

B.C.A

LOCF SYLLABUS – 2025-2026

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 have 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 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.

Ability Enhancement Compulsory Courses (AECC)

“AECC” are the courses based upon the content that leads to Knowledge enhancement especially in Communicative English and other soft skills.

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, Practical's, Generic Elective courses, Discipline Specific Elective courses, Compulsory and Optional Allied courses, Project)

Part-IV: Non Major Elective, Foundation Course, Ability Enhancement Compulsory 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 %

Assignments – 3 = 30%

Tests- 2 = 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 Questions 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 previously learned
2	K2	Comprehension/ Understanding	The learner explains ideas or concepts
3	K3	Application/Applying	The learner uses information in an way
4	K4	Analysis/Analyzing	The learner distinguishes among different parts
5	K5	Evaluation/Evaluating	The learner just if i.e. a stand or decision
6	K6	Synthesis/Creating	The learner creates an ew 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	25			30		75
Continuous Internal Assessment (CIA)	20	25			30		75

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

BLUEPRINTOFQUESTIONPAPER		FORSEMESTEREXAMINATION						
DURATION: 3.00 Hours.		Max Mark :100						
K-LEVELS		K1	K2	K3	K4	K5	K6	Total Marks
PART								
PART –A(One Mark, No choice)	(10x1=10)	10						10
	(2-Marks,Nochoice)	10						10
PART –B(5-Marks)(Either/or type)(5x5=25)			5	10	10			25
PART -C(10 Marks)(3 out of 5)						20	10	30
CourseshavingonlyK5,K6 levels, K5 level- 3								
Questions, K6 level- 2 Questions								
(OneK6level question is compulsory)								
Total		20	05	10	10	20	10	75

EVALUATION

GRADINGSYSTEM

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 with in 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:

$GPA = \frac{\sum_{i=1}^n C_i G_i}{\sum_{i=1}^n C_i}$	$WAM(\text{Weighted Average Marks}) = \frac{\sum_{i=1}^n C_i M_i}{\sum_{i=1}^n C_i}$
Where, C 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:

- For each of the first three parts, there shall be separate classification on the basis o 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 take 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	0	RA

Table- 2: Grading of the Courses - PG

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
Below 50	0	RA

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

Vision

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

Mission

1. Providing quality education in computer science and its applications by updated knowledge through technology transfer
2. 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.

B.C.A SYLLABUS

Syllabus

2025-2026

Programme Code: 3USBCA



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

(Affiliated to Bharathidasan University, Tiruchirappalli)
(Accredited by NAAC)

**Sundarakkottai, Mannargudi-614016,
Thiruvavur(Dt.), TamilNadu, India.**



SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE

(AUTONOMOUS)

(Affiliated to Bharathidasan University)

(Accredited by NAAC | An ISO 9001:2015 Certified Institution)

SUNDARAKKOTTAI, MANNARGUDI-614016,

TAMILNADU, INDIA.

BACHELOR OF COMPUTER APPLICATIONS COURSE STRUCTURE UNDER CBCS

LEARNING OUTCOMES BASED CURRICULUM FRAMEWORK (CBCS-LOCF)

(For the candidates admitted in the academic year 2025-2026)

ELIGIBILITY: Those who have completed +2 examinations with Mathematics as one of the core subject

Semester	Part	Nature of the Course	Course Code	Title of the Course	Inst. Hou rs/ Wee k	L	T	P	O	Credit	Exa m Hou rs	Marks		Total
												Int.	Ext .	
I	I	Language Course (LC)-I	U25LC101	Podhu Tamil I Tamil Elakkiya Varalaru-I	6	5	1	-	-	3	3	25	75	100
	II	English Language Course(ELC)-I	U25ELC101	General English-I	6	5	1	-	-	3	3	25	75	100
	III	Core Course (CC)-I	U25CA101	Computer Architecture	4	3	1	-	-	4	3	25	75	100
		Core Course (CC)-II	U25CA102	Problem Solving and C Programming	4	3	1	-	-	4	3	25	75	100
		Core Practical(CP)-I	U25CA103P	Computer Architecture and Problem Solving with C Lab	3	1	-	2	-	3	3	25	75	100
		Allied Course (AC)-I	U25AMS101	Mathematical Foundation to Computer Science-I	3	2	1	-	-	2	3	25	75	100
	IV	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 languages was not studied in school Level (or) b) Special Tamil if Tamil language was studied upto 10th & 12 th std			2	2	-	-	-	2	3	25	75	100

		Those who choose NCC in Part V must choose NCC course as Non-Major Elective												
		FC	U25FCCA11	Foundation to Computers with Office Automation	2	2	-	-	-	2	3	25	75	100
		Total			30	23	5	2	-	23	-	-	-	800
II	I	Language Course (LC)-II-Tamil	U25LC202	Podhu Tamil II Tamil Elakkiya Varalaru –II	6	5	1	-	-	3	3	25	75	100
	II	English Language Course(ELC)–II	U25ELC202	General English-II	6	5	1	-	-	3	3	25	75	100
	III	Core Course(CC)–III	U25CA204	Operating Systems	4	3	1	-	-	4	3	25	75	100
		Core Course(CC)–IV	U25CA205	Data Structures and C++ Programming	4	3	1	-	-	4	3	25	75	100
		Core Practical (CP)–II	U25CA206P	Operating Systems and Data Structures Using C++ Lab	3	1	-	2	-	3	3	25	75	100
		Allied Course (AC)–II	U25AMS202	Mathematical Foundation to Computer Science-II	3	2	1	-	-	2	3	25	75	100
	IV	Non Major Elective-II@ 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 languages was not studied in school Level (or) Special Tamil if Tamil language was studied upto 10th& 12th std			2	2	-	-	-	2	3	25	75	100
		Skill Enhancement Course(SEC)- I	U25SECA21	Web Technologies	2	2	-	-	-	2	3	25	75	100
		Total			30	23	5	2	-	23	-	-	-	800
III	I	Language Course (LC)-III	U25LC303	Podhu Tamil III Tamizhaga Varalarum Panpadum	6	5	1	-	-	3	3	25	75	100
	II	English Language Course(ELC)–III	U25ELC303	General English-III	6	5	1	-	-	3	3	25	75	100
	III	Core Course(CC)–V	U25CA307	Database Management Systems	4	3	1	-	-	4	3	25	75	100
		Core Practical(CP)–III	U25CA308P	Database Management Systems Lab	4	1	-	3	-	4	3	25	75	100

