

B.C.A SYLLABUS

Syllabus

2026-2027

Programme Code:3USBCA



**SENGAMALA THAYAAR EDUCATIONAL TRUST
WOMEN'S COLLEGE (AUTONOMOUS)**

(Affiliated to Bharathidasan University, Tiruchirappalli)

(Accredited by NAAC)

Sundarakkottai, Mannargudi-614016,

Thiruvarur(Dt.), TamilNadu, India.



**SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)**

(Affiliated to Bharathidasan University, Tiruchirappalli)
(Accredited by NAAC & An ISO 9001:2015 Certified Institution)
SUNDARAKKOTTAI, MANNARGUDI-614016.
TAMILNADU, INDIA.

**BACHELOR OF COMPUTER APPLICATIONS
CHOICE BASED CREDIT SYSTEM–
LEARNING OUTCOMES BASED CURRICULUM FRAME WORK (CBCS–LOCF)**
(For the candidates admitted in the academic year 2026–2027)

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 within 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.

Ability Enhancement Courses (AEC): Ability Enhancement Courses are designed to improve students' language proficiency, communication skills, analytical abilities, environmental awareness, and understanding of contemporary issues. These courses aim to enhance the overall academic and professional capabilities of students and facilitate their effective participation in higher education and employment.

Core Courses (CC): A course that is compulsorily studied by a student as a fundamental requirement of the programme is termed a Core Course (CC). These courses provide the basic knowledge and conceptual understanding of the major discipline. Core Courses constitute the foundation of the programme and ensure that all students acquire the essential competencies and academic standards prescribed for the degree. Successful completion of Core Courses is mandatory for the award of the degree.

Core Practical Courses (CP): Core Practical Courses are laboratory-based courses associated with the Core Theory Courses. These courses provide hands-on training, experimental skills, analytical techniques, and practical exposure necessary for understanding the concepts of the discipline. Students are required to successfully complete all prescribed practical courses as part of the programme requirements.

Allied Courses (AC): Allied Courses are courses offered from disciplines other than the major discipline. These courses provide students with opportunities to gain additional knowledge and skills in allied or complementary areas of study. Allied Courses promote multidisciplinary learning and broaden the academic perspective of students. The selection and completion of Allied Courses shall be governed by the regulations of the institution and the curriculum framework.

Allied Practical (AP): Allied Practical are practical components associated with the chosen Allied discipline. These courses provide laboratory or field-based exposure to the concepts learned in the Allied Courses and help students develop practical skills relevant to the selected area of study.

Interdisciplinary Courses (IDC): Interdisciplinary Courses are designed to provide knowledge and skills that integrate concepts from multiple disciplines. These courses encourage students to explore the interrelationship between different fields of study and develop a broader understanding of contemporary issues and applications. Students may choose Interdisciplinary Courses as prescribed in the curriculum and subject to eligibility requirements.

Discipline Specific Elective Courses (DSE): Discipline Specific Elective Courses are elective courses offered by the major discipline. These courses provide students with opportunities to acquire advanced knowledge and specialization in selected areas of the discipline. Students may choose courses from the prescribed list of electives based on their interests, aptitude, and career aspirations. These courses are generally application-oriented and provide in-depth exposure to specific domains of study.

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.

Value Added Courses (VAC): Value Added Courses are intended to provide additional knowledge, skills, attitudes, and competencies that complement the regular curriculum. These courses focus on holistic development, professional ethics, environmental awareness, personality development, life skills, and emerging areas of knowledge. Successful completion of the prescribed Value Added Courses may be mandatory or optional as specified in the curriculum.

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.

Project Work: Project Work provides students with an opportunity to apply the knowledge and skills acquired during the programme to investigate a specific problem or research topic. Students shall undertake the project under the guidance of a faculty member and submit a dissertation/report followed by evaluation and viva-voce examination, wherever prescribed.

Extension Activities: Students are encouraged to participate in extension and outreach activities such as National Service Scheme (NSS), National Cadet Corps (NCC), Youth Red Cross (YRC), Red Ribbon Club (RRC), community engagement programmes, environmental awareness campaigns, and other socially relevant activities. Such participation may be recognized through credits, certificates, or awards as prescribed by the institution.

Undergraduate Programme:

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

Part -I: Ability Enhancement Course (Tamil / Hindi / French / Sanskrit)

Part-II: Ability Enhancement Course (English)

Part-III: Core Course (Theory, Practicals, Allied courses, Allied Practical and Group Project)

Part-IV: Skill Enhancement Courses, Discipline Specific Elective Courses, Interdisciplinary Courses, Value Education, Health & Wellness, Introduction to Disaster Management, Summer Internship, Value Added Course, Environmental studies, Gender studies and Extension activity.

EXAMINATION

Continuous Internal Assessment (CIA):

UG - Distribution of CIA Marks

Passing Minimum: 40 %

Assisgnment-3	=	30%
Test-2	=	50%
Seminar	=	10%
Attendance	=	10%

Question Paper Pattern

Section A1 (10x1=10 marks)

One word question/ Fill in/ True or False/ Multiple Choice Questions

Two Questions from Each unit

Section A2 (5x2=10 marks)

Short Answers / Match the following

One question from Each unit

Total Marks – 20

Section B: (5x4=20 marks)

Paragraph Answers

Either/ or type, One Question from each unit

Section C: (10x3=30)

Essay Type Answers

Answer 3 out of 5 Questions

One Question from each unit

Section A1 & A2: K1 Level

Section B: K2, K3 and K4 Level

Section 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 previously learned
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/Analyzing	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 of view

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	20			30		70
Continuous Internal Assessment (CIA)	20	20			30		70
QUESTION PATTERN FOR END SEMESTER EXAMINATION/ Continuous Internal Assessment							
SECTION							MARKS
SECTION – A1 (No choice ,One Mark) TWO questions from each unit (10x1 =10)							20
SECTION –A2 (No choice ,Two Mark) ONE question from each unit (5x2 =10)							
SECTION - B (Either/ or type, 4-Marks) ONE questions from each unit (5x4 =20)							20
SECTION - C (3 out of 5) (10 Marks) ONE question from each unit (3x10 =30)							30
Total							70

BLUE PRINT OF QUESTION PAPER FOR END SEMESTER EXAMINATION							
DURATION: 3. 00 Hours.				Max Mark : 70			
K- LEVELS	K1	K2	K3	K4	K5	K6	Total Marks
SECTION							
SECTION –A1 (1 Mark, No choice) (10x1 =10)	10						10
SECTION –A2 (2-Marks, No choice) (5x2=10)	10						10
SECTION –B (4-Marks) (Either/or type) (5x4=20)		4	8	8			20
SECTION -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	04	08	08	20	10	70

EVALUATION

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:

$$\text{GPA} = \frac{\sum_{i=1}^n C_i G_i}{\sum_{i=1}^n C_i}$$

$$\sum_{i=1}^n C_i$$

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.

$$\text{WAM (Weighted Average Marks)} = \frac{\sum_{i=1}^n C_i M_i}{\sum_{i=1}^n C_i}$$

$$\sum_{i=1}^n C_i$$

$$I=1$$

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

CLASSIFICATION OF FINAL RESULTS:

- For each of the first three parts, there shall be separate classification on the basis of CGPA, as indicated in Table-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 earned by 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.
- Grade in Part –IV and Part-V shall be shown separately and it shall not be taken into account for classification.
- A Pass in PART- V will be mandatory although the marks will not count for the calculation of the CGPA.
- 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 previous semester /s is indicated by **Cumulative Grade Point Average (CGPA)**.

