SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI

(AFFILIATED TO MADURAI KAMARAJ UNIVERSITY, MADURAI.
RE-ACCREDITED WITH 'A' GRADE (THIRD CYCLE) BY NAAC WITH CGPA 3.11)

Programme Scheme, Scheme of Examination and Syllabi

(From 2023-2024 Batch onwards)

Department of Mathematics

UG Programme

Curriculum Design and Development Cell
Annexure J

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
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Programme Scheme, Scheme of Examination and Syllabi

(From 2023-2024 Batch onwards)

Department of Mathematics

UG Programme

Curriculum Design and Development Cell

HOD	Dean of Sciences	Dean of Academic Affairs	Principal
K. Lalithambigai	S. Pradeep	S. Jerome	

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
MEMBERS OF BOARD OF STUDIES

S.No.	Board Members	Name and Designation
1.	Chairman of the Board	**Ms.K.Lalithambigai** Head & Assistant Professor of Mathematics Sri Kaliswari College (Autonomous), Sivakasi.
2.	University Nominee	**Dr.A.Shophia Lawrence** Assistant Professor Department of Mathematics School of Mathematics Madurai Kamaraj University, Madurai.
3.	Academic Expert 1.	**Dr. C.Parameswaran** Associate Professor and Head Centre for Research and Post Graduate Studies in Mathematics, Ayya Nadar Janaki Ammal College Sivakasi.
4.	Academic Expert 2.	**Dr. M.Jeyaraman** Assistant Professor Department of Mathematics R.D. Government Arts College Sivagangai
5.	Industrialist	**MAPR.Krishnamoorthy** Partner, Palani Industries Virudhunagar.
6.	Alumnus	**Dr.G.Ramkumar** Assistant Professor Department of Mathematics Arul Anandar College Karumathur.
Members		
7.	Mr.T.Gurunathan	Assistant Professor of Mathematics
8.	Dr.S.Anubala	Assistant Professor of Mathematics
9.	Ms.S.Eswari	Assistant Professor of Mathematics
10.	Ms.C.Arunthathi	Assistant Professor of Mathematics
11.	Ms. S.Ashwini Priya	Assistant Professor of Mathematics
11.	Ms.R.Vanthana	Assistant Professor of Mathematics
12.	Mrs.R.Vanalakshmi	Assistant Professor of Mathematics
13.	Ms.R.Karthika	Assistant Professor of Mathematics

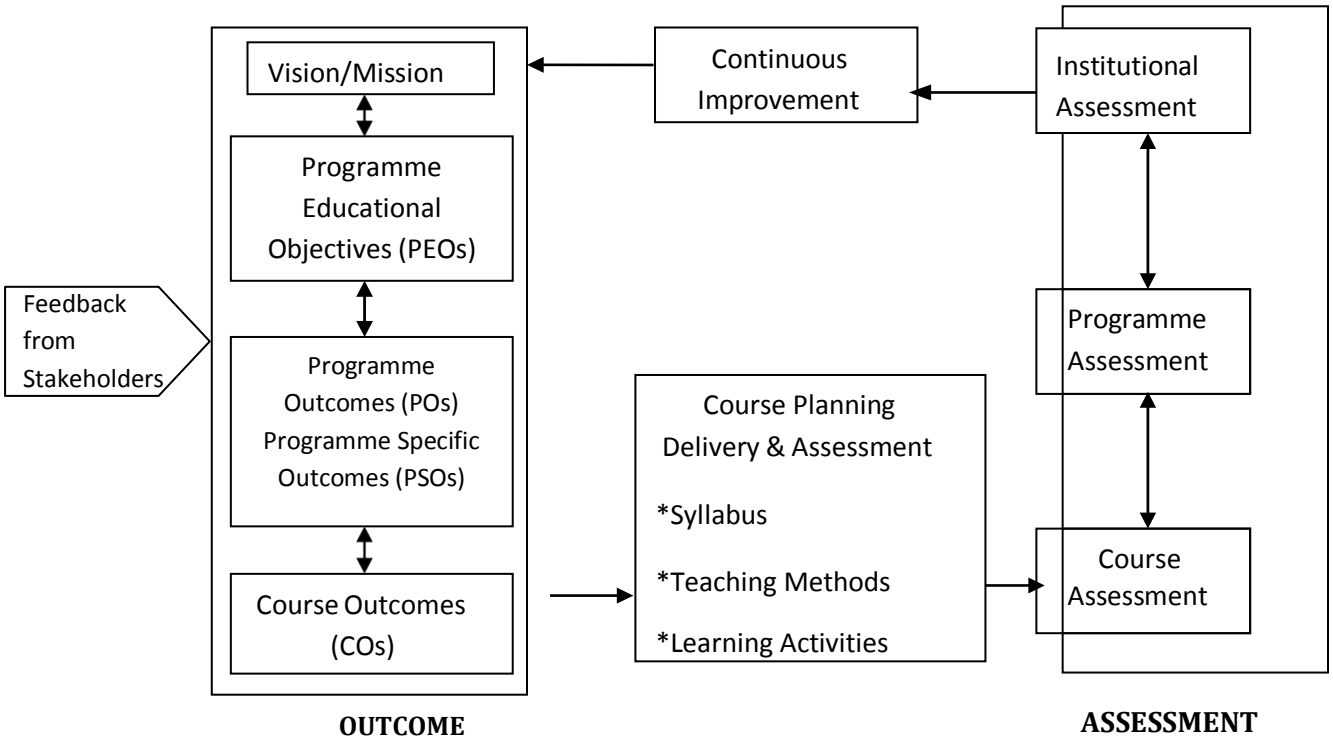
SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
(Affiliated to Madurai Kamaraj University, Re-accredited with A Grade (CGPA 3.11) by NAAC)
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
GUIDELINES FOR OUTCOME-BASED EDUCATION WITH CHOICE BASED CREDIT SYSTEM
(From 2023-2024 Batch onwards)

INTRODUCTION

Sri Kaliswari College in its pursuit of imparting quality education has marked a remarkable growth in terms of academic excellence, infrastructure, student strength, ICT facilities, library and placement records since its establishment in 2000-2001.This institution constitutes an academic community that is committed to encourage the student community to experience and share knowledge, identify their potential, enhance the employability skills and enable them to pursue their goals. After the conferment of autonomous status in the year 2012, the college has so far gone for revision of the syllabi three times and is continually updating the syllabi to meet the needs and demands of the student community.

The institution in its success journey of imparting quality education has been Re-Accredited with A grade (CGPA 3.11) in its third cycle of accreditation by NAAC. As an added feather to its cap, the institution has taken a giant leap to embrace the Outcome-Based Education system to enable the student community to develop their knowledge, skill and attitude simultaneously through a focused learning and help the graduates to compete with their global counterparts and prepare them for life.

I. OUTCOME-BASED EDUCATION (OBE) FRAMEWORK



II. VISION OF THE INSTITUTION

- To impart quality higher education to produce highly talented youth capable of developing the nation

III. MISSION OF THE INSTITUTION

- Ensuring quality in all aspects of the activities
- Developing the latent skills of the rural youth
- Providing value - based education to instill courage and confidence
- Nurturing the entrepreneurial skills of the rural youth
- Creating competency to meet global challenges
- Imbibing social awareness and social responsibilities

IV. VISION OF THE DEPARTMENT

- To create a sound academic ambience to produce competent youth to excel in research and teaching in Mathematics along with concern for society

V. MISSION OF THE DEPARTMENT

- To impart quality education and inculcate the spirit of research through innovative teaching and research methodologies in Mathematics.
- To empower students with required skills to succeed in the ever-changing world.
- To provide innovative training to apply mathematical and computational skills to model, formulate and solve real life problems.

VI. PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

The Graduates will

PEO1: demonstrate a thorough knowledge of fundamental mathematical facts, and solve problems which can be analyzed mathematically.

PEO2: solve complex scientific problems by mathematical simulations.

PEO3: work as mathematical professionals developing knowledge and insights in Mathematics with personal development in work place and in the society.

PEO4: embrace moral and ethical values and demonstrate team work and leadership skills in their career opportunities and academics.

PEO5: pursue higher studies, conduct research, and appear for SSC(CGL), IBPS, RRB and Civil service examinations with confidence developing inclination towards lifelong learning.

VII. PROGRAMME OUTCOMES

(POs)PO1: Disciplinary

Knowledge

Acquire comprehensive and Scientific knowledge in the field of science.

PO2: Critical Thinking, Problem Solving and Analytical Reasoning

Develop students' ability of critical observation and capacity to apply the principles/facts of science to identify, analyse, evaluate and solve problems in order to draw realistic conclusions.

PO3: Scientific Reasoning and Research Related Skills

Capability to involve in planning and conducting experiments, analyze the scientific research field, interpret and draw conclusions from experiments and investigate practically.

PO4: Communication Skills and Digital Literacy

Communicate effectively and articulate clearly the scientific ideas in written and oral form and make use of appropriate software for scientific computations and gain ICT skills to disseminate knowledge.

PO5: Ethics, Values and Multicultural Competence

Embrace moral and ethical values and apply it with a sense of responsibility in the

workplace and community and adopt objective, unbiased and truthful actions in all aspects of work.

PO6: Team Work, Leadership and Employability Skills

Work effectively and respectfully in groups with enhanced inter-personal skills and exhibit qualities associated with leadership to build a team and achieve the vision and show proficiency in professional, employability and soft skills required for placements and higher education.

PO7: Self-directed and Life-long Learning

Recognize the need and have the ability to engage in independent learning and be self - motivated and acquire knowledge through lifelong learning in the broadest context of technological change.

VIII. PROGRAMME SPECIFIC OUTCOMES (PSOs) – B.Sc. MATHEMATICS

On successful completion of B.Sc. Mathematics, the students will

PSO1: develop a comprehensive knowledge in the field of Algebra, Analysis, Geometry, Number Theory, Mechanics, Differential Equations and Statistics.

PSO2: employ critical thinking in understanding the concepts in every area of Mathematics and provide solutions using the domain knowledge of Mathematics.

PSO3: demonstrate a broad knowledge to conduct research and analyse mathematical concepts, and theories within appropriate mathematical framework.

PSO4: communicate various concepts of mathematics effectively using examples and their geometrical visualizations and demonstrate a computational ability in solving a wide array of mathematical problems.

PSO5: embrace moral and ethical values, adopt objective, unbiased and truthful actions in all aspects and identify unethical behaviour such as fabrication, falsification or misrepresentation of data.

PSO6: work independently and effectively in team as a member or leader and gain knowledge and aptitude needed to successfully get through the competitive examinations either for placement or for higher education.

PSO7: acquire knowledge and skills through logical reasoning and to inculcate the habit of self- directed and life-long learning.

IX. PO-PSO Mapping Matrix – B.Sc. Mathematics

PO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
PO1	✓						
PO2		✓					
PO3			✓				
PO4				✓			
PO5					✓		
PO6						✓	
PO7							✓

X. PO-PEO Mapping Matrix – B.Sc. Mathematics

PO \ PEO	PEO1	PEO2	PEO3	PEO4	PEO5
PO1	✓				
PO2	✓				
PO3		✓			✓
PO4			✓		
PO5				✓	
PO6			✓	✓	✓
PO7					✓

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI

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DEPARTMENT OF MATHEMATICS

UG Programme - B.Sc. Mathematics

REGULATIONS

Duration of the Programme **:** Three years (equivalent to six semesters)

Eligibility

Candidate should have passed the Higher Secondary Examinations with Mathematics, Physics and Chemistry as subjects conducted by the Board of Higher Secondary Education, Government of Tamil Nadu or any other examination accepted by the Syndicate of the Madurai Kamaraj University, Madurai as its equivalent.

Medium of Instruction : English

Age Limit

Maximum age limit : 21 Years

Age Relaxation

SC/ SCA/ST/BC/BCM/MBC/DNC & Women : 3 years age relaxation

Differently-Abled Students : 5 years age relaxation

Transitory Permission

Students joined from June 2023 to June 2026 may be permitted to write their examinations in this pattern up to April 2031.

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG PROGRAMME - B.Sc. MATHEMATICS
SCHEME OF EXAMINATION

For all the UG Programmes, the internal and external marks are distributed as follows:

For all Theory Courses (Part I, II, III): Internal Marks: 25; External Marks: 75

For Courses with both Theory and Practical, it will be considered as practical course and assessment will be for both Theory and Practical.

For Part-IV Courses : Internal Marks:25; External Marks: 50(Converted to 75)

For all Practical Courses, Project and

Internship : Internal Marks: 25; External Marks: 75

Internal Mark Distribution for Theory Courses

Assessment Type	**Marks**	**Scheme of Assessment**
Internal Test	10 marks	Two Internal Tests and 1 Model Exam will be conducted and average of the best two will be considered
Written Assignment E-Assignment/ Case Studies/ Reviews/ Field Assignments/ Poster Presentations/ Portfolios	5 marks	Any two of the Assignments will be given and the average of the two will be considered
Quiz	5 marks	One Quiz Test will be conducted
Viva/ Oral Exam/ Group Discussion/ Role Play	5 marks	Test will be conducted in any one of the Oral Mode

Internal Mark Distribution for Practical Courses

Assessment Type	**Marks**	**Scheme of Assessment**
Lab work /Program Execution	15 marks	Two Internal Tests will be conducted and the average of the two will be considered
Observation/Record Notebook	5 marks	Assessment will be done during every practical class
Viva –Voce / Lab Quiz	5 marks	Two Lab Quiz Tests/viva-voce will be conducted and the average of the two will be considered

External Mark Distribution for Practical Courses

Assessment Type	Marks	Scheme of Assessment
Lab work/Program Execution	65 marks	End result of the Practical
Viva –Voce	10 marks	Oral Mode Test

Internal Mark Distribution for Courses with both Theory and Practical

Assessment Type	Marks	Scheme of Assessment
Internal Test	10 marks	Two Internal Tests and 1 Model Exam will be conducted and average of the best two will be considered
Written Assignment E-Assignment/ Case Studies/ Reviews/ Field Assignments/ Poster Presentations/ Portfolios	5 marks	Any two of the Assignments will be given and the average of the two will be considered
Lab work /Program Execution	10 marks	Two Internal Tests will be conducted and the average of the two will be considered

External Mark Distribution for Courses with both Theory and Practical

Assessment Type	Marks	Scheme of Assessment
External Written Test	50 marks	Two hours External Exam will be conducted for 50 marks
Lab work /Program Execution	20 marks	End result of the Practical
Viva –Voce	05 marks	Oral Mode Test

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
QUESTION PAPER PATTERN FOR PART- I, PART- II & PART-III COURSES

Internal Test – 30 Marks – 1 hr Duration

S.No	Type of Questions	Marks
1.	Objective type Questions: Multiple Choice – 3 questions Answer in a Word/Sentence – 3 questions	 03 03
2.	Short Answer–2 questions –either or type	2x7=14
3.	Long Answer–1 question – either or type	1x10=10

Summative Examinations – For Part- I, Part- II & Part-III Courses
75 Marks -3 hrs Duration

S.No	Type of Questions	Marks
1.	Objective type Questions: Multiple Choice – 5 questions Answer in a Word/Sentence – 5 questions	 05 05
2.	Short Answer - 5 questions – either or type	5x7=35
3.	Long Answer - 3 questions – either or type	3x10=30

QUESTION PAPER PATTERN FOR PART -IV COURSES

Internal Test- 30 Marks – 1 hr Duration

S.No	Type of Questions	Marks
1.	Objective type Questions: Multiple Choice – 5 questions	 05
2.	Short Answer - 3 questions – either or type	3x5=15
3.	Long Answer - 1 question – either or type	01x10=10

Summative Examinations – For Part-IV Courses 50 Marks (converted to 75)
-2 hrs Duration

S.No	Type of Questions	Marks
1.	Objective type Questions: Multiple Choice – 10 questions	 10
2.	Short Answer - 4 questions – either or type	4x5=20
3.	Long Answer - 2 questions – either or type	02x10=20

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics

Attainment of Course outcomes

Attainment of Course outcomes is computed using Direct and Indirect assessment methods. Direct Method of Assessment is based on performance of the students in the Continuous Internal Assessment Tests, Summative Examinations and supporting activities such as Seminar, Assignment, Case study, Group Discussion, Quiz, etc., and Indirect Method of Assessment is based on periodical feedback from the students at the end of each course.

Weightage of Direct and Indirect Assessment in computation of attainment of each course is 70% for Direct Assessment and 30% for Indirect Assessment.

Direct Assessment of Course outcome attainment

i) Rubrics:

Internal Assessment contributes 60% and Summative Examinations Assessment contributes 40% to the Direct Assessment of a course outcome for Theory Courses. For the Practical Courses, Internal Assessment contributes 70% and Summative Examinations Assessment contributes 30% to the Direct Assessment of a course outcome.

ii) Setting of Target:

50% of the maximum mark is set as target of Internal Assessment tools and the average mark of the class is set as target of Summative Examinations Assessment.

Formula for calculating percentage attainment of each course outcome

Based on the result of Summative Examinations and Internal Assessment tools, the number of students scoring more than the target is found out.

For each Internal Assessment Tools,

$$\text{Percentage attainment of each course outcome} = \frac{\text{No. of. Students who scored more than the target in the concerned course outcome}}{\text{Total Number of Students}} \times 100$$

$$\text{Percentage attainment of each Course outcome for Internal Assessment tools} = \text{Average of percentage attainment of all Internal Assessment tools}$$

For Summative Examinations,

$$\text{Percentage attainment of each Course outcome} = \frac{\text{No. of. Students who scored more than the target in the concerned CO}}{\text{Total Number of Students}} \times 100$$

Formula for calculating Attainment Percentage of Course outcome of a course

Percentage Attainment of Course outcome for Internal Assessment tools = Average of percentage attainment of all COs

Percentage Attainment of Course outcome for Summative Examinations = Average of percentage attainment of all COs

Final Direct Assessment of Course outcome Attainment

For Theory Courses

Percentage Attainment of Course outcome through Direct Assessment = (0.6 x percentage attainment of CO for internal assessment tool) + (0.4 x percentage attainment of CO for summative examinations)

For Practical Courses

Percentage Attainment of Course outcome through Direct Assessment = 0.7 x percentage attainment of CO for Internal Assessment tools + 0.3 x percentage attainment of CO for Summative Examinations

Indirect Assessment of CO Attainment

The course outcome feedback is conducted at the end of every semester by distributing structured feedback questionnaire to the students. The analysis of this feedback questionnaire is done on the following score. The feedback forms will be sorted with various scores and feedbacks with a score more than 5.5 are considered as satisfactory level for calculations for indirect attainment.

A : 10-8.5 **B :** 8.4-7.0 **C :** 6.9-5.5 **D :** 5.4-4.0 **E :** 3.9-0

$$\text{Percentage attainment for each CO} = \frac{\text{Satisfaction Number}}{\text{Response Received}} \times 100$$

Percentage Attainment of CO of a course = Average of percentage attainment of all COs

Final Assessment of CO attainment

Average course attainment = 0.7 x Direct assessment of CO attainment + 0.3 x Indirect assessment of CO attainment

Expected Level of Attainment for each of the Course Outcomes

Percentage of CO Attainment	Level of Attainment
= 70% and above	Excellent
= 60% - <70 %	Very good
= 50% -< 60 %	Good
= 40% - < 50 %	Satisfactory
Below 40%	Not Satisfactory

Assessment of PO attainment

At the end of the each programme, the Direct PO Assessment is done from the CO Attainment of all courses. The Direct PO Attainment for a particular course is determined from the attainment values obtained for each course outcome related to that PO and the CO-PO mapping values.

$$\text{Weighted contribution of the course in attainment of each PO} = \frac{\text{Weighted Percentage of contribution of the course in attainment of each PO x average course attainment}}{100}$$

$$\text{Percentage attainment for each PO} = \frac{\text{Total weightage of all courses contributed to each PO}}{\text{Total weightage of all courses contributed to all PO s}} \times 100 \text{ x weighted contribution of the course in the attainment of each PO}$$

Percentage Attainment of PO = Average of Percentage attainment of all POs

Expected Level of Attainment for each of the Programme Outcomes

Percentage of PO Attainment	Level of Attainment
= 70% and above	Excellent
= 60% - <70 %	Very good
= 50% -< 60 %	Good
= 40% - < 50 %	Satisfactory
Below 40%	Not Satisfactory

Attainment of Programme Educational Objectives (PEO)

PEOs are assessed after 3 to 4 years of graduation. Attainment is measured based on theFeedback from Stakeholders

1. Alumni
2. Parents
3. Employer

The analysis of this feedback questionnaire is done on the following score. The feedback forms will be sorted with various scores and feedbacks with a score more than 5.5 are considered as satisfactory level for calculations for Indirect Attainment.

A : 10-8.5 **B :** 8.4-7.0 **C :** 6.9-5.5 **D :** 5.4-4.0 **E :** 3.9-0

$$\text{Percentage attainment of PEOs} = \frac{\text{Satisfaction number}}{\text{Response Received}} \times 100$$

Expected Level of Attainment for each of the Programme Educational Objectives

Percentage of PEO Attainment	**Level of Attainment**
= 70% and above	Excellent
= 60% - <70 %	Very good
= 50% -< 60 %	Good
= 40% - < 50 %	Satisfactory
Below 40%	Not Satisfactory

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DEPARTMENT OF MATHEMATICS

UG Programme - B.Sc. Mathematics

CURRICULUM STRUCTURE

OUTCOME-BASED EDUCATION WITH CHOICE BASED CREDIT SYSTEM

(From 2023-2024 Batch onwards)

Part	Courses	Sem I	Sem II	Sem III	Sem IV	Sem V	Sem VI	Credits
I	Tamil / Hindi	6 (3)	6 (3)	6 (3)	6 (3)	-	-	12
II	English	6 (3)	6 (3)	6 (3)	6 (3)	-	-	12
III	Core Courses	4 (4) 4 (4)	4 (4) 4 (4)	5 (5) 5 (5)	5 (5) 5 (5)	5 (4) 5 (4) 5 (4) 5 (4)P	6 (4) 6 (4) 6 (4)	64
	Elective Courses Generic/ Discipline Specific	4 (3)(T) 2(2)(P)	4 (3)(T) 2(2)(P)	4 (3)	3 (3)	4 (3) 4 (3)	5 (3) 5 (3)	28
IV	Skill Enhancement Courses	2 (2) F 2 (2) NME	2(2) 2 (2) NME	1(1) E 2 (2)	2 (2) 2 (2)	-	2(2)	17
	Environmental Studies	-	-	1	1(2)	-	-	02
	Value Education	-	-	-	-	2 (2)	-	02
	Internship/ Industrial Training	-	-	-	-	(2)	-	02
V	Extension Activity	-	-	-	-	-	(1)	01
Total Hours (Per week)/ Credits		30(23)	30(23)	30(22)	30(25)	30(26)	30(21)	140 180

Self-paced Learning (Swayam Course)	-	-	-	-	-	1 Credit	1 Credit

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DEPARTMENT OF MATHEMATICS

UG Programme - B.Sc. Mathematics

CURRICULUM PATTERN

OUTCOME-BASED EDUCATION WITH CHOICE BASED CREDIT SYSTEM

(From 2023-2024 Batch onwards)

PROGRAMME CODE – UMA

Semester	Part	Course Code	Course Name	Hours	Credits	Internal Marks	External Marks
I	I	23UTAG11	Podhu Tamil / Hindi – I	6	3	25	75
	II	23UENL11	General English – I	6	3	25	75
	III	23UMAC11	**Core Course –I :** Algebra & Trigonometry	4	4	25	75
		23UMAC12	**Core Course –II :** Differential Calculus	4	4	25	75
		23UMAA11	**Elective Course Generic/ Discipline Specific - I:** Physics I	4	3	25	75
		23UMAA1P	**Elective Course Generic/ Discipline Specific - I:** Practical: Physics I	2	2	25	75
	IV	23UMAS11	**Skill Enhancement Course I: Foundation Course:** Bridge Mathematics	2	2	25	75
		23UMAN11	**Skill Enhancement Course II: Non Major Elective Course :** Mathematics for Competitive Examinations	2	2	25	75
			Total	**30**	**23**		
II	I	23UTAG21	Podhu Tamil / Hindi – II	6	3	25	75
	II	23UENL21	General English – II	6	3	25	75
	III	23UMAC21	**Core Course III :** Analytical Geometry(Two & Three Dimensions)	4	4	25	75
		23UMAC22	**Core Course IV :** Integral Calculus	4	4	25	75
		23UMAA21	**Elective Course Generic/ Discipline Specific - II:** Physics II	4	3	25	75
		23UMAA2P	**Elective Course Generic/ Discipline Specific - II:** Practical: Physics II	2	2	25	75
	IV	23UMAS2P	**Skill Enhancement Course– III**: Practical: Office Automation	2	2	25	75
		23UMAN21	**Skill Enhancement Course IV: Non Major Elective Course :** Statistics for Data Analytics	2	2	25	75
			Total	**30**	**23**		
III	I	23UTAG31	Podhu Tamil/Hindi– III	6	3	25	75
	II	23UENL31	General English – III	6	3	25	75
	III	23UMAC31	**Core Course V –** : Vector Calculus and Applications	5	5	25	75
		23UMAC32	**Core Course – VI :** Differential Equations and Applications	5	5	25	75
		23UMAA31	**Elective Course Generic/ Discipline Specific - III:** Mathematical Statistics	4	3	25	75

	IV	23UMAS3P	**Skill Enhancement Course– V**: **(Entrepreneurial Skill)**- Practical: Web Designing	1	1	25	75
		23UMAS3Q	**Skill Enhancement Course – VI:** Practical: LaTex	2	2	25	75
		-	Environmental Studies	1	-	-	-
			Total	**30**	**22**		
IV	I	23UTAG41	Podhu Tamil / Hindi – IV	6	3	25	75
	II	23UENL41	General English – IV	6	3	25	75
	III	23UMAC41	**Core Course –VII :** Industrial Statistics	5	5	25	75
		23UMAC42	**Core Course – VIII** : Elements of Mathematical Analysis	5	5	25	75
		23UMAA41	**Elective Course Generic/ Discipline Specific - IV:** Numerical Methods with Applications	3	3	25	75
	IV	23UMAS4P	**Skill Enhancement Course – VII:** Practical: Statistics with SPSS	2	2	25	75
		23UMAS4Q	**Skill Enhancement Course – VIII:** Practical: Data Analysis using R	2	2	25	75
		23UESR41	Environmental Studies	1	2	25	75
			Total	**30**	**25**		
V	III	23UMAC51	**Core Course – IX :** Abstract Algebra	5	4	25	75
		23UMAC52	**Core Course – X :** Real Analysis	5	4	25	75
		23UMAC53	**Core Course – XI :** Mathematical Modelling	5	4	25	75
		23UMAJ51	**Core Course – XII:** Project with Viva Voce	5	4	25	75
		23UMAO5P 23UMAO5Q	**Elective Courses Generic/ Discipline Specific - V:** 1. Programming in C with Practical 2. PHP Programming with Practical	4	3	25	75
		23UMAO51 23UMAO52	**Elective Courses Generic/ Discipline Specific - VI:** 1. Optimization Techniques 2. Integral Transforms & Z Transforms	4	3	25	75
	IV	23UVED51	Value Education	2	2	25	75
		23UMAJ52	Internship/Industrial Training	-	2	25	75
			Total	**30**	**26**		
VI	III	23UMAC61	**Core Course – XIII :** Linear Algebra	6	4	25	75
		23UMAC62	**Core Course – XIV :** Complex Analysis	6	4	25	75
		23UMAC63	**Core Course – XV:** Mechanics	6	4	25	75
		23UMAO61 23UMAO62	**Elective Courses Generic/ Discipline Specific - VII:** 1. Graph Theory and Applications 2. Discrete Mathematics	5	3	25	75
		23UMAO6P 23UMAO6Q	**Elective Courses Generic/ Discipline Specific - VIII:** 1. Programming in C++ with Practical 2. Programming in Python with Practical	5	3	25	75
	IV	23UMAS6P	**Skill Enhancement Course – IX: Professional Competency Skill:** Practical:	2	2	25	75

			Computational Mathematics				
	V	-	Extension Activity	-	1	100	
			Total	**30**	**21**		

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DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
OUTCOME-BASED EDUCATION WITH CHOICE BASED CREDIT SYSTEM
(From 2023-2024 Batch onwards)

PROGRAMME ARTICULATION MATRIX (PAM)

Semester	Part	Course Code	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7
I	I	23UTAG11	Podhu Tamil / Hindi – I	10	7	2	8	2	2	3
	II	23UENL11	General English – I	10	7	2	8	2	2	3
	III	23UMAC11	**Core Course –I :** Algebra & Trigonometry	15	12	4	8	0	3	3
		23UMAC12	**Core Course –II :** Differential Calculus	15	12	4	10	0	4	3
		23UMAA11	**Elective Course Generic/ Discipline Specific - I:** Physics I	13	11	3	6	3	3	3
		23UMAA1P	**Elective Course Generic/ Discipline Specific - I:** Practical: Physics I	10	10	3	4	4	3	3
	IV	23UMAS11	**Skill Enhancement Course I: Foundation Course:** Bridge Mathematics	9	9	4	5	0	4	4
		23UMAN11	**Skill Enhancement Course II: Non Major Elective Course :** Mathematics for Competitive Examinations	9	5	0	8	0	5	5
II	I	23UTAG21	Podhu Tamil / Hindi – II	10	8	2	8	2	2	3
	II	23UENL21	General English – II	10	8	2	8	2	2	3
	III	23UMAC21	**Core Course III :** Analytical Geometry(Two & Three Dimensions)	15	12	5	9	0	3	3
		23UMAC22	**Core Course IV :** Integral Calculus	14	12	4	10	0	4	3
		23UMAA21	**Elective Course Generic/ Discipline Specific - II:**	13	11	5	6	3	3	3

			Physics II							
		23UMAA2P	**Elective Course Generic/ Discipline Specific - II:** Practical: Physics II	10	10	3	4	4	3	4
	IV	23UMAS2P	**Skill Enhancement Course– III**: Practical: Office Automation	10	8	3	10	2	6	3
		23UMAN21	**Skill Enhancement Course IV: Non Major Elective Course :** Statistics for Data Analytics	9	5	0	8	0	5	5
III	I	23UTAG31	Podhu Tamil/Hindi– III	10	8	2	8	2	2	2
	II	23UENL31	General English – III	10	8	3	9	3	3	2
	III	23UMAC31	**Core Course V –** : Vector Calculus and Applications	15	12	5	8	0	2	3
		23UMAC32	**Core Course – VI :** Differential Equations and Applications	15	12	5	8	2	3	3
		23UMAA31	**Elective Course Generic/ Discipline Specific - III:** Mathematical Statistics	15	12	5	8	4	6	3
	IV	23UMAS3P	**Skill Enhancement Course– V**: **(Entrepreneurial Skill)**- Practical: Web Designing	10	7	4	10	3	6	4
		23UMAS3Q	**Skill Enhancement Course – VI:** Practical: LaTex	12	7	5	10	0	6	4
IV	I	23UTAG41	Podhu Tamil / Hindi – IV	10	8	2	9	2	2	2
	II	23UENL41	General English – IV	10	9	3	8	2	3	3
	III	23UMAC41	**Core Course –VII :** Industrial Statistics	10	10	6	8	3	10	3
		23UMAC42	**Core Course – VIII** : Elements of Mathematical Analysis	15	10	6	8	0	3	3
		23UMAA41	**Elective Course Generic/ Discipline Specific - IV:** Numerical Methods with Applications	10	10	5	7	2	4	3
	IV	23UMAS4P	**Skill Enhancement Course – VII:** Practical: Statistics with SPSS	8	9	7	9	3	5	3
		23UMAS4Q	**Skill Enhancement Course – VIII:** Practical:	10	10	7	8	3	5	3

			Data Analysis using R							
		23UESR41	Environmental Studies	8	5	1	7	8	5	5
V	III	23UMAC51	**Core Course – IX :** Abstract Algebra	15	10	7	8	0	4	3
		23UMAC52	**Core Course – X :** Real Analysis	15	10	7	7	0	3	3
		23UMAC53	**Core Course – XI :** Mathematical Modelling	15	12	9	8	4	6	3
		23UMAJ51	**Core Course – XII:** Project with Viva Voce	13	10	10	11	4	5	3
		23UMAO5P 23UMAO5Q	**Elective Courses Generic/ Discipline Specific - V:** 1. Programming in C with Practical 2. PHP Programming with Practical	10	10	4	8	4	5	3
		23UMAO51 23UMAO52	**Elective Courses Generic/ Discipline Specific - VI:** 1. Optimization Techniques 2. Integral Transforms & Z Transforms	15	10	7	7	1	4	3
	IV	23UVED51	Value Education	8	5	1	5	9	4	7
		23UMAJ52	Internship/Industrial Training	8	12	4	7	1	5	8
VI	III	23UMAC61	**Core Course – XIII :** Linear Algebra	15	12	6	8	0	6	3
		23UMAC62	**Core Course – XIV :** Complex Analysis	15	12	6	9	0	3	3
		23UMAC63	**Core Course – XV:** Mechanics	15	12	4	10	0	4	3
		23UMAO61 23UMAO62	**Elective Courses Generic/ Discipline Specific - VII:** 1. Graph Theory and Applications 2. Discrete Mathematics	15	10	8	7	3	4	3
		23UMAO6P 23UMAO6Q	**Elective Courses Generic/ Discipline Specific - VIII:** 1. Programming in C++ with Practical 2. Programming in	10	10	4	8	4	5	3