		Allied Course (AC) – III	U25ACOM301	Financial Accounting	2	2	-	-	-	2	3	25	75	100
		Allied Practical (AP)-I	U25ACOM302P	Accounting Package Lab	2	-	-	2	-	-	-	-	-	-
	IV	Skill Enhancement Course(SEC)-II	U25SECA32	PHP Programming	2	2	-	-	-	2	3	25	75	100
		Skill Enhancement Course(SEC)-III	U25SECA33	Software Engineering	2	2	-	-	-	2	3	25	75	100
	V	Special Course	25UGSC	Health & Wellness	2	-	-	2	-	1	-	-	-	-
		Total			30	20	3	7	-	21	-	-	-	700
IV	II	Language Course(LC)-IV	U25LC404	Podhu Tamil IV Tamizhum Ariviyalum	6	5	1	-	-	3	3	25	75	100
	II	English Language Course(ELC)–IV	U25ELC404	General English-IV	6	5	1	-	-	3	3	25	75	100
	III	Core Course (CC) –VI	U25CA409	Java Programming	5	4	1	-	-	4	3	25	75	100
		Core Practical(CP)–IV	U25CA410P	Java Programming Lab	4	3	1	-	-	4	3	25	75	100
		Allied Practical (AP)-I	U25ACOM302P	Accounting Package Lab	2	-	-	2	-	2	3	25	75	100
		Allied Course (AC)– IV	U25ACOM403	Cost and Management Accounting	3	1	2	-	-	2	3	25	75	100
	IV	Skill Enhancement Course(SEC)-IV	U25SECA44	Entrepreneurship and Startup Ecosystem	2	2	-	-	-	2	3	25	75	100
		Skill Enhancement Course(SEC)-V	U25SECA45	Web Design Tools	2	2	-	-	-	2	3	25	75	100
		Total			30	22	6	2	-	22	-	-	-	800
V	III	Core Course (CC) –VII		Computer Networks	6	5	1	-	-	5	3	25	75	100
		Core Course(CC)– VIII		Python Programming	5	4	1	-	-	4	3	25	75	100
		Core Course (CC)–IX		Data Visualization	5	4	1	-	-	4	3	25	75	100
		Core Practical(CP)–V		Python Programming and Data Visualization Lab	4	1	-	3	-	4	3	25	75	100
		Elective Course (EC)–I		Cyber Security /Design and Analysis of Algorithm / Data Mining and Warehousing	4	3	1	-	-	3	3	25	75	100
		Elective Course (EC)–II		IoT and its Applications /Natural Language Processing / Software Project	4	3	1	-	-	3	3	25	75	100

				Management										
	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	22	5	3	-	27	-	-	-	700
VI	III	Core Course -X		Artificial Intelligence and Machine Learning	6	5	1	-	-	4	3	25	75	100
		Core Practical(CP)-VI		Artificial Intelligence and Machine Learning Lab	6	2	-	4	-	4	3	25	75	100
		Core Project		Project with Viva-Voce / Group Project	5	2	-	3	-	5	3	25	75	100
		Elective Course (EC)–III		Cloud Computing / Grid Computing / Software Metrics	4	3	1	-	-	3	3	25	75	100
		Elective Course (EC)–IV		Big Data Analytics / Human Computer Interaction / Agile Project Management	4	3	1	-	-	3	3	25	75	100
	IV	Value Education		Value Education	2	2	-	-	-	2	3	25	75	100
		Professional Competency Course		Professional Development for Computer Applications	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	20	3	7	-	25	-	-	-	800
				Value Added Course (At least one per year)	-	-	-	-	-	3*2	-	-	-	-
	GRAND TOTAL				180	-	-	-	-	141	-	-	-	4600

Credit Distribution for UG PROGRAMME-BCA

S.No	Part	Subject	No. of Courses	Total Credits
1.	I	Language Course	4	12
2.	II	English Language Course	4	12
3.	III	Core Course Theory	10	41
4.		Core Practical	6	22
5.		Core Project	1	05
6.		Allied Course Theory	4	08
7.		Allied Practical	1	02
8.		Elective Course	4	12
9.	IV	Non-Major Elective	2	04
10.		Foundation Course	1	02
11.		Skill Enhancement Course	5	10
12.		Internship/ Industrial Visit/ Field Visit	1	02
13.		Environmental Studies	1	02
14.		Value Education	1	02
15.		Professional Competency Course	1	02
16.	V	Gender Studies	1	01
17.		Extension Activity	1	01
18.		Health and Wellness	1	01
Total			49	141

Note:			
S.NO	PARTICULARS	CIA	ESE
1.	Theory	25	75
2.	Practical	25	75
3. Separate passing minimum is prescribed for Internal and External marks			

FOR THEORY

1. The passing minimum for CIA shall be 40% out of 25 marks [i.e.10marks]
2. The passing minimum for ESE shall be 40% out of 75marks [i.e.30marks]

FOR PRACTICAL

1. The passing minimum for CIA shall be 40% out of 25 marks [i.e.16marks]
2. The passing minimum for ESE shall be 40% out of 75marks [i.e.24marks]

NON-MAJOR ELECTIVE (NME) OFFERED BY THE DEPARTMENT

Semester	Part	Course Code	Course	Course Title
I	IV	U25NMECA11	NME-I	Basics of Data Analytics using Spreadsheet
II		U25NMECA22	NME-II	Introduction to Data Science

SKILL ENHANCEMENT COURSE (SEC) OFFERED BY THE DEPARTMENT

Semester	Part	Course Code	Course	Course Title
II	IV	U25SECA21	SEC-I	Web Technologies
III	IV	U25SECA32	SEC -II	PHP Programming
	IV	U25SECA33	SEC -III	Software Engineering
IV	IV	U25SECA44	SEC -IV	Entrepreneurship and Startup Ecosystem
	IV	U25SECA44	SEC -V	Web Design Tools

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)



SUNDARAKKOTTAI, MANNARGUDI- 614016.
(For the Candidates admitted in the academic year 2025– 2026)

DEPARTMENT OF COMPUTER APPLICATIONS
BACHELOR OF COMPUTER APPLICATIONS (BCA)

Semester: III-CC-V: Database Management Systems

Ins. Hrs./Week: 4

Course Credit: 4

Course Code: U25CA307

UNIT - I: Introduction to Database Systems and Relational Model

(12 Hours)

Introduction: Database-System Applications- Purpose of Database Systems - View of Data -Database Languages - Relational Databases - Database Design -Data Storage and Querying-Transaction Management -Data Mining and Analysis -Database Architecture - Database Users and Administrators - History of Database Systems.

Relational Model: Structure of Relational Databases -Database Schema - Keys – Schema Diagrams - Relational Query Languages - Relational Operations.

UNIT - II: SQL and Database Queries

(12 Hours)

SQL Overview of the SQL Query Language - SQL Data Definition - Basic Structure of SQL Queries - Additional Basic Operations - Set Operations - Null Values-Aggregate Functions - Nested Subqueries - Modification of the Database. Intermediate SQL: Join Expressions - Views - Transactions - Integrity Constraints - SQL Data Types and Schemas – Authorization.

