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 2021-2022 Batch onwards)

Department of Computer Science

UG Programme

Approved in the Academic Council – XIII held on 11/08/2021

Curriculum Design and Development Cell

Annexure G

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 2021-2022 Batch onwards)

Department of Computer Science

UG Programme

Approved in the Academic Council – XIII held on 11/08/2021

Curriculum Design and Development Cell

HOD	Dean of Applied Science	Dean of Academic Affairs	Principal

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

S.No.	Board Members	Name and Designation
1.	Chairman of the Board	**Mrs. L.Priya M.Sc.,M.Phil.,** Head & Assistant Professor of Computer Science, Sri Kaliswari College (Autonomous),Sivakasi.
2.	University Nominee	**Dr. M.Thangaraj** Professor & Head Department of Computer Science Madurai Kamaraj University, Madurai -625021
3.	Academic Expert 1.	**Mrs. E.Ponmalar** Associate Professor, Department of Computer Science, SFR College for Women, Sivakasi.
4.	Academic Expert 2.	**Dr. C.R.Sakthivel** Head Of the Department, Department of Computer Science, Sri Ramakrishna Mission Vidyala, Coimbatore.
5.	Industrialist	**Mr.G.Mahesh Kumar** Virtuo Technologies,Sivakasi.
6.	Alumni	**Mr.M.Manoj Babu** Process Associate, HCL Technologies Limited, Bangalore. **Mr.G.Kirubhakaran** Member Technical Staff, Zoho Corporation, Tenkasi.
Members		
7.	Mrs. M.Saranya	Assistant Professor in Computer Science
8.	Mrs.C.Kavitha	Assistant Professor in Computer Science
9.	Mr. G.Ramkumar	Assistant Professor in Computer Science
10.	Mrs. A.Karmehala	Assistant Professor in Computer Science
11.	Mr.M.Balamurugan	Assistant Professor in Computer Science
12.	Mr.R.Ramkumar	Assistant Professor in Computer Science
13.	Mr.G.Vignesh Kumar	Assistant Professor in Computer Science
14.	Dr.M.J.Abinash	Assistant Professor in Computer Science
15.	Ms.P.R.Chowmya	Assistant Professor in Computer Science

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI

(Affiliated to Madurai Kamaraj University, Re-accredited with A Grade (CGPA 3.11) by NAAC)

DEPARTMENT OF COMPUTER SCIENCE

UG Programme - B.Sc. Computer Science

GUIDELINES FOR OUTCOME-BASED EDUCATION WITH CHOICE BASED CREDIT SYSTEM

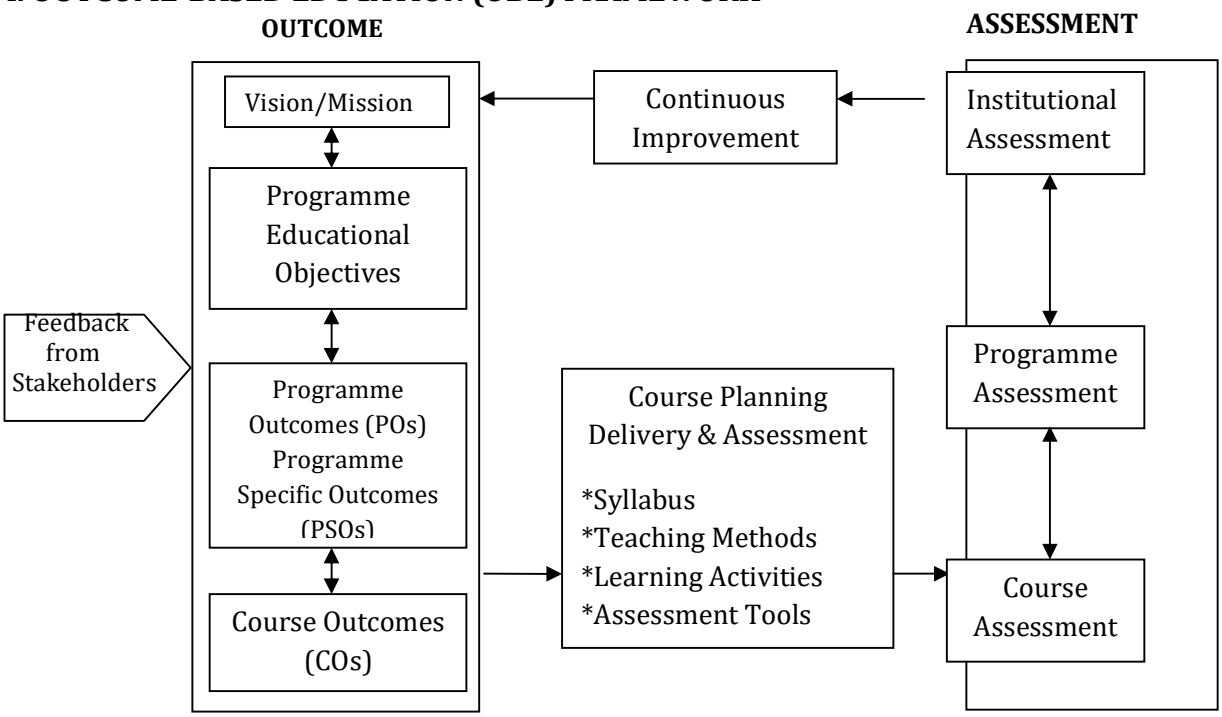
(From 2021-2022 Batch onwards)

INTRODUCTION

Sri Kaliswari College in its pursuit of imparting quality education has been 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 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 focussed 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 impart eminence in computer education to produce technically competent graduates with human values.

V. MISSION OF THE DEPARTMENT

- Empower the youth in rural communities with computer education
- Enhance their knowledge and strengthen their core competence in computers through analytical learning.
- Produce employable graduates by imparting total quality education

VI. PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

The Graduates will

PEO 1: achieve the mastery of the discipline and acquire knowledge and skills in the field of computer science

PEO 2: excel in providing solutions to challenging problems in their profession by applying their knowledge of their domain practically and acquire ability to pursue higher studies of specialization

PEO 3: demonstrate proficiency in various high level programming languages to comprehend, analyze, design and construct contemporary/ innovative solutions in the field of IT and other Entrepreneurial Areas.

PEO 4: exhibit the ability to work independently on a substantial software project and as an effective team member and work effectively in multidisciplinary environment as a socially committed individual.

PEO 5: instill lifelong learning, professional and ethical attitude for embracing global challenges and make positive impact on environment and society.

VII. PROGRAMME OUTCOMES (POs)

PO1: Disciplinary knowledge

Acquire the knowledge of computing, algorithmic principles with mathematical foundations to meet the desired needs

PO2: Critical thinking, Problem solving and Analytical reasoning

Acquire skills to analyze and identify the customer requirements in multidisciplinary domains, create high level design and implement robust software applications using latest technologies.

PO3: Scientific reasoning and Research related skills

Ability to analyze, draw conclusions from qualitative/quantitative data and critically evaluate ideas and also acquire necessary research skills to carry out an experiment or investigation

PO4: Communication skills and Digital literacy

Communicate effectively and articulate clearly the technical information in written and oral form and make use of ICT Tools to disseminate knowledge

PO5: Ethics, Values and Multicultural competence

Implant ethical responsibilities, human and professional values and capability to engage in a multi diverse society

PO6: Team Work, Leadership and Employability skills

Work effectively 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 and skills to attain personal development needed in work place/society through self-paced and self-directed learning.

VIII. PROGRAMME OUTCOMES (PSOs) – B.Sc. Computer Science

On successful completion of B.Sc. Computer Science, the students will

PSO 1: acquire knowledge and competencies in diverse areas of computer science and make them experts to design computer software and hardware by applying mathematical and computational skills.

PSO 2: acquire skills to understand, analyze and develop computer programming in the construction of software systems of varying complexity.

PSO 3: attain the ability to formulate, model, and to design solutions, procedure and to use software tools to solve real world problems and evaluate ideas or research in a specialized areas of Computer Science.

PSO 4: communicate technological concepts in a complete, concise, and correct manner and prepare documentation and presentations using different ICT tools.

PSO 5: recognize cross cultural, societal, professional, legal, and ethical issues prevailing in software industry and exhibit high level of professional and moral values.

PSO 6: gain excellent adaptability to changing work environment, and strengthen good interpersonal skills as a leader in a team and acquire employability skills.

PSO 7: develop the ability to appreciate emerging technologies and constantly upgrade their skills with an attitude towards lifelong learning.

IX. PO-PSO Mapping Matrix – B.Sc. Computer Science

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

X. PO-PEO Mapping Matrix – B.Sc. Computer Science

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

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
(Affiliated to Madurai Kamaraj University, Re-accredited with A Grade (CGPA 3.11) by NAAC)
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science

REGULATIONS

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

Eligibility

Candidate should have passed the Higher Secondary Examinations 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 and the candidate should have studied subject +2 level Mathematics with the subject Physics as one of the subjects in the 10 +2 pattern

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 2021 - 2024 may be permitted to write their examinations in this pattern up to April 2029.

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science
SCHEME OF EXAMINATION

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

For all Theory Courses : Internal Marks: 40; External Marks: 60

For all Practical Courses, Project and Internship : Internal Marks: 50; External Marks: 50

Internal Mark Distribution for Theory Courses

Assessment Type	Marks	Scheme of Assessment
Internal Test	15 marks	Two Internal Tests and 1 Model Exam will be conducted and average of the best two will be considered
Written Assignment	5 marks	One Written Assignment will be given
E-Assignment/ Case Studies/ Reviews/ Field Assignments/ Poster Presentations/ Portfolios	5 marks	Any one of the Assignments will be given
Quiz	5 marks	One Quiz Test will be conducted
Viva/ Oral Exam/ Group Discussion/ Role Play	10 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	40 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 with company based interview questions/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	40 marks	End result of the Practical
Viva –Voce	10 marks	Oral Mode Test

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science
QUESTION PAPER PATTERN

Internal Test – 30 Marks – 1 hr Duration

S.No	Type of Questions	Marks
1.	Objectives type Questions: Multiple Choice – 4 questions Answer in a Word/Sentence – 4 questions	 04 04
2.	Short Answer–3 questions –either or type	3x4=12
3.	Long Answer–1 question – either or type	1x10=10

Summative Examinations – 60 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	5x4=20
3.	Long Answer 3 questions –either or type	3x10=30

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science

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,

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

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

Assessment tools

For Summative Examinations,

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

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

CO	Level of Attainment
Above 70%	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.

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

Expected Level of Attainment for each of the Programme Outcomes

PO	Level of Attainment
Above 70%	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 the Feedback 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

PEO	Level of Attainment
Above 70%	Excellent
60 -70 %	Very good
50-60 %	Good
40 – 50 %	Satisfactory
Below 40%	Not Satisfactory

SRI KALISWARI COLLEGE (AUTONOMOUS), Sivakasi
(Affiliated to Madurai Kamaraj University, Re-accredited with A Grade (CGPA 3.11) by NAAC)
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science
CURRICULUM STRUCTURE
OUTCOME-BASED EDUCATION WITH CHOICE BASED CREDIT SYSTEM
(From 2021-2022 Batch onwards)

S. No	Courses	Sem I	Sem II	Sem III	Sem IV	Sem V	Sem VI	Credits
I	Tamil / Hindi / French	6(3)	6(3)	6(3)	6(3)	-	-	12
II	English	6(3)	6(3)	6(3)	6(3)	-	-	12
III	Core Courses	5(5) 5P(4)	5(5) 5P(4)	5(5) 5P(4)	5(5) 5P(3)	5(5) 5(5) 5P(4) 5P(4)	5(5) 5(5) 5(5) 5P(4) 4P(4)	76
	Allied Courses	4(4)	4(4)	4(4)	4(4)	-	-	16
	Major Elective Courses	-	-	-	-	4(3) 4(3)	4(3)	9
	Self-paced Learning (Swayam Course)	-	-	-	(2)	-	-	2
IV	Ability Enhancement Compulsory Course (AECC) 1. Environmental Studies	2(1)	-	-	-	-	-	1
	2. Value Education	-	1(1)	-	-	-	-	1
	Non-Major Elective Courses	-	-	2(1)	2(1)	-	-	2
	Skill Enhancement Courses	2P (1)	2P (1)	2P (1)	2P (1)	2P (1)	2P(1)	6
	Internship	-	-	-	-	(1)	-	1
	Disaster Management	-	1(1)	-	-	-	-	1
V	Extension	-	-	-	(1)	-	-	1
Total Hours (Per week)/ Credits		30(21)	30(22)	30(21)	30(23)	30(26)	30(27)	140 180

SRI KALISWARI COLLEGE (AUTONOMOUS), Sivakasi

(Affiliated to Madurai Kamaraj University, Re-accredited with A Grade (CGPA 3.11) by NAAC)

DEPARTMENT OF COMPUTER SCIENCE

UG Programme - B.Sc. Computer Science

CURRICULUM PATTERN

OUTCOME-BASED EDUCATION WITH CHOICE BASED CREDIT SYSTEM

(From 2021-2022 Batch onwards)

PROGRAMME CODE – UCS

Semester	Part	Course Code	Course Name	Hours	Credits
I	I	21UTAL11	Tamil/Hindi/French – I	6	3
	II	21UENL11	Communicative English – I	6	3
	III	21UCSC11	**Core Course - I:** Programming in C	5	5
		21UCSC1P	**Core Course - II:** Practical: C Programming	5	4
		21UCSA11	**Allied Course - I:** Mathematical Foundations	4	4
	IV	21UESR11	**Ability Enhancement Compulsory Course – I:** Environmental Studies	2	1
		21UCSS1P	**Skill Enhancement Course - I:** Practical: Office Automation	2	1
			Total	**30**	**21**
II	I	21UTAL21	Tamil/Hindi/French – II	6	3
	II	21UENL21	Communicative English – II	6	3
	III	21UCSC21	**Core Course - III:** Data Structures and Algorithms	5	5
		21UCSC2P	**Core Course - IV:** Practical: Data Structure	5	4
		21UCSA21	**Allied Course - II:** Operations Research	4	4
	IV	21UVED21	**Ability Enhancement Compulsory Course - II:** Value Education	1	1
		21UCSS2P	**Skill Enhancement Course - II:** Practical: DTP and Multimedia	2	1
		21UDMG21	Disaster Management	1	1
			Total	**30**	**22**
III	I	21UTAL31	Tamil/Hindi/French – III	6	3
	II	21UENL31	Communicative English – III	6	3
	III	21UCSC31	**Core Course - V:** Relational Database Management Systems	5	5
		21UCSC3P	**Core Course - VI:** Practical: SQL and PLSQL	5	4
		21UCSA31	**Allied Course - III:** Numerical Methods for Scientific Computation	4	4
	IV	21UCSN31	**Non-Major Elective Course - I:** Fundamentals of Computers	2	1
		21UCSS3P	**Skill Enhancement Course – III:** Practical: Linux and Shell Programming	2	1

			Total	**30**	**21**
IV	I	21UTAL41	Tamil/Hindi/French – IV	6	3
	II	21UENL41	Communicative English – IV	6	3
	III	21UCSC41	**Core Course - VII:** Programming in Java	5	5
		21UCSC4P	**Core Course - VIII:** Practical: Java Programming	5	3
		21UCSA41	**Allied Course – IV :** Microprocessor and Computer Organization	4	4
		21UCSM41 21UCSM42	**Self-paced Learning (Swayam Course):** 1. Programming in C++ 2. Programming, Data Structures and Algorithms using Python	-	2
	IV	21UCSN41	**Non-Major Elective Course - II:** Fundamentals of Internet	2	1
		21UCSS4P	**Skill Enhancement Course - IV:** Practical: Assembly Language Programming	2	1
	V	-	Extension	-	1
			Total	**30**	**23**
V	III	21UCSC51	**Core Course - IX:** Web Technology	5	5
		21UCSC52	**Core Course - X:** System Software and Operating System	5	5
		21UCSC5P	**Core Course - XI:** Practical: Web Technology	5	4
		21UCSC5Q	**Core Course - XII:** Practical: Android Programming	5	4
		21UCSO51 21UCSO52 21UCSO53	**Major Elective Course - I:** 1. Computer Graphics 2. Software Testing 3. Digital Image Processing	4	3
		21UCSO54 21UCSO55 21UCSO56	**Major Elective Course - II:** 1. Data Mining and Warehousing 2. Network Security 3. Artificial Intelligence	4	3
	IV	21UCSS5P	**Skill Enhancement Course – V:** Practical: Soft skill Training	2	1
		21UCSJ51	Internship	-	1
			Total	**30**	**26**
VI	III	21UCSC61	**Core Course - XIII:** Computer Networks	5	5
		21UCSC62	**Core Course - XIV:** Software Engineering	5	5
		21UCSC63	**Core Course - XV:** Open Source Technology	5	5
		21UCSC6P	**Core Course - XVI:** Practical: Open Source Technology	5	4
		21UCSJ61	**Core Course - XVII:** Project	4	4
		21UCSO61 21UCSO62 21UCSO63	**Major Elective Course - III:** 1. Advanced Computing 2. Internet of Things 3. Big Data	4	3
	IV	21UCSS6P	**Skill Enhancement Course - VI:** Practical: Image Processing	2	1
			Total	**30**	**27**

SRI KALISWARI COLLEGE (AUTONOMOUS), Sivakasi
(Affiliated to Madurai Kamaraj University, Re-accredited with A Grade (CGPA 3.11) by NAAC)
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science
OUTCOME-BASED EDUCATION WITH CHOICE BASED CREDIT SYSTEM
(From 2021-2022 Batch onwards)

PROGRAMME ARTICULATION MATRIX (PAM)

Semester	Course Code	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7
I	21UTAL11	Tamil/Hindi/French – I	10	7	2	8	2	2	2
	21UENL11	Communicative English – I	10	7	2	8	2	2	3
	21UCSC11	**Core Course - I:** Programming in C	15	10	5	5	2	5	5
	21UCSC1P	**Core Course - II:** Practical: C Programming	15	11	5	3	2	6	5
	21UCSA11	**Allied Course - I:** Mathematical Foundations	11	13	7	4	0	3	3
	21UESR11	**Ability Enhancement Compulsory Course – I:** Environmental Studies	8	5	1	7	8	5	5
	21UCSS1P	**Skill Enhancement Course - I:** Practical: Office Automation	13	6	0	8	1	5	5
II	21UTAL21	Tamil/Hindi/French – II	10	8	2	8	2	2	2
	21UENL21	Communicative English – II	10	8	2	8	2	2	3
	21UCSC21	**Core Course - III:** Data Structures and Algorithms	15	10	5	5	2	5	5
	21UCSC2P	**Core Course - IV:** Practical: Data Structure	15	10	5	4	2	4	5
	21UCSA21	**Allied Course - II:** Operations Research	9	13	7	4	0	4	4
	21UVED21	**Ability Enhancement Compulsory Course - II:** Value Education	8	5	1	5	9	4	7
	21UCSS2P	**Skill Enhancement Course - II:** Practical: DTP and Multimedia	13	7	0	5	2	7	5
	21UDMG21	Disaster Management	7	8	2	5	2	4	8
III	21UTAL31	Tamil/Hindi/French – III	10	8	2	8	2	2	2
	21UENL31	Communicative English – III	10	8	3	9	3	3	2
	21UCSC31	**Core Course - V:** Relational Database Management Systems	15	10	5	3	2	5	5
	21UCSC3P	**Core Course - VI:** Practical: SQL and PLSQL	15	12	4	3	3	4	5

	21UCSA31	**Allied Course - III:** Numerical Methods for Scientific Computation	10	12	7	5	0	4	4
	21UCSN31	**Non-Major Elective Course - I:** Fundamentals of Computers	9	5	0	8	0	5	5
	21UCSS3P	**Skill Enhancement Course – III:** Practical: Linux and Shell Programming	12	9	5	5	2	2	2
IV	21UTAL41	Tamil/Hindi/French – IV	10	8	2	9	2	2	2
	21UENL41	Communicative English – IV	10	9	3	8	2	3	3
	21UCSC41	**Core Course - VII:** Programming in Java	15	9	6	5	2	3	5
	21UCSC4P	**Core Course - VIII:** Practical: Java Programming	15	9	7	5	2	3	5
	21UCSA41	**Allied Course – IV :** Microprocessor and Computer Organization	15	9	5	4	2	5	5
	21UCSM41 21UCSM42	**Self-paced Learning (Swayam Course):** Programming in C++ Programming, Data Structures and Algorithms using Python	13	10	5	9	1	2	7
	21UCSN41	**Non-Major Elective Course - II:** Fundamentals of Internet	9	5	0	8	0	5	5
	21UCSS4P	**Skill Enhancement Course - IV:** Practical: Assembly Language Programming	14	8	5	3	2	3	4
	-	Extension	8	2	1	7	9	8	5
V	21UCSC51	**Core Course - IX:** Web Technology	15	10	5	5	3	3	4
	21UCSC52	**Core Course - X:** System Software and Operating System	15	10	7	3	2	3	5
	21UCSC5P	**Core Course - XI:** Practical: Web Technology	15	10	5	6	2	2	5
	21UCSC5Q	**Core Course - XII:** Practical: Android Programming	15	8	4	7	2	6	5
	21UCSO51 21UCSO52 21UCSO53	**Major Elective Course - I:** Computer Graphics Software Testing Digital Image Processing	14	10	4	6	1	5	5
	21UCSO54 21UCSO55 21UCSO56	**Major Elective Course - II:** Data Mining and Warehousing Network Security Artificial Intelligence	15	9	9	5	5	2	5
	21UCSS5P	**Skill Enhancement Course – V:** Practical: Soft skill Training	5	5	2	8	5	10	5
	21UCSJ51	Internship	8	12	4	7	6	7	6

VI	21UCSC61	**Core Course - XIII:** Computer Networks	15	10	4	6	1	5	5
	21UCSC62	**Core Course - XIV:** Software Engineering	14	10	5	7	2	5	5
	21UCSC63	**Core Course - XV:** Open Source Technology	15	9	8	5	1	5	5
	21UCSC6P	**Core Course - XVI:** Practical: Open Source Technology	14	9	7	5	2	6	5
	21UCSJ61	**Core Course - XVII:** Project	12	10	7	10	5	6	5
	21UCSO61 21UCSO62 21UCSO63	**Major Elective Course - III:** Advanced Computing Internet of Things Big Data	14	9	8	7	3	4	5
	21UCSS6P	**Skill Enhancement Course - VI:** Practical: Image Processing	15	6	2	4	2	4	5
Total Weightage of all Courses Contributing to PO			**545**	**392**	**185**	**273**	**112**	**188**	**203**

SRI KALISWARI COLLEGE (AUTONOMOUS), Sivakasi
(Affiliated to Madurai Kamaraj University, Re-accredited with A Grade (CGPA 3.11) by NAAC)
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science
OUTCOME-BASED EDUCATION WITH CHOICE BASED CREDIT SYSTEM
(From 2021-2022 Batch onwards)

PROGRAMME ARTICULATION MATRIX – WEIGHTED PERCENTAGE

Semester	Course Code	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7
I	21UTAL11	Tamil/Hindi/French – I	1.83	1.79	1.08	2.93	1.79	1.06	0.99
	21UENL11	Communicative English – I	1.83	1.79	1.08	2.93	1.79	1.06	1.48
	21UCSC11	**Core Course - I:** Programming in C	2.75	2.55	2.7	1.83	1.79	2.66	2.46
	21UCSC1P	**Core Course - II:** Practical: C Programming	2.75	2.81	2.7	1.1	1.79	3.19	2.46
	21UCSA11	**Allied Course - I:** Mathematical Foundations	2.02	3.32	3.78	1.47	0	1.6	1.48
	21UESR11	**Ability Enhancement Compulsory Course – I:** Environmental Studies	1.47	1.28	0.54	2.56	7.14	2.66	2.46
	21UCSS1P	**Skill Enhancement Course - I:** Practical: Office Automation	2.39	1.53	0	2.93	0.89	2.66	2.46
II	21UTAL21	Tamil/Hindi/French – II	1.83	2.04	1.08	2.93	1.79	1.06	0.99
	21UENL21	Communicative English – II	1.83	2.04	1.08	2.93	1.79	1.06	1.48
	21UCSC21	**Core Course - III:** Data Structures and Algorithms	2.75	2.55	2.7	1.83	1.79	2.66	2.46
	21UCSC2P	**Core Course - IV:** Practical: Data Structure	2.75	2.55	2.7	1.47	1.79	2.13	2.46
	21UCSA21	**Allied Course - II:** Operations Research	1.65	3.32	3.78	1.47	0	2.13	1.97
	21UVED21	**Ability Enhancement Compulsory Course - II:** Value Education	1.47	1.28	0.54	1.83	8.04	2.13	3.45
	21UCSS2P	**Skill Enhancement Course - II:** Practical: DTP and Multimedia	2.39	1.79	0	1.83	1.79	3.72	2.46
	21UDMG21	Disaster Management	1.28	2.04	1.08	1.83	1.79	2.13	3.94
III	21UTAL31	Tamil/Hindi/French – III	1.83	2.04	1.08	2.93	1.79	1.06	0.99
	21UENL31	Communicative English – III	1.83	2.04	1.62	3.3	2.68	1.6	0.99
	21UCSC31	**Core Course - V:** Relational Database Management Systems	2.75	2.55	2.7	1.1	1.79	2.66	2.46
	21UCSC3P	**Core Course - VI:** Practical: SQL and	2.75	3.06	2.16	1.1	2.68	2.13	2.46

		PLSQL							
	21UCSA31	**Allied Course - III:** Numerical Methods for Scientific Computation	1.83	3.06	3.78	1.83	0	2.13	1.97
	21UCSN31	**Non-Major Elective Course - I:** Fundamentals of Computers	1.65	1.28	0	2.93	0	2.66	2.46
	21UCSS3P	**Skill Enhancement Course – III:** Practical: Linux and Shell Programming	2.2	2.3	2.7	1.83	1.79	1.06	0.99
IV	21UTAL41	Tamil/Hindi/French – IV	1.83	2.04	1.08	3.3	1.79	1.06	0.99
	21UENL41	Communicative English – IV	1.83	2.3	1.62	2.93	1.79	1.6	1.48
	21UCSC41	**Core Course - VII:** Programming in Java	2.75	2.3	3.24	1.83	1.79	1.6	2.46
	21UCSC4P	**Core Course - VIII:** Practical: Java Programming	2.75	2.3	3.78	1.83	1.79	1.6	2.46
	21UCSA41	**Allied Course – IV :** Microprocessor and Computer Organization	2.75	2.3	2.7	1.47	1.79	2.66	2.46
	21UCSM41 21UCSM42	**Self-paced Learning (Swayam Course):** Programming in C++ Programming, Data Structures and Algorithms using Python	2.39	2.55	2.7	3.3	0.89	1.06	3.45
	21UCSN41	**Non-Major Elective Course - II:** Fundamentals of Internet	1.65	1.28	0	2.93	0	2.66	2.46
	21UCSS4P	**Skill Enhancement Course - IV:** Practical: Assembly Language Programming	2.57	2.04	2.7	1.1	1.79	1.6	1.97
	-	Extension	1.47	0.51	0.54	2.56	8.04	4.26	2.45
V	21UCSC51	**Core Course - IX:** Web Technology	2.75	2.55	2.7	1.83	2.68	1.6	1.97
	21UCSC52	**Core Course - X:** System Software and Operating System	2.75	2.55	3.78	1.1	1.79	1.6	2.46
	21UCSC5P	**Core Course - XI:** Practical: Web Technology	2.75	2.55	2.7	2.2	1.79	1.06	2.46
	21UCSC5Q	**Core Course - XII:** Practical: Android Programming	2.75	2.04	2.16	2.56	1.79	3.19	2.46
	21UCSO51 21UCSO52 21UCSO53	**Major Elective Course - I:** Computer Graphics Software Testing Digital Image Processing	2.57	2.55	2.16	2.2	0.89	2.66	2.46
	21UCSO54 21UCSO55 21UCSO56	**Major Elective Course - II:** Data Mining and Warehousing Network Security Artificial Intelligence	2.75	2.3	4.86	1.83	4.46	1.06	2.46
	21UCSS5P	**Skill Enhancement Course – V:** Practical: Soft skill Training	0.92	1.28	1.08	2.93	4.46	5.32	2.46

	21UCSJ51	Internship	1.47	3.06	2.16	2.56	5.36	3.72	2.96
VI	21UCSC61	**Core Course - XIII:** Computer Networks	2.75	2.55	2.16	2.2	0.89	2.66	2.46
	21UCSC62	**Core Course - XIV:** Software Engineering	2.57	2.55	2.7	2.56	1.79	2.66	2.46
	21UCSC63	**Core Course - XV:** Open Source Technology	2.75	2.3	4.32	1.83	0.89	2.66	2.46
	21UCSC6P	**Core Course - XVI:** Practical: Open Source Technology	2.57	2.3	3.78	1.83	1.79	3.19	2.46
	21UCSJ61	**Core Course - XVII:** Project	2.2	2.55	3.78	3.66	4.46	3.19	2.46
	21UCSO61 21UCSO62 21UCSO63	**Major Elective Course - III:** Advanced Computing Internet of Things Big Data	2.57	2.3	4.32	2.56	2.68	2.13	2.46
	21UCSS6P	**Skill Enhancement Course - VI:** Practical: Image Processing	2.75	1.53	1.08	1.47	1.79	2.13	2.46
Total Weighted 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./BCA
SEMESTER- I
பொதுத்தமிழ் - I (21UTAL11)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 6 **INT.MARKS : 40**
CREDITS : 3 **EXT.MARKS : 60**
DURATION : 90 hrs **MAX.MARKS: 100**

நோக்கம்

தற்கால இலக்கிய வகைமைகளை அறிமுகப்படுத்தும் நோக்கில் இத்தாள் வடிவமைக்கப்பட்டுள்ளது.