Table-2: 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

To Empower the women students by providing excellent software engineering skills to meet the global needs of IT industry

Mission

- Providing quality education in computer science and its applications by updated knowledge through technology transfer
- Enhancing professional skills to satisfy the needs of the Software industries and Technical skills of the individual towards competitive world.

PROGRAMME OUTCOMES FOR B.C.A., DEGREE PROGRAMMES

PO No.	Programme Outcomes (Upon completion of the B.C.A. 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 Computer Applications.
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 OUTCOME (PSO)

PSO No.	Program Specific Outcomes (B.C.A.,DEGREE)
PSO1	Think in a critical and logical based manner
PSO2	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.
PSO3	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.
PSO4	Understand, formulate, develop programming model with logical approaches to a Address issues arising in social science, business and other contexts.
PSO5	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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(AUTONOMOUS)



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SUNDARAKKOTTAI, MANNARGUDI-614016,
TAMILNADU, INDIA.

Department of Computer Applications

BACHELOR OF COMPUTER APPLICATIONS

CHOICE BASED CREDIT SYSTEM

LEARNING OUTCOMES BASED CURRICULUM FRAMEWORK
(CBCS-LOCF)

(For the candidates admitted in the academic year 2026-2027)

ELIGIBILITY: A pass in 12th standard with Computer Science or Mathematics

Sem	Part	Courses	Course Code	Title	Ins. Hrs.	Credits	Exam. Hours	Maximum Marks		
								Int.	Ext.	Total
I	I	Ability Enhancement Course – I (AEC - I)	U26TAEC11	(Tamil\$ / Other Languages+, #)	6	3	3	30	70	100
	II	Ability Enhancement Course – II (AEC - II)	U26EAEC11	English Course – I	6	3	3	30	70	100
	III	Core Course -I (CC - I)	U26CA101	Programming in C and Data Structures	4	4	3	30	70	100
		Core Practical - I (CP - I)	U26CA102P	Programming in C and Data Structures Lab	4	4	3	40	60	100
		Allied Course – I (AC - I)	U26AMS101	Mathematical Foundation to Computer Science-I	3	3	3	30	70	100
		Allied Practical - I (AP-I)	U26AMS102P	Numerical Methods with MATLAB Programming Practical	3	3	3	40	60	100
	IV	Value Education	26UGVED	Value Education	2	2	3	30	70	100
		Interdisciplinary Course – I (IDC - I) #			2	2	3	30	70	100
			Total		30	24	-	--	--	800
II	I	Ability Enhancement Course – III (AEC - III)	U26TAEC22	(Tamil\$ / Other Languages+, #)	6	3	3	30	70	100
	II	Ability Enhancement Course – IV (AEC - IV)	U26EAEC22	English Course – II	6	3	3	30	70	100
	III	Core Course-II(CC -II)	U26CA203	Programming in Java	4	4	3	30	70	100
		Core Practical - II(CP - II)	U26CA204P	Programming in Java Lab	4	4	3	40	60	100
		Allied Course – II (AC - I)	U26AMS203	Mathematical Foundation to Computer Science-II	3	3	3	30	70	100
		Allied Practical - II (AP-I)	U26AMS204P	Operations Research with Excel Solver Practical	3	3	3	40	60	100
	IV	Skill Enhancement Course - I (SEC - I) ##	U26SECA21	Multimedia Technologies	2	2	3	30	70	100
		Interdisciplinary Course – II (IDC - II) #			2	2	3	30	70	100
			Total		30	24	-	-	-	800

III	I	Ability Enhancement Course – V(AEC - V)		(Tamil\$ / Other Languages+, #)	6	3	3	30	70	100
	II	Ability Enhancement Course – VI (AEC - VI)		English Course – III	6	3	3	30	70	100
	III	Core Course- III(CC - III)		Programming in Python	4	4	3	30	70	100
		Core Practical - III(CP - III)		Programming in Python Lab	4	4	3	40	60	100
		Allied Course – III (AC - III)		Financial Accounting	3	3	3	30	70	100
		Allied Practical - III (AP- III)		Computer Applications in Business Practical	3	3	3	40	60	100
	IV	Skill Enhancement Course - II (SEC – II) ##		AI-Powered Software Development	2	2	3	30	70	100
		Interdisciplinary Course – 3 (IDC - III) \$\$		Web Technology	2	2	3	30	70	100
		Health & Wellness @			--	1	-	20	80	100
					Total	30	25	-	--	900
IV	I	Ability Enhancement Course – VII (AEC - VII)		(Tamil\$ / Other Languages+, #)	6	3	3	30	70	100
	II	Ability Enhancement Course – VIII (AEC - VIII)		English Course – IV	6	3	3	30	70	100
	III	Core Course- IV (CC - IV)		Relational Database Management Systems	4	4	3	30	70	100
		Core Practical - IV (CP - IV)		Relational Database Management Systems Lab	4	4	3	40	60	100
		Allied Course – IV (AC - VI)		Organizational Behaviour	3	3	3	30	70	100
		Allied Practical - IV (AP- IV)		Accounting Package Lab	3	3	3	40	60	100
	IV	Skill Enhancement Course - III (SEC - III) ##		Web Technologies	2	2	3	30	70	100
		Interdisciplinary Course – IV (IDC - IV) \$\$		Basics of Cloud Computing	2	2	3	30	70	100
					Total	30	24	-	--	800
	Summer Internship / Industrial Activity during the Summer Vacation after II Year									
V	III	Core Course - V (CC - V)		Programming in PHP	4	4	3	30	70	100
		Core Course - VI(CC - VI)		Fundamentals of Algorithms	5	4	3	30	70	100
		Core Course - VII (CC - VII)		Data Mining and Data Warehousing	5	4	3	30	70	100
		Core Course - VIII (CC - VIII)		Operating Systems	5	4	3	30	70	100
		Core Practical - V(CP - V)		Programming in PHP Lab	5	4	3	40	60	100
	IV	Skill Enhancement Course - IV(SEC - IV)		Machine Learning	2	2	3	30	70	100
		Discipline Specific Elective Course - I (DSEC - I)		Big Data Analytics /Blockchain Technologies/Internet of Things	2	2	3	30	70	100
		Introduction to Disaster Management			2	2	3	30	70	100
		Summer Internship / Industrial Activity @@		(with Viva-Voce)	--	2	3	20	80	100
					Total	30	28	-	--	900

VI	III	Core Course - IX(CC - IX)		Data Communication and Network	4	4	3	30	70	100
		Core Course- X(CC - X)		ASP.Net Programming	5	4	3	30	70	100
		Core Practical - VI(CP - VI)		ASP.Net Programming Lab	5	4	3	40	60	100
		Core Project Work(CPW) @ @		Project Work (with Viva-Voce)	6	4	3	20	80	100
	IV	Skill Enhancement Course - V (SEC - V) ##		Cloud Computing	2	2	3	30	70	100
		Discipline Specific Elective Course - II (DSEC - II) ##		Research Methodology/Software Engineering/ Cyber Security	2	2	3	30	70	100
		Value Added Course		General Studies for Competitive Examinations	2	2	2	30	70	100
		Environmental Studies			2	2	3	30	70	100
		Gender Studies			2	1	3	30	70	100
		Extension Activities *			--	1	-	--	--	--
			Total		30	26	-	--	--	900
			Grand Total		180	151	-	--	--	5100

