SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE

(AUTONOMOUS)
SILVER JUBILEE INSTITUTION

(*Affiliated to Bharathidasan University*)
(Accredited by NAAC | An ISO 9001:2015 Certified Institution)

SUNDARAKKOTTAI, MANNARGUDI – 614016, TAMILNADU, INDIA.

B.Sc., COMPUTER SCIENCE
LEARNING OUTCOMES BASED CURRICULUM FRAMEWORK(CBCS-LOCF)
(*For the candidates admitted in the academic year 2024–2025*)

PROGRAMME CODE

3USCSC

B.Sc., COMPUTER SCIENCE
CHOICE BASED CREDIT SYSTEM– LEARNING OUTCOMES BASED CURRICULUM FRAME WORK (CBCS–LOCF)
(For the candidates admitted in the academic year 2024–2025)

CHOICE BASED CREDIT SYSTEM

The credit based semester system provides flexibility in designing curriculum and assigning credits based on the course content and hours of teaching. The choice based credit system provides a 'cafeteria' type approach in which the students can take courses of their choice, learn at their own pace, undergo additional courses and acquire more than the required credits, and adopt an interdisciplinary approach to learning. Our College has moved to CBCS and implemented the grading system.

OUTCOME-BASED EDUCATION (OBE)

LEARNING OUTCOME-BASED CURRICULUM FRAMEWORK (LOCF)

The fundamental premise underlying the learning outcomes-based approach to curriculum planning and development is that higher education qualifications are awarded on the basis of demonstrated achievement of outcomes (expressed in terms of knowledge, understanding, skills, attitudes and values) and academic standards expected of graduates of a programme of study. Learning outcomes specify what graduates completing a particular programme of study are expected to know, understand and be able to do at the end of their programme of study. The expected learning outcomes are used as reference points that would help to formulate graduate attributes, qualification descriptors, programme learning outcomes and course learning outcomes which in turn will help in curriculum planning and development, and in the design, delivery and review of academic programmes. They provide general guidance for articulating the essential learnings associated with programmes of study and courses with in a programme, maintain national standards and international comparability of learning outcomes and academic standards to ensure global competitiveness, and to facilitate student/graduate mobility and provide higher education institutions an important point of reference for designing teaching-learning strategies, assessing student learning levels, and periodic review of programmes and academic standards.

Some important aspects of the Outcome Based Education Course: is defined as a theory, practical or theory cum practical subject studied in a semester. **Course Outcomes (COs):** are statements that describe significant and essential learning that learners have achieved, and can reliably demonstrate at the end of a course. Generally three or more course outcomes may be specified for each course based on its weightage. **Programme:** is defined as the specialization or discipline of a Degree. **Programme Outcomes (POs):** Programme outcomes are narrower statements that describe what students are expected to be able to do by the time of graduation. POs are expected to be aligned closely with Graduate Attributes. **Programme Specific Outcomes (PSOs):** PSOs are what the students should be able to do at the time of graduation with reference to a specific discipline. **Some important terminologies repeatedly used in LOCF.** **Core Courses (CC)** A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course. These are the courses which provide basic understanding of their main discipline. In order to maintain a requisite standard certain core courses must be included in an academic program. This helps in providing a universal recognition to the said academic program.

Discipline Specific Elective Courses (DSE) Elective course may be offered by the main discipline/subject of study is referred to as Discipline Specific Elective (DSE). These courses offer the flexibility of selection of options from a pool of courses. These are considered specialized or advanced to that particular programme and provide extensive exposure in the area chosen; these are also more applied in nature.

Generic Elective Courses An elective course chosen generally from an **unrelated discipline/subject,** with an intention to seek exposure is called a Generic Elective. Generic Elective courses are designed for the students of **other disciplines**. Thus, as per the CBCS policy, the students pursuing particular disciplines would have to opt Generic Elective courses offered by other disciplines, as per the basket of courses offered by the college. The scope of the Generic Elective (GE) Courses is positively related to the diversity of disciplines in which programmes are being offered by the college.

Non Major Elective (NME). A student shall choose at least two Non – major Elective Courses (NME) from outside his /her department. Non –Major Elective I – Those who choose Tamil in Part I can choose a non –major elective course offered by other departments. Those who do not choose Tamil in Part I must choose either a) Basic Tamil if Tamil language was not studies in school level or b) Special Tamil if Tamil language was studies upto 10th & 12th std.

Skill Enhancement Courses (SECs) These courses focus on developing skills or proficiencies in the student, and aim at providing hands-on training. Skill enhancement courses can be opted by the students of any other discipline, but are highly suitable for students pursuing their academic programme. These courses may be chosen from a pool of courses designed to provide value-based and/or skill-based knowledge.

Field Study/Industrial Visit/Case Study: It has to be completed during the fifth semester of the degree programme. Credit for this course will be entered in the fifth semester's marks statement.

Internship: Students must complete internship during summer holidays after the fourth semester. They have to submit a report of internship training with the necessary documents and have to appear for a viva-voce examination during fifth semester. Credit for internship will be entered in the fifth semester's mark statement.

Extra Credit Courses: In order to facilitate the students, gaining knowledge/skills by attending online courses MOOC, credits are awarded as extra credits, the extra credit are at three semesters after verifying the course completion certificates. According to the guidelines of UGC, the students are encouraged to avail this option of enriching their knowledge by enrolling themselves in the Massive Open Online Courses (MOOC) provided by various portals such as SWAYAM, NPTEL etc.

Undergraduate Programme:

Programme Pattern: The Under Graduate degree programme consists of **FIVE** vital components. They are as follows:

Part -I : Languages (Tamil / Hindi / French / Sanskrit)

Part-II : General English

Part-III: Core Course (Theory, Practicals, Generic Elective courses , Discipline Specific Elective courses , Compulsory and Optional Allied courses, Project)

Part-IV: Non Major Elective, Foundation Course, Value Education, Environmental studies, Skill Enhancement Courses/ Soft Skills, Internship / field visit / industrial visit/ Case Study), Professional Competency Course

Part –V

Extension activity, Gender studies

EXAMINATION

Continuous Internal Assessment (CIA):

UG - Distribution of CIA Marks

Passing Minimum: 40 %

Assisgnment-3	=	30%
Test-3 (Best 2 out of 3)	=	50%
Seminar	=	10%
Attendance	=	10%

Question Paper Pattern

Part A:

Part A 1 (10X1=10 marks)
One word question/ Fill in/True or False/ Multiple Choice Questions
Two Questions from Each unit

Part A 2 (5X2=10 marks)
Match the following
Short Answers
One question from Each unit
Total Marks – 20
Part B: (5X5=25 marks)
Paragraph Answers
Either/ or type, One Question from each unit
Part C: (10X3=30)
Essay Type Answers
Answer 3 out of 5 Questions
One Question from each unit
Part A: K1 Level
Part B: K2, K3 and K4 Level
Part C: K5 and K6 Level

