

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

NATIONALLY ACCREDITED (IV CYCLE) WITH "A+" GRADE BY NAAC

TIRUCHIRAPPALLI -18

DEPARTMENT OF COMPUTER APPLICATIONS



Bachelor of Computer Applications

2026-2027 onwards

SYLLABUS

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

DEPARTMENT OF COMPUTER APPLICATIONS

VISION

- ❖ To produce globally competent computer professionals by providing high quality education and also focus on developing the skills of technical competency.
- ❖ To make an incorporated framework that meets the higher instructive necessities of the community.
- ❖ To prepare the students for technical training with revolutionary vision so they can create employment opportunities for themselves as well as for others.

MISSION

- ❖ To produce a quality learning environment that helps students to enhance problem solving skills and practical knowledge.
- ❖ To provide technical education to the students through well-equipped labs.
- ❖ Giving personal attention to slow learners consequently, allowing them to cope-up with other wards.
- ❖ To impart the professional and communication skills training to the students to get better placement.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEOs	Statements
PEO1	LEARNING ENVIRONMENT To facilitate value-based holistic and comprehensive learning by integrating innovative learning practices to match the highest quality standards and train the students to be effective leaders in their chosen fields.
PEO2	ACADEMIC EXCELLENCE To provide a conducive environment to unleash their hidden talents and to nurture the spirit of critical thinking and encourage them to achieve their goal.
PEO3	EMPLOYABILITY To equip students with the required skills in order to adapt to the changing global scenario and gain access to versatile career opportunities in multidisciplinary domains.
PEO4	PROFESSIONAL ETHICS AND SOCIAL RESPONSIBILITY To develop a sense of social responsibility by formulating ethics and equity to transform students into committed professionals with a strong attitude towards the development of the nation.
PEO5	GREEN SUSTAINABILITY To understand the impact of professional solutions in societal and environmental contexts and demonstrate the knowledge for an overall sustainable development.

PROGRAMME OUTCOMES for B. Sc Computer Science,

B. Sc Computer Science with Cognitive Systems,

BCA and B. Sc Information Technology

Programme

PO NO.	On completion of B. Sc Computer Science / B. Sc Computer Science with Cognitive Systems / BCA/ B. Sc Information Technology Programme, the students will be able to
PO 1	ACADEMIC SKILLS & SOCIAL RESPONSIBILITY Apply Computing, Mathematical and Scientific Knowledge in Various disciplines by understanding the concerns of the society.
PO 2	CRITICAL THINKING AND INNOVATIVE PROGRESS Design the software applications with varying intricacies using programming languages for innovative learning in techno world to meet the changing demands.
PO 3	PERSONALITY DEVELOPMENT Perceive Leadership skills to accomplish a common goal with effective communication and understanding of professional, ethical, and social responsibilities.
PO 4	LIFELONG LEARNING Identify resources for professional development and apply the skills and tools necessary for computing practice to gain real life experiences.
PO 5	CREATIVITY AND HOLISTIC APPROACH Create a scientific temperament and novelties of ideas to support research and development in Computer Science to uphold scientific integrity and objectivity.

PROGRAMME SPECIFIC OUTCOMES FOR BCA

PSO NO.	The students of Bachelor of Computer Applications will be able to	POs Addressed
PSO 1	Understand the concepts of logical and critical thinking with adequate practical skills.	PO1 PO2 PO4 PO5
PSO 2	Adopt necessary technical, scientific, managerial and financial knowledge to be employable or pursue higher education.	PO1 PO2 PO4
PSO 3	Apply neoteric technology in various domains and evaluate the method of implementing it.	PO1 PO2 PO4
PSO 4	Design and create innovative ideas that meet the requirements of an entrepreneur and software industry.	PO1 PO2 PO4 PO5
PSO 5	Explore the ethical values, sustainability and productivity.	PO3 PO4 PO5



CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

DEPARTMENT OF COMPUTER APPLICATIONS

BCA

CHOICE BASED CREDIT SYSTEM - LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS-LOCF)

(For the candidates admitted from the academic year 2026 – 2027 and onwards)