ALLIED COURSE (Allied Papers)

First Year Students	Second Year Students
Mathematics	Accounting and Organizational Behavior

SKILL ENHANCEMENT COURSE (SEC)

S.no	Semester	SEC	Course Code	Title of the paper
1.	II	I	U26SECA21	Multimedia Technologies
2.	III	II		AI-Powered Software Development
3.	IV	III		Web Technologies
4.	V	IV		Machine Learning
5.	VI	V		Cloud Computing

**INTER DISCIPLINARY COURSE (IDC)
FOR WHO HAVE OPT TAMIL AS PART - I**

S. No	Semester	Course Code	Title of the Paper
1	I	U26IDCA11	Foundation of Computers and Office Automation
2	II	U26IDCA22	Introduction to Python Programming
3	III		Web Technology
4	IV		Basics of Cloud Computing

DISCIPLINE SPECIFIC ELECTIVE

S.no	Semester	Course Code	Title of the paper
1	V		Big Data Analytics / Blockchain Technologies/Internet of Things
2	VI		Research Methodology/Software Engineering/ Cyber Security

VALUE ADDED COURSES

S.no	Semester	Course Code	Title of the paper
1	II	U26CAVA21	Introduction to Ancient Indian Technology
2	IV	-	Data Science Using Python and R Programming
3	VI	-	General Studies for Competitive Examinations

**INTERDISCIPLINARY COURSE (IDC) #
FOR WHO HAVE NOT OPT TAMIL AS PART – I**

Those who have studied Tamil upto 10 th +2 but opt for other languages in degree	I Semester	Special Tamil - I
	II Semester	Special Tamil - II
Those who have not studied Tamil in school level	I Semester	Basic Tamil - I
	II Semester	Basic Tamil – II

**INTERDISCIPLINARY COURSE (IDC) \$\$
FOR NCC CADETS ONLY**

NCC Course is a Compulsory Course for the NCC Cadets in the III Semester	NCC Course is a Compulsory Course for the NCC Cadets in the IV Semester
Introduction to NCC	1. Special Subject Army (or) 2. Special Subject Navy (or) 3. Special Subject Air force

SUMMARY OF CURRICULUM STRUCTURE OF UG PROGRAMMES –SCIENCE

Sl. No.	Part	Types of the Courses	No. of Courses	Credits for each Course	Total Credits	Marks
1.	I	Ability Enhancement Course (AEC-Tamil)	4	3	12	400
2.	II	Ability Enhancement Course (AEC-English)	4	3	12	400
3.	III	Core Course (CC)	10	4	40	1000
4.		Core Practical (CP)	6	4	24	600
5.		Allied Course (AC)	4	3	12	400
6.		Allied Practical (MP)	4	3	12	400
7.		Core Project Work (CPW)	1	4	4	100
8.	IV	Skill Enhancement Course (SEC)	5	2	10	500
9.		Discipline Specific Elective Course (DSEC)	2	2	4	200
10.		Interdisciplinary Course (IDC)	4	2	8	400
11.		Value Education	1	2	2	100
12.		Health and Wellness	1	1	1	100
13.		Introduction to Disaster Management	1	2	2	100
14.		Summer Internship / Industrial Activity	1	2	2	100
15.		Value Added Course	1	2	2	100
16.		Environmental Studies	1	2	2	100
17.		Gender Studies	1	1	1	100
18.		EXTENSIONACTIVITIES (NCC / NSS / SPORTS / ANTI DRUG CELL / YRC & Any Other Activities	--	1	1	--
Total			51	-	151	5100
Additional Value Added Course in Semester II and IV**			2**	2	4**	200
MOOC-SWAYAM /NPTEL Courses			-	2	2	-

\$	For those who have studied Tamil upto10 th +2(Regular Stream)															
+	Syllabus for other Languages should be on par with Tamil at degree level															
#	Those who have studied Tamil upto10 th +2 but opt for other languages in degree level under Part –I should study special Tamil and those who have not studied Tamil in the school level should study Basic Tamil in Part– IV under the Interdisciplinary Course.															
##	Naan Mudhalvan Scheme: As per the Naan Mudhalvan Scheme instructions, 5 courses from 2 nd to 6 th semester should be studied under Skill Enhancement Course.															
\$\$	NCC Course is one of the Choices in the Interdisciplinary Course. Only the NCC Cadets are eligible to choose this course. However, NCC Course is a Compulsory Course for the NCC Cadets.															
@	Health and Wellness: Assessments: • Use self-reflective worksheets to assess their understanding • submit the worksheets to internal audit / external audit • Every student’s activity report should be documented and the same have to be assessed by the Physical Director with Mentor. The evaluation should be for 100 marks. • No examination is required. Scheme of Evaluation: <table><tr><th>Part</th><th>Description</th><th>Marks</th></tr><tr><td>A</td><td>Report</td><td>40</td></tr><tr><td>B</td><td>Attendance</td><td>20</td></tr><tr><td>C</td><td>Activities (Observation During Practice)</td><td>40</td></tr><tr><td colspan="2">Total</td><td>100</td></tr></table>	Part	Description	Marks	A	Report	40	B	Attendance	20	C	Activities (Observation During Practice)	40	Total		100
Part	Description	Marks														
A	Report	40														
B	Attendance	20														
C	Activities (Observation During Practice)	40														
Total		100														
@ @	Summer Internship / Industrial Activity Internship will be carried out during the summer vacation after the second year. Viva-Voce will be conducted by the college and Marks shall be sent to the University and the same will be included in the 5th semester Mark Statement. Summer Internship / Industrial Activity & Project Work Scheme of Evaluation: <table><tr><th>Description</th><th>Marks</th></tr><tr><td>Report</td><td>80</td></tr><tr><td>Viva-Voce</td><td>20</td></tr><tr><td>Total</td><td>100</td></tr></table>	Description	Marks	Report	80	Viva-Voce	20	Total	100							
Description	Marks															
Report	80															
Viva-Voce	20															
Total	100															
*	Extension Activities shall be outside instruction hours.															
**	Additional Value added courses will not be included in the total CGPA. These courses are extra-credit courses. Instruction hours for these courses is 30 hours.															

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE

(AUTONOMOUS)



SUNDARAKKOTTAI, MANNARGUDI-614016.

(For the Candidates admitted in the academic year 2026–2027)

DEPARTMENT OF COMPUTER APPLICATIONS

BACHELOR OF COMPUTER APPLICATIONS (BCA)

Semester: I-CC-I: Programming in C and Data Structures

Ins. Hrs./Week:4

Course Credit:4

Course Code:U26CA101

COURSE OBJECTIVES

- Understand the basic concepts of C programming, including data types, operators, input/output, and control statements.
- Develop programs using arrays, strings, and user-defined functions.
- Apply structures, pointers, and file handling techniques in C programming.
- Implement data structures such as linked lists, stacks, queues, and trees.
- Use graph algorithms, searching, and sorting techniques to solve programming problems.