Knowledge levels for assessment of Outcomes based on Blooms Taxonomy

S. No.	Level	Parameter	Description
1	K1	Knowledge/Remembering	**It is the ability to remember the previouslylearned**
2	K2	Comprehension/ Understanding	**The learner explains ideas or concepts**
3	K3	Application/Applying	**The learner uses information in a new way**
4	K4	Analysis/Analysing	**The learner distinguishes among different parts**
5	K5	Evaluation/Evaluating	**The learner justifies a stand or decision**
6	**K6**	**Synthesis /Creating**	**The learner creates a new product or point ofview**

WEIGHTAGE of K – LEVELS IN QUESTION PAPER

(Cognitive Level) K- LEVELS →	Lower Order Thinking			Higher Order Thinking			Total
	K1	K2	K3	K4	K5	K6	
END SEMESTER EXAMINATIONS (ESE)	20	25			30		75
Continuous Internal Assessment (CIA)	20	25			30		75

QUESTION PATTERN FOR END SEMESTER EXAMINATION/Continuous Internal Assessment		
PART		**MARKS**
PART –A I. (No choice ,One Mark) **TWO** questions from each unit	**(**10x1 =10)	20
II. (No choice ,Two Mark) **ONE** question from each unit	**(**5x2 =10)	
PART -B (Either/ or type ,5-Marks) **ONE** questions from each unit	(5x5 =25)	25
PART -C (3 out of 5) (10 Marks) **ONE** question from each unit	(3x10 =30)	30
	Total	**75**

BLUE PRINT OF QUESTION PAPER FOR END SEMESTER EXAMINATION							
DURATION: 3. 00 Hours.						**Max Mark : 75**	
K- LEVELS **PART**	K1	K2	K3	K4	K5	K6	Total Marks
PART –A (One Mark, No choice) (10x1 =10)	10						10
(2-Marks, No choice) (5x2=10)	10						10
PART –B (5- Marks) (Either/or type) (5x5=25)		5	10	10			25
PART -C (10 Marks) (3 out of 5) (3x10=30) Courses having only **K5,K6** levels, K5 level- 3 Questions, K6 level- 2 Questions **(One K6 level question is compulsory)**					20	10	30
Total	20	05	10	10	20	10	75

GRADING SYSTEM

Once the marks of the CIA and the end-semester examination for each of the courses are available, they will be added and converted as final mark. The marks thus obtained will then be graded as per the scheme provided in Table-1.

Grade Point Average (GPA) will be calculated from the first semester onwards for all semester. From the second semester onwards, the total performance within a semester and the continuous performance starting from the first semester are indicated by semester Grade Point Average (GPA) and Cumulative Grade Point Average (CGPA), respectively. These two are calculated by the following formulae:

$$GPA = \dfrac{\sum\limits_{i=1}^{n} C_i G_i}{\sum\limits_{I=1}^{n} C_i}$$	$$WAM\,(Weighted\,Average\,Marks) = \dfrac{\sum\limits_{i=1}^{N} C_i M_i}{\sum\limits_{I=1}^{n} C_i}$$
Where, C_i is the Credit earned for the Course i G_i is the Grade Point obtained by the student for the Course i M_i is the marks obtained for the course i and n is the number of Courses **Passed** in that semester.	

CGPA: Average GPA of all the Courses starting from the first semester to the current semester.

CLASSIFICATION OF FINAL RESULTS:

1.For each of the first three parts, there shall be separate classification on the basis of CGPA, as indicated in Table-2.

2.For the purpose of declaring a candidate to have qualified for the Degree of Bachelor of Arts/Science/Commerce/Management as Outstanding/Excellent/Very Good/Good/Above Average/Average, the marks and the corresponding CGPA earnedby the candidate in Part-III alone will be the criterion, provided the candidate has secured the prescribed passing minimum in the all the Five parts of the Programme.

3.Grade in Part –IV and Part-V shall be shown separately and it shall not be taken into account for classification.

4.A Pass in PART- V will be mandatory although the marks will not count for the calculation of the CGPA.

5.Absence from an examination shall not be taken an attempt.

Table-1: Grading of the Courses - UG

Marks Range	Grade Point	Corresponding Grade
90 and above	10	O
80 and above and below 90	9	A+
70 and above and below 80	8	A
60 and above and below 70	7	B+
50 and above and below 60	6	B
40 and above and below 50	5	C
Below 40	NA	RA

The candidate's performance in every current semester is indicated by **Semester Grade Point Average (SGPA)** and from the second semester onwards, the continuous performance including pervious semester /s is indicated by **Cumulative Grade Point Average (CGPA).**

Table-3: Final Result

CGPA	Corresponding Grade	Classification of Final Result
9.00 and above	O	Outstanding
8.00 to 8.99	A+	Excellent
7.00 to 7.99	A	Very Good
6.00 to 6.99	B+	Good
5.00 to 5.99	B	Above Average
4.00 to 4.99	C	Average
Below 4.00	RA	Re-appearance

The candidates who have passed in the first appearance and within the prescribed duration of the UG programme are eligible. If the candidate's Grade is O/A+ with more than one attempt, the performance is fixed as "Very Good".

VISION

Attaining Global Recognition in Computer Science Education and to Develop the Software Professionals

MISSION

Imparting Quality Education through a Well – Designed Curriculum in tune with the Challenging Software Needs of the Industry

PROGRAMME OUTCOMES FOR B.Sc., DEGREE

PO No.	Programme Outcomes *(Upon completion of the B.Sc. Degree Programme, the Undergraduate will be able to)*
PO-1	**Disciplinary knowledge**: Demonstrate comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate program of study in Bachelor of Science.
PO-2	**Critical thinking, Problem Solving and Reflective thinking:** think critically about the issues and identify, critically analyze and solve problems from the disciplines of concern using appropriate tools and techniques and the knowledge, skills and attitudes acquired and extrapolate the same to real life situations; show critical sensibility to life experiences, with self awareness and reflexivity of both self and society.
PO-3	**Analytical & Scientific Reasoning:** evaluate the reliability and relevance of evidence; identify logical flaws and holes in the arguments of others; analyze and synthesize data from a variety of sources; draw valid conclusions and support them with evidence and examples and addressing opposing viewpoints; critically evaluate ideas, evidence, and experiences from an open minded and reasoned perspective.
PO-4	**Research-related Skills:** develop a sense of capability for relevant/appropriate inquiry and asking questions, synthesize, articulate and report results and to recognize and predict cause and effect relationships, define problems, formulate and establish hypothesis, analyze and interpret and draw conclusions from data, execute and report the results of an experiment or investigation.
PO-5	**Digital literacy and Effective Communication:** use ICT in a variety of learning situations and speak, read, write and listen clearly in person and through electronic media in English and in one or more Indian languages, and make meaning of the world by connecting people, ideas ,books, media and technology; efficiently communicate thoughts and ideas in a clear and concise manner.
PO-6	**Individual and Team Work:** effectively accomplish tasks individually as well as work effectively and respectfully as member or leader with diverse teams, facilitate cooperative or coordinated effort on the part of a group,and act together as a group or a team in the interest so for a common cause and work efficiently as a member of a team.
PO-7	**Multicultural Competence and Social Interaction:** understand the values and beliefs of multiple cultures, global perspectives, engage and interact respectfully with diverse groups and elicit views of others, mediate disagreements and help reach conclusions in group settings.
PO-8	**Awareness of Ethical issues, Human values and Gender Issues:** embrace moral/ethical values in conducting one's life, formulate a position/argument about an ethical issue from multiple perspectives, and use ethical practices in all work and understand the value of relationship between self and the community and aware of the various issues concerning women and society.
PO-9	**Awareness of Environment and Sustainability:** understand the impacts of technology and business practices in societal and environmental contexts, and sustainable development.
PO-10	**Self directed and Lifelong learning:** acquire knowledge and skills, including learning "how to learn", that are necessary for participating in learning activities throughout life and to engage in independent and life-long learning in the broadest context of socio-technological changes.

