Department of Computer Applications
4 Years BCA Structure
Pattern: 2024-25

Dr. Rinku Dulloo Chairman BOS	Dr. Ram Joshi Dean Academics	Dr. Rakesh Jain Director

INDEX

Sr.No	Contents	Page No
1	Vision & Mission	3
2	PO's	5
3	PSO's	6
4	Highlights of the syllabus	7-8
5	Syllabus Structure	9-12

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Department of Computer Applications

Vision

"To progress as a center of brilliance in computing education producing globally proficient professionals contributing to the betterment of the society."

Mission

1. To educate students in the basic standards of Software Engineering
2. To educate students to become successful professionals
3. To propel students for research and entrepreneurship

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Program Outcomes (POs)

PO1: Computational Knowledge: Apply knowledge of computing fundamentals and domain knowledge.
PO2: Problem Analysis: Identify, formulate and solve complex computing problems reaching substantiated conclusions.
PO3: Development of Solutions: Design and evaluate solutions for complex computing problems with appropriate consideration.
PO4: Investigations of complex Computing problems: Use research-based knowledge and research methods for analysis and interpretation of data, and synthesis of the information to provide valid conclusions
PO5: Modern Tool Usage: Create, identify and apply appropriate techniques, resources, and modern computing tools to complex computing activities.
PO6: Professional Ethics: Understand and commit to professional ethics and cyber regulations for professional computing practices.
PO7: Life-long Learning: Identify the need and have the ability, to engage in independent learning as a computing professional.
PO8: Project management and finance: Understand and apply computing, management principles to manage multidisciplinary projects
PO9: Communication Efficacy: Communicate effectively with the computing community, and with society.
PO10: Societal and Environmental Concern: Understand and assess societal, environmental, health, safety,legal, and cultural issues
PO11: Individual and Team Work: Function effectively in diverse teams and in multidisciplinary environments.
PO12: Innovation and Entrepreneurship: Identify a timely opportunity and using innovation to pursue that opportunity.

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Program Specific Outcomes (PSOs):

Upon successful completion of UG BCA Program, the students will attain following

Program Specific Outcomes:

PSO1: Professional Skills-

To provide an opportunity to work effectively with teams and group with better communication skills in written and oral form. Also, to develop an appreciation of ethics and social awareness needed and with this to develop master for successful career and leadership position

PSO2: Problem-Solving Skills-

To prepare the students for technical and managerial skills necessary to design and implement computer applications to conduct open ended problem solving and applying critical thinking

PSO3: Professional Career and Entrepreneurship-

The ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur, and zest for the higher studies and research and entrepreneurship

