structure of Arabic grammar through the examples from Quran and Hadith.</p> <p>5. Learn the cultural and moral values.</p>
Units	
I	<p>(١. سورة لقمان من القرآن الكريم ٢. أحاديث سهلة للدكتور ف. عبد الرحيم)</p> <p style="text-align: right;">سورة لقمان</p> <p style="text-align: right;">من الآية ١ إلى الآية ١٠</p>
II	من الآية ١١ إلى ٢٠
III	من الآية ٢١ إلى ٣٤
IV	<p style="text-align: right;">أحاديث سهلة</p> <p style="text-align: right;">من الحديث ١ إلى الحديث ١٠</p>
V	من الحديث ١١ إلى الحديث ٢٠
Prescribed Text Book	<p style="text-align: right;">١. سورة لقمان من القرآن الكريم</p> <p style="text-align: right;">٢. أحاديث سهلة للدكتور ف. عبد الرحيم</p> <p>1) Sooratu Luqman</p> <p>2) Ahadeeth Sahlah By Dr. V. Abdur Rahim</p>
Reading List (Print and online)	<p>Tafsir Al-Jalalain</p> <p>The Noble Quran, Dr. Muhammad Muhsin Khan and Muhammad Taqi-Ud-Dhin Al-Hilali</p> <p style="text-align: right;">الأربعون النووية</p> <p style="text-align: right;">نصوص من الحديث النبوي الشريف، الدكتور ف. عبد الرحيم</p>

شرح أحاديث سهلة، الدكتور ش. عبد المالك

<https://quran.com/>

<https://sunnah.com/nawawi40>

Method of Evaluation:

Internal Assessment	End Semester Examination	Total	Grade
25	75	100	

Methods of assessment:

Recall (K1) - Simple definitions, MCQ, Recall steps, Concept definitions

Understand/ Comprehend (K2) - MCQ, True/False, Short essays, Concept explanations, Short summary or overview

Application (K3) - Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain

Analyse (K4) - Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge

Evaluate (K5) - Longer essay/ Evaluation essay, Critique or justify with pros and cons

Create (K6) - Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5
CO	1	2	3	3	3

3-Strong

2-Medium

1-Low

UNIVERSITY OF MADRAS

FOUNDATION COURSE: ENGLISH
SYLLABUS WITH EFFECT FROM 2023-2024

FIRST YEAR - SEMESTER II PAPER II –GENERAL ENGLISH

Subject Code	Category	L	T	P	S	Credits	Inst. Hours	Marks		
								CIA	External	Total
100L2ZU	Part II	Y	Y	-	-	3	6	25	75	100
Learning Objectives										
LO1	To make students realize the importance of resilience									
LO2	To enable them to become good decision makers									
LO3	To enable them to imbibe problem-solving skills									
LO4	To enable them to use tenses appropriately									
LO5	To help them use English effectively at the work place.									
Unit No.	Unit Title & Text						No. of Periods for the Unit			
I	RESILIENCE Poem 1.1 Don't Quit – Edgar A. Guest 1.2 Still Here – Langston Hughes Short Story 1.3 Engine Trouble – R.K. Narayan 1.4 Rip Van Winkle – Washington Irving						20			
II	DECISION MAKING Short Story 2.1 The Scribe – Kristin Hunter 2.2 The Lady or the Tiger - Frank Stockton Poem 2.3 The Road not Taken – Robert Frost 2.4 Snake – D. H Lawrence						20			
III	PROBLEM SOLVING Prose life Story 3.1 How I taught My Grandmother to Read – Sudha Murthy Autobiography 3.3 How frog Went to Heaven – A Tale of Angolo 3.4 Wings of Fire (Chapters 1,2,3) by A.P.J Abdul Kalam						20			

UNIVERSITY OF MADRAS

FOUNDATION COURSE: ENGLISH SYLLABUS WITH EFFECT FROM 2023-2024

IV	Tenses 4.1 Present 4.2 Past 4.3 Future 4.4 Concord	15
V	English in the Workplace 5.1 E-mail – Invitation, Enquiry, Seeking Clarification 5.2 Circular 5.3 Memo 5.4 Minutes of the Meeting	15

Course Outcomes

Course Outcomes	On completion of this course, students will;	
CO1	Realize the importance of resilience	PO1,PO7
CO2	Become good decision-makers	PO1,PO2,PO10
CO3	Imbibe problem-solving skills	PO4,PO6,PO9
CO4	Use tenses appropriately	PO4, PO5,PO6
CO5	Use English effectively at the work place.	PO3,PO8

Text Books (Latest Editions)

References Books

1	Martin Hewings. Advanced English Grammar. Cambridge University Press, 2000
2	SP Bakshi, Richa Sharma. Descriptive English. Arihant Publications (India) Ltd., 2019.
3.	Sheena Cameron, Louise Dempsey. The Reading Book: A Complete Guide to Teaching Reading. S & L. Publishing, 2019.
4	Barbara Sherman. Skimming and Scanning Techniques, Liberty University Press, 2014.
5.	Phil Chambers. Brilliant Speed Reading: Whatever you need to read, however. Pearson, 2013.
6.	Communication Skills : Practical Approach Ed. Shaikh Moula
	Ramendra Kumar. Stories of Resilience, Blue Rose Publications, 2020.

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FOUNDATION COURSE: ENGLISH
SYLLABUS WITH EFFECT FROM 2023-2024

Web Sources

1	Langston Hughes. Still Here https://poetryace.com/im-still-here
2	R. K. Narayan. Engine Trouble http://www.sbioaschooltrichy.org/work/Work/images/new/8e.pdf
3	Washington Irving. Rip Van Winkle https://www.gutenberg.org/files/60976/60976-h/60976-h.htm
4	Frank Stockton. The Lady or the Tiger https://www.gutenberg.org/ebooks/396

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	2	3	2
CO2	2	3	3	3	2	3	3	2	2	2
CO3	3	3	3	2	3	3	3	2	3	2
CO4	3	3	3	3	3	3	3	2	2	2
CO5	3	2	3	3	3	3	3	2	2	3

3 – Strong, 2 – Medium , 1 - Low

Mapping with Programme Specific Outcomes:

CO /PO	PSO1	PSO2	PSO3	PSO4
CO1	3	3	3	3
CO2	3	3	3	3
CO3	3	3	3	3
CO4	3	3	3	3
CO5	3	3	3	3
Weightage	15	15	15	15
Weighted percentage of Course Contribution toPos	3.0	3.0	3.0	3.0

UNIVERSITY OF MADRAS

FOUNDATION COURSE: ENGLISH
SYLLABUS WITH EFFECT FROM 2023-2024

FIRST YEAR - SEMESTER II PAPER II –GENERAL ENGLISH

Subject Code	Category	L	T	P	S	Credits	Inst. Hours	Marks		
								CIA	External	Total
100L2ZU	Part II	Y	Y	-	-	3	6	25	75	100
Learning Objectives										
LO1	To make students realize the importance of resilience									
LO2	To enable them to become good decision makers									
LO3	To enable them to imbibe problem-solving skills									
LO4	To enable them to use tenses appropriately									
LO5	To help them use English effectively at the work place.									
Unit No.	Unit Title & Text						No. of Periods for the Unit			
I	RESILIENCE Poem 1.1 Don't Quit – Edgar A. Guest 1.2 Still Here – Langston Hughes Short Story 1.3 Engine Trouble – R.K. Narayan 1.4 Rip Van Winkle – Washington Irving						20			
II	DECISION MAKING Short Story 2.1 The Scribe – Kristin Hunter 2.2 The Lady or the Tiger - Frank Stockton Poem 2.3 The Road not Taken – Robert Frost 2.4 Snake – D. H Lawrence						20			
III	PROBLEM SOLVING Prose life Story 3.1 How I taught My Grandmother to Read – Sudha Murthy Autobiography 3.3 How frog Went to Heaven – A Tale of Angolo 3.4 Wings of Fire (Chapters 1,2,3) by A.P.J Abdul Kalam						20			

UNIVERSITY OF MADRAS

FOUNDATION COURSE: ENGLISH SYLLABUS WITH EFFECT FROM 2023-2024

IV	Tenses 4.1 Present 4.2 Past 4.3 Future 4.4 Concord	15
V	English in the Workplace 5.1 E-mail – Invitation, Enquiry, Seeking Clarification 5.2 Circular 5.3 Memo 5.4 Minutes of the Meeting	15

Course Outcomes

Course Outcomes	On completion of this course, students will;	
CO1	Realize the importance of resilience	PO1,PO7
CO2	Become good decision-makers	PO1,PO2,PO10
CO3	Imbibe problem-solving skills	PO4,PO6,PO9
CO4	Use tenses appropriately	PO4, PO5,PO6
CO5	Use English effectively at the work place.	PO3,PO8

Text Books (Latest Editions)

References Books

1	Martin Hewings. Advanced English Grammar. Cambridge University Press, 2000
2	SP Bakshi, Richa Sharma. Descriptive English. Arihant Publications (India) Ltd., 2019.
3.	Sheena Cameron, Louise Dempsey. The Reading Book: A Complete Guide to Teaching Reading. S & L. Publishing, 2019.
4	Barbara Sherman. Skimming and Scanning Techniques, Liberty University Press, 2014.
5.	Phil Chambers. Brilliant Speed Reading: Whatever you need to read, however. Pearson, 2013.
6.	Communication Skills : Practical Approach Ed. Shaikh Moula
	Ramendra Kumar. Stories of Resilience, Blue Rose Publications, 2020.

UNIVERSITY OF MADRAS

FOUNDATION COURSE: ENGLISH
SYLLABUS WITH EFFECT FROM 2023-2024

Web Sources

1	Langston Hughes. Still Here https://poetryace.com/im-still-here
2	R. K. Narayan. Engine Trouble http://www.sbioaschooltrichy.org/work/Work/images/new/8e.pdf
3	Washington Irving. Rip Van Winkle https://www.gutenberg.org/files/60976/60976-h/60976-h.htm
4	Frank Stockton. The Lady or the Tiger https://www.gutenberg.org/ebooks/396

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	2	3	2
CO2	2	3	3	3	2	3	3	2	2	2
CO3	3	3	3	2	3	3	3	2	3	2
CO4	3	3	3	3	3	3	3	2	2	2
CO5	3	2	3	3	3	3	3	2	2	3

3 – Strong, 2 – Medium, 1 - Low

Mapping with Programme Specific Outcomes:

CO /PO	PSO1	PSO2	PSO3	PSO4
CO1	3	3	3	3
CO2	3	3	3	3
CO3	3	3	3	3
CO4	3	3	3	3
CO5	3	3	3	3
Weightage	15	15	15	15
Weighted percentage of Course Contribution toPos	3.0	3.0	3.0	3.0

UNIVERSITY OF MADRAS
B.Sc. DEGREE PROGRAMME IN MICROBIOLOGY
 SYLLABUS WITH EFFECT FROM 2023-2024

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
136C2A	Microbial Physiology and Metabolism	Core Course III	Y	-	-	-	5	5	25	75	100
Course Objectives											
CO1	Study the basic principles of microbial growth.										
CO2	Understand the basic concepts of aerobic and anaerobic metabolic pathways.										
CO3	Analyze the role of individual components in overall cell function.										
CO4	Provide information on sources of energy and its utilization by microorganisms.										
CO5	Study the different types of metabolic strategies.										
Unit	Details							No.of Hours	Course Objectives		
I	Physiology of Microbial Growth: Batch – continuous - synchronous cultures; Growth curve and measurement method (turbidity, biomass, and cell count). Control of microbial growth.							12	CO1		
II	Nutrition Requirements - Photoautotrophs, photoorganotrophs, chemolithotrophs (Ammonia, Nitrite, Sulfur, Hydrogen, Iron oxidizing Bacteria), chemoorganotrophs. Nutrition transport mechanisms – Passive diffusion and Active transport. Factors affecting microbial growth.							12	CO2		
III	An overview of Metabolism - Embden Meyerhof Pathway, Entner-Doudoroff Pathway, Pentose Phosphate Pathway, Tricarboxylic Acid Cycle. Electron Transport Chain and Oxidative Phosphorylation. ATP synthesis. Fermentation-Homolactic Fermentation, Heterolactic Fermentation, Mixed Acid Fermentation, Butanediol Fermentation.							12	CO3		
IV	Photosynthesis - An overview of chloroplast structure. Photosynthetic Pigments, Light Reaction-Cyclic and non-cyclic Photophosphorylation. Dark Reaction - Calvin Cycle.							12	CO4		
V	Bacterial reproduction - Binary fission, Budding, Reproduction through conidia, cyst formation, endospore formation. Fungi asexual and sexual reproduction, Microalgae reproduction. Asexual and sexual reproduction of protozoa.							12	CO5		
	Total							60			

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Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Describe microorganisms based on nutrition.	PO6, PO9
CO2	Know the concept of microbial growth and identify the factors affecting bacterial growth.	PO6, PO7, PO9
CO3	Explain the methods of nutrient uptake.	PO6, PO9
CO4	Describe anaerobic and aerobic energy production.	PO6, PO9
CO5	Elaborate on the process of bacterial photosynthesis and reproduction.	PO6, PO9
Text Books		
1	Schlegel, H.G. (1993). General Microbiology.,7 th Edition, Press syndicate of the University of Cambridge.	
2	RajapandianK.(2010). Microbial Physiology, Chennai: PBS Book Enterprises India.	
3	MeenaKumari. S. Microbial Physiology, Chennai 1 st Edition MJP Publishers 2006.	
4	Dubey R.C. and Maheswari, S. (2003). A textbook of Microbiology, New Delhi: S. Chand & Co.	
5	S. Ram Reddy, S.M. Reddy (2008). Microbial Physiology. Anmol Publications Pvt Ltd.	
References Books		
1	Robert K. Poole (2004). Advances in Microbial Physiology, Elsevier Academic Press, New York, Volume 49.	
2	Kim B.H., Gadd G.M. (2008). Bacterial Physiology and Metabolism. Cambridge University Press, Cambridge.	
3	Daniel R. Caldwell. (1995). Microbial Physiology & Metabolism Wm.C. Brown Communications, Inc. USA.	
4	Moat, A.G and J.W Foaster (1995). Microbial Physiology, 3 rd edition. Wiley – LISS, A John Wiley & Sons. Inc. Publications.	
5	BhanuShrivastava. (2011). Microbial Physiology and Metabolism: Study of Microbial Physiology and Metabolism. Lambert academic Publication.	
Web Resources		
1	https://sites.google.com/site/microbialphysiologyoddsem/teaching-contents	
2	https://courses.lumenlearning.com/boundless-microbiology/chapter/microbial-Nutrition	
3	https://onlinecourses.swayam2.ac.in/cec20_bt14/preview	
4	http://web.iitd.ac.in/~amittal/2007_Addy_Enzymes_Chapter.pdf	
5	https://www.frontiersin.org/microbial-physiology-and-metabolism	

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Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview	
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
Analyze (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1						M			M		
CO2						M	L		M		
CO3						M			M		
CO4						M			M		
CO5						M			M		

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Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
136C21	Microbial Physiology and Metabolism	CCIV- Core Practical II	-	-	Y	-	5	5	40	60	100

Course Objectives

CO1	Understand the principles of motility test.
CO2	Understand the basic concepts of staining methods.
CO3	Learn the bacterial count using different methods and anaerobic culture.
CO4	Study the morphological demonstration of microorganisms and identification.
CO5	Study the biochemical identification of the bacteria.

UNIT	Details	No.of Hours	Course Objectives
I	Motility demonstration: Hanging drop, wet mount preparation, semi-solid agar, Craigie's tube method. Staining techniques: Smear preparation, permanent specimen preparation, capsular, and acid-fast staining	12	CO1
II	Direct counts – Direct cell count (Petroff-Hausser counting chamber), turbidometry. Viable count - pour plate, spread plate. Bacterial growth curve.	12	CO2
III	Anaerobic culture methods. Antibiotic sensitivity testing: Disc diffusion test - Quality control with standard strains.	12	CO3
IV	Morphological variations in algae, fungi and protozoa. Micrometry: Demonstration of the size of yeast, fungal filaments and protozoa.	12	CO4
V	Methods of Bacterial Identification - Morphological, physiological, and biochemical methods - IMViC test, H ₂ S, TSI, oxidase, catalase, urease test, and carbohydrate fermentation test. Maintenance of pure culture, paraffin method, stab culture, maintenance of mold culture.	12	CO5
	Total	60	

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Course Outcomes		
CO	On completion of this course, students will:	
CO1	Describe hanging drop, wet mount preparation, semi-solid agar, Craigie's tube method.	PO6, PO7, PO8, PO9, PO11
CO2	Demonstrate Smear preparation, permanent specimen preparation, Capsular, and Acid-fast staining.	PO6, PO7, PO8, PO9, PO11
CO3	Explain antibiotic sensitivity testing: Disc diffusion test- quality control with standard strains.	PO6, PO7, PO8, PO9, PO11
CO4	Describe demonstration of the size of yeast, fungal filaments and protozoa.	PO6, PO7, PO8, PO9, PO11
CO5	Elaborate on the bacterial identification- morphological, physiological, and biochemical methods.	PO6, PO7, PO8, PO9, PO11
Text Books		
1	James G Cappucino and N. Sherman MB (1996). A lab manual Benjamin Cummins, New York .	
2	Kannan. N (1996).Laboratory manual in General Microbiology. Palani Publications.	
3	Sundararaj T (2005). Microbiology Lab Manual (1 st edition) publications.	
4	Gunasekaran. P (2007). Laboratory manual in Microbiology. New age international publisher.	
5	Elsa Cooper (2018). Microbial Physiology: A Practical Approach. Callisto Reference publisher.	
References Books		
1	DavidWhite., James Drummond., Clay Fuqua (2012) Physiology and Biochemistry of Prokaryotes. 4th Ed. Oxford University Press, New York.	
2	Robert K. Poole (2004). Advances in Microbial Physiology, Elsevier Academic Press, New York, Volume 49.	
3	Kim B.H., Gadd G.M. (2008). Bacterial Physiology and Metabolism. Cambridge University Press, Cambridge.	
4	Dawes, I.W and Sutherland L.W (1992). Microbial Physiology (2 nd edition), Oxford Blackwell Scientific Publications.	
5	Moat, A.G and J.W Foaster, (1995). Microbial Physiology, 3 rd edition. Wiley – LISS, A John Wiley & Sons. Inc. Publications.	
Web Resources		
1	https://sites.google.com/site/microbialphysiologyoddsem/teaching-contents	
2	https://courses.lumenlearning.com/boundless-microbiology/chapter/microbial-Nutrition	
3	https://onlinecourses.swayam2.ac.in/cec20_bt14/preview	
4	https://www.studocu.com/microbial-physiology-practicals	
5	https://www.agr.hokudai.ac.jp/microbial-physiology	

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Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	40 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	60 Marks
	Total	100 Marks
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview	
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
Analyze (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations.	

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1						M	L	M	L		M
CO2						M	M	L	M		L
CO3						L	M	M	L		M
CO4						L	M	M	M		M
CO5						M	M	M	M		M

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Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
136E2A	Bio Instrumentation	Elective Generic /Discipline Specific Elective II	Y	-	-	-	3	4	25	75	100
Course Objectives											
CO1	Understand the analytical instruments and study the basic principles in the field of sciences.										
CO2	To gain knowledge about principles of spectroscopy										
CO3	Understand the analytical techniques of Chromatography and electrophoresis										
CO4	To understand the principle of different types of scans used in medical diagnosis										
CO5	To gain information about the principles of radioactivity and its measurements										
Unit	Details							No.of Hours	Course Objectives		
I	Basic instruments: pH meter, Buffer of biological importance, Centrifuge- Preparative, Analytical and Ultra, Laminar Air Flow, Autoclave, Hot Air Oven and Incubator. Biochemical calculations-Preparations of Molar solutions - Buffers- Phosphate, Acetate, TE, TAE- calculation of Normality, PPM- Ammonium sulphate precipitation.							12	CO1		
II	Spectroscopic Techniques: Spectroscopic Techniques: Colorimeter, Ultraviolet and Visible, Infra-red and Mass Spectroscopy.							12	CO2		
III	Chromatographic and Electrophoresis Techniques: Chromatographic Techniques: Paper, Thin Layer, Column, HPLC and GC. Electrophoresis Techniques: Starch Gel, AGE, PAGE.							12	CO3		
IV	Imaging techniques: Principle, Instrumentation and application of ECG, EEG, EMG, MRI, CT and PET scan radioisotopes.							12	CO4		

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V	Fluorescence and Radiation based Techniques: Spectrofluorimeter, Flame photometer, Scintillation counter, Geiger Muller counter, Autoradiography.	12	CO5
	Total	60	
Course Outcomes			
Course Outcomes	On completion of this course, students will;		
CO1	Gain knowledge about the basics of instrumentation.	PO1,PO4,PO11	
CO2	Exemplify the structure of atoms and molecules by using the principles of spectroscopy.	PO4,PO10,PO11	
CO3	Evaluate by separating and purifying the components.	PO4,PO7,PO11	
CO4	Understand the need and applications of imaging techniques.	PO7,PO8,PO11	
CO5	Categorize the working principle and applications of fluorescence and radiation.	PO10,PO11	
Text Books			
1.	Jayaraman J (2011). Laboratory Manual in Biochemistry, 2 nd Edition. Wiley Eastern Ltd., New Delhi .		
2.	Ponmurugan. P and Gangathara PB (2012). Biotechniques.1 st Edition. MJP publishers.		
3	Veerakumari, L (2009).Bioinstrumentation- 5 th Edition -.MJP publishers.		
4	Upadhyay, Upadhyay and Nath (2002). Biophysical chemistry – Principles and techniques 3 rd Edition. Himalaya publishing home.		
5	Chatwal G and Anand (1989). Instrumental Methods of Chemical Analysis. S.Himalaya Publishing House, Mumbai.		
References Books			
1	Rodney.F.Boyer (2000). Modern Experimental Biochemistry, 3 rd Edition. Pearson Publication.		
2	SkoogA.,WestM (2014). Principles of Instrumental Analysis – 14 th Edition W.B.SaundersCo.,Philadephia.		
3	N.Gurumani. (2006). Research Methodology for biological sciences- 1 st Edition – MJP Publishers .		
4	Wilson K, and Walker J (2010). Principles and Techniques of Biochemistry and Molecular Biology.7 th Edition. Cambridge University Press .		
5	Webster, J.G. (2004). Bioinstrumentation- 4 th Edition - John Wiley & Sons (Asia) Pvt. Ltd, Singapore.		

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Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
136S2A	Nutrition & Health Hygiene	Skill Enhancement Course -SEC-2 (NME)	Y	-	-	-	2	2	25	75	100
Course Objectives											
CO1	Learn about nutrition and their importance										
CO2	Make student understand the nutritional facts for a better life.										
CO3	Learn information to optimize our diet										
CO4	Impart knowledge on different health care programs taken up by India										
CO5	Learn knowledge on different health indicators and types of hygiene methods										
Unit	Details								No.of Hours	Course Objectives	
I	Nutrition – Definition, Importance, Good nutrition, and Malnutrition; Balanced Diet: Basics of Meal Planning. Carbohydrates, Lipids, Proteins and Vitamins – Functions, dietary sources, effects of deficiency. Macro and micro minerals – functions, effects of deficiency; food sources of Calcium, Potassium, and Sodium; food sources of Iron, Iodine, and Zinc. Importance of water– functions, sources, requirements and effects of deficiency.								5	CO1	
II	Nutrition for Life Cycle: Balanced diet - Normal, Pregnant, Lactating women, Infancy, Young children, Adolescents, Adults, and the Elderly. Diet Chart, Nutritive value of Indian foods.								5	CO2	
III	Improper diets: Definition, Identification, Signs and Symptoms - Malnutrition, Under-nutrition, Over-nutrition, Protein energy malnutrition, Obesity; Nutritional Disease and Disorder - Hypertension, Diabetes, Anemia, Osteomalacia, Cardiovascular disease.								5	CO3	
IV	Health - Determinants of health, Key Health Indicators, Environment health & Public health; Health-Education: Principles and Strategies. Health Policy & Health Organizations: Health Indicators and National Health Policy of Govt. of India; Functioning of various nutrition and Health organizations in India.								5	CO4	
V	Hygiene – Definition; Personal, Community, Medical and Culinary hygiene; WASH (Water, Sanitation and Hygiene) programme. Rural Community Health: Village health sanitation & Nutritional committee. Community & Personal Hygiene: Environmental Sanitation and Sanitation in Public places.								5	CO5	
	Total								25		

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Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Learn the importance of nutrition for a healthy life	PO5, PO6, PO7, PO8, PO10
CO2	Study the nutrition for life cycle	PO5, PO6, PO7, PO8, PO10
CO3	Know the health care programmes of India	PO5, PO6, PO7, PO8, PO10
CO4	Learn the importance of community and personal health & hygiene measures	PO5, PO6, PO7, PO10
CO5	Create awareness on community health and hygiene	PO5, PO6, PO7, PO10
Text Books		
1.	Bamji, M.S., K. Krishnaswamy & G.N.V. Brahmam (2009) Textbook of Human Nutrition (3rd edition) Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi	
2.	Swaminathan (1995) Food & Nutrition (Vol I, Second Edition) The Bangalore Printing & Publishing Co Ltd., Bangalore	
3	SK. Haldar (2022). Occupational Health and Hygiene in Industry. CBS Publishers.	
4	Acharya, Sankar Kr, Rama Das, Minati Sen (2021). Health Hygiene and Nutrition Perception and Practices. Satish Serial Publishing House	
5	Dass (2021). Public Health and Hygiene, Notion Press	
References Books		
1	Vijaya Khader (2000) Food, nutrition & health, Kalyan Publishers, New Delhi	
2	Srilakshmi, B., (2010) Food Science, (5 th Edition) New Age International Ltd., New Delhi	
3	Arvind Kumar Goel (2005). A College Textbook of Health & Hygiene, ABD Publishers	
4	Sharma D. (2015). Textbook on Food Science and Human Nutrition. Daya Publishing House.	
5	Revilla M. K. F., Titchenal A. and Draper J. (2020). Human Nutrition. University of Hawaii, Mānoa.	
Web Resources		
1	National Rural Health Scheme: https://nhm.gov.in/index1.php?lang=1&level=1&sublinkid=969&lid=49	
2	National Urban Health Scheme: https://nhm.gov.in/index1.php?lang=1&level=1&sublinkid=970&lid=137	
3	Village health sanitation & Nutritional committee https://nhm.gov.in/index1.php?lang=1&level=1&sublinkid=149&lid=225	
4	Health Impact Assessment - https://www.who.int/hia/about/faq/en/	
5	Healthy Living https://www.nhp.gov.in/healthylivingViewall	

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Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand / Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview	
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
Analyse (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1					S	M	M	M		S	
CO2					S	M	M	M		S	
CO3					S	M	M	M		S	
CO4					S	S	L			S	
CO5					S	S	M			S	

**சென்னைப் பல்கலைக்கழகம்
University of Madras**

Part-IV

அடிப்படைத் தமிழ் - பாடத்திட்டம்

Basic Tamil - Syllabus

2 பருவங்கள் (இரண்டாம் பருவம்)

(B.A., B.Sc., B.Com., BCA., BBA)

2023-24

பருவம் - II (Semester - II)
அடிப்படைத் தமிழ் - II (Basic Tamil - II)

Course Code	Course Name	Category	L	T	P	S	Credit	Ins. Hours	Marks		
									CIA	External	Total
100S2A	அடிப்படைத் தமிழ் - II Basic Tamil - II	Supportive	2		-	-	2	2	25	75	100
Pre-requisite	தமிழ் எழுத்துகளை அறிந்திருத்தலோடு தொடக்க நிலையில் பேசவும் எழுதப் படிக்கவும் தெரிந்திருத்தல்.										SV 2023
Learning Objectives - கற்றல் நோக்கங்கள்											
<ul style="list-style-type: none"> தமிழ்மொழியைத் தொடக்க நிலையில் பேசவும் பிறர் பேசுவதைப் புரிந்துகொள்ளவும் திறன் பெறுதல். தமிழைப் படிக்கவும் எழுதவும் கற்றுக்கொள்ளுதல். பிறமொழி மாணவர்களுக்குத் தமிழ்மொழி யின் சிறப்புகள் , கலை-பண்பாட்டை அறிமுகப்படுத்துதல். தமிழ் இலக்கிய இலக்கண வளங்களின் சிறப்புக ளை அறிதல் . அவற்றுள் சிலவற்றைச் சுவைத்துப் பார்த்தல். தமிழரின் தனித்தன்மைகளை உணரச் செய்தல். 											
Expected Course Outcomes - எதிர்பார்க்கப்படும் கற்றல் அடைவுகள்											
On the successful completion of the course, students will be able to											
இப் பாடத்தைக் கற்பதால் பின்வரும் பயன்களை மாணவர் அடைவர்											
CO 1	தமிழ்மொழியைப் பேசவும் பிறர் பேசுவதைப் புரிந்துகொள்ளவும் திறன் பெறுதல். தமிழைப் படிக்கவும் எழுதவும் கற்றுக்கொள்வர்.										K1,K2
CO 2	கடிதம், விண்ணப்பம், நிகழ்ச்சிக் குறிப்புகள் எழுதுதல், தகவல் தொடர்புச் சாதனங்களில் தகவல் எழுதுதல் என அன்றாட வாழ்வில் தமிழ்ப் பயன்பாட்டைக் கற்றுக்கொள்வர்.										K1,K3,K4
CO 3	தமிழின் இலக்கிய வளத்தோடு தமிழரின் அறக் கோட்பாடுகளையும் தமிழரின் வரலாற்று-பண்பாட்டுச் செழுமையையும் புரிந்துகொள்வர்.										K1,K2,K4
CO 4	தமிழறிஞர்களையும் படைப்பாளிக ள், அரசியல் தலைவர்கள், சிறந்த ஆளுமைகளைப் பற்றி அறிந்துகொள்வர்.										K4,K5,K6
CO 5	தமிழர் கலை , பண்பாடு, பழக்கவழங்கங்கள், விளையாட்டுகள், விழாக்கள், தமிழரின் தனித்த அடையாளங்கள், சிறப்புகள் ஆகியவற்றை அறிவதோடு, அவரவர் மண்ணுகுரிய கலைப் பண்பாட்டோடு ஒப்பிட்டுப் புரிந்துகொள்வர்.										K1,K4,K5, K6
K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create											
Unit - I	சொல்லும் பொருளும்										
	<ol style="list-style-type: none"> பெயர்-வேற்றுமை, வினை-காலம், பெயரடை-வினையடை, எதிர்ச்சொற்கள் போன்றவறைக் கொண்டு சிறுசிறு தொடர்கள் பேசவைத்தல், எழுதவைத்தல். பெயர்ப் பலகை, செய்தித்தாள் போன்றவற்றை வாசிக்கவும் பொருள் கூறவும் பயிற்சியளித்தல். உரையாடல் (படங்களைப் பார்த்து, சொற்களைச் சொல்லவைத்தல்/பேசவைத்தல், கேள்விகளுக்குப் பதில் அளித்தல், தலைப்புகள் கொடுத்துப் பேசச் செய்தல். 										