கற்றலின் பயன்கள்

இத்தாளை வெற்றிகரமாக முடித்தவுடன் மாணவர்கள்,

CO1[K1]: நவீன இலக்கிய வகைமைகளைஅடையாளம் காண்பர்.

CO2[K2]: மொழி இலக்கண அறிவினைப் புரிந்துகொண்டு பிழை இன்றி எழுதும் திறன்பெறுவர்.

CO3[K3]: இக்கால இலக்கியங்களின் கருத்தம்சங்களைதம் வாழ்நிலையோடு பொருத்திப்பார்ப்பர்.

CO4[K5]: நவீன இலக்கியங்கள் படைப்பதற்கு அடிப்படையாக அமைந்த முறைமை குறித்து மதிப்பீடு செய்து அவற்றை விமர்சிப்பர்.

CO5[K6]: உலகளாவிய கவிதை நாடகப் படைப்புகளைக் கற்றுப் படைப்பர்.

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	-	-
CO4[K5]	2	1	1	1	1	1	1
CO5[K6]	2	1	1	1	-	1	1
Weightage of the course	10	07	02	08	02	02	02
Weighted percentage of Course Contribution to Pos	**1.83**	**1.79**	**1.08**	**2.93**	**1.79**	**1.06**	**0.99**

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

கூறு I **(18 hrs)**

மரபுக்கவிதை: மரபுக்கவிதையின் தோற்றமும் வளர்ச்சியும், **பாரதியார்**: யாமறிந்தமொழிகளிலே, பகைவனுக்கு அருள்வாய். **பாரதிதாசன்**: வீரத்தமிழன், தொழிலாளர் விண்ணப்பம். **கவிமணி**: ஒற்றுமையே உயிர்நிலை. **நாமக்கல் கவிஞர்:** பெண் மனம். **முடியரசன்**: தமிழ் தான் என் பேர். **கண்ணதாசன்:** யாத்திரை. **பட்டுக்கோட்டை:** சின்னப்பயலே.....

கூறு II **(18 hrs)**

புதுக்கவிதை:புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும் - ஹைக்கூவின் தோற்றமும் வளர்ச்சியும். **அப்துல் ரகுமான்** - பாருக்குள்ளே நல்ல நாடு. **நா.காமராசர்:**கண்.**மு.மேத்தா:**கால்களால் நடந்த கதை.**வைரமுத்து:**ஐந்து பெரிது ஆறு சிறிது, **பா.விஜய்:**பேனா பேசுச்சு. **கனிமொழி**:கருவறை வாசனை.**ஹைக்கூ கவிதை:** இ.பரிமளம் -அமுதபாரதி - பா.உதயகண்ணன் - இ.ரா.இரவி - மணிவேலன்-புதுவைசீனு.தமிழ்மணி-புதுவைத்தமிழ்நெஞ்சன் - அறிவுமதி- ஸ்ரீரசா-தங்கம் மூர்த்தி - புதுக்கவிதை - ஹைக்கூ படைப்பதற்குப் பயிற்சி அளித்தல்.

கூறு III **(18 hrs)**

நாடகம்:நாடகத்தின் தோற்றமும் வளர்ச்சியும்,புராண இலக்கிய நாடகங்கள் - **ஜெயந்திநாகராஜன்:**திருநாவுக்கரசர் - திருஞானசம்பந்தர்.

கூறு IV **(18 hrs)**

நாடகம்:புராண இலக்கியநாடகங்கள் - ஜெயந்திநாகராஜன் 1. மாணிக்கவாசகர் 2. கண்ணப்பநாயனார் 3. மெய்ப்பொருள் நாயனார்,நாடகம் படைப்பதற்குப் பயிற்சி அளித்தல்.

கூறு V **(18 hrs)**

இலக்கணம் : முதல், சார்பெழுத்துக்கள் - மொழிமுதல், மொழி இறுதி எழுத்துக்கள் - வல்லினம் மிகும், மிகா இடங்கள்.

பாடநூல்கள்

1. *தொகுப்பு நூல்*,தமிழியல்துறை,ஸ்ரீ காளீஸ்வரிகல்லூரி (தன்னாட்சி),சிவகாசி.
2. ஜெயந்திநாகராஜன்.*புராண இலக்கியநாடகங்கள்*,தாமரைபப்ளிகேஷன்ஸ்,சென்னை,2014.
3. வாசுதேவன்,கா.*பன்முகநோக்கில் தமிழ் இலக்கியவரலாறு*,தேவன் பதிப்பகம்,திருச்சிராப்பள்ளி,2017.

பார்வை நூல்கள்

1. சுதந்திரமுத்து, மு.*படைப்புக் கலை*,அறிவுப் பதிப்பகம்,சென்னை,2008.
2. பாக்கியமேரி.*தமிழ் இலக்கிய வரலாறு*, நியூ செஞ்சுரி புக் ஹவுஸ்,சென்னை,2011.
3. ஸ்ரீதரன்,என்.*பிழையின்றித் தமிழ் எழுதுவோம்*, ஸ்ரீ நந்தினிபதிப்பகம்,சென்னை, 2008.

வலைப்பதிவுகள்(Web Sources)

1. https://youtu.be/6mrdbprILo8
2. https://youtu.be/QYizo6YwBXl
3. https://youtu.be/-oUmlDvHvQg
4. https://youtu.be/3sY76BTiqPQ
5. https://youtu.be/xLosPsqJ6W0

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF ENGLISH
UG Programme - B.A./B.Com./ B.B.A./B.SC./BCA
SEMESTER- I
COMMUNICATIVE ENGLISH - I (21UENL11)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 6 **INT. MARKS : 40**
CREDITS : 3 **EXT. MARKS : 60**
DURATION : 90 hrs **MAX. MARKS: 100**

Preamble

This course helps the learners to develop their communication skills in English through listening, speaking, reading, and writing practices.

Course Outcomes (CO)

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

CO1[K1]: relate and state ideas by reading and listening to simple recorded conversations and fables

CO2[K2]: demonstrate communicative skills through simple Descriptions, Requests and Instructions

CO3[K3]: apply knowledge of word power and grammar rules in Formal and Informal letter writings

CO4[K4]: analyze fairy tales and folk tales to develop language skills through literature

CO5[K6]: construct grammatically correct and meaningful simple sentences in English

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[K6]	2	1	1	1	-	1	1
Weightage of the course	10	07	02	08	02	02	03
Weighted percentage of Course contribution to Pos	**1.83**	**1.79**	**1.08**	**2.93**	**1.79**	**1.06**	**1.48**

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

UNIT I - LISTENING AND SPEAKING **(18 hrs)**

A. Listening

Listening to simple conversations in everyday contexts
Listening to fables
Listening to News Bulletin

B. Speaking

Introducing oneself and others
Describing persons, places, things, daily routines, health and symptoms
Asking for time and date
Asking for directions and giving directions
Giving instructions and seeking clarifications
Making requests and responding to requests
Thanking someone and responding to thanks

UNIT II - READING AND WRITING **(18 hrs)**

A. Reading

Interpreting pictures/maps/pie-charts/tables/flow charts /diagrams
Skimming or scanning through the texts

B. Writing

Hints Developing
Story Completion/ completing the story based on given outline.
Letter Writing: Informal letters- Family, Friends and Relatives
Formal letters: Leave letters and Apology Letter

UNIT III - WORD POWER **18 hrs)**

Prefixes and Suffixes
Homophones and Homonyms
Words related to Parts of the Body & their functions, Cries of Animals, Young Ones of Animals
Connotative and Denotative words
Contextual Usage of words
Puzzles and Anagrams

UNIT IV - GRAMMAR **(18 hrs)**

Nouns-Kinds, Number and Gender
Pronouns-Kinds
Adjectives- Kinds
Verbs-Regular and Irregular verbs, Transitive and Intransitive Verbs
Adverbs- Kinds and Position of Adverbs

UNIT V - LANGUAGE THROUGH LITERATURE (18 hrs)

Fairy Tales, Folk Tales and Legendary Heroes

Fairy Tales

The Pied Piper of Hamelin

The Ugly Duckling

Hansel and Gretel

Folk Tales

Alibaba and the Forty Thieves

Aladdin and the Magic Lamp

The Town Mouse and the Country Mouse

Legendary Heroes

Chhatrapati Shivaji Maharaj- Shivaji's great escape

Mahatma Gandhi- Mohandas takes a spelling test

Tenali Raman- The Stolen Brinjal

Akbar and Birbal- Re-Union

TEXTBOOKS

1. Carthy Mc., and Felicity O'Dell. *English Vocabulary in Use (Upper intermediate)*. UK: Cambridge University Press, 2005.
2. Pillai, Radhakrishna, and K.Rajeevan. *Spoken English for You (Level One)*. Chennai: Emerald Publishers, 2009.
3. Sreelekshmi. *Folk Tales- A WonderWorld of 150 Stories for Children*. Kerala: SL Publishers, 2004.

REFERENCES

Books

1. Babu, Sundara. *Leo's Tenali Raman Stories*. Chennai: Leo Book Publishers, 2015.
2. Kalyani V. *Fairy Tales 1*. Kerala: Sisco Publishers, 2004.
3. *Life Skills* (Jeevan Kaushal) *Facilitators' Guidelines*. New Delhi: University Grants Commission, 2021.
4. Sadanand, Kamalesh and Susheela Punitha. *Spoken English- A Foundation Course for Speakers of Tamil*. Mumbai: Orient Blackswan, 2009.
5. Taylor, Grant. *English Conversation Practice*. New Delhi: Tata McGraw Hill Publishers, 2001.

Web Sources

1. https://kathakids.com/great-personalities/history-and-legends/shivajis-great-escape/
2. https://kathakids.com/great-personalities/stories-of-mahatma-gandhi/
3. https://www.infoplease.com/dictionary/brewers/animals-cries
4. https://www.zooborns.com/zooborns/baby-animal-names.html
5. https://learnenglish.britishcouncil.org/general-english/stories

6. https://www.talkenglish.com/lessonindex.aspx
7. https://www.englishhelper.com/
8. https://www.englishpage.com/

SRI KALISWARI COLLEGE (AUTONOMOUS),SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme – B.Sc. Computer Science
SEMESTER- I
CORE COURSE - I: PROGRAMMING IN C (21UCSC11)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 5 **INT. MARKS : 40**
CREDITS : 5 **EXT. MARKS : 60**
DURATION : 75 hrs **MAX. MARKS:100**

Preamble

This course introduces the learners to the basic concepts of C Programming language and its applications.

Course Outcomes (CO)

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

CO1[K1]: describe preprocessor, data types, control statement, formatted I/O, functions, arrays, pointers, structures, strings and file processing.
CO2[K2]: illustrate preprocessor, control statement, formatted I/O, functions, arrays, pointers, structures, strings and file processing.
CO3[K3]: apply control statements, formatted I/O, functions, arrays, pointers, structures, strings and file processing.
CO4[K4]: compare data types, control statements, various I/O functions and string functions.
CO5[K6]: develop simple program using control statements, arrays and 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	1	-	1	1
CO3[K3]	3	2	1	1	-	1	1
CO4[K4]	3	2	1	1	1	1	1
CO5[K6]	3	2	2	1	1	2	1
Weightage of the course	15	10	05	05	02	05	05
Weighted percentage of Course contribution to POs	**2.75**	**2.55**	**2.7**	**1.83**	**1.79**	**2.66**	**2.46**

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

UNIT I **(15 hrs)**

Introduction: Machine languages, Assembly languages and High-level languages – History of C – C Standard Library - A simple C Program – Data Types **-** Memory Concepts – Arithmetic in C – Decision Making: Equality and Relational Operators. **C Preprocessor**: Introduction - #include Preprocessor Directive - #define Preprocessor Directive: symbolic Constants – Macros – Conditional Compilation – #error and #pragma Preprocessor Directives - # and ## operators – Line Numbers – Predefined symbolic constants – Assertions.

UNIT II **(15 hrs)**

Structured Program: Introduction - Algorithm – Pseudocode - Control Structures – The if selection statement – The if…else selection statement – The while repetition statement – Assignment operators – Increment and Decrement operators. **Program Control:** Introduction – Repetition essentials – Counter-Controlled Repetition – for Repetition statement – Examples using for statement – switch multiple selection statement – do…while repetition statement – break and continue Statements – Logical Operators. **Case Study:** Counter Controlled Repetition – Sentinel Controlled Repetition – Nested Control Structures.

UNIT III **(15 hrs)**

Formatted Input / Output: Introduction – Streams – Formatting Output with printf – Printing integers – Printing floating point numbers – Printing String and Characters – Other Conversion Specifiers – Printing with Field Widths and Precision – Using Flags in the printf Format Control String – Printing Literals and Escape Sequences- Reading Formatted Input with scanf. **Functions:** Introduction – Program modules in C – Math Library Functions – Functions – Function Definitions – Function Prototypes - Function call stack and Activation Records – Headers – Calling Function by Value and by Reference – Storage Classes – Scope Rules – Recursion – Recursion Vs Iteration. **Case Study:** Random Number Generation – A game of chance – Fibonacci Series.

UNIT IV **(15 hrs)**

Arrays: Introduction – Arrays – Defining Arrays – Array Examples – Passing Array to Functions – Sorting Arrays – Searching Arrays – Multiple Subscripted Arrays. **Pointers:** Introduction – Pointer Variable Definitions and Initialization – Pointer Operators – Passing Aruguments to Function by Reference – Using the const Qualifier with Pointers – size of Operator – Pointer Expression and Pointer Arithmetic – Relationship Between Pointers And Arrays - Arrays of Pointers – Pointers to functions. **Structures:** Introduction – Structure Definition – Initializing Structure and Accessing Structure Members – Using Structure With Functions. **Case**

Study: Computing Mean, Median and Mode using Arrays – Bubble Sort Using Call-By-Reference – Card Shuffling and Dealing simulation.

UNIT V **(15 hrs)**

Characters and Strings: Introduction – Fundamentals of Strings and Characters – Character-Handling Library – String-Conversion Functions – Standard Input / Output library functions – String Manipulation functions – Comparison Functions – Search Functions – Memory Functions – Other Functions. **File Processing:** Introduction – Data Hierarchy – Files and Streams – Creating Sequential Access Files – Reading Data From a Sequential-Access File – Random–Access Files – Creating a Random-Access File – Writing Data Randomly to Random-Access File – Reading Data from Random-Access File. **Case Study:** Transaction Processing Program.

TEXTBOOK

1. Paul Deitel, Harvey Deitel. *C How to Program*. New York: Pearson Education, Sixth Edition, 2010.

UNIT I : 1.6,1.7,1.8,2.2,2.4,2.5,2.6,13
UNIT II : 3,4
UNIT III: 9,5
UNIT IV : 6,7
UNIT V : 8,11

REFERENCES

Books

1. David Griffiths, Dawn Griffiths. *Head First C*. O'Reilly, 2012.
2. Herbert Schildt. *C: The Complete Reference*. TMH Publishing Company, 2000.
3. Jeri R. Hanly, Elliot B. Koffman. *Problem Solving and Program Design in C*. Newyork: Pearson Education, 2010.

Web Sources

1. https://www.w3schools.in/c-tutorial/
2. https://www.programiz.com/c-programming
3. https://www.cprogramming.com/tutorial/c-tutorial.html
4. https://www.guru99.com/c-programming-tutorial.html
5. https://www.tutorialspoint.com/cprogramming/index.htm
6. https://www.javatpoint.com/c-programming-language-tutorial

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme – B.Sc. Computer Science
SEMESTER- I
CORE COURSE - II: PRACTICAL: C PROGRAMMING (21UCSC1P)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 5 **INT. MARKS : 50**
CREDITS : 4 **EXT. MARKS : 50**
DURATION : 75 hrs **MAX. MARKS: 100**

Preamble

This course enables the learners to explore the concepts related to C programming and to implement high level language programming.

Course Outcomes (CO)

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

CO1[K2]: demonstrate control statements, operators and bulit-in functions
CO2[K3]: perform operations using user defined functions, pointers, structures, arrays and file I/O.
CO3[K4]: examine looping statements and various functions math.h and string.h
CO4[K5]: choose the way for providing a solution for the given problem.
CO5[K6]: develop simple programs using decision making statements, looping controls and functions.

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K2]	3	3	1	-	-	1	1
CO2[K3]	3	2	1	-	-	1	1
CO3[K4]	3	2	1	1	1	1	1
CO4[K5]	3	2	1	1	-	1	1
CO5[K6]	3	2	1	1	1	2	1
Weightage of the course	15	11	05	03	02	06	05
Weighted percentage of Course contribution to POs	**2.75**	**2.81**	**2.7**	**1.1**	**1.79**	**3.19**	**2.46**

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

1. Write C Programs using Operators.
2. Write C Programs using Basic I/O Statements.
3. Write C Programs using Conditional – Decision Making Statements.
4. Write C Programs using Looping Controls.
5. Write C Programs to demonstrate math.h Library Functions
6. Write C Programs to demonstrate string.h Library Functions
7. Write C Programs using User Defined Functions.
8. Write C Programs using Recursive Functions.
9. Write C Programs using Array.
10. Write C Programs using Pointers.
11. Write C Programs using Structures
12. Write C Programs using File I/O.

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme – B.Sc. (COMPUTER SCIENCE/INFORMATION TECHNOLOGY)/BCA
SEMESTER- I
ALLIED COURSE-I: MATHEMATICAL FOUNDATIONS
(21UCSA11/21UITA11/21UCAA11)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 4 **INT. MARKS : 40**
CREDITS : 4 **EXT.MARKS : 60**
DURATION : 60 hrs **MAX. MARKS: 100**

Preamble

This course introduces the learners to some concepts and notations that are useful in studying and describing objects and problems in branches of Computer Science and applications.

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 and types of functions

CO3[K3]: calculate the rank, inverse matrix of a matrix

CO4[K4]: analyze the truth values of statements with reference to propositional logic

CO5[K5]: determine the appropriate algorithm to solve graph optimization problems

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	2	-	-	-	-	-
CO2[K2]	2	2	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	11	13	07	04	-	03	03
Weighted percentage of Course contribution to POs	**2.02**	**3.32**	**3.78**	**1.47**	**0**	**1.6**	**1.48**

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.

UNIT II **(12 hrs)**

Matrix Algebra: Introduction – Matrix Operations – The Inverse of a Square Matrix–Elementary Operations and Rank of a Matrix.

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.

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 Optimisation Problems.

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.

TEXTBOOKS

1. M.K.Venkataraman, N.Sridharan and N.Chandrasekaran. *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/guhzzPyUxggC?hl=en&gbpv=1&dq=discrete+mathematics+with+graph+theory&printsec=frontcover
5. https://www.google.co.in/books/edition/DISCRETE_MATHEMATICS_AND_GRAPH_THEORY/1ZBeBAAAQBAJ?hl=en&gbpv=1&dq=discrete+mathematics+with+graph+theory&printsec=frontcover
6. https://www.youtube.com/watch?v=hbk01uhgsos

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
UG PROGRAMME
SEMESTER- I
ABILITY ENHANCEMENT COMPULSORY COURSE - I: ENVIRONMENTAL STUDIES
(21UESR11)
(From 2021 - 2022 Batch onwards)

HOURS/WEEK: 2 **INT. MARKS : 40**
CREDIT : 1 **EXT. MARKS : 60**
DURATION : 30 hrs **MAX. MARKS:100**

Preamble

This course familiarizes the learners with the essentials of Environmental Studies by focusing on variety of environmental issues and factors affecting environment.

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, Food Web and Bio geochemical.

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[K4]: examine 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 [K4]	1	1	-	1	2	1	1
Weightage of the course	08	05	01	07	08	05	05
Weighted percentage of Course contribution to Pos	**1.47**	**1.28**	**0.54**	**2.56**	**7.14**	**2.66**	**2.46**

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

UNIT I **(6 hrs)**

Structure of earth and its components: Atmosphere – Lithosphere – Hydrosphere – Biosphere. Renewable and non-renewable resources – Forest, water and energy resources.

UNIT II **(6 hrs)**

Ecosystem: Concept of ecosystem – Terrestrial and aquatic. Structure and function – Energy flow in the ecosystem – Food chain and food web – Ecological pyramids – Bio-geo chemical cycle – carbon and nitrogen cycle.

UNIT III **(6 hrs)**

Biodiversity: Introduction – Definition: genetic, species and ecosystem diversity. Indian Biodiversity Hotspots. Threats to biodiversity – Conservation of Biodiversity – In-situ and Ex-situ conservation strategies. IUCN Red list Categories.

UNIT IV **(6 hrs)**

Pollution: Definition – causes – effects and control measures of Air – Water – Noise – soil – nuclear pollution. Global issues – Global warming – acid rain – Ozone layer depletion. Water conservation – rain water harvesting and water recycling – solid waste management.

UNIT V **(6 hrs)**

Human Population and Environment: Population growth, variation among nations. Road safety awareness. Environment and human health. Human Rights. HIV/AIDS. Women and Child Welfare. Role of Information Technology in Environment and human health. Contribution of students and teachers in adoption of villages and steps to be taken for green villages.

TEXTBOOKS

1. Dharmaraj,J. *Text book of Environmental studies*, S. Chand and Co. New Delhi, 1995.
2. Susila Appadurai. *Environmental Studies*, New Century Book House, 2012.

REFERENCES

Books

1. Agarwal, K.C.*Environmental Biology*, Nidi publication Ltd, Bikaner, 2001.
2. Odum, E.P. *Fundamentals of Ecology*, W.B. Saunders Co. USA, 1971.
3. Miller, T.G. *Environmental sciences*, Wadsworth Publishing Co, New Delhi. 2004.

Web Sources

1. https://www.adcidl.com/pdf/India-Road, Traffic-Signs.pdf.
2. https://www.youtube.com/watch?v=QewEi2U1jLs
3. https://byjus.com/biology/endemic-species/

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme – B.Sc. Computer Science
SEMESTER- I
SKILL ENHANCEMENT COURSE - I: PRACTICAL: OFFICE AUTOMATION
(21UCSS1P)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 2 **INT. MARKS : 50**
CREDIT : 1 **EXT. MARKS : 50**
DURATION : 30 hrs **MAX. MARKS: 100**

Preamble

This course enables the learners to create documents, worksheets and slide presentation in office automation packages.

Course Outcomes (CO)

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

CO1[K2]: demonstrate the Basic Formatting options, Tables, Charts, Mail Merge, Graphs.
CO2[K3]: apply Bullets and Numbering, Mathematical formulas and various designs using office
CO3[K3]: use the tools to apply borders, charts, graphs and custom animation
CO4[K4]: choose appropriate tools and options to create document, worksheet and presentation
CO5[K6]: design a simple document, presentation slide and do Calculation in Worksheets

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K2]	3	1	-	2	-	1	1
CO2[K3]	3	1	-	2	-	1	1
CO3[K3]	3	1	-	1	-	1	1
CO4[K4]	2	1	-	1	-	1	1
CO5[K6]	2	2	-	2	1	1	1
Weightage of the course	13	06	00	08	01	05	05
Weighted percentage of Course contribution to POs	**2.39**	**1.53**	**0**	**2.93**	**0.89**	**2.66**	**2.46**

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

WORD

Exercises involving;

1. Creating, Editing ,Formatting and Saving Documents
2. Creating a table, merging cells, changing column and row width
3. Usage of Paragraph, Line Spacing, Header and Footer options
4. Usage of Bullets and Numbering, Spelling and Grammar options
5. Inserting an image, applying page border and content border
6. Using word art and Mail Merge

WORKSHEET

Exercises involving;

7. Using Mathematical functions
8. Creation of Charts and Graphs
9. Applying Sorting and Filter

POWERPOINT

Exercises involving;

10. Simple Slide creation
11. Applying Transition and Design
12. Using custom Animation
13. Creation of Photo Album

COLLABORATIVE TOOLS

Exercises involving;

14. Sharing an Online Document/Spreadsheet/Powerpoint to a Mail-ID

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF TAMIL
UG Programme - B.A/B.SC/BCA
SEMESTER- II
பொதுத்தமிழ் - II (21UTAL21)
(From 2021-2022 Batch onwards)

HOURS / WEEK: 6 **INT. MARKS : 40**
CREDITS : 3 **EXT. MARKS : 60**
DURATION : 90 hrs **MAX. MARKS: 100**

நோக்கம்

சமய இலக்கியம் தோன்றியதற்கான காலப்பின்னணி மற்றும் சமயம் சார்ந்த இலக்கியங்களை மாணவர்களுக்கு அறிவுறுத்தலும்,பல்வேறு காலகட்ட சிறுகதை இலக்கியங்களை எடுத்துரைக்கும் நோக்கோடு அமைக்கப்பட்டுள்ளது.