UNIT-I: Basic of C

(12-Hours)

Basic of C: History of C- Importance of C – Basic Structure of C programs –Constants, Variables and Data Types – Operators and Expressions – Managing Input and Output Operations - Decision Making and Branching-Decision Making and Looping.

UNIT-II: Arrays and Functions

(12-Hours)

Arrays – Character Arrays and Strings: Declaring and Initializing String Variables-String Handling Functions. User defined Functions: Need for User-Defined Functions-Elements of User-Defined Functions-Definition of Functions-Return Values and their Types-Functions Calls-Function Declaration-Categories of Functions-Return Values-Nesting of Functions - Recursion – Passing arrays to Functions-Passing Strings to Functions-The scope, Visibility and Lifetime of Variables.

UNIT-III: Pointers

(12-Hours)

Structures: Defining a Structure-Declaring Structure Variables TypeDef Declarations-Accessing Structure Members-structure Initialization-Copying and Comparing Structure Variables- Array of Structures - Structures and functions-Unions. Pointers: Understanding Pointers-Accessing the Address of a Variable – Declaring Pointer Variables – Initialization of Pointer Variables - Accessing a Variable through its Pointer – Chain of Pointers –Pointer Expressions-Pointer Increments and Scale Factor - Pointers and Arrays – Pointers and Character Strings- Array of Pointers – Pointers as Function Arguments – Functions Returning Pointers – Pointers to Functions – Pointer and Structures- File Management in C.

UNIT-IV: Stack and Queues

(12-Hours)

Linked Lists: Introduction-Singly Linked Lists-Circular Linked Lists- Doubly Linked List-Stack: Array Representation of Stack - Operations on a Stack - Applications of Stacks. Queues: Array Representation of Queues - Types of Queues – Applications of queues. Trees: Basic Terminology – Types of Trees – Traversing a Binary Tree – Applications of Trees.

UNIT-V: Graphs

(12-Hours)

Graph Terminology – Directed Graphs-Representation of Graph - Graph Traversal – Topological Sorting- Shortest Path. Searching and Sorting: Linear Search-Binary Search – Bubble Sort - Insertion Sort-Selection Sort- Merge Sort – quick Sort.

UNIT-VI: CURRENT CONTOURS (for Continuous Internal Assessment Only)

Program Development using C Fundamentals -Implementation of Arrays, Strings, and Functions Applications of Structures, Pointers, and File Handling -Implementation of Linked Lists, Stacks, Queues, and Trees-Graph Representation and Traversal Techniques-Applications of Searching and Sorting Algorithms-Mini Project/Problem Solving Exercises - Seminar, Quiz, Assignment, and Laboratory-based Assessment

Total Lecture Hours: 60

COURSE OUTCOMES:

On completion of this course, students will be able to

- Summarize the basic knowledge to develop C programs
- Manipulate Looping, arrays and functions
- Apply and write programs for solving real world problems
- Create open, read, manipulate, write and close files.
- Understand the basic concepts in data structures.
- To develop solutions for real-world problems through practical exercises

TEXT BOOK(S)

1. E.Balagurusamy, “Programming in ANSI C”,Tata Mc GrawHill, New Delhi,Seventh Edition,2016.
2. Reema Thareja,“Data structures Using C Second Edition.

REFERENCE BOOK(S)

1. Byron S.Gottfried, “Programming with C”, Schaum’s Outline Series,Tata Mc Graw Hill Edition, New Delhi, 1991.
2. E.Karthikeyan,“ATextbook on C Fundamentals, DataStructures and ProblemSolving”, Prentice-Hall of India Private Limited, New Delhi, 2008.
3. Yashavant Kanetkar,“Let us C”,BPB Publications,Tenth Edition,NewDelhi,2010.
4. Szuhay,Jeff, andSzuhay, Jeff,“ Learn C Programming :A Beginner's Guide to Learning C Programming the Easy and Disciplined Way”, Packt Publishing, 2020.
5. Jena,SisirKumar,andJena,SisirKumar,“CProgramming:LearntoCode”,CRCPress,2021.

E-RESOURCES

1. <https://www.tutorialspoint.com/cprogramming/index.htm>
2. <https://www.w3schools.in/data-structures/intro>
3. <http://www.programiz.com/c-programming>
4. http://www.tutorialpoint.com/data_structures_algorithms/index.html
5. [http://www..onlinegdb.com/online c compiler](http://www.onlinegdb.com/online_c_compiler)

MAPPING WITH PROGRAMME OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	1		2					1	3	2			
CO2	3	2	2	1	2					1	3	3	1		
CO3	3	3	2	2	3					1	3	3	2		
CO4	3	3	3	2	3				1	1	3	3	2	1	
CO5	3	3	3	3	3				1	1	3	3	3	1	
CO6	3	3	3	3	3	1		1	2	2	3	3	3	2	1

Strong-3 Medium-2 low-1

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)



SUNDARAKKOTTAI, MANNARGUDI-614016.
(For the Candidates admitted in the academic year 2026–2027)

DEPARTMENT OF COMPUTER APPLICATIONS
BACHELOR OF COMPUTER APPLICATIONS (BCA)

Semester: I-CP-1: Programming in C and Data Structures Lab

Ins.Hrs./Week:4

Course Credit:4

Course Code:U26CA102P

COURSE OBJECTIVES

- Understand the basic concepts of C programming, including data types, operators, input/output, and control statements.
- Develop programs using arrays, strings, and user-defined functions.
- Apply structures, pointers, and file handling techniques in C programming.
- Implement data structures such as linked lists, stacks, queues, and trees.
- Use graph algorithms, searching, and sorting techniques to solve programming problems.

LIST OF PROGRAMS

1. Write a Program

- (i) To convert temperature from degree Centigrade to Fahrenheit,
- (ii) Find whether given number is Even or Odd,
- (iii) Find the greatest of Three numbers.

2. Write a Program to display Monday to Sunday using switch statement

3. Write a Program to display first Ten Natural Numbers and their sum.

4. Write a Program to perform Multiplication of Two Matrices.

5. Write a Program

- (i) To find the maximum number in an Array using pointer.
- (ii) To reverse a number using pointer.
- (iii) To add two numbers using pointer.

6. Write a Program to create a file containing Student Details.

7. Write a program for insertion and deletion operations in an array.

8. Write a program to implement a stack using singly linked list, Implement Queue using Linked List.

9. Write a program to perform insertion operation in a binary search tree.

10. Write a program to sort an array using Bubble Sort, Selection Sort and Insertion Sort.

Total Lab Hours: 60

COURSE OUTCOMES:

On completion of this course, students will be able to

- Summarize the basic knowledge to develop C programs
- Manipulate Looping, arrays and functions
- Apply and write programs for solving real world problems
- Create open, read, manipulate, write and close files.
- Understand the basic concepts in data structures.
- To develop solutions for real-world problems through practical exercises

TEXT BOOK(S)

1. E.Balagurusamy, “Programming in ANSI C”, Tata Mc GrawHill, New Delhi, Seventh Edition, 2016.
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1. Byron S.Gottfried, “Programming with C”, Schaum’s Outline Series, Tata Mc Graw Hill Edition, New Delhi, 1991.
2. E.Karthikeyan, “A Textbook on C Fundamentals, Data Structures and Problem Solving”, Prentice-Hall of India Private Limited, New Delhi, 2008.
3. Yashavant Kanetkar, “Let us C”, BPB Publications, Tenth Edition, New Delhi, 2010.
4. Szuhay, Jeff, and Szuhay, Jeff, “Learn C Programming : A Beginner's Guide to Learning C Programming the Easy and Disciplined Way”, Packt Publishing, 2020.
5. Jena, Sisir Kumar, and Jena, Sisir Kumar, “C Programming: Learn to Code”, CRC Press, 2021.