Semester	Part	Course	Course Title	Course Code	Inst. Hrs./ week	Credits	Exam			Total		
							Hrs.	Marks				
								Int	Ext			
I	I	Ability Enhancement Course – I (AEC - I)	Pothu Tamil – I	26ULT1	6	3	3	30	70	100		
			Hindi Language & Literature - I	26ULH1								
			Sanskrit Prose and Vocabulary	26ULS1								
			Basic French - I	26ULF1								
	II	Ability Enhancement Course – II (AEC - II)	General English - I	26UE1	6	3	3	30	70	100		
	III	Core Course –I(CC-I)	Programming in C	26UCA1CC1	5	5	3	30	70	100		
				Core Practical -I(CP-I)	Programming in C (P)	26UCA1CP1	3	3	3	40	60	100
				Allied Course- I (AC-I)	Mathematics Foundations to Computer Science - I	26UCA1AC1	3	3	3	30	70	100
				Allied Course Practical-I (ACP-I)	SPSS for Statistical Analysis (P)	26UCA1ACP1	3	3	3	40	60	100
	IV	Ability Enhancement Compulsory Course-I (AECC-I)	Value Education	26UGVE	2	2	-	100	-	100		
Ability Enhancement compulsory Course-II (AECC-II)				Cyber Security	26UGCS	2	2	-	100	-	100	
Total					30	24				800		
II	I	Ability Enhancement Course – III (AEC - III)	Pothu Tamil – II	26ULT2	6	3	3	30	70	100		
			Hindi Language & Literature - II	26ULH2								
			Sanskrit Poetry and Grammar-I	26ULS2								
			Basic French - II	26ULF2								
	II	Ability Enhancement Course – IV (AEC - IV)	General English - II	26UE2	6	3	3	30	70	100		
	III	Core Course–II (CC-II)	Object Oriented Programming using JAVA	26UCA2CC2	5	5	3	30	70	100		
				Core Practical -II (CP-II)	Object Oriented Programming using JAVA (P)	26UCA2CP2	3	3	3	40	60	100
				Allied Course- II (AC-II)	Mathematics Foundations to Computer Science - II	26UCA2AC2	3	3	3	30	70	100
				Allied Course Practical-II (ACP-II)	Mathematics Foundations with MATLAB (P)	26UCA2ACP2	3	3	3	40	60	100
	IV	Ability Enhancement Compulsory Course-III (AECC-III)	Environmental Science	26UGES	2	2	-	100	-	100		
Ability Enhancement Compulsory Course-IV (AECC-IV)				Innovation and Entrepreneurship	26UGIE	2	2	-	100	-	100	
Extra Credit Course			SWAYAM	As per UGC Recommendation								
Total					30	24	-	-	-	800		

Semester	Part	Course	Course Title	Course Code	Inst. Hrs./ week	Credits	Exam			Total		
							Hrs.	Marks				
								Int	Ext			
III	I	Ability Enhancement Course – V (AEC - V)	Pothu Tamil – III	26ULT3	6	3	3	30	70	100		
			Hindi Language & Literature - III	26ULH3								
			Sanskrit Didactics, Alankara and Grammar - II	26ULS3								
			Intermediate French - I	26ULF3								
	II	Ability Enhancement Course – VI (AEC - VI)	Learning Grammar Through Literature - I	26UE3	6	3	3	30	70	100		
	III	Core Course–III(CC-III)		Fundamentals of Python Programming (T & P)	26UCA3CC3	3+2	4	3	50	50	100	
		Core Course -IV(CC-IV)		Data Structures (T & P)	26UCA3CC4	3+2	4	3	50	50	100	
		Allied Course- III (AC-III)		Basics of Accounting	26UCA3AC3	3	3	3	30	70	100	
		Allied Course Practical-III (ACP-III)		Computerized Accounting - I (P)	26UCA3ACP3	3	3	3	40	60	100	
	IV	Inter Disciplinary Course-I (IDC-I)	Introduction to NCC@		26UNC3ID1	2	2	3	2	-	100	100
			Animation Tools - I		26UCA3IDP1				40	60		
			Basic Tamil-I		26ULC3BT1				30	70		
			Special Tamil-I		26ULC3ST1							
		Ability Enhancement Compulsory Course-V (AECC-V)	Health and Wellness *		26UGHW	2*	1	-	100	-	100	
	Extra Credit Course #		SWAYAM		As per UGC Recommendation							
Total					30	23				800		
IV	I	Ability Enhancement Course – VII (AEC - VII)	Pothu Tamil – IV	26ULT4	6	3	3	30	70	100		
			Hindi Language & Literature - IV	26ULH4								
			Sanskrit Drama and Grammar - III	26ULS4								
			Intermediate French – II	26ULF4								
	II	Ability Enhancement Course – VIII (AEC - VIII)	Learning Grammar Through Literature – II	26UE4	6	3	3	30	70	100		
	III	Core Course - V(CC-V)		Operating Systems (T & P)	26UCA4CC5	3 + 2	4	3	50	50	100	
		Core Practical - III(CP-III)		Web Technology (P)	26UCA4CP3	3	3	3	40	60	100	
		Allied Course - IV (AC-IV)		Business Communication	26UCA4AC4	3	3	3	30	70	100	
		Allied Course Practical-IV (ACP-IV)		Computerized Accounting - II (P)	26UCA4ACP4	3	3	3	40	60	100	
	IV	Inter Disciplinary Course-II (IDC-II)	Specialization in Army@		26UNC4ID2	2	2	3	2	-	100	100
			Animation Tools – II		26UCA4IDP2				40	60		
			Basic Tamil–II		26ULC4BT2				30	70		
			Special Tamil –II		26ULC4ST2							
		Skill Enhancement Course–I (SEC-I)	Basics of Data Analytics using Spreadsheet (P)		26UCA4SEP1	2	2	3	40	60	100	
	Extra Credit Course #		SWAYAM		As per UGC Recommendation							
Total					30	23				800		
30 Days INTERNSHIP during Semester Holidays												