			Python with Practical							
	IV	23UMAS6P	**Skill Enhancement Course – IX: Professional Competency Skill:** Practical: Computational Mathematics	13	10	4	10	3	6	3
	V	-	Extension Activity	8	2	1	7	9	8	5
Total Weightage of all Courses Contributing to PO				**519**	**419**	**189**	**348**	**91**	**177**	**148**

SRI KALISWARI COLLEGE (AUTONOMOUS), Sivakasi
(Affiliated to Madurai Kamaraj University, Re-accredited with A Grade (CGPA 3.11) byNAAC)
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
OUTCOME-BASED EDUCATION WITH CHOICE BASED CREDIT SYSTEM
(From 2023-2024 Batch onwards)

PROGRAMME ARTICULATION MATRIX – WEIGHTED PERCENTAGE

Semester	Part	Course Code	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7
I	I	23UTAG11	Podhu Tamil / Hindi – I	1.93	1.67	1.06	2.3	2.2	1.13	2.03
	II	23UENL11	General English – I	1.93	1.67	1.06	2.3	2.2	1.13	2.03
	III	23UMAC11	**Core Course –I :** Algebra & Trigonometry	2.89	2.86	2.12	2.3	0	1.69	2.03
		23UMAC12	**Core Course –II :** Differential Calculus	2.89	2.86	2.12	2.87	0	2.26	2.03
		23UMAA11	**Elective Course Generic/ Discipline Specific - I:** Physics I	2.5	2.63	1.59	1.72	3.3	1.69	2.03
		23UMAA1P	**Elective Course Generic/ Discipline Specific - I:** Practical: Physics I	1.93	2.39	1.59	1.15	4.4	1.69	2.03
	IV	23UMAS11	**Skill Enhancement Course I: Foundation Course:** Bridge Mathematics	1.73	2.15	2.12	1.44	0	2.26	2.7
		23UMAN11	**Skill Enhancement Course II: Non Major Elective Course :** Mathematics for Competitive Examinations	1.73	1.19	0	2.3	0	2.82	3.38
II	I	23UTAG21	Podhu Tamil / Hindi – II	1.93	1.91	1.06	2.3	2.2	1.13	2.03
	II	23UENL21	General English – II	1.93	1.91	1.06	2.3	2.2	1.13	2.03
	III	23UMAC21	**Core Course III :** Analytical Geometry(Two & Three Dimensions)	2.89	2.86	2.65	2.59	0	1.69	2.03
		23UMAC22	**Core Course IV :** Integral Calculus	2.7	2.86	2.12	2.87	0	2.26	2.03

		23UMAA21	**Elective Course Generic/ Discipline Specific - II:** Physics II	2.5	2.63	2.65	1.72	3.3	1.69	2.03
		23UMAA2P	**Elective Course Generic/ Discipline Specific - II:** Practical: Physics II	1.93	2.39	1.59	1.15	4.4	1.69	2.7
	IV	23UMAS2P	**Skill Enhancement Course– III**: Practical: Office Automation	1.93	1.91	1.59	2.87	2.2	3.39	2.03
		23UMAN21	**Skill Enhancement Course IV: Non Major Elective Course :** Statistics for Data Analytics	1.73	1.19	0	2.3	0	2.82	3.38
III	I	23UTAG31	Podhu Tamil/Hindi– III	1.93	1.91	1.06	2.3	2.2	1.13	1.35
	II	23UENL31	General English – III	1.93	1.91	1.59	2.59	3.3	1.69	1.35
	III	23UMAC31	**Core Course V –** : Vector Calculus and Applications	2.89	2.86	2.65	2.3	0	1.13	2.03
		23UMAC32	**Core Course – VI :** Differential Equations and Applications	2.89	2.86	2.65	2.3	2.2	1.69	2.03
		23UMAA31	**Elective Course Generic/ Discipline Specific - III:** Mathematical Statistics	2.89	2.86	2.65	2.3	4.4	3.39	2.03
	IV	23UMAS3P	**Skill Enhancement Course– V**: **(Entrepreneurial Skill)**- Practical: Web Designing	1.93	1.67	2.12	2.87	3.3	3.39	2.7
		23UMAS3Q	**Skill Enhancement Course – VI:** Practical: LaTex	2.31	1.67	2.65	2.87	0	3.39	2.7
IV	I	23UTAG41	Podhu Tamil / Hindi – IV	1.93	1.91	1.06	2.59	2.2	1.13	1.35
	II	23UENL41	General English – IV	1.93	2.15	1.59	2.3	2.2	1.69	2.03
	III	23UMAC41	**Core Course –VII :** Industrial Statistics	1.93	2.39	3.17	2.3	3.3	5.65	2.03
		23UMAC42	**Core Course – VIII** : Elements of Mathematical Analysis	2.89	2.39	3.17	2.3	0	1.69	2.03
		23UMAA41	**Elective Course Generic/ Discipline Specific - IV:** Numerical Methods with Applications	1.93	2.39	2.65	2.01	2.2	2.26	2.03

	IV	23UMAS4P	**Skill Enhancement Course – VII:** Practical: Statistics with SPSS	1.54	2.15	3.7	2.59	3.3	2.82	2.03
		23UMAS4Q	**Skill Enhancement Course – VIII:** Practical: Data Analysis using R	1.93	2.39	3.7	2.3	3.3	2.82	2.03
		23UESR41	Environmental Studies	1.54	1.19	0.53	2.01	8.79	2.82	3.38
V	III	23UMAC51	**Core Course – IX :** Abstract Algebra	2.89	2.39	3.7	2.3	0	2.26	2.03
		23UMAC52	**Core Course – X :** Real Analysis	2.89	2.39	3.7	2.01	0	1.69	2.03
		23UMAC53	**Core Course – XI :** Mathematical Modelling	2.89	2.86	4.76	2.3	4.4	3.39	2.03
		23UMAJ51	**Core Course – XII:** Project with Viva Voce	2.5	2.39	5.29	3.16	4.4	2.82	2.03
		23UMAO5P 23UMAO5Q	**Elective Courses Generic/ Discipline Specific - V:** 1. Programming in C with Practical 2. PHP Programming with Practical	1.93	2.39	2.12	2.3	4.4	2.82	2.03
		23UMAO51 23UMAO52	**Elective Courses Generic/ Discipline Specific - VI:** 1. Optimization Techniques 2. Integral Transforms & Z Transforms	2.89	2.39	3.7	2.01	1.1	2.26	2.03
	IV	23UVED51	Value Education	1.54	1.19	0.53	1.44	9.89	2.26	4.73
		23UMAJ52	Internship/Industrial Training	1.54	2.86	2.12	2.01	1.1	2.82	5.41
VI	III	23UMAC61	**Core Course – XIII :** Linear Algebra	2.89	2.86	3.17	2.3	0	3.39	2.03
		23UMAC62	**Core Course – XIV :** Complex Analysis	2.89	2.86	3.17	2.59	0	1.69	2.03
		23UMAC63	**Core Course – XV:** Mechanics	2.89	2.86	2.12	2.87	0	2.26	2.03
		23UMAO61 23UMAO62	**Elective Courses Generic/ Discipline Specific - VII:** 1. Graph Theory and Applications 2. Discrete Mathematics	2.89	2.39	4.23	2.01	3.3	2.26	2.03

		23UMAO6P 23UMAO6Q	**Elective Courses Generic/ Discipline Specific - VIII:** 1. Programming in C++ with Practical 2. Programming in Python with Practical	1.93	2.39	2.12	2.3	4.4	2.82	2.03
	IV	23UMAS6P	**Skill Enhancement Course – IX: Professional Competency Skill:** Practical: Computational Mathematics	2.5	2.39	2.12	2.87	3.3	3.39	2.03
	V	-	Extension Activity	1.54	0.48	0.53	2.01	9.89	4.52	3.38
Total Weightage Percentage of Course Contribution to Pos				**100**	**100**	**100**	**100**	**100**	**100**	**100**

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF TAMIL
UG PROGRAMME - B.A., B.Sc., B.Com., BBA.,BCA.,
SEMESTER - I
பொதுத்தமிழ் - I (23UTAG11)
(From 2023-2024 Batch onwards)

HOURS / WEEK: 6 **INT. MARKS : 25**
CREDITS : 3 **EXT. MARKS : 75**
DURATION : 90 hrs **MAX. MARKS: 100**

நோக்கங்கள்

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

கற்றலின் பயன்கள்

இத்தாளை வெற்றிகரமாக முடித்தவுடன் மாணவர்கள்,

CO1[K1]: பாரதியார் காலந்தொட்டு தற்காலக் கவிதைகள் வரை கவிதை இலக்கியம் அறிமுகப்படுத்தப்படுவதால் அவற்றை அடையாளம் காண்பர்.

CO2[K2]: கவிதை வரலாற்றினை புரிந்து கொண்டு பிழை இல்லாமல் எழுதும் திறன் பெறுவர்.

CO3[K3]: இக்கால இலக்கிய வகைகள் மற்றும் இலக்கணம் கற்பதன் மூலம் அவற்றை தம் வாழ்நிலையோடு பொருத்திப் பார்ப்பர்.

CO4[K4]: மொழியறிவோடு சிந்தனைத்திறன் பெற்று இலக்கியம் மற்றும் இலக்கணங்களைப் பகுப்பாய்வர்.

CO5[K5]: உலகளாவிய இலக்கியங்களைக் கற்று மதிப்பீடு செய்வர்.

CO/PO Mapping Table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	2	-	2	-	-	-
CO2[K2]	2	2	-	2	-	-	-
CO3[K3]	2	1	-	2	1	-	1
CO4[K4]	2	1	1	1	1	1	1
CO5[K5]	2	1	1	1	-	1	1
Weightage of the Course	10	07	02	08	02	02	03
Weighted percentage of Course Contribution to POs	1.93	1.67	1.06	2.3	2.2	1.13	2.03

Based on the Level of Contribution('3' -High, '2' -Medium, '1' -Low, '-' No correlation)

கூறு I **(18 hrs)**

மரபுக்கவிதை: பெ.சுந்தரனார் - தமிழ்த் தெய்வ வணக்கம், பாரதிதாசன் - சிறுத்தையை வெளியில் வா, கவிமணி - புத்தரும் சிறுவனும், முடியரசன் - மொழி உணர்ச்சி, கண்ணதாசன் - ஆட்டனத்தி ஆதிமந்தி - ஆதிமந்திபுலம்பல், சுரதா - துறைமுகம் தொகுப்பிலிருந்து ஏதேனும் ஒருகவிதை, தமிழ் ஒளி - கடல்

கூறு II **(18 hrs)**

புதுக்கவிதை: அப்துல் ரகுமான் - வீட்டுக்கொருமரம் வளர்ப்போம், ஈரோடு தமிழன்பன் - சென்ரியூ கவிதைகள் (ஏதேனும் ஐந்து கவிதைகள்), வைரமுத்து - பிற்சேர்க்கை, மு.மேத்தா - வாழைமரம், அறிவுமதி - வள்ளுவம் பத்து, நா முத்துக்குமார் - ஆனந்தயாழை மீட்டுகிறாய், சுகிர்தராணி - சபிக்கப்பட்ட முத்தம், இளம் பிறை - நீ எழுத மறுக்கும் எனது அழகு.

கூறு III **(18 hrs)**

சிறுகதைகள் : வாய்ச்சொற்கள் - ஜெயகாந்தன் (மாலைமயக்கம் தொகுப்பு), கடிதம் - புதுமைப்பித்தன், கரு - உமாமகேஸ்வரி, முள்முடி - தி.ஜானகிராமன், சிதறல்கள் - விழி.பா.இதயவேந்தன், காகிதஉறவு - சு.சமுத்திரம், வீட்டின் மூலையில் சமையல் அறை - அம்பை, (மொழிபெயர்ப்புக் கதை) ஆண்டன் செக்காவ் - நாய்க்காரச் சீமாட்டி, சந்தியா பதிப்பகம்.

கூறு IV **(18 hrs)**

மரபுக்கவிதை கவிதை தோற்றம் வளர்ச்சி - புதுக்கவிதை கவிதை தோற்றம் வளர்ச்சி - சிறுகதை தோற்றம் வளர்ச்சி

கூறு V **(18 hrs)**

மொழித்திறன் போட்டிதேர்வு: பொருள் பொதிந்த சொற்றொடர் அமைத்தல், ஓர் எழுத்து ஒருமொழி, வேற்றுமை உருபுகள், திணை, பால், எண், இடம், கலைச்சொல்லாக்கம், மொழிபெயர்ப்பு.
(குறிப்பு: அலகு 4, 5 ஆகியன போட்டித் தேர்வு நோக்கில் நடத்தப்பட வேண்டும்).

பாடநூல்கள்

1. தமிழியல் துறையினர், *தொகுப்பு நூல்,* ஸ்ரீ காளீஸ்வரி கல்லூரி (தன்னாட்சி), சிவகாசி.
2. வாசுதேவன், கா. *பன்முக நோக்கில் தமிழ் இலக்கிய வரலாறு,* தேவன் பதிப்பகம், திருச்சிராப்பள்ளி, 2017.

பார்வை நூல்கள்

1. சிற்பி. பாலசுப்பிரமணியன், *தமிழ் இலக்கிய வரலாறு,* கவிதா வெளியீடு, சென்னை.
2. தமிழண்ணல், *புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு,* சோலை பதிப்பகம், மதுரை
3. பாக்கியமேரி, *வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு*, பாரி நிலையம், சென்னை.

வலைப்பதிவுகள் (Web Sources)

1. Tamil Heritage Foundation- www.tamilheritage.org <http://www.tamilheritage.org>
2. Tamil virtual University Library- www.tamilvu.org/ library http://www.virtualvu.org/library
3. Project Madurai - www.projectmadurai.org.
4. Chennai Library- www.chennailibrary.com <http://www.chennailibrary.com>.
5. Tamil Universal Digital Library- www.ulib.prg <http://www.ulib.prg>.
6. Tamil E-Books Downloads- tamilebooksdownloads. blogspot.com

7. Tamil Books on line- books.tamil cube.com
8. Catalogue of the Tamil books in the Library of British Congress archive.org
9. Tamil novels on line - books.tamilcube.com

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF ENGLISH
UG PROGRAMME - B.A./ B.COM/B.B.A./ B.SC./BCA
SEMESTER- I
GENERAL ENGLISH-I (23UENL11)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 6 (L-5, T-1) **INT. MARKS : 25**
CREDITS : 3 **EXT. MARKS : 75**
DURATION : 90 hrs **MAX. MARKS : 100**

Course Objectives

- To enable learners to acquire the linguistic competence necessarily required in various life situations.
- To help them understand the written text and able to use skimming, scanning skills
- To assist them in creative thinking abilities.
- To enable them become better readers and writers.
- To assist them in developing correct reading habits, silently, extensively and intensively.

Course Outcomes (CO)

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

CO1[K1]: identify the use of the language skills i.e. Reading, Listening, Speaking and Writing.
CO2[K2]: demonstrate communicative skills by articulating simple dialogues and instructions.
CO3[K3]: apply knowledge of word power and grammar in framing correct sentences.
CO4[K4]: analyze prose, poetry and short stories to develop language skills through literature.
CO5[K5]: assess the linguistic competence that enables them, in the future, to present their views in various social, academic and employment situations.

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	2	-	2	-	-	-
CO2[K2]	2	2	-	2	-	-	-
CO3[K3]	2	1	-	2	1	-	1
CO4[K4]	2	1	1	1	1	1	1
CO5[K5]	2	1	1	1	-	1	1
Weightage of the course	10	07	02	08	02	02	03
Weighted percentage of Course contribution	1.93	1.67	1.06	2.3	2.2	1.13	2.03

to POs							

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' No Correlation)

UNIT I - PROSE **(18 hrs)**

Jerome K Jerome	–	Uncle Podger Hangs a Picture
David Sedaris	–	Us and Them -From Dress Your Family in Corduroy and Denim
Harish Bhat	–	JRD

UNIT II - POETRY **(18 hrs)**

William Ralph Emerson	–	A Nation's Strength
Paul Laurence Dunbar	–	The Sparrow
Subramania Bharati	–	A Patch of Land
Chinua Achebe	–	Love Cycle

UNIT III - SHORT STORIES **(18 hrs)**

Bhabani Bhattacharya	–	The Faltering Pendulum
R.K. Laxman	–	The Gold Frame
Sudha Murthy	–	How I Taught My Grandmother to Read

UNIT IV - LANGUAGE COMPETENCY **(18 hrs)**

Vocabulary: Synonyms, Antonyms, Word Formation
Appropriate use of Articles and Parts of speech
Error Correction

UNIT V - ENGLISH FOR WORKPLACE **(18 hrs)**

Self-Introduction, Greetings
Introducing others
Listening for General and Specific Information
Listening to and Giving Instructions/Directions

TEXTBOOKS

1. Bhattacharya, Bhabani. *Steel Hawk and other stories*. New Delhi: Sahitya Akademi, 1967.
2. Sudha, Murthy. *How I Taught My Grandmother to Read and other Stories*, India: Penguin Books, 2004.

REFERENCES

Books

1. Kumar, Vijay T & K Durga Bhavani. *English in use -A Textbook for College Students.* YL Srinivas
2. Swan, Michael. *Practical English Usage* - 4th Edition. New York: Oxford University Press, 2016.
3. Shepherd Margaret & Sharon Hogan. Penny Carter (Illustrator). *The Art of Civilized Conversation: A Guide to Expressing Yourself with Style and Grace.* Now York: Broadway Books, 2005.

Web Sources

1. https://books.google.co.in/books?id=iSHvOmXuvLMC&printsec=frontcover&dq=subramania+bharati+poems&hl=en&newbks=1&newbks_redir=0&source=gb_mobile_search&sa=X&redir_esc=y#v=onepage&q=subramania%20bharati%20poems&f=false
2. https://poets.org/poem/sparrow-0
3. https://poets.org/poem/nations-strength
4. https://www.best-poems.net/chinua-achebe/love-cycle.html
5. https://www.tata.com/newsroom/heritage/coffee-tea-jrd-tata-stories
6. https://legacy.npr.org/programs/morning/features/2004/jun/sedaris/usandthem.html
7. http://rosyhunt.blogspot.com/2013/01/uncle-podger-hangs-picture.html
8. https://fybaenglish.blogspot.com/2018/12/the-gold-frame-r-k-laxman.html

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - I
CORE COURSE –I: ALGEBRA & TRIGONOMETRY (23UMAC11)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 4 **INT. MARKS : 25**
CREDITS : 4 **EXT. MARKS : 75**
DURATION : 60 hrs **MAX. MARKS: 100**

Course Objectives

- To know about the basic ideas of Theory of Equations, Matrices
- To find the eigen values and eigen vectors of a matrix.
- To study logarithm of a complex number and hyperbolic functions.
- To study about expansions of trigonometric functions.

Course Outcomes (CO)

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

CO1[K1]: state the characterization of reciprocal equations, sum of binomial, exponential, logarithmic, trigonometric series, eigen values, eigen vectors of a matrix and expansion of trigonometric functions

CO2[K2]: demonstrate the method of solving reciprocal equations, expansion of trigonometric functions, characteristic property of hyperbolic functions, Cayley-Hamilton theorem, summation of series

CO3[K3]: find eigen values, eigen vectors of a matrix, solution of reciprocal equations , sum of binomial, exponential, logarithmic, trigonometric functions

CO4[K4]: explain the classification of reciprocal equations, relationship between circular and hyperbolic functions, the method of diagonalization of square matrices and the sum of binomial, exponential, logarithmic, trigonometric series

CO5[K5]: determine the solution of reciprocal equations, sum of binomial, exponential, logarithmic, trigonometric series, powers and inverse of a square matrix and the expansion of trigonometric functions

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	1	-	-	-	-	-
CO2[K2]	3	2	1	1	-	-	-
CO3[K3]	3	3	1	2	-	1	1
CO4[K4]	3	3	1	2	-	1	1

CO5[K5]	3	3	1	3	-	1	1
Weightage of the course	15	12	04	08	-	03	03
Weighted percentage of Course contribution to POs	2.89	2.86	2.12	2.3	0	1.69	2.03

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' No Correlation)

UNIT I **(12 hrs)**

Theory of Equations: Reciprocal Equations - Standard form – Increasing or decreasing the roots of a given equation - Removal of terms - Approximate solutions of roots of polynomials by Horner's method – related problems.

UNIT II **(12 hrs)**

Summation of Series: Binomial – Approximations - Exponential –Logarithmic series (Theorems without proof) – related problems.

UNIT III **(12 hrs)**

Matrices: Characteristic equation – Eigen values and Eigen Vectors - Similar matrices - Cayley – Hamilton Theorem (Statement only) - Finding powers of square matrix, Inverse of a square matrix up to order 3, Diagonalization of square matrices - related problems.

UNIT IV **(12 hrs)**

Expansions of $\sin n\theta$, $\cos n\theta$ in powers of $\sin\theta$, $\cos\theta$ - Expansion of $\tan n\theta$ in terms of $\tan\theta$, Expansions of $\cos^n\theta$, $\sin^n\theta$, $\cos^m\theta\sin^n\theta$ –Expansions of $\tan(\theta_1+\theta_2+,\ldots,+\theta_n)$- Expansions of $\sin\theta$, $\cos\theta$ and $\tan\theta$ in terms of θ - related problems.

UNIT V **(12 hrs)**

Hyperbolic functions – Relation between circular and hyperbolic functions - Inverse hyperbolic functions - Logarithm of complex quantities - Summation of trigonometric series - related problems.

TEXTBOOKS

1. W.S. Burnstine and A.W. Panton, *Theory of equations,* New Delhi: S. Chand & Co, 2006.
2. David C. Lay, *Linear Algebra and its Applications*, 3rd Ed., Pearson Education Asia, Indian Reprint, 2007.
3. G.B. Thomas and R.L. Finney, *Calculus*, 9th Ed., Pearson Education, Delhi: 2005.
4. C. V. Durell and A. Robson, *Advanced Trigonometry*, Courier Corporation, 2003.
5. J. Stewart, L. Redlin, and S. Watson, *Algebra and Trigonometry*, Cengage Learning, 2012.

6. G.B. Thomas and R. L. Finny,*Calculus and Analytical Geometry*, Pearson Publication, 9th Edition, 2010.

REFERENCES

Books

1. T.K.Manicavachagom Pillay, T.Natarajan and K.S.Ganapathy. *Algebra, Volume I*. Viswanathan Publication, 2012.
2. T.K.Manicavachagom Pillay, T.Natarajan and K.S.Ganapathy. *Algebra, Volume II*. Viswanathan Publication, 2011.
3. S. Narayanan and T.K.Manicavachagom Pillay. Trigonometry, S. Viswanathan Publication, 2004.

Web Sources

1. https://www.google.com/url?sa=t&source=web&rct=j&url=http://umv.science.upjs.sk/madaras/MZIa/MZIa2011_1en.pdf&ved=2ahUKEwimi4bjwenvAhWo7XMBHf0qCYwQFjAAegQIGBAC&usg=AOvVaw1Lvu-0OOkIXwlso15D2ClG
2. https://www.google.com/url?sa=t&source=web&rct=j&url=https://faculty.math.illinois.edu/~hildebr/347.summer19/nt2.pdf&ved=2ahUKEwi2kMDMwunvAhVvFbcAHUbhCvMQFjAAegQICBAC&usg=AOvVaw1PiIHKcaL_m-BeX_JnMASV&cshid=1617708817107
3. https://www.google.com/url?sa=t&source=web&rct=j&url=https://sites.google.com/a/iitjeemathematics.com/www/conte/quadratic-equations/14-transformation-of-equations&ved=2ahUKEwjs_qT8w-nvAhUk63MBHT2pD7QQFjAAegQIGBAC&usg=AOvVaw0p0bOu7ik13a2FKny1QUYO&cshid=1617709125913
4. https://youtu.be/7O14oeHLaFM
5. https://youtu.be/SCvtxjpVQms

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - I
CORE COURSE –II: DIFFERENTIAL CALCULUS (23UMAC12)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 4 **INT. MARKS : 25**
CREDITS : 4 **EXT. MARKS : 75**
DURATION : 60 hrs **MAX. MARKS: 100**

Course Objectives

- To know about the basic skills of differentiation, successive differentiation, and their applications.
- To study the notions of curvature, evolutes, involutes and polar co-ordinates .
- To study application of differentiation such as finding maxima and minima of functions

Course Outcomes (CO)

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

CO1[K1]: describe nth derivative, partial derivative, total derivative of functions and the method of finding envelope and curvature

CO2[K2]: exemplify successive differentiation, partial differentiation, the envelope of given family of curves, evolute, involute and curvature of curves

CO3[K3]: apply successive differentiation and partial differentiation in finding envelope and curvature

CO4[K4]: analyze the method of finding successive differentiation, partial differentiation, envelope and curvature

CO5[K5]: determine successive differentiation, partial differentiation of functions, envelope of family of curves and curvature of a curve

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	1	-	2	-	-	-
CO2[K2]	3	2	1	2	-	-	-
CO3[K3]	3	3	1	2	-	2	1
CO4[K4]	3	3	1	2	-	1	1
CO5[K5]	3	3	1	2	-	1	1
Weightage of the course	15	12	04	10	-	04	03

Weighted percentage of Course contribution to Pos	2.89	2.86	2.12	2.87	0	2.26	2.03

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' No Correlation)

UNIT I **(12 hrs)**

Successive Differentiation: Introduction (Review of basic concepts) – The n^{th} derivative – Standard results – Fractional expressions – Trigonometrical transformation – Formation of equations involving derivatives – Leibnitz formula for the n^{th} derivative of a product.

UNIT II **(12 hrs)**

Partial Differentiation: Partial derivatives – Successive partial derivatives – Function of a function rule – Total differential coefficient – A special case – Implicit Functions.

UNIT III **(12 hrs)**

Partial Differentiation (Continued): Homogeneous functions – Partial derivatives of a function of two variables – Maxima and Minima of functions of two variables - Lagrange's method of undetermined multipliers.

UNIT IV **(12 hrs)**

Envelope: Method of finding the envelope – Another definition of envelope – Envelope of family of curves which are quadratic in the parameter.

UNIT V **(12 hrs)**

Curvature: Definition of Curvature – Circle, Radius and Centre of Curvature – Cartesian Formula for the radius of Curvature – The Co-ordinates of the Centre of Curvature - Evolute and Involute – Radius of Curvature in Polar Co-ordinates – Pedal Equation of a Curve .

TEXTBOOKS

1. H. Anton, I. Birens and S. Davis. *Calculus*. John Wiley and Sons, Inc., 2002
2. G. B. Thomas and R. L. Finney. *Calculus*. Pearson Education, 2010.
3. M.J. Strauss, G.L. Bradley and K. J. Smith, *Calculus*, *3rd Ed*. Delhi: Dorling Kindersley (India) P. Ltd. (Pearson Education), 2007.

REFERENCES

Books

1. R. Courant and F. John, *Introduction to Calculus and Analysis* (Volumes I & II), Springer- Verlag, New York, Inc., 1989.

2. T. Apostol, *Calculus*, Volumes I and II, Wiley India Pvt. Ltd.
3. S. Goldberg, *Calculus and mathematical analysis*, Dover Publications Inc.
4. S. Narayanan and T.K. Manickavachagom Pillay. *Calculus, Volume I*. S. Viswanathan Publishers Pvt. Ltd, 2006.

Web Sources

1. https://byjus.com/radius-of-curvature-formula/
2. https://theengineeringmaths.com/wpcontent/uploads/2017/08/Chapter-1-Successive-Differentiation-.pdf
3. https://www.youtube.com/watch?v=_WcPtsuMMz0
4. https://www.youtube.com/watch?v=btLWNJdHzSQ

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF PHYSICS
UG Programme – B.Sc. Maths/Chemistry
SEMESTER - I/III
ELECTIVE COURSE GENERIC/ DISCIPLINE SPECIFIC - I/III: PHYSICS – I
(23UMAA11/23UCHA31)
(From 2023-2024 Batch onwards)

HOURS/WEEK	**: 4**	**INT. MARKS**	**: 25**
CREDITS	**: 3**	**EXT. MARKS**	**: 75**
DURATION	**: 60 hrs**	**MAX. MARKS**	**: 100**

Course Objectives

- To analyze and demonstrate the various dynamic motions mathematically and relate the theory with practical applications.
- To impart the basic concepts of elasticity, viscosity and surface tension of materials and describe the experimental methods to determine it.
- To describe the process of liquefactions of gases, working of heat engines and concepts of change in entropy with theory.
- To impart the basic concepts of electricity and magnetism, AC current and voltage, household and factory electrical wiring.
- To introduce logic gates, universal building blocks, Boolean theorems
- To know the government initiatives for Digital India.

Course Outcomes (CO)

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

CO1[K1]: outline the basic concepts of waves, oscillations, ultrasonics, properties of matter, heat and thermodynamics, electricity and magnetism, and digital electronics

CO2[K2]: explain the basic principles with theory pertaining to the course

CO3[K3]: apply basic concepts to derive the expressions and solve problems

CO4[K4]: analyze and verify the basic concepts in the physical processes

CO5[K5]: examine the experimental methods to determine the physical parameters

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1 [K1]	3	1	-	1	-	-	-
CO2 [K2]	3	1	-	2	-	-	-
CO3 [K3]	3	3	1	1	1	1	1
CO4 [K4]	2	3	1	1	1	1	1
CO5 [K5]	2	3	1	1	1	1	1
Weightage of	13	11	03	06	03	03	03

the course							
Weighted percentage of Course contribution to POs	2.5	2.63	1.59	1.72	3.3	1.69	2.03

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low, '-' No Correlation)

UNIT I – WAVES, OSCILLATIONS AND ULTRASONICS (12 hrs)

Simple Harmonic Motion (SHM) – Composition of Two SHMs at Right Angles (Periods in the Ratio 1:1) – Lissajous Figures – Uses – Laws of Transverse Vibrations of Strings – Determination of AC Frequency Using Sonometer (Steel and Brass Wires). Ultrasound – Production – Piezoelectric Method – Application of Ultrasonics: Medical Field – Lithotripsy, Ultrasonography – Ultrasonoimaging- Ultrasonics in Dentistry – Physiotheraphy, Opthalmology – Advantages of Noninvasive Surgery – Ultrasonics in Green Chemistry.

UNIT II – PROPERTIES OF MATTER (12 hrs)

Elasticity: Elastic Constants – Bending of Beam – Theory of Non- Uniform Bending – Determination of Young's Modulus by Non-Uniform Bending – Energy Stored in a Stretched Wire – Torsion of a Wire – Determination of Rigidity Modulus by Torsional Pendulum. **Viscosity:** Streamline and Turbulent Motion – Critical Velocity – Coefficient of Viscosity – Poiseuille's Formula – Comparison of Viscosities – Burette Method. **Surface Tension:** Definition – Molecular Theory – Droplets Formation – Shape, Size and Lifetime – COVID Transmission through Droplets, Saliva – Drop Weight Method – Interfacial Surface Tension.

UNIT III – HEAT AND THERMODYNAMICS (12 hrs)

Joule-Kelvin Effect – Joule-Thomson Porous Plug Experiment – Theory – Temperature of Inversion – Liquefaction of Oxygen – Linde's Process of Liquefaction of Air – Liquid Oxygen for Medical Purpose – Importance of Cryocoolers – Thermodynamic System – Thermodynamic Equilibrium – Laws of Thermodynamics – Heat Engine – Carnot's Cycle – Efficiency – Entropy – Change of Entropy in Reversible and Irreversible Process.

UNIT IV – ELECTRICITY AND MAGNETISM (12 hrs)

Potentiometer – Principle – Measurement of Thermo emf using Potentiometer – Magnetic Field due to a Current Carrying Conductor – Biot-Savart's law – Field along the Axis of the Coil Carrying Current – Peak, Average and RMS Values of AC Current and Voltage – Power Factor and Current Values in an AC circuit – Types of Switches in Household and Factories – Smart WiFi Switches - Fuses and Circuit Breakers in Houses.