E-RESOURCES

1. <https://www.tutorialspoint.com/cprogramming/index.htm>
2. <https://www.w3schools.in/data-structures/intro>
3. <http://www.programiz.com/c-programming>
4. http://www.tutorialspoint.com/data_structures_algorithms/index.html
5. http://www.onlinegdb.com/online_c_compiler

MAPPING WITH PROGRAMME OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	1		2					1	3	2			
CO2	3	2	2	1	2					1	3	3	1		
CO3	3	3	2	2	3					1	3	3	2		
CO4	3	3	3	2	3				1	1	3	3	2	1	
CO5	3	3	3	3	3				1	1	3	3	3	1	
CO6	3	3	3	3	3	1		1	2	2	3	3	3	2	1

Strong-3

Medium-2

low-1

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)



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(For the Candidates admitted in the academic year 2026–2027)

DEPARTMENT OF COMPUTER APPLICATIONS
BACHELOR OF COMPUTER APPLICATIONS (BCA)

Semester: I -VE: Value Education

Ins.Hrs./Week:2

Course Credit:2

Course Code:26UGVED

UNIT-I:Philosophy Of Life and Social Values

Human Life on Earth(Kural629)-Purpose of Life(Kural46)-Meaning and Philosophy of Life (Kural 131, 226) -Family (Kural 45), Peace in Family (Kural1025) Society(Kural446), The Law of Life (Kural 952),Brotherhood(Kural807)Five responsibilities/duties of Man(a) to himself(b) to his family(c) to his environment(d)to his society, (e)to the Universe in his lives(Kural43,981).

UNIT-II–Human Values and Citizenship

Aim of education and value education: Evolution of value oriented education, Concept of Human values: types of Values- Character Formation – Components of Value education- APJ Kalam's ten points for enlightened citizenship-The role of media in value building

UNIT-III: Value Education towards National and Global Development

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

UNIT-IV: Yoga and Health

Definition, Meaning, Scope of Yoga - Aims and objectives of Yoga – Yoga Education with modern context - Different traditions and schools of Yoga - Yoga practices: Asanas, Pranayama and Meditation.

UNITV: Human Rights

Concept of Human Rights: Indian and international perspectives- Evolution of Human Rights-definitions under Indian and International documents -Broad classificationofHumanRightsandRelevantConstitutionalProvisions:Rightto Life, liberty ad Dignity- Right to equality- Right against exploitation- Cultural and Educational Right- Economic Rights- Political Rights- Social Rights - Human Rights of Women and Children – Peace and harmony.

UNIT-VI: CURRENT CONTOURS: (for continuous internal assessment only)

COURSE OUTCOMES

After completion of the course, the student will be able to:

- Apply the values in thirukural to be peaceful, dutiful and responsible in family and society
- Develop character formation and sense of citizenship
- Besecular, self-control, sincere, respectful and moral.
- Master yoga, asana and meditation to promote mental health
- Be attitudinal to follow the constitutional rights

BOOKS FOR REFERENCES

1. Thirukkural with English Translation of Rev.Dr.G.U.Pope, Uma Publication, 156, Serfoji Nagar, Medical College Road, Thanjavur 613 004
2. Leah Levin, Human Rights, NBT, 1998
3. V.R.KrishnaIyer, Dialectics and Dynamics of Human Rights in India, Tagore Law Lectures.
4. Yogic Therapy – Swami Kuvalayananda and Dr.S.L.Vinekar, Government of India, Ministry of Health, New Delhi.
5. SOUNDHEALTH THROUGH YOGA- Dr.K.Chandrasekaran, Prem Kalyan Publications, Sedapatti, 1999.
6. Grose.D.N–“A text book of Value Education’ New Delhi(2005)
7. Gawande . EN – “Value Oriented Education” – Vision for better living. New Delhi (2002) Sarupsons
8. Brain Trust Aliyar- “Value Education for Health, Happiness and Harmony” Erode (2004) Vethathiri publications

MAPPING WITH PROGRAMME OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	1				3	2	3	2	2	1			2	2
CO2	2	1				3	2	3	3	2	1		1	2	2
CO3	2	1				3	2	3	2	2	1		1	2	2
CO4	1					2	3	2	1	1				2	1
CO5	2	2				3	2	3	2	2	1		1	2	2

Strong-3 Medium-2 low-1

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE

(AUTONOMOUS)

SUNDARAKKOTTAI, MANNARGUDI-614016.

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DEPARTMENT OF COMPUTER APPLICATIONS

BACHELOR OF COMPUTER APPLICATIONS (BCA)

Semester: II—CC-II: Programming in Java

Ins.Hrs./Week:4

CourseCredit:4

CourseCode:U26CA203

COURSE OBJECTIVES

- Understand the fundamentals of Java programming, object-oriented concepts, control statements, classes, and objects.
- Develop Java applications using arrays, strings, inheritance, interfaces, and packages.
- Apply exception handling, file handling, input / output streams, and multithreading techniques in Java programs.
- Design graphical user interfaces using Applets, AWT, Swing components, and event handling mechanisms.
- Develop database – driven Java applications using JDBC and integrate GUI components with database operations.

UNIT-I: Introduction

(12-Hours)

Foundation, Essentials, Control Statement and Classes & Objects. Stage of Java – origin of Java – challenges - features - Object-Oriented Programming; Java Essentials: Elements - API - variables - primitive data types – String Class - operators –combined assignment operators - conversion –scope – comments - keyboard input; Control Statements: if, if-else, nested if & if-else-if statements – logical operators – comparison – conditional operator – switch – increment and decrement – while, do-while & for loops – nested loops – break and continue; Classes and Objects: classes and objects -modifiers - passing arguments– constructors - package & import - static class members –method overloading– constructor overloading –returning objects – this variable – recursion – nested & inner classes – abstract classes & methods.

UNIT-II: Arrays and Strings

(12-Hours)

Arrays, String Handling, Inheritance, Interface and Packages. Introduction –processing array – passing arrays – returning arrays – String arrays – two Dimensional Arrays - Arrays with Three or More Dimensions; String Handling : String class – concatenation – comparison – substring – methods – other methods–String Buffer, String Builder &String Tokenizer classes; Inheritance: basics –inheriting and overriding super class methods – calling super class constructor – polymorphism – inherit from different classes – abstract classes – final Class; Interfaces: Basics – multiple Interfaces – multiple inheritance using interface – multilevel interface – Packages – Create and access packages in Net Beans IDE – static Import and package class – access specifiers.

UNIT–III: Exception Handling

(12-Hours)

Exception Handling, I/O and File Handling and Multithreading. Introduction - try and catch block - multiple catch block - nested try - finally Block – throw Statement – exception propagation – throw Clause -custom exception–built-in exception; Multi threading: Introduction –threads–thread creation – lifecycle–joiningathread–scheduler&priority–synchronization–inter-threadcommunication–

thread control – thread Pool – thread group – daemon thread; Files and I/O Streams: file Class – streams – byte streams – filtered byte streams – Random Access File class – character streams.