Semester	Part	Course	Course Title	Course Code	Inst. Hrs./ week	Credits	Exam			Total		
							Hrs.	Marks				
								Int	Ext			
V	III	Core Course -VI(CC-VI)	Software Engineering	26UCA5CC6	5	5	3	30	70	100		
		Core Course -VII (CC-VII)	Database Management Systems	26UCA5CC7	6	5	3	30	70	100		
		Core Practical - IV(CP-IV)	Database Management Systems (P)	26UCA5CP4	3	3	3	40	60	100		
		Core Course -VIII(CC-VIII)	Artificial Intelligence (T&P)	26UCA5CC8	4 + 2	4	3	50	50	100		
		Internship *	Internship	26UCA5INT	-	2	-	20	80	100		
		Discipline Centric Elective Course-I (DCEC-I)	A. Introduction to data science	26UCA5DCE1A	4	4	3	30	70	100		
			B. Data mining	26UCA5DCE1B								
			C. Natural Language Processing	26UCA5DCE1C								
		Discipline Centric Elective Course-II (DCEC-II)	A. Data Visualization(P)	26UCA5DCE2AP	4	4	3	40	60	100		
			B. Data Mining (P)	26UCA5DCE2BP								
			C. Natural Language Processing (P)	26UCA5DCE2CP								
		Ability Enhancement Compulsory Course-VI (AECC-VI)	Introduction to Disaster Management	26UGDM	2	2	-	100	-	100		
		Extra Credit Course #	SWAYAM	As per UGC Recommendation								
		Total					30	29				800
		VI	III	Core Course-IX(CC-IX)	Computer Networks	26UCA6CC9	5	5	3	30	70	100
Core Course -X(CC-X)	Web Programming - PHP(T&P)			26UCA6CC10	3 +2	4	3	50	50	100		
Core Course -XI(CC-XI)	Generative AI (T & P)			26UCA6CC11	3+2	4	3	50	50	100		
Core Practical -V(CP-V)	UI/UX Designing Tools / Graphics & Media Designing Tools			26UCA6CP5	3	3	3	40	60	100		
Discipline Centric Elective Course-III (DCEC-III)	A. Introduction to Machine Learning			26UCA6DCE3A	4	4	3	30	70	100		
	B. Internet of Things			26UCA6DCE3B								
	C. Cloud computing for Analytics			26UCA6DCE3C								
Project	Project Work			26UCA6PW	5	3	-	20	80	100		
IV	Skill Enhancement Course - II (SEC-II)			Professional Competency - General Studies for Competitive Examinations	26UCA6SE2	2	2	2	-	100	100	
	Ability Enhancement Compulsory Course-VII (AECC-VII)			Gender Studies	26UGGS	1	1	-	100	-	100	
	V	Extension Activity *	26UGEA	-	1	-	-	-	-			
Total					30	27				800		
Grand Total					180	150				4800		
<input type="checkbox"/> @ NCC is one of the choices in GEC. Only the NCC cadets are eligible to chooses this course. However, NCC Course is a Compulsory Course for the NCC Cadets. If the Cadet has not studied Tamil in the school level, she has to take Basic Tamil Course. <input type="checkbox"/> *Shall be outside instruction hours <input type="checkbox"/> # Should complete a minimum of one Extra Credit Course from Semester II onwards												

DEPARTMENT OF BCA

CHOICE BASED CREDIT SYSTEM-LEARNING OUTCOME BASED CURRICULUM FRAMEWORK (CBCS-LOCF)

(For the Candidates admitted from the Academic year 2026-2027 and onwards)