UNIT V – DIGITAL ELECTRONICS AND DIGITAL INDIA (12 hrs)

Logic Gates, OR, AND, NOT, NAND, NOR , EXOR Logic Gates – Universal Building Blocks – Boolean Algebra – De Morgan's Theorem – Verification. Overview of Government Initiatives: Software Technological Parks Under MeitY, NIELIT-Semiconductor Laboratories Under Dept. of Space – An Introduction to Digital India.

UNIT VI – PROFESSIONAL COMPONENTS (NOT FOR EXAMINATION)

Expert Lectures – Seminars – Webinars – Industry Inputs – Social Accountability – Patriotism.

TEXTBOOKS

1. Murugesan R. *Allied Physics*. New Delhi: S.Chand & Co., 2001.
2. Brijlal and N. Subramanyam. Waves and Oscillations. New Delhi: Vikas Publishing House, 2001.
3. Murugesan R. *Properties of Matter*. New Delhi: S.Chand & Co., 2012.
4. Rajam J.B. and Arora C.L. *Heat and Thermodynamics.* New Delhi: S.Chand & Co., Eighth edition, 1976.
5. Murugeshan R. *Optics and Spectroscopy*. New Delhi: S.Chand & Company Ltd., Sixth Edition, 2006.
6. Subramaniyam A. *Applied Electronics*. Chennai: National Publishing Co., Second Edition, 1996.

REFERENCES

Books

1. Resnick Halliday and Walker. *Fundamentals of Physics*. Singapore:John Willey and Sons, Asia Pvt. Ltd., Eleventh edition, 2018.
2. Khanna V.R. and Bedi R.S. *Text book of Sound.* Meerut: Kedharnaath Publish & Co, First Edition, 1998.
3. Khare N.S. and Srivastava S.S. *Electricity and Magnetism.* New Delhi: Atma Ram & Sons, Tenth Edition, 1983.
4. Khanna D.R. and Gulati H.R. *Optics.* New Delhi: S. Chand & Co. Ltd., 1979.
5. Mehta V.K and Rohit Mehta. *Principles of Electronics.* New Delhi: S.Chand & Company Ltd., Revised Eleventh Edition, Reprint 2013.

Web Sources

1. https://youtu.be/M_5KYncYNyc
2. https://youtu.be/ljJLJgIvaHY
3. https://youtu.be/7mGqd9HQ_AU
4. https://youtu.be/h5jOAw57OXM
5. https://www.youtube.com/watch?v=t6nGiBzGLD8
6. https://ncert.nic.in/ncerts/l/jesc113.pdf

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF PHYSICS
UG Programme – B.Sc. Maths/Chemistry
SEMESTER - I/III
ELECTIVE COURSE GENERIC/DISCIPLINE SPECIFIC- I/III: PRACTICAL: PHYSICS – I
(23UMAA1P)
(From 2023-2024 Batch onwards)

HOURS/WEEK	**: 2**	**INT. MARKS**	**: 25**
CREDITS	**: 2**	**EXT. MARKS**	**: 75**
DURATION	**: 30 hrs**	**MAX. MARKS**	**: 100**

Course Objectives

- To set up experiments to understand the various concepts of properties of matter.
- To arrange the experiments to evaluate physical parameters of materials and verify theories.
- To quantify and analyze experimental results.
- To do error analysis and correlate results.

Course Outcomes (CO)

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

CO1[K1]: identify the basic concepts of properties of matter, electricity and digital electronics underlying in the experiments

CO2[K2]: setup the experiment and collect data to determine the physical parameters involved in the experiments

CO3[K3]: calculate the basic parameters involved in the experiments from the experimental data

CO4[K4]: analyze/interpret/plot graph/verify the theorem from the experimental data

CO5[K5]: evaluate the physical parameters using appropriate formula/make conclusions from the experimental data

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1 [K1]	2	1	-	-	-	-	-
CO2 [K2]	2	2	-	1	1	-	-
CO3 [K3]	2	2	1	1	1	1	1
CO4 [K4]	2	2	1	1	1	1	1
CO5 [K5]	2	3	1	1	1	1	1
Weightage of the course	10	10	03	04	04	03	03

Weighted percentage of Course contribution to POs	1.93	2.39	1.59	1.15	4.4	1.69	2.03

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low, '-' No Correlation)

LIST OF EXPERIMENTS (Minimum 8**):**

1. Young's Modulus by Non-Uniform Bending using Pin and Microscope
2. Young's Modulus by Non-Uniform Bending using Optic Lever, Scale and Telescope
3. Rigidity Modulus by Static Torsion Method
4. Rigidity Modulus by Torsional Oscillations Without Mass
5. Surface Tension and Interfacial Surface Tension – Drop Weight Method
6. Comparison of Viscosities of Two Liquids – Burette Method
7. Specific Heat Capacity of a Liquid – Half Time Correction
8. Verification of Laws of Transverse Vibrations using Sonometer
9. Calibration of Low Range Voltmeter using Potentiometer
10. Determination of Thermo emf using Potentiometer
11. Verification of Truth Tables of Basic Logic Gates using ICs
12. Verification of De Morgan's Theorems using Logic Gate ICs.
13. Use of NAND as Universal Building Block.

TEXTBOOKS

1. Srinivasan M.N, Balasubramanian S and Ranganathan R. *A Textbook of Practical Physics.* New Delhi: Sultan Chand & Sons, First Edition, Reprint 2011.
2. Ouseph C.C, Rao U.J and Vijayendran V. *Practical Physics and Electronics*. Chennai: Ananda Book Depot, First Edition, Reprint 2019.
3. Ouseph C.C, Srinivasan V and Balakrishnan R. *A Textbook of Practical Physics - Part I.* Chennai: S.Viswanathan (Printers & Publishers) Pvt., Ltd., Revised Edition, Reprint 2000.

REFERENCES

Books

1. Arora C.L. *B Sc Practical Physics.* New Delhi: S.Chand & Sons Co. Ltd., Reprint 2018.
2. Kakani S.L and Shubhra K. *Applied Physics: Theory and Practical*. New Delhi: Viva Books Pvt. Ltd., First Edition, 2015.
3. Manjeet S and Anita D. *Applied Physics: Theory and Experiment*. New Delhi: Vayu Education of India, First Edition, 2011.
4. Tayal D.C. *University Practical Physics*. Mumbai: Himalaya Publishing House, First Millennium Edition, 2000.

Web Sources

1. https://www.youtube.com/watch?v=RvPNGULZASY
2. https://www.youtube.com/watch?v=Ke3xGTfVeCk
3. https://www.youtube.com/watch?v=-vbtoSsRpfk
4. https://www.youtube.com/watch?v=yjOcbjpTCFA
5. https://egyankosh.ac.in/bitstream/123456789/18821/1/Experiment-7.pdf

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. MATHEMATICS
SEMESTER - I
SKILL ENHANCEMENT COURSE I: FOUNDATION COURSE - BRIDGE MATHEMATICS
(23UMAS11)
(From 2023 - 2024 Batch onwards)

HOURS/WEEK: 2 **INT. MARKS : 25**
CREDITS : 2 **EXT. MARKS : 75**
DURATION : 30 hrs **MAX. MARKS: 100**

Course Objectives

- To bridge the gap and facilitate transition from higher secondary to tertiary education.
- To in-still confidence among stakeholders and inculcate interest for Mathematics.

Course Outcomes (CO)

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

CO1[K1]: recall the basics of mathematics
CO2[K2]: explain the fundamentals of mathematics
CO3[K3]: solve simple problems in Algebra, Sequences and Series, Permutations and Combinations, Trigonometry and Calculus
CO4[K4]: interpret the elementary concepts of Algebra, Sequences and Series, Permutations and Combinations, Trigonometry and Calculus
CO5[K5]: assess the formulae and identities in the branches of mathematics, namely, Algebra, Sequences and Series, Permutations and Combinations, Trigonometry and Calculus

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	1	1	-	1	-	-	-
CO2[K2]	2	2	1	1	-	-	-
CO3[K3]	2	2	1	1	-	1	1
CO4[K4]	2	2	1	1	-	1	1
CO5[K5]	2	2	1	1	-	2	2
Weightage of the Course	09	09	04	05	-	04	04
Weighted percentage of Course	1.73	2.15	2.12	1.44	0	2.26	2.7

contributionto Pos							

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low, '-' No Correlation)

UNIT I **(6 hrs)**

Algebra: Binomial theorem - General term - middle term - problems based on these concepts

UNIT II **(6 hrs)**

Sequences and series: Progressions - Fundamental principle of counting - Factorial n.

UNIT III **(6 hrs)**

Combinatorics: Permutations and combinations - Derivation of formulae and their connections - Simple Applications - Combinations with Repetitions - Arrangements within Groups - Formation of Groups.

UNIT IV **(6 hrs)**

Trigonometry: Introduction to Trigonometric ratios - Proof of sin(A+B), cos(A+B), tan(A+B) formulae - Multiple and Submultiple Angles, sin(2A), cos(2A), tan(2A) etc., - Transformations Sum into Product and Product into Sum Formulae - Inverse Trigonometric functions - Sine Rule and Cosine Rule.

UNIT V **(6 hrs)**

Calculus: Limits - Standard Formulae and Problems – Differentiation - Rest Principle - uv Rule - u/v Rule - Methods of Differentiation - Application of Derivatives - Integration – Product Rule and Substitution Method.

TEXTBOOKS

1. NCERT class XI and XII text books.
2. Any State Board Mathematics text books of class XI and XII

REFERENCES

Books

1. TamilNadu State Board Mathematics text book of class XI – Volume -1
2. TamilNadu State Board Mathematics text book of class XI – Volume -2
3. TamilNadu State Board Mathematics text book of class XII – Volume -1

Web Sources

1. https://www.aicte-india.org/sites/default/files/final%20maths.pdf
2. https://egyankosh.ac.in/bitstream/123456789/13834/1/Unit-1.pdf

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - I
SKILL ENHANCEMENT COURSE -II: NON MAJOR ELECTIVE COURSE: MATHEMATICS FOR COMPETITIVE EXAMINATIONS (23UMAN11)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 2 **INT. MARKS : 25**
CREDITS : 2 **EXT. MARKS : 75**
DURATION : 30 hrs **MAX. MARKS : 100**

Course Objectives

- To develop problem solving skills for competitive examinations.
- To understand the concepts of averages, simple interest, compound interest, time and work, profit and loss, and problems on numbers.
- To apply mathematical concepts to solve problems related to competitive examinations.

Course Outcomes (CO)

On Successful completion of the course, the learners will be able to
CO1[K1]: list out the basic mathematical formulae
CO2[K2]: explain the methods of solving aptitude problems
CO3[K3]: manipulate arithmetic operations to solve aptitude problems
CO4[K4]: analyze and make sense of the given data
CO5[K5]: choose the most appropriate method to solve aptitude problems

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	1	-	-	2	-	-	-
CO2[K2]	2	1	-	2	-	1	1
CO3[K3]	2	2	-	2	-	2	2
CO4[K4]	2	1	-	1	-	1	1
CO5[K5]	2	1	-	1	-	1	1
Weightage of the course	09	05	-	08	-	05	05
Weighted percentage of Course contribution to Pos	1.73	1.19	0	2.3	0	2.82	3.38

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low, '-' No Correlation)

UNIT I **(6 hrs)**

Average – Problems on Numbers - Percentage.

UNIT II **(6 hrs)**

Profit and Loss - Ratio and Proportion - Time and Work.

UNIT III **(6 hrs)**

Time and Distance - Problems on Trains- Boats and Streams.

UNIT IV **(6 hrs)**

Alligation or Mixture - Simple Interest - Compound Interest.

UNIT V **(6 hrs)**

Permutations and Combinations - Probability - Odd Man Out and Series.

TEXTBOOK

1. Aggarwal R.S., *Quantitative Aptitude,* New Delhi, S.Chand& Company Ltd., 2011.

REFERENCES

Books

1. Mohan Rao U., *Quantitative Aptitude for Competitive Examinations*, Scitech Publications, 2016.
2. Dr.M.Manoharan, Dr.C.Elango and Prof K.L.Eswaran, *Business Mathematics*, Palani paramount Publications, Reprint 2013.

Web Sources

1. https://tamilnaducareerservices.tn.gov.in/
2. https://1lib.in/book/1197866/7b6778
3. https://www.youtube.com/watch?v=Dsi7x-A89Mw
4. https://www.google.co.in/books/edition/Quantitative_Aptitude_for_Competitive_Ex/0V45QSLII1oC?hl=en&gbpv=1&dq=quantitative+aptitude&printsec=frontcover
5. https://www.google.co.in/books/edition/quantitative_aptitude_test/88ol1Nrb0kcC?hl=en&gbpv=1&dq=quantitative+aptitude&printsec=frontcover
6. https://www.pdfdrive.com/download.pdf?id=54700025&h=38c926aea013abacd9867de9a9144f9c&u=cache&ext=pdf
7. https://www.pdfdrive.com/download.pdf?id=187540802&h=0b85668a8d9ba8e456c0c46ddeb8efb1&u=cache&ext=pdf

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF TAMIL
UG PROGRAMME - B.A., B.Sc., B.Com., BBA., BCA.,
SEMESTER - II
பொதுத்தமிழ் - II (23UTAG21)
(From 2023-2024 Batch onwards)

HOURS / WEEK : 6 **INT. MARKS : 25**
CREDITS : 3 **EXT. MARKS : 75**
DURATION : 90 hrs **MAX. MARKS: 100**

நோக்கங்கள்

- சமய இலக்கியங்களையும் சிற்றிலக்கியங்களையும் மாணவர்களுக்கு அறிமுகப்படுத்துதல்
- மொழித்திறனையும் சிறுகதை இலக்கிய வடிவத்தையும் மாணவர்களுக்கு உணர்த்துதல்.

கற்றலின் பயன்கள்

இத்தாளை வெற்றிகரமாக முடித்தவுடன் மாணவர்கள்,

CO1[K1]: பக்தி இலக்கியங்களைக் கற்பதன் மூலம் பக்தி நெறியினையும், சமய நல்லிணக்கத்தையும் அறிவர்.

CO2[K2]: சமயப்பாடல்கள் மற்றும் சிற்றிலக்கியங்களின் அமைப்பினையும், நோக்கத்தினையும் தெளிவாகக் கூறுவர்.

CO3[K3]: தமிழில் உள்ள பக்தி இலக்கியம் மற்றும் சிற்றிலக்கியங்களின் பொருண்மைகளுடன் இலக்கணத் தெளிவையும் அடைவர்.

CO4[K4]: தமிழ்ச் சமூகப் பண்பாட்டு வரலாற்றினை இலக்கியங்கள் வாயிலாக அறிந்து கொண்டு பாகுபடுத்துவர்.

CO5[K5]: போட்டித் தேர்வுகளில் வெற்றி பெறுவதற்குத் தமிழ்ப் பாடத்தினைப் பயன்கொள்ளும் வகையில் ஏற்ற பயிற்சி பெற்று மதிப்பீடு செய்வர்.

CO/PO Mapping Table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	1	-	1	-	-	-
CO2[K2]	2	2	-	1	1	-	1
CO3[K3]	2	2	-	2	-	1	-
CO4[K4]	2	2	1	2	1	-	1
CO5[K5]	2	1	1	2	-	1	1
Weightage of the Course	10	08	02	08	02	02	03
Weighted percentage of Course Contribution to POs	1.93	1.91	1.06	2.3	2.2	1.13	2.03

Based on the Level of Contribution ('3' -High, '2' -Medium, '1' -Low, '-' No Correlation)

கூறு I **(18 hrs)**

பக்தி இலக்கியம்: திருநாவுக்கரசர் தேவாரம் - நாமார்க்கும் குடியெல்லாம் எனத் தொடங்கும் பதிகம் (10 பாடல்கள்), ஆண்டாள் - திருப்பாவை (முதல் 10 பாசுரம்)

கூறு II **(18 hrs)**

வள்ளலார் - அருள் விளக்கமாலை (முதல் 10 பாடல்),எச்.ஏ.கிருட்டிணப் பிள்ளை - இரட்சணியமனோகரம் - பால்யபிரார்த்தனை, குணங்குடி மஸ்தான் சாகிபு - பராபரக்கண்ணி (முதல் 10 கண்ணி)

கூறு III **(18 hrs)**

சிற்றிலக்கியங்கள்: தமிழ்விடு தூது (முதல் 20 கண்ணி), திருக்குற்றாலக் குறவஞ்சி - குறத்தி மலைவளம் கூறுதல், முக்கூடல் பள்ளு - நாட்டு வளம்

கூறு IV **(18 hrs)**

பாடம் தழுவிய இலக்கிய வரலாறு (பல்லவர் காலம், நாயக்கர் காலம்)

கூறு V **(18 hrs)**

மொழித்திறன் போட்டித்தேர்வுதிறன்: தொடர் வகைகள், மரபுத்தொடர், பழமொழிகள், பிறமொழிச் சொற்களைக் களைதல், வழுச்சொற்கள் நீக்குதல், இலக்கணக் குறிப்பு அறிதல்.

(குறிப்பு: அலகு 4, 5 ஆகியன போட்டித் தேர்வு நோக்கில் நடத்தப் பட வேண்டும்).

பாடநூல்கள்

1. தமிழியல் துறையினர், *தொகுப்பு நூல்,* ஸ்ரீ காளீஸ்வரி கல்லூரி (தன்னாட்சி), சிவகாசி.
2. வாசுதேவன், கா. *பன்முக நோக்கில் தமிழ் இலக்கிய வரலாறு,* தேவன் பதிப்பகம், திருச்சிராப்பள்ளி, 2017.

பார்வை நூல்கள்

1. சிற்பி. பாலசுப்பிரமணியன், *தமிழ் இலக்கிய வரலாறு,* கவிதா வெளியீடு, சென்னை.
2. தமிழண்ணல், *புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு,* சோலை பதிப்பகம், மதுரை
3. பாக்கியமேரி, *வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு,* பாரி நிலையம், சென்னை.

வலைப்பதிவுகள் (Web Sources)

1. Tamil Heritage Foundation- www.tamilheritage.org <http://www.tamilheritage.org>
2. Tamil virtual University Library- www.tamilvu.org/ library http://www.virtualvu.org/library
3. Project Madurai - www.projectmadurai.org.
4. Chennai Library- www.chennailibrary.com <http://www.chennailibrary.com>.
5. Tamil Universal Digital Library- www.ulib.prg <http://www.ulib.prg>.
6. Tamil E-Books Downloads- tamilebooksdownloads. blogspot.com
7. Tamil Books on line- books.tamil cube.com
8. Catalogue of the Tamil books in the Library of British Congress archive.org
9. Tamil novels on line - books.tamilcube.com

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF ENGLISH
UG PROGRAMME - B.A./ B.COM/B.B.A./ B.SC./BCA
SEMESTER- II
GENERAL ENGLISH-II (23UENL21)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 6(L-5, T-1) **INT. MARKS : 25**
CREDITS : 3 **EXT. MARKS : 75**
DURATION : 90 hrs **MAX. MARKS : 100**

Course Objectives

- To introduce learners to the essential skills of communication in English.
- To enable them use these skills effectively in academic and non-academic contexts.
- To help them identify and eliminate common mistakes in writing and speaking.
- To enable them use various business communication strategies and to use advanced vocabulary.
- To familiarize them in writing descriptive essays and respond to arguments orally and in writing.

Course Outcomes (CO)

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

CO1 [K1]: identify appropriate literary terms such as diction, tone, imagery, figures of speech, motif etc.,
CO2 [K2]: define verbs, tenses and concord and its role in speaking and writing effectively.
CO3 [K3]: apply the knowledge of language competency at workplace and day-to-day life
CO4 [K4]: analyze prose, poetry and short stories to develop language skills through literature.
CO5 [K6]: construct grammatically correct and meaningful sentences by choosing apt words.

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	1	-	1	-	-	-
CO2[K2]	2	2	-	1	1	-	1
CO3[K3]	2	2	-	2	-	1	-
CO4[K4]	2	2	1	2	1	-	1
CO5[K6]	2	1	1	2	-	1	1
Weightage of thenb course	10	08	02	08	02	02	03
Weighted percentage of Course contribution to POs	1.93	1.91	1.06	2.3	2.2	1.13	2.03

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' No Correlation)

UNIT I- PROSE **(18 hrs)**

W.R. Inge	-	The Spoon-Fed Age
Dale Carnegie	-	If You Are Wrong. Admit it
Shashi Tharoor	-	Kindly Adjust to our English

UNIT II- POETRY **(18 hrs)**

Alfred Lord Tennyson	-	The Flower
Nissim Ezekiel	-	Very Indian Poem in Indian English
Maya Angelou	-	Still I Rise
Dr. Gieve Patel	-	On Killing a Tree

UNIT III- FICTION **(18 hrs)**

Paulo Coelho	-	The Alchemist

UNIT IV- LANGUAGE COMPETENCY **(18 hrs)**

Homonyms, Homophones, Homographs, Portmanteau words
Verbs and Tenses, Subject Verb Agreement, Error correction

UNIT V- ENGLISH IN THE WORKPLACE **(18 hrs)**

Reading for General and Specific information [charts, tables, schedules, graphs etc]
Reading news and weather reports
Writing paragraphs
Taking and making notes

TEXTBOOKS

1. Coelho, Paulo. *The Alchemist*. New York: Harper, 2005.
2. Pillai, Radhakrishna. *Emerald English Grammar and Composition.* Chennai: Emerald Publishers,2016.

REFERENCES

Books

1. Hewings, Martin. *Advanced English Grammar*. Cambridge University Press, 2000.
2. SP Bakshi, Richa Sharma. *Descriptive English*. India: Arihant Publications Ltd, 2019.
3. Sheena Cameron, Louise Dempsey. *The Reading Book: A Complete Guide to Teaching Reading*. London: S & L. Publishing, 2019.
4. Sherman, Barbara. *Skimming and Scanning Techniques.* Virginia: Liberty University Press, 2014.
5. Chambers, Phil. *Brilliant Speed Reading: Whatever you need to read, However You want to Read it-Twice as Quickly*, India: Pearson, 2013.
6. Coelho, Paulo. *The Archer*. New York: Penguin Viking, 2020.

Web Sources

1. http://econtent.in/pacc.in/admin/contents/40_%20_2020103001102714.pdf
2. https://www.poetryfoundation.org/poems/46446/still-i-rise

3. https://www.poemhunter.com/poem/the-flower-2/
4. https://www.poemhunter.com/poem/on-killing-a-tree/
5. https://www.tbr.fun/if-youre-wrong-admit-it/
6. https://www.theweek.in/columns/shashi-tharoor/2018/05/25/kindly-adjust-to-our-english.html?fbclid=IwAR3IhtdXqvuV4ySECn9S7SA6HmCEYISyd1QHd3BlwKgiNKKwdkeSg3qWp-U/
7. https://docplayer.net/217945876-The-spoon-fed-age-1-by-the-very-reverend-w-r-inge.html
8. https://www.youtube.com/watch?v=lxBYpmxjeDU

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - II
CORE COURSE –III: ANALYTICAL GEOMETRY (TWO & THREE DIMENSIONS)
(23UMAC21)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 4 **INT. MARKS : 25**
CREDITS : 4 **EXT. MARKS : 75**
DURATION : 60 hrs **MAX. MARKS: 100**

Course Objectives

- To extend analytical geometry of 2D in a natural way to analytical geometry of 3D.
- To know the application of algebraic methods to the study of curves and surfaces that lie in three dimensional spaces.
- To analyze characteristics and properties of two and three-dimensional geometric shapes.
- To present mathematical arguments about geometric relationships.

Course Outcomes (CO)

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

CO1[K1]: describe two-dimensional and three – dimensional Cartesian co-ordinates and the geometric objects line, plane, sphere on the co-ordinate system

CO2[K2]: find pole, polar for conics, diameters, conjugate diameters for ellipse and hyperbola, equation of straight lines, circles, planes and spheres

CO3[K3]: solve the problems on two-dimensional and three – dimensional geometric shapes

CO4[K4]: analyze the characteristics and properties of two-dimensional and three – dimensional geometric shapes

CO5[K5]: evaluate the system of two-dimensional and three – dimensional geometric shapes

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	1	-	1	-	-	-
CO2[K2]	3	2	1	1	-	-	-
CO3[K3]	3	3	1	2	-	1	1
CO4[K4]	3	3	1	2	-	1	1
CO5[K5]	3	3	2	3	-	1	1

Weightage of the course	15	12	05	09	-	03	03
Weighted percentage of Course contribution to POs	2.89	2.86	2.65	2.59	0	1.69	2.03

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' No Correlation)

UNIT I **(12 hrs)**

Pole, Polar - conjugate points and conjugate lines – diameters – conjugate diameters of an ellipse - semi diameters- conjugate diameters of hyperbola.

UNIT II **(12 hrs)**

Polar coordinates: General polar equation of straight line – Polar equation of a circle given a diameter, Equation of a straight line, circle, conic – Equation of chord, tangent, normal. Equations of the asymptotes of a hyperbola.

UNIT III **(12 hrs)**

System of Planes - Length of the perpendicular – Orthogonal projection.

UNIT IV **(12 hrs)**

Representation of line – angle between a line and a plane – co – planar lines– shortest distance between two skew lines – length of the perpendicular – intersection of three planes.

UNIT V **(12 hrs)**

Equation of a sphere - general equation - section of a sphere by a plane - equation of the circle - tangent plane - angle of intersection of two spheres - condition for the orthogonality - radical plane.

TEXTBOOKS

1. S. L. Loney, *Co-ordinate Geometry*.
2. Robert J. T. Bell, *Co-ordinate Geometry of Three Dimensions*.
3. William F. Osgood and William C. Graustein, *Plane and Solid Analytic Geometry*, New York: Macmillan Company, 2016.

REFERENCES

Books

1. G.B. Thomas and R. L. Finny, *Calculus and Analytical Geometry*, Pearson Publication, 9th Edition, 2010.
2. Robert C. Yates. *Analytical Geometry with Calculus,* New York: Prentice Hall, Inc., 1961.

3. Earl W. Swokowski and Jeffery A. Cole. *Algebra and Trigonometry with Analytic Geometry*, USA: Brooks/Cole, Cengage Learning , CA, Twelfth Edition, 2010.
4. William H. McCrea, *Analytical Geometry of Three Dimensions*, Dover Publications, Inc, New York, 2006.
5. John F. Randelph, *Calculus and Analytic Geometry*, Wadsworth Publishing Company, CA, USA, 1969.
6. Ralph Palmer Agnew, *Analytic Geometry and Calculus with Vectors*, New York: McGraw-Hill Book Company, Inc. 1962.
7. P.Duraipandian. *Analytical Geometry of 2D*. Muhil publishers.
8. Shanthi Narayan and Dr.P.K. Mittal. *Analytical Solid Geometry of 3D*. S.Chand & amp; Co. Pvt.Ltd.

Web Sources

1. https://www.google.com/url?sa=t&source=web&rct=j&url=https://www.msuniv.ac.in/Download/Pdf/04c32a73f36341f&ved=2ahUKEwj0hauX8YLvAhV94HMBHdXrDdgQFjABegQIFhAC&usg=AOvVaw158jCnVoMshHqthOl9bFWa
2. https://viden.io/knowledge/mathematics-analytical-geometry-3d-and-vector-calculus
3. https://www.google.com/url?sa=t&source=web&rct=j&url=https://ncert.nic.in/ncerts/l/lemh205.pdf&ved=2ahUKEwjq5p7Ph9rvAhWrH7cAHc7CARE4ChAWMAR6BAgBEAI&usg=AOvVaw3tnTk9ZYCHF1w3_uoEK_nS
4. https://www.google.com/url?sa=t&source=web&rct=j&url=https://m.youtube.com/watch%3Fv%3Da2mt2L0e06Y&ved=2ahUKEwjCxqikiNrvAhVX6nMBHY83BI44ChC3AnoECAUQAg&usg=AOvVaw2uPxp81-3IIbcQB8F0yNV7
5. https://brilliant.org/wiki/3d-coordinate-geometry-equation-of-a-plane/

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - II
CORE COURSE –IV: INTEGRAL CALCULUS (23UMAC22)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 4 **INT. MARKS : 25**
CREDITS : 4 **EXT. MARKS : 75**
DURATION : 60 hrs **MAX. MARKS: 100**

Course Objectives

- To study about reduction formulae.
- To know about the functions defined in terms of some improper integrals.
- To find the areas and volumes using multiple integrals
- To know about the relation between beta and gamma functions, geometric and physical applications.

Course Outcomes (CO)

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

CO1[K1]: recognize the types of reduction formulae, methods of finding integrals of algebraic, trigonometric, logarithmic functions, the properties of double and triple integrals, beta and gamma functions

CO2[K2]: explain the relation between beta and gamma functions, geometric and physical applications of integral calculus

CO3[K3]: solve multiple integrals and to find the areas of curved surfaces and volumes of solids of revolution

CO4[K4]: investigate the types of reduction formula, techniques of integration, the properties of beta and gamma functions

CO5[K5]: evaluate double and triple integrals, indefinite integrals using beta and gamma functions

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	2	-	2	-	-	-
CO2[K2]	3	2	1	2	-	1	-
CO3[K3]	3	2	1	2	-	1	1
CO4[K4]	3	3	1	2	-	1	1
CO5[K5]	3	3	1	2	-	1	1
Weightage of the course	14	12	04	10	-	04	03

Weighted percentage of Course contribution to POs	2.7	2.86	2.12	2.87	0	2.26	2.03

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' No Correlation)

UNIT I **(12 hrs)**

Reduction formulae -Types, integration of product of powers of algebraic and trigonometric functions, integration of product of powers of algebraic and logarithmic functions - Bernoulli's formula.

UNIT II **(12 hrs)**

Multiple Integrals - definition of double integrals - evaluation of double integrals – double integrals in polar coordinates - Change of order of integration.

UNIT III **(12 hrs)**

Triple integrals –applications of multiple integrals - volumes of solids of revolution - areas of curved surfaces–change of variables - Jacobian.

UNIT IV **(12 hrs)**

Beta and Gamma functions – infinite integral - definitions–recurrence formula of Gamma functions – properties of Beta and Gamma functions- relation between Beta and Gamma functions - Applications.

UNIT V **(12 hrs)**

Geometric and Physical Applications of Integral calculus.

TEXTBOOKS

1. H. Anton. I. Birens and S. Davis. *Calculus*. John Wiley and Sons, Inc, 2002.
2. G.B. Thomas and R.L. Finney. *Calculus*. Pearson Education, 2007.
3. D. Chatterjee. *Integral Calculus and Differential Equations*. Tata-McGraw Hill Publishing Company Ltd.
4. P. Dyke. *An Introduction to Laplace Transforms and Fourier Series.* Springer Undergraduate Mathematics Series, 2001 (second edition).

REFERENCES

Book

1. S. Narayanan and T.K. Manickavachagom Pillay. *Calculus, Volume II*. S. Viswanathan Publishers, 2007.

Web Sources

1. https://www.youtube.com/watch?v=9_m36W3cK74

2. https://www.youtube.com/watch?v=KgItZSst2sU
3. https://www.youtube.com/watch?v=w_KiHgultbM
4. https://theengineeringmaths.com/wp-content/uploads/2017/09/Chapter-7-Reduction-Formulae.pdf
5. https://www.maths.usyd.edu.au/u/UG/IM/MATH2921/r/PDF/ChangeofVariablesCorral.pdf

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF PHYSICS
UG Programme –B.Sc. Maths/Chemistry
SEMESTER - II/IV
ELECTIVE COURSE GENERIC/DISCIPLINE SPECIFIC - II/IV: PHYSICS –II
(23UMAA21/23UCHA41)
(From 2023-2024 Batch onwards)

HOURS/WEEK	**: 4**	**INT. MARKS**	**: 25**
CREDITS	**: 3**	**EXT. MARKS**	**: 75**
DURATION	**: 60 hrs**	**MAX. MARKS**	**: 100**

Course Objectives

- To explain concepts of interference, diffraction and polarization
- To outline the basic foundation of different atom models and various experiments establishing quantum concepts.
- To summarize the properties of nuclei, nuclear models, nuclear processes, importance of nuclear energy and safety measures to be carried out.
- To describe the basic concepts of special theory of relativity, mass energy equivalence and give an overview of research projects of National and International importance.
- To summarize the working of semiconductor devices like junction diode, Zener diode, transistors and practical devices we use in our daily life.