UNIT–IV: Applet and GUI (12-Hours)

Applet and GUI Part I. Fundamentals – applet class – life cycle – steps for applet program – passing values through parameters – graphics – event handling; GUI I:GUI – creating windows – dialog boxes – layout managers – AWT component classes – Swing component classes – applications of AWT controls.

UNIT–V:AWT and JDBC (12-Hours)

GUI Part II and Java Database Connectivity Event handling – AWT components – AWT graphics classes – Swing controls – application using Swing and AWT; Java Database Connectivity: types of drivers – JDBC architecture – JDBC classes & interfaces – steps in JDBC applications – creating a new Database and table with JDBC.

UNIT-VI: CURRENT CONTOURS (for Continuous Internal Assessment Only)

Hands-on exercises, assignments, quizzes, seminars, case studies, and mini-projects covering Java fundamentals, arrays, strings, inheritance, exception handling, multithreading, file handling, GUI programming, and JDBC applications. Development, testing, and documentation of Java-based solutions for real-world problems.

Total Lecture Hours: 60

COURSE OUTCOMES

On completion of this course, students will be able to

- Understand the concept of OOP as well as the purpose and usage principles.
- Identify members of a class and to implement them
- Create Java application programs using sound OOP practices (e.g., interfaces and APIs) and proper program structuring
- Develop programs using the Java standard class library.
- Develop software using Java programming language, (using applet, AWT controls, and JDBC
- To develop solutions for real-world problems through practical exercise.

TEXT BOOK(S)

1. E.Balagurusamy, “Programming with JAVA”, Tata McGraw Hill, New Delhi, 2019

REFERENCEBOOK(S)

1. C. Muthu, “Programming with JAVA”, Vijay Nicole Imprints Private Limited, Chennai, Second Edition, 2011.
2. Bruce Eckel, Chuck Allison, “Thinking in Java”, Prentice Hall Publications, 2006
5. Malina Pronto, "Java: How To Learn Java Programming: How To Improve Your Java Coding In 2020/2021:

3. Programming Languages To Learn For Beginners In Tech", Independently Published,2020.
4. Nick Samoylov, "Learn Java 12 Programming: A Step-by-step Guide to Learning Essential Concepts in Java", Packt Publishing, 2019.
5. S.Sagayaraj,R.Denis,P.Karthik&D.Gajalakshmi,"Constructive Java Programming", Universities Press, 2021.

WEB RESOURCES

1. <https://www.javatpoint.com/java-tutorial>
2. <https://www.tutorialspoint.com/java/index/html>
3. <https://www.w3schools.com/java>
4. <https://www.programiz.com/java-programming>
5. <https://www.geeksforgeeks.org/java/>

MAPPING WITH PROGRAMME OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	1		2					1	3	2	-		
CO2	3	3	2		2					1	3	3	1		
CO3	3	3	3	1	3					1	3	3	2		
CO4	3	3	2	2	3					1	3	3	2		
CO5	3	3	3	2	3				1	1	3	3	3	2	
CO6	3	3	3	3	3	1	1	1	2	2	3	3	3	2	1

Strong-3 Medium-2 low-1

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)



SUNDARAKKOTTAI, MANNARGUDI-614016.

(For the Candidates admitted in the academic year 2026–2027)

DEPARTMENT OF COMPUTER APPLICATIONS

BACHELOR OF COMPUTER APPLICATIONS (BCA)

Semester: II-CP-II: Programming in Java Lab

Ins.Hrs./Week:4

Course Credit:4

Course Code: U26CA204P

COURSE OBJECTIVES

- Understand the fundamentals of Java programming, object-oriented concepts, control statements, classes, and objects.
- Develop Java applications using arrays, strings, inheritance, interfaces, and packages.
- Apply exception handling, file handling, input / output streams, and multithreading techniques in Java programs.
- Design graphical user interfaces using Applets, AWT, Swing components, and event handling mechanisms.
- Develop database – driven Java applications using JDBC and integrate GUI components with database operations.

LIST OF PROGRAMS

1. Write a program to sort the given numbers using arrays.
2. Write a program to implement the FIND and REPLACE operations in the given text.
3. Write a program to implement a calculator to perform basic arithmetic Operations, doing with constructors
4. Write a program to find the student's percentage and grade using command line arguments.
5. Write a program to draw circle or triangle or square using polymorphism and inheritance.
6. Implement multiple inheritance concepts in java using interface, you can choose your own example of a company or education institution or a general concept which requires the use of interface to solve a particular problem.
7. Write a program to create threads and perform operations like start, stop, suspend, resume.
8. Write a program to develop an applet to play multiple audio clips using multithreading.
9. Write a program to retrieve employee data from a file.
10. Write a program to retrieve student data from a Database.

Total Lecture Hours:60

COURSE OUTCOMES

On completion of this course, students will be able to

- Understand the concept of OOP as well as the purpose and usage principles.
- Identify members of a class and to implement them
- Create Java application programs using sound OOP practices (e.g., interfaces and APIs) and

proper program structuring

- Develop programs using the Java standard class library.
- Develop software using Java programming language, (using applet, AWT controls, and JDBC
- To develop solutions for real-world problems through practical exercise.

TEXT BOOK(S)

1. E.Balagurusamy, “Programming with JAVA”, Tata McGraw Hill, New Delhi, 2019

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1. C. Muthu, “Programming with JAVA”, Vijay Nicole Imprints Private Limited, Chennai, Second Edition, 2011.
2. Bruce Eckel, Chuck Allison, “Thinking in Java”, Prentice Hall Publications, 2006
5. Malina Pronto, "Java: How To Learn Java Programming: How To Improve Your Java Coding In 2020/2021:",
3. Programming Languages To Learn For Beginners In Tech", Independently Published, 2020.
4. Nick Samoylov, “Learn Java 12 Programming: A Step-by-step Guide to Learning Essential Concepts in Java”, Packt Publishing, 2019.
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3. <https://www.w3schools.com/java>
4. <https://www.programiz.com/java-programming>
5. <https://www.geeksforgeeks.org/java/>

MAPPING WITH PROGRAMME OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	1		2					1	3	2	-		
CO2	3	3	2		2					1	3	3	1		
CO3	3	3	3	1	3					1	3	3	2		
CO4	3	3	2	2	3					1	3	3	2		
CO5	3	3	3	2	3				1	1	3	3	3	2	
CO6	3	3	3	3	3	1	1	1	2	2	3	3	3	2	1

Strong-3

Medium-2

low-1

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE

(AUTONOMOUS)



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(For the Candidates admitted in the academic year 2026–2027)

DEPARTMENT OF COMPUTER APPLICATIONS

BACHELOR OF COMPUTER APPLICATIONS (BCA)

Semester: II -SEC-I: Multimedia Technologies

Ins.Hrs./Week:2

Course Credit:2

Course Code:U26SECA21

COURSE OBJECTIVES

- To learn the basic concepts of multimedia and its applications.
- To understand how text, images, animation, audio and video are used in multimedia.
- To learn multimedia file handling and compression techniques.
- To gain knowledge of multimedia hardware software and authoring tools.
- To understand the use of multimedia on the Internet and in web design.