PROGRAMME SPECIFIC OUTCOMES FOR B.Sc., COMPUTER SCIENCE

PSO No.	Program Specific Outcomes (*Upon completion of the B.Sc., COMPUTER SCIENCE Degree Programme, the Undergraduate will be able to*)
PSO-1	Think in a critical and logical based manner
PSO-2	Familiarize the students with suitable software tools of computer science and industrial applications to handle issues and solve problems in mathematics or statistics and real time application related sciences.
PSO-3	Know when there is a need for information, to be able to identify, locate, evaluate, and effectively use that information for the issue or problem at hand.
PSO-4	Understand, formulate, develop programming model with logical approaches to a Address issues arising in social science, business and other contexts.
PSO-5	Acquire good knowledge and understanding to solve specific theoretical and applied problems in advanced areas of Computer science and Industrial statistics. .

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B.Sc., COMPUTER SCIENCE
CHOICE BASED CREDIT SYSTEM – LEARNING OUTCOMES BASED CURRICULUM FRAMEWORK (CBCS –LOCF)
(For the candidates admitted in the academic year 2024 – 2025)

ELIGIBILITY: Those who have completed in 10th , +2 examinations with Mathematics as one the core subject

Sem	Part	Nature of the Course	CourseCode	Title of the Paper	Ins. Hours/ Week	L	T	P	S	Credit	Exam Hours	Marks CIA	Marks ESE	Total
I	I	Language Course-I	U24LC101	Pothu Tamil-I Tamil Ilakkiya Varalaru -I	6	5	1	-	-	3	3	25	75	100
	II	English Language Course-I	U24ELC101	General English – I	6	5	1	-	-	3	3	25	75	100
	III	Core Course-I	U24CS101	Python Programming	5	4	1	-	-	5	3	25	75	100
		Core Practical-I	U24CS102P	Python Programming Lab	4	1	-	3	-	4	3	25	75	100
		Allied Course-I	U24AMA101	Statistics	3	2	1	-	-	2	3	25	75	100
		Allied course-II	U24AMA102	Numerical Analysis	2	2	-	-	-	-	-	-	-	-
		Non Major Elective –I	U24NMECS11	Office automation	2	2	-	-	-	2	3	25	75	100
	IV	Foundation Course	U24FCCS11	Problem Solving Techniques	2	2	-	-	-	2	3	25	75	100
		TOTAL			**30**	**23**	**4**	**3**	**-**	**21**	**-**	**-**	**-**	**700**
II	I	Language Course-II	U24LC202	Pothu Tamil -II Tamil Ilakkiya Varalaru -II	6	5	1	-	-	3	3	25	75	100
	II	English Language Course-II	U24ELC202	General English – II	6	5	1	-	-	3	3	25	75	100
	III	Core Course-II	U24CS203	Data Structures and Algorithms	5	4	1	-	-	5	3	25	75	100
		Core Practical-II	U24CS204P	Data Structures andAlgorithms Lab	4	1	-	3	-	4	3	25	75	100
		Allied Course-II	U24AMA102	Numerical Analysis	2	2	-	-	-	2	3	25	75	100
		Allied Course –III	U24AMA203	Operations Research	3	2	1	-	-	2	3	25	75	100
		Non Major Elective-II	U24NMECS22	Introduction to web design	2	2	-	-	-	2	3	25	75	100
	IV	Skill Enhancement Course-I	U24SECS21	R Programming	2	2	-	-	-	2	3	25	75	100
		TOTAL			**30**	**23**	**4**	**3**	**-**	**23**	**-**	**-**	**-**	**800**
III	I	Language Course-III		Pothu Tamil –III Tamilazha Varalarum Panpadum-III	6	5	1	-	-	3	3	25	75	100
	II	English Language course-III		General English –III	6	5	1	-	-	3	3	25	75	100
	III	Core Course-III		Java Programming	5	4	1	-	-	5	3	25	75	100
		Core Practical-III		Java Programming Lab	4	1	-	3	-	4	3	25	75	100

Sem	Part	Course	Course Code	Title of the Paper	Ins. Hours /Week	L	T	P	S	Credit	Exam Hours	CIA	ESE	Total
		Allied Course-IV		Physics –I	3	2	1	-	-	2	3	25	75	100
		Allied Practical –I		Physics -II Practical I	2	-	-	2	-	-	--	--	--	--
		Skill Enhancement Course-II		Fundamentals of office automation	2	2	-	-	-	2	3	25	75	100
	IV	Skill Enhancement Course-III		Introduction to HTML	2	2	-	-	-	2	3	25	75	100
				TOTAL	**30**	**21**	**4**	**5**	**-**	**21**		**-**	**-**	**700**
IV	I	Language Course-IV		Pothu Tamil –IV Tamilum Ariviyalum -IV	6	5	1	-	-	3	3	25	75	100
	II	English Language Course-IV		General English - IV	6	5	1	-	-	3	3	25	75	100
	III	Core CourseIV		Database Management System	5	4	1	-	-	5	3	25	75	100
		Core Practical -IV		Database Management System Lab	4	1	-	3	-	4	3	25	75	100
		Allied Course –V		Physics III	3	2	1	-	-	2	3	25	75	100
		Allied Practical –I		Physics -II Practical I	2	-	-	2	-	2	3	25	75	100
		Skill Enhancement Course-IV		Understanding Internet	2	2	-	-	-	2	3	25	75	100
	IV	Skill Enhancement Course –V		Multimedia Systems	2	2	-	-	-	2	3	25	75	100
				TOTAL	**30**	**21**	**4**	**5**	**-**	**23**	**-**	**-**	**-**	**800**
V	III	Core Course- V		Computer Networks	6	5	1	-	-	5	3	25	75	100
		Core Course –VI		PHP Programming	5	4	1	-	-	5	3	25	75	100
		Core Course-VII		Software Engineering	5	4	1	-	-	4	3	25	75	100
		Core Practical-V		PHP Programing Lab	4	-	1	3	-	4	3	25	75	100
		Elective Course-I		Artificial Intelligence/Operating systems/Microprocessor and Microcontroller	4	3	1	-	-	3	3	25	75	100
		Elective Course –II		Cloud Computing/Data Mining /Distributed Computing	4	3	1	-	-	3	3	25	75	100
	IV	Environmental Studies		Environmental Studies	2	2	-	-	-	2	3	25	75	100
		Internship/ Industrial visit/ Field visit		Internship/ Industrial visit/ Field visit	-	-	-	-	-	2	-	-	-	-
				TOTAL	**30**	**21**	**6**	**3**	**-**	**28**		**-**	**-**	**700**
VI	III	Core Course-VIII		Dot NET Programming	6	5	1	-	-	4	3	25	75	100
		Core Practical-VI		Dot NET Programming Lab	6	-	1	5	-	4	3	25	75	100
		Core Project		Project with viva- voce/ Group Project	5	-	1	4	-	5	3	25	75	100
		Elective Course-III		Elective Course-III Introduction to Data Science/Software Testing/Machine learning	4	3	1	-	-	3	3	25	75	100