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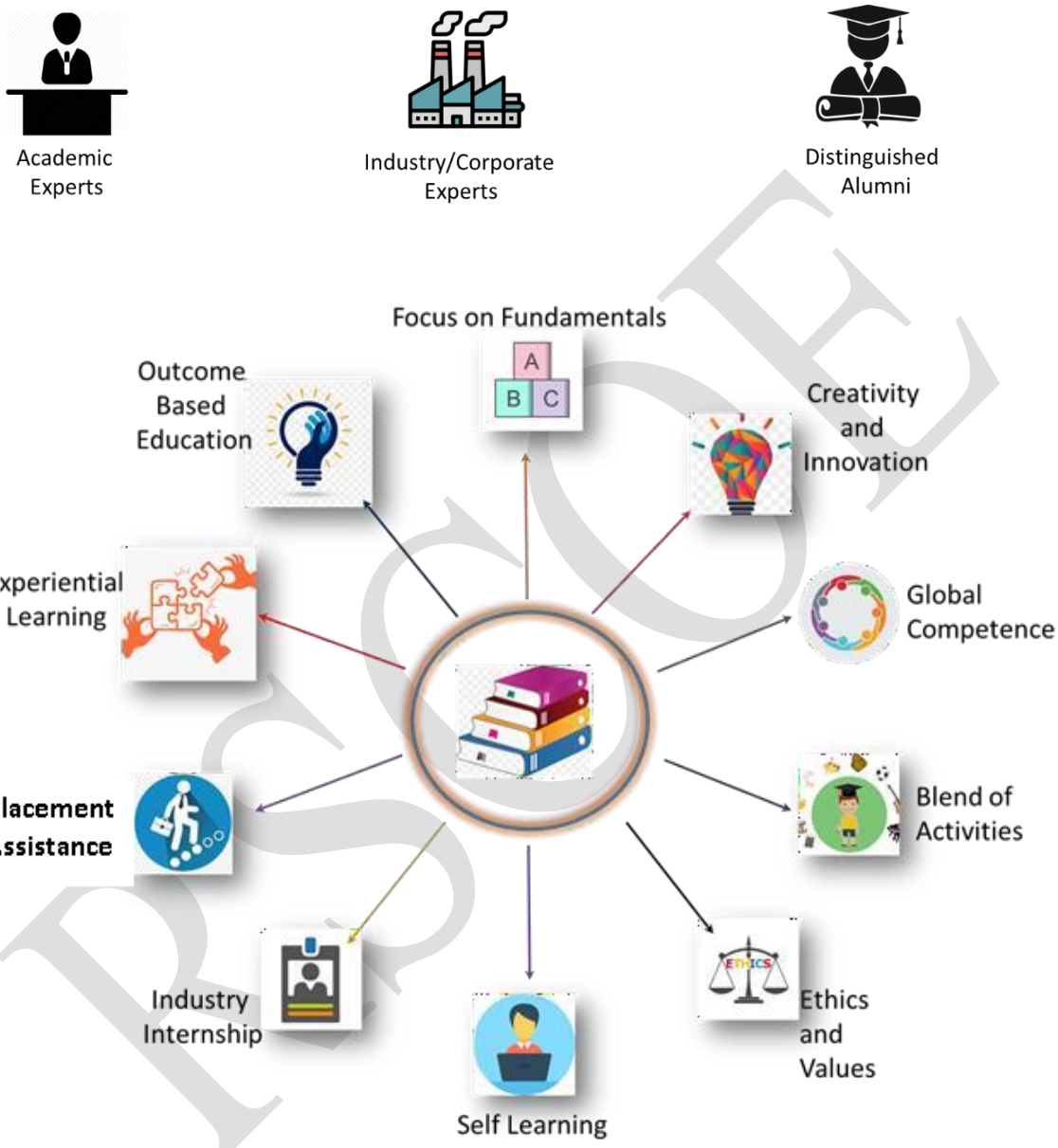
Highlights of the Syllabus

Curriculum of BCA is designed in consultation with



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Everybody knows Technology but "Application makes a Difference"

- The curriculum of BCA is designed in a way such that, students will get knowledge of most trending and "in use" industrial technologies and practices by the time they complete their post-graduation. Keeping this goal in mind updates the curriculum as and when required.
- BCA curriculum is designed to build a strong basic and clear all the fundamental concepts.
- Bridge course is introduced during the induction program for two weeks to learn basic concepts.
- Mini Projects- To understand the importance of working in teams and being part of collective success, we have incorporated Mini projects in each semester where student will work together and implement it.
- Human Values Course- RSCOE focus on the all-around development of our students. This includes refining their technical skills as well as their personal development. Human Values courses will teach them how to handle stressful situations, ethics of a professional and how to give back to the society. This will also motivate them to join the various CSR activities conducted by the company they join and help in achieving the different organizational goals of the company they join.
- Electives offered on emerging technologies. Students can opt any one as per his/her choice.
- Online Professional certification courses are enabled curriculum for all students.
- Language Proficiency – English and softt skills are included in curriculum.
- In order to make students ready for placement, gateway to industry course is given where basic aptitude and technical concepts are introduced.
- Professional communication skills course help students to develop over all personality and groom them.