Course Outcomes (CO)

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

CO1[K1]: outline the basic concepts of wave optics, relativity, atomic, nuclear and semiconductor physics

CO2[K2]: explain the physical phenomena pertaining to the course

CO3[K3]: apply the concepts to derive the expressions and solve problems

CO4[K4]: distinguish different physical phenomena, models, processes, and semiconductor devices

CO5[K5]: examine the experimental methods to determine the physical parameters using basic concepts

CO-PO Mapping table (Course Articulation Matrix)

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1 [K1]	3	1	-	1	-	-	-
CO2 [K2]	3	1	-	2	-	-	-
CO3 [K3]	3	3	1	1	1	1	1
CO4 [K4]	2	3	2	1	1	1	1
CO5 [K5]	2	3	2	1	1	1	1
Weightage of the course	13	11	05	06	03	03	03

Weighted percentage of Course contribution to POs	2.5	2.63	2.65	1.72	3.3	1.69	2.03

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low, '-' No Correlation)

UNIT I – OPTICS (12 hrs)

Interference – Interference in Thin Films – Colors of Thin Films – Air Wedge – Determination of Diameter of a Thin Wire by Air Wedge – Diffraction – Diffraction of Light Vs Sound – Normal Incidence – Experimental Determination of Wavelength using Diffraction Grating (No Theory) – Polarization – Polarization by Double Reflection – Brewster's Law – Optical Activity – Application in Sugar Industries.

UNIT II – ATOMIC PHYSICS (12 hrs)

Atom Models – Bohr Atom Model – Mass Number – Atomic Number – Nucleons – Vector Atom Model – Various Quantum Numbers – Pauli's Exclusion Principle – Electronic Configuration – Periodic Classification of Elements – Bohr Magneton – Stark Effect – Zeeman Effect (Elementary Ideas Only) – Photo Electric Effect – Einstein's Photoelectric Equation – Applications of Photoelectric Effect: Solar Cells, Solar Panels, Optoelectric Devices.

UNIT III – NUCLEAR PHYSICS (12 hrs)

Nuclear Models – Liquid Drop Model – Magic Numbers – Shell Model – Nuclear Energy – Mass Defect – Binding Energy – Radioactivity – Uses – Half Life – Mean Life - Radio Isotopes and Uses – Controlled and Uncontrolled Chain Reaction – Nuclear Fission – Energy Released in Fission – Chain Reaction – Critical Reaction – Critical Size - Atom Bomb – Nuclear Reactor – Breeder Reactor – Importance of Commissioning PFBR in Our Country – Heavy Water Disposal, Safety of Reactors: Seismic and Floods – Introduction to DAE, IAEA – Nuclear Fusion – Thermonuclear Reactions – Differences between Fission and Fusion.

UNIT IV – INTRODUCTION TO RELATIVITY AND GRAVITATIONAL WAVES (12 hrs)

Frame of Reference – Postulates of Special Theory of Relativity – Galilean Transformation Equations – Lorentz Transformation Equations – Derivation – Length Contraction – Time Dilation – Twin Paradox – Mass-Energy Equivalence – Introduction on Gravitational Waves, LIGO, ICTS Opportunities at International Centre for Theoretical Sciences.

UNIT V – SEMICONDUCTOR PHYSICS (12 hrs)

P-N Junction Diode – Forward and Reverse Biasing – Characteristic of Diode – Zener Diode – Characteristic of Zener Diode – Voltage Regulator – Full Wave Bridge Rectifier – Construction and Working – Advantages (No

Mathematical Treatment) – USB Cell Phone Charger – Introduction to e-Vehicles and EV Charging Stations.

UNIT VI – PROFESSIONAL COMPONENTS (NOT FOR EXAMINATION)

Expert Lectures – Seminars – Webinars – Industry Inputs – Social Accountability – Patriotism.

TEXTBOOKS

1. Murugesan R. *Allied Physics*. NewDelhi: S.Chand & Co., 2005.
2. Thangaraj K. and Jayaraman D. *Allied Physics*. Chennai: Popular Book Depot., 2004.
3. Subraminyam N, Brij lal and Avadhanulu M.N. *A Textbook of Optics.* New Delhi: S.Chand & Company Ltd., Twenty Fifth Revised Edition, Reprint 2018.
4. Murugeshan R and Kiruthiga Sivaprasath. *Modern Physics.* New Delhi: S.Chand & Company Ltd., Eighteenth Edition, Reprint 2019.
5. Subramaniyam A. *Applied Electronics.* Chennai: National Publishing Co., Second Edition, 1996.

REFERENCES

Books

1. Resnick Halliday and Walker. *Fundamentals of Physics*. Singapore:John Willey and Sons, Asia Pvt. Ltd., Eleventh edition, 2018.
2. Khanna D.R. and Gulati H.R. *Optics*. New Delhi: S.Chand & Co., 1979.
3. Arthur Beiser. *Concepts of Modern Physics.* New Delhi: Tata McGraw-Hill Publication, Sixth Edition, Reprint 2006.
4. Thomas L. Floyd. *Digital Fundamentals*. New Delhi: Universal Book Stall, Eleventh edition 2017.
5. Mehta V.K and Rohit Mehta. *Principles of Electronics.* New Delhi: S.Chand & Company Ltd., Revised Eleventh Edition, Reprint 2013.

Web Sources

1. https://atoptics.co.uk/atoptics/blsky.htm
2. https://www.metoffice.gov.uk/weather/learn-about/weather/optical-effects
3. https://archive.nptel.ac.in/courses/115/101/115101011/
4. https://www.elprocus.com/semiconductor-devices-types-and-applications/
5. https://www.khanacademy.org/science/in-in-class-12th-physics-india/nuclei

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF PHYSICS
UG PROGRAMME –B.Sc. Maths/Chemistry
SEMESTER - II/IV
ELECTIVE COURSE GENERIC/DISCIPLINE SPECIFIC - II/IV: PRACTICAL: PHYSICS– II (23UMAA2P/23UCHA4P)
(From 2023-2024 Batch onwards)

HOURS/WEEK	**: 2**	**INT. MARKS**	**: 25**
CREDITS	**: 2**	**EXT. MARKS**	**: 75**
DURATION	**: 30 hrs**	**MAX. MARKS**	**: 100**

Course Objectives

- To set up experiments to understand the various concepts of optics, thermal physics, electricity, sound and electronics
- To arrange the experiments to evaluate physical parameters of materials and verify theories
- To quantify and analyze experimental results
- To do error analysis and correlate results

Course Outcomes (CO)

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

CO1[K1]: identify the basic concepts of physics underlying in the experiments

CO2[K2]: setup the experiment and collect data to determine the physical parameters involved in the experiments

CO3[K3]: calculate the basic parameters involved in the experiments from the experimental data

CO4[K4]: analyze/interpret/plot graph/verify the theorem from the experimental data

CO5[K5]: evaluate the physical parameters using appropriate formula/make conclusions from the experimental data

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1 [K1]	2	1	-	-	-	-	-
CO2 [K2]	2	2	-	1	1	-	1
CO3 [K3]	2	2	1	1	1	1	1
CO4 [K4]	2	2	1	1	1	1	1
CO5 [K5]	2	3	1	1	1	1	1
Weightage of the course	10	10	03	04	04	03	04
Weighted percentage of Course	1.93	2.39	1.59	1.15	4.4	1.69	2.7

contribution to POs							

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low, '-' No Correlation)

LIST OF EXPERIMENTS (Minimum 8**):**

1. Radius of Curvature of Lens by Forming Newton's Rings
2. Thickness of a Wire using Air Wedge
3. Wavelength of Mercury Lines using Spectrometer and Grating
4. Refractive Index of Material of the prism by Minimum Deviation
5. Refractive Index of Liquid using Liquid Prism
6. Determination of AC Frequency using Sonometer
7. Specific Resistance of a Wire using PO Box
8. Thermal Conductivity of Poor Conductor using Lee's Disc
9. Determination of figure of merit table galvanometer
10. Determination of Earth's Magnetic Field using Field along the Axis of a Coil
11. Characterisation of Zener Diode
12. Construction of Zener/IC Regulated Power Supply
13. Construction of AND, OR, NOT Gates using Diodes and Transistor
14. NOR Gate as a Universal Building Block

TEXTBOOKS

1. Srinivasan M.N, Balasubramanian S and Ranganathan R. *A Textbook of Practical Physics.* New Delhi: Sultan Chand & Sons, First Edition, Reprint 2011.
2. Ouseph C.C, Rao U.J and Vijayendran V. *Practical Physics and Electronics*. Chennai: Ananda Book Depot, First Edition, Reprint 2019.
3. Ouseph C.C, Srinivasan V and Balakrishnan R. *A Textbook of Practical Physics - Part I & II.* Chennai: S.Viswanathan (Printers & Publishers) Pvt., Ltd., Revised Edition, Reprint 2000.
4. Virendra Kumar. *Digital Electronics: Theory and Experiments*. New Delhi: New Age International (P) Ltd., Second Edition, 2015.

REFERENCES

Books

1. Arora C.L. *B Sc Practical Physics.* New Delhi: S.Chand & Sons Co. Ltd., Reprint 2018.
2. Kakani S.L and Shubhra K. *Applied Physics: Theory and Practical*. New Delhi: Viva Books Pvt. Ltd., First Edition, 2015.
3. Manjeet S and Anita D. *Applied Physics: Theory and Experiment*. New Delhi: Vayu Education of India, First Edition, 2011.
4. Tayal D.C. *University Practical Physics*. Mumbai: Himalaya Publishing House, First Millennium Edition, 2000.

Web Sources

1. https://www.youtube.com/watch?v=l0XmP4YY6-w
2. https://www.youtube.com/watch?v=DD5woC4ZYAQ
3. https://www.youtube.com/watch?v=6Ha-ePYMyfM
4. https://www.youtube.com/watch?v=fWhgguWc8rk
5. https://www.youtube.com/watch?v=BxbXnYFqygU&t=311s
6. https://www.youtube.com/watch?v=aXFNoYa95-8

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - II
SKILL ENHANCEMENT COURSE -III: PRACTICAL: OFFICE AUTOMATION
(23UMAS2P)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 2 **INT. MARKS : 25**
CREDITS : 2 **EXT. MARKS : 75**
DURATION : 30 hrs **MAX. MARKS: 100**

Course Objective

- To impart training in Office components: Word, Excel and Power point.

Course Outcomes (CO)

On Successful completion of the course, the learners will be able to

CO1[K2]: explain the features of office packages, spreadsheets and forms

CO2[K3]: make use of office components, spreadsheet and forms to collect, record, represent, manipulate and interpret data

CO3[K4]: examine the functions of various menus/tools of office components, spreadsheets, forms

CO4[K5]: choose the appropriate component/tool/menu of office components, spreadsheet to manipulate the data

CO5[K6]: prepare a survey report using office packages

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K2]	2	1	-	2	1	-	-
CO2[K3]	2	1	-	2	1	-	-
CO3[K4]	2	2	1	2	-	2	1
CO4[K5]	2	2	1	2	-	2	1
CO5[K6]	2	2	1	2	-	2	1
Weightage of the Course	10	08	03	10	02	06	03
Weighted percentage of Course contribution to POs	1.93	1.91	1.59	2.87	2.2	3.39	2.03

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low,'-' No Correlation)

1. To prepare a document using math tools.
2. To prepare a document using formatting tools.
3. To prepare a newspaper report using word.
4. To find the mean, median, mode of the given data in Excel.
5. To sort the given data in Excel.
6. To prepare a financial statement using Excel.
7. To prepare charts for the given data in Excel.
8. To create a powerpoint presentation using mathematical formulas.
9. To create a powerpoint presentation using hyperlink.
10. To create a powerpoint presentation using slide transition and animation effects.

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - II
SKILL ENHANCEMENT COURSE -IV: NON MAJOR ELECTIVE COURSE:
STATISTICS FOR DATA ANALYTICS (23UMAN21)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 2 **INT. MARKS : 25**
CREDITS : 2 **EXT. MARKS : 75**
DURATION : 30 hrs **MAX. MARKS: 100**

Course Objectives

- To study the method of classification of data
- To understand the basic measures of statistics

Course Outcomes (CO)

On Successful completion of the course, the learners will be able to

CO1[K1]: state the formula for finding descriptive measures of statistics

CO2[K2]: describe the statistical method of classifying data and finding descriptive measures of statistics

CO3[K3]: apply the statistical methods and techniques to find numerical measures of quantitative data

CO4[K4]: classify and investigate the quantitative data to obtain descriptive measures of statistics

CO5[K5]: choose the appropriate measure of statistics for the given quantitative data

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	1	-	-	2	-	-	-
CO2[K2]	2	1	-	2	-	1	1
CO3[K3]	2	2	-	2	-	2	2
CO4[K4]	2	1	-	1	-	1	1
CO5[K5]	2	1	-	1	-	1	1
Weightage of the course	09	05	-	08	-	05	05
Weighted percentage of Course contribution to	1.73	1.19	0	2.3	0	2.82	3.38

Pos							

Based on the level of contribution('3'-High, '2'-Medium, '1'-Low, '-' No Correlation)

UNIT I **(6 hrs)**

Classification of data: Introduction – Types of classification – Formation of a discrete frequency distribution – Formation of a continuous frequency distribution. **Measures of Central Value:** Introduction - Arithmetic Mean – Weighted Arithmetic Mean

UNIT II **(6 hrs)**

Median (Calculation of Quartiles, Deciles and Percentiles) - Mode.

UNIT III **(6 hrs)**

Measures of Dispersion: Introduction – Range - Quartile Deviation – Mean Deviation - Standard Deviation.

UNIT IV **(6 hrs)**

Index Numbers: Introduction – Methods of Constructing Index Numbers – Tests of Adequacy of Index Number Formulae.

UNIT V **(6 hrs)**

Correlation Analysis: Introduction – Significance of the Study of Correlation – Karl Pearson's Coefficient of Correlation – Direct Method of Finding out Correlation Coefficient – Rank Correlation Coefficient,

TEXTBOOK

1. Gupta S. P. *Statistical Methods*, New Delhi, Fortieth Revised Edition, Sultan Chand and Sons, 2013.

REFERENCES

Books

1. Gupta S. C. and Kapoor V. K., *Elements of Mathematical Statistics*, New Delhi, Third Edition, Sultan Chand and Sons, 2006.
2. Saxena H. C., *Elementary statistics*, New Delhi, AbhirorPrakashan, 2008.
3. Gupta S.C. and Kapoor V.K, *Fundamental of Applied Statistics*, third edition, Sultan Chand & Sons, New Delhi.
4. Veerarajan T., *Fundamentals of Mathematical Statistics*, Chennai, Yesdee Publishing Private Limited, 2017.

Web Sources

1. https://www.lkouniv.ac.in/site/writereaddata/siteContent/202004241216240370priyamka_SDS_COLLECTION_OF_DATA.pdf
2. https://books.google.co.in/books?id=kUZLAgAAQBAJ&printsec=frontcover#v=onepage&q&f=false
3. https://www.google.co.in/books/edition/STATISTICS/Ow2DBgAAQBAJ?hl=en&gbpv=1&dq=E.+Narayanan+Nadar.++Statistics.&printsec=frontcover
4. https://www.google.co.in/books/edition/Statistical_Methods/bRUwgf_q5RsC?hl=en&gbpv=1&dq=statistical+methods+book&printsec=frontcover
5. https://www.kluniversity.in/arp/uploads/2096.pdf
6. https://nptel.ac.in/content/storage2/113/101/113101096/MP4/mod01lec02.mp4

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF TAMIL
UG PROGRAMME - B.A., B.Sc., B.Com., BBA., BCA.,
SEMESTER - III
பொதுத்தமிழ் - III (23UTAG31)
(From 2023-2024 Batch onwards)

HOURS / WEEK : 6 **INT. MARKS : 25**
CREDITS : 3 **EXT. MARKS : 75**
DURATION : 90 hrs **MAX. MARKS: 100**

நோக்கங்கள்

- இலக்கியங்களின் சிறப்பினை உணர்த்துதல்.
- காலந்தோறும் எழுந்த காப்பியங்களின் போக்கையும், புதினத்தின் இலக்கிய வடிவத்தையும் யாப்பு, அணி போன்ற இலக்கிய வகைகளையும் மொழிபெயர்ப்புத் திறனையும் மாணவர்கள் உணருமாறு செய்தல்.
- தமிழ் இலக்கியம் சார்ந்த போட்டித் தேர்வுகளுக்கு ஏற்ப கற்பித்தல் நடைமுறைகளை மேற்கொள்ளுதல்.

கற்றலின் பயன்கள்

இத்தாளை வெற்றிகரமாக முடித்தவுடன் மாணவர்கள்,

CO1[K1]: இலக்கியங்களின் வழி வாழ்வியல் சிந்தனைகள் பற்றி அறிவர்.
CO2[K2]: காப்பிய சமயக் கருத்துக்களையும் நோக்கங்களையும் அடையாளம் காண்பர்.
CO3[K3]: தமிழ் புதினங்களின் வழி சமகாலப் படைப்புகளின் வாழ்க்கை முறையின் ஆற்றலைப் பெறுவர்.
CO4[K4]: காப்பியங்கள் மற்றும் புதினங்களின் வரலாற்றினைப் பாகுபடுத்துவர்.
CO5[K5]: இலக்கிய இலக்கணங்களை கற்று அவற்றை மதிப்பீடு செய்வர்.

CO/PO Mapping Table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	1	-	1	-	-	-
CO2[K2]	2	1	-	1	-	-	-
CO3[K3]	2	2	-	2	1	-	-
CO4[K4]	2	2	1	2	-	1	1
CO5[K5]	2	2	1	2	1	1	1
Weightage of the Course	10	08	02	08	02	02	02
Weighted percentage of Course Contribution to Pos	1.93	1.91	1.06	2.3	2.2	1.13	1.35

Based on the Level of Contribution ('3' -High, '2' -Medium, '1' -Low, '-' No Correlation)

கூறு I **(18 hrs)**

பெருங்காப்பியங்கள்: சிலப்பதிகாரம் - வழக்குரை காதை - இளங்கோவடிகள், மணிமேகலை ஆதிரை பிச்சையிட்ட காதை – சீத்தலைச்சாத்தனார், சீவகசிந்தாமணி – பூமகள் இலம்பகம் - திருத்தக்கதேவர், வளையாபதி – நாதகுந்தனார்.

கூறுII **(18 hrs)**

சமயக் காப்பியங்கள்: பெரியபுராணம் - பூசலார் நாயனார் புராணம் - சேக்கிழார், கம்பராமாயணம் - மந்தரை சூழ்ச்சிப் படலம் - கம்பர், வில்லிபாரதம் - மற்போர் சருக்கம் - வில்லிப்புத்தூராழ்வார், சீறாப்புராணம் - புலி வசனித்த படலம் - உமறுப்புலவர்.

கூறு III **(18 hrs)**

புதினம்: வஞ்சிமாநகரம் (வரலாற்றுப் புதினம்) - நா.பார்த்தசாரதி.

கூறு IV **(18 hrs)**

காப்பியத்தின் தோற்றமும் வளர்ச்சியும் - புதினத்தின் தோற்றமும் வளர்ச்சியும்

கூறு V **(18 hrs)**

மொழித்திறன்: நூல் மதிப்புரை, திறனாய்வு செய்தல், கடிதம் வரைதல், விண்ணப்பம் எழுதுதல்.

பாடநூல்கள்

1. தமிழியல் துறையினர், *தொகுப்பு நூல்,* ஸ்ரீ காளீஸ்வரி கல்லூரி (தன்னாட்சி), சிவகாசி.
2. வாசுதேவன், கா. *பன்முக நோக்கில் தமிழ் இலக்கிய வரலாறு,* தேவன் பதிப்பகம், திருச்சிராப்பள்ளி, 2017.
3. நா.பார்த்தசாரதி, வஞ்சி மாநகரம், கவிதா வெளியீடு, சென்னை, 600017

பார்வை நூல்கள்

1. சிற்பி. பாலசுப்பிரமணியன், *தமிழ் இலக்கிய வரலாறு,* கவிதா வெளியீடு, சென்னை.
2. தமிழண்ணல், *புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு,* சோலை பதிப்பகம், மதுரை
3. பாக்கியமேரி, *வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு*, பாரி நிலையம், சென்னை.

வலைப்பதிவுகள் (Web Sources)

1. Tamil Heritage Foundation- www.tamilheritage.org http://www.tamilheritage.org
2. Tamil virtual University Library- www.tamilvu.org/ library http://www.virtualvu.org/library
3. Project Madurai - www.projectmadurai.org.
4. Chennai Library- www.chennailibrary.com http://www.chennailibrary.com
5. Tamil Universal Digital Library- www.ulib.prg http://www.ulib.prg
6. Tamil E-Books Downloads- tamilebooksdownloads. blogspot.com
7. Tamil Books on line- books.tamil cube.com
8. Catalogue of the Tamil books in the Library of British Congress archive.org
9. Tamil novels on line - books.tamilcube.com

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF ENGLISH
UG PROGRAMME - B.A./ B.COM/B.B.A./ B.SC./BCA
SEMESTER- III
GENERAL ENGLISH - III (23UENL31)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 6 (L- 5, T-1) **INT. MARKS : 25**
CREDITS : 3 **EXT. MARKS : 75**
DURATION : 90 hrs **MAX. MARKS : 100**

Course Objectives

- To enhance the level of literary and aesthetic experience of students and to help them respond creatively.
- To sensitize them to the major issues in the society and the world.
- To provide them with an ability to build and enrich their communication skills.
- To equip them to utilize the digital knowledge resources effectively for their chosen fields of study.
- To help them think and write imaginatively and critically.

Course Outcomes (CO)

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

CO1 [K1]: relate and state ideas by reading simple poems and scenes from Shakespearean plays.
CO2 [K2]: demonstrate effective speaking skills by listening to speeches of famous personalities and express it in day-to-day life.
CO3 [K3]: apply the knowledge of language competency in writing letters, emails and display social etiquettes in everyday life.
CO4 [K4]: analyse data interpretation, meeting etiquettes, organizing and participating in a meeting.
CO5 [K5]: develop language skills through literature and assess the knowledge of English in the workplace.

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	1	-	2	-	-	-
CO2[K2]	2	2	-	2	1	1	-
CO3[K3]	2	2	1	2	1	1	-
CO4[K4]	2	2	1	2	-	-	1
CO5[K5]	2	1	1	1	1	1	1
Weightage of the course	10	08	03	09	03	03	02
Weighted percentage of Course contribution to POs	1.93	1.91	1.59	2.59	3.3	1.69	1.35

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' No Correlation)

UNIT I - SPEECHES OF FAMOUS PERSONALITIES **(18 hrs)**

Jawaharlal Nehru	-	Tryst with Destiny
Steve Jobs	-	You've got to Find What You Love
Barack Obama	-	Yes, We Can

UNIT II- POETRY **(18 hrs)**

Christina Rossetti	-	In an Artist's Studio
Toru Dutt	-	Sita
Oodgeroo Noonuccal	-	A Song of Hope
Mamang Dai	-	The Voice of the Mountains

UNIT III - SCENES FROM SHAKESPEARE **(18 hrs)**

Romeo & Juliet	-	The Balcony Scene
Macbeth	-	Banquet Scene
Julius Caesar	-	Murder Scene

UNIT IV - LANGUAGE COMPETENCY **(18 hrs)**

Writing letters and emails
Writing and messaging in social media platforms [blogs, twitter, Instagram, facebook]
Learning netiquette, email etiquette

UNIT V - ENGLISH FOR WORK PLACE **(18 hrs)**

Data Interpretation and Reporting
Data Presentation and analysis
Meeting Etiquettes - language, dress code, voice modulation
Online Meetings - Terms and expressions used
Conducting and participating in a meeting

TEXTBOOK

1. Arden Shakespeare*: Complete works of William Shakespeare*. Bloomsbury, 2011.

REFERENCES

Books

1. Wells, Stanley. *The Shakespeare Book: Big Ideas Simply Explained*, et al. DK Publishing, 2015.
2. Gandhi, Mahatma. *Famous Speeches by Mahatma Gandhi*, Create space Independent Publishing Platform, 2016.
3. Bernish, Jeanne Kelly. *How to Build a Professional Digital Profile* Kindle Edition, Bernish Communications Associates, LLC; 1st edition (May 29, 2012).
4. Folse, Keith.S. *Keys to Teaching Grammar to English Language Learners*, Second Ed.: A Practical Handbook, Michigan Teacher Training, 2016.
5. Yardley, Krysia.M. *Role Play- Theory and Practice*. Matwiejczuk, SAGE publications ltd, 1997.

Web Sources

1. https://www.scribd.com/document/558838656/
2. http://www.wordslikethis.com.au/

3. https://www.poetryfoundation.org/poems/146804/in-an-artist39s-studio
4. https://www.poetrynook.com/poem/s%E2%94%9C%C2%ABta
5. https://www.cam.ac.uk/files/a-tryst-with-destiny/index.html#:~:text=Jawaharlal%20Nehru%2C%20delivering%20his%20Tryst%20with%20Destiny%20speech.&text=%22Long%20years%20ago%20we%20made,awake%20to%20life%20and%20freedom

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - III
CORE COURSE - V: VECTOR CALCULUS AND APPLICATIONS (23UMAC31)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 5 (L-4, T-1) **INT. MARKS : 25**
CREDITS : 5 **EXT. MARKS : 75**
DURATION : 75 hrs **MAX. MARKS: 100**

Course Objectives

- To know about differentiation of vectors and differential operators.
- To know about derivatives of vector functions.
- To develop skills in evaluating line, surface and volume integrals.
- To analyze the physical applications of derivatives of vectors.

Course Outcomes (CO)

On Successful completion of the course, the learners will be able to

CO1[K1]: state the identities and operations in vector calculus

CO2[K2]: explain the basic concepts of vector differentiation and vector integration

CO3[K3]: find the important quantities associated with vector fields such as gradient, divergence, curl and the line, surface, volume integration of vector functions

CO4[K4]: verify the identities involving vector quantities and the theorems of Gauss', Stoke's, Green's

CO5[K5]: evaluate vector identities and their effectiveness in manipulating vector expressions to solve real life situations

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	1	-	1	-	-	-
CO2[K2]	3	2	-	1	-	-	-
CO3[K3]	3	3	1	2	-	-	1
CO4[K4]	3	3	2	2	-	1	1
CO5[K5]	3	3	2	2	-	1	1
Weightage of the course	15	12	05	08	-	02	03

Weighted percentage of Course contribution to Pos	2.89	2.86	2.65	2.3	0	1.13	2.03

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low, '-'No Correlation)

UNIT I **(15 hrs)**

Vector Point Function - Scalar Point Function - Derivative of a Vector and Derivative of a Sum of Vectors - Derivative of a Product of a Scalar and a Vector Point Function - Derivative of a Scalar Product and Vector Product.

UNIT II **(15 hrs)**

The Vector Operator 'del' - The Gradient of a Scalar Point Function - Divergence of a Vector - Curl of a Vector - Solenoidal and Irrotational Vectors – Simple Applications.

UNIT III **(15 hrs)**

Laplacian Operator - Vector Identities - Line Integral - Simple Problems.

UNIT IV **(15 hrs)**

Surface Integral - Volume Integral – Applications.

UNIT V **(15 hrs)**

Gauss Divergence Theorem - Stoke's Theorem - Green's Theorem in Two Dimensions – Applications to Real Life Situations.

TEXTBOOKS

1. Susan J.C., *Vector Calculus*, (4th Edition) Boston, Pearson Education, 2012.
2. Gorguis A., *Vector Calculus for College Students*, Xilbius Corporation, 2014.
3. Marsden J.E. and Tromba A., *Vector Calculus*, (5thEdition.) NewYork, W.H. Freeman, 1988.

REFERENCES

Book

1. Duraipandian P. and Kayalal Pachaiyappa, *Vector Analysis* S.Chand Publication

Web Sources

1. https://nptel.ac.in
2. https://www.mathwarehouse.com/
3. https://www.mathhelp.com/
4. https://www.mathsisfun.com/

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - III
CORE COURSE - VI: DIFFERENTIAL EQUATIONS AND APPLICATIONS
(23UMAC32)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 5 (L-4, T-1) **INT. MARKS : 25**
CREDITS : 5 **EXT. MARKS : 75**
DURATION : 75 hrs **MAX. MARKS: 100**

Course Objectives

- To know the methods of solving Ordinary and Partial Differential Equations.
- To understand how Differential Equations can be used as a powerful tool in solving problems in science.

Course Outcomes (CO)

On Successful completion of the course, the learners will be able to

CO1[K1]: describe the basic concepts of ordinary and partial Differential Equations
CO2[K2]: identify the types of Ordinary and Partial Differential Equations
CO3[K3]: solve the Ordinary and Partial Differential Equations of first order and second order
CO4[K4]: examine the different forms of Ordinary and Partial Differential Equations for finding the solutions
CO5[K5]: determine the appropriate method of solving Ordinary and Partial Differential Equations.

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	1	-	1	-	-	-
CO2[K2]	3	2	1	1	1	-	-
CO3[K3]	3	3	1	2	1	1	1
CO4[K4]	3	3	1	2	-	1	1
CO5[K5]	3	3	2	2	-	1	1
Weightage of the course	15	12	05	08	02	03	03

Weighted percentage of Course contributionto Pos	2.89	2.86	2.65	2.3	2.2	1.69	2.03

Based on the level of contribution('3'-High, '2'-Medium, '1'-Low, '-' No Correlation)

UNIT I **(15 hrs)**

Ordinary Differential Equations: Variable Separable Homogeneous Equation - Non-Homogeneous Equations of First Degree in Two Variables – Linear Equation - Bernoulli's Equation - Exact Differential Equations.

UNIT II **(15 hrs)**

Equation of First Order but not of Higher Degree: Equation Solvable for dy/dx-Equation Solvable for y-Equation Solvable for x- Clairauts' Form. **Linear Equations with constant coefficients:** Particular Integrals of Algebraic, Exponential, Trigonometric Functions and Their Products.

UNIT III **(15 hrs)**

Simultaneous Linear Differential Equations: Simultaneous Linear Differential Equations. **Linear Equations of the Second Order:** Complete Solution in Terms of a Known Integrals - Reduction to the Normal Form - Change of the Independent Variable - Method of Variation of Parameters.

UNIT IV **(15 hrs)**

Partial Differential Equations: Formation of PDE by Eliminating Arbitrary Constants and Arbitrary Functions – Complete Integral – Singular Integral - General Integral - Lagrange's Linear Equations – Simple Applications.

UNIT V **(15 hrs)**

Special Methods – Standard Forms - Charpit's Methods – Simple Applications.

TEXTBOOKS

1. Shepley L. Ross, *Differential Equations*, Third Edition, John Wiley and Sons, 1984.
2. I. Sneddon. *Elements of Partial Differential Equations*, McGrawHill, International Edition, 1967.
3. Simmons G.F. *Differential equations with applications and historical notes*, Second Edition, Tata McGraw Hill Publications, 1991.

REFERENCES

Books

1. D. A. Murray. *Introductory Course in Differential Equations.* Orient and Longman.
2. Piaggio H.T. H., *Elementary Treaties on Differential Equations and their Applications.* Delhi: C.B.S Publisher & Distributors, 1985.
3. Horst R. Beyer, *Calculus and Analysis*, Wiley, 2010.
4. Braun, M. *Differential Equations and their Applications*. (3rd Edition.), New York, Springer- Verlag, 1983.
5. Tyn Myint-U and Lognath Debnath. *Linear Partial Differential Equations for Scientists and Engineers*, (4th Edn.) Birhauser, Berlin. 2007.
6. Boyce, W.E. and R.C.DiPrima. *Elementary Differential Equations and Boundary Value Problems.* New York: (7th Edn.) John Wiley and Sons, Inc., 2001.
7. Sundrapandian, V. *Ordinary and Partial Differential Equations.* New Delhi: Tata McGraw Hill Education Pvt.Ltd, 2013.
8. Narayanan S. and Manickavachagom Pillay T.K., *Differential Equations and Its Applications*, S. Viswanathan Publishers Pvt. Ltd.

Web Sources

1. https://nptel.ac.in
2. https://www.mathwarehouse.com/
3. https://www.mathhelp.com/
4. https://www.mathsisfun.com/

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASIDEPARTMENT OF MATHEMATICS

UG Programme - B.Sc. Mathematics

SEMESTER - III

ELECTIVE COURSE GENERIC/ DISCIPLINE SPECIFIC -III: MATHEMATICAL STATISTICS (23UMAA31)

(From 2023-2024 Batch onwards)

HOURS/WEEK: 4 **INT. MARKS : 25**
CREDITS : 3 **EXT. MARKS : 75**
DURATION : 60 hrs **MAX. MARKS: 100**

Course Objective

- To familiarizes the learners with a variety of numerical measures that are used to summarize quantitative data and distribution function, generating function of random variables.