Sem		Course	Course Code	Title of the Paper	Ins. Hours/ Week	L	T	P	S	Credit	Exam Hours	Marks		Total
												CIA	ESE	
	Part	Elective Course-IV		Elective Course-IV Information Security/Internet of Things /Mobile Application Development	4	3	1	-	-	3	3	25	75	100
	IV	Value Education		Value Education	2	2	-	-	-	2	3	25	75	100
		Professional competency Course		Aptitude and reasoning skillsfor competitive examinations	2	2	-	-	-	2	3	25	75	100
	V	Gender Studies		Gender Studies	1	1	-	-	-	1	3	25	75	100
		Extension activity		Extension activity	-	-	-	-	-	1	-	-	-	-
				TOTAL	**30**	**16**	**5**	**9**	**-**	**25**	**-**	**-**	**-**	**800**
				GRAND TOTAL	**180**	**125**	**27**	**28**		**141**	**-**	**-**	**-**	**4500**
		*Extra Credit		MOOC/SWAYAM/NPTEL						2	-	-	-	-
				Value Added Courses (At least One Per Year)						2	-	-	-	-

T-Tutorial   P-Practical   S-Seminar

Credit Distribution for UG PROGRAMME-Science

S.No	Part	Subject	No. of Courses	Total Credits
1	I	Language Course	4	12
2	II	English Language Course	4	12
3		Core Course –Theory	8	38
4		Core Practical	6	24
5		Core Project	1	05
6	III	Allied Course - Theory	5	10
7		Allied Practical	1	02
8		Elective Course	4	12
9		Non-Major Elective	2	04
10		Foundation Course	1	02
12		Skill Enhancement Course	5	10
13	IV	Internship/ Industrial visit/ Field visit	1	02
14		Environmental Studies	1	02
15		Value Education	1	02
16		Professional competency Course	1	02
17	V	Gender Studies	1	01
18		Extension Activity	1	01
		Total	**47**	**141**

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* For those who studied Tamil upto 10th +2 (Regular Stream)

+ Syllabus for other Languages should be on par with Tamil at degree level

#those who studied Tamil upto 10th +2 but opt for other languages in degree level under Part I should study special Tamil in Part IV

** Extension Activities shall be outside instruction hours

Note:

	CIA	ESE
1. Theory	25	75
2. Practical	25	75

3. Separate passing minimum is prescribed for Internal and External marks

FOR THEORY

The passing minimum for CIA shall be 40% out of 25 marks [i.e. 10 marks]

The passing minimum for University Examinations shall be 40% out of 75 marks[i.e. 30marks]

FOR PRACTICAL

The passing minimum for CIA shall be 40% out of 25 marks [i.e. 10 marks]

The passing minimum for University Examinations shall be 40% out of 75 marks [i.e. 30 marks]

NON MAJOR ELECTIVE (NME) OFFERED BY THE DEPARTMENT

Semester	Part	Course	Course Code	Title of the Paper
I	IV	NME –I	U24NMECS11	Office Automation
II		NME –II	U24NMECS22	Introduction to Web design

SEMESTER I

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(For the Candidates admitted in the academic year 2024– 2025)
PG AND RESEARCH DEPARTMENT OF COMPUTER SCIENCE
B.Sc., COMPUTER SCIENCE

Semester: I- CC-I: Python Programming

Ins. Hrs. /Week: 5 **Course Credit: 5** **Course Code:U24CS101**

UNIT-I **(15 Hours)**

Introduction: The essence of computational problem solving – Limits of computational problem solving-Computer algorithms-Computer Hardware-Computer Software-The process of computational problem solving-Python programming language - Literals - Variables and Identifiers - Operators - Expressions and Data types, Input / output.

UNIT- II **(15 Hours)**

Control Structures: Boolean Expressions - Selection Control - If Statement- Indentation in Python- Multi-Way Selection -- Iterative Control- While Statement- Infinite loops- Definite vs. Indefinite Loops- Boolean Flag. String, List and Dictionary, Manipulations Building blocks of python programs, Understanding and using ranges.

UNIT -III **(14 Hours)**

Functions: Program Routines- Defining Functions- More on Functions: Calling Value-Returning Functions-Calling Non-Value-Returning Functions- Parameter Passing - Keyword Arguments in Python - Default Arguments in Python-Variable Scope. Recursion: Recursive Functions.

UNIT-IV **(16 Hours)**

Objects and their use: Software Objects - Turtle Graphics – Turtle attributes-Modular Design: Modules - Top-Down Design - Python Modules - Text Files: Opening, reading and writing text files – Database Programming: Connecting to a database, Creating Tables, INSERT, UPDATE, DELETE and READ operations, Transaction Control, Disconnecting from a database, String Processing - Exception Handling.

UNIT–V **(15 Hours)**

Dictionaries and Sets: Dictionary type in Python - Set Data type. Object Oriented Programming using Python: Encapsulation - Inheritance – Polymorphism. Python packages: Simple programs using the built-in functions of packages matplotlib, numpy, pandas etc.

Total Lecture Hours-75

COURSE OUTCOMES

The students are able to

1. Develop and execute simple Python programs
2. Write simple Python programs using conditionals and looping for solving problems
3. Decompose a Python program into functions
4. Represent compound data using Python lists, tuples, dictionaries etc.
5. Read and write data from/to files in Python programs

TEXT BOOKS

1. Charles Dierbach, "Introduction to Computer Science using Python - A computational Problem solving Focus", Wiley India Edition, 2015.
2. Wesley J. Chun, "Core Python Applications Programming", 3rd Edition , Pearson Education, 2016

REFERENCE BOOKS

1. John Zelle, "Python Programming: An Introduction to Computer Science", Second edition, Course Technology Cengage Learning Publications, 2013, ISBN 978- 1590282410
2. Mark Lutz, "Learning Python Powerful Object Oriented Programming", O'reilly Media 2018, 5th Edition.
3. Michel Dawson, "Python Programming for Absolute Beginers" , Third Edition, Course Technology Cengage Learning Publications, 2013, ISBN 978-1435455009
4. Timothy A. Budd, "Exploring Python", Tata MCGraw Hill Education Private Limited 2011, 1 st Edition.