Unit - II	அன்றாட வாழ்வில் தமிழ்ப் பயன்பாடு
	காலைக் கடமைகள், சமையல், உணவுகள், உடல்நலம், வீட்டுப் பொருள்கள், வணிகம், போக்குவரத்து, பயணம் தொடர்பான செயல்பாடுகள் போன்ற அன்றாட நடவடிக்கைகளில் தமிழ்மொழிப் பயன்பாடு.
Unit - III	தமிழ் இலக்கியங்கள் அறிமுகம்
	1. தமிழ் இலக்கியங்கள் அறிமுகம் - இலக்கிய இலக்கண வளங்களின் சிறப்புகள். 2. திருக்குறள், ஆத்திசூடி, சங்க இலக்கியம், திரைப் பாடல்கள், நாட்டுப்புறப் பாடல்கள் போன்றவற்றில் சுவைமிகுந்த பாடல்களை வாசிக்கவைத்தல் பொருளுணர்த்துதல், கற்றவற்றை எழுதச்செய்தல்.
Unit - IV	தமிழ்ப் படைப்பாளர்கள், அறிஞர்கள், ஆளுமைகள், தலைவர்கள்
	1. இலக்கிய-இலக்கணப் படைப்பாளர்கள் (தொல்காப்பியர், திருவள்ளுவர், ஓவையார், கம்பர், பாரதி, பாரதிதாசன், ஜெயகாந்தன், கண்ணதாசன், வைரமுத்து போன்றோர்). 2. அரசியல் தலைவர்கள் (காமராசர், பெரியார், அண்ணா, எம்.ஜி.ஆர். போன்றோர்). 3. திரைப் பிரபலங்கள் (சிவாஜி கணேசன், ரஜினிகாந்த், கமலஹாசன், பாலச்சந்தர், இளையராஜா, சி.பா. பாலசுப்பிரமணியம் போன்றோர்). 4. ஆளுமைகள் (வ.உ. சிதம்பரனார், பாவாணர், அப்துல் கலாம், போன்றோர்). மேற்குறித்தோரை அறிமுகப்படுத்துதல். மாணவர்களைப் பேசவைத்தல் /எழுதவைத்தல்.
Unit - V	தமிழர் கலை, பண்பாடு, பழக்க வழங்கல்கள், விளையாட்டுகள், விழாக்கள்
	1. தமிழரின் தனித்த அடையாளங்களும் சிறப்புகளும். 2. கலைகள் (கட்டடம், சிற்பம், ஓவியம், புழங்குபொருள்கள்). 3. நுண்கலைகள் (சிலம்பம், பட்டிமன்றம், வில்லுப்பாட்டு, ஆட்டம், கூத்து போன்றன). 4. விளையாட்டுகள் (குழந்தைகள், சிறுவர், இளைஞர், ஆண்கள், பெண்கள்). 5. விழாக்கள் (குடும்ப விழாக்கள், கோயில் சார்ந்த விழாக்கள், கிராமிய விழாக்கள்). 6. சுற்றுலாத் தலங்கள் / வரலாற்றுச் சிறப்புமிக்க இடங்கள். 7. உணவு, உடை, மருத்துவம் இன்னபிற. மேற்குறித்தவற்றை அறிமுகப்படுத்துதல். மாணவர்களைப் பேசவைத்தல் /எழுதவைத்தல்.
Text book (s)	
•	அடிப்படைத் தமிழ்-2 (Basic Tamil-II)
Reference Books / Websites	
•	தமிழில் நாமும் தவறில்லாமல் எழுதலாம் - பொற்கோ, பாரி நிலையம், சென்னை, 2003.
•	www.tamilvu.org/ta/content/சான்றிதழ்
•	www.thamizham.net/kal/ttenglish/cards32-u8.htm
•	www.thamizham.net/kal/ttenglish/index-u8.htm
•	www.ilearntamil.com
•	www.wikihow.com/Learn-Tamil
•	www.ilovelanguages.org/tamil.php
•	www.ling-app.com/learn-tamil
•	www.ilearntamilnow.com
•	www.17-minute-languages.com/en/learn-tamil
•	www.hindustanitongue.com/learn-tamil

•	www.duolingo.com/course/ta/en/Learn-Tamil
•	www.mylanguages.org/learn_tamil.php
•	www.learn101.org/tamil.php
•	www.goethe-verlag.com/book2/EN/ENTA/ENTA002.HTM
•	www.karky.in/payilcourses/index.html
•	www.tamilvu.org/ta/பயணியர்-தமிழ்
•	www.languagetrainers.com/blog/tamil-words/
•	www.thamizham.net/kal/tamil.htm
•	www.worldtamilacademy.com
•	www.outsourcingtranslation.com/resources/phrases/tamil-sentences.php
•	www.ling-app.com/ta/basic-words-in-tamil/
•	www.thirutamil.com/article/20-easy-thirukkural-in-tamil/
•	www.chennaiLibrary.com/avvai/kondraivendan.html
•	www.tamilvu.org/ta/content/புதிய-பாடத்திட்டம்-2022
•	www.tamilvu.org/ta/content/மின்-கற்றலுக்கான-இணையத்தளம்
•	www.ling-app.com/ta/tamil-culture
•	www.caleidoscope.in/art-culture/tamil-nadu-culture-3

Apps

•	www.kaniyantamil.com/best-mobile-apps-tamil-learning/
•	Tamil 101 - Learn to Write
•	https://payil.app/tva/ta/
•	https://tamil-101.en.aptoide.com/app
•	Ling - Learn Tamil Language
•	Tamil by Nemo
•	Learn Tamil Quickly

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2
CLO 1	3	2	3	2	2	3	2	2	2	2	3	3
CLO 2	2	2	2	3	3	2	2	3	3	2	2	2
CLO 3	3	3	3	2	2	3	3	2	3	3	3	3
CLO 4	3	2	3	3	3	3	2	2	2	2	3	2
CLO 5	2	2	3	3	2	2	3	3	2	3	3	2

Strong - 3, Medium - 2, Low - 1

**சென்னைப் பல்கலைக்கழகம்
University of Madras**

Part-IV

வளர்நிலைத் தமிழ் - பாடத்திட்டம்

Advanced Tamil - Syllabus

2 பருவங்கள் (இரண்டாம் பருவம்)

(B.A., B.Sc., B.Com., BCA., BBA)

2023-24

பருவம் - 2 (Semester - 2)
வளர்நிலைத் தமிழ் - II (Advanced Tamil - II)

Course Code	Course Name	Category	L	T	P	S	Credit	Ins. Hours	Marks		
									CIA	External	Total
100S2B	வளர்நிலைத் தமிழ் - II Advanced Tamil - II	Supportive	2	-	-	-	2	2	25	75	100
Pre-requisite	பத்தாம் வகுப்புவரை தமிழை மொழிப்பாடமாகப் படித்திருக்க வேண்டும்.										SV 2023
Learning Objectives - கற்றல் நோக்கங்கள்											
<ul style="list-style-type: none"> பண்டைத் தமிழ் இலக்கியங்கள் , அவற்றின் சிறப்புகள் மற்றும் பொருண்மைகள் ஆகியன குறித்து அறியச்செய்தல். காப்பிய இலக்கியங்கள் , பக்தி இலக்கியங்கள் ஆகியவற்றில் காணலாகும் கருத்துக் கருவூலங்களை நுகரச் செய்தல். உரைநடை இலக்கியத்துள் , கட்டுரை, இலக்கியம் குறித்த அறிமுகத்தை மாணவர்களுக்கு ஏற்படுத்துதல். பாடத்தின்வழி, பல்வகை இலக்கியங்கள் தோன்றுவதற்கான காரணங்கள் மற்றும் மாற்றம் பெறுவதற்கான காரணங்களை அறியச் செய்தல். இருவேறு மொழிகளின் இயல்புகளை உணர் த்தி, மொழிபெயர்க்கும் திறனையும் அலுவலகக் கடிதம் எழுதும் பயிற்சியையும் பெறச் செய்தல். 											
Expected Course Outcomes - எதிர்பார்க்கப்படும் கற்றல் அடைவுகள்											
On the successful completion of the course, students will be able to											
இப் பாடத்தைக் கற்பதால் பின்வரும் பயன்களை மாணவர் அடைவர்.											
CO 1	உரைநடை இலக்கியத்தின் பெருமைகளை உணர்ந்து , அதனை அன்றாட வாழ்வில் பயன்படுத்தும் திறன் பெறுவர்.									K2,K3	
CO 2	பண்டைத் தமிழ் இலக்கியங்கள் காட்டும் சமூக , பண்பாட்டு, வாழ்வியல் முறைகளை அறிந்துகொள்வர்.									K1,K3,K4	
CO 3	காப்பியக் கட்டமைப்புகளை இன்றைய புதினம் , திரைப்படங்கள் ஆகியவற்றுடன் ஒப்பிட்டுக் காணும் அறிவைப் பெறுவர்.									K1,K3,K4	
CO 4	தமிழ் இலக்கிய மரபினையும் மாற்றங்களையும் ஆய்ந்து உணரும் ஆற்றல் பெறுவர்.									K1,K4,K5, K6	
CO 5	மொழிபெயர்ப்புத் திறன் பெறுவதோடு, அன்றாட வாழ்வின் தேவைகளான பல்வகை அலுவலகக் கடிதங்கள் எழுதும் திறன் பெறுவர்.									K4,K5,K6	
K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create											
Unit - I	பக்தி இலக்கியமும் சிற்றிலக்கியமும்										
	<ol style="list-style-type: none"> “மண்ணில் நல்லவண்ணம் வாழலாம்” - திருஞான சம்பந்தர் திருவேங்கடமலையில் பிறத்தல் என்னும் தலைப்பில் குலசேகர ஆழ்வார் பாடியுள்ள பாடல்களில் ஏதேனும் ஒன்று. முக்கூடற்பள்ளு இலக்கியத்தில் மூத்த பள்ளி தன் நாட்டுவளம் குறித்துப் பாடியுள்ள பாடல்களில் ஏதேனும் ஒன்று. 										
Unit - II	சங்க இலக்கியம், அற இலக்கியம், காப்பியம்										
	<ol style="list-style-type: none"> “நாடா கொன்றோ காடா கொன்றோ” - ஓவையார். “யாதும் ஊரே” - கணியன் பூங்குன்றனார் - புறநானூறு “நிலத்தினும் பெரிதே”, “வேம்பின் பைங்காய்” - குறுந்தொகை. திருக்குறள் - 'பொருள்செயல் வகை' அதிகாரம் 										

	உ) சிலப்பதிகாரம் - வஞ்சிக் காண்டம் - காட்சிக் காதை. ஊ) குண்டலகேசி - “பாளையாம் தன்மை செத்தும்” எனத் தொடங்கும் பாடல்.											
Unit - III	தமிழ் உரைநடை											
	தமிழ் உரைநடைச் சிறப்பையும் தேவையையும் மாணவர்கள் உணரும் வகையில் ஒரு சிறுகதை, ஓர் ஓரங்க நாடகம், ஓர் எளிய கட்டுரைத் தொகுப்பு இவற்றை அறிமுகம் செய்க.											
Unit - IV	தமிழர் பண்பாட்டு வரலாறு											
	தமிழர் பண்பாடு, கலைகள் (நிகழ்த்து கலை, ஓவியம், கட்டடக் கலை போன்றவற்றை அறிமுகம் செய்க.											
Unit - V	மொழிப் பயிற்சி											
	1. மயங்கொலிப் பிழை, குறில்-நெடில், சொற்பிழை, சந்திப்பிழை, தொடர்பு பிழைகளை நீக்கி எழுதப் பயிற்சியளித்தல். 2. கலைச்சொல்லாக்கம் 3. மொழிபெயர்ப்பு - தமிழ்-ஆங்கிலம், ஆங்கிலம்-தமிழ் பகுதிகளை மொழிபெயர்ப்பு செய்யப் பயிற்சியளித்தல். 4. வேலைவேண்டி விண்ணப்பம் எழுதுதல். 5. அலுவலகக் கடிதம். 6. போட்டித் தேர்வுகளுக்குரிய கண்ணோட்டத்தில் மொழி, இலக்கிய வரலாற்றினைக் கற்பித்தல்.											
Text book (s)												
•												
Reference Books / Websites												
•												
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2
CLO 1	3	2	3	2	2	3	2	2	2	2	3	3
CLO 2	2	2	2	3	3	2	2	3	3	2	2	2
CLO 3	3	3	3	2	2	3	3	2	3	3	3	3
CLO 4	3	2	3	3	3	3	2	2	2	2	3	2
CLO 5	2	2	3	3	2	2	3	3	2	3	3	2
Strong - 3, Medium - 2, Low - 1												

UNIVERSITY OF MADRAS
B.Sc. DEGREE PROGRAMME IN MICROBIOLOGY
SYLLABUS WITH EFFECT FROM 2023-2024

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
136S2B	SERICULTURE	Skill Enhancement Course -SEC-3	Y	-	-	-	2	2	25	75	100
Course Objectives											
CO1	Acquire knowledge on the concepts of origin, growth and study of Sericulture as science and scientific approach of mulberry plant.										
CO2	Describe the morphology and physiology of silkworm.										
CO3	Discuss effective management of silkworm diseases.										
CO4	Demonstrate field skills in mulberry cultivation and silkworm rearing with an emphasis on technological aspects.										
CO5	Demonstrate entrepreneurship abilities, innovative thinking, planning, and setting up small-scale enterprises.										
Unit	Details							No.of Hours	Course Objectives		
I	General introduction to Sericulture, its distribution in India. Botanical distribution and taxonomical characters of mulberry varieties and species. Biology of Mulberry plant and Mulberry crop cultivation and protection.							5	CO1		
II	Silkworm - Biology-morphology of silkworm. Life cycle of silkworm- egg, larva, pupa, and moth.							5	CO2		
III	Silkworm pathology: Introduction to Parasitism, Commensalism, Symbiosis and Parasite relationship - Mulberry Silkworm Diseases: Introduction, types, Pebrine, Grasserie, Muscardine, Flacherie, Symptoms and Pathogens, Mode of Infection, Prevention and Control. Non – mulberry silkworm diseases: Pebrine, Bacterial and viral diseases. Brief Account of Pests and Predators of Silkworms, Nature of damage and control measures.							5	CO3		
IV	Rearing of silkworm. Cocoon assessment and processing technologies. Value added products of mulberry and silkworms.							5	CO4		
V	Entrepreneurship and Rural development in sericulture: Planning for EDP, Project formulation, Marketing, Insectary facilities and equipments: Location, building specification, air conditioning and environmental control, furnishings and equipment, sanitation and equipment, subsidiary facilities.							5	CO5		
	Total							25			

UNIVERSITY OF MADRAS
B.Sc. DEGREE PROGRAMME IN MICROBIOLOGY
 SYLLABUS WITH EFFECT FROM 2023-2024

Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Discuss the overall aspects of Sericulture and the biology and varieties of mulberry plant. Creates awareness among students about the economic importance and suitability of Sericulture in Indian conditions.	PO1,PO5,PO7
CO2	Familiarize with the lifecycle of silk worm.	PO1, PO2
CO3	Explain common diseases of silkworm encountered during rearing, sources of infection, disease symptoms, pre-disposing factors and their management practices.	PO1, PO5
CO4	Attain thorough knowledge about the cultivation of mulberry, maintenance of the farm, seed technology, silkworm rearing, post cocoon techniques like stifling, reeling, and utilization of by-products.	PO7, PO8, PO10
CO5	Plan the facilities required for establishment of insectary. Competent to transfer the knowledge and technical skills to the Serifarmers. Analyze the importance of sericulture in entrepreneurship development and emerge as potential entrepreneur.	PO5, PO7, PO8
Text Books		
1	Ganga, G. and Sulochana Chetty (2010). Introduction to Sericulture,, J., Oxford and IBH Pub. Co. Pvt. Ltd., New Delhi.	
2	Dr. R. K. Rajan&Dr. M. T. Himantharaj(2005). Silkworm Rearing Technology, Central Silk Board, Bangalore.	
3	Dandin S B, Jayant Jayaswal and Giridhar K (2010). Handbook of Sericulture technologies,Central Silk Board, Bangalore.	
4	M. C. Devaiah, K. C. Narayanaswamy and V. G. Maribashetty(2010). Advances in Mulberry Sericulture,,CVG Publications, Bangalore	
5	T.V.SatheandJadhav.A.D.(2021). Sericulture and Pest Management, Daya Publishing House.	
References Books		
1	S. Morohoshi (2001). Development Physiology of Silkworms 2 nd Edition, Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi	
2	Hamamura, Y (2001). Silkworm rearing on Artificial Diet. Oxford & IBH publishing Co., Pvt. Ltd. NewDelhi.	
3	M.Johnson, M.Kesary (2019). Sericulture, 5 th . Edition. Saras Publications.	
4	Manisha Bhattacharyya (2019). <u>Economics of Sericulture</u> , Rajesh Publications.	

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 SYLLABUS WITH EFFECT FROM 2023-2024

5	Muzafar Ahmad Bhat, Suraksha Chanotra, Zafar Iqbal Buhroo, Abdul Aziz and Mohd. Azam (2020). <u>A Textbook on Entrepreneurship Development Programme in Sericulture</u> , IP Innovative Publication.	
Web Resources		
1	https://egyankosh.ac.in > bitstream	
2	https://archive.org > details > SericultureHandbook	
3	https://www.academic.oup.com	
4	https://www.sericulture.karnataka.gov.in	
5	https://www.silks.csb.gov.in	
Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	
	Assignments	
	Seminars	
	Attendance and Class Participation	
		25 Marks
External Evaluation	End Semester Examination	
		75 Marks
		Total
		100 Marks
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview	
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
Analyze (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	S				S		S				
CO2	M				S						
CO3	S				S						
CO4							S	S		S	
CO5					S		S	S			



**Dr. MGR-JANAKI COLLEGE
OF ARTS & SCIENCE FOR WOMEN**



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Affiliated to the University of Madras

DEPARTMENT OF MICROBIOLOGY

SHIFT -I

SYLLABUS

FROM 2023-2024

SEMESTER- III

சென்னைப் பல்கலைக்கழகம்
University of Madras

Part-I

பொதுத் தமிழ் - பாடத்திட்டம்

General Tamil - Syllabus

4 பருவங்கள் (மூன்றாம் பருவம்)

(B.A., B.Sc., B.Com., BCA., BBA)

2023-24

பொதுத்தமிழ் -3
தமிழக வரலாறும் பண்பாடும்
இரண்டாம் ஆண்டு - மூன்றாம் பருவம்

Course Code	Course Name	category	L	T	P	S	Credits	Ins.Hrs	CIA	External	Total
200L3AU	பொதுத்தமிழ் -3 தமிழக வரலாறும் பண்பாடும்	Supportive	Y	-	-	-	3	6	25	75	100

Learning Objectives

- தமிழக வரலாற்றை அறிந்துகொள்ளுதல்.
- தமிழரின் வாழ்வியல் தொன்மையை அறிதல்.
- தமிழரின் பண்பாட்டினை அறிந்துகொள்ளல்.
- தமிழர்மேல் நிகழ்ந்த பிற பண்பாட்டுத் தாக்கங்களை அறிதல்.
- தமிழ் இலக்கியம் சார்ந்த போட்டித் தேர்வுகளுக்கு ஏற்ப கற்பித்தல் நடைமுறைகளை மேற்கொள்ளுதல்

Expected Course Outcomes

On the Successful completion of the Course, Students will be able to

இப்பாடத்தைக் கற்பதால் பின்வரும் பயன்களை மாணவர் அடைவர்

CO 1	தமிழக வரலாற்றை அறிந்துகொள்வர்.	K4
CO 2	தமிழரின் வாழ்வியல் தொன்மையை அறிவர்.	K5, K6
CO 3	தமிழரின் பண்பாட்டுக் கூறுகளை அறிந்துகொள்வர்	K3
CO 4	பிற பண்பாட்டுத் தாக்கம் மற்றும் அணுகுமுறைகளை அறிவர்.	K3
CO 5	மொழிப்பயிற்சிக்குத் தேவையான இலக்கணங்களைக் கற்பர்.	K2

K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create

அலகு-1	தொல் பழங்கால வரலாறும் சங்ககால வரலாறும்
<ol style="list-style-type: none"> 1. தொல் தமிழர் 2. பழைய கற்காலம் 3. புதிய கற்காலம் 4. உலோகக் காலம் 5. அகழ்வாராய்ச்சியில் தமிழும் தமிழரும் (கீழடி வரை) 6. திணை வாழ்வியல் (களவு வாழ்க்கை, கற்பு வாழ்க்கை, உணவு, அணிகலன்கள், வாணிகம், விளையாட்டுகள்) 7. கல்வியும், கலைகளும் 	

8. தமிழ் வளர்த்த சங்கம்	
9. சங்க கால ஆட்சி முறை	
10 . அயல்நாட்டுத் தொடர்புகள்	
அலகு-2	ஆட்சியர் வரலாறு
1. மூவேந்தர் வரலாறு	
2. பல்லவர் வரலாறு	
3. நாயக்கர் ஆட்சி	
4. முகம்மதியர் ஆட்சி	
5. மராட்டியர் ஆட்சி	
அலகு-3	ஐரோப்பியர் கால வரலாறு
1. போர்த்துக்கீசியர்	
2. டச்சுக்காரர்கள்	
3. டேனிஸ்காரர்கள்	
4. பிரெஞ்சுக்காரர்கள்	
5. ஆங்கிலேயர்கள்	
6. பாளையக்காரர்கள்	
7. இந்திய விடுதலைப் போராட்டத்தில் தமிழ்நாடு	
அலகு-4	விடுதலைக்குபின் தமிழ்நாட்டு வரலாறு
1. மொழிப்போராட்டம்	
2. சமூக மறுமலர்ச்சி	
3. தொழில்நுட்ப வளர்ச்சி	
அலகு-5	மொழிப்பயிற்சி
<ul style="list-style-type: none"> • நிறுத்தக் குறிகள் • கலைச்சொற்கள் • மொழிபெயர்ப்பு 	
பயிற்சி :ஆங்கிலக் கலைச் சொற்களைக் கொடுத்து அவற்றைத் தமிழில் மொழிபெயர்க்கச் செய்தல்.	
Text books	
<ul style="list-style-type: none"> • தமிழக வரலாறும் பண்பாடும் - கே.கே. பிள்ளை, உலகத் தமிழாராய்ச்சி நிறுவனம், சென்னை, • தமிழர் நாகரிகமும் பண்பாடும் - அ. தட்சிணாமூர்த்தி, யாழ் வெளியீடு, சென்னை,. • தமிழக வரலாறும் பண்பாடும் - வே.தி. செல்லம், மணிவாசகர் பதிப்பகம், சென்னை, • ஆதிச்சநல்லூர் முதல் கீழடி வரை நுவேதா லூயிஸ், கிழக்குப் பதிப்பகம், சென்னை. • பண்பாட்டு மானிடவியல் - பக்தவத்சல பாரதி, அடையாளம் பதிப்பகம், திருச்சி. • .தமிழர் மேல் நிகழ்ந்த பண்பாட்டுப் படையெடுப்புகள், க.ப. அறவாணன், தமிழ்க்கோட்டம், சென்னை. • 	

Reference Books

- தமிழக சமுதாய பண்பாட்டு கலை வரலாறு -கு. சேதுராமன், என்.சி.பி.எச், சென்னை,
- தமிழர் கலையும் பண்பாடும் -அ.கா. பெருமாள், என்.சி.பி.எச், சென்னை.
- ஒரு பண்பாட்டின் பயணம்: சிந்து முதல் வைகை வரை -ஆர். பாலகிருஷ்ணன், ரோஜா முத்தையா ஆராய்ச்சி நூலகம், சென்னை.
- தமிழும் பிற பண்பாடும் - தெ.பொ. மீனாட்சி சுந்தரனார், நியூ செஞ்சுரி புக் ஹவுஸ், சென்னை
- தமிழர் வரலாறும் பண்பாடும் - நீலகண்ட சாஸ்திரி, ஸ்ரீசெண்பகா பதிப்பகம், சென்னை
- தமிழர் வரலாறும் தமிழர் பண்பாடும்- மா.இராசமாணிக்கனார்
- தமிழர் நாகரிக வரலாறு -க.த.திருநாவுக்கரசு, தொல்காப்பியர் நூலகம், சென்னை.

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

Web Sources

- <https://www.chennaiLibrary.com/>
- <https://www.sirukathaigal.com>
- <https://www.tamilvirtualuniversity.org>
- <https://www.noolulagam.com>
- <https://www.katuraitamilblogspot.com>

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2
CLO 1	3	2	3	2	2	3	2	2	2	2	3	3
CLO 2	2	2	2	3	3	2	2	3	3	2	2	2
CLO 3	3	3	3	2	2	3	3	2	3	3	3	3
CLO 4	3	2	3	3	3	3	2	2	2	2	3	2
CLO 5	2	2	3	3	2	2	3	3	2	3	3	2

Strong -3, Medium-2, Low-1

UNIVERSITY OF MADRAS
UG & 5 YR INTEGRATED DEGREE – FOUNDATION COURSE
 EXISTING SYLLABUS (22-23) FOLLOWED FOR THE ACADEMIC YEAR 2023-2024

200L3E

FOUNDATION COURSE: PART-I HINDI PAPER-III

Inst.Hrs. : 6
Credits : 3

Year : II
Semester : III

PAPER –III ANCIENT POETRY AND INTRODUCTION TO HINDI LITERATURE (UPTO REETI KAAL)		
Duration:	1 Semester	
Programme Outcomes:	<ol style="list-style-type: none"> 1. Identify the ancient poets and their works, contribution to society and Literature 2. Studies the contemporary conditions and its impact on Ancient poets 3. Understand the message of poets their expressional and artistic skills 4. Evaluation and critical study of Ancient Poetry and Trends of Ancient Literature 5. Obtain the skills of summarise, interpretation of contexts and literary attitude 	
Programme Specific Outcomes:	<ol style="list-style-type: none"> 1. Basic knowledge of Ancient Poets and their works 2. Basic Knowledge of History of Hindi literature and its trends 3. Obtain skills of briefing, interpretation and evaluation 4. Basic idea of critical and analytical study of literature. 5. Obtain the application knowledge of relation between contemporary condition and literature and its impact on poets 	
Course Objectives	<ol style="list-style-type: none"> 1. Identify the literary trends of ancient Hindi literature, and social conditions and its impact on Ancient poetry 2. Summarise the content of prescribed poems and understand the trends of Ancient Hindi Literature . 3. Critical study and analysis of artistic skills of poets and their expressional skills and literary trends 4. Employ the methods of interpreting contexts, ideas and identify the special features, poetic skills through practicing annotation writing 5. Differentiate the subject, ideology, contribution and poetic skills with each other and also know about contemporary poets , writers and the impact of contemporary situations 6. Conceive the aims of Literature and relations between Literature and contemporary society 	<p>K1</p> <p>K2</p> <p>K4</p> <p>K3</p> <p>K5</p> <p>K6</p>

Pre-requisites, if any:	Basic Knowledge of Hindi Fiction and Translation
UNITS	
I	<ol style="list-style-type: none"> 1. Kabirdas - Saakhi (Dohas from 1 to 10) 2. Literary Trends of Veeragatha Kaal (Aadikaal) 3. Chand Baradai and his Works 4. Vidhyapathi and his Works
II	<ol style="list-style-type: none"> 1. Surdas - Bramargeet Saar 2. Literary Trends of Bhakthi Kaal 3. Gyan Margi Shakha 4. Important Poet : 1. Kabirdas
III	<ol style="list-style-type: none"> 1. Tulasidas – Vinay ke Pad only 2. Literary Trends of Bhakthi Kaal – Prem Margi Shakha 3. Literary Trends of Bhakthi Kaal - Ram Bhakthi Shakha 4. Important Poets – 1. Joyasi and 2. Tulasidas
IV	<ol style="list-style-type: none"> 1. Meera Bai – Pad only 2. Tiruvalluar (Dharmakaand only) 3. Literary Trends of Bhakthi Kaal – Krishna Bhakthi Shakha 4. Important Poet – Surdas
V	<ol style="list-style-type: none"> 1. Biharilal (Dohas 1 to 5) 2. Literary Trends of Reethikaal 3. Important Poet : Bihari and his works 4. Bhushan and his works and Ghananand and his works

Course Outcomes	<ol style="list-style-type: none"> 1. Identifies the Ancient Poets their works, and impact of contemporary conditions of society and ancient History of Hindi Literature 2. Understand the theme , message, expressional and artistic skills 3. Evaluate the thought, ideology, expressional and artistic skills of writers and contextual meanings and literary trends of Ancient History 4. Obtain skills of summarizing, evaluating and critical study and of poems 5. Employ the techniques of interpretation and contextual meaning of texts
------------------------	--

Reading List (Print and Online)	<ol style="list-style-type: none"> 1. Hindi Sahithya Ka Itihas, By: Ramchandra Shukla, Jaya Bharati Publications, 217, B, Maya Press Road, Allahabad – 211 003. 2. Hindi Sahithya Yug Aur Pravritthiya By: Dr. Sivakumar Varma, Asok Prakashan Nayi Sarak, New Delhi – 6. 3. Hindi Sahithya ka Itihas
--	--

	By : Gulabroy, Lakshmi Narayana Agarwal Book Publishers and seller, Anupama Plaza – 1, Block No. 50, Sanjay Palace, Agra – 282002.
Recommended Texts	1. Poetry Selection Madras University Publications University of Madras

Method of Evaluation:

Internal Assessment	End Semester Examination	Total	Grade
25	75	100	

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	S	M	M	M
CO 2	S	S	S	S	S
CO 3	S	S	S	S	S
CO 4	M	S	S	S	S
CO 5	M	S	S	S	S

UNIVERSITY OF MADRAS

FOUNDATION COURSE: FRENCH
SYLLABUS WITH EFFECT FROM 2023-2024

UG & 5 Year PG Integrated – SEMESTER – III

Foundation Course: Translation, Comprehension and Grammar - I

Course Outcomes	1. Identify and appreciate the construction and the structure of different tenses and sentences 2. Translate simple texts 3. Draft and summarize literary texts 4. Apply the grammatical rules to express one's ideas using different tenses 5. Analyze literary texts with respect to their structure and composition		
Course	Foundation Course in French	Course Code	200L3K
Title of the Course:	Translation, Comprehension and Grammar – I		
Credits:	3		
Pre-requisites, if any:	-		
Course Objectives	Understand the structure and use of the different grammatical tenses	K2	
	Translate texts and examine them	K2 and K4	
	Draft summaries of literary texts	K2 and K6	
	Identify the requirement and employ the different grammatical tenses	K3	
	Analyze and critically assess the literary texts	K4 and K5	
UNITS			
I	<i>Nos études</i> <i>Les feuilles mortes</i> Le passé composé		
II	<i>Demain dès l'aube</i> <i>Une visite inattendue</i> L'imparfait		
III	<i>La tortue et le chien</i> Le subjonctif Le conditionnel		
IV	<i>Le vrai Père</i> Les pronoms relatifs La comparaison		
V	<i>L'hiver</i> <i>La danse</i> L'expression du temps		
Prescribed Text	K. Madanagobalane & N.C. Mirakamal, <i>Le français par les textes</i> , Chennai, Samhita Publications – Goyal Publisher & Distributors Pvt Ltd, 2017		

UNIVERSITY OF MADRAS

FOUNDATION COURSE: FRENCH
SYLLABUS WITH EFFECT FROM 2023-2024

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	M	M	M	M	M	L	S	S	S	S	S	M
CO 2	M	M	S	S	S	S	M	S	M	M	S	M	S
CO 3	S	M	S	M	M	M	M	S	S	S	M	S	M
CO 4	S	S	M	M	S	M	L	S	S	S	S	S	M
CO 5	M	M	S	S	S	M	M	S	S	S	M	S	M

S-Strong M-Medium L-Low

SEMESTER III

Title of the Paper : Translation, Comprehension and Grammar-I

Prescribed textbook: K.Madanagobalane &N.C.Mirakamal, *Le français par les textes*, Chennai, Samhita Publications-Goyal Publisher & Distributors Pvt Ltd, 2017

The following texts from the prescribed textbook:

- *Nos études*
- *Les feuilles mortes*
- *Demain dès l'aube*
- *Une visite inattendue*
- *La tortue et le chien*
- *Le vrai Père*
- *L'hiver*
- *La danse*

The following grammar components are chosen from the prescribed textbook:

- Le passé composé
- L'imparfait
- Le subjonctif

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- Le conditionnel
- Les pronoms relatifs
- La comparaison
- L'expression du temps

Paper setters to strictly adhere to the syllabus and ask questions only from the pages included in the syllabus. Questions should cover the entire syllabus.

QUESTION PAPER PATTERN

Time : 3 Hours

Maximum Marks : 75

Section A (10 x 2 = 20 Marks)

Answer any TEN questions

15 short answer questions to be asked from the prescribed texts (name of the text might be included within brackets in the question)

Section B (5 x 5 = 25 Marks)

Answer any FIVE questions

8 Grammar exercises to be given from the prescribed textbook

Section C (3 x 10 = 30 Marks)

Answer any THREE

3 must be answered out of 5 topics (1 translation of a prescribed text, 1 translation of unknown text, 1 comprehension of unknown text, 2 summaries of the prescribed texts)

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EXISTING SYLLABUS (22-23) FOLLOWED FROM THE ACADEMIC YEAR 2023-2024

Programme:	I & II UG – Second Language - SANSKRIT
Programme Code:	BFC-LS22
Duration:	2 years
Programme Outcomes:	<p>After successful completion of the course, learners will be able to:</p> <ol style="list-style-type: none"> 1. Create simple sentences using different grammatical tenses 2. Sensitize the students to the functioning of the language 3. Know the historical and cultural perspective of literary trends and movements in Sanskrit and in its literature 4. Define the origin of Sanskrit Literature 5. Demonstrate different teaching methodologies 6. Translate simple passages 7. Consolidate their communication skills in both spoken and written Sanskrit.
Programme Specific Outcomes:	<ol style="list-style-type: none"> 1. Understand and appreciate the aesthetical, social, political, cultural, etc., values expressed in various prescribed texts 2. Apply different grammatical rules to their reading and writing assignments 3. Identify the base words of nouns and different tenses 4. Read, understand, write and speak in simple Sanskrit 5. Translate simple sentences related to the themes given

List of Courses:

Semester	Course Code	Title of the Course	Core/Elective/ Soft Skill	Credits
I	BFC-LS001	Paper I – Poetry, Grammar and History of Sanskrit Literature	C	3
II	BFC-LS002	Paper II – Prose, Grammar and History of Sanskrit Literature	C	3
III	BFC-LS003	Paper III – Drama, Grammar and History of Sanskrit Literature	C	3
IV	BFC-LS004	Paper IV – Alankara, Didactic & Modern literatures and Translation	C	3

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100L1G

FOUNDATION COURSE: PART-I SANSKRIT PAPER-I

Inst.Hrs. : 6
Credits : 3

Year : I
Semester : I

Paper I – Poetry, Grammar and History of Sanskrit Literature

Course Outcomes	1. Remember the usage of grammatical tenses in constructing sentences in dialogue. 2. Apply the rules of usage in practice exercises and identify errors 3. Explain the nuances in the usage of various grammatical tenses and aspects 4. Demonstrate knowledge of various expressions of opinion, emotions, cause, effect, purpose, and hypothesis in French 5. Communicate in French and summarize the given text	
Course Objectives	Understand the basic Sanskrit sentence structure	K1
	To provide the glimpses of the rich Sanskrit literary tradition through reading the literary composition	K2
	Explain the language of this Mahakavya which is highly elaborate and polished with continual play upon words and variety of metres	K3
	Analyse and interpret expressions of cause, effect, purpose, and opposition in Sanskrit	K4
	Evaluate grammatical nature of verses	K5
Units		
I	Introduction to Sanskrit (Alphabets, Two letter words and three letter words) Grammar: <i>akārāntaḥ puṁliṅgaḥ śabda-s</i> - 1. बाल (<i>Bāl a</i>) and 2. देव (<i>Deva</i>) <i>ākārāntaḥ strīliṅgaḥ śabda-s</i> - 1. बाला (<i>Bāl ā</i>) and 2. लता (<i>Lat ā</i>) <i>akārāntaḥ napuṁsakaliṅgaḥ śabda-s</i> - 1. फल (<i>Phal a</i>) and 2. वन (<i>Vana</i>)	
II	Introduction to <i>Rāmāyana</i> , <i>Kālidāsa</i> and his poetic works Text: <i>Raghuvamśa</i> (Canto I) Verses 1-15	
III	Introduction to the works of <i>Bhāravi</i> - Text: <i>Raghuvamśa</i> (canto I) Verses 16-30	
IV	Introduction to the works of <i>Śrī Harṣha</i> - Text: <i>Raghuvamśa</i> (Canto I) Verses 31-45	
V	Grammar: Conjugations - <i>Laṭ lakāra-s</i> – (Present tense) (i) गच्छति (<i>Gacchat i</i>) (ii) तिष्ठति (<i>Ti ṣṭhat i</i>) (iii) पठति	

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	<p>(<i>Paṭ hat i</i>) (i v) नृत्यति (<i>Ṇṭyat i</i>) (v) कुप्यति (<i>Kupyat i</i>) (vi) कथयति (<i>Kat hayat i</i>) (vi i) गणयति (<i>Ḡanayat i</i>) (vi i i) अस्ति (<i>Ast i</i>) (i x) करोति (<i>Kar ot i</i>) (x) शृणोति (<i>Śṛnot i</i>) Indeclinables (Avyayaani) - अपि (<i>api</i>), कदा (<i>kadā</i>), च (<i>ca</i>), अद्य (<i>adya</i>), विना (<i>vi nā</i>), सह (<i>saha</i>), तत्र (<i>t at ra</i>), किम् (<i>ki m</i>), यदि (<i>yadi</i>) - तर्हि (<i>t ar hi</i>), यथा (<i>yat hā</i>) - तथा (<i>t at hā</i>) Prefixes (<i>Upasargas</i>) - आङ् (<i>āṅ</i>), वि (<i>vi</i>), परि (<i>pari</i>), अनु (<i>anu</i>), अधि (<i>adhi</i>), उत् (<i>ut</i>), प्रति (<i>pr at i</i>), उप (<i>upa</i>), प्र (<i>pr a</i>) निर् (<i>ni r</i>)</p>
Book recommended for Reference	<p><i>Kalāśālā-Saṁskṛta-Sukhabodhinī - I</i> To be Published by: University of Madras, Chennai - 5</p>

Mapping with Programme Outcomes:

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	S	M	S	S
CO 2	S	S	S	S	S
CO 3	S	S	M	M	S
CO 4	S	S	M	S	S
CO 5	S	S	S	S	S