Course Outcomes (CO)

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

CO1[K1]: describe the basic terminologies in statistical analysis of quantitative data

CO2[K2]: explain the basic statistical methods and techniques in data analysis

CO3[K3]: apply the statistical methods and techniques to find numerical measures of quantitative data and calculate mathematical expectation and generating function of randomvariables

CO4[K4]: analyze the properties of statistical measures and distribution functions of random variables

CO5[K5]: determine the appropriate measure that represent the whole quantitative data in hand and the curve that best fit the given data

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	2	1	2	-	-	-
CO2[K2]	3	2	1	2	1	1	-
CO3[K3]	3	2	1	2	1	1	1
CO4[K4]	3	3	1	1	1	2	1
CO5[K5]	3	3	1	1	1	2	1
Weightage of the course	15	12	05	08	04	06	03

Weighted percentage of Course contributionto Pos	2.89	2.86	2.65	2.3	4.4	3.39	2.03

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-'No Correlation)

UNIT I **(12 hrs)**

Frequency Distributions and Measures of Central Tendency: Frequency Distributions – Graphic Representation of a Frequency Distribution – Averages or Measures of Central Tendency or Measures of Location – Requisites for an Ideal Measure of Central Tendency – Arithmetic Mean – Median – Mode – Geometric Mean - Harmonic Mean – Selection of an Average – Partition Values.

UNIT II **(12 hrs)**

Measures of Dispersion, Skewness and Kurtosis: Dispersion – Characteristics for an Ideal Measure of Dispersion - Measures of Dispersion – Range – Quartile Deviation – Mean Deviation – Standard Deviation and Root Mean Square Deviation – Coefficient of Dispersion –Moments – Pearson's β and γ Co-efficients. – Skewness – Kurtosis.

UNIT III **(12 hrs)**

Random Variables - Distribution Functions: Random Variable – Distribution Function – Discrete Random Variable – Continuous Random Variable – Joint Probability Mass Function and Marginal and Conditional Probability Functions – Transformation of One-Dimensional Random Variable.

UNIT IV **(12 hrs)**

Mathematical Expectation, Generating Functions and Law of Large Numbers: Mathematical Expectation – Addition Theorem of Expectation – Multiplication Theorem of Expectation – Covariance – Expectation of a Linear Combination of Random Variables – Variance of a Linear Combination of Random Variables – Expectation of a Continuous Random Variable – Conditional Expectation and Conditional Variance – Moment Generating Function – Cumulants – Characteristic Function – Chebyshev's Inequality – Weak-Law of Large Numbers.

UNIT V **(12 hrs)**

Curve Fitting and Principle of Least Squares: Curve Fitting – Most Plausible Solution of a System of Linear Equations – Conversion of Data to Linear Form.

TEXTBOOK

1. Gupta, S.C. and Kapoor, V.K. *Elements of Mathematical Statistics.* New Delhi: Sultan Chand & Sons, 2006.

REFERENCES

Books

1. Arumugam, S. and Thangapandi Isaac, A. *Statistics*. Palayamkottai: New Gamma Publishing House, 2009.
2. Gupta, S.P. *Statistical Methods*. New Delhi: Sultan Chand and Sons, 2011.
3. Kapur, J.N. and Saxena, H.G. *Mathematical Statistics*. New Delhi: S.Chand & Company LTD, 1989.

Web Sources

1. https://www.google.com/url?sa=t&source=web&rct=j&url=https://www.d.umn.edu/~zliu/math3611/c04_mathexp.pdf&ved=2ahUKEwiYj4X3haPvAhUqzjgGHVhzA10QFjABegQIEBAC&usg=AOvVaw2VuP_3VKsIiCjNX2W8mm2x&cshid=1615287263714
2. https://www.google.com/url?sa=t&source=web&rct=j&url=https://theengineeringmaths.com/wp-content/uploads/2018/01/curve-fitting-and-correlation.pdf&ved=2ahUKEwj52fDOiKPvAhUG7XMBHQvYC08QFjAAegQIARAC&usg=AOvVaw3lr-7dY9pb5pnOdCJYw-r-
3. https://www.google.com/url?sa=t&source=web&rct=j&url=http://eagri.org/eagri50/STAM101/pdf/lec05.pdf&ved=2ahUKEwjAutGEiaPvAhXBwjgGHYy1B7sQFjADegQIEhAC&usg=AOvVaw1C80QxXddlHlMLmkMg2Z-V
4. https://youtu.be/BceFKnWh68Y
5. https://youtu.be/i6ZmA9EEzrI

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - III
SKILL ENHANCEMENT COURSE - V: (ENTERPRENEURIAL SKILL)-
PRACTICAL: WEB DESIGNING (23UMAS3P)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 1 **INT. MARKS : 25**
CREDIT : 1 **EXT. MARKS : 75**
DURATION : 15 hrs **MAX. MARKS: 100**

Course Objectives

- To understand the fundamentals of web design and electronic publishing
- To learn how to create lists and nested lists using HTML, Javascript
- To learn how to create web page layouts and designs using CSS
- To learn how to work with block elements, objects, lists, and tables using CSS

Course Outcomes (CO)

On Successful completion of the course, the learners will be able to

CO1[K2]: explain the features of HTML, CSS and Java Script

CO2[K3]: use HTML, CSS and Java Script program codings/commands to prepare a webpage

CO3[K4]: identify and rectify errors in HTML, CSS and Java Script codings

CO4[K5]: select and manage tools of HTML, CSS and Java Script

CO5[K6]: prepare a web page

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K2]	2	1	-	2	-	-	-
CO2[K3]	2	1	1	2	-	-	1
CO3[K4]	2	1	1	2	1	2	1
CO4[K5]	2	2	1	2	1	2	1
CO5[K6]	2	2	1	2	1	2	1
Weightage of the course	10	07	04	10	03	06	04

Weighted percentage of Course contributionto POs	1.93	1.67	2.12	2.87	3.3	3.39	2.7

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low, '-'No Correlation)

1. To define styles using pseudo-elements and link a style sheet to an HTML document.
2. To create a static web page which defines all text formatting tags of HTML in tabular format
3. To design and publish an educational institution web page using HTML.
4. To create web page layouts and designs with the style elements background, text and font using CSS.
5. To design and implement forms and form elements in their web pages using CSS.
6. To import a picture on a webpage using CSS.
7. To design a simple calculator using Java script to perform the following operations of sum, product, difference and quotient.
8. To create a Java script program that calculates the squares and cubes of the numbers from 0 to 10 and outputs HTML text that displays the resulting values in HTML table format.

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - III
SKILL ENHANCEMENT COURSE -VI: PRACTICAL - LATEX (23UMAS3Q)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 2 **INT. MARKS : 25**
CREDITS : 2 **EXT. MARKS : 75**
DURATION : 30 hrs **MAX. MARKS: 100**

Course Objectives

- To impart training in Latex.
- To acquire knowledge on mathematical documentation using Latex.

Course Outcomes (CO)

On Successful completion of the course, the learners will be able to
CO1[K2]: explain the features of Latex
CO2[K3]: use Latex program codings/commands to prepare academic document
CO3[K4]: identify and rectify errors while run a Latex program
CO4[K5]: select and manage tools of Latex
CO5[K6]: prepare a document using Latex

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K2]	2	1	1	2	-	-	-
CO2[K3]	2	1	1	2	-	-	1
CO3[K4]	3	2	1	2	-	2	1
CO4[K5]	3	2	1	2	-	2	1
CO5[K6]	2	1	1	2	-	2	1
Weightage of the course	12	07	05	10	-	06	04
Weighted percentage of Course contributionto POs	2.31	1.67	2.65	2.87	0	3.39	2.7

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low, '-'No Correlation)

1. To create a document using 5 different fonts.

2. To prepare a document using Latex packages.
3. To prepare a document by citing the references.
4. To prepare a document using hanging indents.
5. To prepare a document using figures and tables.
6. To embed math expressions within text.
7. To display the mathematical formulae.
8. To extract the roots of the quadratic equation.
9. To build math structure.
10. To interpret the structure of the report.

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF TAMIL
UG PROGRAMME - B.A., B.Sc., B.Com., BBA., BCA.,
SEMESTER - IV
பொதுத்தமிழ் - IV (23UTAG41)
(From 2023-2024 Batch onwards)

HOURS / WEEK : 6 **INT. MARKS : 25**
CREDITS : 3 **EXT. MARKS : 75**
DURATION : 90 hrs **MAX. MARKS: 100**

நோக்கங்கள்

- இலக்கியங்களின் சிறப்பினை உணர்த்துதல்.
- சங்க இலக்கியத்தின் சிறப்பையும், நாடகம் என்னும் இலக்கிய வகையின் தன்மையையும் அகபுற இலக்கணங்களையும் மாணவர்களுக்கு அறிமுகப்படுத்துதல்.
- தமிழ் இலக்கியம் சார்ந்த போட்டித் தேர்வுகளுக்கு ஏற்ப கற்பித்தல் நடைமுறைகளை மேற்கொள்ளுதல்.

கற்றலின் பயன்கள்

இத்தாளை வெற்றிகரமாக முடித்தவுடன் மாணவர்கள்,

CO1[K1]: சங்க இலக்கியத்தில் காணப்பெறும் அறக்கருத்துக்களை அறிந்து கொள்வர்.

CO2[K2]: சங்க இலக்கியங்கள் மற்றும் நாடக இலக்கியம் வாயிலாக மக்களின் வாழ்க்கை முறையினை எடுத்துரைப்பர்.

CO3[K3]: நாடக இலக்கியம் மூலம் நடிப்பாற்றலையும், கலைத்தன்மையையும், படைப்பாற்றலையும் கற்பர். மேலும் மொழிபெயர்ப்பு ஆற்றலையும் பெறுவர்.

CO4[K4]: கலைச்சொற்களைக் கண்டறிந்து அவற்றோடு தொடர்புடைய சொல்லைப் பகுப்பர்.

CO5[K5]: சங்க இலக்கியம் மற்றும் நாடக இலக்கியங்களை மதிப்பீடு செய்வர்.

CO/PO Mapping Table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	1	-	1	-	-	-
CO2[K2]	2	1	-	2	-	-	-
CO3[K3]	2	2	-	2	1	-	1
CO4[K4]	2	2	1	2	1	1	-
CO5[K5]	2	2	1	2	-	1	1
Weightage of the Course	10	08	02	09	02	02	02
Weighted percentage of Course Contribution to POs	1.93	1.91	1.06	2.59	2.2	1.13	1.35

Based on the Level of Contribution ('3' -High, '2' -Medium, '1' -Low, '-' No Correlation)

கூறு I **(18 hrs)**

எட்டுத்தொகை: நற்றிணை (10,14,16பாடல்கள்), குறுந்தொகை (16,17,19,20,25,29,38,440), கலித்தொகை (38,51), அகநானூறு (15,33,55), புறநானூறு (37,86,112), பரிபாடல் (55)

கூறு II **(18 hrs)**

பத்துப்பாட்டு: நெடுநல்வாடை - நக்கீரர்

கூறு III **(18 hrs)**

நாடகம்: சபாபதி - பம்மல் சம்பந்த முதலியார்

கூறு IV **(18 hrs)**

சங்க இலக்கியம் தோற்றம் வளர்ச்சி - நாடகத்தின் தோற்றம் வளர்ச்சி

கூறு V **(18 hrs)**

மொழித்திறன்: மொழிபெயர்ப்பு - கலைச்சொற்கள், கொடுக்கப்பட்டுள்ள ஆங்கிலப் பகுதியைத் தமிழில் மொழிபெயர்தல், அலுவலகக் கடிதம் - தமிழில் மொழிபெயர்த்தல்.

பாடநூல்கள்

1. தமிழியல் துறையினர், *தொகுப்பு நூல்,* ஸ்ரீ காளீஸ்வரி கல்லூரி (தன்னாட்சி), சிவகாசி.
2. வாசுதேவன், கா. *பன்முக நோக்கில் தமிழ் இலக்கிய வரலாறு,* தேவன் பதிப்பகம், திருச்சிராப்பள்ளி, 2017.
3. சபாபதி, *பம்மல் சம்பந்த முதலியார்,* கௌரா பதிப்பகக் குழுமம், சென்னை

பார்வை நூல்கள்

1. சிற்பி. பாலசுப்பிரமணியன், *தமிழ் இலக்கிய வரலாறு,* கவிதா வெளியீடு, சென்னை.
2. தமிழண்ணல், *புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு,* சோலை பதிப்பகம், மதுரை
3. பாக்கியமேரி, *வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு*, பாரி நிலையம், சென்னை.

வலைப்பதிவுகள் (Web Sources)

1. Tamil Heritage Foundation- www.tamilheritage.org <http://www.tamilheritage.org>
2. Tamil virtual University Library- www.tamilvu.org/ library http://www.virtualvu.org/library
3. Project Madurai - www.projectmadurai.org.
4. Chennai Library- www.chennailibrary.com <http://www.chennailibrary.com>.
5. Tamil Universal Digital Library- www.ulib.prg <http://www.ulib.prg>.
6. Tamil E-Books Downloads- tamilebooksdownloads. blogspot.com
7. Tamil Books on line- books.tamil cube.com
8. Catalogue of the Tamil books in the Library of British Congress archive.org
9. Tamil novels on line - books.tamilcube.com

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF ENGLISH
UG PROGRAMME - B.A./ B.COM/B.B.A./ B.SC./BCA
SEMESTER- IV
GENERAL ENGLISH –IV (23UENL41)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 6 (L-5, T-1) **INT. MARKS : 25**
CREDITS : 3 **EXT. MARKS: 75**
DURATION : 90 hrs **MAX. MARKS: 100**

Course Objectives

- To help learners imbibe the rules of language unconsciously and tune to deduce language structure and usage.
- To use receptive skills through reading and listening to acquire good exposure to language and literature.
- To develop language skill for effective communication.
- To provide exposure to plays, autobiographies and expose them to value based ideas.
- To enhance the learner's language skills especially in the areas of grammar and pronunciation.

Course Outcomes (CO)

On successful completion of the course, the learners will be able to
CO1 [K1]: state ideas effectively and appropriately in real life situations.
CO2 [K2]: demonstrate speaking skills in appreciating literature.
CO3 [K3]: use grammar and pronunciation effectively and appropriately.
CO4 [K4]: examine the literary works to develop language skills.
CO5 [K6]: construct grammatically correct and meaning full sentences.

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	1	-	1	-	-	-
CO2[K2]	2	1	-	1	-	-	-
CO3[K3]	2	2	1	2	1	1	1
CO4[K4]	2	2	1	2	1	1	1
CO5[K6]	2	3	1	2	-	1	1
Weightage of the course	10	09	03	08	02	03	03
Weighted percentage of Course contribution to Pos	1.93	2.15	1.59	2.3	2.2	1.69	2.03

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' No Correlation)

UNIT I - LIFE WRITING **(18 hrs)**

Malala Yousafzai - I am Malala - Chapter 1
Nikola Tesla - My Inventions - Chapter 2

UNIT II - ONE ACT PLAYS **(18 hrs)**

Edward Albee - The Zoo Story
Anton Chekhov - The Proposal

UNIT III - INTERVIEWS **(18 hrs)**

Nelson Mandela's Interview with Larry King
Rakesh Sharma's Interview with Indira Gandhi from Space
Lionel Messi with Sid Lowe (Print)

UNIT IV - LANGUAGE COMPETENCY **(18 hrs)**

Refuting, Arguing & Debating, Making Suggestions & Responding to Suggestions, Asking for and Giving Advice or Help, Interviews (face to face, telephone and video conferencing)

UNIT V - ENGLISH FOR WORKPLACE **(18 hrs)**

Job Applications: Covering letters, CV and Resume
Creating a digital profile - Linkedin
Filling Forms (Online & Manual): creation of account, railway reservation, ATM, Credit/debit card
Body Language -Practical Skills for Interviews

TEXTBOOKS

1. Yousafzai, Malala, and Christina Lamb. *I Am Malala The Girl Who Stood Up for Education and Was Shot by the Taliban*. New York: Little Brown, 2013.
2. Tesla , Nikola. *My Inventions.* London: Ingram Short Title, 2011.

REFERENCES

Books

1. Taylor, Mary Borg, & Francis, *Writing Your Life: A Guide to Writing Autobiographies.* Routledge, 2021.
2. Bert, A. Norman. *One-act Plays for Acting Students: An Anthology of Short one- Act Plays for one, Two or Three actors*. Christian Publisher LLC, 1987.
3. Dolley, Colin. and Rex Welford.*The One-Act Play Companion: A Guide to plays, Play wrights and Performance*. Bloomsbury Publishing,2015.
4. Bernis, Jeanne Kelly. Editor. *How to Build a Professional Digital Profile*. Bernish, Bernish Communications Associates, LLC, 2012
5. Yardley, M Yardley - Matwiejczuk, *Role Play-Theory and Practice.* SAGE publications ltd, 1997.

Web Sources

1. For Readers' Theatre: https://www.youtube.com/watch?v=JaLQJt8orSw&t=469s(the link to the performance; refer scripts by Aaron Sheperd) http://BBC learn English.com

2. https://www.infoplease.com/dictionary/brewers/animals-cries
3. http://onestopenglish.com
4. http://hearn-english-today.com
5. http://talkenglish.com

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - IV
CORE COURSE - VII: INDUSTRIAL STATISTICS (23UMAC41)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 5(L-4, T-1) **INT. MARKS : 25**
CREDITS : 5 **EXT. MARKS : 75**
DURATION : 75 hrs **MAX. MARKS: 100**

Course Objectives

- To bridge the gap between industry and academia.
- To apply the theory learnt to industrial applications.
- To explain the importance of statistical quality control in industrial settings.
- To identify sources of variation in industrial processes and products.
- To explain the importance of Analysis of time series, Analysis of Variance and Design of Experiments in Industrial applications.

Course Outcomes (CO)

On Successful completion of the course, the learners will be able to

CO1[K1]: describe the basic statistical methods and techniques in data analytics

CO2[K2]: explain the importance of statistical quality control, time series trend values, analysis of variance and randomized experimental design

CO3[K3]: apply the statistical tools and techniques to manage product quality, compare variances across the means, predict future

CO4[K4]: interpret the conclusion drawn by the statistical methods of quality control, time series, analysis of variance and randomized experiment design, events and draw valid inference

CO5[K5]: estimate a valid statistical inference by the statistical methods of quality control, time series, analysis of variance and randomized experiment design, events and draw valid inference

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	2	-	1	-	2	-
CO2[K2]	2	2	-	1	-	2	-
CO3[K3]	2	2	2	2	1	2	1
CO4[K4]	2	2	2	2	1	2	1
CO5[K5]	2	2	2	2	1	2	1

Weightage of the course	10	10	6	8	3	10	3
Weighted percentage of Course contributionto Pos	1.93	2.39	3.17	2.3	3.3	5.65	2.03

Based on the level of contribution('3'-High, '2'-Medium, '1'-Low, '-' No Correlation)

UNIT I **(15 hrs)**

Statistical Quality Control: Introduction – Basis of SQC – Benefits of SQC – Process Control and Product control – Control Charts – Tools for SQC - Control chart for variables – Control chart for mean (X chart), Range Chart (R chart) Standard deviation chart (σ chart).

UNIT II **(15 hrs)**

Control chart for attributes - Natural Tolerance limits and specification limits - Acceptance of sampling plans for attributes - Single, double, Multiples and sequential sampling plans

UNIT III **(15 hrs)**

Analysis of Time Series: Components – Analysis – Measurement of Trend – Measurement of Seasonal variation - Index of Industrial production.

UNIT IV **(15 hrs)**

Analysis of Variance: Introduction – One way classification – Two way classifications with one observation per cell.

UNIT V **(15 hrs)**

Design of Experiments: Introduction – Three Principles of Experimental Design – Completely Randomized Design – Randomized Block Design.

TEXTBOOKS

1. Papoulis A. *Probability, Random Variables and Stochastic process*, New Delhi, Tata McGraw Hill Education Pvt. Ltd.,
2. Baisnab A., Jas M., *Elements of Probability and Statistics*, New Delhi, Tata McGraw Hill Education Pvt. Ltd., 1993.
3. Fruend John E. *Mathematical Statistics*. New Delhi: Prentice Hall of India.

REFERENCES

Books

1. Leavenworth S. *Statistical Quality Control*, New York, McGrawhill Book co, Sixth Edition, 1988.
2. Goon, A. M., Gupta M.K. and Dasgupta B., *Fundamentals of Statistics,* Vol. II. Kolkata, World Press, 1987.
3. Mahajan, *Statistical Quality Control*, New Delhi, Dhanpat Rai & sons, 1997.
4. Gupta, S. C. and Kapoor, V.K., *Fundamentals Of Applied Statistics*, Sultan Chand & Sons, Fourth Edition(Reprint), 2008.

Web Sources

1. https://nptel.ac.in
2. OpenIntro Statistics - https://www.openintro.org/book/stat/
3. http://spcchartsonline.com/ - Statistical Quality Control Tutorial
4. "ControlCharts"(OnlineTutorial):https://www.spcforexcel.com/knowledge/control-chart-basics/control-charts 4
5. https://www.analyticsvidhya.com/blog/2018/01/anova-analysis-of-variance/ - ANOVA Tutorial

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - IV
CORE COURSE - VIII: ELEMENTS OF MATHEMATICAL ANALYSIS (23UMAC42)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 5 (L-4, T-1) **INT. MARKS : 25**
CREDITS : 5 **EXT. MARKS : 75**
DURATION : 75 hrs **MAX. MARKS: 100**

Course Objectives

- To identify and characterize sets and functions.
- To test and analyze the convergence and divergence of sequences, series.
- To understand metric spaces with suitable examples.

Course Outcomes (CO)

On Successful completion of the course, the learners will be able to

CO1[K1]: describe the fundamental concepts of sets and functions, sequences and series of real numbers, continuous function on a metric space

CO2[K2]: explain the various tests for the convergence of sequences and series of real numbers

CO3[K3]: apply the abstract concepts to produce proofs of results that arise in the context of real analysis

CO4[K4]: verify the countability of sets, convergence of sequence and series of real numbers, continuity of functions on a metric space

CO5[K5]: determine the bounds and limits of real sequences, the sum of real series

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	2	-	1	-	-	-
CO2[K2]	3	2	-	1	-	-	-
CO3[K3]	3	2	2	2	-	1	1
CO4[K4]	3	2	2	2	-	1	1
CO5[K5]	3	2	2	2	-	1	1
Weightage of the course	15	10	06	08	-	03	03

Weighted percentage of Course contributionto Pos	2.89	2.39	3.17	2.3	0	1.69	2.03

Based on the level of contribution('3'-High, '2'-Medium, '1'-Low, '-' No Correlation)

UNIT I **(15 hrs)**

Sets and Functions: Sets and Elements - Operations on Sets – Functions – Real Valued Functions – Equivalence, Countability - Real Numbers - Least Upper Bounds.

UNIT II **(15 hrs)**

Sequences of Real Numbers: Definition of a Sequence and Subsequence – Limit of a Sequence – Convergent Sequences – Divergent Sequences - Bounded Sequences - Monotone Sequences.

UNIT III **(15 hrs)**

Operations on Convergent Sequences – Operations on Divergent Sequences – Limit Superior and Limit Inferior - Cauchy Sequences.

UNIT IV **(15 hrs)**

Series of Real Numbers: Convergence and Divergence – Series with Non – negative terms - Alternating Series - Conditional Convergence and Absolute Convergence - Tests for Absolute Convergence.

UNIT V **(15 hrs)**

Limits and Metric Spaces: Limit of a Function on a Real Line - Metric Spaces - Limits in Metric Spaces. **Continuous Functions on Metric Spaces:** Functions Continuous at a Point on the Real Line - Function Continuous on a Metric Space.

TEXTBOOKS

1. Richard R. Goldberg, *Methods of Real Analysis*: Oxford and IBH Publishing, (1 January 2020).
2. Ethan D. Bloch. *The Real Numbers and Real Analysis*. Springer, 2011.
3. G.M. *The fundamentals of Mathematical Analysis, vol I*. New York: Pergamon Press, 1965.

REFERENCES

Books

1. Apostol T. M., *Calculus* (Vol. I), John Wiley and Sons (Asia) P. Ltd., 2002.

2. Bartle R.G. and D. R Sherbert, *Introduction to Real Analysis*, John Wiley and Sons(Asia) P. Ltd., 2000.
3. E. Fischer, *Intermediate Real Analysis*, Springer Verlag, 1983.
4. K.A. Ross, *Elementary Analysis- The Theory of Calculus Series*- Undergraduate Texts in Mathematics, Springer Verlag, 2003.

Web Sources

1. https://nptel.ac.in
2. https://www.mathwarehouse.com/
3. https://www.mathhelp.com/
4. https://www.mathsisfun.com/

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - IV
ELECTIVE COURSE GENERIC/ DISCIPLINE SPECIFIC -IV: NUMERICAL METHODS WITH APPLCATIONS (23UMAA41)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 3 **INT. MARKS : 25**
CREDITS : 3 **EXT. MARKS : 75**
DURATION : 45 hrs **MAX. MARKS: 100**

Course Objectives

- To introduce the various topics in Numerical methods.
- To know the fundamentals of algebraic equations.
- To apply interpolation and approximation on numerical problems.
- To find numerical differentiation and integration of functions.

Course Outcomes (CO)

On Successful completion of the course, the learners will be able to

CO1[K1]: describe the basic concepts in numerical analysis

CO2[K2]: explain the methods of solving algebraic, transcendental, simultaneous equations, finding numerical differentiation and integration

CO3[K3]: apply numerical methods to obtain approximate solutions of algebraic, transcendental and simultaneous equations, numerical differentiation and integration of given functions

CO4[K4]: examine the numerical solution of algebraic, transcendental, simultaneous equations, numerical differentiation and integration of functions and interpolating values of the given data

CO5[K5]: determine the appropriate method of solving algebraic, transcendental, simultaneous equations numerically, finding numerical differentiation and integration of functions and finding missing values of a given data

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	2	1	1	-	-	-
CO2[K2]	2	2	1	1	-	1	-
CO3[K3]	2	2	1	1	-	1	1
CO4[K4]	2	2	1	2	1	1	1
CO5[K5]	2	2	1	2	1	1	1

Weightage of the course	10	10	05	07	02	04	03
Weighted percentage of Course contribution to Pos	1.93	2.39	2.65	2.01	2.2	2.26	2.03

Based on the level of contribution('3'-High, '2'-Medium, '1'-Low, '-' No Correlation)

UNIT I **(9 hrs)**

The Solutions of Numerical Algebraic and Transcendental Equations: The Bisection Method – Iteration Method – Regula Falsi Method – Newton – Raphson Method.

UNIT II **(9 hrs)**

Solution of Simultaneous Linear Algebraic equations: Introduction – Gauss Elimination method – Inversion of a Matrix using Gauss Elimination Method – Iterative Methods – The Gauss Jacobi Method – Gauss Seidel Method of Iteration.

UNIT III **(9 hrs)**

Interpolation: Introduction – Gregory-Newton Forward Interpolation Formula - Gregory-Newton Backward Interpolation Formula – Equidistant Terms with One or More Missing Values.

UNIT IV **(9 hrs)**

Numerical Differentiation: Introduction – Newton's Forward Difference Formula to Get the Derivative – Newton's Backward Difference Formula to Compute the Derivative – Derivative using Stirling's Formula.

UNIT V **(9 hrs)**

Numerical Integration: Introduction – A General Quadrature Formula for Equidistant Ordinates – Trapezoidal Rule – Romberg Method - Simpson's One Third Rule - Simpson's Three Eight Rule – Weddle's Rule.

TEXTBOOK

1. Kandasamy, P., Thilagavathy, K. and Gunavathi, K. *Numerical Methods*. New Delhi : S.Chand and Company Ltd, 2012.

REFERENCES

Books

1. Kalavathy, S. *Numerical Methods*. Chennai : Vijay Nicole Imprints Pvt Ltd, 2004.

2. Arumugam, S., Thangapandi Isaac, A. and Somasundaram, A. *Numerical Methods.* Chennai : Scitech Publications (India) Pvt Ltd, 2009.

Web Sources

1. https://theengineeringmaths.com/wp-content/uploads/2017/11/num-solutions.pdf
2. https://www.lkouniv.ac.in/site/writereaddata/siteContent/202004032250571912siddharth_bhatt_engg_Interpolation.pdf
3. https://theengineeringmaths.com/wp-content/uploads/2017/11/interpolation-web.pdf
4. https://nptel.ac.in/content/storage/111/107/111107105/MP4/mod02lec08.mp4
5. https://nptel.ac.in/content/storage/111/107/111107105/MP4/mod08lec39.mp4

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - IV
SKILL ENHANCEMENT COURSE - VII: PRACTICAL: STATISTICS WITH SPSS
(23UMAS4P)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 2 **INT. MARKS :25**
CREDITS : 2 **EXT. MARKS : 75**
DURATION : 30 hrs **MAX. MARKS: 100**

Course Objectives:

- To gain knowledge in the statistical software packages SPSS.
- To introduce the basic functions of SPSS
- To provide the students with the skills to use SPSS for processing and analyzing
- To train the students to process data and generate outputs.

Course Outcomes (CO)

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

CO1[K1]: state the basic functions of SPSS
CO2[K2]: explain various procedures in SPSS to perform statistical data analysis
CO3[K3]: solve statistical problems through a hoc analysis, hypothesis testing and predictive analysis using SPSS
CO4[K4]: analyze and interpret statistical data through SPSS
CO5[K5]: select and manage SPSS software with flexible deployment options

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	1	1	1	1	-	-	-
CO2[K2]	1	2	1	2	-	1	-
CO3[K3]	2	2	1	2	1	1	1
CO4[K4]	2	2	2	2	1	1	1
CO5[K5]	2	2	2	2	1	2	1
Weightage of the course	08	09	07	09	03	05	03
Weighted percentage of Course	1.54	2.15	3.7	2.59	3.3	2.82	2.03

contribution to Pos							

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low, '-' No Correlation)

1. To check Validity and Reliability of Data.
2. To design Histogram presentation.
3. To create cross tables of Gender and Height.
4. To prepare the Frequency Table with mean, median, mode and standard deviation.
5. To analyze the Correlation Coefficient of Variables.
6. To test the hypothesis using Chi-Square test.
7. To judge the preference using Rank Correlation.
8. To check the dissimilarity between variables using Regression Analysis.
9. To check the reliability of Data and grouping of similar factors using Factor Analysis.
10. To analyze the variations using One way and Two way ANOVA Test.

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - IV
SKILL ENHANCEMENT COURSE -VIII: Practical: DATA ANALYSIS USING R
(23UMAS4Q)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 2 **INT. MARKS :25**
CREDITS : 2 **EXT. MARKS : 75**
DURATION : 30 hrs **MAX. MARKS: 100**

Course Objectives:

- To understand the basics in R programming.
- To import, review, manipulate and summarize datasets using R.
- To create testable hypotheses and identify appropriate statistical tests.
- To perform appropriate statistical tests using R.
- To create and edit visualizations with R.

Course Outcomes (CO)

On successful completion of the course, the learners will be able to
CO1[K1]: state the fundamental commands and syntax of R
CO2[K2]: explain the steps to perform data analysis in R
CO3[K3]: use R programming to analyze quantitative data
CO4[K4]: identify and rectify errors while running R program
CO5[K5]: select and manage tools of R

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	2	1	1	-	-	-
CO2[K2]	2	2	1	1	-	1	-
CO3[K3]	2	2	1	2	1	1	1
CO4[K4]	2	2	2	2	1	1	1
CO5[K5]	2	2	2	2	1	2	1
Weightage of the course	10	10	07	08	03	05	03
Weighted percentage of Course	1.93	2.39	3.7	2.3	3.3	2.82	2.03

contribution to Pos							

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low, '-' No Correlation)

1. To write commands and functions in R.
2. To create a data frame.
3. To draw diagrams using R.
4. To draw histogram for raw data.
5. To calculate various parameters in descriptive statistics.
6. To find Correlation and Regression.
7. To compute probabilities and drawing random samples for distributions.
8. To fit the given data to Binomial and Poisson distributions.
9. To test the hypothesis for proportions and means.
10. To test the independence of attributes using Chi square test.
11. To test a hypothesis using Analysis of Variance (ANOVA).
12. To test a hypothesis using Non parametric tests.

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
UG PROGRAMME
SEMESTER- III & IV
ENVIRONMENTAL STUDIES (23UESR41)
(From 2023 - 2024 Batch onwards)

HOURS/WEEK: 2 (III SEM-1, IV SEM-1) **INT. MARKS : 25**
CREDITS : 2 **EXT. MARKS : 75**
DURATION : 30 hrs **MAX. MARKS: 100**

Course Objectives

- To provide a comprehensive understanding of various environmental issues, including pollution, deforestation, climate change, loss of biodiversity, water scarcity, and resource depletion
- To encourage sustainable practices in various sectors, such as energy, transportation, agriculture, and waste management.
- To promote the conservation and preservation of natural resources, habitats, and ecosystems
- To foster a sense of environmental ethics and values.
- To encourage individuals to, participate in community initiatives, and contribute to sustainable development at local, national, and global levels

Course Outcomes (CO)

On successful completion of the course, the learners should be able to

CO1[K1]: recognize the importance of environment and role of Individuals in its protection.

CO2 [K2]: explain the key concepts of Ecosystem, biodiversity and climatic change

CO3[K3]: apply the right measures for the sustainable use of natural resources.