E- RESOURCES

1. https://onlinecourses.swayam2.ac.in/cec22_cs20/preview

MAPPING WITH PROGRAMME OUTCOMES AND PROGRAM SPECIFIC OUTCOMES

CO	POs										PSOs				
	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5
CO 1	3	3	3	3	3	3	2	2	2	1	3	3	3	3	3
CO 2	3	3	3	3	2	3	3	3	3	2	3	3	3	3	2
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CO 4	3	3	3	3	2	3	3	3	3	2	3	3	3	3	2
CO 5	3	2	3	3	3	3	2	3	3	3	3	2	3	3	3

S-Strong-3   M-Medium-2 L-Low-1

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)
SUNDARAKKOTTAI, MANNARGUDI- 614016
(For the Candidates admitted in the academic year 2024– 2025)
PG AND RESEARCH DEPARTMENT OF COMPUTER SCIENCE
B.Sc., COMPUTER SCIENCE

Semester: I - CP-I: Python Programming Lab

Ins. Hrs. /Week: 4　　　**Course Credit:4**　　　**Course Code:U24CS102P**
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EXERCISES

1. Program to convert the given temperature from Fahrenheit to Celsius and vice versa depending upon user's choice.

2. Program to calculate total marks, percentage and grade of a student. Marks obtained in each of the five subjects are to be input by user. Assign grades according to the following criteria:

   Grade A: Percentage >=80　　　　Grade B: Percentage >=70 and 80

   Grade C: Percentage >=60 and <70　　Grade D: Percentage >=40 and <60

   Grade E: Percentage < 40

3. Program, to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user.

4. Write a Python script that prints prime numbers less than 20.

5. Program to find factorial of the given number using recursive function.

6. Write a Python program to count the number of even and odd numbers from array of N numbers.

7. Write a Python class to reverse a string word by word.

8. Given a tuple and a list as input, write a program to count the occurrences of all items of the list in the tuple. (Input : tuple = ('a', 'a', 'c', 'b', 'd'), list = ['a', 'b'], Output : 3)

9. Read a file content and copy only the contents at odd lines into a new file.

10. Create a Turtle graphics window with specific size.

11. Write a Python program for Towers of Hanoi using recursion

Total Lecture Hours:60

COURSE OUTCOMES

The Students are able to

1. To understand the problem solving approaches
2. To learn the basic programming constructs in Python
3. To practice various computing strategies for Python-based solutions to real world problems
4. To use Python data structures - lists, tuples, dictionaries.
5. To do input/output with files in Python.

TEXT BOOKS

1. Charles Dierbach, "Introduction to Computer Science using Python - A computational Problem solving Focus", Wiley India Edition, 2015.
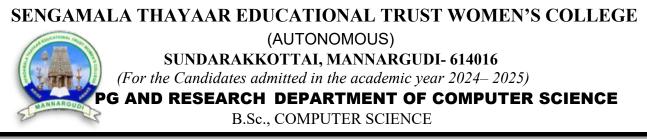
2. Wesley J. Chun, "Core Python Applications Programming", 3rd Edition , Pearson Education, 2016

REFERENCE BOOKS

1. John Zelle, "Python Programming: An Introduction to Computer Science", Second edition, Course   Technology Cengage Learning Publications, 2013, ISBN 978- 1590282410
2. Mark Lutz, "Learning Python Powerful Object Oriented Programming", O'reilly Media 2018, 5th   Edition.
3. Michel Dawson, "Python Programming for Absolute Beginers" , Third Edition, Course Technology   Cengage Learning Publications, 2013, ISBN 978-1435455009
4. Timothy A. Budd, "Exploring Python", Tata MCGraw Hill Education Private Limited 2011, 1 st   Edition.

MAPPING WITH PROGRAMME OUTCOMES AND PROGRAM SPECIFIC OUTCOMES

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S-Strong-3   M-Medium-2 L-Low-1

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE

(AUTONOMOUS)

SUNDARAKKOTTAI, MANNARGUDI- 614016

(For the Candidates admitted in the academic year 2024– 2025)

PG AND RESEARCH DEPARTMENT OF COMPUTER SCIENCE

B.Sc., COMPUTER SCIENCE

Semester: I - FC: Problem Solving Techniques

Ins. Hrs. /Week: 2   **Course Credit:2**   **Course Code:U24FCCS11**

UNIT-I

Introduction: Notion of algorithms and programs – Requirements for solving problems by computer – The problem-solving aspect: Problem definition phase, Getting started on a problem, The use of specific examples, Similarities among problems, Working backwards from the solution – General problem. **(6 Hours)**

UNIT- II

Fundamental Algorithms: Exchanging the values of two variables – Counting - Summation of a set of numbers - Factorial computation - Sine function computation - Fibonacci Series generation - Reversing the digits of an integer – Base Conversion. **(6Hours)**

UNIT -III

Factoring Methods: Finding the square root of a number – The smallest divisor of an integer – Greatest common divisor of two integers - Generating prime numbers – Computing the prime factors of an integer – Generation of pseudo-random numbers - Raising a number to a large power . **(6 Hours)**

UNIT -IV

Array Techniques: Array order reversal – Array counting or histogramming – Finding the maximum number in a set - Removal of duplicates from an ordered array - Partitioning an array – Finding the kth smallest element.. **(6 Hours)**

UNIT–V

Text Processing and Pattern Searching: Text line length adjustment – Left and right justification   of text – Keyword searching in text – Text line editing. **(6 Hours)**

Total Lecture Hours-30

COURSE OUTCOMES

The Students are able to

1. Understand the systematic approach to problem solving.
2. Know the approach and algorithms to solve specific fundamental problems.
3. Understand the efficient approach to solve specific factoring-related problems.
4. Understand the efficient array-related techniques to solve specific problems.
5. Understand the efficient methods to solve specific problems related to text processing.
6. Understand how recursion works.