கற்றலின் பயன்கள்

இத்தாளை வெற்றிகரமாக முடித்தவுடன் மாணவர்கள்,

CO1[K1]: பல்வேறுசமயம் சார்ந்த இலக்கிய வரலாற்றினை அறிவர்.
CO2[K2]: இறை உருவங்களையும் புராணக்கருத்துக்களையும் கூறுவர்.
CO3[K3]: சமயப்பாடல்களின் அமைப்பினையும் நோக்கத்தினையும் தெளிவாக விளக்குவர்.
CO4[K4]: தமிழ்ச் சிறுகதைகளின் பொருண்மைகளைப்பாகுபடுத்துவர்.
CO5[K4]: சொல்லிலக்கணத்தைப் புரிந்துகொண்டு பிழையின்றி எழுதும் திறனைப் பெறுவர்.

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	1	-	-
CO3[K3]	2	2	-	2	-	1	-
CO4[K4]	2	2	1	2	1	-	1
CO5[K4]	2	2	1	2	-	1	1
Weightage of the Course	10	08	02	08	02	02	02
Weighted percentage of Course Contribution to Pos	**1.83**	**2.04**	**1.08**	**2.93**	**1.79**	**1.06**	**0.99**

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

கூறு I **(18 hrs)**

சைவ இலக்கிய வரலாறு - **திருஞானசம்பந்தர்**: முதல் திருமுறை- திருப்பிரமபுரம் - தோடுடைய செவியன் (10 பாடல்கள்). **திருநாவுக்கரசர்:** நான்காம் திருமுறை - திருவதிகைவீரட்டானம் - கூற்றாயினவாறுவிலக்ககலீர் (10 பாடல்கள்).**சுந்தரர்:**ஏழாம்

திருமுறை - திருவெண்ணெய் நல்லூர் பதிகம் - பித்தாபிறைசூடி (10 பாடல்கள்). **மாணிக்கவாசகர்:** குயிற்பத்து (10 பாடல்கள்).

கூறு II **(18 hrs)**

வைணவ இலக்கியவரலாறு - **ஆண்டாள்**: திருப்பாவைமுழுவதும் (30 பாடல்கள்) - **நம்மாழ்வார்**: நான்காம் திருமொழி - நான்காம் பத்து - மண்ணையிருந்துதுழாவி.

கூறு III **(18 hrs)**

கிறிஸ்தவ, இஸ்லாமிய இலக்கியவரலாறு - **கண்ணதாசன்:** இயேசுகாவியம் - மலைப்பொழிவு (முழுவதும்) - **குணங்குடியார்:** நந்தீஸ்வரக்கண்ணி (51 பாடல்கள்).

கூறு IV **(18 hrs)**

சிறுகதைதோற்றம் வளர்ச்சி (தேர்ந்தெடுக்கப்பட்ட 10 சிறுகதைகள்) - **புதுமைப்பித்தன்:**அகல்யை..பி.எஸ். ராமையா: நட்ஷத்திரக் குழந்தைகள் **த.ஜெயகாந்தன்:**அக்ரஹாரத்துப்பூனை. **வண்ணதாசன்**:ஒருசிறு இசை.**வண்ணநிலவன்:**கரையும் உருவங்கள்.. **கு.அழகிரிசாமி**: அன்பளிப்பு. **விஞ்ஞானி**: முன்னை இட்டதீ.**ஆதவன்:** கறுப்புஅம்பாகதை. **மேலாண்மைபொன்னுச்சாமி**: அன்பெழுத்து. **நாஞ்சில் நாடன்**: சூடியபூ சூடற்க

கூறு V **(18 hrs)**

இலக்கணம்: சொல்விளக்கம்,சொற்பாகுபாடு (பெயர்ச்சொல்,வினைச்சொல், இடைச்சொல்,உரிச்சொல்) – அறுவகை வினா - எண்வகை விடை - மொழிப்பயிற்சி: மயங்கொலிப்பிழைகள் (லகர,ளகர,ழகரவேறுபாடு,ரகர,றகரவேறுபாடு - ணகர,னகரவேறுபாடு).

பாடநூல்கள்

1. *தொகுப்புநூல்,* தமிழியல்துறை,ஸ்ரீ காளீஸ்வரிகல்லூரி (தன்னாட்சி),சிவகாசி.
2. வாசுதேவன்,கா.*பன்முகநோக்கில் தமிழ் இலக்கியவரலாறு,*தேவன் பதிப்பகம்,திருச்சிராப்பள்ளி,பன்னிரெண்டாம் பதிப்பு: 2017.

பார்வை நூல்கள்

1. அப்துல்ரகுமான் (குறிப்புரை*).குணங்குடியார்பாடற்கோவை,*மணிவாசகர்பதிப்பகம்,சென்னை, 2002.
2. பாக்கியமேரி. *தமிழ் இலக்கியவரலாறு,*நியூ செஞ்சுரி புக் ஹவுஸ்,சென்னை,நான்காம் பதிப்பு: 2011.
3. ஜெகத்ரட்சகன், எஸ்.*நாலாயிரதிவ்யப் பிரபந்தம்,*முல்லைநிலையம்,சென்னை,முதற்பதிப்பு: 1993.
4. ஸ்ரீமத் கந்தசாமித்தம்பிரான் சாமிகள் (பதி.ஆ.). *மூவர் தேவாரம்,*ஞானசம்பந்தம் பதிப்பகம்,மயிலாடுதுறை, இரண்டாம் பதிப்பு: 1997.

வலைப்பதிவுகள் (Web Sources)

1. https://youtu.be/FPlNGftQnAo
2. https://youtu.be/Rj0S6KOruvA
3. https://youtu.be/Z8xgO8ff44g
4. https://youtu.be/PxeeauHz5CQ
5. https://youtu.be/TLU6MO9YEkA
6. https://podhutamizh.blogspot.com/2017/09/blog-post_42.html
7. https://youtu.be/vZ1FrQuhn_w

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF ENGLISH
UG Programme - B.A./B.Com./ B.B.A./B.SC./BCA
SEMESTER- II
COMMUNICATIVE ENGLISH - II (21UENL21)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 6 **INT. MARKS : 40**
CREDITS : 3 **EXT. MARKS : 60**
DURATION : 90 hrs **MAX. MARKS: 100**

Preamble

This course helps the learners to develop their communication skills in English through listening, reading, speaking and writing practices.

Course Outcomes (CO)

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

CO1[K1]: relate and state ideas by reading and listening to recorded interviews and news

CO2[K2]: demonstrate effective speaking skills by offering suggestions, seeking permission and reporting ongoing activities

CO3[K3]: apply knowledge of word power and grammar rules through proverb expansion and paragraph writings

CO4[K4]: analyze simple poems and short stories to develop language skills through literature

CO5[K6]: construct grammatically correct and logically coherent paragraphs

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 the course	10	08	02	08	02	02	03
Weighted percentage of Course contribution to POs	**1.83**	**2.04**	**1.08**	**2.93**	**1.79**	**1.06**	**1.48**

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

UNIT I - LISTENING AND SPEAKING **(18 hrs)**

A. Listening

Listening to interviews

Listening to news reading

Listening to instructions-download apps in mobile handsets, cooking, sending e-mail

B. Speaking

Inviting person, offering suggestion and seeking permission

Making complaints and asking apology

Expressing likes, dislikes, hopes, wishes, regrets, sympathy, offering condolences, compliments and praising

Reporting conversations, facts, meetings/interviews, ongoing activities and future plans

Talking about the weather, past &future events, interesting plans and arrangements

UNIT II - READING AND WRITING **(18 hrs)**

A. Reading

Reading advertisements

Reading notices

Reading short passages

B. Writing

Proverb Expansion

Paragraph Writing

Essay writing

UNIT III - WORD POWER **(18 hrs)**

Synonyms & Antonyms

Misspelt words

Words related to- House, Clothing, Food, Education, Speaking, Holidays and Sports

UNIT IV - GRAMMAR **(18 hrs)**

Preposition and its kinds

Conjunction and its kinds

Articles

Tenses

UNIT V - LANGUAGE THROUGH LITERATURE **(18 hrs)**

A. Poetry

Sarojini Naidu	-	The Queen's Rival
John Masefield	-	Laugh and be Merry
Alfred Noyes	-	The Highwayman

B. Short Story

Somerset Maugham	-	The Ant and the Grasshopper
Katherine Mansfield	-	A Cup of Tea

TEXTBOOKS

1. Carthy Mc., and Felicity O'Dell. *English Vocabulary in Use (Upper intermediate)*. UK: Cambridge University Press, 2005.
2. Pillai, Radhakrishna and K.Rajeevan. *Spoken English for You (Level One)*. Chennai: Emerald Publishers, 2009.
3. Pillai, Radhakrishna. *Emerald English Grammar and Composition.* Chennai: Emerald Publishers, 2016.

REFERENCES

Books

1. *Life Skills (Jeevan Kaushal) Facilitators' Guidelines*. New Delhi: University Grants Commission, 2021.
2. Radha, Alamelu et.al. *Situational Grammar and Composition.* Chennai:New Century Book House Pvt. Ltd,2008.
3. Sadanand, Kamalesh and Susheela Punitha. *Spoken English- A Foundation Course for speakers of Tamil*. Mumbai: Orient Blackswan, 2009.
4. Subramanian A.E. *Gifts to Posterity.* Chennai*: Anu Chitra Publications*, 2003.
5. Taylor, Grant. *English Conversation Practice*. New Delhi: Tata McGraw Hill Publishers, 2001.
6. Tilak, Raghukul. *Sarojini Naidu Selected Poems.* New Delhi: Educational Publishers, 2009.

Web Sources

1. https://allpoetry.com/Laugh-and-be-Merry
2. https://lincolnprep.wildapricot.org/resources/Reading%20Selections%20for%20Reading%20Competion/The%20Highwayman.pdf
3. https://learnenglish.britishcouncil.org/general-english/stories
4. https://www.talkenglish.com/lessonindex.aspx
5. https://www.englishhelper.com/
6. https://www.englishpage.com/

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme – B.Sc. Computer Science
SEMESTER- II
CORE COURSE - III: DATA STRUCTURES AND ALGORITHMS (21UCSC21)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 5 **INT. MARKS : 40**
CREDITS : 5 **EXT. MARKS : 60**
DURATION : 75 hrs **MAX. MARKS: 100**

Preamble

This course familiarizes the learners with basic skills in Data Structure concepts such as Stack, Queue, Linked List, Trees, Graphs, Searching and Sorting.

Course Outcomes (CO)

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

CO1[K1]: describe the fundamental concepts of Data Structure.
CO2[K2]: demonstrate the concepts of Stack, Queue, Linked List, Trees, Graphs, Searching and Sorting.
CO3[K3]: apply Stack, Queue, Linked List and basic sorting technique for a given simple application
CO4[K4]: compare the Stack and Queue, Linked List and Arrays, Trees and Graphs, Searching and Sorting techniques.
CO5[K6]: develop simple Data Structure Programs using Stack, Queue, Linked List, Trees and Graphs.

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	2	1	1	-	1	1
CO2[K2]	3	2	1	1	-	1	1
CO3[K3]	3	2	1	1	1	1	1
CO4[K4]	3	2	1	1	-	1	1
CO5[K6]	3	2	1	1	1	1	1
Weightage of the course	15	10	05	05	02	05	05
Weighted percentage of Course contribution to POs	**2.75**	**2.55**	**2.7**	**1.83**	**1.79**	**2.66**	**2.46**

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

UNIT I **(15 hrs)**

Introduction: Basic Terminology - Classification of Data Structures - Operations on Data Structures - Abstract Data type – Algorithms - Different Approaches to designing an algorithm - Control Structure used in Algorithms - Time and Space Complexity - Big O notation - Omega Notation - Theta notation and other useful notations.

UNIT II **(15 hrs)**

Linked Lists: Introduction – Singly Linked Lists – Circular Linked Lists – Doubly Linked Lists – Applications of Linked Lists

UNIT III **(15 hrs)**

Stacks: Introduction to Stacks – Array Representation of Stacks – Operations on a Stack – Linked Representation of Stacks – Operations on Linked Stacks – Multiple stacks – Applications of Stacks. **Queues:** Introduction to Queues – Array Representation of Queues – Linked Representation of Queues – Types of Queues – Applications of Queues.

UNIT IV **(15 hrs)**

Trees: Introduction – Types of Trees – Creating a Binary tree from a General Tree – Traversing a Binary Tree – Applications of Trees. **Graphs:** Introduction – Graph Terminology – Directed Graphs – Bi-connected Components – Representation of Graphs – Graph Traversal Algorithms – Shortest Path Algorithms.

UNIT V **(15 hrs)**

Searching and Sorting: Introduction to Searching – Linear Search -Binary Search – Introduction to sorting – Bubble Sort - Insertion sort – Selection Sort – Merge Sort - Quick Sort – Comparison of Sorting Algorithms – External Sorting.

TEXTBOOK

1. Reema Thareja. *Data Structures Using C*. Oxford University Press, Second Edition, 2011.

UNIT I : 2
UNIT II : 6.1-6.4, 6.8
UNIT III : 7,8
UNIT IV : 9.1-9.4, 9.6, 13.1-13.6, 13.8
UNIT V : 14.1- 14.3, 14.6-14.11, 14.16,14.17

REFERENCES

Books

1. Aho, Hopcroft and Ullman. *Data Structures and Algorithms*. Pearson Education,1983.
2. Thomas H. Cormen, Charles E. Leiserson, Ronald L.Rivest, Clifford Stein. *Introduction to Algorithms*. Tata Mcgraw Hill, 2002.
3. Yashavant P Kanetkar. *Data Structure Through C*, BPB Publications, 2003.
4. Ellis Horowitz, Sartaj Sahni, Susan Anderson-Freed. *Fundamentals of Data Structures in C*. University Press, 2008.

Web Sources

1. https://www.geeksforgeeks.org/data-structures/
2. https://www.codechef.com/certification/data-structures-and-algorithms/prepare
3. https://www.programiz.com/dsa
4. https://www.cprogramming.com/algorithms-and-data-structures.html

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme – B.Sc. Computer Science
SEMESTER- II
CORE COURSE - IV: PRACTICAL: DATA STRUCTURE (21UCSC2P)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 5 **INT. MARKS : 50**
CREDITS : 4 **EXT. MARKS : 50**
DURATION : 75 hrs **MAX. MARKS: 100**

Preamble

This course helps the learners to implement the Data Structure Concepts which includes Stack, Queue, Linked List, Trees, Graphs, Searching and Sorting.

Course Outcomes (CO)

On successful completion of the course, the learners will be able to
CO1[K2]: demonstrate Prim's, Dijkstra, Kruskal Algorithms.
CO2[K3]: develop simple Data Structure Programs using C.
CO3[K3]: apply Stack, Queue, Linked List and basic sorting technique for a given simple application
CO4[K4]: compare the working of different Searching and Sorting Algorithms.
CO5[K6]: design the Data Structure programs using Trees, Graphs, Searching and Sorting.

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K2]	3	2	1	1	-	-	1
CO2[K3]	3	2	1	1	-	1	1
CO3[K3]	3	2	1	1	-	1	1
CO4[K4]	3	2	1	1	1	1	1
CO5[K6]	3	2	1	-	1	1	1
Weightage of the course	15	10	05	04	02	04	05
Weighted percentage of Course contribution to POs	2.75	2.55	2.7	1.47	1.79	2.13	2.46

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

1. In a small company there are five salesmen. Each salesman is supposed to sell three products. Write a program using a 2D array to print
   (i) the total sales by each salesman and
   (ii) total sales of each item.
2. Write a program to store a polynomial using linked list. Also, perform addition and subtraction on two polynomials.
3. Write a program to reverse a list of given numbers by using Stack.
4. Write a program to implement a circular queue.
5. Write a program which finds the solution of Josephus problem using a circular linked list.
6. Write a program to implement the breadth-first search algorithm.
7. Write a program to implement the depth-first search algorithm.
8. Write a program to implement the Prim's Algorithm.
9. Write a program to implement the Kruskal Algorithm
10. Write a program to implement Dijikstra algorithm to find the shortest path.
11. Write a program to search an element in an array using the linear search technique.
12. Write a program to search an element in an array using binary search.
13. Write a program to sort an array using insertion sort algorithm.
14. Write a program to sort an array using selection sort algorithm.
15. Write a program to implement merge sort.
16. Write a program to implement quick sort algorithm.

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. (COMPUTER SCIENCE/INFORMATION TECHNOLOGY)/BCA
SEMESTER - II
ALLIED COURSE - II: OPERATIONS RESEARCH
(21UCSA21/21UITA21/21UCAA21)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 4 **INT. MARKS : 40**
CREDITS : 4 **EXT. MARKS : 60**
DURATION : 60 hrs **MAX. MARKS: 100**

Preamble

This course introduces the learners to the importance of Operations Research and some techniques to arrive at optimal solutions to complex decision-making problems.

Course Outcomes (CO)

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

CO1[K1]: state the scope, phases of operations Research and the classification of optimization models

CO2[K2]: explain the computational algorithms for various optimization methods

CO3[K3]: compute optimum solution of the linear programming, transportation, and assignment problems

CO4[K4]: examine the solutions of the optimization problems

CO5[K6]: formulate the mathematical expression of the linear programming model from the study of the situation and derive solutions to the problem

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	1	1	-	-	-	-	-
CO2[K2]	2	3	1	1	-	-	-
CO3[K3]	2	3	2	1	-	1	1
CO4[K4]	2	3	2	1	-	1	1
CO5[K6]	2	3	2	1	-	2	2
Weightage of the course	09	13	07	04	-	04	04
Weighted percentage of Course contribution to POs	**1.65**	**3.32**	**3.78**	**1.47**	**0**	**2.13**	**1.97**

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

UNIT I **(12 hrs)**

Origin and Development of OR: Introduction – Definitions – Scope of Operations Research – Phases of OR – Models in Operations Research – Advantages of a Model – Classification of Models. **Linear Programming:** Introduction – Formulation of LP Problems.

UNIT II **(12 hrs)**

Graphical Method: Procedure of Solving LPP by Graphical Method – General Formulation of LPP – Matrix Form of LPP – Some Important Definitions – Canonical or Standard Forms of LPP. **Simplex Method:** Introduction – Definition – Simplex Algorithm.

UNIT III **(12 hrs)**

Artificial Variables Technique: Introduction – The Big M Method – Two phase Simplex Method – Degeneracy – Unbounded Solution.

UNIT IV **(12 hrs)**

Transportation Problem: Introduction –Mathematical Formulation – Definitions – Optimal Solution – Optimality Test.

UNIT V **(12 hrs)**

Assignment Problem: Introduction – Definition – Hungarian Method Procedure – Unbalanced Assignment Problem–Maximisation in Assignment Problem.

TEXTBOOK

1. S.Kalavathy. *Operations Research.* NewDelhi: Vikas Publishing House Pvt Ltd, Second Edition, 2007.

REFERENCES

Books

1. S.Arumugam and A.Thangapandi Isaac. *Operations Researchs Volume (Linear Programming).* Palayamkottai: New Gamma Publishing House, 2003.
2. S.D.Sharma. *Operations Research.* Meerut: Kedar Nath Ram Nath & Co, 2000.
3. R.Panneerselvam. *Operations Research.* New Delhi:Prentice Hall of India Private Limited, Second Edition, 2006.

Web Sources

1. https://college.cengage.com/mathematics/larson/elementary_linear/4e/shared/downloads/c09s3.pdf
2. https://people.bath.ac.uk/masss/ma30087/handout6.pdf
3. https://youtu.be/BUGIhEecipE
4. https://www.google.co.in/books/edition/Operations_research/Ez_JBUtbglIC?hl=en&gbpv=1&dq=operation+research+by+gupta&printsec=frontcover
5. https://www.google.co.in/books/edition/Operations_Research/0EE8BAAAQBAJ?hl=en&gbpv=1&dq=operation+research+by+gupta&printsec=frontcover

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI

UG PROGRAMME

SEMESTER – II

ABILITY ENHANCEMENT COMPULSORY COURSE-II : VALUE EDUCATION

(21UVED21)

(From 2021 - 2022 Batch onwards)

HOURS/WEEK: 1 **INT. MARKS : 40**

CREDIT : 1 **EXT. MARKS : 60**

DURATION : 15 hrs **MAX. MARKS: 100**

Preamble

This course aims to promote the values of peace, non-violence, religious tolerance and secular thinking among the learners and equip the learners for a harmonious living in the multi-cultural pluralistic society.

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 inPeace

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

CO4[K4]: analyze emotional, social, spiritual attribute to acquire well balancedPersonality

CO5[K4]: examine 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 [K4]	1	1	-	1	2	1	1
Weightage of the Course	08	05	01	05	09	04	07
Weighted percentage of Course contribution to Pos	**1.47**	**1.28**	**0.54**	**1.83**	**8.04**	**2.13**	**3.45**

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

UNIT I – VALUES AND INDIVIDUAL (3 hrs)

Meaning of values – classification of values – Need for value education – Personal values like adaptability, courage, cheerfulness, dignity of labour and self control – Self discipline - Self Confidence - Self initiative - Social values like sacrifice, forgiveness, Honesty, good manners, tolerance, friendship, hospitality, cooperation and civic sense – Moral values like purity, dedication, punctuality, loyalty, truthfulness and sense of duty.

UNIT II – VALUES AND SOCIETY (3 hrs)

Definition of society – democracy – secularism – socialism – Human rights – social integration – Social Justice – Role models: Akbar, Balagangadhar Tilak, Abdul Kalam, Mother Teresa.

UNIT III – VALUES AND RELIGIONS (3 hrs)

Values in Hinduism, Christianity, Islam and Buddhism – Need for religious harmony inter faith dialogue – Role Models: Vivekananda, Narayana Guru, Aravindar, Tagore, Vallalar Ramalingar, Gandhi.

UNIT IV – VALUES AND NATIONAL INTEGRATION (3 hrs)

Secularism and National Integration – Message from the life of Gandhiji, Nehru, Bharathi, Subash Chandra Bose, Sarojini Naidu etc.

UNIT V – VALUES AND SCIENCE (3 hrs)

Indian Gurus – Indian Scientists – Indian Universities – Indian Mathematicians and World Scientists – Science and Religion – Science, Technology development and values – Science and Human values.

TEXTBOOK

1. Pitchaikani Prabhaharan, A. Babu Franklin, M.Archanadevi, *Value education*, Sri Kaliswari college (Autonomous), Sivakasi, 2017.

REFERENCES

Books

1. Subramanyam, K. *Values in Education*, Ramana Publications, 1995
2. Swamy Chidbhavananda, *Indian National Education*, Publication by Ramakirshna Tapovanam.
3. அறிஞர் குழு (தொகுப்பு). *வாழ்வியல் விழுமியங்கள்*, உலக சமுதாய சேவா சங்கம், ஆழியாறு.

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 COMPUTER SCIENCE
UG Programme – B.Sc. Computer Science
SEMESTER- II
SKILL ENHANCEMENT COURSE - II: PRACTICAL: DTP AND MULTIMEDIA
(21UCSS2P)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 2 **INT. MARKS : 50**
CREDIT : 1 **EXT. MARKS : 50**
DURATION : 30 hrs **MAX. MARKS: 100**

Preamble

This course introduces the learners to develop and edit images to create simple animated videos and graphics using standard tools.

Course Outcomes (CO)

On successful completion of the course, the learners will be able to
CO1[K2]: demonstrate the vector image editor tools and prototyping tools.
CO2[K3]: use the Smudge tool, lasso tool and filters to add effects to images.
CO3[K4]: examine the tools used for creating effects in images and animation
CO4[K5]: select suitable Tween, shape and timeline effects to develop animated images and videos.
CO5[K6]: create flyers, brochures and animated files.

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K2]	3	1	-	1	-	1	1
CO2[K3]	3	1	-	1	-	1	1
CO3[K4]	3	1	-	1	-	1	1
CO4[K5]	2	2	-	1	1	2	1
CO5[K6]	2	2	-	1	1	2	1
Weightage of the course	13	07	00	05	02	07	05
Weighted percentage of Course contribution to POs	**2.39**	**1.79**	**0**	**1.83**	**1.79**	**3.72**	**2.46**

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

VECTOR IMAGE EDITOR TOOL

1. Design a Identity Card
2. Design a Newspaper Advertisement
3. Design a Logo
4. Design a Certificate/brochures
5. Design a Wedding Invitation / Book Cover
6. Design a Webpage
7. Design a Mobile Application

GUI PROTOTYPING TOOL

1. A Simple walk cycle animation
2. Create a family Album
3. Make a Rainfall simulation
4. Bow and arrow simulation to hit the target
5. Design an interactive Quiz page
6. Blinking eye animation
7. Bouncing ball animation

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
UG PROGRAMME
SEMESTER – II
DISASTER MANAGEMENT (21UDMG21)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 1 **INT. MARKS : 40**
CREDIT : 1 **EXT. MARKS : 60**
DURATION : 15 hrs **MAX. MARKS: 100**

Preamble

This course introduces the learners to know the causes and impact of disasters and the agencies for disaster management in India.

Course Outcomes (CO)

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

CO1[K1]: outline the causes and impact of disasters.
CO2[K2]: explain the features of national policy on disaster management.
CO3[K3]: present the issues in rehabilitation.
CO4[K4]: classify the mitigation measures.
CO5[K5]: assess the role of the agencies for disaster management.

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	2	1	1	1	-	2	2
CO2[K2]	2	1	-	1	-	-	1
CO3[K3]	1	2	1	1	-	-	2
CO4[K4]	1	2	-	1	1	2	2
CO5[K5]	1	2	-	1	1	-	1
Weightage of the course	07	08	02	05	02	04	08
Weighted percentage of Course contribution to POs	**1.28**	**2.04**	**1.08**	**1.83**	**1.79**	**2.13**	**3.94**

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

UNIT I **(3 hrs)**

Introduction – Disaster – Hazards – Causes and Impact of Disasters – Levels of Disaster – Casual Factors of Disaster – Phases of a Disaster.

UNIT II **(3 hrs)**

Disaster Mitigation – Risk Reduction Measures – Mitigation Actions – Disaster Management Cycle – Classification of Mitigation Measures.

UNIT III **(3 hrs)**

Disaster Preparedness and Planning – Objectives – Strategies – Elements of Disaster Preparedness – Principles of Disaster Planning.

UNIT IV **(3 hrs)**

Disaster Rehabilitation – Issues in Rehabilitation – Objectives – Approaches – Elements of a Rehabilitation Programme.

UNIT V **(3 hrs)**

Framework Disaster Management in India – Features of National Policy on Disaster Management – Primary and Secondary Relief Functions of Central Government – Disaster Management Act 2005 – Agencies for Disaster Management: India Red Cross Society, NIDM – Bharat Scouts and Guides, India Paramilitary Forces.

TEXTBOOK

1. Satish Modh. *Introduction to Disaster Management*. New Delhi: Macmillan Publishers India Limited, First Edition, 2015.

REFERENCES

Books

1. Balamurugan P K and Ajith Kumar S. *Disaster Management*. Chennai: New Century Book House Private Limited, First Edition, 2020.
2. Dasgupta R. *Disaster Management and Rehabilitation.* New Delhi: Mittal Publications, First Edition, 2010.
3. Narayanan B. *Disaster Management*. NewDelhi: A.P.H. Publishing Corporation,First Edition, 2009.