Curriculum Structure

Courses & Credits for UG Science Programmes

Part	Course	No. of Courses	Hours	Credits	Total Credits
I	Ability Enhancement Course	4	6	12	12
II	Ability Enhancement Course	4	6	12	12
III	Core (Theory)	5	5/6	5*5=25	105
	Core (Practical)	5	3	5*3=15	
	Core (Theory & Practical)	6	5/6	6*4=24	
	Project Work	1	5	3	
	Internship	1	-	2	
	Minor Courses	8	4/3	8*3=24	
	DCEC (T)	2	4	2*4=8	
DCEC (P)	1	4	1*4=4		
IV	IDC	2	2	2*2=4	20
	SEC	2	2	2*2=4	
	AECC-I - Value Education	1	2	2	
	AECC-II - Cyber Security	1	2	2	
	AECC-III - Environmental Science	1	2	2	
	AECC-IV - Innovation and Entrepreneurship	1	2	2	
	AECC-V- Health and Wellness	1	-	1	
	AECC-VI - Introduction to Disaster Management	1	2	2	
AECC-VII Gender Studies	1	1	1		
V	Extension Activities		-	1	01
		48		150	150

The Internal and external marks for theory and practical papers are as follows:

Subject	Internal Marks	External Marks
Theory	25	75
Practical	40	60

For Theory:

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

The passing minimum for End Semester Examinations shall be 40 % out of 75 marks (i.e. 30 marks).

For Practical:

The passing minimum for CIA shall be 40 % out of 40 marks (i.e. 16 marks).

The passing minimum for End Semester Examinations shall be 40 % out of 60 marks (i.e. 24 marks).

Internal Component (Theory)

Component	Marks
Attendance	03
Library	03
Seminar/ Quiz/ Assignment	4
CIA-I	7.5
CIA-II	7.5
Total	25

Internal Component (Practical)

Component	Marks
Observation	05
Record	05
Continual performance in practical	05
Model	10
Total	25

Question Paper Pattern

Answer all the questions - PART A - (20 X 1 = 20)

Answer all the questions - PART B - (5 X 5 = 25)

Answer any three questions - PART C - (3 X 10 = 30)

SEMESTER - I

Semester I	Internal Marks:30		External Marks:70	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
26UCA1CC1	Programming in C	CORE COURSE	5	5

Course Objectives

- ❖ To enable students to understand effective code organization
- ❖ To improve problem-solving and programming skills
- ❖ To build a foundation in basic programming constructs

S. No.	Course Features	Relevance Status
1.	Course emphasis on Employability/Entrepreneurship/Skill Development	Employability, Skill Development
2.	Course integrates cross cutting issues relevant to Professional Ethics/Gender sensitization/ Environment and Sustainability/ Human Values/Indian Knowledge System	Environment and Sustainability
3.	Course relevant to Local/Regional/National/ Global needs	Global need
4.	Course focus on Sustainable Developmental Goals	SDG 4,8

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Describe the fundamental concepts and features of the C programming language	K1
CO2	Demonstrate appropriate programming methodologies	K2
CO3	Identify suitable programming constructs for effective problem solving	K3
CO4	Select appropriate data representations, control structures, functions, and concepts based on problem requirements	K4
CO5	Evaluate program performance by identifying and correcting errors	K5

Mapping of CO with PO and PSO

	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	1	1	2	2	2	3	2
CO2	2	2	3	1	1	3	3	3	3	2
CO3	3	2	3	3	3	3	3	3	2	2
CO4	3	2	2	2	2	3	3	2	2	2
CO5	3	3	2	2	2	3	3	2	2	3

“1”-Slight (Low) Correlation

“2”-Moderate (Medium) Correlation

“3”- Substantial (High) Correlation

“-”- Indicates there is no Correlation

Syllabus

UNIT	Contents	HOURS	COs	COGNITIVE LEVEL
I	Introduction to Computing: Introduction-Components of a Computer-Concept of Hardware and Software- Programming Languages and their Generations-Program Development Life Cycle of a C Program/Project. Overview of C: History of C-Importance of C-Basic Structure of C Programs. Constants, Variables and Data Types.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Operators and Expression. Managing Input and Output Operation: Reading and Writing a character -Formatted Input and Output. Decision Making and Branching: If, Switch, The? operator.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Decision Making and Looping: Introduction – While, Do, For Statements –Jumps in Loops. Arrays: One-dimensional - Two dimensional - Multidimensional Arrays. Character Arrays and Strings: Declaring and Initializing String Variables - Reading Strings from Terminal - Writing Strings to Screen - String-Handling Functions.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	User-Defined Functions: Need for User -Defined Functions –A Multi-Function Program-Elements of User-Defined Functions-Definition of Functions –Return values and Their Types-Function Calls- Function Declaration- Category of Functions – Nesting of Functions - Recursion - The scope and lifetime of variables in functions. Structures and Unions: Defining a Structure – Declaring Structure Variables-Accessing Structure Members-Initialization - Arrays of structures - Arrays within structures - Structures within Structures – Structures and Functions- Union - Size of Structures.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Pointers: Understanding pointers - Accessing the address of a variable - Declaring and Initializing pointers - Accessing a variable through its pointers - Pointer Expressions - Pointers and Arrays - Pointers and Character strings. File management	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