UNIT-I: Introduction

(6-Hours)

Multimedia: Definition- Use of Multimedia- Delivering Multimedia. Making Multimedia: The stages of a Multimedia Project - The Intangibles - Hardware Needs - Software Needs - Authoring Systems Needs. Multimedia skills. Text: Font and Faces-Using Text and Multimedia - Computers and Text Font editing and Design Tools- hypermedia and Hypertext.

UNIT-II: Images, Sound, Animation and Video

(6-Hours)

Images: Create Image-Making Still Images-Color-Image File Formats. Sound: The Power of sound-Digital Audio – MIDI Audio – MIDI vs Digital Audio – Multimedia System Sounds-Audio File Formats-Vaughan's Law of Multimedia Minimums-Adding Sound to your Multimedia Project-Animation – Video.

UNIT-III: Digital Video and Image Compression

(6-Hours)

Digital Video and Image Compression: evaluating a compression system - Redundancy and Visibility - Video compression techniques - Standardization of an algorithm - The JPEG image compression standard-ITU -T Standards - MPEG motion video compression standard – DVI Technology.

UNIT-IV: Hardware Software Tools

(6-Hours)

Hardware, Software and Multimedia Authoring Tools: Multimedia Hardware - Macintosh and windows production Platforms – Hardware Peripherals: Memory and Storage Devices - Input Devices - Output devices - Communication Devices - Basic Software Tools.

UNIT-V: Internet and Multimedia

(6-Hours)

The Internet and Multimedia: Internet History – Internetworking - Multimedia on the Web. Designing for the WWW: Developing for the web –Text for the Web-Images for the Web- Sound for the Web- Animation for the Web - Video for the Web.

UNIT-VI: CURRENT CONTOURS (for Continuous Internal Assessment Only)

Assignments, quizzes, seminars, case studies, and mini-projects covering multimedia concepts, text, images, audio, video, animation, multimedia tools, compression techniques, and web-based multimedia applications. Development and presentation of multimedia projects.

Total Lecture Hours: 30

COURSE OUTCOMES

On completion of this course, students will be able to

- Apply the knowledge of the basic fundamental components Multimedia.
- Apply the animation effects for basic multimedia formats.
- Apply multimedia file handling techniques for different media types.
- Identify compression and applying the video setting.
- Explain hardware components and software tool devices.
- Design and create web pages for different applications.

TEXT BOOK(S)

1. Tay Vaughan, Multimedia: Making It Work, 7th Edition, Tata Mc-Graw Hill., 2008.

REFERENCE BOOK(S)

1. John F. Koegel Buford, Multimedia Systems, Pearson edition, 2003. Ranjan Parekh, Principles of Multimedia, TMH, 2006.
2. Ralf Steinmetz and Klara Nahrstedt, Multimedia: Computing, Communication and applications, Pearson Edition, 2001.
3. Syed, Mahbubur Rahman, Multimedia Technologies: Concepts, Methodologies, Tools, and Applications, Information Science Reference, 2008.
4. Banerji, Multimedia Technologies, McGraw-Hill Education (India) Pvt Limited, 2010.
5. Ze-Nian Li, Mark S. Drew, Jiangchuan Liu, Fundamentals of Multimedia. Germany, Springer International Publishing, 2014.

WEB RESOURCES

1. <https://www.simplemultimedia.com>
2. https://www.sas.com/en_us/insights/analytics/big-data-analytics.html
3. <https://cloud.google.com/audio/mmtechnology>
4. <https://www.simplilearn.com>
5. https://www.sas.com/en_us/insights/html

MAPPING WITH PROGRAMME OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2			1					1	3	2			
CO2	2	2	3		3					1	3	3	1		
CO3	2	3	2	1	3						3	3	1		
CO4	3	3	1	2	2						2	3	2		
CO5	2	2	2	1	3					1	3	3	1	1	
CO6	2	3	3	2	3	1			2	2	3	3	2	2	1

Strong-3

Medium-2

low-1

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)



SUNDARAKKOTTAI, MANNARGUDI-614016.
(For the Candidates admitted in the academic year 2026–2027)

DEPARTMENT OF COMPUTER APPLICATIONS

BACHELOR OF COMPUTER APPLICATIONS (BCA)

INTERDISCIPLINARY COURSE OFFERED

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE (AUTONOMOUS)



SUNDARAKKOTTAI, MANNARGUDI-614016.

(For the Candidates admitted in the academic year 2026–2027)

DEPARTMENT OF COMPUTER APPLICATIONS

BACHELOR OF COMPUTER APPLICATIONS (BCA)

Semester: I -IDC-I: Foundation of Computers and Office Automation

Ins.Hrs./Week:2

Course Credit:2

Course Code:U26IDCA11

COURSE OBJECTIVES

- Understand the fundamentals of computers, their components, software, hardware, and operating systems.
- Create and format professional documents using MS Word with text, tables, images, and mail merge features.
- Perform data entry, calculations, chart creation, and data analysis using MS Excel.
- Design and deliver effective presentations using MS PowerPoint with multimedia and animation features.
- Utilize Internet services, e-mail, and e-commerce applications for communication and online transactions.

UNIT-I: Introduction to Computers

(6 Hours)

Introduction to Computers - Generations of Computer – Data and Information – Components of Computer – Software – Hardware – Input Devices -Output Devices- Types of Operating System.

UNIT-II: MS Word

(6Hours)

Introduction – Elements of Window – Files, Folders and Directories – Text Manipulating: Cut, Copy, Paste, Drag and Drop –Text Formatting: Font–Style, Size, Face and Colors (Both foreground and background) – Alignment - Bullets and Numbering - Header and footer-watermark – inserting objects (images, other application document) – Table creation – Mail merge.

UNIT-III: Ms Excel

(6Hours)

Introduction – Inserting rows and columns – Sizing rows and columns – Implementing formulas – Generating series - Functions in excel – Creation of Chart – Inserting objects – Filter – Sorting – Inserting Worksheet.

UNIT-IV: MS PowerPoint

(6Hours)

Introduction – Slides Manipulation (Inserting new, Copy, paste, delete and duplicate slides) Slide show– Types of Views – Types of Animations – Inserting Objects – Implementing multimedia (Video and Audio) – Templates (Built-in and User-Defined).

UNIT-V: Internet

(6Hours)

Introduction to Internet and Intranet – Services of Internet - Domain Name – URL – Browser– Types of Browsers – Search Engine -E-Mail – Basic Components of E-Mail –.How to send group mail. **E-Commerce:** Digital Signature – Digital Currency – Online shopping and transaction.

UNIT-VI:CURRENT CONTOURS(for Continuous Internal Assessment Only) Assignments, quizzes, seminars, practical exercises, and mini-projects covering computer fundamentals, MSWord, MS Excel, MS PowerPoint, Internet applications, e-mail communication, and e-commerce concepts. Preparation and presentation of digital documents, spreadsheets, presentations, and online activities.

Total Lecture Hours-30

COURSE OUTCOMES

On completion of this course, students will be able to

- Explain the basic concepts of computers, hardware, software, input/output devices,
- Create, edit, format, and manage documents using MSWord.
- Apply formulas, functions, charts, and data management techniques in MS Excel.
- Develop effective presentations using MS PowerPoint with animations and multimedia elements.
- Use Internet services, web browsers, search engines, and e-mail for communication
- Demonstrate the use of e-commerce applications, digital signatures, digital currency.