CO4[K4]: analyse the ethical, cross-cultural, and historical context of environmental issues and the links between Human and Natural Systems.

CO5[K5]: evaluate the impact of human action on the biological environment

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1 [K1]	2	1	-	2	2	1	1
CO2 [K2]	2	1	-	2	1	1	1
CO3 [K3]	2	1	-	1	1	1	1
CO4 [K4]	1	1	1	1	2	1	1
CO5 [K5]	1	1	-	1	2	1	1
Weightage of the course	08	05	01	07	08	05	05

Weighted percentage of Course contribution to Pos	1.54	1.19	0.53	2.01	8.79	2.82	3.38

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' No Correlation)

UNIT I – NATURAL RESOURCES (6 hrs)

Natural resources: Definition of resource; Classification of natural resources- biotic and abiotic, renewable and non-renewable. **Biotic resources:** Major type of biotic resources- forests, grasslands, wetlands, wildlife and aquatic (fresh water and marine); Microbes as a resource; Status and challenges. **Water resources:** Types of water resources- fresh water and marine resources; Availability and use of water resources; Environmental impact of over-exploitation, issues and challenges; Water scarcity and stress; Conflicts over water.

UNIT II –SUSTAINABLE DEVELOPMENT (6 hrs)

Soil as a resource and its degradation. **Energy resources:** Sources of energy and their classification, renewable and non-renewable sources of energy; Conventional energy sources- coal, oil, natural gas, nuclear energy; Non-conventional energy sources- solar, wind, tidal, hydro, wave, ocean thermal, geothermal, biomass, hydrogen and fuel cells; Implications of energy use on the environment. **Introduction to sustainable development:** Sustainable Development Goals (SDGs) - targets and indicators, challenges and strategies for SDGs.

UNIT III – ENVIRONMENTAL ISSUES LOCAL, REGIONAL AND GLOBAL (6 hrs)

Industrial revolution and its impact on the environment; Population growth and natural resource exploitation; Global environmental change. **Pollution:** Impact of sectoral processes on Environment, Types of Pollution- air, noise, water, soil, municipal solid waste, hazardous waste; Trans boundary air pollution; Acid rain; Smog. Land use and Land cover change: land degradation, deforestation, desertification, urbanization. **Biodiversity loss:** past and current trends, impact. Global change: Ozone layer depletion; Climate change.

UNIT IV – CONSERVATION OF BIODIVERSITY AND ECOSYSTEM (6 hrs)

Biodiversity and its distribution: Biodiversity as a natural resource; Levels and types of biodiversity; Biodiversity in India and the world; Biodiversity hotspots; Species and ecosystem threat categories. **Ecosystems and ecosystem services:** Major ecosystem types in India and their basic characteristics- forests, wetlands, grasslands, agriculture, coastal and marine; Threats to biodiversity and

ecosystems. Major conservation policies: in-situ and ex-situ conservation approaches; Major protected areas.

UNIT V – CLIMATE CHANGE: IMPACTS, ADAPTATION AND MITIGATION **(6 hrs)**

Climate change: Natural variations in climate; Structure of atmosphere; Anthropogenic climate change from greenhouse gas emissions– past, present and future; Projections of global climate change with special reference to temperature, rainfall, climate variability and extreme events; Importance of 1.5 °C and 2.0 °C limits to global warming; Impacts of climate change on ocean and land systems; Sea level rise, changes in marine and coastal ecosystems; Impacts on forests and natural ecosystems; **Mitigation of climate change -** Renewable energy sources; Carbon capture and storage, National climate action plan and Intended Nationally Determined Contributions (INDCs)

TEXTBOOKS

1. Chiras D. D and Reganold J. P, *Natural Resource Conservation: Management for a Sustainable Future,* 10th Edition, Pearson, 2010
2. Harris, Frances, *Global Environmental Issues,* 2nd Edition, Wiley-Blackwell

REFERENCES

Books

1. Krishnamurthy K. V, *Textbook of Biodiversity,* Science Publishers, Plymouth, UK.
2. Pittock, Barrie, *Climate Change: The Science, Impacts and Solutions,* 2nd Edition, Routledge.

Web Sources

1. https://www.youtube.com/watch?v=QewEi2U1jLs
2. https://www.unep.org/news-and-stories/story/marine-biodiversity-gets-lifeline-high-seas-treaty

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - V
CORE COURSE - IX: ABSTRACT ALGEBRA (23UMAC51)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 5 (L-4, T-1) **INT. MARKS : 25**
CREDITS : 4 **EXT. MARKS : 75**
DURATION : 75 hrs **MAX. MARKS: 100**

Course Objectives

- To study the concepts of Sets, Groups and Rings.
- To understand the construction, characteristics and applications of the abstract algebraic structures.

Course Outcomes (CO)

On successful completion of the course, the learners will be able to
CO1[K1]: state the fundamental concepts of groups and rings
CO2[K2]: identify the algebraic structures of groups and rings
CO3[K3]: apply the abstract concepts to produce proofs of results that arise in the context of groups and rings
CO4[K4]: examine the properties of groups, rings and integral domains
CO5[K5]: asses the structure of groups and rings

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	2	-	1	-	-	-
CO2[K2]	3	2	1	1	-	1	-
CO3[K3]	3	2	2	2	-	1	1
CO4[K4]	3	2	2	2	-	1	1
CO5[K5]	3	2	2	2	-	1	1
Weightage of the course	15	10	07	08	-	04	03
Weighted percentage of Course contribution to POs	2.89	2.39	3.7	2.3	0	2.26	2.03

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low, '-' No Correlation)

UNIT I **(15 hrs)**

Introduction to Groups – Subgroups - Cyclic Groups and Properties of Cyclic Groups - Lagrange's Theorem - A Counting Principle – Examples.

UNIT II **(15 hrs)**

Normal Subgroups and Quotient Group – Homomorphism - Automorphism - Examples.

UNIT III **(15 hrs)**

Cayley's Theorem - Permutation Groups – Examples.

UNIT IV **(15 hrs)**

Definition and Examples of Ring - Some Special Classes of Rings - homomorphism of Rings - Ideals and Quotient Rings - More Ideals and Quotient Rings.

UNIT V **(15 hrs)**

The Field of Quotients of an Integral Domain - Euclidean Rings - The Particular Euclidean Ring – Examples.

TEXTBOOK

1. Herstein, I. N. *Topics in Algebra*. Wiley Eastern Ltd., Second Edition, 1st January 2006.

REFERENCES

Books

1. John B. Fraleigh. *A First Course in Abstract Algebra*. Pearson, 7th Edition, 2002.
2. Artin, M. *Abstract Algebra*. Pearson, 2nd Edition, 2011.
3. Joseph A Gallian, *Contemporary Abstract Algebra*. Narosa, 4th Edition, 1999.

Web Sources

1. https://www.youtube.com/watch?v=yKRbG9Y5pYY&list=PLEAYkSg4uSQ3AaON5oCbS6ecwKsoopBN3
2. https://www.youtube.com/watch?v=S8F4xsmYXCs&list=PLEAYkSg4uSQ3AaON5oCbS6ecwKsoopBN3&index=15
3. https://nptel.ac.in/content/storage2/courses/111104026/lecture27.pdf
4. https://www.youtube.com/watch?v=-tP-cxErI- A&list=PLEAYkSg4uSQ1Yhxu2U –BxtRjZElrfVVcO
5. https://math.okstate.edu/people/binegar/3613/3613-l14.pdf

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - V
CORE COURSE - X: REAL ANALYSIS (23UMAC52)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 5 (L-4, T-1) **INT. MARKS : 25**
CREDITS : 4 **EXT. MARKS : 75**
DURATION : 75 hrs **MAX. MARKS: 100**

Course Objectives

- To study about real numbers and properties of real–valued functions.
- To understand the concepts of connectedness, compactness, completeness of Metric spaces.
- To produce counter examples of convergence of sequences of functions.

Course Outcomes (CO)

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

CO1[K1]: describe the basic elements of real analysis
CO2[K2]: explain the basic concepts and proof techniques in real analysis
CO3[K3]: apply the abstract concepts to produce proofs of results that arise in the context of real analysis
CO4[K4]: explore the characterization of connected, complete, compact metric spaces and the properties of derivatives and integrals of functions
CO5[K5]: determine the continuity and convergence of functions on metric spaces, the connectedness, completeness, compactness, boundedness of sets in a metric space, the derivative and integral of functions on metric spaces

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	2	-	-	-	-	-
CO2[K2]	3	2	1	1	-	-	-
CO3[K3]	3	2	2	2	-	1	1
CO4[K4]	3	2	2	2	-	1	1
CO5[K5]	3	2	2	2	-	1	1
Weightage of the course	15	10	07	07	-	03	03

Weighted percentage of Course contribution to POs	2.89	2.39	3.7	2.01	0	1.69	2.03

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low, '-' No Correlation)

UNIT I **(15 hrs)**

Continuous Functions on Metric Spaces: Open Sets – Closed Sets – Discontinuous Function on R^1. Connectedness, Completeness and Compactness: More about Open Sets - Connected Sets.

UNIT II **(15 hrs)**

Bounded Sets and Totally Bounded Sets: Complete Metric Spaces - Compact Metric Spaces, Continuous Functions on a Compact Metric Space, Continuity of Inverse Functions, Uniform Continuity.

UNIT III **(15 hrs)**

Calculus: Sets of Measure Zero, Definition of the Riemann Integral, Existence of the Riemann Integral - Properties of Riemann Integral.

UNIT IV **(15 hrs)**

Derivatives - Rolle's Theorem, Law of Mean, Fundamental Theorems of Calculus.

UNIT V **(15 hrs)**

Taylor's Theorem - Pointwise Convergence of Sequences of Functions, Uniform Convergence of Sequences of Functions.

TEXTBOOK

1. Richard R. Goldberg. *Methods of Real Analysis*. New Delhi: Oxford & IBH Publishing Co., 1st January 2020.

REFERENCES

Books

1. Walter Rudin. *Principles of Mathematical Analysis.* Tata McGraw Hill Education, Third Edition, 1 July 2017.
2. Tom M Apostal. *Mathematical Analysis*. New Delhi: Addison-Wesley publishing company, Narosa Publishing House, 2nd Edition, 1974.

Web Sources

1. https://www.scribd.com/document/422568997/Goldberg-Method-of-Real-Analysis

2. https://www.pdfdrive.com/download.pdf?id=184071294&h=1df6ea1f94232f484afb462aef9ae5af&u=cache&ext=pdf
3. https://math.libretexts.org/Courses/Monroe_Community_College/MTH_211_Calculus_II/Chapter_9%3A_Sequences_and_Series/9.2%3A_Infinite_Series
4. https://nptel.ac.in/courses/111/106/111106053/
5. https://calclab.math.tamu.edu/~sivan/math663_04c/S34.pdf

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - V
CORE COURSE - XI: MATHEMATICAL MODELLING (23UMAC53)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 5 (L-4, T-1) **INT. MARKS : 25**
CREDITS : 4 **EXT. MARKS : 75**
DURATION : 75 hrs **MAX. MARKS: 100**

Course Objectives

- To construct and analyze mathematical models found in real life problems.
- To explain modeling through differential and difference equations.

Course Outcomes (CO)

On successful completion of the course, the learners will be able to
CO1[K1]: recognize the basics of mathematical modeling
CO2[K2]: identify and simplify the real-world problem situation
CO3[K3]: construct a mathematical model of real-world problems and solve the model using differential and difference equations
CO4[K4]: interpret the mathematical models of the real-world problems
CO5[K5]: validate the mathematical model of the real-world problems

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	2	1	2	-	-	-
CO2[K2]	3	2	2	2	1	1	-
CO3[K3]	3	2	2	2	1	1	1
CO4[K4]	3	3	2	1	1	2	1
CO5[K5]	3	3	2	1	1	2	1
Weightage of the course	15	12	09	08	04	06	03
Weighted percentage of Course contribution to POs	2.89	2.86	4.76	2.3	4.4	3.39	2.03

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low, '-' No Correlation)

UNIT I **(15 hrs)**

Mathematical Modelling: Simple Situations Requiring Mathematical Modelling, Characteristics of Mathematical Models.

UNIT II **(15 hrs)**

Mathematical Modelling through Differential Equations: Linear Growth and Decay Models. Non-Linear Growth and Decay Models, Compartment Models.

UNIT III **(15 hrs)**

Mathematical Modelling through System of Ordinary Differential Equations of First Order: Prey-predator Models, Competition Models, Model with Removal and Model with Immigrations. Epidemics: Simple Epidemic Model, Susceptible – infected - Susceptible (SIS) Model, SIS Model with Constant Number of Carriers. Medicine: Model for Diabetes Mellitus.

UNIT IV **(15 hrs)**

Introduction to Difference Equations.

UNIT V **(15 hrs)**

Mathematical Modelling through Difference Equations: Harrod Model, Cob Web Model - Application to Actuarial Science.

TEXTBOOK

1. Kapur, J. N. *Mathematical Modeling.* New Age International publishers, 2009.

REFERENCES

Books

1. Bimalk Mishra and Dipak K. Satpathi. *Mathematical Modeling*. Ane Books Pvt. Ltd., 1 January 2009.
2. Sandip Banerjee. *Mathematical Modeling Models, Analysis and Applications.* CRC Press, Taylor & Francis group, 2014.
3. Jonas Hall and Thomas Ligefjard. *Mathematical Modeling applications with Geogebra*. John Wiley & Sons, 2017.
4. Mark M. Meerschaert. *Mathematical Modeling*. Elsevier Publications, 2007.
5. Edward A. Bender. *An introduction to mathematical Modeling.* CRC Press, 2002.
6. Walter J. Meyer. *Concepts of Mathematical Modeling.* Dover Publications, 2000.

Web Sources

1. https://people.maths.bris.ac.uk/~madjl/course_text.pdf
2. https://www.sfu.ca/~vdabbagh/Chap1-modeling.pdf
3. https://www.hec.ca/en/cams/help/topics/Mathematical_modelling.pdf

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER- V
CORE COURSE-XII: PROJECT WITH VIVA VOCE (23UMAJ51)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 5 **INT. MARKS : 25**
CREDITS : 4 **EXT. MARKS : 75**
DURATION : 75 hrs **MAX. MARKS : 100**

Course Objectives:

- To familiarize the learners with the objectives and stages in formulating a Research Project
- To relate conceptual knowledge and the fundamentals of the research
- To apply fundamental and disciplinary concepts and methods in ways appropriate to their principal areas of study
- To develop the art of writing coherently, originally and analytically

Course Outcomes (CO)

On successful completion of the course, the learners will be able to
CO1[K2]: express their views with apt illustrations and critical support
CO2[K3]: organize the views and format them into a research paper
CO3[K4]: analyze the views which take about various approaches to the definition terms
CO4[K5]: evaluate the findings of the study
CO5[K6]: compile the Documentation as per the latest Research Methodology

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K2]	3	2	2	2	-	1	-
CO2[K3]	3	2	2	2	1	1	-
CO3[K4]	3	2	2	2	1	1	1
CO4[K5]	2	2	2	2	1	1	1
CO5[K6]	2	2	2	3	1	1	1
Weightage of the course	13	10	10	11	4	5	3
Weighted percentage of Course contribution	2.5	2.39	5.29	3.16	4.4	2.82	2.03

to POs							

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' No Correlation)

Guidelines for Project Submission (UG)

1. Students will work individually or in groups with maximum of 3 members on a semester-long project.
2. Depending on the interest of the students, project titles will be chosen.
3. Students must meet the guide periodically.
4. The project report should be of minimum 25 pages (excluding bibliography & appendices)
5. The project carries 100 marks of which 25 marks for Internal Assessment and 75 Marks for External Examination.
6. There will be two project review sessions.
7. A draft of the final project report should be submitted to the Project Guide for review at least two weeks prior to the end of the semester.
8. Three copies of the final project report should be submitted.
9. The Head of the department and the Project Guide will evaluate the final Project Report.
10. The viva-voce board shall consist of the External Examiner, the Head of the Department and the Internal Examiner

The following rubrics will be taken into account for the evaluation of Project work and viva-voce:

Internal Assessment (25 Marks)		**External Examination (75 Marks)**	
Project Report & Review	: 15 Marks	Project Report	: 25 Marks
PowerPoint Presentation	: 5 Marks	Viva Voce	: 50 Marks
Demo/Performance	: 5 Marks		

SRI KALISWARI COLLEGE (AUTONOMOUS)- SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme – B.Sc. Mathematics
SEMESTER – V
ELECTIVE COURSE GENERIC/ DISCIPLINE SPECIFIC –V: PROGRAMMING IN C WITH PRACTICAL (23UMAO5P)

HOURS/WEEK: 4 (L-2,P-2) **INT. MARKS : 25**
CREDITS : 3 **EXT. MARKS : 75**
DURATION : 60 hrs **MAX. MARKS: 100**

Course Objectives

- To introduce the learners the features and concept of Object Oriented Programming language C.
- To study the program coding of C.

Course Outcomes (CO)

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

CO1[K1]: identify the basic concepts of the programming language C

CO2 [K2]: classify the operations of input , output and decision making statements

CO3 [K3]: apply the concepts of functions and arrays for efficient execution of task

CO4 [K4]: analyze the various methods of solving a problem and choose the best method

CO5 [K5]: evaluate the importance and usage of various concepts of pointers

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	1	-	2	-	1	-
CO2[K2]	2	1	1	2	-	1	-
CO3[K3]	2	2	1	2	1	1	1
CO4[K4]	2	3	1	1	1	1	1
CO5[K5]	2	3	1	1	2	1	1
Weightage of the course	10	10	04	08	04	05	03
Weighted percentage of Course contribution to POs	1.93	2.39	2.12	2.3	4.4	2.82	2.03

Based on the level of contribution ('3'-High- '2'-Medium- '1'-Low '-' No Correlation)

UNIT I **(6 hrs)**

Overview of C: Importance of C- sample C program- C program structure- executing C program. Constants- Variables- and Data Types: Character set- C tokens- keywords and identifiers- constants- variables- data types- declaration of variables- Assigning values to variables-Assignment statement- declaring a variable as constant- as volatile. **Operators and Expressions:** Managing Input and Output Operations.

UNIT II **(6 hrs)**

Decision Making and Branching: Decision making with If- simple IF- IF ELSE- nested IF ELSE - ELSE IF ladder- switch- GOTO statement. Decision Making and Looping: While- Do-While- For- Jumps in loops.

UNIT III **(6 hrs)**

Arrays: Declaration and accessing of one & two-dimensional arrays- initializing two-dimensional arrays- multidimensional arrays. Functions: The form of C functions- Return values and types- calling a function- categories of functions- Nested functions- Recursion- functions with arrays- call by value- call by reference- storage classes-character arrays and string functions.

UNIT IV **(6 hrs)**

Structures and Unions: Defining- giving values to members- initialization and comparison of structure variables- arrays of structure- arrays within structures- structures within structures- structures and functions- unions. Preprocessors: Macro substitution- file inclusion.

UNIT V **(6 hrs)**

Pointers: definition- declaring and initializing pointers- accessing a variable through address and through pointer - pointers and arrays- pointers and functions- pointers and structures.

TEXT BOOK

1. E.Balagurusamy. *Programming in ANSI C.* Chennai: Tata McGraw Hill Education (India) Private Limited, 2019.

REFERENCES

Books

1. Asok.N. Kamthane and Amit Ashok Kamthane. *Programming in C*. New Delhi: Pearson India Education private limited, 2015.
2. Kernighan and Ritchie, *The C Programming Language*, Second Edition,Prentice Hall,1998.

3. Yashavant Kanetkar, *Let Us C*, Eighteenth Edition, BPB Publications,2021

Web Sources

1. https://www.cprogramming.com/tutorial/c-tutorial.html?inl=nv
2. https://www.cppbuzz.com/forum/c/switch-statement-cppbuzz-forum
3. https://cboard.cprogramming.com/c-programming/180098-need-help-understand-pointers-c.html
4. https://nptel.ac.in/content/storage2/106/104/106104128/MP4/mod01lec14.mp4
5. https://nptel.ac.in/content/storage2/106/104/106104128/MP4/mod01lec32.mp4

Exercises:

1. Programs using Input/ Output functions
2. Programs on conditional structures
3. Command Line Arguments
4. Programs using Arrays
5. String Manipulations
6. Programs using Functions
7. Recursive Functions

SRI KALISWARI COLLEGE (AUTONOMOUS)- SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme – B.Sc. Mathematics
SEMESTER – V
ELECTIVE COURSE GENERIC/ DISCIPLINE SPECIFIC – V: PHP PROGRAMMING WITH PRACTICAL (23UMAO5Q)

HOURS/WEEK: 4 (L-2,P-2) **INT. MARKS : 25**
CREDITS : 3 **EXT. MARKS : 75**
DURATION : 60 hrs **MAX. MARKS: 100**

Course Objective

- To learn how to create dynamic web pages using PHP.

Course Outcomes (CO)

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

CO1[K1]: outline the basic concepts of PHP
CO2[K2]: understand the basics of PHP functions, forms and expressions
CO3[K3]: illustrate the concepts of server variables and debug the errors
CO4[K4]: examine the importance and usage of various expressions and forms
CO5[K5]: design and create a web page using form elements to build a challenging subsystem

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	1	-	2	-	1	-
CO2[K2]	2	1	1	2	-	1	-
CO3[K3]	2	2	1	2	1	1	1
CO4[K4]	2	3	1	1	1	1	1
CO5[K5]	2	3	1	1	2	1	1
Weightage of the course	10	10	04	08	04	05	03
Weighted percentage of Course contribution to POs	1.93	2.39	2.12	2.3	4.4	2.82	2.03

Based on the level of contribution ('3'-High- '2'-Medium- '1'-Low '-' No Correlation)

UNIT I **(6 hrs)**

PHP and HTML: Getting Started - Writing PHP-Naming Files – Comments - The Semi colon - Delivering Text as Output – White Spaces-Running the PHP Script. **The Basics of PHP:** Data Types – Variables – Constants - Here Documents – Operators – Arrays -Conditional Statements - Iterations.

UNIT II **(6 hrs)**

Functions: User Defined Functions - Built-in-Functions - PHP Server Variables -Working with Date and Time - Performing Mathematical Operations - Working with String Functions.

UNIT III **(6 hrs)**

Working with Forms: Form Elements - Adding Elements to Form - Uploading Files to Web Server using PHP - Building a Challenge and Response Subsystem.

UNIT IV **(6 hrs)**

Regular Expressions: Regular Expression Engine - Common Usage of Regular Expressions - Types of Regular Expressions - Regular Expression Functions - Symbols used in Regular Expressions - Using Regular Expression Function.

UNIT V **(6 hrs)**

Debugging and Errors: Good Programming Practices - Error Handling in PHP - Logging Errors - Ignoring Errors - Acting on Errors/Exceptions.

TEXTBOOK

1. Ivan Bayross, Sharanam shah. *"PHP 5.1 For Beginners"*, Shroff Publishers & Distributors Pvt.Ltd ,Mumbai , Fourth Reprint 2018, First Edition 2006.

REFERENCES

Books

1. Steven M.Schafer. "*HTML,CSS, JavaScript, Perl, Python & PHP (Web Standards)*", New Delhi: Wiley Dreamtech India (P) Ltd., 2005.
2. Matt Doyle. "*Beginning PHP 5.3* ",Wiley India Pvt.Ltd ., New Delhi: Reprint 2010.

Web Sources

1. https://www.w3schools.com/php/php_intro.asp
2. https://www.javatpoint.com/php-tutorial
3. https://youtu.be/qVU3V0A05k8
4. https://youtu.be/0jHNdSPE6Jc

Exercises:

Working With Control Structures
Working with Forms.
Working With String
Working With Arrays
Working With Functions
Working With Classes and Objects

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - V
ELECTIVE COURSE GENERIC/ DISCIPLINE SPECIFIC –VI: OPTIMIZATION TECHNIQUES (23UMAO51)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 4 (L-3, T-1) **INT. MARKS : 25**
CREDITS : 3 **EXT. MARKS : 75**
DURATION : 60 hrs **MAX. MARKS: 100**

Course Objectives

- To provide a scientific basis to the decision makers for obtaining optimal solution.
- To study about the formulation of Linear Programming Problem and its solution.
- To introduce the concept of Game theory.
- To know about the various queueing models.

Course Outcomes (CO)

On successful completion of the course, the learners will be able to
CO1[K1]: state the terms, tools and techniques of solving optimization problems
CO2[K2]: explain the solution procedure for solving linear programming problems, game theory problems and queueing theory problems
CO3[K3]: find the optimal solution of linear programming problems, problems in game theory and queueing theory
CO4[K4]: examine the optimality of solutions of optimization problems
CO5[K5]: determine an appropriate method of solving linear programming problems, problems in game theory and queueing theory

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	1	-	1	-	-	-
CO2[K2]	3	2	1	2	-	1	
CO3[K3]	3	2	2	1	-	1	1
CO4[K4]	3	2	2	1	-	1	1
CO5[K5]	3	3	2	2	1	1	1
Weightage of the	15	10	07	07	1	04	03

course							
Weighted percentage of Course contribution to POs	2.89	2.39	3.7	2.01	1.1	2.26	2.03

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' No Correlation)

UNIT I **(12 hrs)**

Linear Programming Problem – Mathematical Formulation: Introduction – Linear Programming Problem – Mathematical Formulation of the Problem – Illustrations on Mathematical Formulation of LPPs. **Linear Programming Problem – Graphical Solution and Extension:** Introduction – Graphical Solution Method – Some Exceptional Cases – General Linear Programming Problem – Canonical and Standard Forms of L.P.P.

UNIT II **(12 hrs)**

Linear Programming Problem- Simplex Method: Introduction – The Computational Procedure – Use of Artificial Variables – Degeneracy in Linear Programming.

UNIT III **(12 hrs)**

Duality in Linear Programming: Introduction – General Primal- Dual Pair – Formulating a Dual Problem – Primal-Dual Pair in Matrix Form – Duality and Simplex Method.

UNIT IV **(12 hrs)**

Games and Strategies: Introduction – Two Person Zero Sum Games – Some Basic Terms – The Maximin-Minimax Principle – Games Without Saddle Points –Mixed Strategies – Graphic Solution of 2×n and m×2 Games – Dominance Property – Arithmetic Method for n×n Games – General Solution of m×n Rectangular Games.

UNIT V **(12 hrs)**

Queueing Theory: Introduction – Queueing system – Elements of a Queueing system – Operating Characteristics of a Queueing system – Deterministic Queueing system – Probability Distributions in Queueing systems –Classification of Queueing models – Definition of Transient and Steady states – Poisson Queueing systems – Problems in Model I,II,III,IV.

TEXTBOOK

1 . Kanti Swarup, Gupta P.K. and Man Mohan. *Operations Research.* New Delhi: Sultan Chand and Sons, Sixteenth Edition, 2012.

REFERENCES

Books

1. Premkumar Gupta, Er. and Kira, D.S. *Problems in Operations Research.* NewDelhi: S.Chand and Company Ltd, 2012.
2. Pannerselvam, R. *Operations Research.* New Delhi: Prentice Hall of India Private Limited, Second Edition, 2006.
3. Kapoor, V.K. *Operations Research*. New Delhi: Sultan Chand & Sons Educational Publishers, 2000.

Web Sources

1. https://college.cengage.com/mathematics/larson/elementary_linear/4e/shared/downloads/c09s3.pdf
2. https://www.researchgate.net/publication/313880623_Introduction_to_Operations_Research_Theory_and_Applications/link/5a7931ff0f7e9b41dbd44db2/download
3. https://drive.google.com/file/d/1TbUNTnmVSRdOtPAtaiy86LiVOwAulk8n/view
4. https://thalis.math.upatras.gr/~tsantas/DownLoadFiles/Taha%20-%20Operation%20Research%208Ed.pdf
5. https://www.youtube.com/watch?v=a2QgdDk4Xjw

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - V
ELECTIVE COURSE GENERIC/ DISCIPLINE SPECIFIC –VI: INTEGRAL TRANSFORMS AND Z-TRANSFORMS (23UMAO52)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 4 (L-3, T-1) **INT. MARKS : 25**
CREDITS : 3 **EXT. MARKS : 75**
DURATION : 60 hrs **MAX. MARKS: 100**

Course Objectives

- To learn various transforms.
- To enrich the knowledge in initial value and boundary value problems.
- To study some properties of various transforms.

Course Outcomes (CO)

On successful completion of the course, the learners will be able to
CO1[K1]: describe the boundary value and initial value problems
CO2[K2]: explain the general form and properties of various integral transforms
CO3[K3]: find the Fourier, Hilbert, Stieltjes, Hankel and Z-Transform of given functions
CO4[K4]: analyze the properties of integral transforms
CO5[K5]: determine the appropriate integral transform that simplifies the computational techniques considerably

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	1	-	1	-	-	-
CO2[K2]	3	2	1	2	-	1	
CO3[K3]	3	2	2	1	-	1	1
CO4[K4]	3	2	2	1	-	1	1
CO5[K5]	3	3	2	2	1	1	1
Weightage of the course	15	10	07	07	1	04	03
Weighted percentage of Course contribution to Pos	2.89	2.39	3.7	2.01	1.1	2.26	2.03

Based n the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' No Correlation)

UNIT I **(12 hrs)**

Fourier Transform: Introduction – Classes of Functions – Fourier Series and Fourier Integral Formula – Fourier Transforms – Linearity Property of Fourier Transforms – Change of Scale Property – The Modulation Theorem – Evaluation of Integrals by Means of Inversion Theorems – Fourier Transform of Some Particular Functions – Convolution or Faltung of Two Integrable Functions–Convolution or Falting or Faltung Theorem for FT – Parseval's Relations for Fourier Transforms – Fourier Transform of the Derivative of a Function – Fourier Transform of Some More Useful Functions.

UNIT II **(12 hrs)**

Fourier Transforms of Rational Functions – Other Important Examples Concerning Derivative of FT – The Solution of Integral Equations of Convolution Type – Fourier Transform of Functions of Several Variables – Application of Fourier Transform to Boundary Value Problems.

UNIT III **(12 hrs)**

Hilbert and Stieltjes Transforms: Introduction – Definition of Hilbert Transform – Some Important Properties of Hilbert Transforms – Relation between Hilbert Transform and Fourier Transform – Finite Hilbert Transform – One-sided Hilbert Transform – Asymptotic Expansions of One-sided Hilbert Transform – The Stieltjes Transform – Some Deductions – The Inverse Stieltjes Transform–Relation between Hilbert Transform and Stieltjes Transform.

UNIT IV **(12 hrs)**

Hankel Transforms: Introduction – The Hankel Transform – Elementary Properties – Inversion Formula for Hankel Transform – The Parseval Relation for Hankel Transforms – Illustrative Examples.

UNIT V **(12 hrs)**

The Z-Transform: Introduction – Z-Transform: Definition – Some Operational Properties of Z-Transform – Application of Z-Transforms.

TEXTBOOK

1. BaidyanathPatra. *An Introduction to Integral Transforms*. Newyork: CRC Press Taylor & Francis Group, Broken Sound Parkway NW, 2018.

REFERENCES

Books

1. Lokenath Debnath and Dambaru Bhatta. *Integral Transforms and Their Applications*. Newyork: Chapman & Hall/CRC Taylor & Francis Group, Broken Sound Parkway NW, Second Edition, 2007.

2. Balaji, G. *Transforms and Partial Differential Equations*. Chennai: G.Balaji Publishers, Thirteenth Edition, 2017.
3. Ronald N.Bracewell. *The Fourier Transform and Its Applications*. McGraw-Hill Higher Education, Third Edition, 2000.