S-Strong M-Medium L-Low

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EXISTING SYLLABUS (22-23) FOLLOWED FROM THE ACADEMIC YEAR 2023-2024

100L2G

FOUNDATION COURSE: PART-I SANSKRIT PAPER-II

Inst.Hrs. : 6
Credits : 3

Year : I
Semester : II

Paper II – Prose, Grammar and History of Sanskrit Literature

Course Outcomes	<ol style="list-style-type: none">1. Understand and apply grammatical concepts in drafting sentences and paragraphs2. Apply the rules and regulations in handling usage of Lrt lakara and Asmad Sabdah, practice exercises and identify errors3. Form an idea of the aesthetic expressions that make Sanskrit composition get the position of pride in world literature4. Demonstrate knowledge of various expressions of opinion, emotions, cause, effect, purpose, and hypothesis in Sanskrit5. Appreciate the art of employment of Alankaras in a prose form of poetry	
Course Objectives	Provide acquaintance with prose literature in Sanskrit through a study of one of the best texts of prose, which would pave the way for gaining sufficient grounding in the language	K1
	Enumerate various grammatical tenses and use them to communicate in Sanskrit language	K2
	Summarize the stories of Panchatantra and discuss in	K3
	Analyze and interpret expressions of cause, effect, purpose, and opposition in Sanskrit	K4
	Evaluate and comprehend text passages	K5
Units		
I	Introduction to Prose literature in Sanskrit Grammar: <i>ikārāntaḥ puṁliṅgāḥ śabdāḥ</i> - 1. कवि (<i>Kavi</i>) and 2. रवि (<i>Ravi</i>) <i>ikārāntaḥ strīliṅgāḥ śabdāḥ</i> - 1. मति (<i>Mati</i>) <i>ikārāntaḥ strīliṅgāḥ śabdāḥ</i> - 1. नदी (<i>Nadi</i>) <i>ikārāntaḥ napuṁsakaliṅgāḥ śabdāḥ</i> 1. वारि (<i>Vari</i>)	
II	Introduction to <i>Māhābhārata</i> , the author of बालरामायणम् (<i>Bālarāmāyaṇam</i>) and his works Text: <i>Bālakāṇḍam</i> of <i>Bālarāmāyaṇam</i>	
III	Introduction to the works of <i>Baṇa</i> (<i>Kādambarī</i> and <i>Harṣacaritam</i>), <i>Daṇḍin</i> (<i>Daśakumāracaritam</i> and <i>Avantisundarīkathā</i>) and <i>Subandhu</i> (<i>Vāsavadattā</i>)	
IV	Introduction to Historical <i>Kāvyas</i> in Sanskrit - The works of <i>Kalhaṇaḥ</i> , <i>Bilhaṇaḥ</i> , <i>Bāṇaḥ</i> and <i>Pravarasenaḥ</i>	

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V	<p>Grammar: Conjugations - <i>Lañ lakārah</i> (Past tense) (i) अगच्छत् (<i>Agacchat</i>) (ii) अतिष्ठत् (<i>Atiṣṭhat</i>) (iii) अपठत् (<i>Apaṭhat</i>) (iv) अनृत्यत् (<i>Anṛtyat</i>) (v) अकुप्यत् (<i>Akupyat</i>) (vi) अकथयत् (<i>Akat hayat</i>) (vii) अगणयत् (<i>Aganayat</i>) (viii) आसीत् (<i>Asit</i>) (ix) अकरोत् (<i>Akarot</i>) (x) अशृणोत् (<i>Aśṛnot</i>)</p> <p>Indecl i nabl es: (a) तुमुन् (<i>Tumun</i>) suffix ended words (Infinitive forms) (i) गन्तुम् (<i>Gantum</i>) (ii) स्थातुम् (<i>Stahātum</i>) (iii) पठितुम् (<i>Paṭhitum</i>) (iv) नर्तितुम् (<i>Nartitum</i>) (v) कोपितुम् (<i>Kopitum</i>) (vi) कथयितुम् (<i>Kat hayitum</i>) (vii) गणयितुम् (<i>Ganayitum</i>) (viii) भवितुम् (<i>Bhavitum</i>) (ix) कर्तुम् (<i>Kartum</i>) (x) श्रोतुम् (<i>Śrotum</i>) (b) क्त्वा (<i>Kṛvā</i>) suffix ended words (Past passive participles) (i) गत्वा (<i>Gatvā</i>) (ii) स्मृत्वा (<i>Smṛtvā</i>) (iii) गणयित्वा (<i>Ganayitvā</i>) (iv) पठित्वा (<i>Paṭitvā</i>) (v) कृत्वा (<i>Kṛtvā</i>) (c) ल्यप् (<i>Lyap</i>) suffix ended words (Past passive participles) (i) आगत्य (<i>Āgatya</i>) (ii) विस्मृत्य (<i>Vismṛtya</i>) (iii) विगणय्य (<i>Viganayya</i>) (iv) प्रपठ्य (<i>Prapaṭhya</i>) (v) अनुकृत्य (<i>Anukṛtya</i>)</p>
Book recommended for Reference	<p><i>Kalāsālā-Saṃskṛta-Sukhabodhinī - II</i> To be Published by: University of Madras, Chennai - 5</p>

Mapping with Programme Outcomes:

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	M	S	M	S
CO 2	S	M	S	S	S
CO 3	S	S	S	M	S
CO 4	S	S	M	S	S
CO 5	S	S	S	S	S

S-Strong M-Medium L-Low

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200L3G

FOUNDATION COURSE: PART-I SANSKRIT PAPER-III

Inst.Hrs. : 6
Credits : 3

Year : II
Semester : III

Paper III – Drama, Grammar and History of Sanskrit Literature

Course Outcomes	<ol style="list-style-type: none"> 1. Be familiar with the style of the great Sanskrit Dramatist Bhasa 2. Be able to appreciate the aesthetical, social, political, cultural, etc., values expressed in prescribed composition 3. Understand the structural patterns of Sanskrit dramatic composition 4. Develop the finer and minor nuances of Nataka form of drama 5. Analyze the literary texts
UNITS	
I	Introduction to Dramaturgy – Ten types of Drama - Characteristics and features (<i>Nāndī, Sūtradhāra, Sthāpanā</i> and <i>Bharatavākyam</i>) of Sanskrit Dramas. Prose Text: <i>Karṇabhāram</i> - Page. 01 - 10 (till 10 <i>Slokās</i>)
II	Characteristics and features (<i>Vastu, Netā</i> and <i>Rasas</i>) of Sanskrit Drama - Prose Text: <i>Karṇabhāram</i> - Page. 11 - 20 (till 17 <i>Slokās</i>)
III	Authorship of 13 Trivandrum play of <i>Bhāsa</i> - Introduction to the Dramas of <i>Kālidāsa, Bhavabhūti, Harṣavardhana</i> and <i>Rājaśekhara</i> Text: <i>Karṇabhāram</i> - Page. 21 - 32 (Upto the end)
IV	Introduction to the dramatic works of <i>Viśākhadatta, Śūdraka, Bhaṭṭanārāyaṇa</i> and <i>Murāri</i> - Introduction to Allegorical dramas 1. <i>Prabodhacandrodaya</i> and 2. <i>Saṅkalpasūryodaya</i>
V	Introduction to <i>Campū</i> literature 1. <i>Bhojacampū</i> 2. <i>Viśvaguṇādarśacampū</i> and 3. <i>Nalacampū</i> Grammar – <i>Lṛṭ lakārāḥ</i> (Future tense) (i) गमिष्यति (<i>Gami śyat i</i>) (ii) स्थास्यति (<i>St hāsyat i</i>) (iii) पठिष्यति (<i>Paṭ hi śyat i</i>) (iv) नर्तिष्यति (<i>Nart i śyat i</i>) (v) कोपिष्यति (<i>Kopi śyat i</i>) (vi) कथयिष्यति (<i>Kat hayi śyat i</i>) (vii) गणयिष्यति (<i>Ganayi śyat i</i>) (viii) भविष्यति (<i>Bhavi śyat i</i>) (ix) करिष्यति (<i>Kari śyat i</i>) (x) श्रोष्यति (<i>Ś rośyat i</i>) Declensions: (<i>Sar vanānāśabdāḥ</i>) - 1. तद् शब्दः (<i>Tad śabdah</i>) i n al I gender s 2. अस्मद् शब्दः (<i>Asnad śabdah</i>) 3. युष्मद् शब्दः (<i>Yuśmad śabdah</i>)

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Course Objectives	Understand the structure and use of different phrases and Idioms in Sanskrit Drama and grammatical aspects of <i>Karṇabhāram</i>	K2
	Enhance one's ability to converse freely in the language, which is considered to be a specialized skill as far as the Sanskrit Language goes	K2
	Draft and summarize the literary texts	K3
	Identify and apply different grammatical peculiarities	K3
	Analyze and critically assess the literary texts	K4

Book recommended for Reference	<p style="text-align: center;"><i>Kalāśālā-Saṃskṛta-Sukhabodhinī - III</i></p> <p style="text-align: center;">To be Published by: University of Madras, Chennai - 5</p>
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Mapping with Programme Outcomes:

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	M	M	S	S
CO 2	S	S	S	S	S
CO 3	S	M	M	S	S
CO 4	S	S	M	S	S
CO 5	S	S	S	S	S

S-Strong M-Medium L-Low

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EXISTING SYLLABUS (22-23) FOLLOWED FROM THE ACADEMIC YEAR 2023-2024

200L4G

FOUNDATION COURSE: PART-I SANSKRIT PAPER-IV

Inst.Hrs. : 6
Credits : 3

Year : II
Semester : IV

Paper IV – Alankara, Didactic & Modern literatures and Translation

Course Outcome	<ol style="list-style-type: none"> 1. Apply the usage of compound words 2. Differentiate the alankaras 3. Translate the prose passages prescribed 4. Identify and apply different grammatical tenses of “Mahabharata” related translation 5. Analyze and critically assess the literary texts
UNITS	
I	Introduction to Didactic literature (<i>Pañcatantram</i> and <i>Hitopadeśaḥ</i>) Text: The lion and the hare शशकसिंहकथा (<i>Śaśakasimḥakathā</i>) from <i>Pañcatantram</i> and The jackal and the elephant शृगालहस्तिकथा (<i>Śrgālahastikathā</i>) a story from <i>Mitralābhaḥ</i> of <i>Hitopadeśaḥ</i>
II	<i>Alaṅkārah</i> - i. <i>Upamā</i> , ii. <i>Rūpakam</i> , iii. <i>Ullekhaḥ</i> , iv. <i>Utprekṣā</i> and v. <i>Vyatirekaḥ</i>
III	Introduction to Modern literature - Introduction to अर्थशास्त्रम् (<i>Artha śāstram</i>) of चाणक्यः (<i>Cāṇakyaḥ</i>) - Introduction to मयमतम् (<i>Mayamatam</i>) - Introduction to नीतिद्विषष्टिका (<i>N t i d v i ṣ a ṣ ṭ h i k ā</i>) - <i>S l o k ā s</i> - 1 t o 10 - I n t r o d u c t i o n t o t h e l i f e h i s t o r y o f श्रीआदिशङ्कराचार्यः (<i>Śrī -Ādi śaṅkar ācār yaḥ</i>), श्रीरामानुजाचार्यः (<i>Śrī Rāmānuj ācār yaḥ</i>) and श्रीमध्वाचार्यः (<i>Śrī Mādhvācār yaḥ</i>)
IV	Introduction to Modern literature in Sanskrit - Text: तिरुक्कुरळ् संस्कृतानुवादः (Sanskrit translation of Tirukkural) <i>Slokās</i> 1 to 10 ईश्वरवन्दनम् (<i>Kaḍavul Vāzhththu</i>) by कलियन् रामानुजजीयर् (<i>Kaliyan Rāmānujajīyar</i>) नालडियार् (<i>Nālaḍiyār</i>) translated by श्री एस्. एन्. रामदेशिकः (<i>Śrī S N Rānadeśi ka</i>) - <i>S l o k ā s</i> : 1 t o 5
V	Translation from prose section Unit - I stories Grammar: Conjugation - <i>Loṭ lakārāḥ</i> (Imperative mood) (i) गच्छतु (<i>Gacchat u</i>) (i i) तिष्ठतु (<i>Ti ṣ ṭ hat u</i>) (i i i) पठतु (<i>Paṭ hat u</i>) (i v) शृणोतु (<i>Śr ṇ ot u</i>) (v) करोतु (<i>Kar ot u</i>)

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Course Objectives	Demonstrate the usage of connecting words	K2
	Understand the alankaras which are used in devotional lyrics	K2
	Draft and summarize the literary texts	K3
	Identify the meaning, types of figure of speech of the prescribed text	K3
	Analyze and critically assess the literary texts	K4

Book recommended for Reference	<i>Kalāsālā-Saṃskṛta-Sukhabodhinī - IV</i> To be Published by: University of Madras, Chennai - 5
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Mapping with Programme Outcomes:

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	M	S	S
CO2	S	S	M	S	S
CO3	S	S	M	S	S
CO4	S	M	S	S	S
CO5	S	S	S	S	M

S-Strong M-Medium L-Low

UNIVERSITY OF MADRAS U.G. AND FIVE YEAR INTEGRATED PG DEGREE PROGRAMS FOUNDATION COURSE: PART I – ARABIC <small>(EXISTING SYLLABUS (22-23) FOLLOWED FROM THE ACADEMIC YEAR 2023-2024)</small>	
Programme:	U.G. AND FIVE YEAR INTEGRATED P.G. DEGREE PROGRAMS FOUNDATION COURSE: PART I – ARABIC
Programme Code:	BFC-LA23
Duration:	4 Semesters
On successful completion of this program, the graduates are expected to achieve the following:	
Programme Outcomes:	<ol style="list-style-type: none"> 1. Acquire the knowledge of the structure of Arabic words 2. Acquaint with the knowledge of basic Arabic grammar 3. Become familiar with the knowledge of phonetic system of Arabic language 4. Able to communicate in Arabic 5. Have the knowledge of moral values in the light of Quran and Hadith
Programme Specific Outcomes:	<ol style="list-style-type: none"> 1. Understand the sounds and phrasing of Arabic language. 2. Learn the basic Arabic grammar 3. Develop communication skills in Arabic 4. Acquire new vocabulary in Arabic 5. Learn the moral values of the Holy Quran and Sunnah

List of Courses:

Semester	Course Code	Title of the Course	Foundation Course	Credits
I	100L1H	Paper I : Prose	FC	3
II	100L2H	Paper II : Grammar	FC	3
III	200L3H	Paper III : Communication Skill in Arabic	FC	3
IV	200L4H	Paper IV : Quran and Hadith	FC	3

Course I	Course Code	Title of the Course	Credits
FC	100L1H	Paper I : Prose	3
Course Outcomes	<ol style="list-style-type: none"> 1. Understand the correct pronunciation of Arabic letters 2. Understand the structure-based composition. 3. Acquire new vocabulary in Arabic 4. Read the Arabic sentences without diacritical marks 5. Able to write the simple sentences in Arabic without errors. 		
Pre-requisites, if any:	Nil		
Course Objectives	<ol style="list-style-type: none"> 1. Understand basic Arabic grammar. 2. Understand the structure of Arabic language. 3. Employ sentence making. 4. Enhance vocabulary. 5. Improve reading and writing skills. 		
Units			
I	(دروس اللغة العربية لغير الناطقين بها، الجزء الأول، الدكتور ف. عبد الرحيم) من الدرس الأول إلى الدرس الرابع		
II	من الدرس الخامس إلى الدرس الثامن		
III	من الدرس التاسع إلى الدرس الثالث عشر		
IV	من الدرس الرابع عشر إلى الدرس الثامن عشر		
V	من الدرس التاسع عشر إلى الدرس الثالث والعشرين		

Prescribed Text Book	دروس اللغة العربية لغير الناطقين بها، الجزء الأول، الدكتور ف. عبد الرحيم Duroos Al-Lugha Al-Arabiyya – Part I, By Dr. V. Abdur Rahim
Reading List (Print and online)	معجم الكلمات الواردة في دروس اللغة العربية لغير الناطقين بها مفتاح دروس اللغة العربية لغير الناطقين بها القراءة الراشدة – الشيخ أبو الحسن علي الحسيني الندوي القراءة المفيدة – الدكتور محمد يوسف كوكن العمري منهاج العربية – السيد النبي حيدرآبادي www.alnahw.com

Method of Evaluation:

Internal Assessment	End Semester Examination	Total	Grade
25	75	100	

Methods of assessment:

Recall (K1) - Simple definitions, MCQ, Recall steps, Concept definitions

Understand/ Comprehend (K2) - MCQ, True/False, Short essays, Concept explanations, Short summary or overview

Application (K3) - Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain

Analyse (K4) - Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge

Evaluate (K5) - Longer essay/ Evaluation essay, Critique or justify with pros and cons

Create (K6) - Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5
CO	3	3	3	2	1

3-Strong 2-Medium 1-Low

Course II	Course Code	Title of the Course	Credits
FC	100L2H	Paper II : Grammar	3
Course Outcomes	<ol style="list-style-type: none"> 1. Able to use basic grammatical structure. 2. Develop reading skills and reading speed 3. Acquire new vocabulary in Arabic 4. Understand the different types of sentences. 5. Able to construct simple sentences in Arabic 		
Pre-requisites, if any:	Nil		
Course Objectives	<ol style="list-style-type: none"> 1. Understand basic Arabic grammar. 2. Understand the correct usage of Arabic grammar. 3. Employ sentence making. 4. Enhance vocabulary. 5. Improve reading and writing skills. 		
Units			
I	(قواعد اللغة العربية الأساسية، الدكتور سيد رحمة الله) من الدرس الأول إلى الدرس الرابع		
II	من الدرس الخامس إلى الدرس الثامن		
III	من الدرس التاسع إلى الدرس الثاني عشر		

IV	من الدرس الثالث عشر إلى السادس عشر
V	من الدرس السابع عشر إلى الدرس العشرين
Prescribed Text Book	قواعد اللغة العربية الأساسية، الدكتور سيد رحمة الله Basic Arabic Grammar, By Dr. Syed Rahmathullah
Reading List (Print and online)	النحو الواضح – علي الجارم ومصطفى أمين دليل النحو الواضح – الدكتور بشير أحمد جمالي سهل العوامل – الدكتور تاج الدين المناني النحو الميسر للكبار والصغار – علي محمود عقيلي القواعد التطبيقية في اللغة العربية – الدكتور نديم دعكور www.alnaw.com

Method of Evaluation:

Internal Assessment	End Semester Examination	Total	Grade
25	75	100	

Methods of assessment:

Recall (K1) - Simple definitions, MCQ, Recall steps, Concept definitions

Understand/ Comprehend (K2) - MCQ, True/False, Short essays, Concept explanations, Short summary or overview

Application (K3) - Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain

Analyse (K4) - Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge

Evaluate (K5) - Longer essay/ Evaluation essay, Critique or justify with pros and cons

Create (K6) - Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5
CO	3	3	3	3	1

3-Strong 2-Medium 1-Low

Course III	Course Code	Title of the Course	Credits
FC	200L3H	Paper III : Communication Skill in Arabic	3
Course Outcomes	<ol style="list-style-type: none"> 1. Understand the basics of Arabic language. 2. Learn the structure of Arabic words. 3. Familiarize with the phonetic system of Arabic. 4. Able to communicate in Arabic 5. Able to translate from Arabic to English and vice versa 		
Pre-requisites, if any:	Nil		
Course Objectives	<ol style="list-style-type: none"> 1. Understand the sounds and phrasing of Arabic language. 2. Acquire new vocabulary and apply in context. 3. Develop communication skills in Arabic. 4. Understand the different aspects of communication. 5. Learn to communicate in everyday interactions. 		
Units			
I	(الكتاب الأساسي في تعليم اللغة العربية لغير الناطقين بها، الجزء الأول – السعيد محمد بدوي وفتحي علي يونس) التعارف – في المطار (١)		
II	في الفندق – في المطعم		
III	في البنك – عند الطبيب (١)		

IV	في الطريق - في مكتب البريد
V	في السوق (١) - في السوق (٢)
Prescribed Text Book	<p>الكتاب الأساسي في تعليم اللغة العربية لغير الناطقين بها، الجزء الأول - السعيد محمد بدوي وفتححي علي يونس</p> <p>Al Kitaab Al Asaasi Fi Taleem Al Lughha Al Arabiyya Li Ghair An Naatiqeena Biha - Part I, By Sayeed Muhaamad Badawi and Fathi Ali Yunus</p>
Reading List (Print and online)	<p>A Practice Book on Gulf Arabic, By Dr. Abdul Jaleel. T</p> <p>Arabic Conversation Book, By Mohd. Harun Rashid and Khalid Perwez</p> <p>A Hand book of Commercial Arabic by Dr. Aboobacker K.P</p> <p>العربية لغير العرب - د. مصطفى حسن الريس، الأزهر</p> <p>العربية للحياة - جامعة الملك سعود</p> <p>القراءة العربية لغير العرب - وزارة التربية بالكويت</p> <p>www.talkinarabic.com</p>

Method of Evaluation:

Internal Assessment	End Semester Examination	Total	Grade
25	75	100	

Methods of assessment:

Recall (K1) - Simple definitions, MCQ, Recall steps, Concept definitions

Understand/ Comprehend (K2) - MCQ, True/False, Short essays, Concept explanations, Short summary or overview

Application (K3) - Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain

Analyse (K4) - Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge

Evaluate (K5) - Longer essay/ Evaluation essay, Critique or justify with pros and cons

Create (K6) - Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5
CO	3	3	3	2	1

3-Strong 2-Medium 1-Low

Course IV	Course Code	Title of the Course	Credits
FC	200L4H	Paper IV : Quran and Hadith	3
Course Outcome	<ol style="list-style-type: none"> 1. Know the principal textual sources of the Islamic tradition: The Qur'an and the Hadith. 2. Know the role of Quran and Hadith in the synthesis of Islamic faith and practice. 3. Understand the structure of Arabic grammar through Quran and Hadith. 4. Understand the methodology of translation of Quran and Hadith. 5. Understand the moral values of Quran and Hadith 		
Pre-requisites, if any:	Nil		
Course Objectives	<ol style="list-style-type: none"> 1. Know the importance of Quran and Hadith. 2. Understand the style of Quran and Hadith. 3. Understand the role of Quran and Hadith in the Islamic faith and law. 		

	<p>4. Know the structure of Arabic grammar through the examples from Quran and Hadith.</p> <p>5. Learn the cultural and moral values.</p>
Units	
I	<p>(١. سورة لقمان من القرآن الكريم ٢. أحاديث سهلة للدكتور ف. عبد الرحيم)</p> <p style="text-align: right;">سورة لقمان</p> <p style="text-align: right;">من الآية ١ إلى الآية ١٠</p>
II	من الآية ١١ إلى ٢٠
III	من الآية ٢١ إلى ٣٤
IV	<p style="text-align: right;">أحاديث سهلة</p> <p style="text-align: right;">من الحديث ١ إلى الحديث ١٠</p>
V	من الحديث ١١ إلى الحديث ٢٠
Prescribed Text Book	<p style="text-align: right;">١. سورة لقمان من القرآن الكريم</p> <p style="text-align: right;">٢. أحاديث سهلة للدكتور ف. عبد الرحيم</p> <p>1) Sooratu Luqman</p> <p>2) Ahadeeth Sahlah By Dr. V. Abdur Rahim</p>
Reading List (Print and online)	<p>Tafsir Al-Jalalain</p> <p>The Noble Quran, Dr. Muhammad Muhsin Khan and Muhammad Taqi-Ud-Dhin Al-Hilali</p> <p style="text-align: right;">الأربعون النووية</p> <p style="text-align: right;">نصوص من الحديث النبوي الشريف، الدكتور ف. عبد الرحيم</p>

شرح أحاديث سهلة، الدكتور ش. عبد المالك

<https://quran.com/>

<https://sunnah.com/nawawi40>

Method of Evaluation:

Internal Assessment	End Semester Examination	Total	Grade
25	75	100	

Methods of assessment:

Recall (K1) - Simple definitions, MCQ, Recall steps, Concept definitions

Understand/ Comprehend (K2) - MCQ, True/False, Short essays, Concept explanations, Short summary or overview

Application (K3) - Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain

Analyse (K4) - Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge

Evaluate (K5) - Longer essay/ Evaluation essay, Critique or justify with pros and cons

Create (K6) - Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5
CO	1	2	3	3	3

3-Strong

2-Medium

1-Low

UNIVERSITY OF MADRAS

FOUNDATION COURSE: ENGLISH
SYLLABUS WITH EFFECT FROM 2023-2024

SECOND YEAR - SEMESTER III

PAPER II –GENERAL ENGLISH

Subject Code	Category	L	T	P	S	Credits	Inst. Hours	Marks		
								CIA	External	Total
200L3ZU	Part II	Y	Y	-	-	3	6	25	75	100
Learning Objectives										
LO1	To make them active listeners									
LO2	To enhance the interpersonal relationship skills									
LO3	To embolden them to cope with stress									
LO4	To master grammar skills									
LO5	To help them to use English effectively in a business environment									
Unit No.	Unit Title & Text									No. of Periods for the Unit
I	ACTIVE LISTENING Short Story 1.1 In a Grove – AkutagawaRyunosuke Translated from Japanese by Takashi Kojima 1.2 The Gift of the Magi – O’ Henry Prose 1.3 Listening – Robin Sharma 1.4 Nobel Prize Acceptance Speech – WangariMaathai									20
II	INTERPERSONAL RELATIONSHIPS Prose 2.1 Telephone Conversation – Wole Soyinka 2.2 Of Friendship – Francis Bacon Song on (Motivational/ Narrative) 2.3 Ulysses – Alfred Lord Tennyson 2.4 And Still I Rise – Maya Angelou									20
III	COPING WITH STRESS Poem 3.1 Leisure – W.H. Davies 3.2 Anxiety Monster – RhonaMcFerran Readers Theatre 3.3 The Forty Fortunes: A Tale of Iran 3.4 Where there is a Will – Mahesh Dattani									20
IV	Grammar 4.1 Phrasal Verbs & Idioms 4.2 Modals and Auxiliaries 4.3 Verb Phrases – Gerund, Participle, Infinitive									15

UNIVERSITY OF MADRAS

FOUNDATION COURSE: ENGLISH SYLLABUS WITH EFFECT FROM 2023-2024

V	Composition/ Writing Skills 5.1 Official Correspondence – Leave Letter , Letter of Application, Permission Letter 5.2 Drafting Invitations 5.3 Brochures for Programmes and Events	15
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Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Listen actively	PO1,PO7
CO2	Develop interpersonal relationship skills	PO1,PO2,PO10
CO3	Acquire self-confidence to cope with stress	PO4,PO6,PO9
CO4	Master grammar skills	PO4,PO5,PO6
CO5	Carry out business communication effectively	PO3,PO8

Text Books (Latest Editions)

1	WangariMaathai – Nobel Lecture. Nobel Prize Outreach AB 2023. Jul 2023.
2	Mahesh Dattani, Where there is a Will. Penguin, 2013.
3	Martin Hewings, Advanced English Grammar, Cambridge University Press, 2000
4	EssentialEnglish Grammar by Raymond Murphy

Web Resources

1	WangariMaathai – Nobel Lecture. Nobel Prize Outreach AB 2023. Mon. 17 Jul 2023. https://www.nobelprize.org/prizes/peace/2004/maathai/lecture/
2	Telephone Conversation - Wole Soyinka https://www.k-state.edu/english/westmank/spring_00/SOYINKA.html
3	Anxiety Monster- RhonaMcFerran- www.poetrysoup.com

UNIVERSITY OF MADRAS

FOUNDATION COURSE: ENGLISH
SYLLABUS WITH EFFECT FROM 2023-2024

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	2	3	2
CO2	2	3	3	3	2	3	3	2	2	2
CO3	3	3	3	2	3	3	3	2	3	2
CO4	3	3	3	3	3	3	3	2	2	2
CO5	3	2	3	3	3	3	3	2	2	3

3 – Strong, 2 – Medium , 1 - Low

Mapping with Programme Specific Outcomes:

CO /PO	PSO1	PSO2	PSO3	PSO4
CO1	3	3	3	3
CO2	3	3	3	3
CO3	3	3	3	3
CO4	3	3	3	3
CO5	3	3	3	3
Weightage	15	15	15	15
Weighted percentage of Course Contribution to Pos	3.0	3.0	3.0	3.0

UNIVERSITY OF MADRAS

FOUNDATION COURSE: ENGLISH
SYLLABUS WITH EFFECT FROM 2023-2024

SECOND YEAR - SEMESTER III

PAPER II –GENERAL ENGLISH

Subject Code	Category	L	T	P	S	Credits	Inst. Hours	Marks		
								CIA	External	Total
200L3ZU	Part II	Y	Y	-	-	3	6	25	75	100
Learning Objectives										
LO1	To make them active listeners									
LO2	To enhance the interpersonal relationship skills									
LO3	To embolden them to cope with stress									
LO4	To master grammar skills									
LO5	To help them to use English effectively in a business environment									
Unit No.	Unit Title & Text									No. of Periods for the Unit
I	ACTIVE LISTENING Short Story 1.1 In a Grove – AkutagawaRyunosuke Translated from Japanese by Takashi Kojima 1.2 The Gift of the Magi – O’ Henry Prose 1.3 Listening – Robin Sharma 1.4 Nobel Prize Acceptance Speech – WangariMaathai									20
II	INTERPERSONAL RELATIONSHIPS Prose 2.1 Telephone Conversation – Wole Soyinka 2.2 Of Friendship – Francis Bacon Song on (Motivational/ Narrative) 2.3 Ulysses – Alfred Lord Tennyson 2.4 And Still I Rise – Maya Angelou									20
III	COPING WITH STRESS Poem 3.1 Leisure – W.H. Davies 3.2 Anxiety Monster – RhonaMcFerran Readers Theatre 3.3 The Forty Fortunes: A Tale of Iran 3.4 Where there is a Will – Mahesh Dattani									20
IV	Grammar 4.1 Phrasal Verbs & Idioms 4.2 Modals and Auxiliaries 4.3 Verb Phrases – Gerund, Participle, Infinitive									15

UNIVERSITY OF MADRAS

FOUNDATION COURSE: ENGLISH SYLLABUS WITH EFFECT FROM 2023-2024

V	Composition/ Writing Skills 5.1 Official Correspondence – Leave Letter , Letter of Application, Permission Letter 5.2 Drafting Invitations 5.3 Brochures for Programmes and Events	15
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Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Listen actively	PO1,PO7
CO2	Develop interpersonal relationship skills	PO1,PO2,PO10
CO3	Acquire self-confidence to cope with stress	PO4,PO6,PO9
CO4	Master grammar skills	PO4,PO5,PO6
CO5	Carry out business communication effectively	PO3,PO8

Text Books (Latest Editions)

1	WangariMaathai – Nobel Lecture. Nobel Prize Outreach AB 2023. Jul 2023.
2	Mahesh Dattani, Where there is a Will. Penguin, 2013.
3	Martin Hewings, Advanced English Grammar, Cambridge University Press, 2000
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Web Resources

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2	Telephone Conversation - Wole Soyinka https://www.k-state.edu/english/westmank/spring_00/SOYINKA.html
3	Anxiety Monster- RhonaMcFerran- www.poetrysoup.com

UNIVERSITY OF MADRAS

FOUNDATION COURSE: ENGLISH
SYLLABUS WITH EFFECT FROM 2023-2024

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	2	3	2
CO2	2	3	3	3	2	3	3	2	2	2
CO3	3	3	3	2	3	3	3	2	3	2
CO4	3	3	3	3	3	3	3	2	2	2
CO5	3	2	3	3	3	3	3	2	2	3

3 – Strong, 2 – Medium , 1 - Low

Mapping with Programme Specific Outcomes:

CO /PO	PSO1	PSO2	PSO3	PSO4
CO1	3	3	3	3
CO2	3	3	3	3
CO3	3	3	3	3
CO4	3	3	3	3
CO5	3	3	3	3
Weightage	15	15	15	15
Weighted percentage of Course Contribution to Pos	3.0	3.0	3.0	3.0

UNIVERSITY OF MADRAS
B.Sc. DEGREE PROGRAMME IN MICROBIOLOGY
SYLLABUS WITH EFFECT FROM 2023-2024

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
236C3A	Molecular Biology and Microbial Genetics	Core Course V -Theory	4	1	-	-	5	5	25	75	100
Learning Objectives											
CO1	Provide knowledge on structure and replication of DNA.										
CO2	Illustrate the significance and functions of RNA in protein synthesis.										
CO3	Explain the cause and types of DNA mutation and DNA repair mechanisms.										
CO4	Outline the role of plasmids and phages in genetics.										
CO5	Examine mechanisms of gene transfer and recombination.										
Unit	Details								No. of Hours	Course Objectives	
I	DNA Structure - Salient features of double helix, forms of DNA. Denaturation and renaturation. DNA topology – Supercoiling, linking number, topoisomerases. DNA organization in prokaryotes, eukaryotes. Replication of DNA in prokaryotes and eukaryotes - Bidirectional and unidirectional replication, semi-conservative and semi-discontinuous replication. Mechanism of DNA replication – enzymes involved – DNA polymerases, DNA ligase, primase.								15	CO1	
II	Transcription in Prokaryotes. Concept of transcription. RNA Polymerases - prokaryotic and eukaryotic. General transcription factors in eukaryotes. Translation in prokaryotes and eukaryotes - Translational machinery - ribosome structure in prokaryotes and eukaryotes, tRNA structure and processing. Inhibitors of protein synthesis in prokaryotes and eukaryotes. Overview of regulation of gene expression - <i>lac</i> operons as example.								15	CO2	
III	Mutation - Definition and types of mutations. Physical and chemical mutagens. Reversion and suppression. Uses of mutations. Repair Mechanisms - Photoreactivation, Nucleotide Repair, Base Excision Repair, Methyl Directed Mismatch Repair and SOS Repair.								15	CO3	
IV	Plasmid – Structure, types, replication, plasmid incompatibility, plasmid amplification and curing of plasmids. Bacteriophage-T4 Phage – Structure and lifecycle, Lambda phage-Structure, Lytic and Lysogenic cycle. Applications of Phages in Microbial Genetics.								15	CO4	
V	Gene Transfer Mechanisms - Conjugation and its uses. Transduction - Generalized and Specialized, Transformation - Natural and Artificial Transformation. Transposable elements - Prokaryotic transposable elements – insertion sequences, composite, and non-composite transposons. Transposition and Types of Transposition reactions. Mechanism of transposition: Replicative and non- replicative transposition. Uses of transposons.								15	CO5	
Total								75			