TEXT BOOK

1. R. G. Dromey, How to Solve it by Computer, Pearson India, 2007.

REFERENCE BOOKS

1. George Polya, Jeremy Kilpatrick, The Stanford Mathematics Problem Book: With Hints and Solutions, Dover Publications, 2009 (Kindle Edition 2013).
2. Greg W. Scragg, Problem Solving with Computers, Jones & Bartlett 1st edition, 1996

MAPPING WITH PROGRAMME OUTCOMES AND PROGRAM SPECIFIC OUTCOMES

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CO 4	3	3	2	3	3	3	3	2	3	3	3	3	2	3	3
CO 5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

S-Strong-3   M-Medium-2 L-Low-1

SEMESTER II

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE

(AUTONOMOUS)

SUNDARAKKOTTAI, MANNARGUDI- 614016

(For the Candidates admitted in the academic year 2024– 2025)

PG AND RESEARCH DEPARTMENT OF COMPUTER SCIENCE

B.Sc., COMPUTER SCIENCE

Semester: II –CC-II- Data Structures and Algorithms

Ins. Hrs. /Week: 5   Course Credit:5   Course Code:U24CS203

UNIT-I   INTRODUCTION TO DATA STRUCTURES: (15 Hours)

Data Structures: Definition- Time & Space Complexity, Arrays: Representation of arrays, Applications of arrays, sparse matrix and its representation, Linear list: Singly linked list implementation, insertion, deletion and searching operations on linear list   Circular linked list: implementation, Double linked list implementation, insertion, deletion and searching operations. Applications of linked lists- Dynamic Storage management.

UNIT- II   STACKS: (12 Hours)

Operations, array and linked representations of stack, stack applications, infix to postfix   conversion, postfix expression evaluation, recursion implementation

UNIT-III QUEUES, TREES & GRAPHS :   (18 Hours)

Queues: operations on queues, array and linked representations. Circular Queue: operations,, applications of queues. Trees: Definitions and Concepts- Representation of binary tree, Binary tree traversals (Inorder, Postorder , preorder), Binary search trees .Graphs : Representation of Graphs- Types of graphs -Breadth first traversal – Depth first traversal- -Applications of graphs .

UNIT -IV INTRODUCTION TO ALGORITHMS: (15 Hours)

INTRODUCTION: Definition of Algorithms- Overview and importance of algorithms- pseudocode conventions, Asymptotic notations, practical complexities. Divide-and-Conquer: : General Method – Binary Search- Quick Sort- Merge Sort. Greedy Method: General method- Knapsack problem- Tree vertex splitting- Job sequencing.

UNIT -V DYNAMIC PROGRAMMING, BACKTRACKING & BRANCH & BOUND

Dynamic programming: General method, Multistage Graphs, All pairs shortest path, Single source shortest path. Backtracking: General method, 8 Queens, Graph coloring, Hamiltonian cycle. Branch & Bound: General method, Travelling salesperson problem**.**   **(15Hours)**

Total Lecture Hours-75

COURSE OUTCOMES

The students are able to,

1. To introduce the concepts of Data structures and to understand simple linear data structures.
2. Learn the basics of stack data structure, its implementation and application
3. Use the appropriate data structure in context of solution of given problem and demonstrate a
4. familiarity with major data structures.
5. To introduce the basic concepts of algorithms
6. To give clear idea on algorithmic design paradigms like Dynamic Programming, Backtracking, Branch and Bound .

TEXT BOOK

Ellis Horowitz , Sartaj Sahni, Susan Anderson Freed, Second Edition , "Fundamentals of Data in C", Universities Press

REFERENCE BOOKS
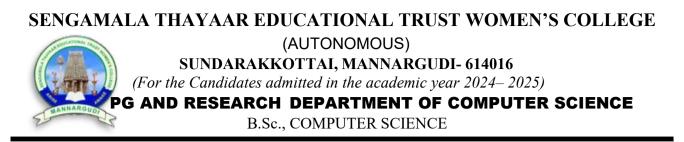
1. A.V. Aho, J.E. Hopcroft, J.D. Ullmann,, "The design and analysis of Computer Algorithms", Addison Wesley, Boston, 1974
2. G. Brassard and P. Bratley, "Fundamentals of Algorithms", PHI, New Delhi, 1997.
3. R.Krishnamoorthy and G.Indirani Kumaravel, Data Structures using C, Tata McGrawHill – 2008. A.K.Sharma, Data Structures using C , Pearson Education India,2011.
4. Sanjoy Dasgupta, C.Papadimitriou and U.Vazirani , Algorithms , Tata McGraw-Hill, 2008.
5. Seymour Lipschutz ,"Data Structures with C", First Edition, Schaum's outline series in computers, Tata McGraw Hill.
6. Thomas H. Cormen, C.E. Leiserson, R L.Rivest and C. Stein, Introduction to Algorithms, Third edition, MIT Press, 2009
7. E. Horowitz, S. Sahni and S. Rajasekaran,   Second Edition ,"Fundamentals of Computer Algorithms " Universities Press

E- RESOURCE

1. Web resources from NDL Library, E-content from open source libraries

MAPPING WITH PROGRAMME OUTCOMES AND PROGRAM SPECIFIC OUTCOMES

CO	POs										PSOs				
	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5
CO 1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
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S-Strong-3   M-Medium-2 L-Low-1

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)
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PG AND RESEARCH DEPARTMENT OF COMPUTER SCIENCE
B.Sc., COMPUTER SCIENCE

Semester: II-CP-II- Data Structures and Algorithms Lab

Ins. Hrs. /Week: 4   Course Credit:4   Course Code:U24CS204P

EXERCISES

2. Array implementation of stacks

3. Array implementation of Queues

4. Linked list implementation of stacks

5. Linked list implementation of Queues

6. Binary Tree Traversals (Inorder, Preorder, Postorder)

7. Implementation of Linear search and binary search

8. Implementation Insertion sort, Quick sort and Merge Sort

9. Finding single source shortest path of a Graph.

Total Hours:60

COURSE OUTCOMES

1. The Students are able to

2. Implement data structures using C

3. Implement various types of linked lists and their applications

4. Implement Tree Traversals

5. Implement various algorithms in C

6. Implement different sorting and searching algorithms

TEXT BOOKS

1. Ellis Horowitz , Sartaj Sahni, Susan Anderson Freed, Second Edition , "Fundamentals of Data in C", Universities Press

2. E. Horowitz, S. Sahni and S. Rajasekaran,   Second Edition ,"Fundamentals of Computer Algorithms " Universities Press

REFERENCE BOOKS

1.Seymour Lipschutz ,"Data Structures with C", First Edition, Schaum's outline series in computers, Tata McGraw Hill.

2. R.Krishnamoorthy and G.Indirani Kumaravel, Data Structures using C, Tata McGrawHill – 2008.

3.A.K.Sharma, Data Structures using C , Pearson Education India,2011.

4.G. Brassard and P. Bratley, "Fundamentals of Algorithms", PHI, New Delhi, 1997.