UNIT - III: Relational Languages and E–R Model

(12 Hours)

Relational Query Languages: The Relational Algebra- The Tuple Relational Calculus - The Domain Relational Calculus. Database Design and the E-R Model: Overview of the Design Process - The Entity-Relationship Model-Constraints-Removing Redundant Attributes – Entity-Relationship Diagrams-Reduction to Relational Schemas – Entity Relationship Design Issues - Extended E-R Features - Alternative Notations for Modeling Data - Other Aspects of Database Design.

UNIT - IV: Relational Database Design and Normalization

(12 Hours)

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

UNIT V: Transaction Management, Storage, and Indexing

(12 Hours)

Transaction Management : ACID Properties, Transactions and Schedules, Concurrent Execution of Transactions, Lock-Based Concurrency Control, Performance of Locking, Transaction Support in SQL, Introduction to Crash Recovery. 2PL, Serializability, and Recoverability, Introduction to Lock Management, Dealing with Deadlocks -Database Storage and Indexing: Data on External Storage, File Organizations and Indexing, Index Data Structures, Comparison of File Organizations, Indexes and Performance Tuning, Guidelines for Index Selection, Basic Examples of Index Selection

Total Lecture Hours: 60

COURSE OUTCOMES

On completion of this course, students will be able to

1. Understand the fundamentals of database systems, relational models, schemas, and relational algebra operations.
2. Construct SQL queries for data definition, data manipulation, joins, subqueries, transactions, and authorization.
3. Design database models using Entity–Relationship diagrams, relational calculus, and schema design techniques.
4. Apply normalization, functional dependencies, and decomposition techniques for efficient relational database design.
5. Analyze transaction management, concurrency control, recovery methods, storage structures, and indexing techniques for database optimization.

TEXT BOOK(S)

1. Abraham Silberschatz, Henry F.Korth,Sudarshan” Database System Concepts”, Sixth Edition, McGraw – Hill ,2013
- 2.. Raghu Ramakrishnan, Johannes Gehrke, “Database Management Systems”, third edition, McGraw – Hill, 2018

REFERENCE BOOK(S)

1. R.P. Mahapatra, Govind Verma, “Database Management Systems”, Khanna Publishing House, 2025
2. Elmasri Ramez, NavatheShamkant.2017. Fundamentals of Database System. SeventhEdition, Pearson Education, New Delhi.
3. Jagdish Chandra Patni, Hitesh Kumar Sharma, Ravi Tomar, Avita Katal., "Database Management System: An Evolutionary Approach", CRC Press, 2022.
4. C.J. Date, “An Introduction to Database Systems” Addison Wesley, 2000.
5. Blokdyk, Gerardus, and Blokdyk, Gerardus, "RDBMS Relational Database Management System a Complete Guide", 2020 Edition, Emereo Pty Limited, 2019.

E-RESOURCES

1. <https://www.geeksforgeeks.org/dbms/dbms/>
2. <https://www.tutorialspoint.com/dbms/>
3. <https://www.w3schools.com/sql/>
4. <https://www.freecodecamp.org/news/database-normalization-1nf-2nf-3nf-table-examples/>
5. https://www.tutorialspoint.com/dbms/dbms_transaction.htm

MAPPING WITH PROGRAMME OUTCOMES

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PS O1	PS O2	PSO 3	PS O4	PSO 5
CO1	3		3		3	3					3	3	3	3	2
CO2	3	3	3								2	3	3	3	2
CO3	3			3	3		3				2	3	3	3	2
CO4	3	3	3	3	3	3					2	3	3	3	2
CO5	3		3		3		3	3			2	3	3	3	2
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 2025– 2026)
DEPARTMENT OF COMPUTER APPLICATIONS
BACHELOR OF COMPUTER APPLICATIONS (BCA)

Semester: III-CP-III: Database Management Systems Lab

Ins. Hrs./Week: 4

Course Credit: 4

Course Code: U25CA308P

1. Create a table and perform the following basic MySQL operations

- Set the primary key
- Alter the structure of the table
- Insert values
- Delete values based on constraints
- Display values using various forms of select clause
- Drop the table

2. Develop MySQL queries to implement the following set operations

- Union
- Union all
- Intersect
- Intersect all

3. Develop MySQL queries to implement the following aggregate functions

- Sum
- Count
- Average
- Maximum
- Minimum
- Group by clause & having clause

4. Develop MySQL queries to implement following join operations

- Natural join
- Inner join
- Outer join-left outer, right outer, full outer
- Using join conditions

5. Develop MySQL queries to implement nested subqueries

- Set membership (In, Not In)
- Set comparison (some, all)
- Empty relation (exists, not exists)
- Check for existence of Duplicate tuples (unique, not unique)

6. Develop MySQL queries to create views and expand it

7. Develop MySQL queries to implement

- String operations using %
- String operations using ‘_’
- Sort the element using asc, desc [*create necessary relations with requires attribute]

8. Consider the following database for a banking enterprise

- a. BRANCH(branch-name: string, branch-city: string, assets: real)
- b. ACCOUNT(accno: int, branch-name: string, balance: real)
- c. DEPOSITOR(customer-name: string, accno: int)
- d. CUSTOMER(customer-name: string, customer-street: string, customercity: string)
- e. LOAN(loan-number: int, branch-name: string, amount: real)
- f. BORROWER(customer-name: string, loan-number: int)
 - Create the above tables by properly specifying the primary keys and the foreign keys
 - Enter at least five tuples for each relation
 - Find all the customers who have at least two accounts at the Main branch.
 - Find all the customers who have an account at all the branches located in a specificcity.
 - Demonstrate how you delete all account tuples at every branch located in a specificcity.
 - Generate suitable reports.
 - Create suitable front end for querying and displaying the results.

9. Queries on TCL

- a. Create a table named ACCOUNT with the following attributes:
 - Acc No
 - Customer Name
 - Balance
- b. Insert at least five records into the table.
- c. Perform the following transaction operations:
 - Start a transaction
 - Update account balance
 - Use SAVEPOINT
 - Perform ROLLBACK
 - Execute COMMIT
- d. Demonstrate concurrent transaction handling using:
 - Shared Lock
 - Exclusive Lock
- e. Verify transaction consistency and recoverability using suitable queries.

Total Lab Hours : 60

COURSE OUTCOMES

On completion of this course, students will be able to

1. Understand and perform basic MySQL table operations.
2. Develop SQL queries using joins, functions, set operations, and subqueries.
3. Design relational databases using primary keys and foreign keys.
4. Generate reports and retrieve data using SQL queries and views.
5. Apply transaction control and locking mechanisms in MySQL.