	in C: Defining and Opening a file – Closing a file - I/O operations on files –Text file-Data File-Error handling during I/O operations - Random access to files			
VI	Self-Study for Enrichment (Not to be included for End Semester Examination) Character Set- The GoTo Instruction- Arithmetic Operations on Characters-Putting Strings Together- Comparison of Two Strings.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Textbook

1. Balagurusamy E. (2024). Programming in ANSI C ,9thEdition , McGraw Hill Education, New Delhi.

References

1. Yashavant Kanetkar, (2022). Let Us C, 19th Edition, BPB Publications, New Delhi.
2. Ashok N. Kamthane, Amit Ashok Kamthane (2015). Programming in C, 3rd Edition, Pearson India Education Services Pvt. Ltd.

Web References

1. <https://www.learn-c.org/>
2. <https://www.cprogramming.com/>
3. <https://www.tutorialspoint.com/cprogramming/index.htm>

Pedagogy

Chalk &Talk, PowerPoint Presentation, Discussion, Assignment, Demo, Quiz and Seminar.

Course Designer

Dr. R. Brendha, Associate Professor, Department of Computer Applications.

Semester I	Internal Marks: 40		External Marks: 60	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
26UCA1CP1	Programming in C (P)	CORE PRACTICAL	3	3

Course Objectives

- To provide students with a solid foundation in the fundamentals of C programming
- To enhance students' ability to write efficient C programs and solve computational problems
- To familiarize students with core programming concepts such as loops, arrays, functions, pointers, structures and files

S. No.	Course Features	Relevance Status
1.	Course emphasis on Employability/Entrepreneurship/Skill Development	Employability, Entrepreneurship, Skill Development
2.	Course integrates cross cutting issues relevant to Professional Ethics/Gender sensitization/ Environment and Sustainability/ Human Values/Indian Knowledge System	Environment and Sustainability
3.	Course relevant to Local/Regional/National/ Global needs	Global need
4.	Course focus on Sustainable Developmental Goals	SDG 4,8

Course Outcomes and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, the students will be able to	
CO1	Recognize the syntax and construction of C programming code	K1, K2
CO2	Analyze the problem and develop skills on identifying appropriate programming constructs for problem solving	K3, K4
CO3	Examine the problem and provide solution using control structures and Looping statements	K4, K5
CO4	Analyze the problem and create program using arrays, functions structures and pointers	K4
CO5	Assess and solve the problems using files	K5

Mapping of CO with PO and PSO

CO s	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	3	2	1	1	3	3	3	2	2
CO2	3	3	3	3	3	2	3	2	3	3

CO3	3	3	3	3	3	3	3	2	3	3
CO4	3	3	3	3	2	3	3	2	3	2
CO5	3	3	3	3	2	3	3	2	3	3

“1”–Slight (Low) Correlation

“2”–Moderate (Medium) Correlation

“3”–Substantial (High) Correlation

“-” indicates there is no Correlation.

List of Exercises

1. Write a C program to demonstrate data types, and operators.
2. Write a C program to implement control statements (if, if-else, switch).
3. Write a C program to implement looping statements (for, while, do-while).
4. Write a C program to demonstrate functions.
5. Write a C program to implement arrays.
6. Write a C program to demonstrate string handling functions.
7. Write a C program to demonstrate pointers.
8. Write a C program to implement structures.
9. Write a C program to perform file operations

Web References:

1. <https://www.programiz.com/c-programming/examples>
2. <https://beginnersbook.com/2015/02/simple-c-programs/>
3. <https://www.tutorialgateway.org/c-programming-examples/>
4. <https://www.studytonight.com/c/programs/>

Pedagogy:

PowerPoint Presentation, Demonstration, Discussion and Practical Sessions

Course Designer:

Dr. R. Brendha, Associate Professor, Department of Computer Applications.