Web Sources

1. https://nptel.ac.in/courses/105/104/105104183/
2. https://nidm.gov.in/

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF TAMIL
UG Programme - B.A/B.Sc/BCA
SEMESTER - III
பொதுத்தமிழ் - III (21UTAL31)
(From 2021-2022 Batch onwards)

HOURS/WEEK : 6 **INT. MARKS : 40**
CREDITS : 3 **EXT. MARKS : 60**
DURATION : 90 hrs **MAX. MARKS: 100**

நோக்கம்

காப்பியம், சிற்றிலக்கியம், உரைநடை உள்ளிட்ட இலக்கிய வகைகளை அறிமுகம் செய்து, அவற்றைச் சமூக, சமயச் சூழலில் விளங்க வைத்து,யாப்பு,அணி உள்ளிட்ட மொழிக் கட்டமைப்புகளை உணர்த்தி,உரைநடை மூலம ் படைப்பாளராகும் தகுதியைப் பெற வைத்து,பல்வேறு நிகழ்வுகளில் நடைபெறும் போட்டிகளில் பங்கேற்கச் செய்யும் வகையில் இத்தாள் வடிவமைக்கப்பட்டுள்ளது.

கற்றலின் பயன்கள்

இத்தாளை வெற்றிகரமாக முடித்தவுடன் மாணவர்கள்,

CO1[K1]: காப்பியங்களில் கூறப்பட்டுள்ள வாழ்வியல் நெறிகளாகிய அறம்,பொருள், இன்பம்,வீடு ஆகியவற்றைப் பற்றிஅறிவர்.

CO2[K2]: செய்யுட்களில் இடம்பெறும் அணிநலன்களைக் காண்பர்.

CO3[K3]: யாப்புமரபைக் கற்றுணர்ந்து கவிதையை இனம் காணும் ஆற்றலைப் பெறுவர்.

CO4[K4]: சிற்றிலக்கியங்கள் உணர்த்தும் சமூகத்தையும் விழுமியத்தையும் விவாதிக்கும் திறனைப் பெறுவர்.

CO5[K4]: சமயங்கள் உணர்த்தும் அறக்கருத்துக்களைப் பகுப்பாய்வுசெய்வர்.

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[K4]	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	1.83	2.04	1.08	2.93	1.79	1.06	0.99

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

கூறு I **(18 hrs)**

காப்பியம்I:காப்பிய இலக்கியவரலாறு,சிலப்பதிகாரம் - அடைக்கலக்காதை (முழுவதும்) - மணிமேகலை - பளிக்கறைபுக்ககாதை (முழுவதும்) - சீவகசிந்தாமணி - காந்தர்வதத்தையார் இலம்பகம் (தேர்ந்தெடுக்கப்பட்ட 15 பாடல்கள்) - சிலைத்தொழிற் (657),கருங்கொடிப் புருவம் (658),திருமலர்க் கமலத் (662),விடுகணைவிசையின் (701),கழித்தவேலேறு (715),தடங்கணாள் பணியினால் (716),சுரந்துவானம் (717),நீர்நின் றளகிற் (718),கல்சேர் பூண்கொள் (719), இருநிலமடந்தை (720),தீந்தொடைநரம்பின் (721),பணிவரும் (722),விண்ணவர் வியப்ப (729),பருந்தும் நிழலும் (730),பண்ணொன்றுபாட (735)

கூறு II **(18 hrs)**

காப்பியம் II:திருவிளையாடற்புராணம் - கடல் சுவறவேல்விட்டபடலம் முழுவதும் - (19 பாடல்கள்) - கம்பராமாயணம் - ஆரணியகாண்டம் - சவரிபிறப்புநீங்குபடலம் முழுவதும் (9 பாடல்கள்) - பாரதிதாசன் - சஞ்சீவிபர்வதத்தின் சாரல் (முழுவதும்)

கூறு III **(18 hrs)**

சிற்றிலக்கியம்:சிற்றிலக்கியவரலாறு,காரைக்காலம்மையார் - அற்புதத் திருவந்தாதி - (1-15 பாடல்கள்) - மீனாட்சியம்மைபிள்ளைத்தமிழ்-வருகைப்பருவம் (10 பாடல்கள்) - முக்கூடற்பள்ளு - குடிமை - பெருமை (12-22 பாடல்கள்)

கூறு IV **(18 hrs)**

உரைநடை:உரைநடையின் தோற்றமும் வளர்ச்சியும்,சொல்லின்செல்வன் - க.நஞ்சையன்,படிப்பதுஎப்படி? - ம.திருமலை,தொல்காப்பியத்தில் கோளியல் நெறி - ச.பாரிஜாதம்,பாவேந்தரின் சமுதாயப் பார்வை - பாக்கியமேரி, இசையும் இயல்பும் - கி.ஈஸ்வரி,கம்பராமாயணத்தில் உறவுகள் - பெ.மகேஸ்வரி

கூறு V **(18 hrs)**

யாப்பு:பாவின் பொதுவிலக்கணமும் வகைகளும்(வெண்பா - ஆசிரியப்பா - கலிப்பா - வஞ்சிப்பா)**அணிகள்:**உவமையணி - உருவகஅணி - பிறிதுமொழிதல் அணி - வேற்றுமையணி - தற்குறிப்பேற்றஅணி - சிலேடைஅணி

பாடநூல்

1. *தொகுப்பு நூல்*,தமிழியல்துறை,ஸ்ரீ காளீஸ்வரி கல்லூரி (தன்னாட்சி),சிவகாசி.

பார்வைநூல்கள்

1. சீனிவாசன், ரா. *சீவகசிந்தாமணி*,அணியகம்,சென்னை, 2000.
2. தமிழண்ணல்.*புதியநோக்கில் தமிழ் இலக்கியவரலாறு*,மீனாட்சிபுத்தகநிலையம்,மதுரை,2008.
3. ஜகந்நாதன். கி.வா. *தமிழ்க் காப்பியங்கள் (ஆராய்ச்சி)*,அமுதநிலையம் லிமிடெட்,சென்னை, 1991.

வலைப்பதிவுகள்(Web Sources)

1. https://youtu.be/AY7R2D2GGQA
2. https://youtu.be/hmqTbZjrnu0
3. www.tamilvu.org/ta/courses-degree-c031-c0313-html-c03132I1-18030
4. https://ta.m.wikipedia.org/wiki/தமிழில்சிற்றிலக்கியங்கள்
5. https://youtu.be/Q7du9EglmBg

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF ENGLISH
UG Programme - B.A./B.SC./BCA
SEMESTER- III
COMMUNICATIVE ENGLISH - III (21UENL31)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 6 **INT. MARKS : 40**
CREDITS : 3 **EXT. MARKS : 60**
DURATION : 90 hrs **MAX. MARKS : 100**

Preamble

This course helps the learners to develop their communication skills in English through listening, speaking, reading and writing practices.

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 listening to telephonic conversations

CO2[K2]: demonstrate effective speaking skills by making speech presentations, discussing television programmes and sports events

CO3[K3]: apply knowledge of word power and grammar rules through diary writing, dialogue writing and writing newspaper reports

CO4[K4]: analyze short fiction to develop language skills through literature

CO5[K6]: construct grammatically correct and logically coherent essays on global problems and environmental issues

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[K6]	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	**1.83**	**2.04**	**1.62**	**3.3**	**2.68**	**1.6**	**0.99**

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

UNIT I -LISTENING AND SPEAKING **(18 hrs)**

A. Listening

Listening to short speech

Listening to telephonic conversation

Listening to poetry

B. Speaking

Telephone etiquette in telephone conversation

Answering the Telephone and asking for someone

Making enquiries on the phone, Leaving messages

Presentation: Global Warming, Pollution, Women Empowerment, Communicable Diseases, System of Education, Economy, Industry, Government etc

Discussion: Television Programmes, Lessons, College facilities, Local facilities, Sports-watching or Playing, Types of food, Types of transport.

UNIT II - READING AND WRITING **(18 hrs)**

Reading: Comprehension Passages: Newspaper articles, Reports and Paraphrase Stories.

Writing: Diary Writing**,** Dialogue Writing**,** Report Writing: Newspaper Reports, Field visits, Meetings and Future Plans

UNIT III - WORD POWER **(18 hrs)**

Portmanteau words

Idioms & Phrases

Words related to- Work, Time, Distance and Dimension, Environment, The Natural World and Global Problems

UNIT IV - GRAMMAR **(18 hrs)**

Sentence-Subject and Predicate

Kinds of Sentences

Sentence Patterns

Question Words and Framing Questions

Question Tags

Degrees of Comparison

Voice

UNIT V - LANGUAGE THROUGH LITERATURE **(18 hrs)**

Abridged version of Fiction

Alexandre Dumas - The Count of Monte Cristo

Charles Dickens	- Oliver Twist
R.M.Ballantyne	- The Coral Island

TEXTBOOKS

1. Dickens, Charles. *Oliver, Twist*. Chennai: Nesting Books Publishing and Distributors (p) Ltd, 2018.
2. Dumas, Alexandre. The *Count of Monte Cristo*. Chennai: Nesting Books Publishing and Distributors (p) Ltd, 2018.
3. Carthy Mc., and Felicity O'Dell. *English Vocabulary in Use (Upper intermediate)*. UK: Cambridge University Press, 2005.
4. Pillai, Radhakrishna and K.Rajeevan. *Spoken English for You (Level One)*. Chennai: Emerald Publishers, 2009.

REFERENCES

Books

1. *Life Skills* (Jeevan Kaushal) *Facilitators' Guidelines*. New Delhi: University Grants Commission, 2021.
2. Dickens, Charles. *Oliver Twist*. Bangalore: Vasan Publications, 2011.
3. Sadanand, Kamalesh and Susheela Punitha. *Spoken English- A Foundation Course for speakers of Tamil*. Mumbai: Orient Blackswan, 2009.
4. Taylor, Grant. *English Conversation Practice*. New Delhi: Tata McGraw Hill Publishers, 2001.

Web Sources

1. https://www.cleverism.com/skills-and-tools/presentation-skills/
2. https://www.vappingo.com/word-blog/86-great-examples-of-portmanteau/
3. https://blog.hubspot.com/service/phone-etiquette
4. https://www.talkenglish.com/lessonindex.aspx
5. https://www.englishhelper.com/
6. https://www.englishpage.com/

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science
SEMESTER- III
CORE COURSE - V: RELATIONAL DATABASE MANAGEMENT SYSTEMS
(21UCSC31)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 5 **INT. MARKS : 40**
CREDITS : 5 **EXT. MARKS : 60**
DURATION : 75 hrs **MAX. MARKS: 100**

Preamble

This course familiarizes the learners with database creation, SQL query operations and concurrency transaction operations.

Course Outcomes (CO)

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

CO1[K1]: outline the fundamental concepts and relational language

CO2[K2]: explain database architecture, relational algebra, structure of relational database, advanced SQL Concepts, normalization, transaction model and concurrency control

CO3[K3]: use keys in database schema, aggregate function in queries and nested sub queries, functional dependencies in decomposition

CO4[K4]: analyze query languages, relational algebra and SQL query language

CO5[K6]: design database schema and perform SQL and PLSQL operations on table data.

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	2	1	1	1	1	1
CO2[K2]	3	2	1	1	1	1	1
CO3[K3]	3	2	1	-	-	1	1
CO4[K4]	3	2	1	1	-	1	1
CO5[K6]	3	2	1	-	-	1	1
Weightage of the course	15	10	05	03	02	05	05
Weighted percentage of Course contribution to POs	**2.75**	**2.55**	**2.7**	**1.1**	**1.79**	**2.66**	**2.46**

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

UNIT I **(15 hrs)**

Introduction: Database-System Applications - Purpose of Database Systems **-**View of Data - Database Languages - Database Design - Database Engine - Database and Application Architecture -Database Users and Administrators. **Relational Languages:** Structure of Relational Databases -Database Schema - Keys- Schema Diagrams -Relational Query Languages - The Relational Algebra.

UNIT II **(15 hrs)**

Introduction to SQL: Overview of the SQL Query Language - SQL Data Definition - Basic Structure of SQL Queries - Additional Basic Operations - Set Operations - Null Values - Aggregate Functions - Nested Sub queries - Modification of the Database. **Intermediate SQL:** Join Expressions - Views -**Advanced SQL:** Accessing SQL from a Programming Language - Functions and Procedures – Triggers.

UNIT III **(15 hrs)**

Database Design Using the E-R Model: The Entity-Relationship Model-Complex Attributes - Mapping Cardinalities - Primary Key - Removing Redundant Attributes in Entity Sets - Reducing E-R Diagrams to Relational.

UNIT IV **(15 hrs)**

Relational Database Design: Features of Good Relational Designs - Decomposition Using Functional Dependencies-Normal Forms - Functional-Dependency Theory - Algorithms for Decomposition Using Functional Dependencies - Decomposition Using Multivalued- Dependencies - More Normal Forms - Atomic Domains and First Normal Form - Database-Design Process - Modeling Temporal Data.

UNIT V **(15 hrs)**

Transactions: Transaction Concept - Simple Transaction Model - Storage Structure - Transaction Atomicity and Durability - Transaction Isolation – Serializability - Transaction Isolation and Atomicity. **Concurrency Control:** Lock**-**Based Protocols - Deadlock Handling - Multiple Granularity - Insert Operations, Delete Operations, and Predicate Reads - Timestamp-Based Protocols-Validation-Based Protocols.

TEXTBOOK

1. Abraham Silberschatz, Henry F.Korth, S.Sudarshan. *Database System Concepts.* Mc Graw Hill Education, Seventh Edition, 2020.

   UNIT I : 1.1-1.7,2
   UNIT II : 3,4.1-4.2,5.1-5.3
   UNIT III: 6.2-6.7
   UNIT IV : 7

UNIT V : 17.1-17.7,18.1-18.6

REFERENCES

Books

1. Ramez Elmasri, Shamkant B.Navathe. *Fundamentals of Database Systems.* Pearson India Pvt. Ltd, 2017.
2. Anthony Molinaro, *SQL Cookbook.* O'Reilly Media, 2005.
3. CarPLlos coronel and Steven Morris. *Database Systems: Design, Implementation, and Management.* Cengage Learning.

Web Sources

1. https://www.khanacademy.org/computing/computer-programming/sql
2. https://learnsql.com/
3. https://www.studytonight.com/dbms/

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science
SEMESTER- III
CORE COURSE - VI: PRACTICAL: SQL AND PLSQL (21UCSC3P)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 5 **INT. MARKS : 50**
CREDITS : 4 **EXT. MARKS : 50**
DURATION : 75 hrs **MAX. MARKS: 100**

Preamble

This course introduces the learners to the definition of database and enables them to present the concepts and techniques relating to query processing.

Course Outcomes (CO)

On successful completion of the course, the learners will be able to
CO1[K2]: specify commands to create, alter and handle tables and views
CO2[K3]: apply limit, range queries and use string, aggregate and date function
CO3[K3]: perform join and exception handling while accessing data
CO4[K6]: construct PL/SQL program to execute procedure, function and cursor
CO5[K6]: create trigger to handle database event

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K2]	3	3	-	1	-	-	1
CO2[K3]	3	3	-	1	-	1	1
CO3[K3]	3	2	1	1	1	1	1
CO4[K6]	3	2	1	-	1	1	1
CO5[K6]	3	2	2	-	1	1	1
Weightage of the course	15	12	04	03	03	04	05
Weighted percentage of Course contribution to POs	**2.75**	**3.06**	**2.16**	**1.1**	**2.68**	**2.13**	**2.46**

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

SQL

1. Demonstrate DDL Commands by Creating and Altering Tables
2. Demonstrate DML commands using Multiple tables.
3. Demonstrate Various Aggregate functions of SQL.
4. Demonstrate Date and String functions in SQL.

5. Demonstrate Joins queries with Multiple tables
6. Demonstrate the concept of Views by creating view with selected fields
7. Demonstrate limit and range queries in large table
8. Demonstrate import and export data into and from database

PL/SQL

9. Write PL/SQL Program to implement Built –in Exception
10. Write PL/SQL Program to implement User defined Exception.
11. Write PL/SQL Program to demonstrate the working of Procedures
12. Write PL/SQL Program to demonstrate the working of Functions
13. Write PL/SQL Program to demonstrate the working of Trigger
14. Write PL/SQL Program to demonstrate the working of Cursor

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF MATHEMATICS
UG Programme - B.Sc. Computer Science
SEMESTER - III
ALLIED COURSE - III: NUMERICAL METHODS FOR SCIENTIFIC COMPUTATION (21UCSA31)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 4 **INT. MARKS : 40**
CREDITS : 4 **EXT. MARKS : 60**
DURATION : 60 hrs **MAX. MARKS: 10**

Preamble

This course introduces the learners to some basic techniques for the efficient numerical solution of problems in science and analyze approximation errors in the process of computation.

Course Outcomes (CO)

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

CO1[K2]: explain the methods of solving the problems in science numerically

CO2[K3]: apply numerical methods to obtain approximate solutions of algebraic, transcendental and differential equations

CO3[K3]: apply numerical techniques to compute numerical differentiation and integration of given functions

CO4[K4]: analyze error arising in numerical computation of solutions to mathematical and applied problems

CO5[K5]: determine the method of interpolation to estimate the unknown data value between known data values

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K2]	2	2	1	1	-	-	-
CO2[K3]	2	2	1	1	-	1	1
CO3[K3]	2	2	1	1	-	1	1
CO4[K4]	2	3	2	1	-	1	1
CO5[K5]	2	3	2	1	-	1	1
Weightage of the course	10	12	07	05	-	04	04
Weighted percentage of Course contribution to POs	**1.83**	**3.06**	**3.78**	**1.83**	**0**	**2.13**	**1.97**

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

UNIT I **(12 hrs)**

Numerical Solutions of Algebraic and Transcendental Equation: Introduction – Horner's Method – Bolzano's Bisection Method – Fixed Point Iteration or Simple Iteration Method – Method of False Position (Regula Falsi Method) – Newton Raphson Method – Muller Method – Chebyshev Method.

UNIT II **(12 hrs)**

Solution of Simultaneous Linear Algebraic Equations and Eigen value Problems: Introduction **–** Direct Methods-Gauss Elimination Method – Gauss Jordan Elimination Method – Method of Triangular Decomposition or Factorization – Crout's Reduction Method – Iterative Methods of Solving Simultaneous Equations – Jacobi's Method – Gauss Seidel Iteration Method.

UNIT III **(12 hrs)**

Interpolation with Equal Intervals: Introduction – Gregory Newton's Forward Interpolation Formula for Equal Intervals – Gregory Newton's Backward Interpolation Formula for Equal Intervals – Central Difference Interpolation Formulae – Gauss's Forward Interpolation Formula – Gauss's Backward Interpolation Formula – Stirling's Interpolation Formula – Bessel's Interpolation Formula – Laplace Everett Interpolation Formula – Relation Between Bessel's and Laplace Everett Formula. **Interpolation with Unequal Intervals :** Introduction – Divided Differences – Properties of Divided Differences – Lagrange's Interpolation Formula for Unequal Intervals – Alternative Form of Lagrange's Formula.

UNIT IV **(12 hrs)**

Numerical Differentiation and Integration: Introduction – Values of the Derivatives of y, Based on Newton's Forward Interpolation Formula – Values of Derivatives of y, Based on Newton's Backward Interpolation Formula – Values of Derivatives of y, Based on Stirling's Formula – Numerical Integration – Newton's-Cote's Quadrature Formula – Trapezoidal Rule – Composite Trapezoidal Rule – Truncation Error in Trapezoidal Rule – Simpson's One Third Rule – Composite Simpson's One Third Rule – Truncation Error in Simpson's One Third Rule – Simpson's Three Eighths Rule – Composite Simpson's Three Eighths Rule – Weddle's Rule – Composite Weddle's Rule – Romberg's Method.

Unit V **(12 hrs)**

Numerical Solution of Ordinary Differential Equations: Introduction – Numerical Solution of a Differential Equation – Euler's and Runge Kutta's Methods – Comparison of Taylor Series Method and R.K.Method – Local and Global Truncation Errors.

TEXTBOOK

1. T.Veerarajan and T.Ramachandran. *Numerical Methods With Programs in C*. New Delhi : Tata McGraw – Hill Publishing Company Limited, Second Edition, 2007.

REFERENCES

Books

1. P.Kandasamy, K.Thilagavathy and K.Gunavathi*. Numerical Methods*. New Delhi : S.Chand and Company Ltd, 2012.
2. S.Kalavathy. *Numerical Methods*. Chennai : Vijay Nicole Imprints Pvt Ltd, 2004.
3. S.Arumugam, A.Thangapandi Isaac and A.Somasundaram. *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/2020040322 50571912siddharth_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 COMPUTER SCIENCE
UG Programme – B.Sc. Computer Science
SEMESTER- III
NON-MAJOR ELECTIVE COURSE - I: FUNDAMENTALS OF COMPUTERS
(21UCSN31)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 2 **INT. MARKS : 40**
CREDIT : 1 **EXT. MARKS : 60**
DURATION : 30 hrs **MAX. MARKS: 100**

Preamble

This course introduces the learners to the basic functions of computers, its parts and enhances the knowledge about Operating systems and Computer networks.

Course Outcomes (CO)

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

CO1 [K1]: describe anatomy of computer, memory unit, input and output units, basics of operating system, computer software and computer networks

CO2 [K2]: explain characteristics, generations and classification of computers, memory unit, input and output units, fundamentals of operating system and computer networks

CO3 [K3]: perform numeric conversions and binary arithmetic operations using number system

CO4 [K4]: distinguish various generations of computer, types of printer, types of network topologies and types of ROM

CO5 [K4]: examine classification of computers, input and output devices and types of network

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	-	-	2	-	1	1
CO2[K2]	2	-	-	2	-	1	1
CO3[K3]	2	-	-	1	-	1	1
CO4[K4]	1	3	-	1	-	1	1
CO5[K4]	1	2	-	2	-	1	1
Weightage of the course	09	05	00	08	00	05	05
Weighted percentage of Course contribution to POs	**1.65**	**1.28**	**0**	**2.93**	**0**	**2.66**	**2.46**

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

UNIT I **(6 hrs)**

Introduction to Computers: Introduction – Characteristics of Computer – Generations of Computer – Classification of Computer. **Anatomy of Computer:** Functions and components of computer – CPU – ALU – Memory – Registers – Addresses – Working of CPU and Memory.

UNIT II **(6 hrs)**

Memory Units: RAM –ROM – PROM – EPROM – EEPROM – Flash Memory. **Input Units:** Introduction – Keyboard – Mouse – Trackball – Joystick – Digitizing Tablet – Scanners – Digital Camera – MICR – OCR – OMR – Barcode reader. **Output Units:** Introduction – Monitor – Printer – Plotter – Sound cards and speakers – 3D Audio.

UNIT III **(6 hrs)**

Number System and Binary Arithmetic: Introduction – Decimal number system – Binary number system – Binary to decimal conversion – Decimal to binary conversion – Binary Addition – Binary subtraction – Complements – Octal number system – Hexadecimal number system.

UNIT IV **(6 hrs)**

Operating System: Introduction – Functions of an Operating system – Classification of Operating system. **Computer Software:** Operating system – utilities – Compilers and interpreters – Word processors – Spreadsheets – Presentation graphics – DBMS. **Image Processors:** Paint programs – Draw programs – Image editors

UNIT V **(6 hrs)**

Computer Networks: Introduction – Overview of Network – Communication Processors – Communication Media – Telecommunication software – Types of Network – Network Topologies – Network Protocols – Network Architecture.

TEXTBOOK

1. Alexis Leon, Mathews Leon. *Fundamentals of Computer Science and Communication Engineering*. Chennai: Leon Tech World,

   UNIT I : 2.1, 2.2, 3.1-3.6, 4.1-4.4, 6.1-6.4
   UNIT II : 7.1-7.3, 8.1-8.6, 9
   UNIT III : 5.1-5.5,5.11,5.12
   UNIT IV : 15.1-15.5, 12
   UNIT V : 6

REFERENCES

Books

1. P.K.Sinha. *Computer Fundamentals*. BPB publications, 2004.
2. Deepak Bharihoke. *Fundamentals of Information Technology*. Pentagon Press, 2000.
3. E Balagurusamy. *Fundamentals of Computer.* McGraw-Hill Education, 2009.

Web Sources

1. https://www.tutorialspoint.com/computer_fundamentals/index.htm
2. http://www.lsp4you.com/electronics/Generation%20of%20Computers.pdf
3. https://www.tutorialspoint.com/computer_fundamentals/computer_software.htm

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme – B.Sc. Computer Science
SEMESTER- III
SKILL ENHANCEMENT COURSE – III: PRACTICAL: LINUX AND SHELL PROGRAMMING (21UCSS3P)
(From 2021-2022 Batch onwards)

HOURS/ WEEK: 2 **INT. MARKS : 50**
CREDIT : 1 **EXT. MARKS : 50**
DURATION : 30 hrs **MAX. MARKS: 100**

Preamble

This course introduces the learners to the fundamental concepts -Unix, Linux general purpose commands and the shell programming.

Course Outcomes (CO)

On successful completion of the course, the learners will be able to
CO1[K2]: illustrate the basic UNIX general purpose commands
CO2[K3]: apply linux commands in shell programming
CO3[K3]: perform different file operations in shell programming
CO4[K4]: examine sort, grep and file commands
CO5[K5]: choose the appropriate shell commands to develop simple applications

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K2]	3	2	1	1	-	-	-
CO2[K3]	3	2	1	1	-	-	-
CO3[K3]	2	2	1	1	-	-	-
CO4[K4]	2	1	1	1	1	1	1
CO5[K5]	2	2	1	1	1	1	1
Weightage of the course	12	09	05	05	02	02	02
Weighted percentage of Course contribution to POs	**2.2**	**2.3**	**2.7**	**1.83**	**1.79**	**1.06**	**0.99**

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

1. Basic Commands (ls, cat, touch,time)
2. Basic Commands (sudo, rm, man, clear, mkdir, rmdir, pr)
3. Basic Commands (grep, kill, nice, pmap, date, whoami, sort)

4. Write a menu driven shell script to execute the following commands: cat, touch, cal, time, date.
5. Write a shell script to execute basic arithmetic operations
6. Write a shell script to find the sum of digits of a given number
7. Write a shell script to demonstrate an if statement
8. Write a shell script to find out the factorial of a given number using for loop
9. Write a Shell script to check whether a given name is File or Directory
10. Write a shell script to display date in the mm/dd/yy format.
11. Write a shell script to modify — cal command to display calendars of the specified Months
12. Write a shell script to merge the contents of three files, sort the contents and then display them page by page
13. Write a script to encrypt and decrypt a text file
14. Write a Shell script to Sort the employee file
15. Write a shell program which accepts the name of the file form the standard input device and perform the following operations:
    I. Store 5 names into the file
    II. Sort the names in ascending order
    III. List unsorted and sorted file
    IV. Quit

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF TAMIL
UG Programme - B.A./B.SC./BCA
SEMESTER-IV
பொதுத்தமிழ் - IV (21UTAL41)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 6 **INT. MARKS : 40**
CREDITS : 3 **EXT. MARKS : 60**
DURATION : 90hrs **MAX. MARKS: 100**

நோக்கம்

சங்க இலக்கியங்களின் மேன்மைகளையும் வாழ்வியல் அறங்களையும் மாணவர்களுக்கு எடுத்துரைப்பதையும் புதின இலக்கியத்தை அறிமுகப்படுத்துவதையும் நோக்கமாகக் கொண்டு இத்தாள் வடிவமைக்கப்பட்டுள்ளது.