TEXT BOOK(S)

1. Korth, Silbertz, Sudarshan,” Database System Concepts”, Seventh Edition, McGraw - Hill.(2019)
- 2.. Raghu Ramakrishnan, Johannes Gehrke, “Database Management Systems”, third edition, McGraw – Hill, 2018

REFERENCE BOOKS

1. R.P. Mahapatra, Govind Verma, "Database Management Systems", Khanna Publishing House, 2025
2. Elmasri Ramez, NavatheShamkant.2017. Fundamentals of Database System. SeventhEdition, Pearson Education, New Delhi.
3. Jagdish Chandra Patni, Hitesh Kumar Sharma, Ravi Tomar, Avita Katal., "Database Management System: An Evolutionary Approach", CRC Press, 2022.
4. C.J. Date, "An Introduction to Database Systems" Addison Wesley, 2000.
5. Blokdyk, Gerardus, and Blokdyk, Gerardus, "RDBMS Relational Database Management System a Complete Guide", 2020

E-RESOURCES

1. <https://www.geeksforgeeks.org/dbms/dbms/>
2. <https://www.tutorialspoint.com/dbms/>
3. <https://www.w3schools.com/sql/>
4. <https://www.freecodecamp.org/news/database-normalization-1nf-2nf-3nf-table-examples/>
5. https://www.tutorialspoint.com/dbms/dbms_transaction.htm

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SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
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SUNDARAKKOTTAI, MANNARGUDI- 614016.
(For the Candidates admitted in the academic year 2025– 2026)

DEPARTMENT OF COMPUTER APPLICATIONS
BACHELOR OF COMPUTER APPLICATIONS (BCA)

Semester: III-SEC-II: PHP Programming

Ins. Hrs./Week: 2

Course Credit: 2

Course Code: U25SECA32

UNIT- I: Essential PHP

(6 Hours)

Creating Variables, Constants, Understanding Internal Data types in PHP – Operators and Flow Control- Strings and Arrays: The String Functions , PHP Array Functions, Handling Multi-Dimensional Array.

UNIT- II: Functions and Reading Data

(6 Hours)

Creating Functions in PHP, Passing Functions , Arrays to functions, Passing by Reference, Default Arguments, Variable scope in PHP, Working with static variables– Reading Data in Webpages– PHP Browser – Handling Power.

UNIT- III: OOP in PHP

(6 Hours)

Object-Oriented Programming: Creating Classes, Objects, Constructor, Destructor, setting access to Properties and methods, Overriding and Overloading methods – Advanced Object-Oriented Programming.

UNIT- IV: Handling File and Databases

(6 Hours)

File Handling: Opening, looping, writing, reading, closing, checking, parsing, Copying, appending, locking and deleting a file – Working with Databases: Creating a MySQL Database, Accessing the Database in PHP, Updating Databases, Inserting, Deleting, Creating New Tables, New Database.

UNIT- V: Cookie and Ajax

(6 Hours)

Cookie: Reading, Setting, deleting and setting Cookie's expiration – Working with FTP – Session: Storing data in sessions, writing a Hit counter using sessions – Ajax – Advanced Ajax.

Total Lecture Hours: 30

COURSE OUTCOMES

On completion of this course, students will be able to

1. Understand operators and controls in PHP
2. Understand Concept of Functions
3. Understand Object oriented programming
4. Understand using PHP with MySQL
5. Understand Ajax

TEXT BOOK(S)

1. Steven Holzner.2007. PHP:The Complete Reference.First Edition, McGraw Hill India, New Delhi.
2. Larry Ullman. 2017. PHP 6 and MySQL 5 for Dynamic websites: Visual Quick Pro Guide.Third Edition, Peachpit Press, San Francisco, USA.

REFERENCE BOOK(S)

1. Bruce Dou. 2020. Mastering Swoole PHP: Build High Performance Concurrent System with Async and Coroutines”.First Edition, Transfon Ltd, UK.
2. Doug Bierer.2016. PHP 7 Programming Cookbook.First Edition, PacktPublishing, Mumbai.
3. Gunnard Engebret.2021. PHP 8 Revealed.First Edition, First Edition, Apress Publications, USA.
4. Mikael Olsson. 2020. PHP 8 Quick Scripting Reference.Third Edition, Apress Publications, USA.
5. VikramVaswani. 2008. PHP:ABeginner'sGuide. First Edition, McGrawHillEducation, New Delhi.

WEB RESOURCES

1. <https://www.w3schools.com/php/DEFAULT.asp>
2. <https://www.tutorialspoint.com/php/index.html>
3. http://www.nptelvideos.com/php/php_video_tutorials.php
4. <https://www.tutorialspoint.com/php/index.htm>
5. <https://www.phptpoint.com>

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SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
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SUNDARAKKOTTAI, MANNARGUDI- 614016.
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DEPARTMENT OF COMPUTER APPLICATIONS
BACHELOR OF COMPUTER APPLICATIONS (BCA)

Semester: III-SEC-III: Software Engineering

Ins. Hrs./Week: 2

Course Credit: 2

Course Code: U25SECA33

UNIT- I: Introduction

(6 Hours)

Introduction to Software Engineering – Software Process – Software Process Models – Software Model– Requirements Engineering Principles : Requirements Engineering – Importance of Requirements – Types of Requirements – Steps involved in Requirements Engineering.

UNIT- II: Requirements Analysis Modeling

(6Hours)

Analysis Modeling Approaches – Structured Analysis –Object Oriented Analysis – Design and Architectural Engineering: Design Process and Concepts – Basic Issues in Software Design – Characteristics of Good Design – Software Design and Software Engineering – Function Oriented System versus Object Oriented System – Modularity, Cohesion, Coupling, Layering – Real Time Software Design – Design Models – Design Documentation.

UNIT- III: Object Oriented Concepts

(6Hours)

Fundamental Parts of Object Oriented Approach – Data Hiding and Class Hierarchy Creation – Relationships – Role of UML in OO Design – Design Patterns – Frameworks – Object Oriented Analysis – Object Oriented Design – User Interface Design: Concepts of User Interface – Elements of User Interface – Designing the User Interface – User Interface Evaluation – Golden Rules of User Interface Design – User Interface Models – Usability.

UNIT- IV: Software Coding, Software Project Management

(6 Hours)

Software Coding – Introduction to Software Measurement and Metrics – Software Configuration – Project Management Introduction – Risk Analysis and Management – Communication and Team Management – Project Stake holder Management – Computer-aided Software Engineering.

UNIT- V: Software Testing

(6 Hours)

Software Testing Fundamentals –Test Case Design–White-Box Testing – Basis Path Testing – Control Structure Testing –Black-Box Testing – Testing for Specialized Environment, Architectures and Applications – Software Testing Strategies: A Strategic Approach to Software Testing – Unit Testing – Integration Testing – Validation Testing – System Testing.