UNIVERSITY OF MADRAS
B.Sc. DEGREE PROGRAMME IN MICROBIOLOGY
 SYLLABUS WITH EFFECT FROM 2023-2024

Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Analyze the significance of DNA and elucidate the replication mechanism.	PO4, PO5, PO7, PO9
CO2	Illustrate the types of RNA and protein synthesis machinery.	PO4, PO7, PO9
CO3	Infer the causes and types of DNA mutation and summarize the DNA repair mechanisms.	PO5, PO7, PO9
CO4	Evaluate the importance of plasmids and phages in genetics.	PO7, PO9
CO5	Analyze gene transfer and recombination methods.	PO5, PO6, PO7, PO9
Text Books		
1.	Malacinski G.M. (2008). Freifelder's Essentials of Molecular Biology. 4 th Edition. Narosa Publishing House, New Delhi.	
2.	Gardner E. J. Simmons M. J. and Snusted D.P. (2006). Principles of Genetics. 8 th Edition. Wiley India Pvt. Ltd.	
3.	Trun N. and Trempey J. (2009). Fundamental Bacterial Genetics. 1 st Edition. Blackwell Science Ltd.	
4.	Brown T. A. (2016). Gene Cloning and DNA Analysis- An Introduction. (7 th Edition). John Wiley and Sons, Ltd.	
5.	Dale J. W., Schantz M.V. and Plant N. (2012). From Gene to Genomes – Concepts and Applications of DNA Technology. (3 rd Edition). John Wileys and Sons Ltd.	
References Books		
1.	Glick B. R. and Patten C.L. (2018). Molecular Biotechnology – Principles and Applications of Recombinant DNA. 5 th Edition. ASM Press.	
2.	Russell P.J. (2010). iGenetics - A Molecular Approach, 3rd Edition., Pearson New International edn.	
3.	Nelson, D.L. and Cox, M.M. Lehninger (2017). Principles of Biochemistry. 7 th Edition, W.H. Freeman.	
4.	Synder L., Peters J. E., Henkin T.M. and Champness W. (2013). Molecular Genetics of Bacteria, 4 th Edition, ASM Press Washington-D.C. ASM Press.	
5.	Primrose S.B. and Twyman R. M. (2006). Principles of Gene Manipulation and Genomics. (7 th Edition). Blackwell Publishing	
Web Resources		
1.	[PDF] Lehninger Principles of Biochemistry (8th Edition) By David L. Nelson and Michael M. Cox Book Free Download - StudyMaterialz.in	
2.	https://microbenotes.com/gene-cloning-requirements-principle-steps-applications/	
3.	https://courses.lumenlearning.com/boundless-biology/chapter/dna-replication/	
4.	Molecular Biology Notes - Microbe Notes	
5.	Molecular Biology Lecture Notes & Study Materials Easy Biology Class	

UNIVERSITY OF MADRAS
B.Sc. DEGREE PROGRAMME IN MICROBIOLOGY
 SYLLABUS WITH EFFECT FROM 2023-2024

Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks

Methods of Assessment	
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain
Analyze (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1				S	S	M	S	M	S	M	
CO2				S	M	M	S	M	S	L	
CO3				M	S	M	S	M	S	L	
CO4				M	M	M	S	M	S	L	
CO5				M	S	S	S	M	S	L	

UNIVERSITY OF MADRAS
B.Sc. DEGREE PROGRAMME IN MICROBIOLOGY
 SYLLABUS WITH EFFECT FROM 2023-2024

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
236C31	Molecular Biology and Microbial Genetics	Core Course –VI – Practical III	-	-	Y	-	5	5	40	60	100
Learning Objectives											
CO1	Provide knowledge on structure and replication of DNA.										
CO2	Elucidate the methods of Genomic and Plasmid DNA isolation.										
CO3	Explain methods of protein separation.										
CO4	Explain artificial transformation method.										
CO5	Outline the role of phages in genetics.										
Unit	Details							No. of Hours	Course Objectives		
I	Study of different types of DNA and RNA using micrographs and model / schematic representations. Study of semi-conservative replication of DNA through micrographs / schematic representations.							15	CO1		
II	Isolation of Genomic and Plasmid DNA from <i>E. coli</i> and Analysis by Agarose gel electrophoresis. Estimation of DNA using colorimeter (Diphenylamine reagent), UV spectrophotometer (A260 measurement).							15	CO2		
III	Resolution and visualization of proteins by polyacrylamide gel electrophoresis (SDS-PAGE) – Demonstration. UV induced auxotrophic mutant production and isolation of mutants by replica plating technique – Demonstration.							15	CO3		
IV	Perform artificial Transformation in <i>E. coli</i> . Isolation of antibiotic resistant mutants by gradient plate method. - Demonstration							15	CO4		
V	Screening and isolation of phages from sewage. Isolation of RNA from yeast. Estimation of RNA using colorimeter (Orcinol)							15	CO5		
	Total							75			

UNIVERSITY OF MADRAS
B.Sc. DEGREE PROGRAMME IN MICROBIOLOGY
 SYLLABUS WITH EFFECT FROM 2023-2024

Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Illustrate different types of DNA and RNA.	PO4, PO7, PO9, PO11
CO2	Utilize hands-on training in isolation of genomic and plasmid DNA.	PO4, PO7, PO9, PO11
CO3	Analyze importance of experimental microbial genetics.	PO4, PO7, PO9, PO11
CO4	Apply the knowledge of molecular techniques in various fields.	PO4, PO7, PO9, PO11
CO5	Investigate the significance of Phages.	PO4, PO7, PO9, PO11
Text Books		
1.	Crichton. M. (2014). Essentials of Biotechnology. Scientific International Pvt Ltd. New Delhi.	
2.	Sambrook J. and Russell D.W. (2001). Molecular Cloning - A Laboratory Manual – 7 th Edition. Cold Spring Harbor, N.Y: Cold Spring Harbor Laboratory Press.	
3.	Dale J. W., Schantz M. V. and Plant N. (2012). From Gene to Genomes – Concepts and Applications of DNA Technology. (3 rd Edition). John Wileys and Sons Ltd.	
4.	Gunasekaran P. (2007). Laboratory Manual in Microbiology. New Age International.	
5.	James G Cappucino. and Natalie Sherman. (2016). Microbiology – A laboratory manual. (5 th Edition). The Benjamin publishing company. New York.	
References Books		
1	Glick B. R. and Patten C.L. Molecular Biotechnology – Principles and Applications of Recombinant DNA. 5 th Edition. ASM Press. 2018.	
2	Russell P.J. (2010). iGenetics - A Molecular Approach, 3 rd Edition., Pearson New International edn.	
3	Nelson, D.L. and Cox, M.M. Lehninger(2017). Principles of Biochemistry. 7 th Edition, W.H. Freeman.	
4	Synder L., Peters J. E., Henkin T.M. and Champness W. (2013). Molecular Genetics of Bacteria, 4 th edition, ASM Press Washington-D.C. ASM Press.	
5	Brown T.A. (2016). Gene Cloning and DNA Analysis. (7 th Edition). John Wiley and Jones, Ltd.	
Web Resources		
1	https://www.molbiotools.com/usefullinks.html	
2	(PDF) Molecular Biology Laboratory manual (researchgate.net)	
3	https://www.molbiotools.com/usefullinks.html	
4	https://geneticgenie.org3 .	
5	https://currentprotocols.onlinelibrary.wiley.com/doi/pdf/10.1002/cpet.5	

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Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview	
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
Analyze (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1				S	L	M	S	M	S	M	S
CO2				S	L	M	S	M	S	M	S
CO3				S	L	M	S	M	S	M	S
CO4				S	L	M	S	M	S	M	S
CO5				S	L	M	S	M	S	M	S

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Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
236E3A	Clinical Laboratory Technology	Elective Generic/Discipline Specific Elective -III	Y	-	-	-	3	4	25	75	100

Learning Objectives

CO1	Demonstrate ethical and professional conduct with patients, laboratory personnel, health-care professionals, and the public.
CO2	Explain how accurate and reliable information might be obtained about proper procurement, storage, and <i>handling</i> of laboratory <i>specimens</i> .
CO3	Develop a sound scientific knowledge foundation that prepares them to interpret, analyze and evaluate scientific knowledge in clinical practice.
CO4	Perform a full range of laboratory tests with accuracy and precision.
CO5	Establish quality assurance principles and practices to ensure the accuracy and reliability of laboratory information.

Unit	Details	No.of Hours	Course Objectives
I	Introduction to Clinical Laboratory Science: Basic laboratory principles - Code of conduct for medical laboratory personnel - Organization of clinical laboratory and role of medical laboratory technician - Safety measures. Assessment of a patient and brief history of collection. Maintenance of Hygiene & Infection Control Practices.	12	CO1
II	Specimen collection and processing - Blood, urine, stool, sputum CSF, amniotic fluid and bile. Separation of serum and plasma, Handling of specimens for testing, preservation of specimens, transport of specimens and factors affecting the clinical results.	12	CO2
III	Introduction to Histopathology- Methods of examination of tissues and cells, Fixation of tissues: Classification and properties of fixatives. Tissue processing - Collection of specimens, Labeling and fixation, Dehydration, Clearing, Impregnation, Embedding - Paraffin block making, Section Cutting, Microtomes – types and mounting of sections.	12	CO3
IV	Introduction to Haematology- Laboratory methods used in the investigation of coagulation disorders - coagulation tests , Routine coagulation tests, (prothrombin time , plasma recalcification time,partial thromboplastin time , activated partial thromboplastin time, thrombin time), Laboratory diagnosis of bleeding disorders. Estimation of fibrinogen, Assay of coagulation factors.	12	CO4
V	Quality Standards in Health Laboratories – Development and implementation of standards, Accreditation Boards –NABL, ISO,	12	CO5

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	CAP, COLA, Performing quality assessment - pre-analytical, analytical, and post-analytical phases of testing.		
	Total	60	

Course Outcomes

Course Outcomes	On completion of this course, students will;		
CO1	Describe characteristics of laboratory organizations and demonstrate professionalism by displaying professional conduct, model ethical behaviour and operate as a vital member of the medical lab team. Practice safety or infection control procedures in the clinical laboratory, properly use safety equipment and maintain a clean, safe work environment.		PO3, PO11
CO2	Accurately collect specimens for various purposes. Determine appropriate tests based on test request, Maintain standard and transmission-based precautions, Engage in the scientific process by understanding the principles and practices of clinical study design, implementation, and dissemination of results.		PO5, PO6, PO11
CO3	Identify the basic structure of cells, tissues and organs and describe their contribution to normal function. Interpret light and electron microscopic histological images and identify the tissue source and structures. Relate and recognize the histological appearance of affected tissues to the underlying pathology.		PO6, PO8, PO9, PO11
CO4	Recognize the pathologies behind benign and malignant disorders of erythrocytes, leucocytes, thrombocytes and familiar with the diagnosis, evaluation, and management of hematologic malignancies.		PO5, PO6, PO9, PO11
CO5	Interpret, implement, and complying with laws, regulations and accrediting standards and guidelines of relevant governmental and non-governmental agencies.		PO1, PO10

Text Books

1.	Mukharji, K.L. (2000). Medical Laboratory Techniques, Vol - I, II & III, 5 th Edition. Tata McGrawHill, Delhi.
2.	Ochei, A., Kolhatkar, A. (2000). Medical Laboratory Science: Theory and Practice, McGraw Hill Education.
3	Ramnik Sood (2015). Concise Book of Medical Laboratory Technology: Methods and Interpretation, 2 nd Edition, Jaypee Brothers Medical Publishers, New Delhi.
4.	S. Ramakrishnan, KN Sulochana (2012). Manual of Medical Laboratory Techniques, Jaypee Brothers Medical Publishers Pvt. Ltd
5.	Talib V.H. (2019). Handbook Medical Laboratory Technology, 2 nd Edition, Directorate of health services, Government of India.

References Books

1	Rutherford, B.H. Gradwohl, A.C. Sonnenwirth L. Jarett. Gradwohls. (2000). Clinical Laboratory Methods and Diagnosis, Vol-I, 8th edition, Mosby.
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Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
236S3A	Organic Farming & Biofertiliser Technology	Skill Enhancement Course – Sec -4 (Entrepreneurial Skill)	Y	-	-	-	1	1	25	75	100
Learning Objectives											
CO1	Impart knowledge about the significance of organic farming and strategies to increase the yield to conserve environment.										
CO2	To encourage organic farming in urban areas.										
CO3	Comprehensive knowledge about bacterial biofertilizers, its advantages and future perspective.										
CO4	Structure and characteristic features of Cyanobacterial and fungal biofertilizer										
CO5	Develop the knowledge and skill to produce, analyze the quality of packaging, storage and assess the shelf life and bioefficacy of biofertilizers.										
Unit	Details							No.of Hours	Course Objectives		
I	Principle of organic farming: Principles of health, fairness, ecological balance, and care. Environmental benefits of organic farming: sustainability - reduced non-renewable energy by decreasing agrochemical need. Biodiversity - crop rotation, inter-cropping. Ecological services – biological control, soil formation and nutrient cycling.							6	CO1		
II	Organic farming for urban space; Create a Sustainable Organic Garden (Backyard - square foot gardening, small space gardening, mini farming) Composting, Vermicomposting.							6	CO2		
III	Biofertilizers: Introduction, advantages and future perspective. Structure and characteristic features of bacterial biofertilizers- <i>Azospirillum</i> , <i>Azotobacter</i> , <i>Bacillus</i> , <i>Pseudomonas</i> , <i>Rhizobium</i> and <i>Frankia</i> .							6	CO3		
IV	Structure and characteristic features of Cyanobacterial biofertilizers - <i>Anabaena</i> , <i>Nostoc</i> ; Structure and characteristic features of fungal biofertilizers- arbuscular mycorrhiza							6	CO4		
V	Production of <i>Rhizobium</i> , <i>Azotobacter</i> , <i>Anabena</i> ; Biofertilizers - Storage, shelf life, quality control and marketing.							6	CO5		
	Total							30			

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Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Become an Entrepreneur with wide knowledge about farming and sustainable resources.	PO1, PO2, PO7, PO8, PO10
CO2	Implement organic farming in urban areas with knowledge on compost.	PO1, PO5, PO10
CO3	Gain knowledge about the bacterial biofertilizers and its advantages	PO1, PO5, PO7, PO8, PO10
CO4	Understand the significance about Cyanobacterial and fungal biofertilizers	PO1, PO5, PO7, PO8, PO10
CO5	Understand and implement the use of bio fertilizers.	PO1, PO5, PO7, PO8, PO10
Text Books		
1.	A.K. Sharma (2006). Hand book of Organic Farming	
2.	A.C.Gaur (2017). Hand book of Organic Farming and Biofertilizers	
3.	N.S. Subbarao (2017). Bio-fertilizers in Agriculture and Forestry (4 th Edition) Med tech publisher	
4.	SubbaRao, N. S. (2002). Soil Microbiology. Soil Microorganisms and Plant Growth. (4 th Edition), Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.	
5.	Dubey, R. C. (2008). A Textbook of Biotechnology. S. Chand & Co., New Delhi.	
References Books		
1	Masanobu Fukuoka, Frances Moore Lappe Wendell Berry (2009). The One-Straw Revolution: An Introduction to Natural Farming, 1st edition, YRB Classics.	
2	SujitChakrabarty(2018). Organic Home Gardening Made Easy, 1 st Edition,	
3	Singh and Purohit (2008). Biofertilizer technology. Agrobios, India.	
4	Bansal M (2019). Basics of Organic Farming CBS Publisher.	
5	Hurst, C.J., Crawford R.L., Garland J.L., Lipson D.A., Mills A.L. and Stetzenbach L.D. (2007). Manual of Environmental Microbiology. (3 rd Edition). American Society for Microbiology.	
Web Resources		
1.	https://agritech.tnau.ac.in/org_farm/orgfarm_introduction.html	
2.	https://www.fao.org/organicag/oa-faq/oa-faq6/en/	
3.	https://www.india.gov.in/topics/agriculture/organic-farming	
4.	https://agriculture.nagaland.gov.in/bio-fertilizer/	
5.	https://vlab.amrita.edu/index.php?sub=3&brch=272	

UNIVERSITY OF MADRAS
B.Sc. DEGREE PROGRAMME IN MICROBIOLOGY
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Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview	
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
Analyze (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

Mapping with Programme Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	S	S					S	S		S	
CO2	S				S					S	
CO3	S				S		S	S		S	
CO4	S				S		S	S		S	
CO5	S				S		S	S		S	

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Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
236S3B	Aquaculture	Skill Enhancement Course -5	Y	-	-	-	2	2	25	75	100

Learning Objectives

CO1	Provide a deeper knowledge in aquaculture systems and methods.
CO2	Explain the significance and functions of design, types and construction of aquaculture ponds.
CO3	Demonstrate the biological characteristics of various aquaculture species.
CO4	Discuss the methods involved in post stocking management.
CO5	Illustrate major cultivatable species for aquaculture.

Unit	Details	No. of Hours	Course Objectives
I	Aquaculture Systems and Methods - Scope and definition. Traditional, extensive, semi - intensive and intensive culture. Monoculture, polyculture, composite culture, mixed culture, mono-sex culture, cage culture, pen culture, raft culture, race way culture.	6	CO1
II	Aquaculture Engineering - Design and construction of pond, lay-out and design of aquaculture farm, construction, water intake system, drainage system - aeration and aerators. Ponds - Types of ponds.	6	CO2
III	Selection of Species - Biological characteristics of aquaculture species; economic and market considerations; seed resources, collection and transportation. Pre-Stocking Management-Sun drying, ploughing / tilling, desilting, liming and fertilization, eradication of weed fishes. Stocking - Acclimatization of seed and release - species combinations - stocking density and ratio.	6	CO3
IV	Post Stocking Management - Water and soil quality parameters required for optimum production, control of aquatic weeds and aquatic insects, algal blooms and microorganisms. Food conversion ratio (FCR). Growth - Measurement of growth, length - weight relationship.	6	CO4
V	Major cultivable species for aquaculture – Culture of Indian Major Carps. Culture of Giant fresh water prawn, <i>Macrobrachium rosenbergii</i> - seed collection, formation and sources. Hatchery management. Culture of tiger shrimp, <i>Penaeus monodon</i> and <i>Litopenaeus vannamei</i> . Culture of pearl oysters. Culture of sea weeds. Methods of Crab culture. Culture of ornamental fishes. Culture of Molluscs.	6	CO5
	Total	30	

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Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Analyze the significance and importance of aquaculture	PO4, PO5, PO7,PO9
CO2	Illustrate the types and construction of aquaculture ponds	PO4, PO7,PO9
CO3	Analyze the biological characteristics of species and choose the best species for aquaculture.	PO5, PO7,PO9
CO4	Follow methods involved for optimal growth of aquaculture species	PO7,PO9
CO5	Summarize major species suitable for aquaculture in a particular environment	PO5, PO6, PO7,PO9
Text Books		
1.	Santhanam, R. Velayutham, P. Jegatheesan, G. A (2019).Manual of Freshwater Ecology: An Aspect of Fishery Environment. Daya Publishing House, New Delhi.	
2.	Stickney, R.R. (2016). Aquaculture: An Introductory Text. 3 rd Edition. Centre for Agriculture and Bioscience International Publishing.	
3.	Ackefors H., Huner J and Konikoff M. (2009). Introduction to the General Principles of Aquaculture. CRC Press.	
4.	Mushlisin Z. A. (2012). Aquaculture. In Tech.	
5.	Akpaniteaku R.C. (2018).Basic Handbook of Fisheries and Aquaculture. AkiNik Publications.	
References Books		
1.	Arumugam N. (2014). Aquaculture. Saras Publication.	
2.	Pillay T. V. R. and Kutty M.N. (2005). Aquaculture: Principles and Practices. 2 nd Edition. Wiley India Pvt. Ltd.	
3.	Tripathi S. D., Lakra W.S. and Chadha N.K. (2018). Aquaculture in India. Narendra Publishing House.	
4.	Rath R.K.(2011). Fresh Water Aquaculture. 3 rd Edition. Scientific Publishers.	
5.	Lucas J. S., Southgate P.C. and Tucker C.S. (2019). Aquaculture: Farming Aquatic Animals and Plants. Wiley Blackwell.	
Web Resources		
1.	Aquaculture: Types, Benefits and Importance (Fish Farming) - Conserve Energy Future (conserve-energy-future.com)	
2.	Fisheries Department - Tamil Nadu (tn.gov.in)	
3.	Aquaculture - Google Books	
4.	aquaculture Definition, Industry, Farming, Benefits, Types, Facts, & Methods Britannica	
5.	Fisheries & Aquaculture (investindia.gov.in)	

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Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview	
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
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Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1				S	S	M	S	M	S	M	
CO2				S	M	M	S	M	S	L	
CO3				M	S	M	S	M	S	L	
CO4				M	M	M	S	M	S	L	
CO5				M	S	S	S	M	S	L	

UNIVERSITY OF MADRAS
U.G. DEGREE COURSE

ENVIRONMENTAL STUDIES PROGRAMME
ABILITY ENHANCEMENT COMPULSORY COURSES
(AECC- Environmental Studies)

Syllabus with effect from the academic year 2018-2019
(i.e. for batch of candidates admitted to the course from the academic year 2017-18)

Credits: 2

II Year / III/IV Sem.

Unit 1: Introduction to Environmental Studies

- Multidisciplinary nature of environmental studies;
- Scope and importance; concept of sustainability and sustainable development.

Unit 2 : Ecosystem (2 lectures)

- What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem:
Food chains, food webs and ecological succession, Case studies of the following ecosystem:
 - a) Forest ecosystem
 - b) Grassland ecosystem
 - c) Desert ecosystem
 - d) Aquatic ecosystem (ponds, stream, lakes, rivers, ocean, estuaries)

Unit 3: Natural Resources : Renewable and Non – renewable Resources (6 lectures)

- Land resources and land use change: Land degradation, soil erosion and desertification.
- Deforestation : Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.
- Water : Use and over –exploitation of surface and ground water, floods, droughts, conflicts over water (international and inter-state).
- Energy resources : Renewable and non renewable energy sources, use of alternate energy sources, growing energy needs, case studies.

Unit 4: Biodiversity and Conservation (8 lectures)

- Levels of biological diversity: genetics, species and ecosystem diversity, Biogeographic zones of India: Biodiversity patterns and global biodiversity hot spots
- India as a mega- biodiversity nation, Endangered and endemic species of India.
- Threats to biodiversity: Habitat loss, poaching of wildlife, man- wildlife conflicts, biological invasions; Conservations of biodiversity: In-situ and Ex-situ Conservation of biodiversity.
- Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.

Unit 5: Environmental Pollution (8 lectures)

- Environmental pollution: types, causes, effects and controls: Air, Water, soil and noise Pollution.
- Nuclear hazards and human health risks
- Solid waste management: Control measures of urban and industrial waste
- Pollution case studies.

UNIVERSITY OF MADRAS

U.G. DEGREE COURSE

Unit 6: Environmental Policies & Practices (8 lecturers)

- Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture
- Environment Laws: Environment Protection Act, Air (Prevention & Control of Pollution) Act; Water (Prevention and Control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act. International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD).
- Nature reserves, tribal populations and rights, and human Wildlife conflicts in Indian context.

Unit 7: Human Communities and the Environment (7 lectures)

- Human population growth, impacts on environment, human health and welfare.
- Resettlement and rehabilitation of projects affected persons; case studies.
- Disaster management: floods, earthquake, cyclone and landslides.
- Environmental movements : Chipko, Silent Valley, Bishnois of Rajasthan.
- Environmental ethics : Role of Indian and other religions and cultures in environmental conservation.
- Environmental communication and public awareness, case studies(e.g. CNG Vehicles in Delhi)

Unit 8 : Field Work (6 lectures)

- Visit to an area to document environmental assets: river / forest/ flora/ fauna etc.
- Visit to a local polluted site – Urban / Rural/ Industrial/ Agricultural.
- Study of common plants, insects, birds and basic principles of identification.
- Study of simple ecosystem- pond, river, Delhi Ridge etc.

(Equal to 5 Lectures)

Suggested Readings:

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.
3. Glesson, B. and Low, N.(eds.)1999. Global Ethics and Environment, London, Routledge.
4. Gleick,P.H.1993.Water Crisis. Pacific Institute for Studies in Dev.,Environment & Security. Stockholm Env.Institute, Oxford Univ.Press.
5. Groom, Martha J., Gary K.Meffe, and Carl Ronald Carroll. Principles of Conservation Biology. Sunderland: Sinauer Associates,2006.
6. Grumbine,R.Edward, and Pandit,M.K2013.Threats from India's Himalayas dams .Science,339:36-37
7. McCully,P.1996.Rivers no more :the environmental effects of dams(pp.29-64).Zed books.
8. McNeill,John R.2000.Something New Under the Sun: An Environmental History of the Twentieth Century.
9. Odum,E.P.,Odum, H.T.& Andrees,J.1971.Fundamental of Ecology. Philadelphia Saunders.
10. Pepper,I.L.,Gerba,C.P & Brusseau,M.L.2011.Environmental and Pollution Science. Academic Press.
11. Rao,M.N.& Datta,A.K1987.Waste Water Treatment. Oxford and IBH Publishing Co.Pvt.Ltd.
12. Raven,P.H.,Hassenzahl,D.M & Berg,L.R.2012 Environment.8th edition. John Willey & sons.

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U.G. DEGREE COURSE

13. Rosencranz, A., Divan,S.,& Noble, M.L.2001.Environmental law and policy in India. Tirupathi 1992.
14. Sengupta,R.2003.Ecology and Economics: An approach to sustainable development.OUP
15. Singh,J.S.,Singh,S.P and Gupta,S.R.2014.Ecology,Environmental Science and Conservation. S.Chand Publishing, New Delhi.
16. Sodhi,N.S.,Gibson,L.&Raven ,P.H(eds).2013.Conservation Biology :Voices from the Tropics. John Willey & Sons.
17. Thapar,V.1998.Land of the Tiger: A Natural History of the Indian Subcontinent.
18. Warren,C.E.1971.Biology and water Pollution Control. WB Saunders.
19. Willson,E.O.2006. The Creation: An appeal to save life on earth..New York: Norton.
20. World Commission on Environment and Development.1987.Our Common Future. Oxford University Press.



**Dr. MGR-JANAKI COLLEGE
OF ARTS & SCIENCE FOR WOMEN**



SATHYABAMA MGR MALIGAI

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DEPARTMENT OF MICROBIOLOGY

SHIFT -I

SYLLABUS

FROM 2023-2024

SEMESTER- IV

சென்னைப் பல்கலைக்கழகம்
University of Madras

Part-I

பொதுத் தமிழ் - பாடத்திட்டம்

General Tamil - Syllabus

4 பருவங்கள் (நான்காம் பருவம்)

(B.A., B.Sc., B.Com., BCA., BBA)

2023-24

பொதுத்தமிழ் -4
தமிழும் அறிவியலும்
இரண்டாம் ஆண்டு - நான்காம் பருவம்

Course Code	Course Name	category	L	T	P	S	Credits	Ins.Hrs	CIA	Externa	Total
200L4AU	பொதுத்தமிழ் -4 தமிழும் அறிவியலும்	Supportive	Y	-	-	-	3	6	25	75	100

Learning Objectives

- தாய்மொழி வழியாக அறிவியல் பற்றிய சிந்தனைகளை வளர்த்தல்.
- அறிவியல் கலைச் சொல்லாக்கம் பற்றிப் பயிற்றுவித்தல்.
- மாணவர்களுக்கு அறிவியல் பார்வையை ஏற்படுத்துதல்.
- தமிழில் அறிவியல் படைப்பிலக்கியங்களை உருவாக்கத் தூண்டுதல்
- தமிழ் இலக்கியம் சார்ந்த போட்டித் தேர்வுகளுக்கு ஏற்ப கற்பித்தல் நடைமுறைகளை மேற்கொள்ளுதல்

Expected Course Outcomes

On the Successful completion of the Course, Students will be able to

இப்பாடத்தைக் கற்பதால் பின்வரும் பயன்களை மாணவர் அடைவர்

CO 1	தாய்மொழி வழியாக அறிவியல் பற்றிச் சிந்திக்கும் திறன் பெற்றிருப்பர்.	K4
CO 2	அறிவியல் கலைச் சொல்லாக்கம் பற்றிய விதிகள், நுணுக்கங்களைத் தெரிந்திருப்பர்.	K5, K6
CO 3	அறிவியல் தமிழ் வளர்ச்சியில் மொழிபெயர்ப்பின் பங்கு குறித்து அறிந்திருப்பர்.	K3
CO 4	மொழியறிவோடு சிந்தனைத்திறனைப் பெறுவர்	K3
CO 5	மொழிப்பயிற்சிக்குத் தேவையான இலக்கணங்களைக் கற்பர்.	K2

K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create

அலகு-1	தமிழரின் அறிவியல் சிந்தனைகள்
	<ul style="list-style-type: none"> • அறிவியலும் மனித வாழ்வும் • ஐந்திணைப் பகுப்பும் சூழலியலும் • தொழில்நுட்ப மேலாண்மை • நீர் நில மேலாண்மை

அலகு-2	பழந்தமிழ் இலக்கியங்களில் அறிவியல் சிந்தனைகள்
	<ol style="list-style-type: none"> 1. நிலவியல் 2. உலோகவியல் 3. வானவியல் 4. உயிரியல் 5. உளவியல்

அலகு-3	இடைக்கால இலக்கியங்களில் அறிவியல் சிந்தனைகள்
	<ol style="list-style-type: none"> 1. காப்பியங்களில் அறிவியல் 2. சிற்றிலக்கியங்களில் அறிவியல் 3. உரைநூல்களில் அறிவியல்
அலகு-4	இணையத் தமிழ்
	<ol style="list-style-type: none"> 1. இணையத் தமிழ் பயன்பாடு - அறிமுகம் 2. இணையத்தமிழ்க் கல்விக்கழகம் 3. இணைய நூலகம் 4. செயற்கை நுண்ணறிவியல் 5. தமிழ்நாட்டு அறிவியல் ஆளுமைகள்
அலகு-5	கடிதம் எழுதுதலும் கட்டுரை எழுதுதலும்
	<ul style="list-style-type: none"> • உறவு முறைக் கடிதப் பயிற்சி • அலுவலகக் கடிதப் பயிற்சி • விண்ணப்பப் படிவம் எழுதும் பயிற்சி • தன் விவரப் படிவம் எழுதும் பயிற்சி • கருத்து விளக்கக் கட்டுரைகள் எழுதும் பயிற்சி • பத்திரிகைகளுக்குக் கட்டுரை எழுதும் பயிற்சி
Text books	
	<ul style="list-style-type: none"> • அறிவியல் தமிழ் இன்றைய நிலை - இராதா செல்லப்பன், உலகத் தமிழாராய்ச்சி நிறுவனம், சென்னை. • மணவை முஸ்தபா, தமிழில் அறிவியல் படைப்பிலக்கியம், மணவை பப்ளிகேஷன், சென்னை. • கலைச்சொல்லாக்கம் - மங்கை, ரங்கராசபுரம், சென்னை .
Reference Books	
	<ol style="list-style-type: none"> 1. தமிழர் வேளாண்மை மரபுகள் - இல).செ.கந்தசாமி • 2. சங்க இலக்கியத்தில் வேளாண் சமுதாயம், பெ.மாதையன், நியூ செஞ்சுரி புக் ஹவுஸ் 3. தமிழில் அறிவியல் இதழ்கள்சாமுவேல்- ரா.பார்வேந்தன் ஃபிஷ்கிறீன் பதிப்பகம், கோவை 4. அறிவியல் தமிழ் - பதிப்பாசிரியர் இராதா செல்லப்பன், பாரதிதாசன் பல்கலைக்கழகம், திருச்சிராப்பள்ளி. 5. இணையத் தமிழ் வரலாறு, மு.பொன்னவைக்கோ, பாரதிதாசன் பல்கலைக்கழகம் 6. இணையத் தமிழ், சந்திரிகா சுப்பிரமணியம் - சந்திரோதயம் பதிப்பகம் 7. இணையமும் இனிய தமிழும் - துரை. மணியரசன், இசை பதிப்பகம் 8. கணினித் தமிழ், இல. சுந்தரம் - விகடன் பிரசுரம் 9. மாண்புமிகு மண், பாமயன், வம்சி புக்ஸ்

10. தமிழ் இலக்கியத்தில் அறிவியல் சிந்தனைகள் வானதி பதிப்பகம், சென்னை

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

Web Sources

- <https://www.chennaiLibrary.com/>
- <https://www.sirukathaigal.com>
- <https://www.tamilvirtualuniversity.org>
- <https://www.noolulagam.com>
- <https://www.katuraitamilblogspot.com>

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	1.
CLO1	3	2	3	3	3	2	2	2	3	2	3	2	
CLO2	3	3	2	2	2	3	2	3	3	2	2	2	
CLO3	3	2	3	3	2	2	2	3	2	3	3	2	
CLO4		3	3	2	2	2	3	2	3	2	3	3	
CLO5	3	3	2	2	2	3	3	2	2	2	3	3	

Strong -3,Medium-2,Low-

UNIVERSITY OF MADRAS
UG & 5 YR INTEGRATED DEGREE – FOUNDATION COURSE
 EXISTING SYLLABUS (22-23) FOLLOWED FOR THE ACADEMIC YEAR 2023-2024

200L4E

FOUNDATION COURSE: PART-I HINDI PAPER-IV

Inst.Hrs. : 6
Credits : 3

Year : II
Semester : IV

PAPER –IV MODERN POETRY AND INTRODUCTION TO HINDI LITERATURE (AADHUNIK KAAL)	
Duration:	1 Semester
Programme Outcomes:	<ol style="list-style-type: none"> 1. Identify the Modern poets and their works, contribution to society and Literature 2. Studies the contemporary conditions and its impact on Modern poets 3. Understand and differentiate the message of poets their expressional and artistic skills and 4. Evaluation and critical study of Modern Poetry and Trends of Ancient Literature 5. Obtain the skills of summarise, interpretation of contexts and literary attitude
Programme Specific Outcomes:	<ol style="list-style-type: none"> 1. Basic knowledge of modern Poets and their works 2. Basic Knowledge of History of Hindi literature and its trends 3. Obtain skills of briefing, interpretation and evaluation 4. Basic idea of critical and analytical study of literature. 5. Obtain the application knowledge of relation between contemporary condition and literature and its impact on poets

Course Objectives		
	1. Identify the modern trends of Modern Hindi literature, different forms of modern literature i.e. poetry, fiction etc.	K1
	2. Summarise the content of prescribed poems and understand the trends of modern Hindi Literature .	K2
	3. Critical study and analysis of artistic skills of poets and their expression skills	K4
	4. Employ the methods of interpreting contexts, ideas and identify the poetic skills through practicing annotation writing	K3 K5
	5. Differentiate the subject and poetic skills of prescribe poems with each other and also know about contemporary poets , writers and the impact of contemporary situations	K6
	6. Conceive the aims of Literature and relations between	

	Literature and contemporary society	
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Pre-requisites, if any:	Basic knowledge of Modern Hindi poets and their poetry	
UNITS		
I	<ol style="list-style-type: none"> 1. Asha – (Jayashankar Prasad) 2. Tum Logon se Door (Nagarjun) 3. Literary Trends of Chayavaad 	
II	<ol style="list-style-type: none"> 1. Kavi Aur Kalpana – (Dhramaveer Bhaarathi) 2. Bharat Ki Aarthi - (Shamsher Bahadur Singh) 3. Literary Trends of Pragathivaad 	
III	<ol style="list-style-type: none"> 1. Varadan Mangoonga Nahi (Siva Mangal Singh Suman) 2. Anevalon Se Ek Savaal (Bharat Bhooshan Agarwal) 3. Literary Trends of Nayee Kavita 	
IV	<ol style="list-style-type: none"> 1. Literary Trends of Hindi Short Stories 2. Literary Trends of Hindi One Act Plays 3. Maithili Saran Gupta, Mahadevi Varma, 	
V	<ol style="list-style-type: none"> 1. Jayashankar Prasad, Nirala, 2. Panth, Dinakar, Premchand, 3. Yashpaal, Jainendra Kumar, Mohan Rakesh, 	

Course Outcomes	<ol style="list-style-type: none"> 1. Evaluate the poetic skills of poets and their poems 2. Identify the conditions inspire the poets and writers 3. Enumerate the literary trends and different literary forms 4. Understand the human, social, ethical and literary values 5. Obtain the knowledge to evaluate and critical analysis of literary works
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Reading List (Print and Online)	<ol style="list-style-type: none"> 1. Hindi Sahithya Ka Itihas, By: Ramchandra Shukla, Jaya Bharati Publications, 217, B, Maya Press Road, Allahabad – 211 003. 2. Hindi Sahithya Yug Aur Pravritiya By: Dr. Sivakumar Varma, Asok Prakashan Nayi Sarak, New Delhi – 6. 3. Hindi Sahithya ka Itihas By : Gulabroy, Lakshmi Narayana Agarwal Book Publishers and seller, Anupama Plaza – 1, Block No. 50, Sanjay Palace, Agra – 282002
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Recommended Texts	6. Poetry Selection Madras University Publications University of Madras
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Method of Evaluation:

Internal Assessment	End Semester Examination	Total	Grade
25	75	100	

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	S	S	S	S
CO 2	S	S	M	S	M
CO 3	S	S	M	S	S
CO 4	M	M	S	S	S
CO 5	S	S	S	S	S

UNIVERSITY OF MADRAS

FOUNDATION COURSE: FRENCH

SYLLABUS WITH EFFECT FROM 2023-2024

UG & 5 Year PG Integrated – SEMESTER – IV

Foundation Course: Translation, Comprehension and Grammar - II

Course Outcomes	<ol style="list-style-type: none"> 1. Apply connecting words (<i>cause, but, concession, condition, hypothèse, conséquence</i>) to improve the spoken as well as written communication skills 2. Differentiate the various past tenses in “<i>Les Temps du Passé</i>” and their unique usage 3. Summarize the literary texts 4. Identify and apply the different grammatical tenses of “<i>les temps du passé</i>” in sample exercises to practice 5. Critically assess the literary texts through an analysis of its themes, narrative techniques, characters and its cultural significance 		
Course	Foundation Course in French	Course Code	200L4K
Title of the Course:	Translation, Comprehension and Grammar – II		
Credits:	3		
Pre-requisites, if any:	----		
Course Objectives	Demonstrate the usage of connecting words in a given text	K2	
	Understand and differentiate the various types of past tenses in “ <i>Les Temps du Passé</i> ”	K2 and K4	
	Summarize the literary texts after a thorough analysis	K2 and K4	
	Identify and apply the different grammatical tenses of “ <i>les temps du passé</i> ”	K3	
	Analyze and critically assess the literary texts with regard to the themes and literary techniques	K4 and K5	
UNITS			
I	<i>Estula</i> <i>Décadi et son grand-père</i> Le plus-que-parfait		
II	<i>Une mauvaise nouvelle</i> <i>L'égoïste puni</i> Le passé simple		
III	<i>La visite de la grand-mère</i> L'expression de la cause L'expression de la conséquence		
IV	<i>Le Horla</i> L'expression du but L'expression de la concession		
V	<i>Monsieur Friquet</i> <i>Le lévrier et le serpent</i> L'expression de la condition et de l'hypothèse		
Prescribed Text	K. Madanagobalane & N.C. Mirakamal, <i>Le français par les textes</i> , Chennai, Samhita Publications – Goyal Publisher & Distributors Pvt Ltd, 2017		

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FOUNDATION COURSE: FRENCH
SYLLABUS WITH EFFECT FROM 2023-2024

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	M	S	M	L	S	M	L	S	S	S	M	S	M
CO2	S	M	M	L	M	M	L	S	S	S	S	M	M
CO3	M	S	S	M	M	M	M	S	S	M	M	S	M
CO4	S	M	M	L	M	M	L	S	S	S	S	M	M
CO5	M	S	S	M	M	M	M	S	S	M	M	S	M

S-Strong M-Medium L-Low

SEMESTER IV

Title of the Paper : Translation, Comprehension and Grammar-II

Prescribed textbook: K.Madanagobalane & N.C.Mirakamal, *Le français par les textes*, Chennai, Samhita Publications-Goyal Publisher & Distributors Pvt Ltd, 2017

The following texts from the prescribed textbook:

- *Estula*
- *Décadi et son grand-père*
- *Une mauvaise nouvelle*
- *L'égoïste puni*
- *La visite de la grand-mère*
- *Le Horla*
- *Monsieur Friquet*
- *Le lévrier et le serpent*

The following grammar components are chosen from the prescribed textbook:

- Le plus-que-parfait

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FOUNDATION COURSE: FRENCH SYLLABUS WITH EFFECT FROM 2023-2024

- Le passé simple
- L'expression de la cause
- L'expression de la conséquence
- L'expression du but
- L'expression de la concession
- L'expression de la condition et de l'hypothèse

Paper setters to strictly adhere to the syllabus and ask questions only from the pages included in the syllabus. Questions should cover the entire syllabus.