ALLIED COURSE -I (AC-I)

MATHEMATICS FOUNDATIONS TO COMPUTER SCIENCE – I (For Bachelor of Computer Application) (2026-2027 and Onwards)

COURSE CODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDIT
26UCA1AC1	Mathematics Foundations to Computer Science – I	ALLIED COURSE -I	3	3

Course Objectives

- **Understand** fundamental concepts of discrete mathematics and statistics, including sets, functions, matrices, graph theory, and data analysis.
- **Apply** mathematical and statistical techniques to solve problems in computer science.
- **Analyze** computational problems using appropriate mathematical abstractions and logical reasoning.

S. No.	Course Features	Relevance Status
1	Course emphasis on Employability / Entrepreneurship / Skill Development	Employability & Skill Development
2	Course integrates cross cutting issues relevant to Professional Ethics / Gender sensitization / Environment and Sustainability / Human Values/Indian Knowledge system/ Indian Knowledge System	Indirect Relevance
3	Course relevant to Local / Regional / National / Global needs	Global Need
4	Course focus on Sustainable Development Goals	SDG 4, 5, 9, 12

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Recall and understand fundamental concepts, definitions, and properties from sets, functions, matrices, graph theory, and statistical methods (dispersion and correlation).	K1
CO2	Explain and interpret principles and methods from discrete mathematics, linear algebra, and statistics, including graph structures, matrix operations, and data analysis techniques.	K2
CO3	Apply concepts and techniques from sets, graphs, matrices, and statistical measures to solve a variety of mathematical and real-world problems.	K3
CO4	Analyze problems by integrating concepts from graph theory, matrix algebra, and statistics to develop appropriate mathematical models and solutions.	K4
CO5	Evaluate and justify solutions to complex problems by integrating concepts from discrete structures, linear systems, and statistical methods to support decision-making.	K5

Mapping of CO with POs and PSOs

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	1	1	0	1	3	1	1	1	1
CO2	3	2	1	1	1	3	1	2	1	1
CO3	3	3	2	1	1	3	2	2	2	1
CO4	3	3	2	2	1	3	2	3	2	1
CO5	3	3	2	2	2	3	2	3	2	2

“1” – Slight (Low) Correlation

“2” – Moderate (Medium) Correlation

“3” – Substantial (High) Correlation

“-” indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	Cos	CONITIVE LEVEL
I	Basic Structures: Sets, Functions, Sums, and Matrices Sets - Set Operations-Functions- Sequences and Summations.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Elementary Graph Theory Definition of Graphs – Applications of Graphs – Finite and infinite graphs – Incidence and Degree – Isolated Vertex, Pendant Vertex and Null Graph. Path and Circuits: Isomorphism – Subgraphs – Walks, Paths and Circuits – Connected Graphs, Disconnected Graphs and Components – Euler graphs.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Matrix Algebra Rank of a matrix, Elementary transformation of a Matrix, A system of n-homogeneous equations with n unknowns – Linear dependence and independence of vectors- system of non-homogeneous linear equations – Eigen Vectors and Eigen Values.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	Measures of Central Tendency: Arithmetic Mean - Merits and Demerits of Arithmetic Mean - Median - Median for Continuous Frequency Distribution - Merits and Demerits of Median – Mode - Mode for Continuous Frequency Distribution - Merits and Demerits of Mode.	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Measures of Dispersion: Measures of Dispersion- Range- Quartile Deviation- Mean Deviation- Standard Deviation Correlation: Introduction- Meaning of Correlation- Scatter Diagram- Karl Pearson's coefficient of correlation- Assumptions Underlying Karl Pearson's Correlation Coefficient- Rank Correlation- Tied Ranks-Repeated Ranks	9	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self-Study for Enrichment (Not included for End Semester Examination)- Growth of functions – Hamiltonian Paths and Circuits - Special Type of matrices-Geometric and Harmonic mean -Limits for the Rank Correlation Coefficient.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Books

1. Kenneth H. Rosen, (1999), Discrete Mathematics & its Applications(Fourth edition), WCB/ McGraw Hill Company Limited.
2. Deo Narsingh, Graph Theory with Application to Engineering and Computer Science, Prentice Hall, India, 1979.Narsingh Deo. (2007). Graph Theory with Applications to Engineering and Computer. Prentice Hall of India Private Limited.
3. T. K. Manicavachagom Pillay, T. Natarajan, K. S. Ganapathy. (2015). Algebra, Volume II. S. Viswanathan (Printers & Publishers) Pvt., Ltd.