Total Lecture Hours: 30

COURSE OUTCOMES

On completion of this course, students will be able to

1. Describe requirements of Software Engineering
2. Describe the Modeling Approaches
3. Explain n the Object Oriented Approach in software Engineering
4. Describe the concepts of software coding and software Testing
5. Understand Web Engineering Concepts

TEXT BOOK(S)

1. Chandramouli Subramanian, Saikat Dutt, Chandramouli Seetharaman, B.G. Geetha. 2015. Software Engineering, First Editon, Pearson India Education Pvt. Ltd., New Delhi.
2. Roger S. Pressman. 2000. Software engineering: a practitioner's approach. Fifth Edition, McGraw-Hill Education, New York.

REFERENCE BOOK(S)

1. Frank Tsui, Orlando Karam. 2011. Essentials of Software Engineering, Second Edition, Jones and Bartlett Publishers, Burlington.
2. Rajib Mall. 2018. Fundamentals of Software Engineering. Fifth Edition, PHI Learning Private Limited, New Delhi.
3. Rod Stephens. 2015. Beginning Software Engineering. John Wiley & Sons Inc, India.
4. Ronald J. Leach. 2020. Introduction to Software Engineering, Second Edition, CRC Press, Florida, USA.
5. Miland G. Limaye. 2009. Software Testing: Principles, Techniques and Tools. First Edition, Tata McGraw-Hill Education, New Delhi.

E-RESOURCES

1. https://en.wikipedia.org/wiki/Software_engineering
2. <https://www.javatpoint.com/software-engineering-tutorial>
3. <https://www.geeksforgeeks.org/software-engineering/>
4. <https://www.castsoftware.com/glossary/what-is-software-engineering-definition-types-of-basics-introduction>
5. <https://nptel.ac.in/courses/106/105/106105087/>

MAPPING WITH PROGRAMME OUTCOMES

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CO4	3	3	2		2		3	3	3	3			3	3	2
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DEPARTMENT OF COMPUTER APPLICATIONS
BACHELOR OF COMPUTER APPLICATIONS (BCA)

Semester: III-Special Course Health & Wellness

Ins. Hrs./Week: 2

Course Credit: 1

Course Code: 25UGSC

UNIT I: Introduction to Holistic Well-being

Introduce the core components of Health & Well-being namely Physical, mental And emotional well-being. Provide worksheets on all the four components individually and explain the inter Connectedness to give an overall understanding.

UNIT II: Wellness Wheel Exercise (Overall Analysis)

Guide students to assess their well-being in various life dimensions through exercises on various aspects of wellbeing, and explain the benefits of applying wellness wheel.

Introduce Tech Tools:

Explore the use of technology to support well-being.

Introduce students to apps for meditation, sleep tracking, or healthy recipe inspiration.

UNIT III: Breaking Bad Habits (Overall Analysis)

Open a discussion on bad habits and their harmful effects.

Provide a worksheet to the students to identify their personal bad habits.

Discuss the trigger, cause, consequence and solution with examples.

Guide them to replace the bad habits with good ones through worksheets.

UNIT IV: Physical Well-being

1. Fitness

Introduce the different types of fitness activities such as basic exercises, cardiovascular exercises, strength training exercises, flexibility exercises, so on and so forth. (Include theoretical explanations and outdoor activity).

2. Nutrition

Facilitate students to reflect on their eating habits, their body type, and to test their knowledge on nutrition, its sources and the benefits.

3. Yoga & Meditation

Discuss the benefits of Yoga and Meditation for one's overall health.

Demonstrate different yoga postures and their benefits on the body through visuals (pictures or videos)

4. Brain Health

Discuss the importance of brain health for daily life.

Habits that affect brain health (irregular sleep, eating, screen time).
Habits that help for healthy brains (reading, proper sleep, exercises).
Benefits of breathing exercises and meditation for healthy lungs.

5. Healthy Lungs

Discuss the importance of lung health for daily life.
Habits that affect lung health (smoking, lack of exercises).
Benefits of breathing exercises for healthy lungs.

6. Hygiene and Grooming

Discuss the importance of hygienic habits for good oral, vision, hearing and skin health.
Discuss the positive effects of grooming on one's confidence level and professional growth.

Suggested Activities (sample): Nutrition:

Invite a nutritionist to talk among the students on the importance of nutrition to the body or show similar videos shared by experts on social media. Organize a 'Stove less/fireless cooking competition' for students where they are expected to prepare a nutritious dish and explain the nutritive values in parallel.

UNIT V:Emotional Well-being

1. Stress Management

Trigger a conversation or provide self-reflective worksheets to identify the stress factors in daily life and their impact on students' performance. Introduce different relaxation techniques like deep breathing, progressive muscle relaxation, or guided imagery.
(use audio recordings or visuals to guide them through these techniques).
After practicing the techniques, have them reflect on how these methods can help manage stress in daily life.

2. Importance of saying 'NO'

Explain the students that saying 'NO' is important for their Physical
Explain the students that saying 'NO' is important for their Physical and mental well-being, Academic Performance, Growth and Future, Confidence, Self-respect, Strong and Healthy Relationships, building reputation for self and their family (avoid earning a bad name).
Factors that prevent them from saying 'NO'.
How to practice saying 'NO'.

3. Body Positivity and self-acceptance

Discuss the following with the students.
What is body positivity and self-acceptance?
Why is it important?
Be kind to yourself.
Understand that everyone's unique.
Suggested Activities (Sample):
(Importance of saying 'NO')
Provide worksheets to self-reflect on...
how they feel when others say 'no' to them
the situations where they should say 'no'

Challenge students to write a song or rap about the importance of saying no and how to do it effectively.

Students can perform their creations for the class.

UNIT VI: Social Well-Being

1. Practicing Gratitude

Discuss the importance of practicing gratitude for building relationships with family, friends, Relatives, mentors and colleagues.

Discuss how one can show gratitude through words and deeds.

Explain how practicing gratitude can create 'ripple effect

2. Cultivating Kindness and Compassion

Define and differentiate between kindness and compassion.

Explore practices that cultivate these positive emotions

Self-Compassion as the Foundation.

The power of small gestures.

Understanding another's perspective.

The fruits of compassion.

3. Practising Forgiveness

Discuss the concept of forgiveness and its benefits.

Forgiveness: What is it? and What it isn't?

Benefits of forgiveness.

Finding forgiveness practices.

4. Celebrating Differences

Appreciate the value of individual differences and foster inclusivity.

The World: A Tapestry of Differences (cultures, backgrounds, beliefs, abilities, and appearances).

Finding strength in differences (diverse perspectives and experiences lead to better problem-solving and innovation).

Celebrating differences, not ignoring them (respecting and appreciating the unique qualities).