QUESTION PAPER PATTERN

Time : 3 Hours

Maximum Marks : 75

Section A (10 x 2 = 20 Marks)

Answer any TEN questions

15 questions to be asked from the prescribed texts (name of the text might be included within brackets in the question)

Section B (5 x 5 = 25 Marks)

Answer any FIVE questions

8 Grammar exercises to be given from the prescribed textbook

Section C (3 x 10 = 30 Marks)

Answer any THREE

3 must be answered out of 5 topics (1 translation of a prescribed text, 1 translation of unknown text, 1 comprehension of unknown text, 2 summaries of the prescribed texts)

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UNIVERSITY OF MADRAS
UG & 5 YR INTEGRATED DEGREE – FOUNDATION COURSE
SYLLABUS WITH EFFECT FROM 2022-2023
EXISTING SYLLABUS (22-23) FOLLOWED FROM THE ACADEMIC YEAR 2023-2024

Programme:	I & II UG – Second Language - SANSKRIT
Programme Code:	BFC-LS22
Duration:	2 years
Programme Outcomes:	<p>After successful completion of the course, learners will be able to:</p> <ol style="list-style-type: none"> 1. Create simple sentences using different grammatical tenses 2. Sensitize the students to the functioning of the language 3. Know the historical and cultural perspective of literary trends and movements in Sanskrit and in its literature 4. Define the origin of Sanskrit Literature 5. Demonstrate different teaching methodologies 6. Translate simple passages 7. Consolidate their communication skills in both spoken and written Sanskrit.
Programme Specific Outcomes:	<ol style="list-style-type: none"> 1. Understand and appreciate the aesthetical, social, political, cultural, etc., values expressed in various prescribed texts 2. Apply different grammatical rules to their reading and writing assignments 3. Identify the base words of nouns and different tenses 4. Read, understand, write and speak in simple Sanskrit 5. Translate simple sentences related to the themes given

List of Courses:

Semester	Course Code	Title of the Course	Core/Elective/ Soft Skill	Credits
I	BFC-LS001	Paper I – Poetry, Grammar and History of Sanskrit Literature	C	3
II	BFC-LS002	Paper II – Prose, Grammar and History of Sanskrit Literature	C	3
III	BFC-LS003	Paper III – Drama, Grammar and History of Sanskrit Literature	C	3
IV	BFC-LS004	Paper IV – Alankara, Didactic & Modern literatures and Translation	C	3

UNIVERSITY OF MADRAS
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SYLLABUS WITH EFFECT FROM 2022-2023
EXISTING SYLLABUS (22-23) FOLLOWED FROM THE ACADEMIC YEAR 2023-2024

100L1G

FOUNDATION COURSE: PART-I SANSKRIT PAPER-I

Inst.Hrs. : 6
Credits : 3

Year : I
Semester : I

Paper I – Poetry, Grammar and History of Sanskrit Literature

Course Outcomes	1. Remember the usage of grammatical tenses in constructing sentences in dialogue. 2. Apply the rules of usage in practice exercises and identify errors 3. Explain the nuances in the usage of various grammatical tenses and aspects 4. Demonstrate knowledge of various expressions of opinion, emotions, cause, effect, purpose, and hypothesis in French 5. Communicate in French and summarize the given text	
Course Objectives	Understand the basic Sanskrit sentence structure	K1
	To provide the glimpses of the rich Sanskrit literary tradition through reading the literary composition	K2
	Explain the language of this Mahakavya which is highly elaborate and polished with continual play upon words and variety of metres	K3
	Analyse and interpret expressions of cause, effect, purpose, and opposition in Sanskrit	K4
	Evaluate grammatical nature of verses	K5
Units		
I	Introduction to Sanskrit (Alphabets, Two letter words and three letter words) Grammar: <i>akārāntaḥ puṁliṅgaḥ śabda-s</i> - 1. बाल (<i>Bāl a</i>) and 2. देव (<i>Deva</i>) <i>ākārāntaḥ strīliṅgaḥ śabda-s</i> - 1. बाला (<i>Bāl ā</i>) and 2. लता (<i>Lat ā</i>) <i>akārāntaḥ napuṁsakaliṅgaḥ śabda-s</i> - 1. फल (<i>Phal a</i>) and 2. वन (<i>Vana</i>)	
II	Introduction to <i>Rāmāyana</i> , <i>Kālidāsa</i> and his poetic works Text: <i>Raghuvamśa</i> (Canto I) Verses 1-15	
III	Introduction to the works of <i>Bhāravi</i> - Text: <i>Raghuvamśa</i> (canto I) Verses 16-30	
IV	Introduction to the works of <i>Śrī Harṣha</i> - Text: <i>Raghuvamśa</i> (Canto I) Verses 31-45	
V	Grammar: Conjugations - <i>Laṅ lakāra-s</i> – (Present tense) (i) गच्छति (<i>Gacchat i</i>) (ii) तिष्ठति (<i>Ti ṣṭhat i</i>) (iii) पठति	

UNIVERSITY OF MADRAS
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SYLLABUS WITH EFFECT FROM 2022-2023

	<p>(<i>Paṭ hat i</i>) (i v) नृत्यति (<i>Ṇṭyat i</i>) (v) कुप्यति (<i>Kupyat i</i>) (vi) कथयति (<i>Kat hayat i</i>) (vi i) गणयति (<i>Ḡanayat i</i>) (vi i i) अस्ति (<i>Ast i</i>) (i x) करोति (<i>Kar ot i</i>) (x) शृणोति (<i>Śṛnot i</i>) Indeclinables (Avyayaani) - अपि (<i>api</i>), कदा (<i>kadā</i>), च (<i>ca</i>), अद्य (<i>adya</i>), विना (<i>vi nā</i>), सह (<i>saha</i>), तत्र (<i>t at ra</i>), किम् (<i>ki m</i>), यदि (<i>yadi</i>) - तर्हि (<i>t ar hi</i>), यथा (<i>yat hā</i>) - तथा (<i>t at hā</i>) Prefixes (<i>Upasargas</i>) - आङ् (<i>āṅ</i>), वि (<i>vi</i>), परि (<i>pari</i>), अनु (<i>anu</i>), अधि (<i>adhi</i>), उत् (<i>ut</i>), प्रति (<i>pr at i</i>), उप (<i>upa</i>), प्र (<i>pr a</i>) निर् (<i>ni r</i>)</p>
Book recommended for Reference	<p><i>Kalāśālā-Saṁskṛta-Sukhabodhinī - I</i> To be Published by: University of Madras, Chennai - 5</p>

Mapping with Programme Outcomes:

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	S	M	S	S
CO 2	S	S	S	S	S
CO 3	S	S	M	M	S
CO 4	S	S	M	S	S
CO 5	S	S	S	S	S

S-Strong M-Medium L-Low

UNIVERSITY OF MADRAS
UG & 5 YR INTEGRATED DEGREE – FOUNDATION COURSE
SYLLABUS WITH EFFECT FROM 2022-2023
EXISTING SYLLABUS (22-23) FOLLOWED FROM THE ACADEMIC YEAR 2023-2024

100L2G

FOUNDATION COURSE: PART-I SANSKRIT PAPER-II

Inst.Hrs. : 6
Credits : 3

Year : I
Semester : II

Paper II – Prose, Grammar and History of Sanskrit Literature

Course Outcomes	<ol style="list-style-type: none">1. Understand and apply grammatical concepts in drafting sentences and paragraphs2. Apply the rules and regulations in handling usage of Lrt lakara and Asmad Sabdah, practice exercises and identify errors3. Form an idea of the aesthetic expressions that make Sanskrit composition get the position of pride in world literature4. Demonstrate knowledge of various expressions of opinion, emotions, cause, effect, purpose, and hypothesis in Sanskrit5. Appreciate the art of employment of Alankaras in a prose form of poetry	
Course Objectives	Provide acquaintance with prose literature in Sanskrit through a study of one of the best texts of prose, which would pave the way for gaining sufficient grounding in the language	K1
	Enumerate various grammatical tenses and use them to communicate in Sanskrit language	K2
	Summarize the stories of Panchatantra and discuss in	K3
	Analyze and interpret expressions of cause, effect, purpose, and opposition in Sanskrit	K4
	Evaluate and comprehend text passages	K5
Units		
I	Introduction to Prose literature in Sanskrit Grammar: <i>ikārāntaḥ puṁliṅgāḥ śabdāḥ</i> - 1. कवि (<i>Kavi</i>) and 2. रवि (<i>Ravi</i>) <i>ikārāntaḥ strīliṅgāḥ śabdāḥ</i> - 1. मति (<i>Mati</i>) <i>ikārāntaḥ strīliṅgāḥ śabdāḥ</i> - 1. नदी (<i>Nadi</i>) <i>ikārāntaḥ napuṁsakaliṅgāḥ śabdāḥ</i> 1. वारि (<i>Vari</i>)	
II	Introduction to <i>Māhābhārata</i> , the author of बालरामायणम् (<i>Bālarāmāyaṇam</i>) and his works Text: <i>Bālakāṇḍam</i> of <i>Bālarāmāyaṇam</i>	
III	Introduction to the works of <i>Baṇa</i> (<i>Kādambarī</i> and <i>Harṣacaritam</i>), <i>Daṇḍin</i> (<i>Daśakumāracaritam</i> and <i>Avantisundarīkathā</i>) and <i>Subandhu</i> (<i>Vāsavadattā</i>)	
IV	Introduction to Historical <i>Kāvyas</i> in Sanskrit - The works of <i>Kalhaṇaḥ</i> , <i>Bilhaṇaḥ</i> , <i>Bāṇaḥ</i> and <i>Pravarasenaḥ</i>	

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V	<p>Grammar: Conjugations - <i>Lañ lakārah</i> (Past tense) (i) अगच्छत् (<i>Agacchat</i>) (ii) अतिष्ठत् (<i>Atiṣṭhat</i>) (iii) अपठत् (<i>Apaṭhat</i>) (iv) अनृत्यत् (<i>Anṛtyat</i>) (v) अकुप्यत् (<i>Akupyat</i>) (vi) अकथयत् (<i>Akat hayat</i>) (vii) अगणयत् (<i>Aganayat</i>) (viii) आसीत् (<i>Asit</i>) (ix) अकरोत् (<i>Akarot</i>) (x) अशृणोत् (<i>Aśṛnot</i>)</p> <p>Indecl i nabl es: (a) तुमुन् (<i>Tumun</i>) suffix ended words (Infinitive forms) (i) गन्तुम् (<i>Gantum</i>) (ii) स्थातुम् (<i>Stahātum</i>) (iii) पठितुम् (<i>Paṭhitum</i>) (iv) नर्तितुम् (<i>Nartitum</i>) (v) कोपितुम् (<i>Kopitum</i>) (vi) कथयितुम् (<i>Kat hayitum</i>) (vii) गणयितुम् (<i>Ganayitum</i>) (viii) भवितुम् (<i>Bhavitum</i>) (ix) कर्तुम् (<i>Kartum</i>) (x) श्रोतुम् (<i>Śrotum</i>) (b) क्त्वा (<i>Kṛvā</i>) suffix ended words (Past passive participles) (i) गत्वा (<i>Gatvā</i>) (ii) स्मृत्वा (<i>Smṛtvā</i>) (iii) गणयित्वा (<i>Ganayitvā</i>) (iv) पठित्वा (<i>Paṭitvā</i>) (v) कृत्वा (<i>Kṛtvā</i>) (c) ल्यप् (<i>Lyap</i>) suffix ended words (Past passive participles) (i) आगत्य (<i>Āgatya</i>) (ii) विस्मृत्य (<i>Vismṛtya</i>) (iii) विगणय्य (<i>Viganayya</i>) (iv) प्रपठ्य (<i>Prapaṭhya</i>) (v) अनुकृत्य (<i>Anukṛtya</i>)</p>
Book recommended for Reference	<p><i>Kalāsālā-Saṃskṛta-Sukhabodhinī - II</i> To be Published by: University of Madras, Chennai - 5</p>

Mapping with Programme Outcomes:

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	M	S	M	S
CO 2	S	M	S	S	S
CO 3	S	S	S	M	S
CO 4	S	S	M	S	S
CO 5	S	S	S	S	S

S-Strong M-Medium L-Low

UNIVERSITY OF MADRAS
UG & 5 YR INTEGRATED DEGREE – FOUNDATION COURSE
SYLLABUS WITH EFFECT FROM 2022-2023
EXISTING SYLLABUS (22-23) FOLLOWED FROM THE ACADEMIC YEAR 2023-2024

200L3G

FOUNDATION COURSE: PART-I SANSKRIT PAPER-III

Inst.Hrs. : 6
Credits : 3

Year : II
Semester : III

Paper III – Drama, Grammar and History of Sanskrit Literature

Course Outcomes	<ol style="list-style-type: none"> 1. Be familiar with the style of the great Sanskrit Dramatist Bhasa 2. Be able to appreciate the aesthetical, social, political, cultural, etc., values expressed in prescribed composition 3. Understand the structural patterns of Sanskrit dramatic composition 4. Develop the finer and minor nuances of Nataka form of drama 5. Analyze the literary texts
UNITS	
I	Introduction to Dramaturgy – Ten types of Drama - Characteristics and features (<i>Nāndī, Sūtradhāra, Sthāpanā</i> and <i>Bharatavākyam</i>) of Sanskrit Dramas. Prose Text: <i>Karṇabhāram</i> - Page. 01 - 10 (till 10 <i>Slokās</i>)
II	Characteristics and features (<i>Vastu, Netā</i> and <i>Rasas</i>) of Sanskrit Drama - Prose Text: <i>Karṇabhāram</i> - Page. 11 - 20 (till 17 <i>Slokās</i>)
III	Authorship of 13 Trivandrum play of <i>Bhāsa</i> - Introduction to the Dramas of <i>Kālidāsa, Bhavabhūti, Harṣavardhana</i> and <i>Rājaśekhara</i> Text: <i>Karṇabhāram</i> - Page. 21 - 32 (Upto the end)
IV	Introduction to the dramatic works of <i>Viśākhadatta, Śūdraka, Bhaṭṭanārāyaṇa</i> and <i>Murāri</i> - Introduction to Allegorical dramas 1. <i>Prabodhacandrodaya</i> and 2. <i>Saṅkalpasūryodaya</i>
V	Introduction to <i>Campū</i> literature 1. <i>Bhojacampū</i> 2. <i>Viśvaguṇādarśacampū</i> and 3. <i>Nalacampū</i> Grammar – <i>Lṛṭ lakārāḥ</i> (Future tense) (i) गमिष्यति (<i>Gami śyat i</i>) (ii) स्थास्यति (<i>St hāsyat i</i>) (iii) पठिष्यति (<i>Paṭ hi śyat i</i>) (iv) नर्तिष्यति (<i>Nart i śyat i</i>) (v) कोपिष्यति (<i>Kopi śyat i</i>) (vi) कथयिष्यति (<i>Kat hayi śyat i</i>) (vii) गणयिष्यति (<i>Ganayi śyat i</i>) (viii) भविष्यति (<i>Bhavi śyat i</i>) (ix) करिष्यति (<i>Kari śyat i</i>) (x) श्रोष्यति (<i>Ś rośyat i</i>) Declensions: (<i>Sar vanānāśabdāḥ</i>) - 1. तद् शब्दः (<i>Tad śabdah</i>) i n al I gender s 2. अस्मद् शब्दः (<i>Asnad śabdah</i>) 3. युष्मद् शब्दः (<i>Yuśmad śabdah</i>)

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SYLLABUS WITH EFFECT FROM 2022-2023

Course Objectives	Understand the structure and use of different phrases and Idioms in Sanskrit Drama and grammatical aspects of <i>Karṇabhāram</i>	K2
	Enhance one's ability to converse freely in the language, which is considered to be a specialized skill as far as the Sanskrit Language goes	K2
	Draft and summarize the literary texts	K3
	Identify and apply different grammatical peculiarities	K3
	Analyze and critically assess the literary texts	K4

Book recommended for Reference	<p style="text-align: center;"><i>Kalāśālā-Saṃskṛta-Sukhabodhinī - III</i></p> <p style="text-align: center;">To be Published by: University of Madras, Chennai - 5</p>
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Mapping with Programme Outcomes:

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	M	M	S	S
CO 2	S	S	S	S	S
CO 3	S	M	M	S	S
CO 4	S	S	M	S	S
CO 5	S	S	S	S	S

S-Strong M-Medium L-Low

UNIVERSITY OF MADRAS
UG & 5 YR INTEGRATED DEGREE – FOUNDATION COURSE
SYLLABUS WITH EFFECT FROM 2022-2023
EXISTING SYLLABUS (22-23) FOLLOWED FROM THE ACADEMIC YEAR 2023-2024

200L4G

FOUNDATION COURSE: PART-I SANSKRIT PAPER-IV

Inst.Hrs. : 6
Credits : 3

Year : II
Semester : IV

Paper IV – Alankara, Didactic & Modern literatures and Translation

Course Outcome	<ol style="list-style-type: none"> 1. Apply the usage of compound words 2. Differentiate the alankaras 3. Translate the prose passages prescribed 4. Identify and apply different grammatical tenses of “Mahabharata” related translation 5. Analyze and critically assess the literary texts
UNITS	
I	Introduction to Didactic literature (<i>Pañcatantram</i> and <i>Hitopadeśah</i>) Text: The lion and the hare शशकसिंहकथा (<i>Śaśakasimhakathā</i>) from <i>Pañcatantram</i> and The jackal and the elephant शृगालहस्तिकथा (<i>Śrgālahastikathā</i>) a story from <i>Mitralābhaḥ</i> of <i>Hitopadeśah</i>
II	<i>Alaṅkārah</i> - i. <i>Upamā</i> , ii. <i>Rūpakam</i> , iii. <i>Ullekhaḥ</i> , iv. <i>Utprekṣā</i> and v. <i>Vyatirekaḥ</i>
III	Introduction to Modern literature - Introduction to अर्थशास्त्रम् (<i>Artha śāstram</i>) of चाणक्यः (<i>Cāṇakyaḥ</i>) - Introduction to मयमतम् (<i>Mayamatam</i>) - Introduction to नीतिद्विषष्टिका (<i>N t i d v i ṣ a ṣ ṭ h i k ā</i>) - <i>S l o k ā s</i> - 1 t o 10 - I n t r o d u c t i o n t o t h e l i f e h i s t o r y o f श्रीआदिशङ्कराचार्यः (<i>Śrī -Ādi śaṅkar ācār yaḥ</i>), श्रीरामानुजाचार्यः (<i>Śrī Rāmānuj ācār yaḥ</i>) and श्रीमध्वाचार्यः (<i>Śrī Mādhvācār yaḥ</i>)
IV	Introduction to Modern literature in Sanskrit - Text: तिरुक्कुरळ् संस्कृतानुवादः (Sanskrit translation of Tirukkural) <i>Slokās</i> 1 to 10 ईश्वरवन्दनम् (<i>Kaḍavul Vāzhththu</i>) by कलियन् रामानुजजीयर् (<i>Kaliyan Rāmānujajīyar</i>) नालडियार् (<i>Nālaḍiyār</i>) translated by श्री एस्. एन्. रामदेशिकः (<i>Śrī S N Rānadeśi ka</i>) - <i>S l o k ā s</i> : 1 t o 5
V	Translation from prose section Unit - I stories Grammar: Conjugation - <i>Loṭ lakārāḥ</i> (Imperative mood) (i) गच्छतु (<i>Gacchat u</i>) (i i) तिष्ठतु (<i>Ti ṣ ṭ hat u</i>) (i i i) पठतु (<i>Paṭ hat u</i>) (i v) शृणोतु (<i>Śr ṇ ot u</i>) (v) करोतु (<i>Kar ot u</i>)

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UG & 5 YR INTEGRATED DEGREE – FOUNDATION COURSE
SYLLABUS WITH EFFECT FROM 2022-2023

Course Objectives	Demonstrate the usage of connecting words	K2
	Understand the alankaras which are used in devotional lyrics	K2
	Draft and summarize the literary texts	K3
	Identify the meaning, types of figure of speech of the prescribed text	K3
	Analyze and critically assess the literary texts	K4

Book recommended for Reference	<i>Kalāsālā-Saṃskṛta-Sukhabodhinī - IV</i> To be Published by: University of Madras, Chennai - 5
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Mapping with Programme Outcomes:

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	M	S	S
CO2	S	S	M	S	S
CO3	S	S	M	S	S
CO4	S	M	S	S	S
CO5	S	S	S	S	M

S-Strong M-Medium L-Low

UNIVERSITY OF MADRAS U.G. AND FIVE YEAR INTEGRATED PG DEGREE PROGRAMS FOUNDATION COURSE: PART I – ARABIC <small>(EXISTING SYLLABUS (22-23) FOLLOWED FROM THE ACADEMIC YEAR 2023-2024)</small>	
Programme:	U.G. AND FIVE YEAR INTEGRATED P.G. DEGREE PROGRAMS FOUNDATION COURSE: PART I – ARABIC
Programme Code:	BFC-LA23
Duration:	4 Semesters
On successful completion of this program, the graduates are expected to achieve the following:	
Programme Outcomes:	<ol style="list-style-type: none"> 1. Acquire the knowledge of the structure of Arabic words 2. Acquaint with the knowledge of basic Arabic grammar 3. Become familiar with the knowledge of phonetic system of Arabic language 4. Able to communicate in Arabic 5. Have the knowledge of moral values in the light of Quran and Hadith
Programme Specific Outcomes:	<ol style="list-style-type: none"> 1. Understand the sounds and phrasing of Arabic language. 2. Learn the basic Arabic grammar 3. Develop communication skills in Arabic 4. Acquire new vocabulary in Arabic 5. Learn the moral values of the Holy Quran and Sunnah

List of Courses:

Semester	Course Code	Title of the Course	Foundation Course	Credits
I	100L1H	Paper I : Prose	FC	3
II	100L2H	Paper II : Grammar	FC	3
III	200L3H	Paper III : Communication Skill in Arabic	FC	3
IV	200L4H	Paper IV : Quran and Hadith	FC	3

Course I	Course Code	Title of the Course	Credits
FC	100L1H	Paper I : Prose	3
Course Outcomes	<ol style="list-style-type: none"> 1. Understand the correct pronunciation of Arabic letters 2. Understand the structure-based composition. 3. Acquire new vocabulary in Arabic 4. Read the Arabic sentences without diacritical marks 5. Able to write the simple sentences in Arabic without errors. 		
Pre-requisites, if any:	Nil		
Course Objectives	<ol style="list-style-type: none"> 1. Understand basic Arabic grammar. 2. Understand the structure of Arabic language. 3. Employ sentence making. 4. Enhance vocabulary. 5. Improve reading and writing skills. 		
Units			
I	(دروس اللغة العربية لغير الناطقين بها، الجزء الأول، الدكتور ف. عبد الرحيم) من الدرس الأول إلى الدرس الرابع		
II	من الدرس الخامس إلى الدرس الثامن		
III	من الدرس التاسع إلى الدرس الثالث عشر		
IV	من الدرس الرابع عشر إلى الدرس الثامن عشر		
V	من الدرس التاسع عشر إلى الدرس الثالث والعشرين		

Prescribed Text Book	دروس اللغة العربية لغير الناطقين بها، الجزء الأول، الدكتور ف. عبد الرحيم Duroos Al-Lugha Al-Arabiyya – Part I, By Dr. V. Abdur Rahim
Reading List (Print and online)	معجم الكلمات الواردة في دروس اللغة العربية لغير الناطقين بها مفتاح دروس اللغة العربية لغير الناطقين بها القراءة الراشدة – الشيخ أبو الحسن علي الحسيني الندوي القراءة المفيدة – الدكتور محمد يوسف كوكن العمري منهاج العربية – السيد النبي حيدرآبادي www.alnahw.com

Method of Evaluation:

Internal Assessment	End Semester Examination	Total	Grade
25	75	100	

Methods of assessment:

Recall (K1) - Simple definitions, MCQ, Recall steps, Concept definitions

Understand/ Comprehend (K2) - MCQ, True/False, Short essays, Concept explanations, Short summary or overview

Application (K3) - Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain

Analyse (K4) - Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge

Evaluate (K5) - Longer essay/ Evaluation essay, Critique or justify with pros and cons

Create (K6) - Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5
CO	3	3	3	2	1

3-Strong 2-Medium 1-Low

Course II	Course Code	Title of the Course	Credits
FC	100L2H	Paper II : Grammar	3
Course Outcomes	<ol style="list-style-type: none"> 1. Able to use basic grammatical structure. 2. Develop reading skills and reading speed 3. Acquire new vocabulary in Arabic 4. Understand the different types of sentences. 5. Able to construct simple sentences in Arabic 		
Pre-requisites, if any:	Nil		
Course Objectives	<ol style="list-style-type: none"> 1. Understand basic Arabic grammar. 2. Understand the correct usage of Arabic grammar. 3. Employ sentence making. 4. Enhance vocabulary. 5. Improve reading and writing skills. 		
Units			
I	(قواعد اللغة العربية الأساسية، الدكتور سيد رحمة الله) من الدرس الأول إلى الدرس الرابع		
II	من الدرس الخامس إلى الدرس الثامن		
III	من الدرس التاسع إلى الدرس الثاني عشر		

IV	من الدرس الثالث عشر إلى السادس عشر
V	من الدرس السابع عشر إلى الدرس العشرين
Prescribed Text Book	قواعد اللغة العربية الأساسية، الدكتور سيد رحمة الله Basic Arabic Grammar, By Dr. Syed Rahmathullah
Reading List (Print and online)	النحو الواضح – علي الجارم ومصطفى أمين دليل النحو الواضح – الدكتور بشير أحمد جمالي سهل العوامل – الدكتور تاج الدين المناني النحو الميسر للكبار والصغار – علي محمود عقيلي القواعد التطبيقية في اللغة العربية – الدكتور نديم دعكور www.alnahw.com

Method of Evaluation:

Internal Assessment	End Semester Examination	Total	Grade
25	75	100	

Methods of assessment:

Recall (K1) - Simple definitions, MCQ, Recall steps, Concept definitions

Understand/ Comprehend (K2) - MCQ, True/False, Short essays, Concept explanations, Short summary or overview

Application (K3) - Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain

Analyse (K4) - Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge

Evaluate (K5) - Longer essay/ Evaluation essay, Critique or justify with pros and cons

Create (K6) - Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5
CO	3	3	3	3	1

3-Strong 2-Medium 1-Low

Course III	Course Code	Title of the Course	Credits
FC	200L3H	Paper III : Communication Skill in Arabic	3
Course Outcomes	<ol style="list-style-type: none"> 1. Understand the basics of Arabic language. 2. Learn the structure of Arabic words. 3. Familiarize with the phonetic system of Arabic. 4. Able to communicate in Arabic 5. Able to translate from Arabic to English and vice versa 		
Pre-requisites, if any:	Nil		
Course Objectives	<ol style="list-style-type: none"> 1. Understand the sounds and phrasing of Arabic language. 2. Acquire new vocabulary and apply in context. 3. Develop communication skills in Arabic. 4. Understand the different aspects of communication. 5. Learn to communicate in everyday interactions. 		
Units			
I	(الكتاب الأساسي في تعليم اللغة العربية لغير الناطقين بها، الجزء الأول – السعيد محمد بدوي وفتحي علي يونس) التعارف – في المطار (١)		
II	في الفندق – في المطعم		
III	في البنك – عند الطبيب (١)		

IV	في الطريق - في مكتب البريد
V	في السوق (١) - في السوق (٢)
Prescribed Text Book	<p>الكتاب الأساسي في تعليم اللغة العربية لغير الناطقين بها، الجزء الأول - السعيد محمد بدوي وفتحي علي يونس</p> <p>Al Kitaab Al Asaasi Fi Taleem Al Lughha Al Arabiyya Li Ghair An Naatiqeena Biha - Part I, By Sayeed Muhaamad Badawi and Fathi Ali Yunus</p>
Reading List (Print and online)	<p>A Practice Book on Gulf Arabic, By Dr. Abdul Jaleel. T</p> <p>Arabic Conversation Book, By Mohd. Harun Rashid and Khalid Perwez</p> <p>A Hand book of Commercial Arabic by Dr. Aboobacker K.P</p> <p>العربية لغير العرب - د. مصطفى حسن الرئيس، الأزهر</p> <p>العربية للحياة - جامعة الملك سعود</p> <p>القراءة العربية لغير العرب - وزارة التربية بالكويت</p> <p>www.talkinarabic.com</p>

Method of Evaluation:

Internal Assessment	End Semester Examination	Total	Grade
25	75	100	

Methods of assessment:

Recall (K1) - Simple definitions, MCQ, Recall steps, Concept definitions

Understand/ Comprehend (K2) - MCQ, True/False, Short essays, Concept explanations, Short summary or overview

Application (K3) - Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain

Analyse (K4) - Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge

Evaluate (K5) - Longer essay/ Evaluation essay, Critique or justify with pros and cons

Create (K6) - Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5
CO	3	3	3	2	1

3-Strong 2-Medium 1-Low

Course IV	Course Code	Title of the Course	Credits
FC	200L4H	Paper IV : Quran and Hadith	3
Course Outcome	<ol style="list-style-type: none"> 1. Know the principal textual sources of the Islamic tradition: The Qur'an and the Hadith. 2. Know the role of Quran and Hadith in the synthesis of Islamic faith and practice. 3. Understand the structure of Arabic grammar through Quran and Hadith. 4. Understand the methodology of translation of Quran and Hadith. 5. Understand the moral values of Quran and Hadith 		
Pre-requisites, if any:	Nil		
Course Objectives	<ol style="list-style-type: none"> 1. Know the importance of Quran and Hadith. 2. Understand the style of Quran and Hadith. 3. Understand the role of Quran and Hadith in the Islamic faith and law. 		