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Semester-I

Course Code	Course Type as per NEP	Course Name	Teaching Scheme		Semester Examination Scheme of Marks				Total	Credits
					Theory					
			TH	Lab	ISE (20)	MSE (30)	ESE (50)	Laboratory		Total
BCA241101T	SEC-Skill Enhancement Course	C Programming	3	-	20	30	50	-	100	3
BCA241101L		C Programming	-	4	ISCE:60		40	100	100	2
BCA241102T	CC	Database Management SSystem	3	-	20	30	50	-	100	3
BCA241102L	CC	Database Management System	-	4	ISCE:60		40	100	100	2
BCA241103T	CC	Software Engineering	3	-	20	30	50	-	100	3
BCA241104T	CC	Fundamentals of Computer	3	-	20	30	50	-	100	3
BCAVA241105T	VA-Value Added Course	Organization Behaviour	3	-	20	30	50	-	100	3
BCAAE241106L	AEC-Ability/ Skill Enhancement Course	English Essentials	-	2	-	-	-	50	50	1
BCAMD241107T	MDC	Generic IKS	2	-	20	30	50	-	100	2
		Total	17	10				250	850	22

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Bachelor of Computer Applications (BCA)

Semester-II

Course Code	Course Type	Course	Teaching Scheme		Semester Examination Scheme of Marks				Total	Credits
			TH	Lab	Theory			Laboratory		TOTAL
					ISE (20)	MSE (30)	ESE (50)			
BCA241201T	SEC- Skill Enhancement Course	C++ Programming	3	-	20	30	50	-	100	3
BCA241201L		C++ Programming	-	4	ISCE:60		40	100	100	2
BCA241202T	CC- Core Course	Advance Database Management System	3	-	20	30	50	-	100	3
BCA241202L		Advance Database Management System	-	4	ISCE:60		40	100	100	2
BCA241203T		Mathematics I	3	-	20	30	50	-	100	3
BCA241204T		Computer Network	3	-	20	30	50	-	100	3
BCA241205T		Operating System	3	-	20	30	50	-	100	3
BCAVA241206L	VA- Value Added Course	Environmental Studies	-	2	-	-	-	50	50	1
BCACoC241207L	CoC- Co-curricular	Co-curricular - I	-	2	ISCE:50			50	50	1
		Total	15	12				300	800	21

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List of Exit Courses after completion of Semester I and II

1. Exit option is available for students those who have earned the total 42 credits at the End of Second Semester.

2. Student who wants to avail the exit option after second year have to earn additional 4 credits from the list of courses shown below.

3. These courses student have to complete within summer vacation after 1st Year.

4. After fulfilment as mentioned in 1 to 3 above, Students can earn **UNDER GRADUATE CERTIFICATE IN COMPUTER APPLICATION** and same will be issued by the Institute.

Sr. No.	Course code	Name	Credits
1	BCA242102T	Data Structure	2
2	BCA2422101T	JAVA	2

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Semester-III

Course Code	Course Type	Course	Teaching Scheme		Semester Examination Scheme of Marks					Credits
					Theory				TOTAL	TOTAL
			TH	Lab	ISE (20)	MSE (30)	ESE (50)	Laboratory		
BCA242101T	SEC- Skill Enhancement Course	Web Technology	3	-	20	30	50	-	100	3
BCA242101L		Web Technology	-	4	ISCE:60		40	100	100	2
BCA242102T	CC- core course	Data Structure	3	-	20	30	50	100	100	3
BCA242102L		Data Structure	-	4	ISCE:60		40	-	100	2
BCA242103T		Mathematics II	3	-	20	30	50	-	100	3
BCA242104T		Design & Analysis of Algorithm	3	-	20	30	50	-	100	3
BCA242105T		Multimedia Applications	3	-	20	30	50	-	100	3
BCA242106T	HSSM- Humanities Social Science and Management	Universal Human Values	2	-	20	30	50	-	100	2
BCA242107		Indian Constitution	Non-credit course							
		Total	17	8				200	800	21