கற்றலின் பயன்கள்

இத்தாளை வெற்றிகரமாக முடித்தவுடன் மாணவர்கள்,

CO1[K1]: புதின இலக்கியவகைகளைஅடையாளம் காண்பர்.
CO2[K2]: சங்க இலக்கியங்களில் உள்ளஅறக்கருத்துக்களைஎடுத்துரைப்பர்.
CO3[K3]: அக,புற இலக்கணங்களைக் கற்பர்.
CO4[K4]: சங்க இலக்கியங்களின் வாயிலாக மக்களின் வாழ்க்கைமுறையினைப் பாகுபடுத்துவர்.
CO5[K5]: பண்டையதமிழ் இலக்கியஆளுமைகளைமதிப்பிடுவர்.

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	8	2	9	2	2	2
Weighted percentage of Course contribution to Pos	1.83	2.04	1.08	3.3	1.79	1.06	0.99

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

கூறு I **(18 hrs)**

எட்டுத்தொகை இலக்கியவரலாறு - **குறிஞ்சித்திணை - நற்றிணை:**ஓங்குமலைநாட(55) - கழுதுகால்கிளர(255). **முல்லைத்திணை - குறுந்தொகை:**பெருந்தண் மாரிப்(94),மடவவாழிமஞ்ஞை(251).

மருதத்திணைகலித்தொகை:அகன்துறைஅணிபெற(73), புள்இமிழ் அகல் வயல்(79). **நெய்தல் திணை -ஐங்குறுநூறு:**தாய்க்குஉரைத்தபத்து(10 பாடல்கள்).**பாலைத்திணை - அகநானூறு:** வளம்கெழுதிருநகர்ப்(17),கடல்முகந்துகொண்டகமஞ்சூல்(43). **பரிபாடல்**: வையை - வளிபொருமின்னொடு(12).**புறநானூறு**: இரும்பனைவெண்தோடு(45) - எமக்கேகலங்கல் (298),**பதிற்றுப்பத்து:**ஐந்தாம்பத்தில் மாமலைமுழக்கின்.

கூறு II **(18 hrs)**

பத்துப்பாட்டு இலக்கியவரலாறு- **பத்துப்பாட்டு:**குறிஞ்சிப்பாட்டு (முழுவதும்)

கூறு III **(18 hrs)**

சங்கமருவியகால இலக்கியவரலாறு- **திரிகடுகம்:**தற்புகழ்ச்சிக்குக் கூடாதவை - தொல் அவையும்(8) -புகழுக்குரிய மூவர் - மண்ணின் மேல் வான்(16),வீடுபேறுஅடையும் வழிகள் - பற்று(22) -கற்றறிந்தார் கடமை -நுண்மொழிநோக்கிப்பொருள்(32),நல்லோர் நெறி- சான்றாருள் சான்றான் எனப்படுதல்(82). **நாலடியார்**: கூடாநட்பு (231-240).**இனியவைநாற்பது**: உடையான் வழக்கினிது(2) -மானம் அழிந்தபின்(13) - குழவிதளர்நடை(14) -பிறன்கைப் பொருள்வெளவான்(21) - வருவாய் அறிந்து (22). **இன்னாநாற்பது:** உண்ணாதுவைக்கும்(16) -மாரிநாள் கூவும்(20) - யானையில் மன்னாக்(22) - சிறையில்லா மூதூரின்(23) - ஏமம்இல் மூதூர்(24).**திருக்குறள்**:அறத்துப்பால் - புகழ், இன்பத்துப்பால் - குறிப்பறிதல் (அதிகாரங்கள் முழுவதும்).

கூறு IV **(18 hrs)**

புதின இலக்கியவரலாறு,கூட்டுக்குஞ்சுகள் - இராஜம் கிருஷ்ணன்.

கூறு V **(18 hrs)**

இலக்கணம் - தொல்காப்பியர் குறிப்பிடும் திணைக்கோட்பாடுகள் - அகப்பொருள் - புறப்பொருள் - உள்ளுறை - இறைச்சி - விண்ணப்பம் - புகார் - பாராட்டுக் கடிதங்கள் - அறிக்கை - செய்திஎழுதுதல்.

பாடநூல்கள்

1. *தொகுப்பு நூல்*,தமிழியல்துறை,ஸ்ரீ காளீஸ்வரிகல்லூரி (தன்னாட்சி),சிவகாசி.
2. இராஜம் கிருஷ்ணன். *கூட்டுக்குஞ்சுகள்*,நியூ செஞ்சுரிபுத்தகநிலையம்,சென்னை, 2011.
3. வாசுதேவன்,கா. *பன்முகநோக்கில் தமிழ் இலக்கியவரலாறு*,தேவன் பதிப்பகம்,திருச்சிராப்பள்ளி, 2017.

பார்வை நூல்கள்

1. சுப்பிரமணியன், க. *சங்ககாலச் சமுதாயம்*,ஜனசக்திஅச்சகம்,சென்னை, 1993.
2. பாலசுப்பிரமணியன் சிற்பி&நீலபத்மநாபன் (பதி.),*புதியதமிழ் இலக்கியவரலாறு*. மணமலர்ப் பதிப்பகம்,சென்னை,2000.
3. பாலசுப்பிரமணியன்,சி.*தமிழ் இலக்கியவரலாறு*,மண்மலர்ப் பதிப்பகம்,சென்னை,2003.
4. மோகன், இரா. *பத்துப்பாட்டு மூலமும் உரையும்*.நியூ செஞ்சுரிபுத்தகநிலையம்,சென்னை,2004.

வலைப்பதிவுகள்(Web Sources)

1. https://youtu.be/Gv84KCknV_g
2. https://youtu.be/B42bzKeb-aI
3. https://youtu.be/sLE4yH-7PeE
4. https://youtu.be/wdlw8CyEBP8

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF ENGLISH
UG Programme - B.A./B.SC./BCA
SEMESTER- IV
COMMUNICATIVE ENGLISH - IV (21UENL41)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 6 **INT. MARKS : 40**
CREDITS : 3 **EXT. MARKS : 60**
DURATION : 90 hrs **MAX. MARKS: 100**

Preamble

This course helps the learners to develop their communication skills in English through listening, reading, speaking and writing practices.

Course Outcomes (CO)

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

CO1[K1]: relate and state ideas by listening to lectures and reading narratives
CO2[K2]: demonstrate effective speaking skills through group discussions and answering interview questions
CO3[K3]: apply knowledge of word power and grammar rules through drafting Memorandum, Minutes of the meetings and Agenda
CO4[K4]: analyze tales from Shakespeare to develop language skills through literature
CO5[K6]: construct grammatically correct and meaningful sentences for Covering letters and Resume Writing and thereby preparing students towards employability

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	1.83	2.3	1.62	2.93	1.79	1.6	1.48

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

UNIT I - LISTENING AND SPEAKING **(18 hrs)**

LISTENING

Listening to lectures

Listening to commentaries

Listening to narratives

SPEAKING

Welcome address and Vote of Thanks

Role Play

Anchoring

Group discussion

Interview questions

UNIT II - READING AND WRITING **(18 hrs)**

Reading Newspaper- articles, letter to editor, sports and entertainment

WRITING

Drafting:

Memorandum

Minutes of the meeting

Agenda

Resume writing & Covering letter

UNIT III - WORD POWER **(18 hrs)**

Words often confused

Analogy

Words related to- Health and Medicine, Pleasant and Unpleasant feelings, Success and Failure, Science and Technology and Travel

UNIT IV - GRAMMAR **(18 hrs)**

Identify Phrases and Clauses

Transformation of Sentences: Reported speech, Simple, Compound and Complex Sentences

Error Spotting

UNIT V - LANGUAGE THROUGH LITERATURE **(18 hrs)**

TALES FROM SHAKESPEARE

Romeo and Juliet

A Midsummer Night's Dream

The Merchant of Venice

King Lear

Macbeth

TEXTBOOKS

1. Carthy Mc., and Felicity O'Dell. *English Vocabulary in Use (Upper intermediate)*. UK: Cambridge University Press, 2005.
2. Pillai, Radhakrishna G., and K.Rajeevan. *Spoken English for You (Level One)*. Chennai: Emerald Publishers, 2009.
3. Pillai, Radhakrishna G. *Emerald English Grammar and Composition.* Chennai: Emerald Publishers, 2016.

REFERENCES

Books

1. *Life Skills (Jeevan Kaushal) Facilitators' Guidelines*. New Delhi: University Grants Commission, 2021.
2. Radha, Alamelu and Kasthuri Bai. *Situational Grammar and Composition.* Chennai: New Century Book House Pvt. Ltd, 2008.
3. Sadanand, Kamalesh and Susheela Punitha. *Spoken English- A Foundation Course for speakers of Tamil*. Mumbai: Orient Blackswan, 2009.
4. Taylor, Grant. *English Conversation Practice*. New Delhi: Tata McGraw Hill Publishers, 2001.

Web Sources

1. https://www.litcharts.com/how-to-guides/shakespeare-research-resources
2. https://steffesziri.files.wordpress.com/2019/04/illustrated-stories-from-shakespeare-0.pdf
3. https://www.talkenglish.com/lessonindex.aspx
4. https://www.englishhelper.com/
5. https://www.englishpage.com/

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science
SEMESTER- IV
CORE COURSE - VII: PROGRAMMING IN JAVA (21UCSC41)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 5 **INT. MARKS : 40**
CREDITS : 5 **EXT. MARKS : 60**
DURATION : 75 hrs **MAX. MARKS: 100**

Preamble

This course familiarizes the learners with the basic concepts of Object Oriented Programming, Java Packages, Interfaces, Exceptions and Threads.

Course Outcomes (CO)

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

CO1[K1]: describe the concepts of object oriented programming, string handling, arrays, exception and packages
CO2[K2]: illustrate the principles of inheritance, packages, interfaces, exceptions and multithreading
CO3[K3]: develop Java programs using OOPs concepts, strings and arrays
CO4[K4]: differentiate iterative, conditional and looping statements and analyze string operation
CO5[K6]: develop solution for a simple problem using control statements, strings, arrays and inheritance

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	2	-	1	-	-	-
CO2[K2]	3	1	1	1	-	1	1
CO3[K3]	3	2	1	1	-	1	1
CO4[K4]	3	2	2	1	1	-	1
CO5[K6]	3	2	2	1	1	1	2
Weightage of the course	15	09	06	05	02	03	05
Weighted percentage of Course contribution to POs	**2.75**	**2.3**	**3.24**	**1.83**	**1.79**	**1.6**	**2.46**

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

UNIT I **(15 hrs)**

An Overview Of Java: Object Oriented Programming – A First Simple Program – Using Blocks of Code – Lexical Issues – Java Class Libraries – Datatypes – Variables – Type Casting and Conversion – Operators. **String Handling:** Special String Operations – Character Extraction – String Comparison – Searching Strings – Modifying a String.

UNIT II **(15 hrs)**

Control Statements: if Single Selection Statement – if…else Double Selection Statement – while Repetition Statement – Increment and Decrement Operators. **Methods:** Introduction – Program Modules in Java – Static Methods, Static Fields and Class Math – Declaring Methods with Multiple Parameters – Scope Of Declarations – Method Overloading.

UNIT III **(15 hrs)**

Arrays And Arraylists: Introduction – Arrays – Declaring and Creating Arrays – Passing Arrays to Methods – Multidimensional Arrays – Class Arrays. **Inheritance:** Introduction – Super Classes and Subclasses – Protected Members – Relationship between Super Classes and Subclasses – Constructors in Subclasses – Class Object.

UNIT IV **(15 hrs)**

Exception Handling: Introduction – Divide by Zero without Exception handling – Handling Arithmetic Exception and InputMismatchExceptions – Java exception hierarchy – finally block – chained exceptions – declaring new exception types. **Multithreading:** Introduction – Thread states – Creating and executing threads with Executor Framework – Thread synchronization – Producer/Consumer Relationship: without synchronization - Producer/Consumer Relationship: Array Blocking Queue - Producer/Consumer Relationship: with synchronization - Producer/Consumer Relationship: Bounded Buffers - Producer/Consumer Relationship: The Lock and Condition interfaces – Multithreading with GUI.

UNIT V **(15 hrs)**

Packages: Defining a package – Access protection – Importing packages. **Interfaces:** Defining an Interface – Implementing Interfaces – Nested Interfaces – Applying Interfaces – Variables in Interface – Interface can be extended – Default and Static Methods in an Interface.

TEXTBOOKS

1. Herbert Schildt. *Java: The Complete Reference*. New Delhi: McGraw Hill Education (India) Private Limited, Ninth Edition, 2014.
   UNIT I : 2,3,16
   UNIT V : 9
2. Paul Deital, Harvey Deital. *Java – How to program*. Sun Microsystem Inc, Ninth Edition, 2017.
   UNIT II : 4,6
   UNIT III: 7,9
   UNIT IV : 11,26

REFERENCES

Books

1. Herbert Schildt. *Java A Beginner's guide*. Seventh Edition.
2. Kathy Sierra, Bert bates. *Head First Java (A Brain-Friendly Guide)*. Second Edition.
3. Barry A.Burd, *Beginning Programming with Java for dummies*, Fifth Edition.

Web Sources

1. www.javatpoint.com/java-tutorial/
2. www.tutorialspoint.com/java/
3. www.geeksforgeeks.org/java/
4. www.programiz.com/java-programming/

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science
SEMESTER- IV
CORE COURSE - VIII: PRACTICAL: JAVA PROGRAMMING (21UCSC4P)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 5 **INT. MARKS : 50**
CREDITS : 3 **EXT. MARKS : 50**
DURATION : 75 hrs **MAX. MARKS: 100**

Preamble

This course equips the learners with programming skills in Java using the concepts of OOP's, Java Packages, Interfaces, Exceptions and Threads.

Course Outcomes (CO)

On successful completion of the course, the learners will be able to
CO1[K2]: illustrate the concepts of Object Oriented Programming
CO2[K2]: demonstrate the functionalities of inheritance, packages, interfaces, exceptions and multithreading
CO3[K3]: apply OOP's concepts in Java programming to solve problems
CO4[K5]: choose appropriate iterative, conditional and looping statements to solve problems
CO5[K6]: develop solution for a simple problem using Java

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K2]	3	2	1	1	-	-	1
CO2[K2]	3	1	1	1	-	1	1
CO3[K3]	3	2	1	1	1	-	1
CO4[K5]	3	2	2	1	-	1	1
CO5[K6]	3	2	2	1	1	1	1
Weightage of the course	15	09	07	05	02	03	05
Weighted percentage of Course contribution to POs	**2.75**	**2.3**	**3.78**	**1.83**	**1.79**	**1.6**	**2.46**

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

1. Program to perform arithmetic operations using classes and objects
2. Program to define a class, involving constructors and overloaded the constructors
3. Program to practice String class and its methods
4. Program to demonstrate Method Overloading
5. Program to pass arrays to methods
6. Program to demonstrate the concept array of objects
7. Program to demonstrate use of sub class and nested class
8. Program to implement the concept of inheritance
9. Program to demonstrate the use of method overriding
10. Program to demonstrate the concept of Exception Handling using predefined exceptions
11. Program to illustrate the concept of Exception Handling by creating user-defined exceptions
12. Program to implement the concept of Threading by extending Thread class
13. Program to implement the concept of Threading by implementing Runnable interface
14. Program to implement the concept of creating packages and importing classes from user defined package
15. Program to demonstrate use of implementing and extending interfaces.

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science
SEMESTER- IV
ALLIED COURSE - IV: MICROPROCESSOR AND COMPUTER ORGANIZATION
(21UCSA41)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 4 **INT. MARKS : 40**
CREDITS : 4 **EXT. MARKS : 60**
DURATION : 60 hrs **MAX. MARKS: 100**

Preamble

This course introduces the learners to the typical architecture of Microprocessor, organization of Computer and enables to develop programs in assembly language.

Course Outcomes (CO)

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

CO1[K1]: describe fundamentals of microprocessors, microprocessor architecture, modes of input and output transfer and memory organization

CO2[K2]: explain instruction set of 8085, data representation and general register organization

CO3[K3]: develop simple assembly code for different data and instruction format, number representation

CO4[K4]: analyse large computer to single chip microcontroller, synchronous and asynchronous data transfer, microcomputer system, modes of I/O transaction

CO5[K4]: examine various number system and different types of instruction

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	2	1	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[K4]	3	2	1	1	1	1	1
Weightage of the course	15	09	05	04	02	05	05
Weighted percentage of Course contribution to POs	**2.75**	**2.3**	**2.7**	**1.47**	**1.79**	**2.66**	**2.46**

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

UNIT I **(12 hrs)**

Microprocessors: Microcomputer and Assembly Language: Microprocessors - Microprocessor Instruction set and Computer Languages – From large computer to single chip Microcontrollers.

UNIT II **(12 hrs)**

Microprocessor Architecture and Microcomputer System: Microprocessor Architecture and its Operations - Memory -Input and Output (I/O) Devices - Examples of a Microcomputer System.

UNIT III **(12 hrs)**

Introduction to 8085 Assembly Language Programming : The 8085 Programming Model- Instruction Classification- Instruction, Data Format, and Storage - How to Write, Assemble, and Execute a Simple Program - Overview of 8085 Instruction Set - Writing and Hand Assembling a Program.

UNIT IV **(12 hrs)**

Data Representation: Data Types-Number Systems -Octal and Hexadecimal Numbers -Decimal Representation -Alphanumeric Representation **Complements:** (r-l)'s Complement - (r's) Complement. **CPU:** General Register Organization – Stack Organization– Instruction Format - Program Control.

UNIT V **(12 hrs)**

Input/Output: I/O Interface – Asynchronous Data Transfer – Modes of I/O Transfer –Direct Memory Access. **Memory Organization:** Memory Hierarchy – Main Memory – Auxiliary Memory – Associative Memory – Cache Memory – Virtual Memory.

TEXTBOOKS

1. Ramesh S.Gaonkar. *Microprocessor Architecture, Programming, and Applications with the 8085*. Prentice Hall, New Jersey, Columbus, Fourth Edition, 1998.
   UNIT I : 1.1-1.3
   UNIT II : 3.1-3.4
   UNIT III: 2.1-2.6

2. M.Morris Mano. *Computer System Architecture*. Prentice Hall of India, Third Edition, 2008.
   UNIT IV: 3.1-3.2,8.2-8.4,8.7
   UNIT V : 11.2-11.4,11.6,12.1-12.6

REFERENCES

Books

1. W. Stallings. *Computer Organization and Architecture-Designing for Performance*. Pearson Education/PHI, Inc., Third Edition, 2008.
2. J.P. Hayes. *Computer Architecture and Organization*. Tata McGraw-Hill, Third Edition,2012.
3. S. Tanenbaum. *Structured Computer Organization*. Pearson Education, Inc., Fifth Edition, 2006.

Web Sources

1. https://www.youtube.com/playlist?list=PL1iLu2CSC9EWAo0ysorNI_nebwF6Rwkr0
2. https://www.elprocus.com/8085-microprocessor-architecture/
3. https://www.tutorialspoint.com/microprocessor/index.htm

SRI KALISWARI COLLEGE(AUTONOMOUS),SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science
SEMESTER- IV
SELF-PACED LEARNING (SWAYAM COURSE): PROGRAMMING IN C++
(21UCSM41)
(From 2021-2022 Batch onwards)

CREDITS : 2 **EXT. MARKS : 100**
DURATION: 8 weeks **MAX. MARKS: 100**

Preamble

This course provides the learners with an opportunity for a lifelong learning by meeting the demand in terms of knowledge, skills, and competencies.

Course Outcomes (CO)

On successful completion of this course learners will be able to

CO1[K1]: identify the background and the key words in C++
CO2[K2]: demonstrate independent and self-paced learning for clear understanding of the concept
CO3[K3]: develop computer and communication skills to broaden their knowledge in the course
CO4[K3]: use high quality reading resources, communication tools and technology to send assignments and to take up test
CO5[K4]: analyse critically and apply technical skills to comprehend the ideas or theories in the video lectures

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	2	1	2	-	-	2
CO2[K2]	3	2	1	1	-	-	2
CO3[K3]	3	2	1	2	1	1	1
CO4[K3]	2	2	1	2	-	-	1
CO5[K4]	2	2	1	2	-	1	1
Weightage of the course	13	10	05	09	01	02	07
Weighted percentage of Course contribution to POs	**2.39**	**2.55**	**2.7**	**3.3**	**0.89**	**1.06**	**3.45**

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

WEEK 1: Programming in C++ is Fun : Build and execute a C program in C++, Write equivalent programs in C++

WEEK 2: C++ as Better C : Procedural Extensions of C

WEEK 3: Overview of OOP in C++ : Classes and basic Object-Oriented features (encapsulation)

WEEK 4: Overview of OOP in C++ : More OO features, overloading, namespace and using struct and union

WEEK 5: Inheritance : Generalization / Specialization of Object Modeling in C++

WEEK 6: Polymorphism : Static and Dynamic Binding

WEEK 7: Type Casting & Exceptions : C++ cast operators; C++ Exceptions and standard exception classes

WEEK 8: Templates and STL – Function and Class templates and using STL like containers, algorithms

REFERENCES

Books

1. Bjarne Stroustrup .*The C++ Programming Language*, 2013.
2. Bjarne Stroustrup .*Programming: Principles and Practice Using C++*, 2014

SRI KALISWARI COLLEGE(AUTONOMOUS),SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science
SEMESTER- IV
SELF-PACED LEARNING (SWAYAM COURSE): PROGRAMMING, DATA STRUCTURES AND ALGORITHMS USING PYTHON (21UCSM42)
(From 2021-2022 Batch onwards)

CREDITS : 2 **EXT. MARKS : 100**
DURATION: 8 weeks **MAX. MARKS: 100**

Preamble

This course provides the learners with an opportunity for a lifelong learning by meeting the demand in terms of knowledge, skills, and competencies.

Course Outcomes (CO)

On successful completion of this course learners will be able to

CO1[K1]: identify the background and the key words in Python and Data Structures

CO2[K2]: demonstrate independent and self-paced learning for clear understanding of the concept

CO3[K3]: develop computer and communication skills to broaden their knowledge in the course

CO4[K3]: use high quality reading resources, communication tools and technology to send assignments and to take up test

CO5[K4]: analyse critically and apply technical skills to comprehend the ideas or theories in the video lectures

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	2	1	2	-	-	2
CO2[K2]	3	2	1	1	-	-	2
CO3[K3]	3	2	1	2	1	1	1
CO4[K3]	2	2	1	2	-	-	1
CO5[K4]	2	2	1	2	-	1	1
Weightage of the course	13	10	05	09	01	02	07
Weighted percentage of Course contribution to POs	**2.39**	**2.55**	**2.7**	**3.3**	**0.89**	**1.06**	**3.45**

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

WEEK 1
Informal introduction to programming, algorithms and data structures via gcd
Downloading and installing Python
gcd in Python: variables, operations, control flow - assignments, conditionals, loops, functions

WEEK 2
Python: types, expressions, strings, lists, tuples
Python memory model: names, mutable and immutable values
List operations: slices etc
Binary search
Inductive function definitions: numerical and structural induction
Elementary inductive sorting: selection and insertion sort
In-place sorting

WEEK 3
Basic algorithmic analysis: input size, asymptotic complexity, O() notation
Arrays vs lists
Merge sort & Quick sort
Stable sorting

WEEK 4
Dictionaries
More on Python functions: optional arguments, default values
Passing functions as arguments
Higher order functions on lists: map, filter, list comprehension

WEEK 5
Exception handling
Basic input/output
Handling files
String processing

WEEK 6
Backtracking: N Queens, recording all solutions
Scope in Python: local, global, nonlocal names
Nested functions
Data structures: stack, queue
Heaps

WEEK 7
Abstract data types
Classes and objects in Python
"Linked" lists: find, insert, delete
Binary search trees: find, insert, delete
Height-balanced binary search trees

WEEK 8
Efficient evaluation of recursive definitions: memoization
Dynamic programming: examples
Other programming languages: C and manual memory management
Other programming paradigms: functional programming

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme – B.Sc. Computer Science
SEMESTER- IV
NON-MAJOR ELECTIVE COURSE - II: FUNDAMENTALS OF INTERNET
(21UCSN41)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 2 **INT. MARKS : 40**
CREDIT : 1 **EXT. MARKS : 60**
DURATION : 30 hrs **MAX. MARKS: 100**

Preamble

This course familiarizes the learners with the origin of Internet and internet connection and it enhances the student knowledge to download and install programs, to send Email and to create and work with web pages.

Course Outcomes (CO)

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

CO1[K1]: describe sending emails, searching in the web, modems, domains, computer virus and components of webpage

CO2[K2]: explain the basics of internet and web, E-mail and its components, domain name, URL, Downloading and installing a software

CO3[K3]: apply the knowledge of basic elements in HTML to create a simple web page

CO4[K4]: distinguish types of top level domain and types of computer viruses, modem and layers of TCP/IP

CO5[K4]: examine types of modem and layers in TCP/IP model

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	-	-	1	-	1	1
CO4[K4]	2	3	-	2	-	1	1
CO5[K4]	1	-	-	2	-	1	1
Weightage of the course	09	05	00	08	00	05	05
Weighted percentage of Course contribution to POs	**1.65**	**1.28**	**0**	**2.93**	**0**	**2.66**	**2.46**

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

UNIT I **(6 hrs)**

Understanding the Internet: What is the internet? – How TCP/IP makes the internet work. **An Overview of the internet:** Mail – The Web – The parts of the Web – Anonymous FTP and Downloading – Talk Facilities.

UNIT II **(6 hrs)**

Everything you need to connect to the net: Operating system (Windows) – Modems. **Internet Addresses:** Two Types of Top Level Domains – Domains – IP Address – Mail Address – URL – Filename and Extensions

UNIT III **(6 hrs)**

The Web: The Basic Ideas – Options and Preferences – Entering a URL – Shortcuts when Typing URL – Navigating – Reading a Webpage. **Mail:** The Basic Ideas – The Body of a Message – Attachments – Signatures – Mail is stored (Folder) – Address Lines within the Header (To, Cc, Bcc) – Using an Address Book – Replying – Forwarding – Understanding – Mail Error Message.

UNIT IV **(6 hrs)**

Finding Stuff on the Internet: Search Engines – Techniques for Using the Search Engine. **Downloading and Installing Software:** Overview of the Download Process – Downloading Program – Anonymous FTP – Installing a Program – Uninstalling a Program. **Safety, Security and Privacy:** Computer Virus.

UNIT V **(6 hrs)**

Creating Your Own Webpage: HTML – The Components of a Webpage – Web Page Editors – Pictures and Sounds – Finding a Server to Host Your Website. **Getting Your Own Domain Name:** How to Get Your Own Domain Name – Registering a Domain Name – Choosing a Domain Name.