	<p>4. Know the structure of Arabic grammar through the examples from Quran and Hadith.</p> <p>5. Learn the cultural and moral values.</p>
Units	
I	<p>(١. سورة لقمان من القرآن الكريم ٢. أحاديث سهلة للدكتور ف. عبد الرحيم)</p> <p style="text-align: right;">سورة لقمان</p> <p style="text-align: right;">من الآية ١ إلى الآية ١٠</p>
II	من الآية ١١ إلى ٢٠
III	من الآية ٢١ إلى ٣٤
IV	<p style="text-align: right;">أحاديث سهلة</p> <p style="text-align: right;">من الحديث ١ إلى الحديث ١٠</p>
V	من الحديث ١١ إلى الحديث ٢٠
Prescribed Text Book	<p style="text-align: right;">١. سورة لقمان من القرآن الكريم</p> <p style="text-align: right;">٢. أحاديث سهلة للدكتور ف. عبد الرحيم</p> <p>1) Sooratu Luqman</p> <p>2) Ahadeeth Sahlah By Dr. V. Abdur Rahim</p>
Reading List (Print and online)	<p>Tafsir Al-Jalalain</p> <p>The Noble Quran, Dr. Muhammad Muhsin Khan and Muhammad Taqi-Ud-Dhin Al-Hilali</p> <p style="text-align: right;">الأربعون النووية</p> <p style="text-align: right;">نصوص من الحديث النبوي الشريف، الدكتور ف. عبد الرحيم</p>

شرح أحاديث سهلة، الدكتور ش. عبد المالك

<https://quran.com/>

<https://sunnah.com/nawawi40>

Method of Evaluation:

Internal Assessment	End Semester Examination	Total	Grade
25	75	100	

Methods of assessment:

Recall (K1) - Simple definitions, MCQ, Recall steps, Concept definitions

Understand/ Comprehend (K2) - MCQ, True/False, Short essays, Concept explanations, Short summary or overview

Application (K3) - Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain

Analyse (K4) - Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge

Evaluate (K5) - Longer essay/ Evaluation essay, Critique or justify with pros and cons

Create (K6) - Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5
CO	1	2	3	3	3

3-Strong

2-Medium

1-Low

UNIVERSITY OF MADRAS

FOUNDATION COURSE: ENGLISH

SYLLABUS WITH EFFECT FROM 2023-2024

SECOND YEAR - SEMESTER IV

PAPER II –GENERAL ENGLISH

Subject Code	Category	L	T	P	S	Credits	Inst. Hours	Marks		
								CIA	External	Total
200L4ZU	Part II	Y	Y	-	-	3	6	25	75	100
Learning Objectives										
LO1	To help learners imbibe goal-setting attitude.									
LO2	To enable them to understand the value of integrity.									
LO3	To help them deal with emotions.									
LO4	To teach the learners to frame sentences using tenses.									
LO5	To enhance reporting skills.									
Unit No.	Unit Title & Text							No. of Periods for the Unit		
I	GOAL SETTING (UNICEF) Life Story 1.1 From Chinese Cinderella – Adeline Yen Mah 1.2 Why I Write - George Orwell Short Essay 1.3 On Personal Mastery – Robin Sharma 1.4 On the Love of Life – William Hazlitt							20		
II	INTEGRITY Short Story 2.1 The Taxi Driver – K.S. Duggal 2.2 Kabuliwala - Rabindranath Tagore 2.3 A Retrieved Reformation – O Henry Extract from a play 2.4 The Quality of Mercy (Trial Scene from the Merchant of Venice - Shakespeare)							20		
III	COPING WITH EMOTIONS Poem 3.1 Pride – Dahlia Ravikovitch 3.2 Phenomenal Woman – Maya Angelou Reader’s Theatre 3.3 The Giant’s Wife A Tall Tale of Ireland – William Carleton 3.4 The Princess and the God : A Tale of Ancient India							20		

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FOUNDATION COURSE: ENGLISH

SYLLABUS WITH EFFECT FROM 2023-2024

IV	Language Competency Sentences 4.1 Simple Sentences 4.2 Compound Sentences 4.3 Complex Sentences Direct and Indirect Speech	15
V	Report Writing 5.1 Narrative Report 5.2 Newspaper Report Drafting Speeches 5.3 Welcome Address 5.4 Vote of Thanks	15

Course Outcomes

Course Outcomes	On completion of this course, students will	
CO1	Determine their goals	PO1,PO7
CO2	Identify the value of integrity.	PO1,PO2,PO10
CO3	Deal with emotions.	PO4,PO6,PO9
CO4	Frame grammatically correct sentences	PO4,PO5,PO6
CO5	Write cohesive reports.	PO3,PO8

Text Books (Latest Editions)

1	Oxford Practice Grammar , John Eastwood, Oxford University Press
2	Cambridge Grammar of English , Ronald Carter and Michael McCarthy
3.	George Orwell Essays, Penguin Classics

Web Resources

1	http://www.gradesaver.com/George-orwell-essays/study/summary
2	O' Henry. A Retrieved Reformation. https://americanenglish.state.gov/files/ae/resource_files/a-retrieved-reformation.pdf
3	Maya Angelou. Phenomenal Woman. https://www.poetryfoundation.org/poems/48985/phenomenal-woman
4	The Quality of Mercy, https://poemanalysis.com
5	https://www.oxfordscholarlyeditions.com/display/10.1093/actrade/9780199235742.book.1/actrade-9780199235742-div1-106-William-Hazlitt

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FOUNDATION COURSE: ENGLISH

SYLLABUS WITH EFFECT FROM 2023-2024

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	2	3	2
CO2	2	3	3	3	2	3	3	2	2	2
CO3	3	3	3	2	3	3	3	2	3	2
CO4	3	3	3	3	3	3	3	2	2	2
CO5	3	2	3	3	3	3	3	2	2	3

3 – Strong, 2 – Medium , 1 – Low

Mapping with Programme Specific Outcomes:

CO /PO	PSO1	PSO2	PSO3	PSO4
CO1	3	3	3	3
CO2	3	3	3	3
CO3	3	3	3	3
CO4	3	3	3	3
CO5	3	3	3	3
Weightage	15	15	15	15
Weighted percentage of Course Contribution to Pos	3.0	3.0	3.0	3.0

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FOUNDATION COURSE: ENGLISH

SYLLABUS WITH EFFECT FROM 2023-2024

SECOND YEAR - SEMESTER IV

PAPER II –GENERAL ENGLISH

Subject Code	Category	L	T	P	S	Credits	Inst. Hours	Marks		
								CIA	External	Total
200L4ZU	Part II	Y	Y	-	-	3	6	25	75	100
Learning Objectives										
LO1	To help learners imbibe goal-setting attitude.									
LO2	To enable them to understand the value of integrity.									
LO3	To help them deal with emotions.									
LO4	To teach the learners to frame sentences using tenses.									
LO5	To enhance reporting skills.									
Unit No.	Unit Title & Text							No. of Periods for the Unit		
I	GOAL SETTING (UNICEF) Life Story 1.1 From Chinese Cinderella – Adeline Yen Mah 1.2 Why I Write - George Orwell Short Essay 1.3 On Personal Mastery – Robin Sharma 1.4 On the Love of Life – William Hazlitt							20		
II	INTEGRITY Short Story 2.1 The Taxi Driver – K.S. Duggal 2.2 Kabuliwala - Rabindranath Tagore 2.3 A Retrieved Reformation – O Henry Extract from a play 2.4 The Quality of Mercy (Trial Scene from the Merchant of Venice - Shakespeare)							20		
III	COPING WITH EMOTIONS Poem 3.1 Pride – Dahlia Ravikovitch 3.2 Phenomenal Woman – Maya Angelou Reader’s Theatre 3.3 The Giant’s Wife A Tall Tale of Ireland – William Carleton 3.4 The Princess and the God : A Tale of Ancient India							20		

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SYLLABUS WITH EFFECT FROM 2023-2024

IV	Language Competency Sentences 4.1 Simple Sentences 4.2 Compound Sentences 4.3 Complex Sentences Direct and Indirect Speech	15
V	Report Writing 5.1 Narrative Report 5.2 Newspaper Report Drafting Speeches 5.3 Welcome Address 5.4 Vote of Thanks	15

Course Outcomes

Course Outcomes	On completion of this course, students will	
CO1	Determine their goals	PO1,PO7
CO2	Identify the value of integrity.	PO1,PO2,PO10
CO3	Deal with emotions.	PO4,PO6,PO9
CO4	Frame grammatically correct sentences	PO4,PO5,PO6
CO5	Write cohesive reports.	PO3,PO8

Text Books (Latest Editions)

1	Oxford Practice Grammar , John Eastwood, Oxford University Press
2	Cambridge Grammar of English , Ronald Carter and Michael McCarthy
3.	George Orwell Essays, Penguin Classics

Web Resources

1	http://www.gradesaver.com/George-orwell-essays/study/summary
2	O' Henry. A Retrieved Reformation. https://americanenglish.state.gov/files/ae/resource_files/a-retrieved-reformation.pdf
3	Maya Angelou. Phenomenal Woman. https://www.poetryfoundation.org/poems/48985/phenomenal-woman
4	The Quality of Mercy, https://poemanalysis.com
5	https://www.oxfordscholarlyeditions.com/display/10.1093/actrade/9780199235742.book.1/actrade-9780199235742-div1-106-William-Hazlitt

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FOUNDATION COURSE: ENGLISH

SYLLABUS WITH EFFECT FROM 2023-2024

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	2	3	2
CO2	2	3	3	3	2	3	3	2	2	2
CO3	3	3	3	2	3	3	3	2	3	2
CO4	3	3	3	3	3	3	3	2	2	2
CO5	3	2	3	3	3	3	3	2	2	3

3 – Strong, 2 – Medium , 1 – Low

Mapping with Programme Specific Outcomes:

CO /PO	PSO1	PSO2	PSO3	PSO4
CO1	3	3	3	3
CO2	3	3	3	3
CO3	3	3	3	3
CO4	3	3	3	3
CO5	3	3	3	3
Weightage	15	15	15	15
Weighted percentage of Course Contribution to Pos	3.0	3.0	3.0	3.0

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Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
236C4A	Immunology and Immunotechnology	Core Course – VII	Y	-	-	-	5	5	25	75	100

Course Objectives

CO1	To gain knowledge about immune system, organs of immunity and cells involved.
CO2	To distinguish the types of antigens and antibodies; their properties.
CO3	To provide in-depth knowledge on immuno-techniques.
CO4	To discuss the role of MHC system in transplantation; functions of Tumor specific antigens.
CO5	To impart knowledge on immunological disorders.

Unit	Details	No.of Hours	Course Objectives
I	Organs and Cells of Immune System: Primary lymphoid organs, secondary lymphoid organs, and lymphoid tissues, T cell - TCR, B cell – BCR, granulocytic cells, antigen presenting cells. Immune Response – Mechanism and Physiology of Immune Response - Innate, Humoral and Cell mediated immunity. Immunohematology.	12	CO1
II	Antigen and Antibody: Antigens – Types, properties and functions, Haptens and Adjuvants. Antibodies - structure, properties and classes. Antigen and Antibody Reactions – precipitation and agglutination, Vaccines – Active and passive immunization and types of vaccines. Other approaches to new vaccines and vaccination schedule.	12	CO2
III	Immunoassay and Immunotechniques - Preparation and standardization of bacterial antigens; Raising of monoclonal and polyclonal antibodies; Purification of antibodies. Immunotechniques – RIA, RAST, ELISA, Immunofluorescence techniques, Flow Cytometry..	12	CO3
IV	Major Histocompatibility Complex (MHC) - MHC Antigens - structure and function; HLA system. Transplantation Immunology - tissue transplantation and grafting; Mechanism of graft acceptance and rejection; HLA typing and Tumor Immunology - tumor specific antigens, immune diagnosis; cancer immune therapy.	12	CO4
V	Immunological disorders and diseases - Hypersensitivity reactions (Type I, II, III and IV). Auto immune disorders and diseases: organ specific and systemic.	12	CO5
	Total	60	

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Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Assess the fundamental concepts of immunity, contributions of the organs and cells in immune responses.	PO1, PO4, PO6, PO9,
CO2	Investigate the structures of Ag and Ab; Immunization.	PO1, PO4, PO5, PO9
CO3	Justify the Immunoassay and Immunotechniques.	PO1, PO4, PO5, PO7
CO4	Explain about the immunologic processes governing graft rejection and therapeutic modalities for immunosuppression in transplantation	PO1, PO3, PO4, PO5, PO9
CO5	Analyze the overreaction by our immune system leading to hypersensitive conditions and its consequences.	PO1, PO4, PO5, PO6
Text Books		
1.	Richard Coico, Geoffrey Sunshine, Eli Benjamini. (2003). Immunology – A Short Course. 5 th Edition., Wiley-Blackwell, New York.	
2.	Judith A.Owen, Jenni Punt, Sharon A. Stranford, Janis Kuby. (2013). Immunology, 7 th Edition., W. H. Freeman and Company, New York.	
3.	Abul K. Abbas, Andrew H. Lichtman, Shiv Pillai. (2021). Cellular and Molecular Immunology, 10 th Edition., Elsevier.	
4.	Robert R. Rich, Thomas A. Fleisher, William T. Shearer, Harry Schroeder, Anthony J. Frew, Cornelia M. Weyand. (2018). Clinical Immunology: Principles and Practice, 5 th Edition. Elsevier.	
5.	Pravash Sen. Gupta. (2003). Clinical Immunology. Oxford University Press.	
References Books		
1	Janeway Travers. (1997). Immunobiology- the immune system in health and disease. Current Biology Ltd. London, New York. 3 rd Edition.	
2	Peter J. Delves, Seamus Martin, Dennis R. Burton, Ivan M. Roitt. (2006). Roitt's Essential Immunology, 11 th Edition., Wiley-Blackwell.	
3	William R Clark. (1991). The Experimental Foundations of Modern Immunology. 3 rd Edition. John Wiley and Sons Inc. New York.	
4	Frank C. Hay, Olwyn M. R. Westwood. (2002). Practical Immunology, 4 th Edition., Wiley-Blackwell.	
5	Noel R. Rose, Herman Friedman, John L. Fahey. (1986). Manual of Clinical Laboratory Immunology. ASM. 3 rd Edition.	
Web Resources		
1	https://www.ncbi.nlm.nih.gov/books/NBK279395/	
2	https://med.stanford.edu/immunol/phd-program/ebook.html	
3	https://ocw.mit.edu/courses/hst-176-cellular-and-molecular-immunology-fall-2005/pages/lecture-notes/	
4	Immunology Overview - Medical Microbiology - NCBI Bookshelf (nih.gov)	
5	Immunology - an overview ScienceDirect Topics	

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 SYLLABUS WITH EFFECT FROM 2023-2024

Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks

Methods of Assessment	
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain
Analyze (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO1	S			M		S			M
CO2	S			M	M				M
CO3	S			S	S		S		
CO4	S		M	S	S				M
CO5	S			S	M	M			

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 SYLLABUS WITH EFFECT FROM 2023-2024

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
236C41	Immunology and Immunotechnology	Core Course –VIII- Practical IV	-	-	Y	-	5	5	40	60	100

Course Objectives

CO1	To gain hands-on knowledge to identify Blood group and typing.
CO2	To acquire adequate skill to perform latex agglutination reactions.
CO3	To analyze precipitation reactions in gels.
CO4	To investigate the antigen & antibody reactions in electrophoresis.
CO5	To familiarize with Separation of Lymphocytes.

Unit	Details	No.of Hours	Course Objectives
I	Identification of blood group and typing. Coomb's test. TPHA	12	CO1
II	T cell identification (Demonstration) Latex Agglutination reactions- RF, ASO, CRP	12	CO2
III	Ouchterlony's Double Diffusion Method (antigen pattern). Single Radial Immuno Diffusion Method.	12	CO3
IV	Electrophoresis - Serum, Counter and Immunoelectrophoresis.	12	CO4
V	Separation of Lymphocytes by density gradient centrifugation method. ELISA: Hepatitis/ HIV	12	CO5
	Total	60	

Course Outcomes

Course Outcomes	On completion of this course, students will;	
CO1	Assess the blood groups and types	PO1,PO5, PO6, PO7, PO8
CO2	Competently perform serological diagnostic tests such as RF, ASO, CRP	PO4, PO5, PO6, PO7, PO8

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CO3	Illustrate the antigen antibody reactions in gel.	PO5, PO6, PO7, PO8, PO9
CO4	Compare & contrast antigens and antibodies in electrophoresis	PO5, PO6, PO7, PO8, PO9
CO5	Examine the concept of ELISA.	PO5, PO6, PO7, PO8, PO9
Text Books		
1.	Talwar. (2006). Hand Book of Practical and Clinical Immunology, Vol. I, 2nd edition, CBS.	
2.	Asim Kumar Roy. (2019). Immunology Theory and Practical, Kalyani Publications.	
3.	Richard Coico, Geoffrey Sunshine, Eli Benjamini. (2003). Immunology – A Short Course. 5 th Edition., Wiley-Blackwell, New York.	
4.	Judith A.Owen, Jenni Punt, Sharon A. Stranford, Janis Kuby. (2013). Immunology, 7 th Edition., W. H. Freeman and Company, New York.	
5.	Pravash Sen. Gupta. (2003). Clinical Immunology. Oxford University Press.	
References Books		
1	Frank C. Hay, Olwyn M. R. Westwood. (2008). Practical Immunology, 4th Edition, Wiley-Blackwell.	
2	Wilmore Webley. (2016). Immunology Lab Manual, LAD Custom Publishing.	
3	Rose. (1992). Manual of Clinical Lab Immunology, ASM.	
4	Janeway Travers. (1997). Immunobiology- the immune system in health and disease. Current Biology Ltd. London, New York. 3 rd Edition.	
5	Peter J. Delves, Seamus Martin, Dennis R. Burton, Ivan M. Roitt. (2006). Roitt's Essential Immunology, 11 th Edition., Wiley-Blackwell.	
Web Resources		
1	https://www.researchgate.net/publication/275045725_Practical_Immunology-A_Laboratory_Manual	
2	https://www.urmc.rochester.edu/MediaLibraries/URMCMedia/labs/frelinger-lab/documents/Immunology-Lab-Manual.pdf	
3	https://webstor.srmist.edu.in/web_assets/downloads/2021/18BTC106J-lab-manual.pdf	
4	Immunology Overview - Medical Microbiology - NCBI Bookshelf (nih.gov)	
5	Immunology - an overview ScienceDirect Topics	

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Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview	
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
Analyze (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO1	M				S	S	S	S	
CO2				S	M	M	S	S	
CO3					M	S	S	S	M
CO4					M	M	S	S	M
CO5					M	M	S	S	M

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Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
236E4A	Food Processing Technology	Elective Generic/ Discipline Specific Elective -IV	Y	-	-	-	3	3	25	75	100

Learning Objectives

CO1	To provide knowledge on objectives of food preservation.		
CO2	To explain the freshness criteria and quality assessment of meat and fish.		
CO3	To outline the methods of milk processing and fermented milk products.		
CO4	To explain the importance of fat and oil processing.		
CO5	To discuss the methods of microbiological examination of foods.		
Unit	Details	No.of Hours	Course Objectives
I	Introduction to Food Preservation – Objectives and techniques of food preservation. Preservation: principles of high temperature, low temperature, radiation, chemical preservatives and bio preservatives.	12	CO1
II	Freshness criteria and quality assessment of meat and fish –spoilage and methods of preservation. Production of byproducts after processing waste and their utilization. Role of packaging material, types of packaging material.	12	CO2
III	Composition of milk, Quality assessment of milk, thermal processing of fluid milk-pasteurization (LTH, HTST&UHT techniques). Fermented milk products-cheese, butter milk, yogurt, kumis, kefir and acidophilus milk. Hygiene and sanitation requirement in food processing and fermentation industries.	12	CO3
IV	Importance of fats and oils in Food-Extraction of fats and Oils- Rendering, pressing, solvent extraction, pressing of oil- degumming, refining, bleaching, deodorization, fractionation, pyrolysis of fats, toxicity of frying oil.	12	CO4
V	Methods for the microbiological examination of foods. Food borne illness and diseases. Microbial cultures for food fermentation. Indian Factories Act on safety, HACCP, Safety from adulteration of food.	12	CO5
	Total	60	

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Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Assess the fundamental concepts of food preservation.	PO1, PO3, PO5, PO6, PO8
CO2	Investigate the quality assessment of meat and fish.	PO1, PO5, PO6, PO7, PO8
CO3	Design the processing of milk and milk quality assessment.	PO1, PO5, PO6, PO7, PO8
CO4	Explain about the importance of fats and oils.	PO1, PO4, PO6, PO7, PO8
CO5	Plan the food safety and adulteration detection.	PO3, PO4, PO6, PO7, PO8
Text Books		
1.	Avantina Sharma. (2006). Text Book of Food Science and Technology, International Book Distributing Co, Lucknow, UP.	
2.	Sivasankar. (2005). Food Processing and Preservation, 3rd Edition., Prentice hall of India Pvt Ltd, New Delhi.	
3	Ramaswamy H & Marcotte M. (2006). Food Processing: Principles & Applications. Taylor & Francis.	
4	NIIR Board of Food and Technologist. (2005). Modern Technology of Food Processing and Agrobased industries, National Institute of Industrial Research, Delhi.	
5	Adams M.R. and Moss M. O (2007). Food Microbiology. New Age International.	
Reference Books		
1	Fellos PJ. (2005). Food Processing Technology: Principle & Practice 2 nd Edition. CRC.	
2	Peter Zeuthen and Leif Bogh-Sorenson. (2005). Food Preservation Techniques, Woodland Publishing Ltd, Cambridge, England. 1	
3	Gustavo V. Barbosa-Canovas, Maria S. Tapia, M. Pilar Cano. (2004). Novel Food Processing Technologies, CRC.	
4	Suman Bhatti, Uma Varma. (1995). Fruit and vegetable processing organizations and institutions, 1 st Edition., CBS Publishing, New Delhi.	
5	Mirdula Mirajkar, Sreelatha Menon. (2002). Food Science and Processing Technology Vol-2, Commercial processing and packaging, Kanishka publishers, New Delhi.	
Web Resources		
1	https://sites.google.com/a/uasd.in/ecourse/food-processing-technology	
2	https://nptel.ac.in/courses/126105015	
3	https://engineeringinterviewquestions.com/biology-notes-on-food-adulteration/	
4	food processing Definition, Purpose, Examples, & Facts Britannica	
5	Food Processing Technology Food News & Views Updated Daily (foodprocessing-technology.com)	

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Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview	
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
Analyze (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO1	M		M		S	M		S	
CO2	M				S	M	S	S	
CO3	M				S	M	S	S	
CO4	M			S		S	S	S	
CO5			M	M		M	S	S	

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Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
236S4A	Vaccine Technology	Skill Enhancement Course SEC -6	Y	-	-	-	2	2	25	75	100
Course Objectives											
CO1	To provide knowledge on the basics of immunization and induction of immunity.										
CO2	To learn the types of vaccines, its immunological effects and regulatory guidelines.										
CO3	To learn the role of rDNA in vaccine technology.										
CO4	To provide the knowledge on conventional to recent technology of vaccine production										
CO5	To learn about ethical issues and regulations in vaccine production and clinical trials										
Unit	Details							No.of Hours	Course Objectives		
I	History of vaccination, Active and passive immunization; requirements for induction of immunity, Epitopes, linear and conformational epitopes, characterization and location of APC, MHC and immunogenicity,							3hrs	CO1		
II	Viral/bacterial/parasite vaccine differences, methods of vaccine preparation – Live, killed, attenuated, sub unit vaccines; Licensed vaccines, Viral Vaccine - Poliovirus vaccine-inactivated & Live, Rabies vaccines, Hepatitis A & B vaccines, Bacterial Vaccine - Anthrax vaccines, Cholera vaccines, Diphtheria toxoid, Parasitic vaccine - Malaria Vaccine.							6	CO2		
III	Vaccine technology- Role and properties of adjuvants, recombinant DNA and protein-based vaccines, plant-based vaccines, reverse vaccinology; Peptide vaccines, conjugate vaccines. Recent advances in Malaria, Tuberculosis, HIV.							5	CO3		
IV	Fundamental research to rational vaccine design. Antigen identification and delivery, T-Cell expression cloning for identification of vaccine targets for intracellular pathogens, Rationale vaccine design based on clinical requirements: Scope of future vaccine strategies.							5	CO4		
V	Vaccine additives and manufacturing residuals, Regulation and testing of vaccines, Regulation of vaccines in developing countries, Quality control and regulations in vaccine research, Animal testing, Rational design to clinical trials, Large scale production, Commercialization. Vaccine safety ethics and Legal issues.							5	CO5		
Total								24			

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Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Explain the significance of critical antigens, immunogens and adjuvants in developing effective vaccines.	PO1,PO10
CO2	Understand the types of vaccines.	PO5
CO3	Construct vaccine applying rDNA technology.	PO7,PO10
CO4	Formulate the strategies for developing an innovative vaccine technology with different mode of vaccine delivery.	PO9,PO10
CO5	Evaluate the regulatory issues and guidelines for the management of vaccine production.	PO3,PO5
Text Books		
1.	Ronald W. Ellis.(2001). New Vaccine Technologies.Landes Bioscience.	
2.	Cheryl Barton. (2009). Advances in Vaccine Technology and Delivery.Espicom Business Intelligence.	
3	Male, David. Ed. (2007). Immunology. 7 th Edition. Mosby Publication.	
4	Kuby, RA Goldsby, Thomas J. Kindt, Barbara, A. Osborne. (2002). Immunology. 6 th Edition, Freeman.	
5	Brostoff J, Seaddin JK, Male D, Roitt IM. (2002). Clinical Immunology. 6 th Edition, Gower Medical Publishing.	
References Books		
1	Stanley A. Plotkin, Walter Orenstein& Paul A. Offit.(2013). Vaccines, 6 th Edition. BMA Medical Book Awards Highly Commended in Public Health. Elsevier Publication.	
2	Coico, R. etal. (2003). Immunology: A Short Course. 5 th Edition, Wiley – Liss.	
3	Parham, Peter.(2005). The Immune System. 2 nd Edition, Garland Science.	
4	Abbas, A.K. etal. (2007). The Cellular and Molecular Immunology. 6 th Edition, Sanders / Elsevier.	
5	Weir, D.M. and Stewart, John (2000). Immunology. 8 th Edition, Churchill Pvt. Ltd.	
Web Resources		
1	https://www.slideshare.net/adamm/bbs/pathogenesis-3-rd-internal-updated-43458567	
2	https://www.bio.fiocruz.br/en/images/stories/pdfs/mpti/2013/selecao/vaccine-processtechnology.pdf	
3	https://www.dcvmn.org/IMG/pdf/ge_healthcare_dcvmn_introduction_to_pd_for_vaccine_production_29256323aa_10mar2017.pdf	
4	https://www.sciencedirect.com/science/article/pii/B9780128021743000059	
5	https://www.researchgate.net/publication/313470959_Vaccine_Scaleup_and_Manufacturing	

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Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand / Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview	
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
Analyse (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	M									M	
CO2					S						
CO3							M			M	
CO4									L	M	
CO5			L		M						

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Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
236S4B	Apiculture	Skill Enhancement Course- Sec – 7	Y	-	-	-	2	2	25	75	100
Course Objectives											
CO1	To understand the biology of honey bees.										
CO2	To study on honey bee colony establishment.										
CO3	To develop knowledge on honey extraction.										
CO4	To understand the diseases of honey bees and their control.										
CO5	To gain information on financial assistance and funding agencies for bee keeping industry.										
Unit	Details								No.of Hours	Course Objectives	
I	Biology of Bees: Honeybee – Systematic position – Species of Honey bees – Life history of Honey bee – behaviour – swarming – Pheromone.								6	CO1	
II	Social life in Bees: Bee colony – Castes – natural colonies and their yield – Types of bee hives – Structure – location, care and management.								6	CO2	
III	Bee Rearing: Apiary – Care and Management – Artificial bee hives – types – construction of spaceframes – Selection of sites – Handling – Maintenance – Instruments employed in Apiary – Extraction instruments.								6	CO3	
IV	Bee Economy: Honey – Composition – uses – Bee wax and its uses – yield in national and international market – Diseases of honey bees and their control methods. Economics of bee culture.								6	CO4	
V	Entrepreneurial Venture – Preparing proposals for financial assistance and funding agencies – Bee Keeping Industry – Recent Efforts, Modern Methods in employing artificial Beehives for cross pollination in horticultural gardens.								6	CO5	
	Total								30		
Course Outcomes											
Course Outcomes	On completion of this course, students will;										
CO1	Understand the systematic position and life history of honey bee.								PO1, PO2, PO10		
CO2	Reveal the different stages and types of bees and discuss about the care and management of apiculture.								PO1, PO2, PO4, PO5		
CO3	Describe the practice of bee rearing process and analyze instruments employed in apiary.								PO2, PO4, PO5, PO10, PO11		
CO4	Compare and contrast the composition of honey and bee wax and interpret the yield in National and International markets.								PO4, PO5, PO7, PO8, PO10		

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CO5	Clarify the proposal for financial assistance and funding agencies and reveal the modern methods employed in artificial bee hives.	PO5, PO8, PO9, PO10, PO11
Text Books		
1.	Dewey M. Caron. (2013). Honey Bee Biology and Beekeeping. Revised Edition. Wicwas Press, Kalamazoo. ISBN 10: 1878075292	
2.	R. A. Morse. (1993). Rearing queen honey bees. Wicwas press, NY. ISBN-10 : 1878075055	
3.	Ted Hooper. (2010). Guide to Bees & Honey: The World's Best Selling Guide to Beekeeping. Northern Bee Books. Oxford. ISBN 10: 1904846513	
4.	Jayashree K. V., Tharadevi C.S. and Arumugam N. (2014) Apiculture. Saras Publication	
5.	Raj H. (2020). Vinesh Text Book of Apiculture. S. Vinesh and Co.	
References Books		
1	Dewey M. Caron. (2020). The Complete Bee Handbook: History, Recipes, Beekeeping Basics, and More, Rockridge Press. ISBN-10 : 1646119878	
2	Joachim Petterson. (2016). Beekeeping: A Handbook on Honey, Hives & Helping the Bees, Weldon Owen.	
3	Eva Crane. (1999). The World History of Beekeeping and Honey Hunting. Routledge. India. ISBN-10 : 0415924677	
4	Pagar B. S. (2016). Textbook Of Apiculture. Sahitya Sagar.	
5	Sehgal P.K. (2018). Text Book of Sericulture, Apiculture and Entomology. Kalayani.	
Web Resources		
1	Bee Keeping Basics. Retrieved from: https://denton.agrilife.org/files/2013/08/beekeeping-basics.pdf	
2	Beekeeping as an Entrepreneurship, Retrieved from: https://lupinepublishers.com/agriculture-journal/pdf/CIACR.MS.ID.000270.pdf	
3	Raising Bumble Bees at Home: A Guide to Getting Started. Retrieved from: https://www.ars.usda.gov/ARSUserFiles/20800500/BumbleBeeRearingGuide.pdf	
4	Apiculture – Biology for Everybody (homeomagnet.com)	
5	Apiculture: Introduction to Apiculture (iasri.res.in)	
Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks

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Methods of Assessment	
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain
Analyze (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	S	S								S	
CO2	S	S		S	S						
CO3		S		S	M					S	S
CO4				S	M		S	S		M	
CO5					S			S	S	S	S

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U.G. DEGREE COURSE

ENVIRONMENTAL STUDIES PROGRAMME

ABILITY ENHANCEMENT COMPULSORY COURSES

(AECC- Environmental Studies)

Syllabus with effect from the academic year 2018-2019

(i.e. for batch of candidates admitted to the course from the academic year 2017-18)

Credits: 2

II Year / III/IV Sem.

Unit 1: Introduction to Environmental Studies

- Multidisciplinary nature of environmental studies;
- Scope and importance; concept of sustainability and sustainable development.

Unit 2 : Ecosystem (2 lectures)

- What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem:
Food chains, food webs and ecological succession, Case studies of the following ecosystem:
 - a) Forest ecosystem
 - b) Grassland ecosystem
 - c) Desert ecosystem
 - d) Aquatic ecosystem (ponds, stream, lakes, rivers, ocean, estuaries)

Unit 3: Natural Resources : Renewable and Non – renewable Resources (6 lectures)

- Land resources and land use change: Land degradation, soil erosion and desertification.
- Deforestation : Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.
- Water : Use and over –exploitation of surface and ground water, floods, droughts, conflicts over water (international and inter-state).
- Energy resources : Renewable and non renewable energy sources, use of alternate energy sources, growing energy needs, case studies.

Unit 4: Biodiversity and Conservation (8 lectures)

- Levels of biological diversity: genetics, species and ecosystem diversity, Biogeographic zones of India: Biodiversity patterns and global biodiversity hot spots
- India as a mega- biodiversity nation, Endangered and endemic species of India.
- Threats to biodiversity: Habitat loss, poaching of wildlife, man- wildlife conflicts, biological invasions; Conservations of biodiversity: In-situ and Ex-situ Conservation of biodiversity.
- Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.

Unit 5: Environmental Pollution (8 lectures)

- Environmental pollution: types, causes, effects and controls: Air, Water, soil and noise Pollution.
- Nuclear hazards and human health risks
- Solid waste management: Control measures of urban and industrial waste
- Pollution case studies.

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Unit 6: Environmental Policies & Practices (8 lecturers)

- Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture
- Environment Laws: Environment Protection Act, Air (Prevention & Control of Pollution) Act; Water (Prevention and Control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act. International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD).
- Nature reserves, tribal populations and rights, and human Wildlife conflicts in Indian context.

Unit 7: Human Communities and the Environment (7 lectures)

- Human population growth, impacts on environment, human health and welfare.
- Resettlement and rehabilitation of projects affected persons; case studies.
- Disaster management: floods, earthquake, cyclone and landslides.
- Environmental movements : Chipko, Silent Valley, Bishnois of Rajasthan.
- Environmental ethics : Role of Indian and other religions and cultures in environmental conservation.
- Environmental communication and public awareness, case studies(e.g. CNG Vehicles in Delhi)

Unit 8 : Field Work (6 lectures)

- Visit to an area to document environmental assets: river / forest/ flora/ fauna etc.
- Visit to a local polluted site – Urban / Rural/ Industrial/ Agricultural.
- Study of common plants, insects, birds and basic principles of identification.
- Study of simple ecosystem- pond, river, Delhi Ridge etc.

(Equal to 5 Lectures)

Suggested Readings:

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.
3. Glesson, B. and Low, N.(eds.)1999. Global Ethics and Environment, London, Routledge.
4. Gleick,P.H.1993.Water Crisis. Pacific Institute for Studies in Dev.,Environment & Security. Stockholm Env.Institute, Oxford Univ.Press.
5. Groom, Martha J., Gary K.Meffe, and Carl Ronald Carroll. Principles of Conservation Biology. Sunderland: Sinauer Associates,2006.
6. Grumbine,R.Edward, and Pandit,M.K2013.Threats from India's Himalayas dams .Science,339:36-37
7. McCully,P.1996.Rivers no more :the environmental effects of dams(pp.29-64).Zed books.
8. McNeill,John R.2000.Something New Under the Sun: An Environmental History of the Twentieth Century.
9. Odum,E.P.,Odum, H.T.& Andrees,J.1971.Fundamental of Ecology. Philadelphia Saunders.
10. Pepper,I.L.,Gerba,C.P & Brusseau,M.L.2011.Environmental and Pollution Science. Academic Press.
11. Rao,M.N.& Datta,A.K1987.Waste Water Treatment. Oxford and IBH Publishing Co.Pvt.Ltd.
12. Raven,P.H.,Hassenzahl,D.M & Berg,L.R.2012 Environment.8th edition. John Willey & sons.