5. A.V. Aho, J.E. Hopcroft, J.D. Ullmann,, "The design and analysis of Computer

6.Algorithms", Addison Wesley, Boston, 1974

7.Thomas H. Cormen, C.E. Leiserson, R L.Rivest and C. Stein, Introduction to Algorithms, Third edition, MIT Press, 2009

8. Sanjoy Dasgupta, C.Papadimitriou and U.Vazirani , Algorithms , Tata McGraw-Hill, 2008.

WEB RESOURCES

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MAPPING WITH PROGRAMME OUTCOMES AND PROGRAM SPECIFIC OUTCOMES

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S-Strong-3   M-Medium-2 L-Low-1

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)
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(For the Candidates admitted in the academic year 2024– 2025)
PG AND RESEARCH DEPARTMENT OF COMPUTER SCIENCE
B.Sc., COMPUTER SCIENCE

Semester: II –SEC-I- R Programming

Ins. Hrs. /Week: 2   Course Credit:2   Course Code:U24SECS21

UNIT-I   **(6 Hours)**

Introduction: History of R- Benefits of Using R - Working with code Editor: RGui and RStudio - Starting your First R Session - Sourcing a script - Navigating the workspace- Vectors: Creating vectors - Discovering the properties of vector- combing vectors repeating vector - Getting values in and out of vectors- working with logical vectors

UNIT- II   **(6 Hours)**

Using character vector for text data - Manipulating text - Factoring in Factors - Working with more dimensions: Adding a second dimension - Using the indices - Naming matrix rows and columns - Calculating with matrices - Adding more dimensions: Creating an array – Combining different types of values in Data Frame

UNIT-III   **(6 Hours)**

Control Structures: Conditional control structures: if statement - if..else   statement - switch statement - Loops: for, while and repeat loops - break and next statement. Functions: The Function Keyword - Arguments - Return Values- Functions as Arguments

UNIT -IV   **(6 Hours)**

Getting data into and out of R: Getting data into R: Entering data in the R text editor - Using clipboard to copy and paste - Reading data in CSV files and excel files- Working with other data types - Getting your data out of R

UNIT -V   **(6 Hours)**

Introduction to Graphical Analysis: Box-Whiskers plots - Scatter plots - Pairs plots - Line charts - Pie charts - Cleveland dot charts - Bar charts: single category bar chats and multiple category bar charts.

Total Lecture Hours-30

COURSE OUTCOMES

Upon successful completion of this course the students would be able to:
1. Understand the basics of R programming
2. Work with vectors, matrices and data frames
3. Acquire the knowledge of various control structures
4. Parse data files using built-in functions
5. Apply the various statistical functions and produce high quality graphics

TEXT BOOK

1. Andrie Devries And Jorismeys , "R Programming For Dummies", Wiley Publications, Isbn:978-81-265-5201-6. (Unit 1 : chapter-2,3,4) (Unit 4: chapter 12,14) (Unit 2 chapter 5,6,7)

REFERENCE BOOKS

1. Alex Nordeen, Learn R Programming In 24 Hours: Complete Guide For Beginners, Guru99, 2020.

2. Jeeva Jose, Beginner's Guide For Data Analysis Using R Programming., Khanna Publishing House,2019

3. Joseph Adler, "R In Nutshell A Desktop Quick Reference",Isbn:978-0-596- 80170-0

4. Lovelace, Robin, And Gillespie, Colin. Efficient R Programming: A Practical Guide to Smarter Programming, O'reilly Media, 2016.

5. Matloff, Norman, And Matloff, Norman S, The Art Of R Programming: A Tour Of Statistical Software Design, No Starch Press, 2011.

6. Paul Teetor, "R Cook Book",O'relly Publications, First Edition, 2011, Isbn: 978-0-596-80915-7 (Unit 5: Chapter 10)

7. Roger D. Peng, "R Programming For Data Science", Leanopub, 2015

8. Tilman M .Davis "The Book of R", No Starch Press, 2016 (Unit 3: chapter 10,11,3)

9. Dr.Mark Gardener, "Beginning R- The Statistical Programming Language", Wiley Publications, Isbn: 978-81-265-4120-1.

MAPPING WITH PROGRAMME OUTCOMES AND PROGRAM SPECIFIC OUTCOMES

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S-Strong-3   M-Medium-2 L-Low-1

NON MAJOR ELECTIVE

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)
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PG AND RESEARCH DEPARTMENT OF COMPUTER SCIENCE
B.Sc., COMPUTER SCIENCE

Semester: I –NME-I- Office Automation

Ins. Hrs. /Week: 2   Course Credit:2   Course Code:U24NMECS11

UNIT-I

Introductory concepts: Memory unit – CPU-Input Devices: Key board, Mouse and Scanner. Output devices: Monitor, Printer. Introduction to Operating systems & its features: DOS – UNIX– Windows. Introduction to Programming Languages.   **(6 Hours)**

UNIT- II

Word Processing: Open, Save and close word document; Editing text – tools, formatting, bullets; Spell Checker - Document formatting – Paragraph alignment, indentation, headers and footers, numbering; printing – Preview, options, merge.   **(6 Hours)**

UNIT-III

Spreadsheets: Excel – opening, entering text and data, formatting, navigating; Formulas – entering, handling and copying; Charts – creating, formatting and printing, analysis tables, preparation of financial statements, introduction to data analytics.   **(6 Hours)**

UNIT -IV

Database Concepts: The concept of data base management system; Data field, records, and files, Sorting and indexing data; Searching records. Designing queries, and reports; Linking of data files; Understanding Programming environment in DBMS; Developing menu drive applications in query language (MS – Access).

                              (6 Hours)

UNIT -V

Power point: Introduction to Power point - Features – Understanding slide typecasting & viewing slides – creating slide shows. Applying special object – including objects & pictures – Slide transition – Animation effects, audio inclusion, timers.   **(6 Hours)**

                              Total Lecture Hours-30

COURSE OUTCOMES

The students are able to,

1. Understand the basics of computer systems and its components.

2. Understand and apply the basic concepts of a word processing package.

3. Understand and apply the basic concepts of electronic spreadsheet software.

4. Understand and apply the basic concepts of database management system.

5. Understand and create a presentation using PowerPoint tool.

TEXT BOOK

1. Peter Norton, "Introduction to Computers" –Tata McGraw-Hill.

REFERENCE BOOKS

1. Jennifer Ackerman Kettel, Guy Hat-Davis, Curt Simmons, "Microsoft 2003", Tata McGraw-Hill.

WEB RESOURCES

Web content from NDL / SWAYAM or open source web resources

MAPPING WITH PROGRAMME OUTCOMES AND PROGRAM SPECIFIC OUTCOMES

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S-Strong-3   M-Medium-2 L-Low-1

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
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PG AND RESEARCH DEPARTMENT OF COMPUTER SCIENCE
B.Sc., COMPUTER SCIENCE

Semester: I –NME-II- Introduction to Web Design

Ins. Hrs. /Week: 2   **Course Credit:2**   **Course Code:U24NMECS22**

Unit-I Introduction to Internet   **(6 Hours)**

Computers in Business-Networking-internet-Electronic Mail (E-Mail)-Resource Sharing-Gopher-World Wide Web-Usenet-Telnet-Bulletin Board Service- Wide area Information Service-**Internet Technologies:** Modem-Internet Addressing-Physical Connections-Telephone Lines-**Internet Browsers**: Internet Explorer-Netscape Navigator-Google Chrome-Mozilla Firefox-Opera.