TEXTBOOK

1. Harley Hahn. *Harley Hahn teaches The Internet*. New Delhi: Prentice Hall of India Private Limited, 2001.

   UNIT I : 1.1, 1.4, 2.2-2.4, 2.9, 2.10
   UNIT II : 3.5, 3.13, 4.2, 4.5, 4.6, 4.9-4.11
   UNIT III: 7.1, 7.2, 7.5-7.8, 5.1, 5.7-5.12, 5.14-5.17
   UNIT IV : 9.2, 9.3, 11, 8.9
   UNIT V : 15, 16.1-16.3

REFERENCES

Books

1. Young Kai Seng. *Using the Internet*. Minerva Publications, 2003.
2. Wendy Willed. *HTML A Beginners guide*. Tata McGraw-Hill Publishing Company Limited.
3. Margaret Levine Young. *The Complete reference Internet*. New Delhi: Tata McGraw Hill Publishing Company Limited.

Web Sources

1. https://www.internetsociety.org/internet/history-internet/brief-history-internet/
2. http://wifinotes.com/computer-networks/internet-network-architecture.html
3. https://www.w3schools.com/html/html_elements.asp

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science
SEMESTER- IV
SKILL ENHANCEMENT COURSE - IV: PRACTICAL: ASSEMBLY LANGUAGE PROGRAMMING (21UCSS4P)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 2 **INT. MARKS : 50**
CREDIT : 1 **EXT. MARKS : 50**
DURATION : 30 hrs **MAX. MARKS: 100**

Preamble

This course gives practical training in assembly language programming using an 8085 microprocessor.

Course Outcomes (CO)

On successful completion of the course, the learners will be able to
CO1[K2]: demonstrate arithmetic operations using assembly language programming
CO2[K3]: use logical operations in assembly code
CO3[K3]: utilize data transfer instruction, looping instruction and shift and rotate instruction
CO4[K5]: choose appropriate register and memory level instruction
CO5[K6]: design simple assembly program for a given problem

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K2]	3	2	1	1	1	-	-
CO2[K3]	3	2	1	1	-	-	1
CO3[K3]	3	2	1	1	-	1	1
CO4[K5]	3	1	1	-	-	1	1
CO5[K6]	2	1	1	-	1	1	1
Weightage of the course	14	08	05	03	02	03	04
Weighted percentage of Course contribution to POs	**2.57**	**2.04**	**2.7**	**1.1**	**1.79**	**1.6**	**1.97**

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

1. Write assembly program to modify the contents of memory
2. Write assembly program modify the contents of register
3. Write assembly program using Arithmetic instruction
4. Write assembly program using Data transfer instruction
5. Write assembly program using logic instruction
6. Write assembly program using shift and rotate instruction
7. Write assembly program using control flow and loop instruction
8. Write assembly program using various addressing modes.

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
UG Programme
SEMESTER III & IV
PART V – EXTENSION
(From 2021 -2022 Batch Onwards)

HOURS/WEEK: 2
CREDIT : 1
DURATION : 60 hrs **INT. MARKS: 100**

Preamble

This course aims to promote holistic development among the youth by defining their roles and responsibilities towards ones family and their society and enables them to acquire professional skills and ethics.

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/non verbal 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 the course	08	02	01	07	09	08	05
Weighted percentage of Course contribution to Pos	**1.47**	**0.51**	**0.54**	**2.56**	**8.04**	**4.26**	**2.46**

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	

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science
SEMESTER- V
CORE COURSE - IX: WEB TECHNOLOGY (21UCSC51)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 5 **INT. MARKS : 40**
CREDITS : 5 **EXT. MARKS : 60**
DURATION : 75 hrs **MAX. MARKS: 100**

Preamble

This course familiarizes the learners with markup language, and formatting using HTML and CSS and enables them to develop web applications.

Course Outcomes (CO)

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

CO1[K1]: describe the basic tags of HTML, attributes of CSS and constructs of PHP
CO2[K2]: explain HTML tags, stylesheets, PHP operators ,flow controls, arrays, strings and functions
CO3[K3]: develop a webpage using links, tables, lists, images and CSS
CO4[K4]: analyze and write programs using HTML tags, CSS and PHP
CO5[K6]: construct PHP programs that use various numeric functions, string functions, cookies and session

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	1	1	-	-	1
CO4[K4]	3	2	1	1	1	1	1
CO5[K6]	3	2	1	1	1	1	1
Weightage of the course	15	10	05	05	03	03	04
Weighted percentage of Course contribution to POs	**2.75**	**2.55**	**2.7**	**1.83**	**2.68**	**1.6**	**1.97**

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

UNIT I **(15 hrs)**

Introducing HTML and CSS: What HTML is – What HTML files look like – HTML attributes – Using the style attribute – **Learning the basics of HTML:** Structuring your HTML – The title – Headings – Paragraphs – Comments. **Organising Information With Lists:** Lists – Numbered Lists – Unordered Lists – Definition Lists – Nesting Lists. **Using Images on Your Web Pages:** Images on the Web – Image Formats – Inline Images – Images and Text.

UNIT II **(15 hrs)**

Working with Links: Creating links – Links to Other Documents on the web – Links to Specific Places within Documents. **Formatting Text with HTML and CSS:** Character Level Elements – Character Formatting using CSS – Horizontal Rules – Line break – Special Characters – Fonts and Font Sizes. **Building Tables:** Creating tables – Table Parts – Sizing Tables, Borders and Cells – Table and Cell Color – Aligning your Table Content.

UNIT III **(15 hrs)**

Essential PHP: Creating Your Development Environment – Creating a First PHP Page – Running Your First PHP Page – Mixing HTML and PHP – Printing Some Text – Printing Some HTML – More Echo Power. **Operators and Flow Control:** Using The If Statement – The PHP Comparison Operators – The PHP Logical Operators – The else statement – The elseif statement – The ternary operator – The switch statement – Using for loops – Using while loops – Using do…while loops – Using foreach loop.

UNIT IV **(15 hrs)**

Strings and Arrays: The String Functions – Converting To and From Strings – Formatting Text Strings – Building Yourself Some Arrays – Modifying Data in Arrays – Deleting Array Elements – Handling Arrays With Loops – The PHP Array Functions – Extracting Data From Arrays – Sorting Arrays – Handling Multidimensional Arrays – Using Multidimensional Arrays in Loops. **Creating Functions:** Creating Functions in PHP – Passing Functions Some Data – Passing Arrays To Functions – Passing By Reference – Using Default Arguments – Returning Data From Functions – Returning Arrays.

UNIT V **(15 hrs)**

Working with Databases: Creating a Mysql Database – Creating a New Table – Putting Data into the New Database – Accessing the Database in PHP – Updating Databases – Inserting New Data Items into a Database – Deleting Records – Creating New Tables – Creating a New Database – Sorting Your Data. **Cookies:**

Setting a Cookie – Reading a Cookie – Setting Cookies' Expiration – Deleting Cookies.
Sessions: Storing Data in Sessions – Writing a Hit Counter Using Sessions.

TEXTBOOKS

1. Laura Lemay, Rafe Colburn, Jennifer Kyrnin. *Mastering HTML, CSS & JavaScript. Web Publishing*, New Delhi :BPB Publications
   UNIT I : 3,4,5,9
   UNIT II : 6,7,10

2. Steven Holzner. *PHP: The Complete Reference*. New Delhi: McGraw Hill Education (India) Private Limited.
   UNIT III: 1,2
   UNIT IV : 3,4
   UNIT V : 10,11

REFERENCES

Books

1. Jon Duckett. *Beginning HTML, XTML, CSS and JavaScript*. Wiley Publishing
2. Julie C. Meloni. *HTML, CSS & JavaScript*. Pearson Education, 2012
3. Vikram Vaswani. *PHP A Beginner's Guide*. Tata McGraw Hill Education

Web Sources

1. https://www.geeksforgeeks.org/web-technology/html-css/
2. https://www.javatpoint.com/html-tutorial
3. https://www.geeksforgeeks.org/php-tutorials/
4. https://www.tutorialspoint.com/php/index.htm

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science
SEMESTER- V
CORE COURSE - X: SYSTEM SOFTWARE AND OPERATING SYSTEM (21UCSC52)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 5 **INT. MARKS : 40**
CREDITS : 5 **EXT. MARKS : 60**
DURATION : 75 hrs **MAX. MARKS: 100**

Preamble

This course familiarizes the learners with compilation, loading and linking processes and concepts and principles in the Operating system.

Course Outcomes (CO)

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

CO1[K1]: describe the functions of assembler, compiler, loader, linker, operating system, thread, deadlock concept and process synchronization

CO2[K2]: explain features of assembler, compiler, loader, linker , main and virtual memory, file system and inter process communication

CO3[K3]: calculate turn around and waiting time using process& CPU scheduling algorithm

CO4[K4]: analyse machine independent and dependent assembler, compiler, loader, linker design option, main, virtual memory & file system management

CO5[K5]: justify various process and CPU scheduling algorithm, paging techniques in memory management

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
CO3[K3]	3	2	1	1	-	1	1
CO4[K4]	3	2	2	-	1	1	1
CO5[K5]	3	2	2	-	1	1	1
Weightage of the course	15	10	07	03	02	03	05
Weighted percentage of Course contribution to POs	**2.75**	**2.55**	**3.78**	**1.1**	**1.79**	**1.6**	**2.46**

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

UNIT I **(15 hrs)**

Introduction: System Software and Machine Architecture – The Simplified Instructional Computer. **Assembler:** Basic Assembler Functions – Machine Dependent Assembler Features - Machine Independent Assembler Features – Assembler Design Options.

UNIT II **(15 hrs)**

Loader and Linkers: Basic Loader Functions - Machine Dependent Loader Features - Machine Independent Loader Features – Loader Design Options. **Compiler:** Basic Compiler Functions - Machine Dependent Compiler Features - Machine Independent Compiler Features – Compiler Design Options

UNIT III **(15 hrs)**

Introduction: What Operating Systems Do - Computer-System Architecture-Operating-System Structure -Operating-System Operations. **Operating-System Structures**: System Calls - Types of System Calls - System Programs - Operating System Design and Implementation. **Process Management:** Process Concept-Process Scheduling -Operations on Processes - Inter-Process Communication

UNIT IV **(15 hrs)**

Threads: Multithreading Models-Threading Issues. **CPU Scheduling:** Basic Concepts - Scheduling Criteria - Scheduling Algorithms - Thread Scheduling. **Process Synchronization:** The Critical-Section Problem-Peterson's Solution-Semaphores Classic Problems of Synchronization.

UNIT V **(15 hrs)**

Deadlocks: Deadlock Characterization - Methods for Handling Deadlocks - Deadlock Prevention - Deadlock Avoidance - Deadlock Detection - Recovery from Deadlock. **Main Memory:** Contiguous Memory Allocation - Paging - Structure of the Page Table –Segmentation. **Virtual Memory:** Demand Paging- Page Replacement – Thrashing. **File-System Interface:** File Concept - Access Methods - Directory Structure.

TEXTBOOKS

1. Leland L. Beck. *System Software – An Introduction to Systems Programming.* Pearson Education, Third Edition, 2001.

   UNIT I : 1.2-1.3,2.1-2.4
   UNIT II : 3.1-3.4,5.1-5.4

2. Silberschatz, Galvin, Gange. *Operating System Concepts*. John Wiley & Sons.INC , Seventh Edition, 2005

UNIT III: 1.1, 1.3-1.5, 2.3-2.6, 3.1-3.4
UNIT IV : 4.2, 4.4, 5.1-5.3, 5.5, 6.2-6.3, 6.5-6.6
UNIT V : 7.2-7.7, 8.3-8.6, 9.2,9.4, 9.6, 10.1-10.3

REFERENCES

Books

1. Andrew S.Tanenbaum. *Modern Operating Systems*. Addison Wesley,Second Edition 2001
2. Shio Kumar Singh. *Database Systems Concepts, Designs and Application*. Pearson Education, 2011.
3. C. J. Date, A. Kannan and S. Swamynathan. *An Introduction to Database Systems*. Pearson Education, 2009.

Web Sources

1. https://hackr.io/tutorials/learn-operating-systems
2. https://www.coursera.org/courses?query=operating%20system&page=
3. https://intellipaat.com/blog/tutorial/sql-tutorial/rdbms/

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science
SEMESTER- V
CORE COURSE - XI: PRACTICAL: WEB TECHNOLOGY (21UCSC5P)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 5 **INT. MARKS : 50**
CREDITS : 4 **EXT. MARKS : 50**
DURATION : 75 hrs **MAX. MARKS: 100**

Preamble

This course enables the learners to create websites using markup language and formatting using HTML, CSS and to develop server side and client side scripting using scripting language.

Course Outcomes (CO)

On successful completion of the course, the learners will be able to
CO1[K2]: illustrate HTML tags, PHP built-in functions and connecting database
CO2[K3]: develop simple web applications using HTML tags, CSS and PHP
CO3[K5]: choose PHP constructs, cookies and sessions to design simple web applications
CO4[K6]: create simple client and server side web applications
CO5[K6]: design simple web applications using HTML,CSS and PHP

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K2]	3	2	1	1	-	1	1
CO2[K3]	3	2	1	-	1	-	1
CO3[K5]	3	2	1	2	-	-	1
CO4[K6]	3	2	1	2	1	-	1
CO5[K6]	3	2	1	1	-	1	1
Weightage of the course	15	10	05	06	02	02	05
Weighted percentage of Course contribution to POs	**2.75**	**2.55**	**2.7**	**2.2**	**1.79**	**1.06**	**2.46**

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

1. Program to design web application using HTML formatting tags
2. Program to design website using Tables and Cascading Style Sheets
3. Program for form handling using PHP
4. Program to perform validation in forms
5. Program to use iterative statements in PHP
6. Program for string functions in PHP
7. Program for Built-in functions in PHP
8. Program for user defined functions in PHP
9. Program to perform manipulation with database
10. Program to store and retrieve images in database
11. Program to demonstrate session
12. Program to demonstrate cookies

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science
SEMESTER- V
CORE COURSE – XII: PRACTICAL: ANDROID PROGRAMMING (21UCSC5Q)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 5 **INT. MARKS : 50**
CREDITS : 4 **EXT. MARKS : 50**
DURATION : 75 hrs **MAX. MARKS: 100**

Preamble

This course provides the basic understanding of Android platform and hands-on practices to build simple mobile application.

Course Outcomes (CO)

On successful completion of the course, the learners will be able to
CO1[K2]: demonstrate the tools in an android platform
CO2[K3]: apply Java programming concepts to build an android application
CO3[K3]: use the various android form widgets
CO4[K6]: design and develop user interface for mobile application
CO5[K6]: create simple android application by using layouts and various views

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K2]	3	-	-	1	1	-	1
CO2[K3]	3	1	-	1	-	-	1
CO3[K3]	3	2	-	1	-	1	1
CO4[K6]	3	2	2	2	-	2	1
CO5[K6]	3	3	2	2	1	3	1
Weightage of the course	15	08	04	07	02	06	05
Weighted percentage of Course contribution to POs	**2.75**	**2.04**	**2.16**	**2.56**	**1.79**	**3.19**	**2.46**

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

Exercises may be based on

1. Design simple GUI application with activity
2. Design an application that uses Fonts, Colors
3. Design an application with widgets
4. Design an application with GUI Layouts
5. Develop an application that draws basic graphical primitives on the screen
6. Design a gaming application
7. Develop an application to handle images and videos
8. Design an application with Database

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme – B.Sc. Computer Science
SEMESTER- V
MAJOR ELECTIVE COURSE - I: COMPUTER GRAPHICS
(21UCSO51)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 4 **INT. MARKS : 40**
CREDITS : 3 **EXT. MARKS : 60**
DURATION : 60 hrs **MAX. MARKS: 100**

Preamble

This course introduces the learners to GUI, Input Devices, Graphics Software, 2D, Output Primitives and Transformations, Scaling, Viewing, Area filling and Clipping.

Course Outcomes (CO)

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

CO1[K1]: describe the concepts of computer graphics, GUI, basic 2D,different graphics systems and applications of computer graphics, Output Primitives, two dimensional geometric transformations, two dimensional viewing.

CO2[K2]: explain the concepts of video display devices, output primitives and its attributes, transformations, viewing and clipping.

CO3[K3]: use transformations for 2D,raster scan systems, random scan systems for video display devices and various clipping operations.

CO4[K4]: compare the Raster Scan & Random Scan Systems, transformations, clipping algorithms.

CO5[K4]: examine the concepts of transformations, viewing and clipping in graphics

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
CO3[K3]	3	2	1	1	-	1	1
CO4[K4]	2	2	1	1	-	1	1
CO5[K4]	3	2	2	2	1	1	1
Weightage of the course	14	10	04	06	01	05	05
Weighted percentage of Course contribution to POs	**2.57**	**2.55**	**2.16**	**2.2**	**0.89**	**2.66**	**2.46**

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

UNIT I **(12 hrs)**

A Survey of Computer Graphics: Computer Aided Design – Presentation Graphics – Computer Art – Entertainment – Education and Training – visualization – Image processing – Graphical user interfaces. **Overview of Graphics systems:** Video Display devices –Raster Scan Systems – Random Scan Systems - Graphics monitors and workstations – Input Devices – Hard Copy devices – Graphics software.

UNIT II **(12 hrs)**

Output Primitives : Points and Lines – Line Drawing algorithms – Loading the Frame Buffer – Line Function – Circle Generating Algorithms – Ellipse Generating Algorithms – Other Curves – Parallel Curve Algorithms – Curve Functions – Pixel Addressing – Filled Area Primitives – Fill Area Functions – Cell Array – Character Generation.

UNIT III **(12 hrs)**

Attributes of Output Primitives: Line Attributes – Curve Attributes – Color and Gray Scale Levels – Area Fill Attributes – Character Attributes – Bundled Attributes – Inquiry Functions – Antialiasing.

UNIT IV **(12 hrs)**

Two Dimensional Geometric Transformations: Basic Transformations – Translation – Rotation – Scaling – Matrix Representations and Homogeneous Coordinates – Composite Transformations: General Pivot Point Rotation – General fixed point scaling – other transformations – Reflection and shear – Transformation Functions.

UNIT V **(12 hrs)**

Two-Dimensional Viewing: Two Dimensional Viewing Functions – Clipping Operations – Point Clipping – Line Clipping – Polygon Clipping –Curve Clipping – Text Clipping.

TEXTBOOK

1. Donald Hearn and M.Pauline Baker. *Computer Graphics*. Pearson Education, Second Edition,2013

UNIT I : 1,2
UNIT II: 3
UNIT III: 4
UNIT IV : 5.1-5.4,5.7
UNIT V : 6.4-6.10

REFERENCES

Books

1. Edward Angel and Dave Shreiner. *Interactive Computer Graphics: A Top-Down Approachwith Shader –Based OpenGL*. Pearson Education, Sixth Edition, 2012.
2. Amarendra N Sinha and Arun D Udai. Computer Graphics. Tata McGraw Hill Education Private Linited, New Delhi, Fifth Reprint 2011
3. F. S. Hill. *Computer Graphics using OpenGL*. Pearson Education, Second edition, 2003.

Web Sources

1. https://www.tutorialspoint.com/computer_graphics/computer_graphics_basics.htm
2. https://www.tutorialspoint.com/computer_graphics/circle_generation_algorithm.htm
3. https://www.tutorialspoint.com/computer_graphics/viewing_and_clipping.htm
4. https://www.tutorialspoint.com/computer_graphics/2d_transformation.htm
5. http://www.cs.binghamton.edu/~reckert/460/lect10_2010-Attributes.pdf

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme – B.Sc. Computer Science
SEMESTER- V
MAJOR ELECTIVE COURSE - I: SOFTWARE TESTING (21UCSO52)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 4 **INT. MARKS : 40**
CREDITS : 3 **EXT. MARKS : 60**
DURATION : 60 hrs **MAX. MARKS: 100**

Preamble

This course introduces the learners to the test metrics, regression testing, Unit testing integration testing

Course Outcomes (CO)

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

CO1[K1]: describe software testing, control flow graph, predicate analysis, regression testing, unit testing and integration testing.
CO2[K2]: explain the basics of software testing, predicate and boolean expressions
CO3[K3]: use appropriate testing methods.
CO4[K4]: distinguish various testing methods in the software.
CO5[K6]: select appropriate testing strategy to test the particular software

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
CO3[K3]	3	2	1	1	-	1	1
CO4[K4]	2	2	1	1	-	1	1
CO5[K6]	3	2	2	2	1	1	1
Weightage of the course	14	10	04	06	01	05	05
Weighted percentage of Course contribution to POs	2.57	2.55	2.16	2.2	0.89	2.66	2.46

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

UNIT I **(12 hrs)**

Basics of Software Testing: Human Errors and Testing – Software Quality – Requirements, Behavior and Correctness – Correctness Versus Reliability – Testing and Debugging – Test Metrics – Software and Hardware Testing – Testing and Verification – Test Generation Strategies – Static Testing – Types of Testing – Principles of Testing

UNIT II **(12 hrs)**

Mathematical: Predicates and Boolean Expressions – Control Flow Graph – Dominators and Post Dominators – Program Dependence Graph – Strings, Languages and regular Expressions

UNIT III **(12 hrs)**

Predicate Analysis: Introduction – Domain Testing – Cause - Effect Graphing – Tests using Predicate Syntax – Tests using Basis Paths – Scenarios and Tests.

UNIT IV **(12 hrs)**

Regression Testing: What is Regression Testing – Regression Test Process – Selecting Regression Tests – Test Selection using Execution Trace – Test Selection using Dynamic Slicing – Scalability of Test Selection Algorithms. **Unit Testing:** Introduction – Context – Test Design – Using Junit – Stubs and Mocks

UNIT V **(12 hrs)**

Integration Testing: Introduction – Integration Errors – Dependence – OO Versus Non-OO Programs – Integration Hierarchy – Test Generation – Test Assessment.

TEXTBOOK

1. Aditya P.Mathur. *Foundations of Software Testing.* Pearson Education, Second Edition.

   UNIT I : 1.1-1.8,1.10,1.11,1.13,1.15
   UNIT II: 2.1,2.2,2.4-2.6
   UNIT III: 4.1-4.6
   UNIT IV : 9.1,9.2, 9.4-9.7,10.1-10.5
   UNIT V : 11.1-11.5,11.7,11.8

REFERENCES

Books

1. Srinivasan Desikan, Gopalaswamy ramesh. *Software Testing Principles and practices*. Pearson Publication, 2016.
2. Kshirasagar Naik, Priyadarsh Tripathy. *Software Testing and Quality Assurance -Theory and Practice*. John Wiley & Sons publication, 2011.
3. William E.Lewis. *Software Testing and Continuous Quality Improvement*. Auerbach Publications, Third edition,2011.

Web Sources

1. https://www.tutorialspoint.com/software_testing/index.htm
2. https://www.tutorialspoint.com/software_testing_dictionary/black_box_testing.htm
3. https://www.geeksforgeeks.org/difference-between-system-testing-and-acceptance-testing/
4. https://www.tutorialspoint.com/software_testing_dictionary/performance_testing.htm
5. https://blog.testlodge.com/what-is-a-test-plan-in-software-testing/

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme – B.Sc. Computer Science
SEMESTER- V
MAJOR ELECTIVE COURSE - I: DIGITAL IMAGE PROCESSING (21UCSO53)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 4 **INT. MARKS : 40**
CREDITS : 3 **EXT. MARKS : 60**
DURATION : 60 hrs **MAX. MARKS: 100**

Preamble

This course introduces the learners to the fundamental concepts of Image processing and various techniques for image segmentation, compression and restoration.

Course Outcomes (CO)

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

CO1[K1]: describe the fundamental concepts of digital image, image enhancement, image restoration, image compression, image segmentation and edge detection

CO2[K2]: explain the image enhancement using filters, filters in image restoration, morphological image processing, image segmentation and edge detection.

CO3[K3]: use various filters in image enhancement and image restoration and basic algorithms for morphological image processing , image compression and various operators in edge detection.

CO4[K4]: compare lossy and lossless compression and various operators in Edge detection

CO5[K5]: choose appropriate technique for image enhancement, restoration, compression, segmentation and Edge detection

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
CO3[K3]	3	2	1	1	-	1	1
CO4[K4]	2	2	1	1	-	1	1
CO5[K5]	3	2	2	2	1	1	1
Weightage of the course	14	10	04	06	01	05	05
Weighted percentage of Course contribution to POs	**2.57**	**2.55**	**2.16**	**2.2**	**0.89**	**2.66**	**2.46**

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

UNIT I **(12 hrs)**

Introduction: Fundamental steps in Digital Image Processing- Components of an Image processing system. **Digital Image Fundamentals:** Elements of visual perception - Light and the Electromagnetic System - Image Sensing and Acquisition – Image Sampling and Quantization – Some Basic Relationship between pixels - Linear and Nonlinear Operations.

UNIT II **(12 hrs)**

Image Enhancement in Spatial Domain: Some Basic Gray Level Transformation - Histogram Processing - Enhancement using Arithmetic/Logic Operations - Basics of Spatial Filtering - Smoothing Spatial Filtering - Sharpening Spatial Filters. **Image Enhancement in Frequency Domain:** Smoothing frequency domain filters – Sharpening frequency domain filters – Homomorphic filtering

UNIT III **(12 hrs)**

Image Restoration: A Model of the Image Degradation/Restoration Process – Noise Models - Restoration in the Presence of Noise Only Spatial Filtering - Periodic Noise Reduction by Frequency Domain Filtering –Inverse Filtering - Minimum Mean Square Error (Wiener) Filtering – Constrained Least square filtering – Geometric Mean filter.

UNIT IV **(12 hrs)**

Image Compression: Fundamentals – Image Compression Models - Elements of Information Theory - Error-Free Compression - Lossy Compression - Image Compression Standards. **Morphological Image Processing:** Preliminaries – Dilation and erosion – opening and closing – The Hit or Miss Transformation – Some basic Morphological algorithm

UNIT V **(12 hrs)**

Image Segmentation: Detection of Discontinuation - Edge Linking and Boundary Detection – Thresholding - Region Based Segmentation - Segmentation by Morphological Watersheds - The Use of Motion in Segmentation **Edge Detection:** Gradient operators – Compass operators – Laplace operators and Zero Crossings – Stochastic Gradients – Performance of Edge Detection Operators – Line and spot Detection

TEXTBOOKS

1. Rafael C. Gonzalez, Richard E. Woods. *Digital Image Processing*. Pearson, Second Edition, 2013

   UNIT I : 1.4,1.5,2

   UNIT II: 3.2-3.7, 4.3-4.5

   UNIT III: 5.1-5.4,5.7-5.10

UNIT IV : 8,9.1-9.5

UNIT V : 10

2. Anil.K.Jain K.*Fundamentals of Digital Image Processing***.** New Delhi: PHI Private Limited, 2011

UNIT V : 9.4

REFERENCES

Books

1. Anil K. Jain. *Fundamentals of Digital Image Processing.* Pearson, 2002.
2. Madhuri A.Joshi. *Digital Image Processing - An Algorithmic Approach.* New Delhi: PHI Learning, 2009.
3. Handa B, Dutta Majumder D. *Digital Image Processing and Analysis.* New Delhi: PHI Learning, 2009

Web Sources

1. https://www.ques10.com/p/33595/what-is-image-processing-explain-fundamental-steps/
2. https://www.analytixlabs.co.in/blog/what-is-image-segmentation/
3. https://sse.tongji.edu.cn/linzhang/DIP/slides/Lecture%2003-Intensity%20Transformations%20and%20Spatial%20Filtering.pdf
4. https://www.cs.auckland.ac.nz/courses/compsci773s1c/lectures/ImageProcessing-html/topic4.htm
5. https://www.slideshare.net/pareshkamble/image-compression-12093925

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science
SEMESTER- V
MAJOR ELECTIVE COURSE – II: DATA MINING AND WAREHOUSING (21UCSO54)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 4 **INT. MARKS : 40**
CREDITS : 3 **EXT. MARKS : 60**
DURATION : 60 hrs **MAX. MARKS: 100**

Preamble

This course familiarizes the learners with Data Mining and Data Warehousing and helps the students to understand the need and appropriate technique for mining.