Web Sources

1. https://vdocuments.site/integral-transforms-and-their-applications-586e2d789629f.html
2. https://www.math.tamu.edu/~alexeip/PSZ.pdf
3. https://www.et.byu.edu/~vps/ME505/IEM/09%2004.pdf
4. https://nptel.ac.in/courses/111/102/111102129/
5. https://www.pdfdrive.com/an-introduction-to-integral-transforms-d187713205.html
6. https://www.zuj.edu.jo/download/the-fourier-transform-and-its-applications-bracewell-pdf/

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI

UG PROGRAMME

SEMESTER –V

VALUE EDUCATION (23UVED51)

(From 2023 - 2024 Batch onwards)

HOURS/WEEK :2 (L-2, T-) **INT. MARKS : 25**
CREDIT :2 **EXT. MARKS : 75**
DURATION : 30 hrs **MAX. MARKS : 100**

Course Objectives

- To inculcate the values towards personal development
- To know the social values for the global development
- To ensure the modern challenges of Adolescent
- To be aware of human right
- To enrich the knowledge to control the mind

Course Outcomes (CO)

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

CO1[K1]: identify the basic human values and ethics necessary for harmonious human relationship

CO2 [K2]: explain the significance of social values and religious tolerance to live in peace

CO3[K3]: articulate the life-changing principles of brotherhood, honesty, loyalty and community solidarity

CO4[K4]: analyse emotional, social, spiritual attribute to acquire well balanced personality

CO5[K5]: assess the importance of harmonious living in the multi-cultural pluralistic society

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1 [K1]	2	1	-	1	1	-	2
CO2 [K2]	2	1	-	1	2	1	2
CO3 [K3]	2	1	-	1	2	1	1
CO4 [K4]	1	1	1	1	2	1	1
CO5 [K5]	1	1	-	1	2	1	1
Weightage of the course	08	05	01	05	09	04	07
Weighted percentage of Course contribution to POs	1.54	1.19	0.53	1.44	9.89	2.26	4.73

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' No Correlation)

UNIT I – CONCEPT OF HUMAN VALUES, VALUE EDUCATION TOWARDS PERSONAL DEVELOPMENT **(6 hrs)**

Aim of Education and Value Education; Evolution of Value Oriented Education; Concept of Human Values; Types of Values; Components of Value Education**. Personal Development:** Self Analysis and Introspection; Sensitization Towards Gender Equality, Physically Challenged, Intellectually Challenged. Respect to - Age, Experience, Maturity, Family Members, Neighbours, Co-Workers. **Character Formation towards Positive Personality:** Truthfulness, Constructivity, Sacrifice, Sincerity, Self-Control, Altruism, Tolerance, Scientific Vision.

UNIT II – VALUE EDUCATION TOWARDS NATIONAL AND GLOBAL DEVELOPMENT **(6 hrs)**

National and International Values: Constitutional or national values - Democracy, socialism, secularism, equality, justice, liberty, freedom and fraternity. Social Values - Pity and probity, self-control, universal brotherhood. Professional Values - Knowledge thirst, sincerity in profession, regularity, punctuality and faith. Religious Values - Tolerance, wisdom, character. Aesthetic values - Love and appreciation of literature and fine arts and respect for the same. National Integration and international understanding.

UNIT III – IMPACT OF GLOBAL DEVELOPMENT ON ETHICS AND VALUES **(6 hrs)**

Conflict of cross-cultural influences, mass media, cross-border education, materialistic values, professional challenges and compromise. Modern Challenges of Adolescent Emotions and behavior; Sex and spirituality: Comparision and competition; positive and negative thoughts. Adolescent Emotions, arrogance, anger, sexual instability, selfishness, defiance

UNIT IV – THERAUPATIC MEASURES **(6 hrs)**

Control of the mind through

1. Simplified physical exercise
2. Meditation – Objectives, types, effect on body, mind and soul
3. Yoga – Objectives, Types, Asanas
4. Activities: (i) Moralisation of Desires (ii) Neutralisation of Anger (iii)Eradication of Worries (iv)Benefits of Blessings

UNIT V – HUMAN RIGHTS **(6 hrs)**

Concept of Human Rights – Indian and International Perspectives - Evolution of Human Rights - Definitions under Indian and International documents - **Broad classification of Human Rights and Relevant Constitutional Provisions -** Right to Life, Liberty and Dignity - Right to Equality - Right against Exploitation - Cultural and Educational Rights - Economic Rights - Political Rights - Social Rights - **Human Rights of Women and Children -** Social Practice and Constitutional Safeguards - Female Foeticide and Infanticide - Physical assault and harassment - Domestic violence - Conditions of Working Women - **Institutions for Implementation -** Human Rights Commission – Judiciary - Violations and Redressel - Violation by State - Violation by Individuals - Nuclear Weapons and terrorism - Safeguards.

REFERENCES

BOOKS

1. Pitchaikani Prabhaharan, A. Babu Franklin, M.Archana Devi, *Value education*, Sri Kaliswari College (Autonomous), Sivakasi, 2017.
2. Subramanyam, K. *Values in Education*, Ramana Publications, 1995
3. Swamy Chidbhavananda, *Indian National Education*, Publication by Ramakirshna Tapovanam.

Web Sources

1. https://www.youtube.com/watch?v=ruKY3GqBvYQ.
2. https://www.republicworld.com/technology-news/science/15-famous-indian-scientists-list-know-what-were-their-innovations.html.
3. https://www.youtube.com/watch?v=M9_l9DDvEsw.

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B. Sc. Mathematics
SEMESTER- V
INTERNSHIP/INDUSTRIAL TRAINING (23UMAJ52)
(From 2023-2024 Batch onwards)

HOURS/WEEK: - **INT. MARKS: 25**
CREDITS : 2 **EXT. MARKS: 75**
DURATION : - **MAX. MARKS: 100**

Course Objectives

- To learn and develop new skills relevant to the field of study or career interests.
- To understand different departments, roles, and functions within the organization to broaden knowledge and explore potential career paths.
- To apply the knowledge gained in academic studies to real-world scenarios.
- To bridge the gap between classroom learning and professional life.
- To gain exposure to different tasks, projects, and challenges relevant to the chosen field.

Course Outcomes (CO)

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

CO1[K1]: identify different career paths within the industry and gain insights into potential future roles

CO2[K3]: apply theoretical concepts and academic knowledge to real-world situations and challenges encountered during the internship

CO3[K4]: analyse problems, generate innovative solutions, and make informed decisions

CO4[K5]: evaluate how to manage time effectively and prioritize tasks to meet deadlines and deliver quality work

CO5 [K6]: create a portfolio of the work, projects, and achievements during the internship

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	2	-	1	1	1	2
CO2[K3]	2	3	-	1	-	1	2
CO3[K4]	2	2	-	2	-	1	1

CO4[K5]	-	2	1	-	-	1	1
CO5[K6]	1	3	3	3	-	1	2
Weightage of the course	08	12	04	07	01	05	08
Weighted percentage of Course contribution to Pos	1.54	2.86	2.12	2.01	1.1	2.82	5.41

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' No Correlation)

Rules and Regulations

1. Each Student has to undergo 30 hours institutional/industry based training during the fourth semester summer vacation.
2. Internships could be undertaken in different media organizations, industries and educational institutions which should be approved by the department.
3. Students should keep a detailed record of activities performed and hours spent in training and report the same to the Faculty Coordinator/Mentor/Guide regularly about the progress of internship on weekly basis
4. At the end of the internship, the student must submit a full-fledged detailed internship report (not exceeding 20 pages) along with attendance certificate
5. The Internship carries 100 marks out of which 25 marks for Internal and 75 Marks for External.
6. The viva voce board shall consist of the Head of the Department and the Internal Examiner (Senior Faculty member)
7. The training programme shall be evaluated as per the following pattern

Internal (25 Marks)
Training Review: 15 Marks
Daily Log Report: 5 Marks
PPT Presentation :5 Marks

External (75 Marks)
Training Report :25 Marks
Viva Voce : 50 Marks

EACH INTERNSHIP REPORT WILL FOLLOW THE FORMAT DESCRIBED:

- Title Page
- College Certificate Page
- Internship Certificate provided by the internship institution
- Declaration Page
- Acknowledgement
- Company Profile
- Organizational structure of the concern

- Weekly work plan
- List of figures, List of Tables
- Index
- Chapters

List of Chapters

1. Introduction
2. Nature of work
3. Role in the organization
4. Questionnaires and Observations about work
5. Operating Environment
6. Detailed Description of Technology used
7. Implementation
8. Conclusion
9. Appendix

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - VI
CORE COURSE - XIII: LINEAR ALGEBRA (23UMAC61)
(From 2023-2024 Batch onwards)

HOURS/WEEK : 6 (L-5, T-1) **INT. MARKS : 25**
CREDITS : 4 **EXT. MARKS : 75**
DURATION : 90 hrs **MAX. MARKS: 100**

Course Objectives

- To introduce the algebraic structures vector space and Inner product space.
- To study about linear transformations and various operators on vector spaces

Course Outcomes (CO)

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

CO1[K1]: describe the important topics of linear algebra

CO2[K2]: explain the basic concepts and general theory of vector spaces, inner product spaces and matrices

CO3[K3]: apply the abstract concepts to produce proofs of results that arise in the context of linear algebra

CO4[K4]: interpret the matrix representation of system of linear equations and linear transformations, Cayley-Hamilton theorem and Gram-Schmidt orthogonolization process

CO5[K5]: determine linear span of a set, basis and dimension of a vector space, matrix representation of a linear transformation, orthogonal basis of an inner product space, eigen values and eigen vectors of a matrix

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	2	-	1	-	-	-
CO2[K2]	3	2	1	1	-	-	-
CO3[K3]	3	2	1	2	-	2	1
CO4[K4]	3	3	2	2	-	2	1
CO5[K5]	3	3	2	2	-	2	1
Weightage of the course	15	12	06	08	-	06	03

Weighted percentage of Course contribution to POs	2.89	2.86	3.17	2.3	0	3.39	2.03

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low, '-' No Correlation)

UNIT I **(18 hrs)**

Vector Spaces – Subspaces – Linear Combinations and Linear Span - Systems of Linear Equations – Homogenous Equations – Non-homogenous Equations – Elementary Matrices – Row Reduced - Echelon form.

UNIT II **(18 hrs)**

Linear Dependence and Linear Independence – Bases – Dimensions.

UNIT III **(18 hrs)**

Linear Transformations, Null spaces and Ranges – Matrix Representation of a Linear Transformation – Invertibility and Isomorphisms – Dual Spaces.

UNIT IV **(18 hrs)**

Eigen Values, Eigen Vectors, Diagonalizability – Invariant Subspaces – Cayley–Hamilton Theorem.

UNIT V **(18 hrs)**

Inner Products and Norms – Gram Schmidt Orthogonalization Process - Orthogonal Complements.

TEXTBOOK

1. Stephen H Friedberg, Arnold J Insel and Lawrence E Spence. *Linear Algebra*, 5th edition (2018) Pearson

REFERENCES

Books

1. Herstein, I. N. *Topics in Algebra*. Wiley Eastern Ltd., Second Edition, 2006.
2. Gopalakrishnan, N. S. *University Algebra*. New Age International Publications, Wiley Eastern Ltd.
3. John B. Fraleigh. *First course in Algebra*, Addison Wesley.
4. Stephen H. Friedberg, Arnold J. Insel and Lawrence E. Spence. *Linear Algebra*. New Delhi: Prentice Hall of India Pvt. Ltd., 4th Edition, 2004.
5. David C. Lay. *Linear Algebra and its Applications*. Pearson Education Asia, Indian Reprint, 3rd Edition, 2007.
6. Lang, S. *Introduction to Linear Algebra*. Springer, 2nd Edition, 2005.
7. Gilbert Strang. *Linear Algebra and its Applications*. Thomson, 2007.

Web Sources

1. https://www.youtube.com/watch?v=2DX8Vp1Q2-0
2. https://youtu.be/cHNmT1-qurk
3. https://ocw.mit.edu/ans7870/18/18.013a/textbook/HTML/chapter04/section06.html
4. https://www.youtube.com/watch?v=ffXZBZB0hOY
5. https://byjus.com/maths/eigen- values/#:~:text=Eigenvectors%20are%20vectors%20(non,any%20li near%20transformation%20is%20applied.&text=In%20a%20brief%2C%20we%20can,a%20scalar%20multiple%20of%20x

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - VI
CORE COURSE - XIV: COMPLEX ANALYSIS (23UMAC62)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 6 (L-5, T-1) **INT. MARKS : 25**
CREDITS : 4 **EXT. MARKS : 75**
DURATION : 90 hrs **MAX. MARKS: 100**

Course Objectives

- To understand the concept of mappings and transformations.
- To compute complex contour integrals and applying Cauchy's integral in various versions.
- To understand zeros and singularities of an analytic function, apply their properties in the evaluation of definite integral.

Course Outcomes (CO)

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

CO1[K1]: describe the elementary topics in complex analysis

CO2[K2]: explain the basic concepts and properties of functions of complex variables

CO3[K3]: apply the abstract concepts to produce proofs of results that arise in the context of complex analysis

CO4[K4]: analyze the behaviour of analytic functions and conformal maps, convergence of sequences and series of functions of complex variables

CO5[K5]: determine the continuity, differentiability, integrability of complex functions, series expansion of analytic functions in the region of convergence, zeros and poles of analytic functions

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	2	1	1	-	-	-
CO2[K2]	3	2	1	2	-	-	-
CO3[K3]	3	2	1	2	-	1	1
CO4[K4]	3	3	1	2	-	1	1
CO5[K5]	3	3	2	2	-	1	1
Weightage of the course	15	12	06	09	-	03	03
Weighted percentage of	2.89	2.86	3.17	2.59	0	1.69	2.03

Course contribution to POs							

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low, '-' No Correlation)

UNIT I **(18 hrs)**

Analytic functions: Functions of a Complex variable – Limits – Theorem on Limits – Continuity – Derivatives – Differentiation Formulas – Cauchy Riemann Equation – Conditions for Differentiability – Polar Coordinates – Analytic Functions – Harmonic Functions.

UNIT II **(18 hrs)**

Conformal Mapping: Mappings – Mapping by Exponential Function – Linear Transformation – The Transformation $w = \frac{1}{z}$ – Mappings by $\frac{1}{z}$ – Linear Fractional Transformations (bilinear).

UNIT III **(18 hrs)**

Complex Integration: Contour Integrals – Some Examples – Simply and Multiply Connected Domains – Cauchy Integral Formula – Formula for Derivatives – Liouville's Theorem – Fundamental Theorem of Algebra – Maximum Modulus Principle.

UNIT IV **(18 hrs)**

Sequences and Series: Convergence of Sequences – Convergence of Series – Taylor's Series – Laurent Series – Absolute and Uniform Convergence of Power Series – Continuity of Sums of Power Series – Integration and Differentiation of Power Series.

UNIT V **(18 hrs)**

Residues and Poles: Isolated Singular Points – Residues – Cauchy Residue Theorem – Residue at Infinity – The Three Types of Isolated Singular Points – Residues at Poles – Zeros of Analytical Functions – Zeros and Poles – Evaluation of Real Improper Integrals (excluding poles on the real axis).

TEXTBOOK

1. James Ward Brown and Ruel V. Churchill. *Complex variables and application*, Seventh Edition, Mc-Graw Hill Book Co., International Edition, 2009.

REFERENCES

Books

1. Theodore W. Gamelan. *Complex Analysis*. Springer Verlag, 2008.

2. Joseph Bak and Donald J. Newman. *Complex analysis*. New York: Undergraduate Texts in Mathematics, Springer-Verlag New York Inc, 2nd Edition, 1997.
3. Richard A. Silverman. *Introductory Complex Analysis*. Dover Publications, 1972.
4. Ponnusamy, S. and Silverman, H. *Complex variables with applications*, Birkhauser, 2006.
5. Duraipandian, P. and Kayalal Pachiyappa. *Complex Analysis*. New Delhi: S. Chand & Company PVT. LT, 2016.

Web Sources

1. https://www.mathcity.org/_media/msc/notes/complex-analysis-m- usman-hamid.pdf
2. https://www.math.columbia.edu/~rf/complex2.pdf
3. https://www.researchgate.net/publication/280722238_Complex_Analysis_Problems_with_solutions
4. https://www.youtube.com/watch?v=uliv9TzeD6o

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathemetics
SEMESTER - VI
CORE COURSE - XV: MECHANICS (23UMAC63)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 6 (L-5, T-1) **INT. MARKS : 25**
CREDITS : 4 **EXT. MARKS : 75**
DURATION : 90 hrs **MAX. MARKS: 100**

Course Objectives

- To understand equilibrium of a particle under the action of given forces
- To study about central orbits
- To explain the concept of projectiles

Course Outcomes (CO)

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

CO1[K1]: describe the basic terminologies of mechanics
CO2[K2]: explain the fundamental concepts and principles of mechanics
CO3[K3]: apply the principles and methods of mechanics to find the resultant of forces on bodies concerned in statics and kinematic quantities of projectile motion
CO4[K4]: investigate the motion of a particle under action of various forces
CO5[K5]: evaluate the fundamental laws of mechanics

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	1	-	2	-	-	-
CO2[K2]	3	2	1	2	-	1	-
CO3[K3]	3	3	1	2	-	1	1
CO4[K4]	3	3	1	2	-	1	1
CO5[K5]	3	3	1	2	-	1	1
Weightage of the course	15	12	04	10	-	04	03
Weighted percentage of Course contribution to POs	2.89	2.86	2.12	2.87	0	2.26	2.03

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low, '-' No Correlation)

UNIT I **(18 hrs)**

Force: Newton's Laws of Motion – Resultant of Two Forces on a Particle - **Equilibrium of a Particle:** Equilibrium of a Particle – Limiting Equilibrium of a Particle on an Inclined Plane.

UNIT II **(18 hrs)**

Forces on a Rigid Body: Moment of a Force – General Motion of a Body – Equivalent Systems of Forces- Parallel Forces – Forces Acting Along a Triangle - **A Specific Reduction of Forces:** Reduction of Coplanar Forces into a Force and Couple – Problems involving Frictional Forces.

UNIT III **(18 hrs)**

Work, Energy and Power: Work – Conservative Field of Force – Power - Rectilinear Motion under Varying Force: Simple Harmonic Motion - Along a Horizontal Line – Along a Vertical Line.

UNIT IV **(18 hrs)**

Projectiles: Forces on a Projectile – Projectile Projected on an Inclined Plane.

UNIT V **(18 hrs)**

Central Orbits: General Orbits – Central Orbit – Conic as a Centered Orbit.

TEXTBOOKS

1. A. Ruina and R. Pratap. *Introduction to Statics and Dynamics*. Oxford University Press, 2014.
2. S.L. Loney. *The Elements of Statics and Dynamics.* Cambridge University Press, 1904.

REFERENCES

Books

1. Meriam, J. L. and Kraige, L. G. *Engineering Mechanics: Statics*. New York: Wiley and sons Pvt. Ltd., 7th Edition, 2012.
2. Meriam, J. L., Kraige, L. G. and Bolton, J.N. *Engineering Mechanics: Dynamics*. New York: Wiley and sons Pvt. Ltd., 8th Edition, 2015.
3. Dhiman, A. K., Dhinam, P. and Kulshreshtha, D. *Engineering Mechanics (Statics and Dynamics)*. New Delhi: McGraw Hill Education (India) Private Limited, 2015.
4. Duraipandian, P. Lakmi Duraipandian and Muthamizh Jayapragasam, *Mechanics*. S. Chand and co. Private limited, Reprint 2016.

Web Sources

1. https://www.esaral.com/statics-dynamics-notes-for-notes-for-class-11-iit-jee-neet/
2. https://www.selfstudys.com/uploads/pdf/cC6qDBPhVdcNqFvRRyua.pdf
3. https://www.ijesird.com/DECEMBER_5.PDF
4. https://ocw.mit.edu/courses/aeronautics-and-astronautics/16-07-dynamics-fall-2009/lecture-notes/MIT16_07F09_Lec09.pdf
5. https://nptel.ac.in/content/storage/112/106/112106180/MP4/mod06lec23.mp4
6. https://nptel.ac.in/content/storage/112/106/112106180/MP4/mod01lec03.mp4

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - VI
ELECTIVE COURSE GENERIC/ DISCIPLINESPECIFIC –VII: GRAPH THEORY AND APPLICATIONS (23UMAO61)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 5 (L-4, T-1) **INT. MARKS : 25**
CREDITS : 3 **EXT. MARKS : 75**
DURATION : 75 hrs **MAX. MARKS: 100**

Course Objectives

- To translate real life situation to diagrammatic representations.
- To develop problem solving skills and thereby solve real life problems.
- To create interest in Research.

Course Outcomes (CO)

On successful completion of the course, the learners will be able to
CO1[K1]: describe the basic terminologies of graph theory
CO2[K2]: explain the elements and concepts in graph theory
CO3[K3]: apply the abstract concepts to produce proofs of results that arise in the context of graph theory
CO4[K4]: examine the characterizations of various graphs
CO5[K5]: determine connectivity, traversability, planarity, cutpoints, bridges, blocks of a graph and various operations on graphs

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	2	1	1	1	-	-
CO2[K2]	3	2	1	1	1	1	-
CO3[K3]	3	2	2	1	1	1	1
CO4[K4]	3	2	2	2	-	1	1
CO5[K5]	3	2	2	2	-	1	1
Weightage of the course	15	10	08	07	03	04	03
Weighted percentage of Course contributio	2.89	2.39	4.23	2.01	3.3	2.26	2.03

n to POs							

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' No Correlation)

UNIT I **(15 hrs)**

Graphs: Varieties of Graphs – Walks and Connectedness – Degrees – The Problem of Ramsey – Extremal Graphs – Intersection Graphs – Operation on Graphs.

UNIT II **(15 hrs)**

Blocks: Cutpoints, Bridges and Blocks – Block Graphs and Cutpoint Graphs. **Trees:** Characterization of Trees – Centers and Centroids – Block-cutpoint Trees –Independent Cycles and Cocycles.

UNIT III **(15 hrs)**

Connectivity: Connectivity and Line-connectivity. **Matrices:** The Adjacency Matrix – The Incidence Matrix – The Cycle Matrix.

UNIT IV **(15 hrs)**

Partitions. **Traversability:** Eulerian Graphs – Hamiltonian Graphs.

UNIT V **(15 hrs)**

Planarity: Plane and Planar Graphs – Outerplanar Graphs – Kuratowski's Theorem.

TEXTBOOK

1. Frank Harary. *Graph Theory*. New Delhi: Narosa Publishing House, 2001

REFERENCES

Books

1. Murugan, M. *Topics in Graph Theory and Algorithms*. Chennai: Muthali Publishing House, 2003.
2. Choudum, S.A. *A First Course in Graph Theory*. NewDelhi: Macmillan India Limited, 1999.
3. Arumugam, S. and Ramachandran, S. *Invitation to Graph Theory*. Chennai: Scitech Publications(India) Pvt.Ltd,2009.

Web Sources

1. https://scanftree.com/Graph-Theory/
2. https://proofwiki.org/wiki/Dirac%27s_Theorem

3. https://proofwiki.org/wiki/Graph_is_Bipartite_iff_No_Odd_Cycles
4. https://www.youtube.com/watch?v=yklF3JDMxGk
5. https://www.youtube.com/watch?v=AtDgXyluW-Y

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - VI
ELECTIVE COURSE GENERIC/ DISCIPLINE SPECIFIC –VII: DISCRETE MATHEMATICS (23UMAO62)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 5 (L-4, T-1) **INT. MARKS : 25**
CREDITS : 3 **EXT. MARKS : 75**
DURATION : 75 hrs **MAX. MARKS: 100**

Course Objectives

- To study about functions and logic.
- To know about the basic concepts of algebraic systems
- To learn methods of solving recurrence relations

Course Outcomes (CO)

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

CO1[K1]: describe terminologies related to functions, recurrence relations, logic, semigroups, monoids

CO2[K2]: explain the basic concepts related to functions, semigroups, monoids, recurrence relation, logic

CO3[K3]: find the inverse and composition of functions, solution of recurrence relations, truth values of propositional statements, normal forms of logical statements

CO4[K4]: analyze the types of functions, the axioms and properties of the algebraic structures semigroups and monoids, recurrence relations of sequences, tautological implications and the theory of inference

CO5[K5]: validate the equivalence of logic formulae, homomorphism and isomorphism of semigroups and monoids, the generating functions of recurrence relations

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	2	1	1	1	-	-
CO2[K2]	3	2	1	1	1	1	-
CO3[K3]	3	2	2	1	1	1	1
CO4[K4]	3	2	2	2	-	1	1
CO5[K5]	3	2	2	2	-	1	1

Weightage of the course	15	10	08	07	03	04	03
Weighted percentage of Course contribution to POs	2.89	2.39	4.23	2.01	3.3	2.26	2.03

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' No Correlation)

UNIT I **(15 hrs)**

Functions: Function and Operators – One-to-one, Onto Functions – Special Types of Functions – Invertible Functions – Composition of Functions.

UNIT II **(15 hrs)**

Recurrence Relations and Generating Functions: Recurrence – An Introduction – Polynomials and their Evaluations – Recurrence Relations – Solution of Finite Order Homogeneous (linear) Relations – Solution of Non-homogeneous Relations – Generating Functions – Some Common Recurrence Relations – Primitive Recursive Functions – Recursive and Partial Recursive Functions.

UNIT III **(15 hrs)**

Algebraic Systems: Binary Operation – Algebraic Systems – Semigroups and Monoids – Homomorphism and Isomorphism of Semigroups and Monoids – Properties of Homomorphism– Subsemigroups and Submonoids.

UNIT IV **(15 hrs)**

Logic: Introduction – TF Statements – Connectives – Atomic and Compound Statements – Well-Formed (Statement) Formulae – The Truth Table of a Formula – Tautology – Tautological Implications and Equivalence of Formulae.

UNIT V **(15 hrs)**

Replacement Process – Functionally Complete Sets of Connectives and Duality Law – Normal Forms – Principal Normal Forms – Theory of Inference.

TEXTBOOK

1. Venkataraman, M.K., Sridharan, N. and Chandrasekaran, N. *Discrete Mathematics.* Chennai: The National Publishing Company, 2011.

REFERENCES

Books

1. Trembley, J.P. and Manohar, R. *Discrete Mathematical Structures with Applications to Computer Science*. NewDelhi: Tata McGraw Hill Publishing Company Limited, 2008.
2. Ralph P.Grimaldi. *Discrete and Combinational Mathematics An Applied Introduction*. NewDelhi: Pearson Education Pvt. Ltd., Fourth Edition, 1999.
3. Sharma, J.K. *Discrete Mathematics.* NewDelhi: Macmillan India Ltd, Second Edition, 2005.

Web Sources

1. https://byjus.com/maths/tautology/
2. https://www.math.tamu.edu/~shatalov/220_Chapter_4.pdf
3. https://nptel.ac.in/courses/106/106/106106094/
4. https://byjus.com/jee/functions-and-its-types/
5. https://doc.lagout.org/science/0_Computer%20Science/3_Theory/Mathematics/Handbook%20Of%20Discrete%20And%20Combinatorial%20Mathematics.pdf

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme- B.Sc. Mathematics
SEMESTER- VI
ELECTIVE COURSE GENERIC/ DISCIPLINE SPECIFIC –VIII: PROGRAMMING IN C++ WITH PRACTICAL (23UMAO6P)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 5 (L-3, P-2) **INT. MARKS : 25**
CREDITS : 3 **EXT. MARKS : 75**
DURATION : 75 hrs **MAX. MARKS: 100**

Course Objectives

- To inculcate knowledge on Object-oriented concepts and programming using C++.
- To demonstrate the use of various OOPs concepts with the help of programs

Course Outcomes (CO)

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

CO1[K1]: outline the C++ programming fundamentals and the concepts of object-oriented programming like object and class, Encapsulation, inheritance and polymorphism.

CO2[K2]: explain the control structures, types of constructors, inheritance and different type conversion mechanisms

CO3[K3]: use C++ codes efficiently to develop programs

CO4[K4]: analyze the importance of object oriented programming features like polymorphism, reusability, generic programming, data abstraction and the usage of exception handling

CO5[K5]: determine the use of object oriented features such as classes, overloading to develop C++ programs for complex problems.

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	2	-	2	-	1	-
CO2[K2]	2	2	1	2	-	1	-
CO3[K3]	2	2	1	2	1	1	1
CO4[K4]	2	2	1	1	1	1	1
CO5[K5]	2	2	1	1	2	1	1
Weightage	10	10	04	08	04	05	03

of the course							
Weighted percentage of Course contribution to POs	1.93	2.39	2.12	2.3	4.4	2.82	2.03

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' NoCorrelation)

UNIT I **(9 hrs)**

OOP Paradigm – Concepts of OOP – Benefits of OOP - Object Oriented Languages – Applications of OOP - Tokens, Expressions and Control Structures.

UNIT II **(9 hrs)**

Functions in C++ : Function Prototyping – Call by Reference - Return by Reference – Inline Function – Default Arguments – Const Arguments – Recursion – Function Overloading – Classes and Objects.

UNIT III **(9 hrs)**

Constructors and Destructors: Constructors – Parameterized Constructors – Multiple Constructors – Copy Constructors – Dynamic Constructor – Destructors.

UNIT IV **(9 hrs)**

Operator overloading and Type Conversions: Operator Overloading – Overloading Unary Operators – Overloading Binary operators – Rules for Operator Overloading.

UNIT V **(9 hrs)**

Inheritance: Introduction – Types of Inheritance – Virtual Base Classes – Abstract Classes.

TEXTBOOK

1. E. Balaguruswamy. *Object Oriented Programming using C++*. 6th Edition, Tata McGraw Hill, 2013.

REFERENCES

Books

1. Bjarne Stroustrup. *The C++ Programming Language.* Fourth Edition, Pearson Education..
2. Hilbert Schildt. *C++ - The Complete Reference*. 4th Edition, Tata McGrawHill.

Web Sources

1. http:/fahad.cprogramming.blogspot.com/p/c-simple-examples.html

2. http://www.sitesbay.com/cpp/cpp-polymorphism

Exercises:

1. Working with Operators
2. Working with Classes and Objects
3. Working with Functions
4. Working with Constructors
5. Working with Function Overloading
6. Working with Inheritance

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme- B.Sc. Mathematics
SEMESTER- VI
ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC –VIII: PROGRAMMING IN PYTHON WITH PRACTICAL (23UMAO6Q)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 5 (L-3, P-2) **INT. MARKS : 25**
CREDITS : 3 **EXT. MARKS : 75**
DURATION : 75 hrs **MAX. MARKS: 100**

Course Objectives

- To understand the concepts of Python programming.
- To apply the OOPs concept in Python programming
- To solve basic programming problems.

Course Outcomes (CO)

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

CO1[K1]: outline the basic concepts in python language..

CO2[K2]: interpret different looping and conditional statements in python language.

CO3[K3]: apply the various data types and identify the usage of control statements, loops, functions.

CO4[K4]: analyze and solve problems using basic constructs and techniques of python.

CO5[K5]: assess the approaches used in the development of interactive application.

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	2	-	2	-	1	-
CO2[K2]	2	2	1	2	-	1	-
CO3[K3]	2	2	1	2	1	1	1
CO4[K4]	2	2	1	1	1	1	1
CO5[K5]	2	2	1	1	2	1	1
Weightage of the course	10	10	04	08	04	05	03

Weighted percentage of Course contribution to POs	1.93	2.39	2.12	2.3	4.4	2.82	2.03

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' No Correlation)

UNIT I **(9 hrs)**

Basics of Python Programming: History of Python-Features of Python-Literal-Constants-Variables - Identifiers–Keywords-Built-in Data Types-Output Statements – Input Statements-Comments – Indentation- Operators-Expressions-Type conversions.

UNIT II **(9 hrs)**

Control Statements: Selection/Conditional Branching statements: if, if-else, nested if and if-elif-else statements. Iterative Statements: while loop, for loop, else suite in loop and nested loops. Jump Statements: break, continue and pass statements.

UNIT III **(9 hrs)**

Python Arrays: Defining and Processing Arrays – Array methods.. Functions: Function Definition – Function Call – Variable Scope and its Lifetime-Return Statement.

UNIT IV **(9 hrs)**

Python Strings: String operations- Immutable Strings - Built-in String Methods and Functions - String Comparison.

UNIT V **(9 hrs)**

Lists: Creating a list -Access values in List-Updating values in Lists-Nested lists -Basic list operations-List Methods. Tuples: Creating, Accessing, Updating and Deleting Elements in a tuple – Nested tuples– Difference between lists and tuples.

TEXTBOOKS

1. Reema Thareja. *Python Programming using problem solving approach*. First Edition, Oxford University Press, 2017.
2. Dr. R. Nageswara Rao. "*Core Python Programming*", First Edition . Dream tech Publishers, 2017.

REFERENCES

Books

1. VamsiKurama, *Python Programming*: *A Modern Approach.* Pearson Education.

2. Mark Lutz. *Learning Python.* Orielly.

Web Sources

1. https://www.programiz.com/python-programming
2. https://www.guru99.com/python-tutorials.html

Exercises:

1. Program using variables, constants, I/O statements in Python.
2. Program using Operators in Python.
3. Program using Conditional Statements.
4. Program using Loops.
5. Program using Jump Statements.
6. Program using Functions.
7. Program using Strings.
8. Program using Lists.

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Mathematics
SEMESTER - VI
SKILL ENHANCEMENT COURSE -IX: PROFESSIONAL COMPETENCY SKILL:
PRACTICAL: COMPUTATIONAL MATHEMATICS (23UMAS6P)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 2 **INT. MARKS : 25**
CREDITS : 2 **EXT. MARKS : 75**
DURATION : 30 hrs **MAX. MARKS: 100**

Course Objective

- To impart training in Matlab, Maple and Scilab.