Activities for celebrating differences (share culture, learn about others, embrace new experiences)

5. Digital Detox

Introduce the students to:

The concept of a digital detox and its benefits for social well-being How to disconnect from devices more often to strengthen real-world connections

UNIT VII: Intellectual Well-being

1. Being a lifelong Learner

Give students an understanding on:

The relevance of intellectual well-being in this 21st century to meet the expectations in personal and professional well-being

The Importance of enhancing problem-solving skills Cultivating habits to enhance the intellectual well-being (using the library extensively, participating in Extra-curricular activities, reading newspaper etc.)

2. Digital Literacy

Discuss:

The key aspects of digital literacy and its importance in today's world.

It is more than just liking and sharing on social media.

The four major components of digital literacy (critical thinking, communication, Problem-solving, digital citizenship).

Why is digital literacy important?

Boosting one's digital skills.

3. Transfer of Learning

Connections between different subjects How knowledge gained in one area can be applied to others.

Suggested Activities (sample): Intellectual Well-being.

Provide worksheets to students for teaching them how to boost intellectual well-being.

Ask the students to identify a long-standing problem in their locality and come up with a solution and present it in the classroom. Also organize an event like 'Idea Expo' to display the designs, ideas, and suggestions, to motivate the students to improve their intellectual well-being.

UNIT VIII .Environmental Well-being**The Importance of initiating a change in the environment.**

The session could be around:

Defining Environmental well-being (physical, chemical, biological, social, and psychosocial factors) People's behaviour, crime, pollution, political activities, infra-Structure, family situation etc.

Suggesting different ways of initiating changes in the environment (taking Responsibility, creating Awareness, volunteering, approaching administration).

Suggested Activities (sample).

Providing worksheets to self-reflect on how the environment affects their life, and the ways to initiate a change Dedicate a bulletin board or wall space (or chart work) in the Classroom for students to share their ideas for improving. Environmental well-being.

Creating a volunteers' club in the college and carrying out monthly activities like campus cleaning, awareness campaigns against noise pollution, (loud speakers in Public places), addressing anti-social behavior on the campus or in their locality.

UNIT IX :Mental Well-being**1. Importance of self-reflection****Discuss:**

Steps involved in achieving mental well-being (self-reflection, self-awareness, applying Actions, Achieving mental well-being).

Different ways to achieve mental well-being (finding purpose, coping with stress, moral Compass, connecting for a common cause).

The role of journaling in mental well-being

2. Mindfulness and Meditation Practices.

Benefits of practicing mindful habits and meditation for overall well-being.

1. Connecting with nature

Practising to be in the present moment Nature walk, feeling the sun, listening to the natural sounds

Exploring with intention Hiking, gardening to observe the nature

Reflecting on the emotions, and feeling kindled by nature.

2. Serving people

Identifying the needs of others

Helping others.

Volunteering your time, skills and listening ear.

Finding joy in giving.

3. Creative Expressions Indulging in writing poems, stories, music

Making/listening, creating visual arts to connect with inner selves.

Suggested Activities (Sample):

(Mindfulness and Meditation) Conducting guided meditation every day for 10

Minutes and directing the students to record the changes they observe.

UNIT X: Situational Awareness (Developing Life skills)

1. Being Street smart

Discuss:

Who are street smart?

Why is it important to be street smart?

Characteristics of a street smart person: Importance of acquiring life skills to become street smart (General First-aid procedure, CPR Procedure, Handling Emergency situations like fire, flood etc).

2. Digital Awareness

Discuss:

Cyber Security

Information Literacy.

Digital Privacy

Fraud Detection

Suggested Activities (sample):

(Street Smart) Inviting professionals to demonstrate the CPR Procedure

Conducting a quiz on Emergency Numbers

UNIT XI: Understanding Addiction

Plan this session around:

Identifying the environmental cues, triggers that lead to picking up this habit

Knowing the impact of substance abuse Adverse health conditions, social isolation, ruined future, hidden financial loss and damaging the family reputation. Seeking help to get out of this addiction. Suggested Activities Provide Worksheets to check the students' level of understanding about substance addiction and their impacts.

Share case studies with students from real-life.

Play/share awareness videos on addiction/de-addiction, experts talk.

*Conduct awareness programmes on Drugs and its ill effects.

(Arrange Experts from the concerned government departments and NGOs working in drug addiction issues) and maintain the documents of the program

Total Lecture Hours : 30

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DEPARTMENT OF COMPUTER APPLICATIONS
BACHELOR OF COMPUTER APPLICATIONS (BCA)

Semester: IV-CC-VI : Java Programming

Ins. Hrs./Week: 5

Course Credit: 4

Course Code: U25CA409

UNIT-I: Introduction

(15 Hours)

Introduction: Review of Object Oriented concepts – History of Java –Java buzz words-JVM architecture – Data types – Variables – Scope and lifetime of variables - Arrays- Operators-Control statements – Type conversion and casting – Simple java program – Constructors –this keyword- The finalize() Method.

UNIT- II: Inheritance and Packages

(15 Hours)

Inheritance: Basic concepts - Types of inheritance -Member access rules- Using super - Method overriding- Abstract classes - Dynamic method dispatch – Using final with Inheritance. **Packages:** Definition-Access Protection-Importing Packages **Interfaces:** Definition–Implementation–Extending Interfaces. **Exception Handling:** try–catch- throw-throws–finally–Built-in exceptions- Creating own Exception classes.

UNIT-III: Multithreaded Programming and I/O streams

(15 Hours)

Multi-threaded Programming: Thread Class – Runnable interface – Synchronization–Using synchronized methods– Using synchronized statement – Inter thread Communication–Deadlock. **I/O Streams:** Concepts of streams – Stream classes – Byte and Character stream – Reading console Input and Writing Console output – File Handling.

UNIT- IV: AWT Controls and Exception Handling

(15 Hours)

AWT Controls: The AWT class hierarchy –user interface components – Labels-Button-Text Components - Check Box - Check Box Group - Choice -List Box - Panels – Scroll Pane - Menu - Scroll Bar. Working with Frame class - Color - Fonts and layout managers. **Event Handling:** Events – Event sources – Event Listeners - Event Delegation Model (EDM) – Handling Mouse and Keyboard Events - Adapter classes – Inner classes.

UNIT-V: Swing

(15 Hours)

Swing: Introduction to Swing – Hierarchy of swing components. Containers-Top level containers - JFrame- JWindow - JDialog - JPanel - JButton –JtoggleButton -JCheckBox-JradioButton-JLabel, JtextField-JTextArea-JList- JComboBox- JScrollPane.

Total Lecture Hours: 75

COURSE OUTCOMES

On completion of this course, students will be able to

1. Understand the basic Object-oriented concepts. Implement the basic constructs of Core Java.
2. Implement inheritance, packages, interfaces and exception handling of Core Java.
3. Implement multi - threading and I/O Streams of Core Java.
4. Implement AWT and Event handling.
5. Use Swing to create GUI.