Course Outcomes (CO)

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

CO1[K1]: describe different methodologies used in data Mining and data warehousing
CO2[K2]: explain the basic principles and algorithms used in data mining and data warehousing
CO3[K3]: apply data mining techniques to solve simple mining problems
CO4[K4]: differentiate frequent pattern mining, association, correlation, prediction, outlier, clustering and classification rules
CO5[K4]: examine the application of data mining, models of OLAP and preprocessing

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	1	1	1	1	-	1
CO2[K2]	3	1	2	1	1	-	1
CO3[K3]	3	2	2	1	1	-	1
CO4[K4]	3	2	2	1	-	1	1
CO5[K4]	3	3	2	1	2	1	1
Weightage of the course	15	09	09	05	05	02	05
Weighted percentage of Course contribution to POs	**2.75**	**2.3**	**4.86**	**1.83**	**4.46**	**1.06**	**2.46**

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

UNIT I **(12 hrs)**

Introduction: What is Data Mining- What kind of Data can be mined – What kinds of patterns can be mined - Which Technologies are used - Major Issues in Data Mining. **Getting to Know Your Data:** Data Objects and Attribute Types - Basic Statistical Descriptions of Data - Data Visualization.

UNIT II **(12 hrs)**

Data Pre - Processing: An Overview - Data cleaning - Data Integration - Data Reduction. **Association Rule Mining:** Frequent Item set Mining methods - which patterns are Interesting - Pattern evaluation Methods.

UNIT III **(12 hrs)**

Data Warehousing and Online Analytical Processing: Data Warehouse: Basic Concepts –Data Warehouse Modeling-Data Warehouse Design and Usage-Data Warehouse Implementation-Data Generalization by Attribute-Oriented Induction

UNIT IV **(12 hrs)**

Classification: Basic Concepts - Decision Tree Induction - Bayes Classification Methods - Rule Based Classification - Bayesian Belief Networks - Classification by Back propagation - Support Vector Machines - Classification using Frequent patterns.

UNIT V **(12hrs)**

Cluster Analysis: Basic Concepts and Methods: Cluster Analysis - Partitioning Methods - Hierarchical Methods: Agglomerative Vs Divisive Hierarchical Clustering. Data Mining Trends: Data mining Applications - Data Mining Trends.

TEXTBOOK

1. Jiawei Han and Micheline Kamber. *Data Mining Concepts and Techniques*. Elsevier Inc, Third Edition, 2007

UNIT I : 1.2,1.3,1.4,1.5,1.7,2.1,2.2,2.3
UNIT II : 3.1,3.2,3.3,3.4,3.4,6.2,6.3
UNIT III: 4
UNIT IV : 8.1,8.2,8.3,8.4,9.1,9.2,9.3,9.4
UNIT V : 10.1,10.2,10.3.1,13.3,13.5

REFERENCES

Books

1. Alex Berson and Stephen J.Smith. *Data Warehousing, Data Mining and OLAP*. Tata McGraw – Hill , 35th Reprint 2016.
2. K.P. Soman, Shyam Diwakar and V. Ajay. *Insight into Data Mining Theory and Practice*. Prentice Hall of India, 2006.
3. Ian H.Witten and Eibe Frank. *Data Mining: Practical Machine Learning Tools and Techniques*. Elsevier.

Web Sources

1. http://web.engr.illinois.edu/~hanj/bk2/toc.pdf
2. www.slideshare.net/.../data-warehousing-and-data-mining-presentation
3. www.wright.edu/~arijit.sengupta/mis710/notes/lect6a-datamining.ppt 3.
4. https://www.cse.iitb.ac.in/infolab/Data/Talks/krithi-talk-impact.ppt
5. https://www.geeksforgeeks.org/association-rule/

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science
SEMESTER- V
MAJOR ELECTIVE COURSE – II: NETWORK SECURITY
(21UCSO55)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 4 **INT. MARKS : 40**
CREDITS : 3 **EXT. MARKS : 60**
DURATION : 60 hrs **MAX. MARKS: 100**

Preamble

This course introduces the learners to the basic concepts of Network Security and the significance of protecting data

Course Outcomes (CO)

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

CO1[K1]: describe the concepts of Cryptography and Security
CO2[K2]: explain the encryption techniques, number theory, authentication requirement and application, intrusion detection and countermeasures
CO3[K3]: apply number theory, basic encryption and decryption techniques
CO4[K4]: examine the usage of number theory, key management and authentication functions
CO5[K4]: differentiate various block cipher and authentication protocol for an algorithm

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	1	1	1	1	-	1
CO2[K2]	3	1	2	1	1	-	1
CO3[K3]	3	2	2	1	1	-	1
CO4[K4]	3	2	2	1	-	1	1
CO5[K4]	3	3	2	1	2	1	1
Weightage of the course	15	09	09	05	05	02	05
Weighted percentage of Course contribution to POs	**2.75**	**2.3**	**4.86**	**1.83**	**4.46**	**1.06**	**2.46**

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

UNIT I **(12 hrs)**

Introduction: Model of Network Security – Security Attacks, Services and Mechanisms – OSI Security Architecture – Classical Encryption Techniques. **Block Ciphers and Data Encryption Standard:** Block Cipher Principles-DES – Strength Of DES – Differential and Linear Cryptanalysis- Block Cipher Design Principles. **More on Symmetric Ciphers:** Block Cipher Mode of Operation – RC4-Evaluation Criteria for AES. **Confidentiality Using Symmetric Encryption:** Placement of Encryption Function – Traffic Confidentiality.

UNIT II **(12 hrs)**

Number Theory: Prime Number – Modular Arithmetic – Euclid's Algorithm - Fermet's And Euler's Theorem – Primality – Chinese Remainder Theorem – Discrete Logarithm – Public Key Cryptography and RSA – Key Distribution – Key Management – Diffie Hellman Key Exchange – Elliptic Curve Cryptography.

UNIT III **(12 hrs)**

Message Authentication and Hash Functions: Authentication Requirement – Authentication Function – MAC – Hash Function – Security of Hash Function And MAC. **Hash and MAC Algorithms:** SHA - HMAC – CMAC - Digital Signature and Authentication Protocols – DSS.

UNIT IV **(12 hrs)**

Network Security Applications: Authentication Applications: Kerberos – X.509 Authentication Services - E-Mail Security – IP Security - Web Security.

UNIT V **(12 hrs)**

System Security: Intruder – Intrusion Detection System – Virus and Related Threats – Countermeasures – Firewalls Design Principles – Trusted Systems – Practical Implementation of Cryptography And Security

TEXTBOOK

1. William Stallings. *Cryptography & Network Security.* Newyork City: Pearson Education, Fourth Edition, 2010.

UNIT I : 1.2-1.6,2,3.1-3.5,5.1,5.2,6.2,6.3,7.1,7.2
UNIT II : 7.3,8.1-8.5,9.1,9.2,10.1,10.2,10.4
UNIT III: 11.1-11.5, 12.1, 12.3, 12.4, 13.1-13.3
UNIT IV : 14.1,14.2,15.1,15.2,16.1-16.6,17.1-17.3
UNIT V : 18.1,18.2,19.1,19.2,20.1,20.2,Appendix B

REFERENCES

Books

1. Charlie Kaufman, Radia Perlman, Mike Speciner. *Network Security, Private communication in public world*, PHI, 2002.
2. Bruce Schneier, Neils Ferguson. *Practical Cryptography*. Wiley Dreamtech India Pvt. Ltd, 2003.
3. Douglas R Simson. *Cryptography – Theory and practice*.CRC Press, 1995.

Web Sources

1. https://www.cs.columbia.edu/~smb/classes/f06/l08.pdf
2. https://www.cs.drexel.edu/~greenie/cs475/CS475-13-02.pdf
   https://engineering.purdue.edu/kak/compsec/NewLectures/Lecture2.pdf
3. https://www.geeksforgeeks.org/ip-security-ipsec/
4. https://www.goodfirms.co/glossary/web-security/

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science
SEMESTER- V
MAJOR ELECTIVE COURSE – II: ARTIFICIAL INTELLIGENCE (21UCSO56)
(From 2021-2022 Batch onwards)

HOURS /WEEK: 4 **INT. MARKS : 40**
CREDITS : 3 **EXT. MARKS : 60**
DURATION : 60 hrs **MAX. MARKS: 100**

Preamble

This course introduces the learners to the fundamental principles of Artificial Intelligence including Knowledge Representation, Reasoning, Problem Solving and Machine Learning.

Course Outcomes (CO)

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

CO1[K1]: describe the basics and applications of artificial intelligence
CO2[K2]: explain agents, problem solving techniques, robotics, natural language processing and propositional logic
CO3[K3]: use the problem solving, knowledge, reasoning and planning techniques in artificial intelligence
CO4[K4]: analyze learning, communication and acting techniques
CO5[K4]: examine the algorithms of gaming, machine learning and natural language processing

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	1	1	1	1	-	1
CO2[K2]	3	1	2	1	1	-	1
CO3[K3]	3	2	2	1	1	-	1
CO4[K4]	3	2	2	1	-	1	1
CO5[K4]	3	3	2	1	2	1	1
Weightage of the course	15	09	09	05	05	02	05
Weighted percentage of Course contribution to POs	**2.75**	**2.3**	**4.86**	**1.83**	**4.46**	**1.06**	**2.46**

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

UNIT I **(12 hrs)**

Introduction: What is AI?-The Foundations of Artificial Intelligence-History of Artificial Intelligence -The State of the Art. **Intelligent Agents:** Agents and Environments - **Good Behavior:** The Concepts of Rationality - The Nature of Environments - The Structure of Agents.

UNIT II **(12 hrs)**

Solving Problems by Searching: Problem-Solving Agents - Example Problems - Searching for Solutions - Uniformed Search Strategies - Informed Search Strategies - Heuristic functions. **Adversarial Search:** Games - Optimal Decision in Games - Alpha-Beta Pruning - Imperfect Real-Time Decisions - Stochastic Games - Partially Observable Games - State of the Art Game Programs.

UNIT III **(12 hrs)**

Logical Agents: Knowledge-Based Agents - The Wumpus World-Logic - **Propositional Logic:** A Very Simple Logic - Propositional Theorem Proving - Effective Propositional Model Checking - Agents Based on Propositional Logic. **Classical Planning:** Definition of Classical Planning - Algorithm for Planning as State-Space Search - Planning Graph - Other Classical Planning Approaches -Analysis of Planning Approaches.

UNIT IV **(12 hrs)**

Learning from Examples : Forms of learning – Supervised Learning-Learning Decision Trees - Evaluating and Choosing the Best Hypothesis - The Theory of Learning - Regression and Classification with Linear Models - Artificial Neural Network - Nonparametric Models - Support Vector Machines - Ensemble Learning - Practical Machine Learning. **Natural Language Processing:** Language Models - Text Classification - Information Retrieval - Information Extraction.

UNIT V **(12 hrs)**

Natural Language for Communication: Phase Structure Grammars - Syntatic Analysis(Parsing) - Augmented Grammars and Semantic Interpretation - Machine Translation - Speech Recognition. **Robotics:** Introduction - Robot Hardware - Robotic Perception - Planning to Move - Planning Uncertain Movements - Moving-Robotic Software Architectures - Application Domains

TEXTBOOK

1. Stuart Russell, Peter Norvig. *Artificial Intelligence: A Modern Approach.* Prentice Hall, Third Edition, 2010.

UNIT I : 1.1-1.4, 2.1-2.4
UNIT II : 3.1-3.6, 5.1-5.7
UNIT III: 7.1-7.7, 10.1-10.5
UNIT IV : 18.1-18.11, 22.1-22.4
UNIT V : 23.1-23.5, 25.1-25.8

REFERENCES

Books

1. Elaine Rich, Kevin Knight. *Artificial Intelligence*. Tata McGraw Hill Education, 2016.
2. Vinod Chandra S.S, Anand Hareendran S. *Artificial Intelligence and Machine Learning*.PHI Learning Private Limited, 2014.
3. Christopher Bishop, *Pattern Recognition and machine learning*. Springer Verlag, 2006.

Web Sources

1. https://www.tutorialspoint.com/artificial_intelligence/artificial_intelligence_popular_search_algorithms.htm
2. https://www.tutorialspoint.com/artificial_intelligence/artificial_intelligence_robotics.htm
3. https://en.wikipedia.org/wiki/Artificial_intelligence
4. https://itlaw.wikia.org/wiki/Artificial_intelligence
5. https://becominghuman.ai/a-simple-introduction-to-natural-language-processing-ea66a1747b32

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science
SEMESTER- V
SKILL ENHANCEMENT COURSE - V: PRACTICAL: SOFT SKILL TRAINING
(21UCSS5P)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 2 **INT. MARKS : 50**
CREDIT : 1 **EXT. MARKS : 50**
DURATION : 30 hrs **MAX. MARKS: 100**

Preamble

This course develops communication, presentation and interview skills among the learners.

Course Outcomes (CO)

On successful completion of the course, the learners will be able to
CO1[K1]: identify their interpersonal skill
CO2[K3]: present their view confidently among a group of people
CO3[K4]: examine themselves in mock HR and stress interview
CO4[K5]: prioritize their work using time management skill
CO5[K6]: design standard resume

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	1	1	-	2	2	2	1
CO2[K3]	1	1	1	2	1	2	1
CO3[K4]	1	1	-	1	1	2	1
CO4[K5]	1	1	1	2	1	2	1
CO5[K6]	1	1	-	1	-	2	1
Weightage of the course	05	05	02	08	05	10	05
Weighted percentage of Course contribution to POs	**0.92**	**1.28**	**1.08**	**2.93**	**4.46**	**5.32**	**2.46**

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

1. Resume Preparation
2. Email Etiquettes by sending and replying emails
3. Peer Session on Self Introduction
4. Enact on Body Languages by peers

5. Prepare a Time Management Matrix for daily scheduling
6. Do Time Management related exercises and activities in the classroom
7. Do Distress related exercises in the class room
8. Conduct activities related to enhance leadership qualities
9. Do activities related to team sprit
10. Peer Group Discussion on various topics
11. Peer Mock Stress Interview
12. Peer Mock HR Interview

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B. Sc. Computer Science
SEMESTER- V
INTERNSHIP (21UCSJ51)
(From 2021-2022 Batch onwards)

INT. MARKS : 50
CREDIT : 1 **EXT. MARKS : 50**
DURATION: 25 days **MAX. MARKS: 100**

Preamble

This course familiarizes the real world experience through practice-oriented and hands-on working experience in the industry to the learners

Course Outcomes (CO)

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

CO1[K2]: demonstrate the capability of software, hardware and modern development tools which are used in an industry or real-world and trained during the Internship period
CO2[K3]: apply the acquired knowledge in the trained area to solve real world problems
CO3[K3]: present their learned skill
CO4[K4]: compare different roles in an industry
CO5[K6]: design a powerpoint presentation and explain the software used for their training

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K2]	3	2	-	1	1	1	1
CO2[K3]	2	3	-	1	1	1	1
CO3[K3]	2	2	-	2	2	2	1
CO4[K4]	-	2	1	-	1	2	1
CO5[K6]	1	3	3	3	1	1	2
Weightage of the course	08	12	04	07	06	07	06
Weighted percentage of Course contribution to POs	**1.47**	**3.06**	**2.16**	**2.56**	**5.36**	**3.72**	**2.96**

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

Guidelines

1. Each Student has to undergo minimum 25 days institutional/industry based training during the fourth semester summer vacation.

2. Internships could be undertaken in different organizations, industries and agencies approved by the department.
3. Students should keep a detailed record of activities performed and hrs spent in training and report the same to the Faculty Coordinator every week.
4. The internship report should be of minimum 20 pages.
5. Attendance certificate from the organization has to be submitted to the HOD.
6. Two copies of the Internship report should be submitted.
7. The Internship carries 100 marks out of which 50 marks for Internal Assessment and 50 marks for External Examination.
8. The student has to appear for viva-voce.
9. The viva-voce board shall consist of the Head of the Department and the Internal Examiner.

The following rubrics will be taken into account for the evaluation of the Training Programme:

Internal Assessment (50 Marks)		**External Examination (50 Marks)**	
Training Report & Review	: 40 Marks	Training Report	: 20 Marks
Daily Log Report/Attendance	: 5 Marks	Viva Voce	: 30 Marks
Powerpoint Presentation	: 5 Marks		

Internship Report must contain the following details:

- 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

Text Format in the report: Times New Roman 12 with 1.5 line margins 1.5" left and 1" all other

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme – B.Sc. Computer Science
SEMESTER- VI
CORE COURSE - XIII: COMPUTER NETWORKS (21UCSC61)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 5 **INT. MARKS : 40**
CREDITS : 5 **EXT. MARKS : 60**
DURATION : 75 hrs **MAX. MARKS: 100**

Preamble

This course enables the students to learn the fundamentals of Computer Network and its concepts and to enhance their knowledge in various functions and protocols in different layers and to differentiate various techniques in error detection, framing and routing.

Course Outcomes (CO)

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

CO1[K1]: describe the functions of each layer in OSI and TCP/IP model, Encoding, Wireless, Internetworking, End to End protocols, Congestion Control mechanism, Network security, Applications and Infrastructure services

CO2[K2]: explain performance of network, Framing, Error Detection, Reliable Transmission, Internetworking, Congestion control mechanism, Application and Infrastructure services

CO3[K3]: apply the basic knowledge of networks to implement network software, Reliable transmission, Switching and Bridging, Congestion control and Network Security

CO4[K4]: distinguish various types of network architecture, encoding, error detection techniques, congestion control mechanism and network security

CO5[K5]: choose any protocols for each layer in networks

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	1	-	2	-	1	1
CO2[K2]	3	2	1	1	-	1	1
CO3[K3]	3	3	1	1	-	1	1
CO4[K4]	3	2	1	1	-	1	1
CO5[K5]	3	2	1	1	1	1	1
Weightage of the course	15	10	04	06	01	05	05
Weighted percentage of Course contribution to POs	**2.75**	**2.55**	**2.16**	**2.2**	**0.89**	**2.66**	**2.46**

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

UNIT I **(15 hrs)**

Foundation: Applications – Requirements – Network Architecture – Implementing Network Software – Performance.

UNIT II **(15 hrs)**

Getting Connected: Perspectives on Connecting – Encoding(NRZ, NRZI, Manchester, 4B/5B) – Framing – Error Detection – Reliable Transmission – Ethernet and Multiple Access Networks (802.3) - Wireless

UNIT III **(15 hrs)**

Switching and Bridging – Basic Internetworking (IP) – Routing – The Global Internet – Multicast

UNIT IV **(15 hrs)**

End-to-End Protocols: Simple Demultiplexer (UDP) – Reliable Byte Stream (TCP). **Congestion Control and Resource Allocation:** TCP Congestion Control – Congestion Avoidance Mechanism.

UNIT V **(15 hrs)**

Network Security: Example Systems: Pretty Good Privacy – Secure Shell – Transport Layer Security – IP Security – Wireless security (802.11i). **Applications:** Traditional applications - E-mail (SMTP, MIME, IMAP) – World Wide Web (HTTP) – Web Services. Infrastructure Services: Name Service (DNS) – Network Management (SNMP).

TEXTBOOK

1. Larry L.Peterson and Bruce S.Davie. *Computer Networks a systems approach.* New Delhi: RELX India Private Limited, ELSEVIER, Fifth Edition, 2018

   UNIT I : 1
   UNIT II: 2
   UNIT III: 3.1–3.3, 4.1, 4.2
   UNIT IV : 5.1, 5.2, 6.3, 6.4
   UNIT V : 8.4, 9.1, 9.3

REFERENCES

Books

1. Behrouz A. Forouzan. *Data Communication and Networking.* McGraw-Hill.
2. Andrew S. Tanenbaum, David J. Wetherall. *Computer Networks.* Pearson Education, 2013.
3. William Stallings. *Data and Computer Communications.* Pearson, 2013.

Web Sources

1. https://www.dammies.com/programming/networking
2. https://www.noction.com/blog/tcp-transmissioncontrol
3. https://www.techopedia.com/transport-layer-security-tls

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme – B.Sc. Computer Science
SEMESTER- VI
CORE COURSE - XIV: SOFTWARE ENGINEERING (21UCSC62)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 5 **INT. MARKS : 40**
CREDITS : 5 **EXT. MARKS : 60**
DURATION : 75 hrs **MAX. MARKS: 100**

Preamble

This course provides an insight to the processes of software development and enhances the knowledge of analysis, design, development and testing in Software Engineering.

Course Outcomes (CO)

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

CO1[K1]: describe process models, Agile development, Requirement modeling, Design concepts, software testing strategies, SQA, ISO 9001, CMMI Model and software process improvement

CO2[K2]: explain the basic knowledge of software, process models, agile development, requirements modeling, design concepts, software testing strategies, SQA and Software Process Improvement

CO3[K3]: apply the knowledge of software engineering in designing, testing and ensuring quality of a software

CO4[K4]: distinguish various types of process model, requirements modelling, Design concepts and testing strategies

CO5[K5]: select any process model, requirements modelling and testing strategies for software products

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
CO3[K3]	3	2	2	1	-	1	1
CO4[K4]	3	2	1	2	1	1	1
CO5[K5]	2	2	2	2	1	1	1
Weightage of the course	14	10	05	07	02	05	05
Weighted percentage of Course contribution to POs	**2.57**	**2.55**	**2.7**	**2.56**	**1.79**	**2.66**	**2.46**

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

UNIT I **(15 hrs)**

Introduction: The Nature of Software – The Unique nature of WebApps - Software Engineering - The Software Process - Software Engineering Practice – Software Myths. **Process Models:** A Generic Process Model - Process Assessment and Improvement -Prescriptive Process Models - The Unified Process: Personal and Team Process Model. **Agile Development:** What is an Agile Process? - Other Agile Process Models.

UNIT II **(15 hrs)**

Requirements Modeling: Requirements Analysis - Scenario Based Modeling - UML Models that Supplement the Use Case - Data Modeling Concepts - Class Based Modeling. **Requirements Modeling strategies:** Flow Oriented Modeling - Creating a Behavioral Model. **Design Concepts:** The Design process – Design Concepts – The Design Model

UNIT III **(15 hrs)**

Architectural Design: Software Architecture - Architectural Genres - Architectural Styles - Architectural Design. **Component Level Design:** What is a component? – Designing class based components **User Interface Design:** The Golden Rules - User Interface Analysis and Design - Interface Analysis - Interface Design Steps. **Web App Design:** Web app Design quality - Design goals - A design pyramid for webApps - web app Interface Design - Aesthetic design – Content design - Architecture design - Navigation design - Component level design.

UNIT IV **(15 hrs)**

Software Testing Strategies: A strategic approach to software testing – Strategic Issues - Test Strategies for Conventional Software - Test strategies for Object Oriented Software - Test Strategies for Web Apps - Validation Testing - System Testing - The art of Debugging. **Testing Conventional Applications:** Software Testing Fundamentals – Internal and External Views of Testing - White Box Testing -Basis Path Testing - Control Structure Testing – Black Box Testing.

UNIT V **(15 hrs)**

Software Quality Assurance: Elements of Software Quality Assurance - SQA Tasks, Goals and Metrics - Formal Approaches to SQA - Statistical Software Quality Assurance Software Reliability - The ISO 9000 Quality Standards - The SQA Plan. **Software Process Improvement:** What is SPI? – The SPI Process – The CMMI – The people CMMI – Other SPI frameworks.

TEXTBOOK

1. Roger S. Pressman. *Software Engineering-A Practitioner's Approach.* New Delhi: McGraw Hill Education, Seventh Edition, 2014.

UNIT I : 1, 2.1-2.3, 2.5, 2.6, 3.3, 3.5
UNIT II : 6, 7.1-7.3, 8.2-8.4
UNIT III: 9.1-9.4, 10.1, 10.2, 11.1–11.4, 13.1-13.9
UNIT IV : 17, 18.1-18.6
UNIT V : 16, 30.1-30.5

REFERENCES

Books

1. Richard Fairley. *Software Engineering Concepts.* Tata McGraw Hill Edition, 2008.
2. K.K.Aggarwal, Yogesh Singh. *Software Engineering.* New Delhi: New age international (p) Ltd, 2005.
3. Ronald J.Leach. *Introduction to Software Engineering.* New York: CRC Pres, 2016.

Web Sources

1. http://www.thomasalspaugh.org/pub/fnd/softwareProcess.html
2. https://www.test-institute.org/Introduction_To_Software_Testing.php
3. http://www.sqa.net/softwarequalitymetrics.html

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme – B.Sc. Computer Science
SEMESTER- VI
CORE COURSE - XV: OPEN SOURCE TECHNOLOGY (21UCSC63)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 5 **INT. MARKS : 40**
CREDITS : 5 **EXT. MARKS : 60**
DURATION : 75 hrs **MAX. MARKS: 100**

Preamble

This course introduces the learners to open source technology concepts, tools, UML and python programming.

Course Outcomes (CO)

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

CO1[K1]: describe the need of an open sources, advantages of open source application, UML diagrams, data types, decision control statements, function, file handling and data structures.

CO2[K2]: explain open source, the concept of UML diagrams & their constructs, decision control statements, function, file handling and data structures.

CO3[K3]: apply UML diagrams to visualize the design of a system and decision control statements, function, file handling and data structures.

CO4[K4]: examine the user requirement specification and system requirement specification, concepts of python and differentiate between the data types and compare the functions and modules.

CO5[K6]: develop simple programs using list, tuple, sets, dictionary, control and looping statements, functions and modules in python.

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	2	2	1	-	1	1
CO2[K2]	3	1	1	1	-	1	1
CO3[K3]	3	2	2	1	-	1	1
CO4[K4]	3	2	1	1	-	1	1
CO5[K6]	3	2	2	1	1	1	1
Weightage of the course	15	09	08	05	01	05	05
Weighted percentage of Course contribution to POs	**2.75**	**2.3**	**4.32**	**1.83**	**0.89**	**2.66**	**2.46**

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

UNIT I **(15 hrs)**

Introduction to Open Source: The Need of an Open Sources – Advantages of Open Sources Application – Open Sources Development Model Licenses and Patents – FOSS – BSD – Free Software Movement – Commercial Software Vs Open Source Software – Commercial Aspects of Open Source Movement – Certification Courses Issues – Global and Indian – Copyrights and Copy Lefts – Application of Open Sources – Problems with Traditional Commercial Software. **Case Study:** Apache – BSD – Linux – Mozilla (Firefox) – GCC – Open Office.

UNIT II **(15 hrs)**

Introduction to UML: Introduction – Development Process – Class Diagrams – Sequence Diagrams – Object Diagrams – Deployment Diagrams - Use Cases – State Machine Diagrams – Activity Diagrams – Communication Diagrams – Composite Structures – Component Diagrams – Collaborations.