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Semester-IV

Course Code	Course Type	Course	Teaching Scheme		Semester Examination Scheme of Marks				Total	Credits
			TH	Lab	Theory			Laboratory		TOTAL
					ISE (20)	MSE (30)	ESE (50)			
BCA242201T	SEC- Skill Enhancement Course	JAVA-I	3	-	20	30	50	-	100	3
BCA242201L		JAVA-I	-	4	ISCE:60		40	100	100	2
BCA242202T		Advance Web Technology	3	-	20	30	50	-	100	3
BCA242202L		Advance Web Technology(Mini Project)	-	4	ISCE:60		40	100	100	2
BCA242203T	CC- Core Course	Software Testing	3	-	20	30	50	-	100	3
BCA242204T		Cyber Security & Cyber Law	3	-	20	30	50	-	100	3
BCA242205T		Cloud Computing	3	-	20	30	50	-	100	3
BCAAE242206L	CoC- Co-curricular	Co-curricular-II	-	2	ISCE:50			50	50	1
	Total		12	14				250	750	20

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CoC- List of Co – curricular –I, II

1. Social development activities: Organize cultural events,Volunteering for social work
2. Educational activities: Projects in exhibitions,Extempore
3. Recreational activities:Seminars,Workshops,Industrial visits
4. Physical development focused activities:Yoga,National cadets corps (NCC),Sports competitions, Meditation
5. Culture and value-based activity: Annual day, Cultural festivals
6. Arts and craft-based activities: Photography, Poster drawing

List of Exit Courses after completion of Semester III and IV

1. Exit option is available for students those who have earned the total 81 credits at the End of fourth Semester.

2. Student who wants to avail the exit option after second year have to earn additional 4 credits from the list of courses shown below.

3. These courses student have to complete within summer vacation after 2 nd Year.

4. After fulfilment as mentioned in 1 to 3 above, Students can earn **UNDER GRADUATE DIPLOMA IN COMPUTER APPLICATION** and same will be issued by the Institute.

Sr. No.	Course code	Name	Credits
1	BCA243101T	JAVA II	2
2	BCA243103T	PYTHON	2

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Bachelor of Computer Applications (BCA)

Semester-V

Course Code	Course Type	Course	Teaching Scheme		Semester Examination Scheme of Marks				Total	Credits
			TH	Lab	Theory			Laboratory		TOTAL
					ISE (20)	MSE (30)	ESE (50)			
BCA243101T	SEC-Skill Enhancement Course	JAVA -II	3	-	20	30	50	-	100	3
BCA243101L		JAVA -II(Mini Project)	-	4	ICSE:60		40	100	100	2
BCA243102T		Python Programming	3	-	20	30	50	-	100	3
BCA243102L		Python Programming	-	4	ICSE:60		40	100	100	2
BCA243105T	CC- Core Course	Quantitative Techniques	3	-	20	30	50	-	100	3
BCA243106T		Object Oriented Analysis Design	3	-	20	30	50	-	100	3
BCA243107T	DSE - Discipline Specific Elective	Elective I	3	-	20	30	50	-	100	3
BCA243108T		Elective II	3	-	20	30	50	-	100	3
		Total	18	8	-			200	800	22

Support System Elective I		Support System Elective II	
Course	**Course Name**	**Course**	**Course Name**
BCA243107T-A	**Business Intelligence & Analytics**	BCA243108T-A	**Business Model to Startup and Support**
BCA243107T-B	**Fintech**	BCA243108T-B	**Entrepreneurship Development**

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Bachelor of Computer Applications (BCA)

Semester-VI

Course Code	Course Type	Course	Teaching Scheme		Semester Examination Scheme of Marks				Total	Credits
			TH	Lab	Theory			Laboratory		TOTAL
					ISE (20)	MSE (30)	ESE (50)			
BCA243201T	SEC- Skill Enhancement Course	Project Management	3	-	20	30	50	-	100	3
BCA243202L	MP- Major Project	Major Project	-	4	ISCE:60		40	100	100	2
BCA243203T	DSE- Discipline Specific Elective	Elective III	3	-	20	30	50	-	100	3
BCA243203L		Elective III	-	4	ISCE:60		40	100	100	2
BCA243204T	CC- Core Course	Basics of Machine Learning	3	-	20	30	50	-	100	3
BCAAE243205	AEC - Ability / Skill Enhancement Course	Soft Skills	3	-	20	30	50	-	100	1
		Total	12	8	-			200	600	14

Note : Major Project can be done in Python/Java/Web technology etc.