TEXT BOOK(S)

1. Herbert Schildt, The Complete Reference, Tata McGraw Hill, New Delhi, 7th Edition, 2010.
2. Gary Cornell, Core Java2 Volume I– Fundamentals, AddisonWesley,1999.

REFERENCE BOOK(S)

1. Head First Java, O' Rielly Publications,
2. Y. Daniel Liang, Introduction to Java Programming, 7th Edition, Pearson EducationIndia,2010.
3. Eckel, Bruce. Thinking in Java. 4th ed., Prentice Hall, 2006.
4. Deitel, Paul, and Harvey Deitel. Java: How to Program. 11th ed., Pearson, 2017.
5. Bloch, Joshua. Effective Java. 3rd ed., Addison-Wesley, 2018.

E- RESOURCES

1. <https://java-beginners-tutorial.com/core-java-tutorial>
2. <http://docs.oracle.com/javase/tutorial/>
3. <https://www.coursera.org/>
4. <https://www.quora.com/Java-programming-language-What-are-some-recommended-books-and-online-resources-for-learning-Java-for-beginner-intermediate-and-advanced-programmers>
5. <https://www.smart-academy.in/course/java-programming-course/>

MAPPING WITH PROGRAMME OUTCOMES

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3		3	3		3					3	3	2		
CO2	3	3	3		3		3	3	2		2	2	2	3	
CO3	3		3	3			3				2	3			2
CO4	3	3		3		3					3	2	3	2	2
CO5	3	3	3	3	3		3	3					2	2	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 2025– 2026)
DEPARTMENT OF COMPUTER APPLICATIONS
BACHELOR OF COMPUTER APPLICATIONS (BCA)

Semester: IV-CP-VI : Java Programming Lab

Ins. Hrs./Week: 4

Course Credit: 4

Course Code: U25CA410P

LIST OF PROGRAMS

1. Write a Java program that prompts the user for an integer and then prints out all the prime numbers up to that Integer.
2. Write a Java program to multiply two given matrices.
3. Write a Java program that displays the number of characters, lines and words in a text.
4. Generate random numbers between two given limits using Random class and print messages according to the range of the value generated.
5. Write a program to do String Manipulation using Character Array and perform the following string operations:
 - a. String length
 - b. Finding a character at a particular position
 - c. Concatenating two strings
6. Write a program to perform the following string operations using String class:
 - a. String Concatenation
 - b. Search a substring
 - c. To extract substring from given string
7. Write a program to perform string operations using String Buffer class:
 - a. Length of a string
 - b. Reverse a string
 - c. Delete a substring from the given string
8. Write a java program that implements a multi-thread application that has three threads. First thread generates random integer every 1 second and if the value is even, second thread computes the square of the number and prints. If the value is odd, the third thread will print the value of cube of the number.
9. Write a threading program which uses the same method a synchronously to print the numbers 1 to 10 using Thread 1 and to print 90 to 100 using Thread 2.
10. Write a program to demonstrate the use of following exceptions.
 - a. Arithmetic Exception
 - b. Number Format Exception
 - c. Array Index Out of Bound Exception
 - d. Negative Array Size Exception
11. Write a Java program that reads on file name from the user, then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes.
12. Write a program to accept a text and change its size and font. Include bold italic options .Use frames and controls.

13. Write a Java program that handles all mouse events and shows the event name at the center of the window when a mouse event is fired.(Use adapter classes).
14. Write a Java program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the +, -, *, % operations. Add a text field to display the result. Handle any possible exceptions like divide by zero.
15. Write a Java program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green with radio buttons. On selecting a button, an appropriate message with-stop||or-ready||or-go|| should appear above the buttons in a selected color. Initially there is no message shown.

Total Lab Hours: 60

COURSE OUTCOMES

On completion of this course, students will be able to

1. Understand the basic Object-oriented concepts. Implement the basic constructs of Core Java.
2. Implement inheritance, packages, interfaces and exception handling of Core Java.
3. Implement multi - threading and I/O Streams of Core Java.
4. Implement AWT and Event handling.
5. Use Swing to create GUI.

TEXT BOOK(S)

1. Herbert Scheldt, The Complete Reference, Tata Mc Graw Hill, New Delhi, 7th Edition, 2010.
2. Gary Cornell, CoreJava2VolumeI– Fundamentals, Addison Wesley, 1999.

REFERENCE BOOK(S)

1. Head First Java, O' Reilly Publications,
2. Y. Daniel Liang, Introduction to Java Programming, 7th Edition, Pearson Education India, 2010.
3. Eckel, Bruce. Thinking in Java. 4th ed., Prentice Hall, 2006.
4. Deitel, Paul, and Harvey Deitel. Java: How to Program. 11th ed., Pearson, 2017.
5. Bloch, Joshua. Effective Java. 3rd ed., Addison-Wesley, 2018.

E-RESOURCES:

1. <https://java-beginners-tutorial.com/core-java-tutorial>
2. <http://docs.oracle.com/javase/tutorial/>
3. <https://www.coursera.org/>
4. <https://www.tpointtech.com/java-swing>
5. <https://www.smart-academy.in/course/java-programming-course/>

MAPPING WITH PROGRAMME OUTCOMES

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3		3	3		3			3		3		2		
CO2	3	3	3		3				2		2		2	3	
CO3	3		3	3			3		3		3		2		2
CO4	3	3		3		3			3		2		3	2	2
CO5	3	3	3	3	3		3	3	2		3		2	2	3

S-Strong(3)

M-Medium(2)

L-Low(1)

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
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SUNDARAKKOTTAI, MANNARGUDI- 614016.
(For the Candidates admitted in the academic year 2025– 2026)
DEPARTMENT OF COMPUTER APPLICATIONS
BACHELOR OF COMPUTER APPLICATIONS (BCA)

Semester: IV-SEC-IV : Entrepreneurship and Startup Ecosystem

Ins. Hrs./Week: 2

Course Credit: 2

Course Code: U25SECA44

UNIT 1: Introduction to Entrepreneurship

(6 Hours)

Understanding Entrepreneurship: Introduction-Role of an Entrepreneur-Age of an Entrepreneurial Firm-Characteristics and skills- Introduction to Entrepreneurship -Types of Entrepreneurs-Entrepreneurial Failure-Growth of Business Idea-Intellectual Property: Patents, Copyrights, Trademarks and Trade Secrets.

UNIT 2: Family Business and Business Opportunities

(6 Hours)

Family Business : Family Business in India ,The Founder, The Next Generation, Entry of Family Members ,Non-Family Managers , Succession, Best Practices-Business in India : Introduction-Major Issues-Types of Organization-Legal Compliances-Entrepreneurial Support

UNIT 3: Building and Managing New Ventures

(6 Hours)

Buying a Business: Challenges, search, The Process of Buying, Scrutiny, Valuation, Negotiation, Franchising-Entrepreneurial Finance : Debt, Venture Capital. Business Model: Components of a Business Model, Customer Value Proposition, Profit Formula, Key Resources, Key Processes Types of Business model.