Course Outcomes (CO)

On Successful completion of the course, the learners will be able to

CO1[K1]: describe the features of Matlab, Maple, Scilab
CO2[K2]: explain the basics of Matlab, Maple, Scilab
CO3[K3]: use Matlab, Maple, Scilab codings/commands to do mathematical manupulations
CO4[K4]: identify and rectify errors while running Matlab, Maple, Scilab programs
CO5[K5]: select and manage tools of Matlab, Maple, Scilab

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	2	-	2	-	-	-
CO2[K2]	2	2	1	2	-	-	-
CO3[K3]	3	2	1	2	1	2	1
CO4[K4]	3	2	1	2	1	2	1
CO5[K5]	3	2	1	2	1	2	1
Weightage of the course	13	10	04	10	03	06	03
Weighted percentage of Course contribution to POs	2.5	2.39	2.12	2.87	3.3	3.39	2.03

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low, '-'No Correlation)

1. To perform basic arithmetic operations using Matlab.
2. To compute logarithmic and trigonometric values of functions using Matlab.
3. To solve the system of linear equation using Matlab.
4. To factorize a polynomial using Matlab.
5. To plot the graph of a function using Matlab.
6. To perform operations on matrices using Matlab.
7. To find the eigen values and eigen vectors of a matrix using Matlab.
8. To manipulate a string in Matlab.
9. To compute definite and indefinite integrals using Matlab.
10. To return the results of the program using parameters in Maple.
11. To compute the matrix and vector computations in Maple.
12. To perform operations on polynomials in Maple.
13. To call external programs in Maple.
14. To solve algebraic and transcendental equations using Scilab.
15. To interpolate a given data using Scilab.

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI

UG Programme

SEMESTER V & VI

PART V – EXTENSION ACTIVITY

(From 2023 -2024 Batch Onwards)

HOURS/WEEK: -

CREDIT : 1

DURATION : - **INT. MARKS: 100**

Course Objectives

- To promote community involvement, encourage civic participation, and foster a sense of ownership and responsibility.
- To involve the learners in organizing campaigns, seminars, or public events to educate the public, promote understanding, and advocate for positive change.
- To create platforms for knowledge sharing, partnership development, and collective action.
- To encourage environmental conservation, promote responsible resource management, or foster sustainable livelihoods.
- To raise awareness about social issues, advocate for marginalized groups, or implement programs that promote inclusivity and equal opportunities.

Course Outcomes (CO)

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

CO1 [K1]: recognize the importance of community service through training and education

CO2 [K2]: interpret ecological concerns, consumer rights, gender issues & legal protection

CO3 [K3]: develop team spirit, verbal/nonverbal communication and organizational ethics by participating in community service

CO4 [K4]: examine the necessity of professional skills & community-oriented services for a holistic development

CO5 [K6]: create awareness on human rights, legal rights, First Aid, Physical fitness and wellbeing

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1 [K1]	2	-	-	2	2	1	1
CO2 [K2]	2	1	-	2	1	1	1
CO3 [K3]	2	-	-	1	2	2	1
CO4 [K4]	1	1	1	1	2	2	1
CO5 [K6]	1	-	-	1	2	2	1
Weightage of	08	02	01	07	09	08	05

the course							
Weighted percentage of Course contribution to Pos	1.54	0.48	0.53	2.01	9.89	4.52	3.38

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' No Correlation)

Details of the Courses

1. National Cadet Corps (NCC) – 190 hrs
2. National Service Scheme (NSS) – 240 hrs
3. Physical Education
4. Red Ribbon Club (RRC)
5. Youth Red Cross (YRC)
6. Fine Arts Club
7. Library and Information Service Club
8. Yoga Club
9. ECO Club
10. Consumer Club
11. Human Rights Club
12. Women Empowerment Cell
13. Legal Awareness League

Courses Offered to Other Departments

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Physics / B. Sc. Chemistry
SEMESTER - I
ELECTIVE COURSE GENERIC / DISCIPLINE SPECIFIC - I: MATHEMATICS - I
(23UPHA11/23UCHA11)
(From 2023-2024 Batch onwards)

HOURS/WEEK : 6 (L-5, T-1) **INT. MARKS : 25**
CREDITS : 5 **EXT. MARKS : 75**
DURATION : 90 hrs **MAX. MARKS: 100**

Course Objectives

- To explore the fundamental concepts of Mathematics.
- To acquire knowledge about finding approximate roots of the polynomial equations.
- To improve students' ability in solving problems of matrices and calculus.

Course Outcomes (CO)

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

CO1[K1]: state the elementary concepts of calculus, numerical methods of solving equations, eigen values and eigen vectors of matrices

CO2[K2]: explain the application of differentiation, integration and the method of solving polynomial equations numerically

CO3[K3]: find the numerical solution of polynomial equations, eigen values and eigen vectors of matrices, curvature and radius of curvature of curves, area, volume and centroid of surfaces

CO4[K4]: interpret Cayley-Hamilton theorem, Leibnitz theorem, Jacobian determinant, iterative methods of solving polynomial equations

CO5[K5]: determine the approximate solution of polynomial equations numerically, inverse, eigen values and eigen vectors of a matrix, n^{th} derivative of a function, curvature and radius of curvature of a curve, double and triple integration of integrands

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	1	-	1	-	1	-
CO2[K2]	3	1	1	1	-	1	1
CO3[K3]	3	2	1	1	-	1	1
CO4[K4]	3	2	1	1	-	1	1
CO5[K5]	3	2	2	1	-	1	1
Weightage of the course	14	08	05	05	-	05	04

Weighted percentage of Course contribution to POs							

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' No Correlation)

UNIT I **(18 hrs)**

The Solution of Numerical Algebraic and Transcendental Equations: The Bisection Method - Iteration Method - Regula Falsi Method –Newton-Raphson Method - Simple problems.

Textbook 1

Page No. 69 - 97

UNIT II **(18 hrs)**

Solutions of Simultaneous Linear Algebraic Equations: Gauss-Elimination Method - Gauss Jordan Elimination Method – Iterative Methods – Gauss Jacobi Method - Gauss Seidel Iterative Method - Simple problems.

Textbook 1

Page No. 112 - 126 and 145 - 158

UNIT III **(18 hrs)**

Matrices: Eigen Values and Eigen vectors - Cayley -Hamilton Theorem [without proof].

TextBook 2

Page No. 85 - 95

UNIT IV **(18 hrs)**

Successive Differentiation: The n-th Derivatives – Standard Results – Trigonometrical Transformation - Leibnitz Formula for the n-th derivative of a product Theorem [without proof]. **Curvature:** Circle, Radius and Centre of curvature – Cartesian Formula for the Radius of Curvature – The Co-ordinates of the Centre of Curvature – Evolute and Involute - Radius of Curvature when the curve is given in Polar Co-ordinates.

Textbook 3

Page No. 70 - 75, 82 – 84, 291 – 312.

UNIT V **(18 hrs)**

Multiple Integrals: Evaluation of the Double Integral – Double Integral in Polar Co-ordinates - Triple Integrals – Simple Applications to Area and Volume.

Textbook 4

Page No. 203-241

TEXTBOOKS

1. P. Kandasamy , K. Thilagavathy and K. Gunavathy. *Numerical Methods.* New Delhi: S. Chand & Company Ltd, 2002 **(UNITS I & II)**

2. P. Balasubramanyam and K.G. Subramanian. *Ancillary Mathematics Volume I*. New Delhi: Tata McGraw-Hill Publishing Company Ltd,1996 **(UNIT III)**
3. S. Narayanan and T.K. Manicavachagom Pillay. *Calculus Vol I*. Chennai: S.Viswanathan Pvt Ltd, 2006 **(UNITIV)**
4. S. Narayanan and T.K. Manicavachagom Pillay. *Calculus Vol II*. Chennai: S. Viswanathan Pvt Ltd, 2006 **(UNIT V)**

REFERENCES

Books

1. S.J. Venkatesan. *Allied Mathematics – I.* Chennai: Sri Krishna Publications.
2. P. R. Vittal. *Allied Mathematics.* Chennai: Margham Publication, 2003.
3. A. Singaravelu. *Numerical Methods*. Meenakshi Publications.

Web Sources

1. https://www.onlinemath4all.com/characteristic-equation-of-matrix.html
2. https://www.youtube.com/watch?app=desktop&v=_WcPtsuMMz0
3. https://www.youtube.com/watch?app=desktop&v=KgItZSst2sU
4. https://www.youtube.com/watch?app=desktop&v=w_KiHgultbM

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme – B. Sc Computer Science / B. Sc Information Technology / Computer Science (Cloud Computing and Cyber Security) / BACHELOR OF COMPUTER APPLICATIONS
SEMESTER- I
ELECTIVE COURSE GENERIC / DISCIPLINE SPECIFIC - I: DISCRETE MATHEMATICS - I (23UCSA11 /23UITA11 /23UCYA11 / 23UCAA11)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 4(L-3, T-1) **INT. MARKS : 25**
CREDITS : 3 **EXT.MARKS : 75**
DURATION : 60 hrs **MAX. MARKS: 100**

Course Objectives

- To understand the fundamental concepts of discrete mathematics.
- To develop logical thinking skills and problem-solving skills.

Course Outcomes (CO)

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

CO1[K1]: define the discrete objects in the context of mathematical structures for computer science and applications

CO2[K2]: recognize the properties of set operations, relations and functions, matrix operations, logic statements, various graphs

CO3[K3]: compute various operations on sets, relations, functions, matrices, graphs and truth values of logic statements

CO4[K4]: classify the types of relations, functions, matrices, logic statements and graphs

CO5[K5]: assess the equivalency of relations, invertibility of functions, tautological implications and equivalence of logic formulae, the method of solving graph optimization problems

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	2	-	-	-	-	-
CO2[K2]	2	2	1	1	-	1	-
CO3[K3]	2	3	2	1	-	1	1
CO4[K4]	2	3	2	1	-	1	1
CO5[K5]	2	3	2	1	-	1	1
Weightage of the course	10	13	07	04	-	04	03

Weighted percentage of Course contribution to Pos							

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low, '-' No Correlation)

UNIT I **(12 hrs)**

Set Theory: Introduction – Sets – Notation and Description of Sets – Subsets – Venn-Euler Diagram – Operations on Sets – Properties of Set Operations. **Relations:** Cartesian Product of Two Sets – Relations – Representation of a Relation – Operations on Relations – Equivalence Relations. **Functions**: Functions and Operators – One-to-one, Onto Functions – Special Types of Functions – Invertible Functions.

Textbook 1: Chapter I: Sections 1-7;
Chapter II: Sections 1-5;
Chapter III: Sections 1-4

UNIT II **(12 hrs)**

Matrix Algebra: Introduction – Matrix Operations – The Inverse of a Square Matrix–Elementary Operations and Rank of a Matrix.

Textbook 1: Chapter VI: Sections 1-4.

UNIT III **(12 hrs)**

Logic: Introduction – TF - Statements – Connectives – Atomic and Compound Statements – Well-Formed (Statement) Formulae – The Truth Table of a Formula –Tautology – Tautological Implications and Equivalence of Formulae – Replacement Process.

Textbook 1: Chapter IX: Sections 1-9.

UNIT IV **(12 hrs)**

Graphs: Graph – Finite and Infinite Graphs – Directed and Undirected Graphs – Basic Terminologies – Matrix Representation of Graphs – Subgraph – Walks – Closed Walk – Open Walk – Path – Length of the Path – Circuit or Cycle or Elementary Cycle, Circular Path – Connected – Eulerian Graphs – Operations of Graphs – Hamiltonian Graph – Complete Undirected Graph – Weighted Graph – Graph Optimization Problems.

Textbook 2: Chapter I: Sections 1.1-1.9.

UNIT V **(12 hrs)**

Trees: Acyclic Graph – Tree – Forest – Some Properties of Trees – Pendant Vertices in a Tree – Distance in a Tree – Eccentricity of a Vertex – Center

of a Tree – Rooted Tree – Subtree – Binary Trees – Properties of Binary Trees – Counting Trees – Spanning Trees – Weighted Graph – Minimum Spanning Tree.
Textbook 2: Chapter 2: Sections 2.1-2.16.

TEXTBOOKS

1. M.K.Venkataraman, N.Sridharan and N.Chandra sekaran. *Discrete Mathematics.* Chennai: The National Publishing Company, 2011. **(UNITS I, II & III)**
2. P. Geetha. *Graph Theory.* Chennai: Scitech Publications (India) Pvt. Ltd, 2009. **(UNITS IV & V)**

REFERENCES

Books

1. G.Shanker Rao. *Discrete Mathematical Structures.* New Delhi: New Age International (P) Limited Publishers, 2002.
2. N.G.Goudru. *Discrete Mathematical Structures.* Mumbai: Himalaya Publishing House, 2003.
3. B.S.Vatsa and Suchi Vatsa. *Discrete Mathematics.* New Delhi: New Age International (P) Limited Publishers, Fourth Revised Edition, 2012.

Web Sources

1. https://byjus.com/maths/tautology/
2. https://courses.lumenlearning.com/math4libarts/chapter/cardinality/
3. https://www.whitman.edu/mathematics/higher_math_online/section04.01.html
4. https://www.google.co.in/books/edition/DISCRETE_MATHEMATICS_AND_GRAPHTHEORY/1ZBeBAAAQBAJ?hl=en&gbpv=1&dq=discrete+mathematics+with+graph+theory&printsec=frontcover

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Physics / B. Sc. Chemistry
SEMESTER - II
ELECTIVE COURSE GENERIC / DISCIPLINE SPECIFIC - II: MATHEMATICS - II
(23UPHA21/23UCHA21)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 6 (L-5, T-1) **INT. MARKS : 25**
CREDITS :5 **EXT. MARKS : 75**
DURATION : 90hrs **MAX. MARKS: 100**

Course Objectives

- To study the method of interpolating data
- To gain knowledge on expansion of trigonometric functions and the method of solving partial differential equations
- To know the basic concepts of vector calculus
- To know the basics of Hyperbolic Function

Course Outcomes (CO)

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

CO1[K1]: describe the terminologies in trigonometric functions, hyperbolic functions, partial differentiation, vector calculus and interpolation

CO2[K2]: explain the elementary concepts of trigonometric functions, hyperbolic functions, partial differentiation, vector calculus and interpolation

CO3[K3]: find out the expansions of trigonometric functions, the missing values of given data, divergence and curl of the vector field, partial differentiation of functions

CO4[K4]: characterize the properties of divergence and curl, hyperbolic functions and partial derivatives of functions

CO5[K5]: determine the missing values of given data, partial differentiation of functions, expansion of trigonometric functions, derivatives of vector functions

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	1	-	1	-	1	-
CO2[K2]	3	1	1	1	-	1	1
CO3[K3]	3	2	1	1	-	1	1
CO4[K4]	3	2	1	1	-	1	1
CO5[K5]	3	2	2	1	-	1	1
Weightage of the course	14	08	05	05	-	05	04

Weighted percentage of Course contribution to POs							

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' No Correlation)

UNIT I **(18hrs)**

Trigonometry: Expansions of sin nθ, cos nθ, $\sin^n\theta$, $\cos^n\theta$, tannθ - **:** Expansions of sin θ, cos θ, tan θ in terms of θ.

Textbook: 1

Page No: 61-82

UNIT II **(18 hrs)**

Hyperbolic Functions: Hyperbolic and Inverse Hyperbolic Functions – **Resolution Into Factors**: Logarithm of complex quantities

Textbook: 1

Page No: 93-104, 122-127

UNIT III **(18hrs)**

Vector Differentiation: Vector functions – Directional Derivative – Normal Derivative – Maximal Directional Derivative – Divergence and Curl

Textbook: 2

Page No: 245-269

UNIT IV **(18hrs)**

INTERPOLATION: Linear interpolation – Gregory-Newton's forward and backward interpolation formula – Equidistant terms with one or more missing values – Lagrange's interpolation formula – Inverse interpolation.

Textbook: 3

Page No: 209-227, 271-278

UNIT V **(18hrs)**

PARTIAL DIFFERENTIATION: Successive partial derivatives– Functions of functions rule - Total differential coefficient – Implicit functions – Homogeneous functions – Partial derivatives of a function of two functions.

Textbook: 4

Page No: 178-182 & 188-198

TEXTBOOKS

1. S. Narayanan and T.K. Manicavachagom Pillay. *Trigonometry*. Chennai: S. Viswanathan Pvt Ltd, 2007 **(UNITS I& II)**
2. P. Balasubramanyam and K.G. Subramanian. *Ancillary Mathematics Vol I*. New Delhi: Tata McGraw-Hill Publishing Company Ltd,1996 **(UNIT III)**
3. P.Kandasamy , K.Thilagavathy and K. Gunavathy. *Numerical Methods.* New Delhi: S. Chand & Company Ltd, 2002 **(UNIT IV)**
4. S. Narayanan and T.K. Manicavachagompillay. *Calculus Vol I.* Chennai:

S. Viswanathan Pvt Ltd, 2006**(UNIT V)**

REFERENCES

Books

1. S. P. Rajagopalan and R. Sattanathan. *Allied Mathematics Vol I & II*. New Delhi: Vikas Publications, 2005.
2. S. J. Venkatesan. *Allied Mathematics – II.* Chennai: Sri Krishna Publications.
3. P. R. Vittal. *Allied Mathematics. Chennai:* Margham Publications, 2003.
4. P. Kandhasamy and K. Thilagavathy. *Allied Mathematics Vol I & II.* New Delhi: Tata McGraw Hill, 2003.
5. P.Kandasamy and K.Thilagavathy. *Calculus of Finite differences & Numerical Analysis.*New Delhi: S. Chand & Company Ltd, 2003.

Web Sources

1. https://uomustansiriyah.edu.iq/media/lectures/6/6_2018_11_10!11_16_14_AM.pdf
2. https://www.scribd.com/document/323436605/3-Problems-on-Expansion-of-Sinn%CE%B8-and-Cosn%CE%B8-in-Terms-of-Sinn%CE%B8-Andcosn%CE%B8
3. https://solitaryroad.com/c254.html
4. https://nptel.ac.in/courses/111108144
5. https://mathworld.wolfram.com/FiniteDifference.html

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - BACHELOR OF COMPUTER APPLICATIONS
SEMESTER - II
ELECTIVE COURSE GENERIC/ DISCIPLINE SPECIFIC - II: OPTIMIZATION TECHNIQUES (23UCAA21)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 4 (L-3, T-1) **INT. MARKS : 25**
CREDITS : 3 **EXT. MARKS : 75**
DURATION : 60 hrs **MAX. MARKS: 100**

Course Objectives

- To study the method of Mathematical formulation of Linear Programming problem and finding its solution using graphical method and simplex method.
- To study the method of solving Assignment and Transportation problem.

Course Outcomes (CO)

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

CO1[K1]: state the basic terminologies of linear programming problem, transportation problem and assignment problem

CO2[K2]: explain the methods of solving linear programming problem, transportation problem and assignment problem

CO3[K3]: find optimal solution of linear programming problem, transportation problem and assignment problem

CO4[K4]: examine the optimality of solutions of linear programming problem, transportation problem and assignment problem

CO5[K5]: determine the appropriate method of finding the optimal solution of linear programming problem, transportation problem and assignment problem

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	1	1	1	-	1	1
CO2[K2]	2	2	1	2	-	1	1
CO3[K3]	2	3	2	1	-	1	1
CO4[K4]	2	3	2	1	-	2	1
CO5[K5]	2	2	2	1	-	2	1
Weightage of the	10	11	08	06	-	07	05

course							
Weighted percentage of Course contribution to POs							

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' No Correlation)

UNIT I **(12 hrs)**

Linear Programming Problem – Mathematical Formulation: Introduction – Linear Programming Problem – Mathematical Formulation of the Problem – Illustration on Mathematical Formulation of LPPs. Linear Programming Problem –Graphical Solution and Extension: Introduction – Graphical Solution Method – Some Exceptional cases.

Chapter 2: Sections 2.1 – 2.4 & Chapter 3: Sections 3.1 – 3.3

UNIT II **(12 hrs)**

Linear Programming Problem – Simplex Method: Introduction – The Computational Procedure – Use of Artificial Variables.

Chapter 4: Sections 4.1, 4.3, 4.4

UNIT III **(12 hrs)**

Duality in Linear Programming Problem: Introduction – General Primal Dual Pair – Formulating a Dual Problem – Primal-Dual Pair in Matrix Form – Duality and Simplex Method.

Chapter 5: Sections 5.1 - 5.4, 5.7

UNIT IV **(12 hrs)**

Transportation Problem: Introduction – LP Formulation of the Transportation Problem – Existence of Solution in T.P – Duality in Transportation Problem – The Transportation Table – Loops in Transportation Table – Triangular Basis in a T.P – Solution of a Transportation Problem – Finding an Initial Basic Feasible Solution – Test for Optimality – Economic Interpretation of u_j's and v_j's – Degeneracy in Transportation Problem – Transportation Algorithm (MODI Method) – Some Exceptional Cases.

Chapter 10: Sections 10.1 – 10.13, 10.15

UNIT V **(12 hrs)**

Assignment Problem: Introduction – Mathematical Formulation of the Problem – Solution Methods of Assignment Problem – Special Cases in Assignment Problems – The Travelling Salesman Problem.

Chapter 11: Section 11.1 – 11.4, 11.7

TEXTBOOK

1. Kanti Swarup, Gupta P.K. and Man Mohan. *Operations Research.* New Delhi: Sultan Chand and Sons, Sixteenth Edition, 2012.

REFERENCES

Books

1. Premkumar Gupta, Er. and Kira, D.S. *Problems in Operations Research.* NewDelhi: S.Chand and Company Ltd, 2012.
2. Pannerselvam, R. *Operations Research.* New Delhi: Prentice Hall of India Private Limited, Second Edition, 2006.
3. Kapoor, V.K. *Operations Research*. New Delhi: Sultan Chand & Sons Educational Publishers, 2000.
4. Kalavathy, S. *Numerical Methods.* Chennai: Vijay Nicole Imprints Private Limited, 2004.
5. Kandasamy, P. and thilagavathy, K. *Calculus of finite differences and Numerical Analysis*. New Delhi: S.Chand and Company Ltd., First Edition, 2003.

Web Sources

1. https://www.researchgate.net/publication/313880623_Introduction_to_Operations_Research_Theory_and_Applications/link/5a7931ff0f7e9b41dbd44db2/download
2. https://www.youtube.com/watch?v=a2QgdDk4Xjw
3. https://theengineeringmaths.com/wp-content/uploads/2017/11/num-solutions.pdf
4. https://www.lkouniv.ac.in/site/writereaddata/siteContent/202004032250571912siddharth_bhatt_engg_Interpolation.pdf
5. https://theengineeringmaths.com/wp-content/uploads/2017/11/interpolation-web.pdf

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme – B. Sc Computer Science / B. Sc Information Technology / Computer Science (Cloud Computing and Cyber Security)
SEMESTER - II
ELECTIVE COURSE GENERIC / DISCIPLINE SPECIFIC - II: DISCRETE MATHEMATICS - II (23UCSA21/ 23UITA21 / 23UCYA21)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 4 (L-3, T-1) **INT. MARKS : 25**
CREDITS : 3 **EXT. MARKS : 75**
DURATION : 60 hrs **MAX. MARKS: 100**

Course Objectives

- To study the method of mathematical formulation of Linear Programming problem and finding its solution using graphical method.
- To study the method of solving Assignment and Transportation problem.
- To find numerical solutions to problems where the exact solutions are not known

Course Outcomes (CO)

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

CO1[K1]: state the basic terminologies of linear programming problem, transportation problem, assignment problem, curve fitting, numerical solutions of polynomial equations

CO2[K2]: explain the methods of solving linear programming problem, transportation problem, assignment problem, fitting curve for given data, solving polynomial equations numerically

CO3[K3]: find optimal solution of linear programming problem, transportation problem, assignment problem, numerical solution of polynomial equations and a curve that best fit the given data

CO4[K4]: examine the optimality of solutions of linear programming problem, transportation problem, assignment problem and the empirical relation of given data

CO5[K5]: asses the method of finding the optimal solution of linear programming problem, transportation problem, assignment problem, the curve that best fit the given data, the numerical solution of polynomial equations

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	1	1	1	-	1	1
CO2[K2]	2	2	1	2	-	1	1
CO3[K3]	2	3	2	1	-	1	1
CO4[K4]	2	3	2	1	-	2	1

CO5[K5]	2	2	2	1	-	2	1
Weightage of the course	10	11	08	06	-	07	05
Weighted percentage of Course contribution to POs							

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low '-' No Correlation)

UNIT I **(12 hrs)**

Linear Programming Problem – Mathematical Formulation: Introduction – Linear Programming Problem – Mathematical Formulation of the Problem – Illustration on Mathematical Formulation of LPPs. **Linear Programming Problem –Graphical Solution and Extension:** Introduction – Graphical Solution Method – Some Exceptional cases.

Chapter 2: Sections 2.1 – 2.4 & Chapter 3: Sections 3.1 – 3.3

UNIT II **(12 hrs)**

Transportation Problem: Introduction – LP Formulation of the Transportation Problem – Existence of Solution in T.P – Duality in Transportation Problem – The Transportation Table – Loops in Transportation Table – Triangular Basis in a T.P – Solution of a Transportation Problem – Finding an Initial Basic Feasible Solution – Test for Optimality – Economic Interpretation of u_j's and v_j's – Degeneracy in Transportation Problem – Transportation Algorithm (MODI Method) – Some Exceptional Cases.

Chapter 10: Sections 10.1 – 10.13, 10.15

UNIT III **(12 hrs)**

Assignment Problem: Introduction – Mathematical Formulation of the Problem – Solution Methods of Assignment Problem – Special Cases in Assignment Problems – The Travelling Salesman Problem.

Chapter 11: Sections 11.1 – 11.4, 11.7

UNIT IV **(12 hrs)**

Empirical Relations and Curve Fitting: Introduction – Equations Reducible to Linear Form – Method of Least Squares-Fitting a Straight Line – Method of Least Square-Fitting a Second Degree Parabola.

Chapter 2: Page No. 2.1 – 2.4, 2.5 – 2.6, 2.8 – 2.24

UNIT V **(12 hrs)**

Numerical Solutions of Algebraic and Transcendental Equation: Introduction – Bolzano's Bisection Method – Simple Iteration Method – Method of False Position(Regula Falsi Method) – Newton-Raphson Method.

Chapter 3: Page No. 3.1 – 3.5, 3.16 – 3.21

TEXTBOOKS

1. Kanti Swarup, Gupta P.K. and Man Mohan. *Operations Research.* New Delhi: Sultan Chand and Sons, Sixteenth Edition, 2012. **(UNITS I, II & III)**
2. T. Veerarajan, T. Ramachandran. *Numerical Methods with Programs in C*. New Delhi: Tata McGraw-Hill Pulishing Company Limited, Second Edition, 2007.**(Units IV &V)**

REFERENCES

Books

1. Premkumar Gupta, Er. and Kira, D.S. *Problems in Operations Research.* NewDelhi: S.Chand and Company Ltd, 2012.
2. Pannerselvam, R. *Operations Research.* New Delhi: Prentice Hall of India Private Limited, Second Edition, 2006.
3. Kapoor, V.K. *Operations Research*. New Delhi: Sultan Chand & Sons Educational Publishers, 2000.
4. Kalavathy, S. *Numerical Methods.* Chennai: Vijay Nicole Imprints Private Limited, 2004.
5. Kandasamy, P. and thilagavathy, K. *Calculus of finite differences and Numerical Analysis*. New Delhi: S.Chand and Company Ltd., First Edition, 2003.

Web Sources

1. https://www.researchgate.net/publication/313880623_Introduction_to_Operations_Research_Theory_and_Applications/link/5a7931ff0f7e9b41dbd44db2/ download
2. https://www.youtube.com/watch?v=a2QgdDk4Xjw
3. https://theengineeringmaths.com/wp-content/uploads/2017/11/num-solutions.pdf
4. https://www.lkouniv.ac.in/site/writereaddata/siteContent/202004032250571912siddharth_bhatt_engg_Interpolation.pdf
5. https://theengineeringmaths.com/wp-content/uploads/2017/11/interpolation-web.pdf

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Computer Science/ Computer Science (Cloud Computing and Cyber Security)
SEMESTER - III
ELECTIVE COURSE GENERIC / DISCIPLINE SPECIFIC - III: NUMERICAL METHODS (23UCSA31/23UCYA31)
(From 2023-2024 Batch onwards)

HOURS/WEEK: 4(L-3, T-1) **INT. MARKS : 25**
CREDITS : 3 **EXT. MARKS : 75**
DURATION : 60 hrs **MAX. MARKS: 100**

Course Objectives

- To introduce the various topics in Numerical methods.
- To know the fundamentals of algebraic equations.
- To study the method of interpolation.
- To find numerical differentiation and integration of functions.
- To solve ordinary differential equations numerically.

Course Outcomes (CO)

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

CO1[K1]: describe the basic concepts in numerical analysis

CO2[K2]: explain the methods of solving algebraic, transcendental, differential equations numerically, finding numerical differentiation and integration and interpolating values

CO3[K3]: apply numerical methods to obtain approximate solutions of algebraic, transcendental and differential equations, numerical differentiation and integration of given functions, missing values of given data

CO4[K4]: examine the numerical solution of algebraic, transcendental differential equations, numerical differentiation and integration of functions and interpolating values of the given data

CO5[K5]: determine the appropriate method of solving algebraic, transcendental differential equations numerically, finding missing values of a given data, interpolating the given data

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	2	1	1	-	-	-
CO2[K2]	2	2	1	1	-	1	1
CO3[K3]	2	2	1	1	-	1	1
CO4[K4]	2	2	2	1	-	1	1
CO5[K5]	2	2	2	1	-	1	1

Weightage of the course	10	10	07	05	-	04	04
Weighted percentage of Course contribution to POs							

Based on the level of contribution ('3'-High, '2'-Medium, '1'-Low, '-' No Correlation)

UNIT I **(12 hrs)**

Fundamentals of Algebraic Equation: Solution of Algebraic and Transcendental Equations - Bisection Method – Fixed Point Iteration Method – Newton Raphson Method – Linear System of Equations – Gauss Elimination Method – Gauss Jordan Method.

Page No. 3.2, 3.3, 3.4, 3.13 – 3.18, 3.20, 3.21, 4.1, 4.2, 4.10 – 4.16

UNIT II **(12 hrs)**

Iterative, Interpolation and Approximation: Iterative Methods - Gauss Jacobi and Gauss Seidel – Eigen Values of a Matrix by Power Method and Jacobi's Method for Symmetric Matrices. Interpolation with Unequal Intervals – Lagrange's Interpolation – Newton's Divided Difference Interpolation.

Page No. 4.5, 4.7, 4.8, 4.21 – 4.25, 4.28 – 4.34, 7.1, 7.2, 7.6, 7.7, 7.12 – 7.18

UNIT III **(12 hrs)**

Interpolation with Equal Interval: Difference Operators and Relations - Interpolation with Equal Intervals – Newton's Forward and Backward Difference Formulae.

Page No. 6.1 – 6.4, 6.11 – 6.16

UNIT IV **(12 hrs)**

Numerical Differentiation and Integration: Approximation of Derivatives using Interpolation Polynomials – Numerical Integration using Trapezoidal, Simpson's 1/3 rule.

Page No. 8.1, 8.2, 8.8 – 8.11, 8.28 – 8.30, 8.38 – 8.40

UNIT V **(12 hrs)**

Initial Value Problems for Ordinary Differential Equations: Single Step Methods – Taylor's Series Method – Euler's Method – Modified Euler's Method - Runge Kutta Method for Solving (first, second, third and 4th) Order Equation.

Page No. 10.1 – 10.13, 10.16 - 10.25

TEXTBOOK

1. Veerarajan, T. and Ramachandran, T. *Numerical Methods with Programs in C*. New Delhi: Tata McGraw – Hill Publishing Company Limited, Second Edition, 2007.

REFERENCES

Books

1. Kandasamy, P., Thilagavathy, K. and Gunavathi, K. *Numerical Methods*. New Delhi : S.Chand and Company Ltd, 2012.
2. Kalavathy, S. *Numerical Methods*. Chennai : Vijay Nicole Imprints Pvt Ltd, 2004.
3. Arumugam, S., Thangapandi Isaac, A. and Somasundaram, A. *Numerical Methods.* Chennai : Scitech Publications (India) Pvt Ltd, 2009.

Web Sources

1. https://theengineeringmaths.com/wp-content/uploads/2017/11/num-solutions.pdf
2. https://www.lkouniv.ac.in/site/writereaddata/siteContent/ 202004032250571912sidd harth_bhatt_engg_Interpolation.pdf
3. https://theengineeringmaths.com/ wpcontent/uploads/2017/11/interpolationweb.pdf
4. https://nptel.ac.in/content/storage/ 111/107/111107105/MP4/mod02lec08.mp4
5. https://nptel.ac.in/content/storage /111/107/111107105/MP4/mod08lec39.mp4