Application Development Elective III	
Course	**Course Name**
BCA243203T-A	Spring Boot
BCA243203T-B	React JS

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BACHELOR IN COMPUTER APPLICATION Degree will be awarded, if a student wishes to exit at the end of Third year.

Exit Criteria after Third Year of BCA Programme - The students shall have an option to exit after 3rd year of Computer Application Program and will be awarded with a Bachelor's in Computer Application.

Re-entry Criteria in to Fourth Year (Seventh Semester) The student who takes an exit after third year with an award of BCA may be allowed to re-enter in to Seventh Semester for completion of the BCA (Honours) or BCA (Honours with Research) Program as per the respective University / Admitting Body schedule after earning requisite credits in the Third year.

Semester-VII (BCA(Honors))
Specialisation- AI and ML

Course Code	Course Type	Course	Teaching Scheme		Semester Examination Scheme of Marks				Total	Credits
			TH	Lab	Theory			Laboratory		TOTAL
					ISE (20)	MSE (30)	ESE (50)			
BCA244101T-A	Skill Enhancement Course	Basics of Artificial Intelligence	3	-	20	30	50	-	100	3
BCA244102L-A		Basics of Artificial Intelligence	-	4	ISCE:60		40	100	100	2
BCA244103T-A		Distributed Computing for AI	3	-	20	30	50	-	100	3
BCA244104L-A		Distributed Computing for AI	-	4	ISCE:60		40	100	100	2
BCA244105T-A	CC- Core Course	Cognitive computing	3	-	20	30	50	-	100	3
BCA244106T-A		Natural Language Processing (NLP)	3	-	20	30	50	-	100	3
BCA244107-A	CEP-Community Engagement Project	Community Engagement Project		8	ISCE:120		80	200	200	4
	Total		12	16	-			400	800	20

Semester-VII (BCA(Honors))
Specialisation- Data Science

Course Code	Course Type	Course	Teaching Scheme		Semester Examination Scheme of Marks				Total	Credits
			TH	Lab	Theory			Laboratory		TOTAL
					ISE (20)	MSE (30)	ESE (50)			
BCA244101T-B	SEC- Skill Enhancement Course	Python for Data Science	3	-	20	30	50	-	100	3
BCA244102L-B		Python for Data Science	-	4	ICSE:60		40	100	100	2
BCA244103T-B		Machine Learning	3	-	20	30	50	-	100	3
BCA244104L-B		Machine Learning	-	4	ICSE:60		40	100	100	2
BCA244105T-B	CC- Core Course	Inferential Statistics	3	-	20	30	50	-	100	3
BCA244106T-B		Predictive Modelling	3	-	20	30	50	-	100	3
BCA244107-B	CEP- Community Engagement Project	Community Engagement Project		8	ICSE:120		80	200	200	4
	Total		12	16	-			400	800	20

Semester-VII (BCA(Honors))
Specialisation- Cyber Security

Course Code	**Course Type**	Course	Teaching Scheme		Semester Examination Scheme of Marks				Total	**Credits**
			TH	**Lab**	**Theory**			**Laboratory**		**TOTAL**
					ISE (20)	**MSE (30)**	**ESE (50)**			
BCA244101T-C	SEC- Skill Enhancement Course	Digital security and Forensics	3	-	20	30	50	-	100	3
BCA244101L-C		Digital security and Forensics	-	4	ICSE:60		40	100	100	2
BCA244102T-C		Network security	3	-	20	30	50	-	100	3
BCA244102L-C		Network security	-	4	ICSE:60		40	100	100	2
BCA244103T-C	CC- Core Course	Fundamentals of cyber security	3	-	20	30	50	-	100	3
BCA244104T-C		Cyber Law and Regulations	3	-	20	30	50	-	100	3
BCA244105-C	CEP- Community Engagement Project	Community Engagement Project		8	ICSE:120		80	200	200	4
	Total		12	16	-			400	800	20