UNIT 4: Start-up Ecosystem

(6 Hours)

Making a Business Plan: Uses, Writing a Business Plan, Data collection, Kinds of Business Plans-Managing operation: Purchasing Process, Inventory, Cash Management , Cash Manager, Managing During Disasters, Seasonal Business- Entrepreneurial Marketing-New Product Development-E-Business.

UNIT – V : Venture Funding and Intellectual Property Management

(6 Hours)

Government Schemes for Entrepreneurs – Start-up India, Digital India, MSME -Sources of Venture Funding in India -Seed Funding and Crowdfunding -Bank Loans and Financial Assistance for Start-ups -Source of Technology for New Ventures

Total Lecture Hours: 30

COURSE OUTCOMES

On completion of this course, students will be able to

1. Explain the basics of entrepreneurship, types of entrepreneurs, and intellectual property rights.
2. Describe family business practices, business opportunities, and legal compliances in India.
3. Understand business buying, entrepreneurial finance, and different business models.
4. Develop knowledge in business planning, operations management, marketing, and e-business.
5. Identify government schemes, funding sources, and technology support for start-ups.

TEXT BOOK

1. Entrepreneurship, Rajeev Roy, Oxford University Press , Second Edition 2011

REFERENCE BOOKS

1. Entrepreneurship: Successfully Launching New Ventures by R. Duane Ireland Bruce R. Barringer, Pearson Publishing 4
2. Family Business Management by Rajiv Agarwal, Sage Publishing 5. Anish Tiwari (2003), “Mapping the Startup Ecosystem in India”, Economic & Political Weekly 6. Ramachandran, K, Indian Family Businesses: Their survival beyond three generations, ISB Working Paper Series
3. Peter F. Drucker, *Innovation and Entrepreneurship*, Harper Business.
4. David H. Holt, *Entrepreneurship: New Venture Creation*, Prentice Hall of India.
5. Neeraj Pandey and Khushdeep Dharni, *Intellectual Property Rights*, PHI Learning.

E- RESOURCES

1. <https://nptel.ac.in>
2. <https://swayam.gov.in>
3. <https://www.startupindia.gov.in>
4. <https://msme.gov.in>
5. <https://www.wipo.int/academy/en/>

MAPPING WITH PROGRAMME OUTCOMES

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
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CO2	3	2			3		3				2	2	2	3	
CO3	3	2	2		3	3			3		3	3	2		2
CO4	3	2	2			3		3			2	3	3	2	2
CO5	3				3	3	3		3	3	3	2	2	2	3

S-Strong(3)

M-Medium(2)

L-Low(1)

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
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SUNDARAKKOTTAI, MANNARGUDI- 614016.
(For the Candidates admitted in the academic year 2025– 2026)

DEPARTMENT OF COMPUTER APPLICATIONS
BACHELOR OF COMPUTER APPLICATIONS (BCA)

Semester: IV-SEC-V : Web Design Tools

Ins. Hrs./Week: 2

Course Credit: 2

Course Code: U25SECA45

UNIT-I : Introduction to Web Designing

(6 Hours)

Introduction to Internet and WWW-Web Browsers and Web Servers - Basics of Web Designing -Structure of a Web Page - HTML Introduction - HTML Tags and Attributes - Text Formatting -Tags- Lists and Tables- Hyperlinks and Images - Forms and Form Controls

UNIT-II : Cascading Style Sheets (CSS)

(6 Hours)

Introduction to CSS - Types of CSS - CSS Syntax and Selectors - Backgrounds, Colors, Fonts, and Borders - CSS Box Model - Margins and Padding - Positioning and Layouts - CSS Navigation Bars - Responsive Web Design - Media Queries

UNIT-III : JavaScript

(6 Hours)

Introduction to JavaScript - Variables and Data Types- Operators and Expressions- Conditional Statements - Looping Statements- Functions in JavaScript- Arrays and Strings- Events and Event Handling - Form Validation - Dialog Boxes

UNIT-IV: Advanced Web Design Tools

(6 Hours)

Introduction to Bootstrap - Bootstrap Grid System- Buttons, Forms, Tables, and Cards-Navigation Components - Introduction to jQuery - jQuery Syntax and Selectors - jQuery Effects and Events - Image Sliders and Animations - Web Templates and Themes

UNIT-V: Web Hosting and Publishing

(6 Hours)

Domain Names and Hosting - Web Publishing Techniques- FTP and File Uploading- Introduction to Content Management Systems - Website Maintenance - Search Engine Optimization (SEO) -Website Security Basics - Testing and Debugging Web Pages - Introduction to Web Accessibility

Total Lecture Hours: 30

COURSE OUTCOMES

On completion of this course, students will be able to

1. Understand the basic concepts of web designing and internet technologies.
2. Design static and responsive web pages using HTML and CSS.
3. Develop interactive web applications using JavaScript.
4. Create dynamic and responsive websites using Bootstrap and jQuery.
5. Publish, test, and maintain websites using web hosting and management tools.

TEXT BOOKS

1. Ivan Bayross, Web Enabled Commercial Application Development Using HTML, DHTML, JavaScript and PHP, 4th Edition, BPB Publications, 2010.
2. Jon Duckett, HTML and CSS: Design and Build Websites, 1st Edition, Wiley Publications, 2011.
3. David Flanagan, JavaScript: The Definitive Guide, 7th Edition, O'Reilly Media, 2020.
4. Jennifer Robbins, Learning Web Design, 5th Edition, O'Reilly Media, 2018., Wiley Publications, 2011.
5. David Flanagan, JavaScript: The Definitive Guide, 7th Edition, O'Reilly Media, 2020.

REFERENCE BOOKS

1. HTML & CSS: The Complete Reference, 5th Edition, McGraw-Hill Education, 2017.
2. CSS in Depth, 2nd Edition, Manning Publications, 2023.
3. Learning PHP, MySQL & JavaScript, 6th Edition, O'Reilly Media, 2021.
4. JavaScript for Absolute Beginners, 1st Edition, Que Publishing, 2015.
5. Learning Web Development, 1st Edition, O'Reilly Media, 2014.

E- RESOURCES

1. <https://developer.mozilla.org/>
2. <https://www.w3schools.com/>
3. <https://getbootstrap.com/>
4. <https://jquery.com/>
5. <https://www.freecodecamp.org/>

MAPPING WITH PROGRAMME OUTCOMES

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
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CO3	3		3		3			3			2		2	2	
CO4	3	3			3		3			2	3	2	2	3	2
CO5	3	3	3		3	3		3	3		2	2	3	2	2

S-Strong(3)

M-Medium(2)

L-Low(1)