4. Gupta. S. C, Kapoor. V. K. (Reprint 2018). *Fundamentals of Mathematical Statistics*, Sultan Chand & Sons, New Delhi.

Chapter and Section

- UNIT-I Chapter 2 : Sections 1.4-1.7[1]
UNIT-II Chapter 1:Sections 1.1-1.5 [2]
Chapter 2: Sections 2.1-2.6 [2]
UNIT-III Chapter 2:Sections 11-16[3]
UNIT-IV Chapter 2: Sections 2.5-2.5.2, 2.6-2.6.2, 2.7-2.7.2 [4]
UNIT-V Chapter 10:Sections 3.4-3.7, 10.3,10.6-10.6.2 [4]

Reference Books

1. C.L. Liu, (2004), Elements of Discrete Mathematics(Second Edition), Tata McGraw-Hill Publishing Company Limited.
2. Ralph P. Grimaldi, B. V. Ramana(2006), Discrete and Combinatorial Mathematics, Pearson Education.
3. S. Narayanan, R. HanumanthaRao,T. K. ManickavachagomPillay,Dr. P. Kandasamy (2009), Ancillary Mathematics Volume – I, S.Viswanathan (Printers and Publishers) Pvt.Ltd.
4. Pillai.R.S.N & Bhagavathi (2008) Statistics, Theory and Practice , S.Chand & Sons.

Web References

1. <https://www.cs.wm.edu/~tadavis/cs243/ch02s.pdf>
2. <https://www.youtube.com/watch?v=O6Kd1oYaauc>
3. https://youtu.be/jd-3l7PB7_0
4. <https://youtu.be/L4DRw9oECSw>
5. <https://www.youtube.com/watch?v=PFDu9oVAE-g>
6. <https://youtu.be/JMbkd-ANjK0>
7. <https://youtu.be/11c9cs6WpJU>

Pedagogy

Chalk &Talk, Assignment, Seminar, Quiz, Group discussion, Brain storming, e-content.

Course Designer

Dr.P.Saranya

ALLIED COURSE PRACTICAL-I (ACP-I)
INTRODUCTION TO SPSS FOR STATISTICAL ANALYSIS(P)
(For Bachelor of Computer Application)
(2026-2027 and Onwards)

Course Objectives

Semester I	Internal Marks: 40		External Marks:60	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs / Week	CREDITS
26UCA1ACP1	SPSS for Statistical Analysis(P)	ALLIED COURSE PRACTICAL	3	3

- Analyze the different types of data using appropriate statistical software
- Demonstrate a good understanding of descriptive statistics and graphical tools
- Emphasize analytical thinking to solve statistical problems using SPSS.

S.No.	Course Features	Reference Status
1.	Course emphasis on Employability/Entrepreneurship/Skill Development.	Employability, Skill Development
2.	Course integrates cross cutting issues relevant to Professional Ethics/Gender Sensitization/Environment and sustainability/Human Values.	Professional Ethics
3.	Course relevant to Local/Regional/National/Global need.	National, Global Need
4.	Course focus on Sustainable Development Goal.	Sustainable Development Goal 4,8,9,12

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Understand , select and collect different types of statistical data to present them effectively through charts and tables.	K1, K2
CO2	Solve the problems using various statistical method using SPSS.	K2
CO3	Interpret results of commonly used statistical analyses in SPSS Package.	K2
CO4	Apply SPSS tools to analyze data using correlation and regression.	K3
CO5	Discriminate the basic analytical techniques to generate results..	K4

Mapping of COs with POs and PSOs

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	3	2	3	2
CO2	3	3	2	2	2	3	2	3	2	3
CO3	2	3	3	2	2	2	3	3	2	3
CO4	3	2	3	2	2	3	3	2	3	2
CO5	3	3	2	3	3	3	2	2	3	3

“1” – Slight (Low) Correlation –

“2” – Moderate (Medium) Correlation –

“3” – Substantial (High) Correlation –

“-” indicates there is no correlation.

LIST OF PROGRAMS

1. Tabulation of Data
2. Frequency Tabulation
3. Simple Bar Chart for Qualitative Variables
4. Clustered Bar Chart
5. Pie Chart
6. Line Graph
7. Histogram
8. Descriptive Statistics
9. Karl Pearson's Correlation Coefficient
10. Spearman Rank Correlation Coefficient
11. Simple Linear Regression
12. Multiple Linear Regression

Web References

1. https://www.youtube.com/watch?v=Nbjz6G_Z74A
2. <https://www.youtube.com/watch?v=0NeaD1Moip0>
3. https://www.youtube.com/watch?v=m8911gbP_g0
4. <https://www.youtube.com/watch?v=OopxVjGODOo>
5. <https://www.youtube.com/watch?v=d57zpZampRk>
6. <https://www.youtube.com/watch?v=06QOdHv68pM>
7. <https://www.youtube.com/watch?v=Kp8QFo4XyME>

Pedagogy

Power point presentations, Live Demo, Hands on Training.