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13. Rosencranz, A., Divan,S.,& Noble, M.L.2001.Environmental law and policy in India. Tirupathi 1992.
14. Sengupta,R.2003.Ecology and Economics: An approach to sustainable development.OUP
15. Singh,J.S.,Singh,S.P and Gupta,S.R.2014.Ecology,Environmental Science and Conservation. S.Chand Publishing, New Delhi.
16. Sodhi,N.S.,Gibson,L.&Raven ,P.H(eds).2013.Conservation Biology :Voices from the Tropics. John Willey & Sons.
17. Thapar,V.1998.Land of the Tiger: A Natural History of the Indian Subcontinent.
18. Warren,C.E.1971.Biology and water Pollution Control. WB Saunders.
19. Willson,E.O.2006. The Creation: An appeal to save life on earth..New York: Norton.
20. World Commission on Environment and Development.1987.Our Common Future. Oxford University Press.



**Dr. MGR-JANAKI COLLEGE
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DEPARTMENT OF MICROBIOLOGY

SHIFT -I

SYLLABUS

FROM 2023-2024

SEMESTER-V

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 SYLLABUS WITH EFFECT FROM 2023-2024

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
336C5A	Bacteriology And Mycology	Core Course IX	Y	-	-	-	4	5	25	75	100
Course Objectives											
CO1	Understand the role of normal flora and pathogenic microbes of various diseases and clinical microbiological techniques.										
CO2	Basic knowledge about Gram positive pathogenic bacteria and their epidemiology										
CO3	Acquire knowledge about Gram negative pathogenic bacteria and nosocomial infections										
CO4	Comprehensive knowledge about medically important, its classification and its significance										
CO5	Gain knowledge about the general characteristics and mode of action of various antibacterial agents										
Unit	Details								No.of Hours	Course Objectives	
I	History, Classification of Medically Important Microbes, Koch's, and River's postulates-A brief account on the normal microbial flora of the healthy human body – Host-pathogen interactions: Definitions of infection, invasion, primary and opportunistic pathogens, pathogenicity, virulence, toxigenicity, carriers, endemic, epidemic, pandemic diseases and epidemiology – putative virulence factors of human pathogens –infectious disease cycle. Collection and transport of clinical specimens for bacterial and fungal infections.								12	CO1	
II	Medically Important Gram Positive infections - Causative agent, clinical symptoms, pathogenesis, mode of transmission, prevention and treatment of the following bacterial diseases (a) Streptococcal infections (<i>Streptococcus pyogenes</i> , <i>Streptococcus faecalis</i>), (b) Staphylococcal infections (<i>Staphylococcus aureus</i>), (c) Tetanus (<i>Clostridium tetani</i>)(d) Diphtheria (<i>Corynebacterium diphtheriae</i>) (e) Anthrax (<i>Bacillus anthracis</i>) (f) Tuberculosis (<i>Mycobacterium tuberculosis</i>), (g) Leprosy (<i>Mycobacterium leprae</i>).								12	CO2	
III	Medically Important Gram-Negative infections - Causative agent, clinical symptoms, pathogenesis, mode of transmission, prevention, and treatment of the following bacterial diseases (a) Meningitis (<i>Streptococcus pneumoniae</i> , <i>Neisseria meningitidis</i>) (b) typhoid (<i>Salmonella typhi</i> , <i>Salmonella paratyphi</i>) (c) cholera (<i>Vibrio cholerae</i>) (d) bacillary dysentery (<i>Shigella dysenteriae</i>); Sexually Transmitted disease (Syphilis– <i>Treponema pallidum</i> . Gonorrhoea - <i>Neisseria gonorrhoeae</i>); Nosocomial infections – definition, importance, and their control (<i>Pseudomonas aeruginosa</i>).								12	CO3	
IV	Medically Important Fungi - Classification of medically important fungi; Superficial mycoses: Pityriasis versicolor; Tinea nigra; Piedra. Cutaneous mycoses: <i>Microsporium</i> spp., <i>Trichophyton</i> spp., and								12	CO4	

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	<i>Epidermophyton floccosum</i> . Subcutaneous mycoses: Chromoblastomycosis; Sporotrichosis; Systemic Mycoses - Blastomycosis; Histoplasmosis; Opportunistic Infections - Candidiasis; Cryptococcosis; Zygomycosis; Mycotoxins: Aflatoxin		
V	Antimicrobial agents -General characteristics and mode of action of Antibacterial agents: Modes of action with an example for each: Inhibitor of nucleic acid synthesis; Inhibitor of cell wall synthesis; Inhibitor of cell membrane function; Inhibitor of protein synthesis; Inhibitor of metabolism. Antifungal agents: Mechanism of action of Amphotericin B, Griseofulvin.	12	CO5
	Total	60	
Course Outcomes			
CO	On completion of this course, students will;		
CO1	Understand the importance of normal flora of human body and acquire knowledge on the process of infectious disease.	PO1, PO3, PO5, PO7, PO10, PO11	
CO2	Explain the various bacterial pathological events during the progression of an infectious disease, and apply the underlying mechanisms of spread of disease and its control.	PO1, PO3, PO5, PO7, PO10, PO11	
CO3	Compile a list of disease-causing bacteria and compare their modes of infection, symptoms, diagnosis and treatment.	PO1, PO3, PO5, PO7, PO10, PO11	
CO4	Comprehend human-fungal interaction, which can be applied to obtain in-depth knowledge on fungal diseases and the mechanism behind the disease process.	PO1, PO3, PO5, PO7, PO10, PO11	
CO5	Explain the types of mycoses caused in humans and categorize the modes of infection, pathogenesis, and treatment with introduction to mycotoxins.	PO1, PO3, PO4, PO5, PO6, PO7, PO9, PO10	
Text Books			
1	Tom Parker, M. Leslie H. Collier. (1990). Topley&Wilson's Principles of Bacteriology, Virology and Immunity, 8 th Edition. London: Edward Arnold.		
2	Greenwood, D., Slack, R.B. and Peutherer, J.F. (2012) Medical Microbiology, 18 th Edition. Churchill Livingstone, London.		
3	Finegold, S.M. (2000) Diagnostic Microbiology, 10 th Edition. C.V. Mosby Company, St. Louis.		
4	Ananthanarayanan, R. and JayaramPanicker C.K. (2020) Text book of Microbiology. Orient Longman, Hyderabad.		
5	JagdishChander (2018). Textbook of Medical Mycology, 4 th edition, Jaypee brothers medical publishers.		
References Books			
1	Gerhardt, P., Murray, R.G., Wood, W.A. and Kreig, N.R. (Editions) (1994) Methods for General and Molecular Bacteriology. ASM Press, Washington, DC.		
2	Kevin Kavanagh, (2018). Fungi Biology and Applications 3 rd Edition. Wiley Blackwell publishers.		
3	C.J. Alexopoulos, C.W. Mims, M. Blackwell, (2007). Introductory Mycology, 4 th edition. Wiley publishers.		

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4	A.J. Salle (2007). Fundamental principles of bacteriology, fourth edition, Tata McGraw-Hill Publications.
5	Christopher C. Kibbler ,Richard Barton,Neil A. R. Gow, Susan Howell,Donna M. MacCallum, Rohini J. Manuel (2017). Oxford Textbook of Medical Mycology. Oxford University Press.

Web Resources

1	http://textbookofbacteriology.net/nd
2	https://microbiologysociety.org/members-outreach-resources/links.html
3	http://mycology.cornell.edu/fteach.html
4	https://www.adelaide.edu.au/mycology/
5	https://www.isham.org/mycology-resources/mycological-links

Methods of Evaluation

Internal Evaluation	Continuous Internal Assessment Tests	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participitation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks

Methods of Assessment

Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions
Understand / Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain
Analyse (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	S		S		S		S			M	S
CO2	S		S		S		S			M	S
CO3	S		S		S		S			M	S
CO4	S		S		S		S			M	S
CO5	S		S	M	S	M	S		S	M	

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 SYLLABUS WITH EFFECT FROM 2023-2024

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
336C5B	Virology And Parasitology	Core Course X	Y	-	-	-	4	5	25	75	100

Course Objectives

CO1	To gain knowledge on properties and classification of viruses and collection of relevant clinical samples for diagnosing viral infections.
CO2	To understand pathogenic microorganisms of viruses and the mechanisms by which they cause disease in the human body.
CO3	To gain knowledge about reemerging viral infections and develop diagnostic skills, including the use and interpretation of laboratory test in the diagnosis of infectious diseases.
CO4	Understand the types of parasites causing infections in the intestine.
CO5	To develop skills in the diagnosis of parasitic infections.

Unit	Details	No.of Hours	Course Objectives
I	General Properties, replication and Classification of viruses (Baltimore classification), Cultivation of viruses- in animals, embryonated eggs and tissue culture, Virus purification assays - collection and transport of clinical specimens for viral infections.	12	CO1
II	Viral diseases with reference to symptoms, pathogenesis, transmission, prophylaxis and control – Arboviruses (Flavi virus), Picorna viruses (Polio virus and Rhinovirus), Hepatitis viruses (HAV, HBV, HCV, HDV, HEV), Rabies virus, Orthomyxoviruses (Influenza virus) and Paramyxoviruses (Mumps and Measles virus), Pox viruses (Variola, Vaccinia), Herpes viruses (Herpes simplex, Varicella zoster), Adeno viruses, Rota viruses and HIV viruses. Oncogenic viruses (Human Papilloma virus): Introduction, characteristics of transformed cells, mechanism of viral oncogenesis and clinical manifestations.	12	CO2
III	Emerging and reemerging viral infections (SARS, Swine flu, Ebola, Dengue, Chikungunya- and Corona) – causes, spread and preventive measures. Detection of viruses in clinical specimens – Serological and Molecular diagnosis of virus infections – Antiviral agents, Interferons and Viral Vaccines, Immunization schedules.	12	CO3
IV	General introduction to Medical Parasitology, Classification of medically important parasites. Morphology, life cycle, pathogenesis, clinical features, laboratory diagnosis, prevention and treatment of diseases caused by the following organisms: <i>Entameoba histolytica</i> , flagellates (<i>Giardia lamblia</i> , <i>Leishmania donovani</i>), Sporozoa- <i>Plasmodium</i> spp.	12	CO4
V	Introduction to Helminthes, Platyhelminthes – <i>Taenia</i> – <i>Fasciola</i> – <i>Paragonimus</i> – <i>Schistosoma</i> spp. Nematelminthes – <i>Ascaris</i> –	12	CO5

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	<i>Ankylostoma – Enterobius – Trichuris – Trichinella – Wuchereria – Dracanculus.</i> Collection, transport and examination of specimen Laboratory techniques in parasitology - Examination of faeces for ova and cyst by direct wet mount and iodine wet mount, Concentration methods (Floatation and Sedimentation techniques), Examination of blood for parasites. Cultivation of parasites.		
	Total	60	
Course Outcomes			
Course Outcomes	On completion of this course, students will;		
CO1	Understand the structure and properties of viruses, cultivation methods and diagnosis of viral diseases.	PO5,PO10	
CO2	Knowledge of basic and general concepts of causation of disease by the pathogenic microorganisms and various parameters of assessment of their severity and the methods of diagnosis.	PO5,PO10	
CO3	Insights to treatment options of viral diseases.	PO5,PO10	
CO4	Knowledge about the importance of protozoans in the intestine.	PO5,PO10	
CO5	Knowledge of Nematodes as infectious agent	PO5,PO10	
TEXT BOOKS			
1.	S., Rajan(2007). Medical microbiology, MJP publisher.		
2.	JeyaramPaniker, C.K. (2006). Text Book of Parasitology Jay Pee Brothers,NewDelhi.		
3	AroraD.R. and AroraB. (2002). Medical Parasitology, 1 st Edition CBS Publishers & Distributors, New Delhi.		
4	Chatterjee (1986). Medical Parasitology. Tata McGraw Hill, Calcutta.		
5	Parija S. C. (1996). Text Book of Medical Parasitology.4th edition, Orient Longman, AllIndia Publishers & Distributors.		
References Books			
1	Jawetz, E., Melnick, J.L. and Adelberg, E.A. (2000). Review of Medical Microbiology, 19 th Edition. Lange Medical Publications, U.S.A.		
2	Ananthanarayan, R. and JeyaramPaniker, C.K. (2009). Text Book of Microbiology, 8 th Edition. Orient Longman, Chennai .		
3	Conrat HF, Kimball PC and Levy JA. (1988). Virology. II edition. Prentice Hall, Englewood Cliff, New Jersey..		
4	Topley& Wilsons’s (1990). Principles of Bacteriology, Virology and Immunity, 8 th Edition, Vol. III Bacterial Diseases, Edward Arnold, London.		
5	Finegold, S.M. (2000). Diagnostic Microbiology, 10 th Edition. C.V. Mosby Company,St.Louis.		
Web Resources			
1	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4047123/		
2	https://www.ncbi.nlm.nih.gov/pubmed/21722309		
3	https://www.sciencedirect.com/science/article/pii/S2211753919300193		
4	https://cmr.asm.org/content/30/3/811		
5	https://www.nejm.org/doi/full/10.1056/NEJMoa1811400		

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Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks

Methods of Assessment	
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions
Understand / Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain
Analyse (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1					M					M	
CO2					M					M	
CO3					M					M	
CO4					M					M	
CO5					M					M	

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Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
336C51	Practical V- Medical Microbiology	Core Course XI	Y	-	-	-	4	5	40	60	100

Course Objectives			
CO1	Learning Objectives To familiarize students with medical microbiology techniques and technical knowledge on collection and processing of clinical samples.		
CO2	To learn the techniques for isolation and identification of bacterial pathogens.		
CO3	To gain expertise in various techniques of clinically important viral pathogens and their identification.		
CO4	To get acquainted with medically important fungi and their metabolism.		
CO5	To categorize parasites and understand their role in infections.		
Unit	Details	No. of Hours	Course Objectives
I	1. Collection and Transport of Clinical specimens. 2. Simple, Differential and Special staining of Clinical materials. 3. Culture techniques used to isolate microorganisms.	12	CO1
II	4. Identification of bacterial pathogens by their biochemical reactions. 5. Antimicrobial susceptibility testing by disc-diffusion technique and determination of Minimum Inhibitory Concentration.	12	CO2
III	6. Isolation of Bacteriophages from Sewage and other natural sources. 7. Identification of Viruses in Slides/Smears/Spotters. Demonstration of Negri bodies (Staining). 8. Cultivation of Viruses in Embryonated eggs – Amniotic, Allantoic, Yolk sac routes and Chorio-allantoic membrane.	12	CO3
IV	9. Microscopic identification of medically important Fungi – KOH and Lactophenol cotton Blue staining. 10. Slide culture techniques for fungal Identification 11. Identification of Dermatophytes. 12. Germ tube test, Carbohydrate fermentation and assimilation tests for Yeasts.	12	CO4
V	13. Direct Examination of Faeces – wet mount and Iodine mount – Demonstration of Protozoan cysts and Helminthes eggs. 14. Concentration techniques of stool specimen – Flootation and Sedimentation methods. 15. Examination of blood for Malarial parasites – thin and thick	12	CO5

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	smear preparations. 16. Identification of Medically important parasites in slides / specimens as spotters.		
	Total	60	
Course Outcomes			
Course Outcomes	On completion of this course, students will;		
CO1	Demonstrate methods to observe and measure microorganisms by standard microbiological techniques	PO4, PO5, PO7.	
CO2	Identify pathogenic microorganisms in the laboratory set-up and interpret their sensitivity towards commonly administered antibiotics.	PO4, PO5, PO7, PO8.	
CO3	Understand experimental tools used to cultivate and characterize clinically important viruses and bacteriophages	PO4, PO5, PO7, PO8.	
CO4	Elucidate clinically important fungi.	PO4, PO5, PO7, PO8.	
CO5	Investigate Parasites of medical importance and identify them from clinical specimens.	PO4, PO5, PO7, PO8.	
Text Books			
1.	Dubey, R.C. and Maheswari, D.K. (2020). S. Chand Publishers. ISBN-13: 978-8121921534, ISBN-10: 8121921538.		
2.	K.R. Aneja (2017). Experiments in Microbiology, Plant Pathology, Tissue Culture and Microbial Biotechnology. 5 th Edition. New Age International Publishers. ISBN-10: 9386418304, ISBN-13: 978-9386418302.		
3	Collee, J.G., Fraser, A.G., Marnion, B.P. and Simmons, A. (1996). Mackie & McCartney Practical Medical Microbiology. 14 th Edition. Elsevier. ISBN-10: 813120393X, ISBN-13: 978-8131203934.		
4	Prince CP (2009). Practical Manual of Medical Microbiology, 1st edition, Jaypee digital publishing.		
5	James H. Jorgensen, Karen C. Carroll, Guido Funke, Michael A. Pfaller, Marie Louise Landry, Sandra S. Richter, David W. Warnock (2015). Manual of Clinical Microbiology, 11th Edition, ASM press		
References Books			
1	Patricia M. Tille (2021). Bailey & Scott's Diagnostic Microbiology, 15 th Edition. Elsevier. ISBN-10: 0323681050, ISBN-13: 978-0323681056.		
2	Monica Cheesbrough (2006). District Laboratory Practice in Tropical Countries. Part 1. 2 nd Edition. Cambridge University Press. ISBN-10: 0521171571, ISBN-13: 978-0521171571.		
3	Michael A. Pfaller (ed.) (2015). Manual of Clinical Microbiology. Vol. 1 and 2. 11 th Edition. ASM Press. ISBN-10: 9781555817374, ISBN-13: 978-1555817374.		
4	Josephine A. Morello, Paul A. Granato and Helen EckelMizer (2002). Laboratory Manual and Workbook in Microbiology. 7 th Edition. The McGraw Hill Company. ISBN: 0-07-246354-6.		
5	Rowland, S.S., Walsh, S.R., Teel, L.D. and Carnahan, A.M. ((1994). Pathogenic and Clinical Microbiology: A Laboratory Manual. Lippincott Williams & Wilkins. ISBN-10:		

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0316760498, ISBN-13: 9780316760492.		
Web Resources		
1	https://www.microcarelab.in/media/microcarelab.in/files/Sample-Collection-Manual.pdf	
2	http://ssu.ac.ir/cms/fileadmin/user_upload/Daneshkadaha/pezeshki/microb/file_amuzeshi/Lab_QA_Microbiology_QA.pdf	
3	https://www.academia.edu/11977315/Basic_Laboratory_Procedures_in_Clinical_Bacteriology	
4	https://cmr.asm.org/content/31/3/e00062-17.full.pdf	
5	https://microbiologyinfo.com/techniques-of-virus-cultivation/	
Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview	
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
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Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1				S	M		S				
CO2				S	S		S	L			
CO3				S	S		S	L			
CO4				S	S		S	L			
CO5				S	S		S	L			

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Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
336C52	Group Project	Project with Viva-Voce CC-XII	-	-	-	-	4	5	40	60	100

Group projects enable students to get hands-on training in microbiological techniques needed for research. Thus the students can share diverse perspectives resulting in pooling of knowledge and skills. Group work may approach tasks and solve problems in novel, interesting ways, thereby converting established theoretical concepts to practical skills. If structured properly, it will promote team work and collaboration. Group projects also will help students to choose a research design, solve real life problems and benefit the society at large. Thus group project facilitates the students to convert ideas to practice thereby creating a research culture among students.

Guidelines for group project:

A research problem need to be selected based on creative ability and scientific thought.

A brief description of the problem needs to be given.

Hypothesis statement should be framed.

Objectives by which the project work is to be carried out should be clearly stated.

Methodology has to be designed to test the hypothesis.

Results obtained need to be replicable.

Documented report has to be submitted on completion of the project.

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Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
336E5A	Recombinant DNA Technology	Elective Generic/ Discipline Specific Elective- V	Y		-	-	3	4	25	75	100

Course Objectives

CO1	Understand the principles of rDNA technology.
CO2	Illustrate the molecular tools employed in gene cloning.
CO3	Discuss the importance of various molecular techniques and their importance in Biotechnology.
CO4	Acquire knowledge about the concepts of tissue culture methods and transgenic organisms.
CO5	Examine recent trends in genetic engineering and its application in human welfare.

Unit	Details	No. of Hours	Course Objectives
I	Milestones in rDNA Technology-Gene manipulation-Steps involved in Gene Cloning. Isolation of Chromosomal and Plasmid DNA. Restriction endonuclease - Discovery, Types, Mode of action-Application of Ligase, DNA Polymerase, DNA Modifying enzymes and Topoisomerases. Uses of Linkers and Adapters.	12	CO1
II	Artificial Gene Transfer methods- Calcium Chloride Induction, Electroporation, Microinjection, Biolistic method, Liposome and Viral-mediated delivery. Cloning vectors –Properties and Applications - Plasmid Based Vectors- Natural Vectors-pSC101 and pMB1.Artificial Vectors-pBR322 and pUC. Phage Based Vectors- Lambda phage. Hybrid Vectors, Phagemid, Cosmid, BAC and YAC. Screening of Recombinants. Genomic DNA and cDNA library-Construction and Screening.	12	CO2
III	Molecular Tools- PCR- Types. Gel Electrophoresis- AGE and PAGE Blotting Techniques - Southern, Western & Northern. DNA sequencing methods - Sanger’s and Automated method. Recent trends in Genetic Engineering- Targeted Genome Editing- ZFNs, TALENs, CRISPRs. GeneTargeting-Knock-in &Knock-outs. DNA Finger printing,	12	CO3
IV	Plant Biotechnology – Media, Growth regulators and Equipment for plant tissue culture-Explant Culture- Micropropagation- Callus and Protoplast Culture-Production of Bio-active secondary metabolites by plant Tissue Culture - <i>Agrobacterium</i> and Crown Gall Tumors, Ti Plasmid and Ri Plasmid – Animal Biotechnology-Principles of Animal Cell Culture, Media and Equipment for Animal Cell Culture – Primary and Secondary Cultures- Cell Lines- Types, Establishment and Maintenance of Cell Lines.	12	CO4
V	Applications of Genetic Engineering - Transgenic Animals – Mice and Sheep-Recombinant Cytokines and their use in the Treatment of Animal infections- Monoclonal Antibodies in Therapy- Vaccines and their Applications in Animal Infections - Human Gene Therapy-Germline and Somatic Cell Therapy - <i>Ex-vivo</i> Gene Therapy-SCID (Severe Combined	12	CO5

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	Immuno Deficiency) – <i>In-vivo</i> Gene Therapy- CFTR (Cystic Fibrosis Transmembrane Regulator) – Vectors in Gene Therapy-Viral and Non-Viral Vectors. Transgenic Plants– Bt Cotton, Bt Corn, Round Ready soybean, Flavr Savr Tomato and Golden Rice.		
	Total	60	
Course Outcomes			
Course Outcomes	On completion of this course, students will;		
CO1	Illustrate the steps involved in introduction and expression of foreign DNA into bacteria, animal and plants cells and their screening.	PO4, PO6, PO7, PO9	
CO2	Discuss the various cloning vectors and their applications.	PO4, PO6, PO7, PO9	
CO3	Assess the usage and advantages of molecular tools.	PO4, PO6, PO7, PO9	
CO4	Explain plant and animal tissue culture protocols and gene transfer mechanism.	PO4, PO6, PO7, PO9	
CO5	Elucidate and understand the application of genetic engineering and gene therapy.	PO4, PO6, PO7, PO9	
Text Books			
1.	Brown T.A.(2016). Gene Cloning and DNA Analysis. 7 th Edition . John Wiley and Jones, Ltd.		
2.	Dale J. W., Schantz M.V. and Plant N. (2012). From Gene to Genomes – Concepts and Applications of DNA Technology. 3 rd Edition. John Wileys and Sons Ltd.		
3.	Keya Chaudhuri (2013). Recombinant DNA technology. The Energy and Resources Institute		
4.	Siddra Ijaz, Imran UIHaq (2019). Recombinant DNA Technology. Cambridge Scholars Publishing.		
5.	Monika Jain (2012). Recombinant DNA Techniques: A Textbook, I Edition, Alpha Science International Ltd		
References Books			
1.	Maloy S. R., Cronan J.E. Jr. and Freifelder D.(2011). Microbial Genetics. 2 nd Edition. Narosa Publishing Home Pvt Ltd.		
2.	Glick B. R. and Patten C.L.(2018). Molecular Biotechnology – Principles and Applications of Recombinant DNA. 5 th Edition. ASM Press.		
3.	Russell P.J. (2010). iGenetics - A Molecular Approach, 3 rd Edition. Pearson New International Edition.		
4.	Synder L., Peters J. E., Henkin T.M. and Champness W. (2013). Molecular Genetics of Bacteria, 4 th Edition. ASM Press Washington-D.C. ASM Press.		
5.	James D.Watson, Michael Gilman, Jan Witkowski, Mark Zoller (1992). Recombinant DNA. Scientific American Books		

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Web Resources		
1	https://www.britannica.com/recombinant-DNA-technology	
2	https://www.byjus.com/recombinant-dna-technology	
3	https://www.rpi.edu	
4	https://www.ncbi.nlm.nih.gov	
5	https://www.le.ac.uk/recombinant-dna-and-genetic-techniques	
Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand / Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview	
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
Analyse (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1				S	L	S	S	M	S		
CO2				S	L	S	S	M	S		
CO3				S	L	S	S	M	S		
CO4				S	L	S	S	M	S		
CO5				S	L	S	S	M	S		

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Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
336E5B	Biosafety & Bioethics	Core Elective VI	Y	-	-	-	3	4	25	75	100
Course Objectives											
CO1	To create a research environment - encourage investigation, analysis and studying the bioethical principles, values, concepts, and social and juridical implications contained in the Universal Declaration on Bioethics and Human										
CO2	Rights in order to assist their application and promotion in the areas of science, biotechnology and medicine.										
CO3	To discuss about various aspects of biosafety regulations, IPR and bioethics concerns arising from the commercialization of biotech products.										
CO4	To introduce fundamental aspects of Intellectual property Rights to students who are going to play a major role in development and management of innovative projects in industries.										
CO5	To understand the importance of IPR, Patents and Patent laws.										
Unit	Details							No.of Hours	Course Objectives		
I	Basics of Biosafety - Laboratory Hazards and Hazard symbols. Definitions on Biohazard, Biosafety and Biosecurity- Biohazard-LAI, BP. Biohazard Classification. Biological Risk Groups. Need and application of biosafety. Good Laboratory Practices (GLP), Good Manufacturing Practices (GMP).							12	CO1		
II	Hazardous materials in Biotechnology - Categories of Waste in the Biotechnology Laboratories, Biohazardous waste and their disposal and treatments- issues in use of GMO's, risk for animal/human/ agriculture and environment owing to GMO. Hazardous materials, Emergency response/ First aids in Laboratories.							12	CO2		
III	Biological Safety Containment in Laboratory - Primary and secondary containments - Physical and biological containment. Types of biosafety containments (level I, II, III), PPE, Biosafety guidelines in India - Roles of Institutional Biosafety Committee, RCGM, GEAC.							12	CO3		
IV	Introduction and need of Bioethics - its relationship with other branches, Ethical implications of biotechnological products and techniques. Ethical Issues involving human cloning, human genome project, prenatal diagnosis, agriculture and animal rights, Social and ethical implications of biological weapons.							12	CO4		
V	IPR, Patents and Patent laws - Intellectual property rights-TRIP-GATT International conventions patents, Methods of application of patents, Legal implications. Biodiversity and farmer rights, Objectives of the patent system, Basic principles and general requirements of patent law, Biotechnological inventions, and patent							12	CO5		

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	law. Legal development-Patentable subjects and protection in biotechnology. The patenting of living organisms.		
	Total	60	
Course Outcomes			
CO	On completion of this course, students will;		
CO1	Understand the control measures of laboratory hazards (chemical, biological and physical) and to practice safety strategies and personal protective equipment	PO1, PO2, PO3, PO7, PO10	
CO2	Develop stratagems for the use of genetically modified organisms and Hazardous materials	PO1, PO3, PO4	
CO3	Develop skills of critical ethical analysis of contemporary moral problems in medicine and health care.	PO1, PO6	
CO4	Analyze and respond to the comments of other students regarding philosophical issues.	PO3, PO4	
CO5	Pave the way for the students to catch up Intellectual Property(IP) as a career option a. R&D IP Counsel b. Government Jobs – Patent Examiner c. Private Jobs d. Patent agent and Trademark agent e. Entrepreneur	PO1, PO7, PO10	
Text Books			
1.	Usharani .B, S Anbazhagi, C K Vidya, (2019). Biosafety in Microbiological Laboratories- 1 st Edition, Notion Press, ISBN-101645878856		
2.	Sateesh.M.K.,(2009). Bioethics and Biosafety- 1 st Edition, J. K International Publishing House Pvt. Ltd: Delhi, ISBN :9788190675703		
3	DeepaGoel and ShominiParashar, (2013). IPR, Biosaftey and Bioethics- 1 st Edition, Pearson education: Chennai, ISBN-13: 978-8131774700		
4	Rajmohan Joshi (2006). Biosafety and Bioethics. Gyan Books publisher.		
5	Sateesh. M.K. (2013). Bioethics and Biosafety. i.K. International pvt,Ltd.		
References Books			
1	Nithyananda, K V. (2019). Intellectual Property Rights: Protection and Management, India, IN: Cengage Learning India Private Limited, ISBN-10: 9386668572		
2	Neeraj, P., &Khusdeep, D. (2014). Intellectual Property Rights, India, IN: PHI learning Private Limited, ISBN : 9788120349896		
3	Ahuja, V K. (2017). Law relating to Intellectual Property Rights, India, IN: Lexis Nexis, ISBN-10: 8131251659.		
4	Edited by Sylvia Uzochukwu, Nwadiuto (Diuto) Esiobu, Arinze Stanley Okoli, Emeka Godfrey Nwoba, EzebuiroNwagboChristpeace, Charles OluwaseunAdetunji, Abdulrazak B. Ibrahim, Benjamin Ewa Ubi (2022). Biosafety and Bioethics in Biotechnology-Policy, Advocacy, and Capacity Building,1st edition. CRC Press		
5	Sree Krishna. V (2007). Bioethics and Biosafety in Biotechnology. New age international publishers.		

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Web Resources		
1	Subramanian, N., &Sundararaman, M. (2018). Intellectual Property Rights – An Overview. Retrieved from http://www.bdu.ac.in/cells/ipr/docs/ipr-eng-ebook.pdf .	
2	World Intellectual Property Organisation. (2004). WIPO Intellectual propertyHandbook. Retrieved from https://www.wipo.int/edocs/pubdocs/en/intproperty/489/wipo_pub_489.pdf .	
3	https://www.niehs.nih.gov/bioethics	
4	https://www.sist.sathyabama.ac.in	
5	https://www.longdom.org/bioethics-and-biosafety	
Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks

Methods of Assessment	
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions
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Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	S	S	S				M			M	
CO2	S		S	S							
CO3	S					S					
CO4			S	S							
CO5	S						M			S	

UNIVERSITY OF MADRAS
U.G. DEGREE COURSE

PART – IV - VALUE EDUCATION

Common for all U.G. & Five Year Integrated Courses
(Effective from the Academic Year 2012 – 2013)

SYLLABUS

CREDITS: 2

III YEAR / V SEM

Objective: Value are socially accepted norms to evaluate objects, persons and situations that form part and parcel of sociality. A value system is a set of consistent values and measures. Knowledge of the values are inculcated through education. It contributes in forming true human being, who are able to face life and make it meaningful. There are different kinds of values like, ethical or moral values, doctrinal or ideological values, social values and aesthetic values. Values can be defined as broad preferences concerning appropriate courses of action or outcomes. As such, values reflect a person's sense of right and wrong or what "ought" to be. There are representative values like, "Equal rights for all", "Excellence deserves admiration". "People should be treated with respect and dignity". Values tend to influence attitudes and behavior and help to solve common human problems. Values are related to the norms of a culture.

UNIT I: Value education-its purpose and significance in the present world – Value system – The role of culture and civilization – Holistic living – balancing the outer and inner – Body, Mind and Intellectual level – Duties and responsibilities.

UNIT II: Salient values for life – Truth, commitment, honesty and integrity, forgiveness and love, empathy and ability to sacrifice, care, unity, and inclusiveness, Self esteem and self confidence, punctuality – Time, task and resource management – Problem solving and decision making skills – Interpersonal and Intra personal relationship – Team work – Positive and creative thinking.

UNIT III: Human Rights – Universal Declaration of Human Rights – Human Rights violations – National Integration – Peace and non-violence – Dr.A P J Kalam's ten points for enlightened citizenship – Social Values and Welfare of the citizen – The role of media in value building.

UNIT IV: Environment and Ecological balance – interdependence of all beings – living and non-living. The binding of man and nature – Environment conservation and enrichment.

UNIT V: Social Evils – Corruption, Cyber crime, Terrorism – Alcoholism, Drug addiction – Dowry – Domestic violence – untouchability – female infanticide – atrocities against women – How to tackle them.

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Books for Reference :

1. M.G. Chitakra: Education and Human Values, A.P.H. Publishing Corporation, New Delhi, 2003.
2. Chakravarthy, S.K: Values and ethics for Organizations: Theory and Practice, Oxford University Press, New Delhi, 1999.
3. Satchidananda, M.K: Ethics, Education, Indian Unity and Culture, Ajantha Publications, Delhi, 1991.
4. Das, M.S. & Gupta, V.K.: Social Values among Young adults: A changing Scenario, M.D. Publications, New Delhi, 1995.
5. Bandiste, D.D.: Humanist Values: A Source Book, B.R. Publishing Corporation, Delhi, 1999.
6. Ruhela, S.P.: Human Values and education, Sterling Publications, New Delhi, 1986.
7. Kaul, G.N.: Values and Education in Independent Indian, Associated Publishers, Mumbai, 1975.
8. NCERT, Education in Values, New Delhi, 1992.
9. Swami Budhananda (1983) How to Build Character A Primer : Rmakrishna Mission, New Delhi.
10. A Culture Heritage of India (4 Vols.), Bharatiya Vidya Bhuvan, Bombay, (Selected Chapters only)
11. For Life, For the future : Reserves and Remains – UNESCO Publication.
12. Values, A Vedanta Kesari Presentation, Sri Ramakrishna Math, Chennai, 1996.
13. Swami Vivekananda, Youth and Modern India, Ramakrishna Mission, Chennai.
14. Swami Vivekananda, Call to the Youth for Nation Building, Advaita Ashrama, Calcutta.
15. Awakening Indians to India, Chinmayananda Mission, 2003.