UNIT III **(15 hrs)**

Python Programming: Features of Python – History of Python – The Future of Python – Literal Constants – Variables and Identifiers – Data Types – Input Operations – Comments – Reserved Words – Indentation – Operators and Expressions – Expressions in Python – Operations on Strings – Other Data Types – Type Conversion - Decision Control Statements – Introduction – Selection/Conditional Branching Statements – Basic Loop Structures / Iterative Statements. Nested Loops –break, continue, pass statements - else Statement used with Loops.

UNIT IV **(15 hrs)**

Functions: introduction – Function Definition – Function Call – Variable Scope and Lifetime – The return Statement – More on Defining Functions – Lambda Functions – Documentation Strings – Good Programming Practices – Recursive Functions. **Modules:** Packages in Python – Standard Library Modules – Globals(), Locals() and Reload() – Function Redefinition.

UNIT V **(15 hrs)**

File Handling: Introduction – File Path – Types of Files – Opening and Closing Files – Reading and Writing Files – File Positions – Renaming and Deleting Files – Directory Methods. **Data Structures:** Sequence – Lists – Functional Programming – Tuple – Sets – Dictionaries.

TEXTBOOKS

1. Kenneth Wong and Phet Sayo. *Free/Open Source Software A General Introduction*. UNDP-APDIP, 2004.
2. Martin Fowler. *UML Distilled: A Brief Guide to the Standard Object Modeling Language.* Addison Wesley, Third Edition, 2003.
   UNIT II: 1,2,3,4,6,8,9,10,11,12,13,14,15
3. Reema Thareja. Python *Programming Using Problem Solving Approach*. Oxford University Press, 2017.
   UNIT III: 3,4
   UNIT IV : 5
   UNIT V : 8,11

REFERENCES

Books

1. Kailash Vadera, Bhayesh Gandhi. *Open Source Technology*. Laxmi Publications Pvt Limited, 2009.
2. John M. Zelle. *Python Programming: An Introduction to Computer Science.* Franklin and Beedle, 2004.
3. Russ Miles, Kim Hamilton. *Learning UML 2.0*. O'Reilly Media, 2006

Web Sources

1. https://opensource.com/resources/what-open-source
2. https://www.esri.com/news/arcnews/spring11articles/open-source-technology-and-esri.html
3. https://www.uml.org/
4. https://www.tutorialspoint.com/uml/index.htm
5. https://www.w3schools.com/python/
6. https://www.tutorialspoint.com/python/index.htm

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme – B.Sc. Computer Science
SEMESTER- VI
CORE COURSE - XVI: PRACTICAL: OPEN SOURCE TECHNOLOGY (21UCSC6P)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 5 **INT. MARKS : 50**
CREDITS : 4 **EXT. MARKS : 50**
DURATION : 60 hrs **MAX. MARKS: 100**

Preamble

This course enables the learners to use open source tools, to draw UML diagrams, to implement conditionals, loops, functions, modules, files and additional data types like list, tuple and dictionary.

Course Outcomes (CO)

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

CO1[K2]: draw the use case diagram, sequence diagram, activity diagram, deployment diagram and illustrate conditional & looping statements, list, tuple, dictionary.

CO2[K3]: perform the operations using operators, function and modules in python

CO3[K4]: analyze the usage of compound data types like list, tuple and dictionary to solve a problem.

CO4[K5]: choose the UML diagrams to visualize the design of the system.

CO5[K6]: design the UML notation for a SRS and also develop a simple python program.

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K2]	3	1	1	1	-	1	1
CO2[K3]	3	2	1	1	-	1	1
CO3[K4]	3	2	2	1	-	1	1
CO4[K5]	3	2	1	1	1	1	1
CO5[K6]	2	2	2	1	1	2	1
Weightage of the course	14	09	07	05	02	06	05
Weighted percentage of Course contribution to POs	**2.57**	**2.3**	**3.78**	**1.83**	**1.79**	**3.19**	**2.46**

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

1. Design a Use case diagram for given URS (User Requirement Specification)
2. Design a Class diagram for given URS
3. Design a Object diagram for given SRS (System Requirement Specification)
4. Design Sequence diagrams for given SRS
5. Design State chart diagrams for given URS.
6. Design an Activity diagram for given URS
7. Design Component diagram for given URS
8. Design Collaboration diagram for given URS
9. Design Deployment diagram for given URS
10. Write a program to demonstrate different number data types in python.
11. Write a program to perform different arithmetic operations on numbers in python.
12. Write a program to create, concatenate and print a string and accessing substring from a given string.
13. Write a program to create, append, and remove lists in python.
14. Write a program to demonstrate working with tuples in python.
15. Write a program to demonstrate working with dictionaries in python.
16. Write a python program to find the largest of three numbers.
17. Write a python program to define a module to find Fibonacci numbers.
18. Write a python program to import that module.

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme - B.Sc. Computer Science
SEMESTER- VI
CORE COURSE - XVII: PROJECT (21UCSJ61)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 4 **INT. MARKS : 50**
CREDITS : 4 **EXT. MARKS : 50**
DURATION : 75 hrs **MAX. MARKS: 100**

Preamble

This course provides an opportunity to apply the knowledge and skills acquired through various courses in the field of computer science to design and develop simple projects.

Course Outcomes (CO)

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

CO1[K2]: demonstrate the acquired basic knowledge of technological tools and techniques in specific domain
CO2[K3]: apply the domain specific subject knowledge in project
CO3[K3]: present the solution orally and in the form of project report
CO4[K5]: choose alternative solution for the existing problem definition
CO5[K6]: prepare formal report which describes the work undertaken using ICT tools

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K2]	3	2	1	1	1	1	1
CO2[K3]	3	2	2	1	1	2	1
CO3[K3]	2	2	1	2	1	1	1
CO4[K5]	2	2	1	3	1	1	1
CO5[K6]	2	2	2	3	1	1	1
Weightage of the course	12	10	07	10	05	06	05
Weighted percentage of Course contribution to POs	**2.2**	**2.55**	**3.78**	**3.66**	**4.46**	**3.19**	**2.46**

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

Guidelines

1. Students will work individually or in groups with maximum 2 members on a semester-long project.
2. Depending on the interest of the students, project research areas will be chosen.
3. The Students must meet the guide periodically.
4. The project carries 100 marks of which 50 marks for Internal Assessment and 50 marks for External Examination.
5. There will be two project review sessions.
6. 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.
7. The project report should be of minimum 40 pages (excluding bibliography & appendices)
8. Two 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 (50 Marks)	**External Examination (50 Marks)**
Project Report & Review : 40 Marks	Project Report : 20 Marks
Powerpoint Presentation : 5 Marks	viva-voce/Demo : 30 Marks
Demo/Performance : 5 Marks	

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme – B.Sc. Computer Science
SEMESTER- VI
MAJOR ELECTIVE COURSE – III: ADVANCED COMPUTING
(21UCSO61)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 4 **INT. MARKS : 40**
CREDITS : 3 **EXT. MARKS: 60**
DURATION : 60 hrs **MAX. MARKS: 100**

Preamble

This course introduces the learners to the basic concepts of Android application development in mobile computing, the basics of cloud computing and green computing.

Course Outcomes (CO)

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

CO1[K1]: describe android platform and design essentials, cloud architecture and deployment model, green computing
CO2[K2]: explain the anatomy of android, cloud components and architecture, green IT Strategies
CO3[K2]: outline cloud deployment, green strategies and android terminologies
CO4[K4]: compare the types of cloud services, android anatomy and green computing strategies
CO5[K5]: justify the usage of android services, cloud services and green IT fundamentals

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	2	2	1	1	1	1
CO2[K2]	3	3	2	3	1	-	1
CO3[K2]	3	2	2	1	1	1	1
CO4[K4]	3	1	1	1	-	1	1
CO5[K5]	2	1	1	1	-	1	1
Weightage of the course	14	09	08	07	03	04	05
Weighted percentage of Course contribution to POs	**2.57**	**2.3**	**4.32**	**2.56**	**2.68**	**2.13**	**2.46**

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

UNIT I **(12 hrs)**

Introduction to Android: The Android Platform - Android SDK - Eclipse Installation - Android Installation, Building you First Android application - Understanding Anatomy of Android Application - Android Manifest file.

UNIT II **(12 hrs)**

Android Application Design Essentials: Anatomy Of An Android Applications - Android Terminologies - Application Context – Activities – Services - Intents - Receiving and Broadcasting Intents - Using Intent Filter - Permissions.

UNIT III **(12 hrs)**

Introduction to Cloud Computing: Cloud Computing Overview Origins of Cloud Computing – Cloud Components - Essential Characteristics – On-Demand Self Service - Broad Network Access - Location Independent Resource Pooling - Rapid Elasticity - Measured Service - Comparing Cloud Providers with Traditional IT Service Providers - Roots of Cloud Computing.

UNIT IV **(12 hrs)**

Cloud Architecture: Cloud Architecture- Layers and Models Layers in Cloud Architecture, Software as a Service (SaaS) - features of SaaS and benefits - Platform as a Service (PaaS) -Features of PaaS and benefits - Infrastructure as a Service (IaaS) - Features of IaaS and Benefits - Service Providers - Challenges and Risks in Cloud Adoption. **Cloud Deployment Model:** Public Clouds – Private Clouds – Community Clouds - Hybrid Clouds - Advantages of Cloud Computing.

UNIT V **(12 hrs)**

Green Computing: Green IT Fundamentals - Business - IT and the Environment – Green Computing: Carbon Foot Print, Scoop on Power . **Green IT Strategies:** Drivers – Dimensions and Goals – Environmentally Responsible Business: Policies, Practices and Metrics.

TEXTBOOKS

1. Lauren Darcey and Shane Conder. *Android Wireless Application Development*. Pearson Education, Second Edition, 2011.
   UNIT I : 1,2,3,4
   UNIT II: 4-6
2. Anthony T.Velte, Toby J. Velte, Robert Elsenpeter. Cloud computing a practical approach. TATA McGraw- Hill, 2010.
   UNIT III: 1,2,3
   UNIT IV : 4,5,6,7,8

3. BhuvanUnhelkar. *Green IT Strategies and Applications-Using Environmental Intelligence.* CRC Press, 2014.

UNIT V : 1,2,3

REFERENCES

Books

1. Reto Meier. *Professional Android 2 Application Development*. Wiley India Pvt Ltd, 2010.
2. Mark L Murphy. *Beginning Android*. Wiley India Pvt Ltd, 2010.
3. Judith Hurwitz, Robin Bloor, Marcia Kaufman,FernHalper. *Cloud computing for dummies*, Wiley Publishing Inc, 2010.
4. RajkumarBuyya, James Broberg, AndrzejGoscinski. *Cloud Computing (Principles and Paradigms)*. John Wiley & Sons Inc, 201.1
5. John Lamb. *The Greening of IT*. Pearson Education, 2009.

Web Sources

1. https://www.android.com/intl/en_in/
2. https://azure.microsoft.com/en-in/overview/what-is-cloud-computing/
3. https://datascience.foundation/datatalk/green-computing-the-future-of-computing

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme – B.Sc. Computer Science
SEMESTER- VI
MAJOR ELECTIVE COURSE – III: INTERNET OF THINGS (21UCSO62)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 4 **INT. MARKS : 40**
CREDITS : 3 **EXT. MARKS : 60**
DURATION : 60 hrs **MAX. MARKS: 100**

Preamble

This course introduces the Internet of things (IoT),the network of physical devices, vehicles and home appliances.

Course Outcomes (CO)

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

CO1[K1]: describe IoT, internet principles, prototyping for embedded devices and four pillars of IoT
CO2[K2]: explain the principles of IoT and applications
CO3[K2]: illustrate the usage of connected devices, MAC addresses, Non-digital methods,3D printing and four pillars of IoT
CO4[K4]: examine internet principles and embedded devices required for IoT
CO5[K5]: choose the IOT connected devices, TCP and UDP Ports and Embedded devices to solve real time applications

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	2	2	1	1	1	1
CO2[K2]	3	3	2	3	1	-	1
CO3[K2]	3	2	2	1	1	1	1
CO4[K4]	3	1	1	1	-	1	1
CO5[K5]	2	1	1	1	-	1	1
Weightage of the course	14	09	08	07	03	04	05
Weighted percentage of Course contribution to POs	**2.57**	**2.3**	**4.32**	**2.56**	**2.68**	**2.13**	**2.46**

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

UNIT I **(12 hrs)**

IoT an Overview: The Flavour of the Internet of Things – The "Internet" of "Things" – The Technology of the Internet of Things - Design Principles for Connected Devices – Calm and Ambient Technology – Web Thinking for Connected Devices.

UNIT II **(12 hrs)**

Internet Principles: Internet Communications and IP Addresses – MAC Addresses – TCP and UDP Ports – Thinking about Prototyping – Sketching – Prototypes and Production - Open Source Versus Cloud Source.

UNIT III **(12 hrs)**

Prototyping for Embedded Devices: Electronics – Embedded Computing Basics – Arduino – Raspberry Pi – Prototyping the Physical Design – Preparation – Sketch, Iterate and Explore – Non Digital Methods – 3D Printing – Laser Cutting.

UNIT IV **(12 hrs)**

IoT Applications: The ICT Wave – Ubiquitous IoT Applications – A Panoramic View of IoT Applications – Important Vertical IoT Applications.

UNIT V **(12 hrs)**

Four Pillars Of IoT: The Horizontal, Vertical and Four Pillars – M2M, RFID, WSN and SCADA – DNA of IOT – DCM, Device, Connect – Wired and Wireless Networks – Satellite IoT – Protocol Standardization for IoT – IoT Protocol Standardization Efforts.

TEXTBOOKS

1. Adrian McEwen and Hakim Cassimally. *Designing the Internet of Things*. Wiley,2014.
   UNIT I : 1,2
   UNIT II: 3,4
   UNIT III: 5,6
2. Honbo Zhou. *The Internet of things in the cloud a middleware perspective*. CRC Press, Taylor and Francis Group, 2013.
   UNIT IV : 1,2
   UNIT V : 3,4,6

REFERENCES

Books

1. John Soldatos*. Building Blocks for IoT Analytics*. River Publishers, 2016.
2. Jean - Philippe Vasseur, Adam Dunkels*. Interconnecting Smart Objects with IP: The Next Internet.* Morgan Kuffmann Publishers, 2010
3. ArshdeepBahga and Vijai Madisetti. *A Hands - on Approach: Internet of Things.* Universities Press, 2015.
4. Samuel Greengard. *The Internet of Things.* The MIT press, 2015
5. Peter Waher.*Learning Internet of Things*. Packt Publishing, 2015.

Web Sources

1. http://indexof.co.uk/CloudComputingbooks/Essentials%20of%20cloud%20computing%20(2015).pdf
2. https://www.iottechexpo.com/2018/11/iot/the-iot-analytics-lifecycle-from-generating-data-topredicting-the-future-losant/
3. https://www.coursera.org/learn/cloud-iot-platform
4. https://www.udemy.com/course/iothacking1/

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme – B.Sc. Computer Science
SEMESTER- VI
MAJOR ELECTIVE COURSE – III: BIG DATA (21UCSO63)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 4 **INT. MARKS : 40**
CREDITS : 3 **EXT. MARKS : 60**
DURATION : 60 hrs **MAX. MARKS: 100**

Preamble

This course introduces the learners to the basics of big data analytics, algorithms with tools and techniques for analysis.

Course Outcomes (CO)

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

CO1[K1]: outline the concepts of big data, statistical concepts ,data analysis, clustering and map reduce hadoop framework

CO2[K2]: explain time series, neural networks and fuzzy logic analysis, mining data streams and frequent itemset and various visualization techniques

CO3[K3]: apply regression, clustering and classification techniques

CO4[K4]: distinguish the stream concepts and the clustering techniques

CO5[K4]: analyze regression modeling, time series and market based model

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K1]	3	2	2	1	1	1	1
CO2[K2]	3	3	2	3	1	-	1
CO3[K3]	3	2	2	1	1	1	1
CO4[K4]	3	1	1	1	-	1	1
CO5[K4]	2	1	1	1	-	1	1
Weightage of the course	14	09	08	07	03	04	05
Weighted percentage of Course contribution to POs	**2.57**	**2.3**	**4.32**	**2.56**	**2.68**	**2.13**	**2.46**

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

UNIT I **(12 hrs)**

Introduction To Big Data: Introduction to Big Data Platform – Challenges of Conventional Systems - Web Data – Evolution of Analytic Scalability, Analytic Processes and Tools, Analysis Vs Reporting - Modern Data Analytic Tools. **Statistical Concepts:** Sampling Distributions - Resampling, Statistical Inference - Prediction Error.

UNIT II **(12 hrs)**

Data Analysis: Regression Modeling - Multivariate Analysis - Bayesian Modeling, Inference and Bayesian Networks - Support Vector and Kernel Methods. **Analysis of Time Series:** Linear Systems Analysis - Nonlinear Dynamics - Rule Induction. **Neural Networks:** Learning and Generalization, - Competitive Learning - Principal Component Analysis and Neural Networks. **Fuzzy Logic:** Extracting Fuzzy Models From Data - Fuzzy Decision Trees - Stochastic Search Methods.

UNIT III **(12 hrs)**

Mining Data Streams: Introduction to Streams Concepts – Stream Data Model and Architecture - Stream Computing, Sampling Data in a Stream – Filtering Streams – Counting Distinct Elements in a Stream – Estimating Moments – Counting Oneness in a Window – Decaying Window - Realtime Analytics Platform(RTAP) Applications - Case Studies - Real Time Sentiment Analysis, Stock Market Predictions.

UNIT IV **(12 hrs)**

Frequent Itemsets And Clustering: Mining Frequent Itemsets - Market Based Model – Apriori Algorithm – Handling Large Data Sets in Main Memory – Limited Pass Algorithm – Counting Frequent Itemsets in a Stream – Clustering Techniques – Hierarchical – K- Means – Clustering High Dimensional Data – CLIQUE and PROCLUS – Frequent Pattern Based Clustering Methods – Clustering in Non-Euclidean Space – Clustering for Streams and Parallelism.

UNIT V **(12 Hrs)**

Frameworks and Visualization: Mapreduce – Hadoop, Hive, Mapr – Sharding – Nosql Databases - S3 - Hadoop Distributed File Systems – Visualizations - Visual Data Analysis Techniques - Interaction Techniques - Systems and Applications

TEXTBOOKS

1. Michael Berthold, David J. Hand. *Intelligent Data Analysis.* Springer. 2007.
   UNIT I : 1,2
   UNIT II : 3,4,5,6,7,8,9
   UNIT V: 10

2. AnandRajaraman and Jeffrey David Ullman.*Mining of Massive Datasets*. Cambridge University Press, 2012

   UNIT III : 4

   UNIT IV : 6,7

3. David Loshin. Big Data Analytics from strategic planning to Enterprise Integration with Tools, Techniques, NoSQL and Graph. Morgan Kaufmann, 2013

   UNIT V : 7,9,10

REFERENCES

Books

1. EMC Education Services. *Data Science and Big Data Analytics*: *Discovering, Analyzing,Visualizing and Presenting Data*. Wiley publishers, 2015.
2. Bart Baesens. *Analytics in a Big Data World: The Essential Guide to Data Science and itsApplications*. Wiley Publishers, 2015.
3. Kim H. Pries and Robert Dunnigan. *Big Data Analytics: A Practical Guide for Managers*. CRCPress, 2015

Web Sources

1. https://www.ti.rwth-aachen.de/teaching/BigData/FBDA.pdf
2. http://creativestellars.blogspot.com/p/big-data-cse-3-1.html
3. https://lecturenotes.in/notes/17901-note-for-big-data-bd-by-preethi-cse-005

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF COMPUTER SCIENCE
UG Programme – B.Sc Computer Science
SEMESTER- VI
SKILL ENHANCEMENT COURSE – VI: PRACTICAL: IMAGE PROCESSING
(21UCSS6P)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 2 **INT. MARKS : 50**
CREDIT : 1 **EXT. MARKS : 50**
DURATION : 30 hrs **MAX. MARKS: 100**

Preamble

This course introduces the learners to the fundamentals of digital image processing and gives an understanding in graphical design.

Course Outcomes (CO)

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

CO1[K2]: demonstrate the image effects, image filters and geometric transformation, color and contrast adjustment.
CO2[K3]: use filtering techniques in image enhancement
CO3[K3]: apply the effects of various image transformation
CO4[K4]: examine the usage of geometric transformation and color channelization in image
CO5[K6]: combine various image effects, filters and transformations to image

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1[K2]	3	1	-	1	-	-	1
CO2[K3]	3	1	-	1	-	1	1
CO3[K3]	3	1	-	-	-	1	1
CO4[K4]	3	1	1	1	1	1	1
CO5[K6]	3	2	1	1	1	1	1
Weightage of the course	15	06	02	04	02	04	05
Weighted percentage of Course contribution to POs	**2.75**	**1.53**	**1.08**	**1.47**	**1.79**	**2.13**	**2.46**

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

1. Import, export and properties of an image
   [Reading an image, writing an image, display the information of an image and properties of an image (color node, storage mode, dimension and total no of frames)]
2. To create a program to display gray scale image using read and write operation.
3. Image Transformation/Geometric transformations.
   [Trim, Cropping, Scaling, rotation, Image Border and Flip & Flop]
4. Contrast Adjustment with Image Analysis
   [Adjusting Brightness and Contrast of an image]
   [Adding watermark, converting file format (JPG to PNG)]
5. Image enhancement [Morphological Operations (Erosion, dilation, Opening and Closing)]
6. Image effects (Silly Filters) [Charcoal, Oil paint, edge, embossing and negate]
7. Image Filter [Low Pass Filter, High Pass Filter and Noise]
8. Color space conversion [RGB to Grey, RGB to HIS, HIS to RGB]
9. Color Channelization [Separate the color channels of an image]
10. Kernel Convolution [Blurring]
11. Animation [Morph the sequence of images]
12. Convert Black and White to Color photo to perform animation of an image

Courses offered to Other Departments

SRI KALISWARI COLLEGE (AUTONOMOUS), SIVAKASI
DEPARTMENT OF TAMIL
UG Programme - B.A. Tamil
SEMESTER- V
CORE COURSE - XII: PRACTICAL: OFFICE AUTOMATION (21UTAC54)
(From 2021-2022 Batch onwards)

HOURS/WEEK: 5 **INT. MARKS : 50**
CREDITS : 4 **EXT. MARKS : 50**
DURATION : 75 hrs **MAX. MARKS: 100**

Preamble

கணினித் தொகுப்புகளை உபயோகித்து ஆவணங்கள், விரிதாள்கள் மற்றும் ஸ்லைடுகளை எளிய முறையில் உருவாக்கும் நோக்கில் இத்தாள் வடிவமைக்கபட்டுள்ளது.

Course Outcomes (CO)

பாடநெறி வெற்றிகரமாக முடிந்த பின் கற்பவர்களால்,

CO1 [K2]: அடிப்படை வடிவமைப்பு விருப்பங்கள், அட்டவணைகள், வரைபடங்கள், அஞ்சல் ஒன்றிணைப்பு வரைபடங்கள் ஆகியவற்றை செய்வர்

CO2 [K3]: மைக்ரோசா.ப்ட் அலுவலகத்தைப் பயன்படுத்தி தோட்டாக்கள் மற்றும் எண், கணித சூத்திரங்கள் மற்றும் மற்றும் பல்வேறு வடிவமைப்புகளைப் பயன்படுத்துவர்

CO3 [K3]: கணித சூத்திரங்கள், எழுத்துரு, பத்தி, பக்க வடிவமைப்பு விருப்பங்களுக்கான கருவிகளைப் பயன்படுத்தி காட்டுவர்

CO4 [K4]: பல்வேறு வகையான எடிட்டிங் கருவிகள், பட்டியல்கள் மற்றும் விளக்கப்படங்களை ஒப்பிடுவர்

CO5 [K6]: ஒரு ஆவணம், விளக்கக்காட்சி ஸ்லைடை வடிவமைத்து பணித்தாள்களில் கணக்கீடு செய்வர்

CO-PO Mapping table (Course Articulation Matrix)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1 [K2]	2	3	2	1	-	1	2
CO2 [K3]	2	2	1	1	1	-	2
CO3 [K3]	3	2	1	1	-	1	1
CO4 [K4]	2	2	2	1	1	1	2
CO5 [K6]	2	1	2	1	1	-	1
Weightage of the course	11	10	08	05	03	03	08
Weighted percentage of Course contribution to POs	**2.34**	**2.58**	**5.71**	**1.39**	**1.8**	**1.65**	**4.44**

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

WORD

1. புதிய டாக்குமெண்டை உருவாக்குதல், சேமித்தல் மற்றும் அலைன்மெண்ட் கன்ட்ரோல் பயன்படுத்தல்
2. புதிய அட்டவணை உருவாக்குதல், செல்களை இணைத்தல் மற்றும் பிரித்தல், வரிசை மற்றும் நீளவரிசை *(Row and Column)* இணைத்தல் மற்றும் நீக்குதல் ஆட்டோ.ஃபிட்
3. பத்திவரிசை இடைவெளி, தலைப்பு மற்றும் அடிக்குறிப்பு *(Paragraph, Line spacing, Header and Footer)* பயன்படுத்தல்
4. தோட்டாக்கள் மற்றும் எண்ணிடல், எழுத்துப்பிழை மற்றும் இலக்கணம் *(Bullets and Numbering, Spelling and Grammar)* பயன்படுத்தல்
5. குறிப்பிட்ட வடிவத்திற்குள் படத்தினை நுழைத்தல் மற்றும் பக்கவடிவமைப்பு பயன்படுத்தல் *(Page Border and Page Color)*
6. திருமண அழைப்பிதழ் வடிவமைத்தல் (தமிழ் மற்றும் ஆங்கில மொழியில் வோர்ட் ஆர்ட் மற்றும் கூகிள் இன்புட் பயன்படுத்தல்
7. செய்தித்தாள் வடிவமைத்தல் (தமிழ் மற்றும் ஆங்கில மொழியல் காலம் அலைன்மெண்ட் மற்றும் ட்ராப்கேப் பயன்படுத்தல்
8. அஞ்சல் ஒன்றிணைப்பு உருவாக்குதல் *(Mail Merge)*
9. அட்டவணையை உருவாக்கி விவரங்களை உள்ளிடல் *(Table creation)*
10. கூகிள் ஆவணங்கள், கூகிள் ஸ்லைடுகள் மற்றும் கூகிள் தாள்கள் பயன்படுத்தி ஒரு ஆவணம், விளக்கக்காட்சி மற்றும் விரித்தாளைப் பகிர்த்தல்

POWERPOINT

11. சிலைட் உருவாக்குதல் *(Simple Slide)*
12. டிரான்ஸிசன் மற்றும் டிசைன் பயன்படுத்தல் *(Transition and Design)*
13. கஸ்டம் அனிமேஷின் பயன்படுத்தல் *(Custom Animation)*
14. புகைப்பட ஆல்பம் தயாரித்தல் *(Photo Album)*

EXCEL

15. கணிதசெயலிகளை பயன்படுத்தல் *(Mathematical Function)*
16. வரைபடம் மற்றும் விளக்கப்படம் பயன்படுத்தல் *(Graphs and Charts)*
17. வடிகட்டி கண்ட்ரோல் பயன்படுத்தல் *(Filter)*