Course Designer

Dr. V.Manimozhi

ABILITY ENHANCEMENT COMPULSORY COURSE -II(AECC-II)
CYBER SECURITY
(2026 - 2027 Onwards)

Semester I	Internal Marks: 100		External Marks: -	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs / Week	CREDITS
26UGCS	CYBER SECURITY	ABILITY ENHANCEMENT COMPULSORY COURSE	2	2

Course Objectives

- To understand the concept of cyber security and the issues and challenges associated with it
- To develop an understanding of cyber-crimes, their nature, and legal remedies
- To analyse and evaluate the basic security aspects related to Computer and Mobiles

S. No.	Course Features	Relevance Status
1.	Course emphasis on Employability/ Entrepreneurship/Skill Development	Employability, Skill Development
2.	Course integrates cross cutting issues relevant to Professional Ethics/Gender sensitization/ Environment and Sustainability/ Human Values/Indian Knowledge System	Professional Ethics, Gender Sensitization, Human Values
3.	Course relevant to Local/Regional/National/ Global needs	Local, Regional, National, Global needs
4.	Course focus on Sustainable Developmental Goals	SDG 4, 5, 16

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement	Cognitive Level
	On the successful completion of the course, students will be able to	
CO1	Outline the concept of cyber security, cyber-crime, cyber law and the issues and challenges	K1
CO2	Develop deeper understanding of cyber-crimes, their nature, and legal remedies using case studies	K2
CO3	Apply various privacy and security measures in social media and online payments	K3
CO4	Analyse tools and techniques used for cyber security	K4
CO5	Evaluate security aspects of Computer, Mobiles and other digital devices	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3	3	2	3	3	3
CO2	3	3	3	3	3	2	3	3	2	3
CO3	3	3	3	3	3	2	3	2	3	3
CO4	3	3	3	3	3	3	3	2	2	3
CO5	3	3	3	3	3	3	2	3	3	3

“1” – Slight (Low) Correlation –

“3” – Substantial (High) Correlation –

“2” – Moderate (Medium) Correlation –

“-” indicates there is No correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	Introduction to Cyber Security: Defining Cyberspace and Overview of Computer and Web technology - Communication and web technology - Internet infrastructure for data transfer and governance - Issues and challenges of cyber security.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	Cyber Crime : Cyber crime targeting computers and mobiles - cyber crime against women and children - financial frauds- social engineering attacks - zero day and zero click attacks.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	Social Media Overview and Security: Introduction to Social networks - Types of Social Media - Social media monitoring – Hashtag - Viral content - Social media marketing .	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	E-Commerce : Definition of E- Commerce - Elements of E-Commerce security - ECommerce threats - E-Commerce security best practices.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	Digital Payments: Unified Payment Interface (UPI) - Digital payments related common frauds and preventive measures - RBI guidelines on digital payments and customer protection in unauthorized banking transactions.	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	Self Study for Enrichment (Not included for End Semester Examinations) Case Studies: Parliament Attack Cyber Crime - Pune Citibank Mphasis Call Center Fraud - Yahoo Data Breach - Equifax Data Breach.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Reference Books

1. Sunit Belapure and Nina Godbole, (2011). *Cyber Security Understanding Cyber Crimes*,
2. Henry A. Oliver, (2015). *Security in the Digital Age: Social Media Security Threats and Vulnerabilities* Create Space Independent Publishing Platform, Pearson.
3. Krishna Kumar, (2011). *Cyber Laws: Intellectual Property & E-Commerce Security*, Dominant Publishers.
4. Eric Cole, Ronald Krutz, (2011). *Network Security Bible*, Wiley India Pvt. Ltd, 2nd Edition.
5. R. C Mishra, (2010). *Cyber Crime: Impact on the New Millennium*, Authors Press. Edition 2010.

Web References

1. <https://www.udacity.com/course/intro-to-cybersecurity-nanodegree--nd545>
2. <https://www.techtarget.com/searchsecurity/definition/cybersecurity>
3. <https://www.financemagnates.com/fintech/payments/the-evolution-of-digital-payments-and-ecommerce/>
4. <https://www.cyberralegalservices.com/casestudies.php>
5. <https://www.vidhikarya.com/legal-blog/cyber-crime-and-cyber-law-in-india>

Pedagogy

Power Point Presentations, Group Discussions, Seminar, Quiz, Assignment.

Course Designers

1. Dr. R. Divya
2. Ms. A. Gowri Shankari