Unit-II Introduction to HTML   **(6 Hours)**

Designing Home page-History of HTML-Characteristics of HTML-HTML Generations-HTML Documents-Anchor Tags-Marquee-Formatting Text-Hyper Links-Sample HTML Documents-**Head and Body Sections:** Header Section-Title- Colorful Web Page-Comments Lines-Some Sample HTML Documents.

Unit-III Designing Body Section   **(6 Hours)**

Heading Printing-Aligning the Headings-Horizontal Rule-Paragraph-Tab Settings-Images and Pictures-Embedding PNG Format images-Difference between Background image and image-**Lists**: Definition of List-Types of List-Unordered Lists-Ordered Lists-Nested Lists-descriptive Lists.

Unit-IV Table Handling   **(6 Hours)**

Tables- Table Creation in HTML-Width of the Tables and Cells-Cell Spanning Multiple Rows/ Columns- Coloring Cells-Column Specifications-Some Sample Tables-**DHTML :**Definition of DHTML-Uses of HTML-Difference between HTML and

Unit-V Forms and Frames   **(6 Hours)**

Frames: Frameset Definition-Frame Definition-Uses of Frame-Nested Framesets- -**Forms**: Action Attribute-Method Attribute-Enctype Attribute-Drop down List-Sample Forms-HTML Accessories.   **Total Lecture Hours-30**

COURSE OUTCOMES

The students are able to,

1. Understand the Internet Concepts and its Technologies.
2. Describe importance of HTML Tags using Designing Home Page.
3. Use and Examine Ordered and Unordered Lists using HTML Documents.
4. Understand the Table Handling , Frames and Forms in web page
5. Understand the concepts of CSS using in Web Page.

TEXT BOOK

1. C.Xavier "World Wide Web design with HTML"Tata McGraw-Hill Publishing Company Limited,2000.

REFERENCE BOOKS

1. Alexis Leon, 2012, Internet for Everyone, Second Edition, S. Chand (G/L) & Company Ltd, S.
2. Chand (G/L) & Company Ltd , New Delhi, India.
3. Harvey & Paul Dietel & Associates, Harvey Deital and Abbey Dietel, 2011, Internet and world wide web, Fifth Edition, Pearson Education, London, England.
4. Keith Sutherland, 2000, Understanding the Internet, First Edition, A division of Reed Educational and professional Publication Ltd, Oxford, United Kingdom.
5. Preston Gralla, 2006, How the Internet Works, Eighth Edition, Pearson Education, London, England

E-RESOURCES

1. https://bit.ly/3e6ZrS
2. https://bit.ly/3h4e0bp
3. https://bit.ly/2QAZa1d

MAPPING WITH PROGRAMME OUTCOMES AND PROGRAM SPECIFIC OUTCOMES

CO	POs										PSOs				
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S-Strong-3   M-Medium-2 L-Low-1

VALUE ADDED

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE

(AUTONOMOUS)

SUNDARAKKOTTAI, MANNARGUDI- 614016

(For the Candidates admitted in the academic year 2024– 2025)

PG AND RESEARCH DEPARTMENT OF COMPUTER SCIENCE

B.Sc., COMPUTER SCIENCE

VALUE ADDED COURSE

SEMESTER II: Fundamentals of Computer Hardware

Ins. Hrs. /Week: 02   **Course Credit:2**   **Course Code:U24CSVA21**

UNIT- I   **(6Hours)**
Introduction To Computers: Types of Computers - Micro, Mini, Mainframe And Super Computer, Architecture of A Computer System–Processor (CPU) - Types and Their Specifications-Intel: Celeron -P4 Family- Xeon- Dual Core- Quad Core-Core 2 Duo- I3-I5-I7 – AMD- Arithmetic Unit-Logic Units-Control Unit.

UNIT –II   **(6 Hours)**
Memory: Types, Storage, Semiconductor Memories: RAM-ROM- PROM- EMPROM- EEPROM-Static and Dynamic- Cache Memory- Secondary Storage Devices: Types- Capacity- Popular Brands- Standards- Interface- Concept of Tracks- Sector- Cylinder And Cluster. Jumper Setting: CMOS Setting- Input / Output Devices. Serial Port and Parallel Port–Principle of Communication-Types of Connecting Devices- Interface Standards-Connectors.

UNIT-III   **(6 Hours)**
Keyboard: Types of Keyboard- Correcting Problems- Vacuum Cleaners And Keyboards- Keyboard Maintenance- Mouse: Mouse Basics- Working With A Mouse- Performing Mouse Actions- Inside The Mouse- Adjusting Mouse Properties- Mouse Keys- Mouse Maintenance- Optical Mouse-Breakdown And Break Through.

 UNIT-IV   **(6 Hours)**
Monitors: Basic- VGA-DVI-Viewable Area- Maximum Resolution and Dot Pitch-Power Consumption- Flat Panel- Monitor Resolution- Color Depth- Degaussing- Power Option for Monitor- Display Option For Monitor- Monitor Maintenance- Types Of Monitor-LCD Monitors-LED Monitors-OLED Monitors- Plasma Monitor-CRT Monitors- Structure Of Monitor- Types Of Scanners- Plotters- Types Of Plotters- Flatbed Scanner- Automated Document Feeder-Overhead Scanner- QR Code Or Bar Code Scanner-Drum Scanner.

UNIT-V   **(6 Hours)**
Printers: Printer Characteristics- Type Quality- Print Speed- Impact vs Non-impact and Fonts. Inkjet Printers: Common Features- Operations- Parts of Inkjet Printer- Control Panel- Trays- Cartridges-Cleaning Cartridges- Replacing Cartridges- Clearing Paper Jams. Laser Printers: Common Features-Operations, Technology- Control Panel- Trays- Output Bin- Cartridges- Redistributing Toner-Internal Cleaning- Paper Jams- Cancel Printing Jobs- Setting Preferences and Defaults of Printing-Breakdown and Break Through.

Total Lecture Hours-30

COURSE OUTCOMES
1. The students are able to
2. Understand Basic Concepts Computer
3. Understand about various types of Memory and Ports
4. Describe the working of Keyboard and Mouse.
5. Discuss the basics of Monitor
6. Understand about Printers and its type

TEXT BOOK
1. PC Hardware: The Complete Reference by Craig Zacker and John Rourke

REFERENCE BOOKS
1. Modern All about Keyboard and Mouse, Lotia
2. Modern TFT & LCD Monitor Introduction and Troubleshooting, BPB Publication
3. Modern All about Printer, Lotia

E-RESOURCES
1. https://en.m.wikipedia.org/wiki/Computer_hardware
2. https://www.computerhope.com/jargon/h/hardware.htm#:~:text=Abbreviated%20as%20HW
3. %2C%20hardware%20is,or%20smartphone%2C%20it%20is%20hardware
4. https://en.m.wikiversity.org/wiki/IT_Fundamentals/2014/Hardware