TEXT BOOK(S)

1. Mathew,Anoop,and S.Kavitha Murugeshan. "Fundamentals of Information Technology". Majestic Books, 2009.
2. Leon,Alexis,and MathewsLeon. "Fundamentals of Information Technology".2nd ed., Vikas Publishing House, 2008.
3. Bansal,S.K. "Fundamentals of Information Technology".APH Publishing Corporation, 2003.

REFERENCEBOOK(S)

1. Leon,Alexis,andMathewsLeon.FundamentalsofInformationTechnology.Vikas Publishing House, 2009.
2. Norton,Peter.IntroductiontoComputers.6thed.,McGraw-HillEducation,2004.
3. Shelly, GaryB.,andMistyE.Vermaat.MicrosoftOffice2016:IntroductoryConceptsand Techniques. Cengage Learning, 2016.
4. Cox,Joyce,andJoanPreppernau.MicrosoftOfficeWord,Excel,andPowerPoint2010Step by Step. Microsoft Press, 2010.
5. Comer,DouglasE.The Internet Book: Everything You Need to Know about Computer Networking and How the Internet Works. 5th ed., Pearson Education, 2018.

E-RESOURCES

1. <https://testbook.com/learn/computer-fundamentals>
2. <https://www.tutorialsmate.com/2020/04/computer-fundamentals-tutorial.html>
3. <https://www.javatpoint.com/computer-fundamentals-tutorial>
4. https://www.tutorialspoint.com/computer_fundamentals/index.htm
5. <https://www.nios.ac.in/media/documents/sec229new/Lesson1.pdf>

MAPPINGWITHPROGRAMOUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	1	1	2	1	1	1	1	1	3	2	1	1	1
CO2	2	2	3	1	3	1	1	1	2	2	2	3	2	1	2
CO3	3	3	2	2	3	1	1	1	1	1	3	3	2	1	2
CO4	1	1	3	1	3	1	1	1	2	3	2	2	3	1	3
CO5	2	2	2	1	3	2	1	1	3	3	2	3	2	2	3
CO6	2	3	2	2	3	3	1	2	2	2	3	2	2	3	2

S-Strong (3)

M-Medium(2)

L-Low(1)

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
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DEPARTMENT OF COMPUTER APPLICATIONS

BACHELOR OF COMPUTER APPLICATIONS (BCA)

Semester: II-IDC-II: Introduction to Python Programming

Ins.Hrs./Week:2

Course Credit:2

Course Code:U26IDCA22

COURSE OBJECTIVES

- Understand the fundamentals of Python programming, including variables, expressions, operators, functions, and program structure.
- Apply conditional statements, recursion, and iteration techniques to solve computational problems.
- Develop Python programs using strings, lists, dictionaries, tuples, and other built-in data structures.
- Perform file handling, exception handling, and modular programming for efficient data processing.
- Design object-oriented Python applications using classes, objects, inheritance, polymorphism, and advanced Python features.

UNIT-I: Introduction

(6-Hours)

The Way of the Program - Arithmetic operators - Values and Types - Formal and Natural Languages. Variables, Expressions and statements: Assignment statements - Variable Names- Expression and statements-Script mode-Order of Operations – String Operations - Comments. Functions: Function Calls-Math Functions - Composition - Adding New functions -Flow of execution-Parameters and Arguments – Variables and Parameters are Local Stack diagram -Fruitful Functions and Void Functions.

UNIT-II: Conditionals and Recursion

(6-Hours)

Conditionals and Recursion: Floor division and Modulus-Boolean expression –Logical Operators- Condition Execution-Alternative Execution-Chained Conditionals-Nested Conditionals Recursion- Stack diagrams for Recursive Functions-Keybaord Input-Fruitful Functions-Iteration

UNIT-III: Strings and Tuples

(6-Hours)

Strings: A string is a sequence-len-Traversal with a for loop-String slices-String are Immutable- Searching-Looping and Counting-String Methods-The in Operator-String Comparison. Lists- Dictionaries: A Dictionary is a Mapping- Dictionary as a collection of counters-Looping and dictionaries – Reverse Lookup-Dictionaries and Lists-Memos-Global Variables- Tuples

UNIT-IV: Classes and Objects

(6-Hours)

Files: Persistence – Reading and writing-Format Operator-Filenames and Paths-Catching Exceptions-Databases-Pickling-Pipes-writing Modules. Classes and Object: Programmer –defined Types-Attributes-Rectangles-Instances as return values-Objects are mutable-Copying. Classes and Functions.

UNIT-V: Classes and Methods

(6-Hours)

Classes and Methods: Object Oriented Features-Printing Objects-The init method-The str method-Operator overloading-Type based dispatch-Polymorphism-Interface implementation. Inheritance-Card Objects-Class Attributes-Comparing cards - Decks-Printing the Deck, Add, Remove Shuffle and Sort-Inheritance-Class diagram-Data encapsulation. Goodies: Conditional Expressions – Generator Expression-any and all- Sets- Counters – Default dict-Named Tuples-Gathering keyword Args.

UNIT-VI: CURRENT CONTOURS (for Continuous Internal Assessment Only)

Assignments, quizzes, seminars, programming exercises, and mini-projects covering Python fundamentals, functions, recursion, strings, lists, dictionaries, tuples, file handling, exception handling, classes, objects, inheritance, and object-oriented programming concepts. Development and presentation of Python- based applications.

Total Lecture Hours: 30

COURSE OUTCOMES

On completion of this course, students will be able to

- Explain the fundamental concepts of Python programming.
- Develop Python programs using conditional statements, loops.
- Apply strings, lists, dictionaries, tuples, and other built-in data structures in Python applications.
- Perform file operations, exception handling, and module creation for efficient program
- Design and implement object-oriented programs using classes, objects, methods, inheritance,
- Utilize advanced Python features and libraries to develop efficient, reusable, TEXT

BOOK(S)

1. “Think Python” how to think like a computer scientist, Allen B. Downey O’Reilly 2nd edition.

REFERENCEBOOK(S)

1. Mark Lutz, “Learning Python Powerful Object Oriented Programming”, O’reilly Media 2018, 5th Edition.
2. Timothy A. Budd, “Exploring Python”, Tata McGraw Hill Education Private Limited 2011, 1st Edition.
3. John Zelle, “Python Programming: An Introduction to Computer Science”, Second edition, Course Technology Cengage Learning Publications, 2013, ISBN 978- 1590282410
4. Michel Dawson, “Python Programming for Absolute Beginners”, Third Edition, Course Technology Cengage Learning Publications, 2013.
5. Wesley J. Chun, “Core Python Applications Programming”, 3rd Edition, Pearson Education, 2016

WEB RESOURCES

1. <https://www.simplilearn.com>
2. https://www.sas.com/en_us/insights/analytics/big-data-analytics.html
3. <https://cloud.google.com/architecture/big-data-analytics>
4. <https://www.simplilearn.com>
5. https://www.sas.com/en_us/insights/analytics/big-data-analytics.html
- 6.

MAPPING WITH PROGRAMME OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	1		2						3	2	1		
CO2	3	3	2	1	2						3	3	2	1	
CO3	2	3	2	1	3						3	3	2	1	
CO4	2	2	3	2	3					1	2	3	3	2	1
CO5	3	3	3	2	3				1	1	3	3	3	2	1
CO6	3	3	3	3	3	1			2	2	3	3	3	3	2