**Dr. MGR-JANAKI COLLEGE
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Accredited with 'A' Grade by NAAC

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**INTERNSHIP /INDUSTRIAL VISIT
FIELD VISIT**

COURSE CODE: 336V5B

FROM 2023-2024

SEMESTER-V



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DEPARTMENT OF MICROBIOLOGY

SHIFT -I

SYLLABUS

FROM 2023-2024

SEMESTER-VI

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 SYLLABUS WITH EFFECT FROM 2023-2024

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
336C6A	Environmental And Agriculture Microbiology	Core Course – XIII	Y	-	-	-	4	6	25	75	100

Course Objectives

CO1	To discuss the distribution and association of microorganism in various ecosystems and to know about the role of microorganism in water pollution and water quality.										
CO2	To acquire knowledge about the role of microorganism in water pollution and water quality										
CO3	Gain knowledge about microbes as biofertilizers and the aspects of application.										
CO4	To learn about the process of solid waste management and sewage water treatment.										
CO5	Gain knowledge on various plant diseases and pathogens										
Unit	Details								No. of Hours	Course Objectives	
I	Microorganisms and their Habitats: Structure and function of ecosystems Terrestrial Environment: Soil profile and soil microflora, Microbial succession in decomposition of soil organic matter. Role of microorganisms in elemental cycles in nature: Carbon, Nitrogen. Aquatic Environment: Microflora of fresh water and marine habitats, factors influencing microbial growth in the aquatic environments. Atmosphere: Aeromicroflora and dispersal of microbes, Assessment of air quality, Enumeration of microorganism in air, Air sanitation. Extreme Habitats: Extremophiles: Microbes thriving at high & low temperatures, pH, high hydrostatic & osmotic pressures, salinity, & low nutrient levels. Predisposing factors for Environmental diseases – infectious (water and air borne) and pollution related, spread and control of these diseases. Environmental Protection Agency (EPA) - role in environmental protection.								12	CO1	
II	Water potability: Sources and types of water surface, ground, stored, distilled, mineral and de-mineralized water and their pollution, biological indicators of water Pollution, Eutrophication. Conventional Bacteriological standards of Water Quality, MPN index, coliform test, Membrane filtration. BOD, COD. Advanced molecular methods for water analysis. Water borne diseases. Central Pollution Control Board (CPCB) standards.								11	CO2	

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III	Microbial Interactions: Rhizosphere microflora. Concepts of Nitrogen fixation – Symbiotic and asymbiotic nitrogen fixers. Brief account of microbial interactions: Symbiosis, neutralism, commensalism, competition, Ammensalism, Synergism, parasitism, and predation. General account and Significance of Biofertilizers and biocontrol agents – Bacterial, cyanobacterial, VAM. Mass production of Rhizobial biofertilizer. Biocontrol agents – Bacterial, viral, fungal.	12	CO3
IV	Waste treatment and bioremediation: Solid waste management: Sources and types of solid waste, composting, vermicomposting, production of biogas. Liquid waste management: Primary, secondary, and tertiary sewage treatment. Bioremediation and waste management: Need and scope of bioremediation. Degradation of hydrocarbons, oil spills, heavy metals – Chromium, lead, and xenobiotics – PCB.	15	CO4
V	Plant pathology: Mode of entry of pathogens, Microbial enzymes, toxins, growth regulators and suppressor of plant defense in plant diseases. Plant defense mechanisms. Bacterial diseases – Citrus canker, Blight of paddy. Viral disease – TMV, CMV. Fungal disease- red rot of sugarcane, Tikka disease. Plant disease management.	10	CO5
	Total	60	

Course Outcomes

Course Outcomes	On completion of this course, students will;		
CO1	Describe about the structure and function of ecosystems and understand the role of microbes in various environments	PO1	
CO2	Identify the cause of water pollution, and perform methods to assess the quality of water.	PO4,PO5,PO6,PO7, PO8	
CO3	Explain the production of biofertilizers and biopesticides.	PO1, PO7,PO8	
CO4	Explain about waste treatment process and microbial decomposition and bio-remediation process.	PO6	
CO5	Describe about plant diseases caused by microbes and acquire a clear idea on plant pathogenic interaction	PO1,PO5	

Text Books

1.	Joseph C. Daniel. (2006). Environmental aspects of Microbiology 2 nd Edition. BrightSun Publications.
2.	Pradipta. K.M. (2008). Textbook of Environmental Microbiology. I.K. Publishing. House.
3.	Ramanathan, and Muthukaruppan SM. (2005). Environmental Microbiology. OmSakthi Pathipagam, Annamalai Nagar.
4.	K. Vijaya Ramesh. (2004). Environmental Microbiology. 1 st Edition. MJP Publishers.
5.	SubbaRao. N.S. (2017). Soil Microbiology. 4 th Edition. Oxford and IBH Publishing Pvt. Ltd.

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References Books		
1	Dirk, J. Elsas, V., Trevors, J.T., Wellington, E.M.H. (1997). Modern Soil Microbiology, Marcel Dekker INC, New York, Hong Kong.	
2	EcEldowney S, Hardman D.J., Waite D.J., Waite S.(1993). Pollution: Ecology and Biotreatment – Longman Scientific Technical.	
3	Mitchel, R.(1992). Environmental Microbiology. Wiley –John Wiley and Sons. Inc. Publications, New York.	
4	Clescri, L.S., Greenberg, A.E. and Eaton, A.D.(1998). Standard Methods for Examination of Water and Wastewater, 20 th Edition. American Public Health Association.	
5	Atlas, R.M. and Bartha, R.(1992). Microbial Ecology: Fundamentals and Applications, 2 nd Edition. The Benjamin / Cummings Publishing Co., Redwood City, CA.	
Web Resources		
1	https://nptel.ac.in/courses/126105016	
2	https://www.classcentral.com/course/swayam-plant-pathology-and-soil-health-14236	
3	https://www.wasteonline.org.uk/resources/InformationSheets/WasteDisposal.htm	
4	https://plantpath.cornell.edu/labs/enelson/PDFs/Hill_et_al_2000.pdf	
5	https://onlinelibrary.wiley.com/doi/full/10.1111/j.1365-2389.2005.00781.x	
Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks
Methods of Assessment		
Recall (KI)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand / Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview	
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
Analyse (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	S										
CO2				M	S	S	S	S			
CO3	S						S	S			
CO4						S					
CO5	M				M						

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Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
336C6B	Food, Dairy and Probiotic Microbiology	Core Course – XIV	Y	-	-	-	4	6	25	75	100
Course Objectives											
CO1	To impart current knowledge of basic and applied microbiological aspects of fluid milks and dairy products for improved quality and food safety.										
CO2	Gives an insight into various types of food borne diseases and their prevention										
CO3	To gain information about microflora of milk										
CO4	To study about the production of fermented dairy products										
CO5	To impart current knowledge of probiotics, prebiotics and functional dairy foods for the health benefits To create a sustainable environmentally and technologically advanced dairy farm										
UNIT	Details								No.of Hours	Course Objectives	
I	Food as a substrate for microorganisms - Microorganisms important in Food Microbiology; Molds, yeasts and bacteria -General Characteristics - Classification and importance. Principles of food preservation - Asepsis - Removal of microorganisms, - High temperature - Low temperature - Drying - Food additives. Nanoscience in food preservation; microencapsulation.								12	CO1	
II	Contamination and spoilage of food products - Food borne infections (<i>Bacillus cereus</i> , <i>Salmonella</i> sp., <i>Shigella</i> sp., <i>Listeria monocytogenes</i> and <i>Campylobacter jejuni</i>) and intoxications – (<i>Staphylococcus aureus</i> , <i>Clostridium botulinum</i> , <i>Clostridium perfringens</i> and mycotoxins) Food borne disease outbreaks - newly emerging pathogens. Conventional and Novel technology in control of food borne pathogens and preventive measures - Food sanitation - plant sanitation - Employees' health standards. Regulatory Agencies & criteria for food safety.								15	CO2	
III	Microflora of raw milk - sources of contamination. Spoilage and preservation of milk and milk products. -antimicrobial systems in raw milk. Importance of biofilms, their role in transmission of pathogens in dairy products and preventive strategies.								15	CO3	
IV	Food fermentations: Indian pickles, bread, vinegar, fermented vegetables (Sauerkraut), fermented dairy products (Yoghurt, Cheese, Acidophilus milk, Kefir, Koumiss). Oriental fermented foods-Miso – Tempeh, Ontjom, Natto and Idli. Spoilage and defects of fermented dairy products - Functional fermented foods and nutraceuticals, Bioactive proteins and bioactive peptides, Genetically modified foods.								15	CO4	

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V	Probiotic microorganisms, concept, definition, safety of probiotic microorganisms, legal status of probiotics, Characteristics of Probiotics for selection: stability maintenance of probiotic microorganisms. Role of probiotics in health and disease: Mechanism of probiotics. Application of bacteriocins in foods. Biopreservation. Prebiotics: concept, definition, criteria, types and sources of prebiotics, prebiotics and gut microflora - Prebiotics and health benefits: mineral absorption, immune response, cancer prevention, elderly health and infant health, prebiotics in foods.	15	CO5
Total		72	
Course Outcomes			
Course Outcomes	On completion of this course, students will;		
CO1	Gain knowledge about food as a substrate for various microbes, Understand about the principles and application of different types of food spoilage and preservation technique,	PO7,PO8,PO10	
CO2	Acquire a thorough understanding of food borne diseases, testing methods, and preventive technique	PO5,PO10	
CO3	Gain information about spoilage of milk and its products and its antimicrobial properties	PO5,PO7	
CO4	Learn about the various fermented product and its various stage spoilage	PO7,PO8,PO10	
CO5	Impart current knowledge of probiotics, prebiotics and functional dairy foods for the health benefits	PO5,PO6	
Text Books			
1.	Frazier WC and West off DC. (2017). Food microbiology. 5 th Edition TATA McGraw Hill Publishing Company Ltd. New Delhi.		
2.	Adams, M.R., Moss, M.O.(2018). Food Microbiology 1 st edition. New Age Publishers by New Age International (P) Ltd., Publishers.		
3	R.C. Dubey. (2014). Advanced Biotechnology. S. Chand publishers.		
4	Banwart GJ. (1989). Basic food microbiology, Chapman & Hall, New York.		
5	Sugumar D. (1997). Outlines of dairy technology, Oxford University press. 1997.		
References Books			
1	Jay JM, Loessner MJ and Golden DA.(2005). Modern Food Microbiology. 7 th Edition CBS Publishers and Distributors, Delhi, India.		
2	Prescott, Harley and Klein Wim.(2008). Microbiology, 7 th Edition McGraw Hill Publications.		
3	Robinson, R. K.(2002). Dairy Microbiology Handbook - The Microbiology of Milk and Milk Products (Third Edition), A John Wiley & Sons, Inc., New York.		
4	Yuankunlee,Sepposalminen. (2008). Handbook of probiotics and prebiotics Second Edition. A John Wiley & Sons publication Inc.		
5	DharumauraiDhansekaran, AlwarappanSankaranarayanan. (2021). Advances in Probiotics Microorganisms in Food and Health 1 st Edition. eBook ISBN:9780128230916.		

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WEB RESOURCES		
1	https://www.researchgate.net/publication/15326559_A_Dynamic_Approach_to_Predicting_BacterialGrowth_in_Food/link/5a1d2e02aca2726120b28eba/download	
2	https://www.fda.gov/food/laboratory-methods-food/bam-foodsamplingpreparation-sample-homogenate	
3	https://www.researchgate.net/publication/243462186_Foodborne_diseases_in_India_-_A_review	
4	https://www.researchgate.net/publication/228662659_Fermented_Dairy_Products_Starter_Cultures_and_Potential_Nutritional_Benefits/link/000084160cf23f86393d5764/download	
5	https://www.fda.gov/food	
Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand / Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview	
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
Analyse (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1							S	S		M	
CO2					S					M	
CO3					S		M				
CO4							S	S		M	
CO5					M	M					

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Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
336C61	Practical VI- Applied Microbiology	Core Course – XV- Practical VI	Y	-	-	-	4	6	40	60	100

Course Objectives

CO1	To assess the water quality and potability.
CO2	To acquire knowledge on enumeration of bacteria from milk and milk quality analysis.
CO3	To investigate various extracellular enzyme producers in soil and to gain knowledge on preparation of biofertilizers.
CO4	Improve knowledge on plant pathogens
CO5	To acquire knowledge on preparation of probiotics and prebiotics

Unit	Details	No. of Hours	Course Objectives
I	1. Physical, chemical, and microbiological assessment of water and potability test for water. <ul style="list-style-type: none"> • Physical – Color, pH, • Chemical - alkalinity, acidity, DO, BOD, COD • Microbiological – MPN index (Presumptive, Completed and Confirmatory test) 2. Study of air microflora by settle plate method.	12	CO1
II	3. Isolation and identification of bacteria and fungi from fruits and vegetables 4. Direct microscopic count of milk. 5. Methylene blue reductase test and Resazurin test 6. Microbiological examination of milk by SPC.	12	CO2
III	7. Isolation of extracellular enzyme producers – Amylase, protease, lipase 8. Microbiological assay of antibiotics by cup plate method and other methods 9. Isolation of <i>Rhizobium/ Azotobacter/</i> phosphate solubilizing organisms 10. Preparation of biofertilizers – Demonstration	12	CO3
IV	11. Study of plant pathogens- Tikka Disease, Red rot of sugarcane, Citrus canker, Blight of paddy. 12. Study of fungi - <i>Mucor, Curvularia, Alternaria, Rhizopus, Aspergillus</i>	10	CO4

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V	13. Isolation of constituent flora of fermented milk. 14. Growth of probiotic LAB in broth, milk and whey. 15. Preparation of probiotic fermented milks like dahi, yoghurt, lassi and whey drink. 16. Effect of prebiotics on the growth of LAB in milk and broth. 17. Survivability of probiotic organisms in fermented milks. 18. Antimicrobial potential of the functional dairy products.	14	CO5
	Total	60	

Course Outcomes

Course Outcomes	On completion of this course, students will;		
CO1	Assess the microbial quality of water and relate the experimental results to the prescribed standards by the statutory bodies	PO1, PO4,PO5,PO6, PO7, PO8	
CO2	Evaluate the quality of milk and enumerate bacteria in milk by standard plate count method	PO5,PO6, PO7, PO8	
CO3	Identify extracellular enzyme producing and nitrogen fixing microorganism from soil and to prepare a biofertilizer.	PO1,PO8	
CO4	Identify various plant pathogenic bacteria	PO1	
CO5	Synthesize probiotic fermented milks using microorganisms	PO1,PO7,PO8	

Text Books

1.	Cappucino J and Sherman N.(2010). Microbiology: A Laboratory Manual. 9 th Edition. Pearson Education Limited.
2.	Kannan. N. (1996). Laboratory manual in General Microbiology. Palani Publications.
3.	R C Dubey and D K Maheswari.(2002). Practical Microbiology. S. Chand Publishing.
4.	Neelima Garg, K.L. Garg, K.G. Mukerji (2010).Laboratory Manual of Food Microbiology, Wiley publication
5.	Aneja, KR.(2010). Experiments in Microbiology, Plant pathology and Biotechnology. New Age International (P) Limited.

References Books

1	Christon J. Hurst Editor in Chief, Ronald L. Crawford, Jay L. Garland, David A. Lipson, Aaron L. Mills, Linda D. Stetzenbach (2007). Manual of Environmental Microbiology, Third Edition, Wiley publication.
2	James G Cappucino and Natalie Sherman.(2016). Microbiology – A laboratory manual. 4 th Edition. The Benjamin publishing company, New York.
3	Marylynn V. Yates, Cindy H. Nakatsu, Robert V. Miller, Suresh D. Pillai 2016). Manual of Environmental Microbiology, 4 th Edition,ASM press.
4	Burns, Richard G (2005). Environmental Microbiology A Laboratory Manual, 2 nd Edition .Lippincott Williams & Wilkins, Inc.
5	Ian Pepper, Charles Gerba, Jeffrey Bredecke (2004). Environmental Microbiology-A laboratory manual, Elsevier.

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Web Resources		
1	https://micobenotes.com/fields-of-microbiology/	
2	https://bio.libretexts.org	
3	https://www.google.com	
4	https://www.sfamjournals.onlinelibrary.wiley.com	
5	https://www.degruyter.com	
Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand / Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview	
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
Analyse (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	S			M	S	S	S	S
CO2					M	M	M	M
CO3	M							S
CO4	M							
CO5	M						S	S

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Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
336E6A	Pharmaceutical Microbiology	Elective Generic /Discipline Specific Elective-VII	Y	-	-	-	3	5	25	75	100
Course Objectives											
CO1	To provide the knowledge on basics of chemotherapy										
CO2	To learn the assays and testing methods of antibiotics.										
CO3	To gain information about spoilage of pharmaceutical products										
CO4	To provide the knowledge on drug discovery and clinical trials										
CO5	To learn about regulations in pharmaceutical industry										
Unit	Details								No.of Hours	Course Objectives	
I	Introduction to Pharmaceutical microbiology: Ecology of microorganisms in pharmaceutical industry: Atmosphere, water, skin and respiratory flora of workers, raw materials, packaging, building and equipments and their control measures; Design and layout of sterile manufacturing.								12	CO1	
II	Microbial contamination and spoilage of pharmaceutical products: Microbial aspects of pharmaceutical products; Sterilization of pharmaceutical products: Heat, gaseous, radiation and filtration; Contamination and Spoilage of Pharmaceutical products: sterile injectable and non-injectable, ophthalmologic preparation, implants.								10	CO2	
III	Production of antibiotics: Production of antibacterial – Penicillin, Tetracycline; antifungal – Griseofulvin, Amphotericin; antiparasitic agents – Artemesin, Metronidazole; Semi-synthetic antibiotics and anticancerous agents; Additional application of microorganisms in pharmaceutical sciences: Enzymes- Streptokinase, Streptodornase, L-asperginase and clinical dextrin; Immobilization procedures for pharmaceutical applications (liposomes); Biosensors in pharmaceuticals.								12	CO3	
IV	Production of immunological products and their quality control: Vaccines - DNA vaccines, synthetic peptide vaccines, multivalent vaccines; Vaccine clinical trials; Immunodiagnosics - immuno sera and immunoglobulin; Quality control in Pharmaceutical: In – Process and Final Product Control; Sterility tests.								16	CO4	
V	Quality Assurance and Validation: Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP) in pharmaceutical industry; Regulatory aspects of quality control; Quality assurance and quality management in pharmaceuticals – BIS (IS), ISI, ISO, WHO and US certification.								10	CO5	
Total								60			

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Course Outcomes		
Course Outcomes	On completion of this course, students will;	
CO1	Learn the basics of chemotherapy and action of antibiotics	PO1,PO10
CO2	Carry out the microbiological assay of antibiotics	PO7
CO3	Analyse Microbiological standardization of Pharmaceuticals, sterility testing of pharmaceutical products Apply sterilization in pharmaceutical industry	PO5,PO8, PO10
CO4	Evaluate the process and develop new strategies for rational drug design	PO9,PO10
CO5	Learn the Regulatory guidelines in pharmaceuticals product.	PO3,PO5
Text Books		
1.	Chand Pasha Kedernath. (2021). Text book of Pharmaceutical Microbiology. Ramnath Publisher.	
2.	Hugo WB and Russell AD. (2004).Pharmaceutical Microbiology VII edition. Blackwell Scientific Publication, Oxford.	
3	Franklin,DJ. and Snow, GA. (2013). Biochemistry of antimicrobial action.Chapman& Hall.	
4	Kuntal Das (2019). Pharmaceutical Microbiology, second edition, NiraliPrakashan.	
5	PriyatamaPowar, Shital Nimbargi, VaijayantiSapre (2020). Pharmaceutical Microbiology, I edition, Technical publications.	
References Books		
1	Handa, S.S. and Kapoor, V.K. (2022) .Pharmacognosy. 4 th Edition. Vallabh Prakashan Publishers, New Delhi.	
2	Kokate, C.K., Durohit, A.P. and Gokhale, S.R.,(2002). Pharmacognosy. 12 th edition NiraliPrakasham Publishers, Pune.	
3	S. P. Vyas & V. K. Dixit.(2003). Pharmaceutical Biotechnology. CBS Publishers & Distributors, New Delhi.	
4	Wallis, T.E. (2005). Text book of Pharmacognosy. 5 th edition. CBS publishers and distributors, New Delhi.	
5	Garrod, L.P., Lambert, HP. And C'Grady, F. (1973). Antibiotics and Chemotherapy. (eds). Churchill Livingstone.	
Web Resources		
1	https://www.pharmapproach.com/introduction-to-pharmaceutical-microbiology/	
2	https://www.iptsalipur.org/wp-content/uploads/2020/08/BP303T_PMB_UNIT_I.pdf	
3	https://www.pharmanotes.org/2021/11/pharmaceutical-microbiology-b-pharma.html	
4	https://snscourseware.org/snscphs/notes.php?cw=CW_604b15c6313c5	
5	https://www.thermofisher.com	
Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks

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Methods of Assessment	
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions
Understand / Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain
Analyse (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	M									M	
CO2							M				
CO3					S			M		M	
CO4									L	M	
CO5			L		M						

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Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
336E6B	Entrepreneurship and Bio-Business	Elective Generic /Discipline Specific Elective- VIII	Y	-	-	-	3	5	25	75	100

Course Objectives

CO1	Understanding basic concepts in the area of entrepreneurship, the role and importance of entrepreneurship for economic development
CO2	Developing personal creativity and entrepreneurial initiative, adopting the key steps in the elaboration of business idea.
CO3	Understanding the stages of the entrepreneurial process and the resources needed for the successful development of entrepreneurial ventures.
CO4	Explain the central components of successful business strategies in biotechnology, and create a business plan.
CO5	Understand the various funding resources and develop as Entrepreneur

Unit	Details	No.of Hours	Course Objectives
I	Bio Entrepreneurship: Introduction to bio-business, SWOT analysis of bio-business. Ownership, Development of Entrepreneurship; Stages in entrepreneurial process; Government schemes and funding. Small scale industries: Definition, Characteristics, Need and rationale.	12	CO1
II	Entrepreneurship Opportunity in Agricultural Biotechnology: Business opportunity, Essential requirement, Marketing, strategies, Schemes, Challenges and Scope-with case study on Plant cell and tissue culture technique, Polyhouse culture. Herbal bulk drug production, Nutraceuticals, Value added herbal products. Bioethanol production using Agricultural waste and Algal source. Integration of system biology for agricultural applications. Biosensor development in Agriculture management.	12	CO2
III	Entrepreneurship Opportunity in Industrial Biotechnology: Business opportunity, Essential requirement, Marketing strategies, Schemes, Challenges, and Scope. Pollution monitoring and Bioremediation for Industrial pollutants. Integrated compost production- microbe enriched compost. Bio pesticide/ insecticide production. Biofertilizer. Single cell protein.	12	CO3
IV	Therapeutic and Fermented products: Stem cell production, stem cell bank, production of monoclonal/polyclonal antibodies, secondary metabolite production – antibiotics, probiotic and prebiotics.	12	CO4

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V	Project Management, Technology Management and Startup Schemes: Building Biotech business challenges in Indian context-biotech partners (BIRAC, DBT, Incubation centers. etc.), Operational biotech parks in India. Indian Company act for Biobusiness-schemes and subsidies. Project proposal preparation, Successful start-ups-case study.	12	CO5
	Total	60	
Course Outcomes			
Course Outcomes	On completion of this course, students will;		
CO1	Describe and apply several entrepreneurial ideas and business theories in practical framework.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PO13, PO14	
CO2	Analyse the business environment in order to identify business opportunities, identify the elements of success of entrepreneurial ventures, evaluate the effectiveness of different entrepreneurial strategies and interpret their own business plan.	PO2, PO5, PO7, PO8, PO10, PO12, PO14	
CO3	Express the mass production of microbial inoculants used as Biofertilizers and Bioinsecticides in response with field application and crop response.	PO4, PO6, PO9, PO11	
CO4	Analyze the application and commercial production of Monoclonal antibodies, Cytokines. TPH and teaching kits.	PO5, PO6, PO9, PO11	
CO5	Integrate and apply knowledge of the regulation of biotechnology industries, utilize effective team work skills within an effective management team with a common objective, and gain effective team work skills, with an awareness of cultural diversity and social inclusiveness.	PO2, PO7, PO8	
Text Books			
1.	Craig Shimasaki. (2014). Biotechnology Entrepreneurship: Starting, Managing, and Leading Biotech Companies. Academic Press.		
2.	Ashton Acton, O. (2012). Biological Pigments– Advances in Research and Application Scholarly Editions: Atlanta, Georgia.		
3.	Jennifer Merritt, Jason Feifer (2018). Start Your Own Business, 7th edition, Entrepreneur Press publisher.		
4.	Peter F. Drucker (2006). Innovation and Entrepreneurship. Harper Business publisher.		
5.	Leah Cannon (2017). How to Start a Life Science Company: A Comprehensive Guide for First-Time Entrepreneurs. International Kindle paperwhite.		
References Books			
1	Crueger, W, and Crueger. A.(2000). Biotechnology: A Text Book of Industrialmicrobiology, 2nd Edition, Sinauer Associates: Sunderland.Mass.		
2	Paul S Teng. (2008). Bioscience Entrepreneurship in AsiaWorld Scientific Publishing Company.		

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3	Charles E. Bamford, Garry D. Bruton (2015). ENTREPRENEURSHIP: The Art, Science, and Process for Success, 2 nd Edition, McGraw Hill publisher.
4	Yali Friedman (2014). Building Biotechnology: Biotechnology Business, Regulations, Patents, Law, Policy and Science 4th Edition, Logos press publication.
5	Stephanie A. Wisner (2022). Building Backwards to Biotech: The Power of Entrepreneurship to Drive Cutting-Edge Science to Market, International Kindle paperwhite.

Web Resources

1	https://www.bio-rad.com/webroot/web/pdf/lse/literature/Biobusiness.pdf
2	https://www.crg.eu/biobusiness-entrepreneurship
3	https://www.entrepreneur.com
4	https://www.birac.nic.in
5	https://www.springer.com

Methods of Evaluation

Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks

Methods of Assessment

Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain
Analyze (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations

Mapping with Programme Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	S	S	S	S	S	S	S	S	S	S	S
CO2		S			M		S	S		M	
CO3											
CO4				S		S			S		S
CO5		S					S	S			

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Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
336S6A	Microbial Quality Control And Testing	Professional Competency Skill	Y	-	-	-	2	2	25	75	100

Course Objectives

CO1	To understand the use of various advanced techniques for application in the field of quality control and quality assurance.
CO2	To cultivate skills involved execution of microbiological techniques and to develop the good laboratory practices.
CO3	To ensure the food safety regulations and its standards.
CO4	To acquire knowledge on laboratory testing, Control & safety process.
CO5	To analyze microbial standards to establish the quality of food products.

Unit	Details	No. of Hours	Course Objectives
I	Microbial quality control: Definition, history and introduction. Standard Methods involved in assessment of microbial quality control. Q.A and Q.C definitions and importance. Traditional Microbiological Quality Controlling methods: Sampling methods, TVC, APC and serial dilution techniques. Good laboratory practices, Good microbiological practices.	12	CO1
II	Instruments associated in QC & QA: Principle involved, working conditions, uses and precautions of Laminar Air Flow (LAF), Autoclave, Incubator, pH meter, Colony counter, Hot air oven, Centrifuges, Colorimeter/ Spectrophotometer, ELISA and storage devices. Methodology of Disinfection, Autoclaving & Incineration.	12	CO2
III	Culture media used in QC and QA: Design of specialized media for identification of pathogens. Good laboratory practices in culture media preparation: raw material, water, pH. Uses of media. Enrichment culture technique, Detection of specific microorganisms - on XLD agar, Salmonella Shigella Agar, Mannitol salt agar, EMB agar, MacConkey Agar, Saboraud Agar.	12	CO3
IV	Determining Microbes in Pharmaceutical Samples: Sterility testing for pharmaceutical products, Bioburden, Pyrogen test, in process and final process control, safety and sterility test.	12	CO4
V	HACCP for Food Safety and Microbial Standards: Hazard analysis of critical control point (HACCP) - Principles, flow diagrams, limitations. Microbial Standards for Different Foods	12	CO5

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	and Water – BIS standards for common foods and drinking water. Ascertaining microbial quality of milk by MBRT, Rapid detection methods of microbiological quality of milk at milk collection centres.		
	Total	60	
Course Outcomes			
Course Outcomes	On completion of this course, students will;		
CO1	Understand the theoretical assessment of microbial quality methods and its good laboratory practices.	PO1, PO5, PO6, PO9, PO10	
CO2	Describe the microbiological aspects of quality control of food and pharmaceutical products.	PO1, PO4, PO5, PO6	
CO3	Explain the identification of pathogenic microorganisms and good laboratory practices.	PO1, PO3, PO5, PO6, PO9	
CO4	Acquire the knowledge of different sterility test for the pharmaceutical products.	PO1, PO4, PO5, PO6	
CO5	Illustrate the safety concern management and regulations of food and pharmaceutical industry and learn the basic standard methods and procedures for the microbiological analysis of food.	PO1, PO3, PO4, PO5, PO6, PO9, PO10	
Text Books			
1	W.B.Hugo&A.D.Russell. (1998). Pharmaceutical Microbiology.6 th Edition. Blackwell scientific Publications.		
2	Kulkarni A. K. Bewoor V. A. ()Quality Control,Wiley India Pvt. Ltd,		
3	Chandrakant Kokare (2016). Pharmaceutical Microbiology, 1st Edition, Nirali Publication.		
4	Brown.M.R.W. (2017). Microbiological Quality Assurance A Guide Towards Relevance and Reproducibility of Inocula,1st Edition. CRC press.		
5	Dev Raj Rakesh Sharma And V K Joshi (2011).Quality Control For Value Addition In Food Processing, New India Publishing Agency.		
References Books			
1	Rosamund M. Baird, Norman A. Hodges, Stephen P. Denyer. (2000). Handbook of Microbiological Quality Control in Pharmaceuticals and Medical Devices. 1 st Edition, CRC Press.		
2	Konieczka, (2012). Quality Assurance and Quality Control in the Analytical Chemical Laboratory A Practical Approach (Hb), Routledge, Taylor and Francis group.		
3	Singh Gajjar, Budhrani, Usman. (2021). Quality Control And Quality Assurance (M.Pharm)SVikas And Company.		
4	David Roesti, Marcel Goverde (2019). Pharmaceutical Microbiological Quality Assurance and Control: Practical Guide for Non-Sterile Manufacturing, Wiley publication.		
5	Amihud Kramer Bernard A. Twigg (2017). Quality Control For The Food Industry Fundamentals & Applications (Vol.1) 3rd Edition, MEDTEC publication.		

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Web Resources		
1	https://www.study.com/microbiology-quality-control-testing-definition-procedures.	
2	https://www.sigmaaldrich.com	
3	https://www.coursera.org	
4	https://www.atcc.org	
5	https://www.fao.org	
Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview	
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Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

Mapping with Programme Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	S				S	S			S	S	
CO2	S			M	M	M					
CO3	S		M		S	S			M		
CO4	S			S	M	M					
CO5	S		S	M	S	S			S	S	



**Dr. MGR-JANAKI COLLEGE
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EXTENSION ACTIVITY

COURSE CODE: 336V6A

FROM 2023-2024

SEMESTER-VI



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சென்னைப் பல்கலைக்கழகம்

[Established under the Act of Incorporation XXVII of 1857
– Madras University Act 1923] [State University]
Centenary Building, Chepauk, Chennai – 600 005

No.V.3/S.1 /Common template for UG/2024/ 292

Date: - 8 OCT 2024

From
The Registrar,
University of Madras.

To
The Principals of all affiliated Arts and Science College (Autonomous/Non-Autonomous)

Sir/Madam,

Sub: Academic- Implementation of common Template for all UG Degree
Programme from the academic year 2023-2024 - Reg

I am by direction to inform you that the common Template for all UG Degree Programme inclusion of Naan Mudhalvan course from 2nd semester to 6th semester from the academic year 2023-2024 offered in the affiliated Arts and Science Colleges is adopted based on the letter received from TANSICHE.

I am forwarding herewith the common Template for all UG Degree Programmes.

This may kindly be brought to the notice of the concerned Department/ Staff/Students in your colleges without fail.

The receipt of this communication may kindly be acknowledged.

Thanking you,

Yours faithfully,

S. Kailashan
for REGISTRAR

Encl: as above

UNIVERSITY OF MADRAS

Revised Template for the Scheme of Examination and Credit Distribution for UG Degree Programmes which Includes Naan Mudhalvan Courses with effect from the academic year 2023-2024 onwards

Component	Semester I	Credits	Hours
Part I	Languages – Tamil/Other Languages - 1	3	6
Part II	English 1	3	6
Part III	Core Course - CC 1	5	5
	Core Course - CC 2	5	5
	Elective 1 Generic/Discipline Specific	3	4
Part IV	Skill Enhancement Course (SEC) - 1	2	2
	Skill Enhancement(Foundation Course)	2	2
		23	30

Component	Semester II	Credits	Hours
Part I	Languages – Tamil /Other Languages - 2	3	6
Part II	English - 2	3	4 + 2*
Part III	Core Course - CC 3	5	5
	Core Course - CC 4	5	5
	Elective 2 Generic/Discipline Specific	3	4
Part IV	Skill Enhancement Course (SEC) - 2	2	2
	NMC- 1 * (Naan Mudhalvan Course) - Language Proficiency for Employability	2	2*
	Skill Enhancement Course – (SEC) -3	2	2
		25	30

- The Instructional hours distributed for Part-II English is 4 hours instead of 6 hours and the 2 hours provided for Language Proficiency for Employability (Naan Mudhalvan Course (NMC-I)) which shall be handled by the faculty of English Department only .

Component	Semester III	Credits	Hours
Part I	Languages – Tamil /Other Languages - 3	3	6
Part II	English - 3	3	6
Part III	Core Course - CC 5	5	5
	Core Course - CC 6	5	5
	Elective 3 Generic/Discipline Specific	3	4
Part IV	Skill Enhancement Course (SEC) - 4 (Entrepreneurial Skill)	1	1
	NMC-2 (Naan Mudhalvan Course/Skill Enhancement Course (SEC) - 5	2	2
	E.V.S.	-	1
		22	30

Contd..2..

Component	Semester IV	Credit	Hours
Part I	Languages – Tamil /Other Languages - 4	3	6
Part II	English - 4	3	6
Part III	Core Course - CC 7 Core Industry Module	5	5
	Core Course 8	5	5
	Elective 4 Generic/Discipline Specific	3	3
Part IV	NMC-3 (Naan Mudhalvan Course)/Skill Enhancement Course (SEC) - 6	2	2
	E.V.S	2	1
	Value Education	2	2
		25	30

Component	Semester V	Credits	Hours
Part I	Core Course - CC 9	4	5
Part II	Core Course - CC 10	4	5
Part III	Core Course - CC 11	4	5
	Core Course/ Project with viva-voce - CC 12	4	5
	Elective - 5 Generic/Discipline Specific	3	4
	Elective - 6 Generic/Discipline Specific	3	4
Part IV	NMC-4 (Naan Mudhalvan Course)/Skill Enhancement Course (SEC) - 7	2	2
	Summer Internship/Industrial Training	2	-
		26	30

Component	Semester VI	Credit	Hours
Part I	Core Course 13	4	6
Part II	Core Course 14	4	6
Part III	Core Course 15	4	6
	Elective - 7 Generic/Discipline Specific	3	5
	Elective - 8 Generic/Discipline Specific	3	5
Part IV	NMC- 5 (Naan Mudhalvan Course)/ Professional Competency Skill	2	2
Part V	Extension Activity	1	-
		21	30

- Total – 142 Credits (Minimum Credits required for the award of Degree 142)
- Originally Value Education subjects in the V Semester, now it is shifted to IV Semester in view of accommodating Naan Mudhalvan Course in the V Semester.
- Naan Mudhalvan Courses are mandatory for award of Degree for all UG Programmes, If a student is long absentee/lack of attendance for exceptional cases, he/she shall not be mapped for NM courses, instead the existing Skill Enhancement Course (SEC) shall be offered to the said students for award of Degree.