Semester-VII (BCA(Honors))
Specialisation- Research

Course Code	Course Type	Course	Teaching Scheme		Semester Examination Scheme of Marks				Total	Credits
			TH	Lab	Theory			Laboratory		TOTAL
					ISE (20)	MSE (30)	ESE (50)			
BCA244101T-D	SEC- Skill Enhancement Course	Research Methodology	2	-	20	30	50	-	100	2
BCA244101L-D		Research Methodology		2	ICSE:60		40	100	100	2
BCA244102T-D		Advance Data Analytics	2	-	20	30	50	-	100	2
BCA244102L-D		Advance Data Analytics	-	4	ICSE:60		40	100	100	2
BCA244103-D		Mini Research Project		8	20	30	50	-	100	4
BCA244104-D		Self Learning (Research)								4
BCA244105-D		Review Paper published / presented in UGC care								2
	Total		18	8	-		380	200	800	20

Eligibility for admission to the UG Bachelor's Degree with Research: Minimum CGPA/CPI of 7.5 or minimum 75% after sixth semester for UG Bachelor's Degree

Note: In Advance Data Analytics Tools like Power BI, Tableau etc can be considered.

Semester-VIII (BCA(Honors))
Specialisation- AI and ML/ Data Science/ Cyber Security

Course Code	Course Type	Course	Teaching Scheme		Semester Examination Scheme of Marks				Total	Credits
			TH	Lab	Theory			Laboratory		TOTAL
					ISE (20)	MSE (30)	ESE (50)			
BCA244201		Self Learning Course(Swayam/ NPTEL/ Coursera)			ICSE:60		40	100	100	2
BCA244202		Dissertation			ICSE:360		240		600	18
	Total								700	20

Semester-VIII (BCA(Honors))
Specialisation- Research

Course Code	Course Type	Course	Teaching Scheme		Semester Examination Scheme of Marks				Total	Credits
			TH	Lab	Theory			Laboratory		TOTAL
					ISE (20)	MSE (30)	ESE (50)			
BCA244201		Self Learning Course(Swayam/ NPTEL/ Coursera)			ICSE:60		40	100	100	2
BCA244202		Dissertation			ICSE:360		240		600	18
	Total								700	20

Eligibility for admission to the UG Bachelor's Degree with Research: Minimum CGPA/CPI of 7.5 or minimum 75% after sixth semester for UG Bachelor's Degree

Note: The Self Learning Course(Swayam/ NPTEL/ Coursera will be related to research only)

Course Type Abbreviations

SEC: Skill Enhancement Course

CC : Core Course

HSSM : Humanities Social Science and Management

AEC : Ability Enhancement Course

IKS : Indian Knowledge System

VEC : Value Education Course

CoC : Co-curicullar Course

MP : Major Project

CEP : Community Engagement Project

Total Marks	6100
Total credits SEC	51
Total Credits Core Course	57
Total Credits Ability/Skill Enhancement	02
Total Credits Value Added Course	04
Total Credits Major Project	03
Total Credits Multi-Disciplinary Elective course	02
	160

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F. Y. BCA
Academic Year – 2024-2025 Semester -I
[BCA241101T]: C Programming

Teaching Scheme:	Credit	Examination Scheme:
TH: - 03 Hours/Week	TH: 03	In Sem. Evaluation : 20 Marks Mid Sem. Exam : 30 Marks End Sem. Exam : 50 Marks Total : 100 Marks

Course Prerequisites:Basic knowledge of computer operations and understanding of fundamental programming.

Course Objective:

1. To familiarize with the basics of programming concepts, and develop a solution using C programming language.

2. To understand structured programming approach.

Course Outcome:

After successful completion of the course, students will able to:

CO1: Understand the Fundamentals of C Programming

CO2: Implement Control Structures in C Programs

CO3: Utilize Functions for Modular Programming

CO4: Operate with Arrays and Perform Array-based Operations

CO5: Manage Strings and Perform String Operations in C

Course Contents

UNIT-I	C Fundamentals	08 Hours

History of 'C' language, Application areas, Structure of a 'C' program, C' Program development life cycle, Function as building blocks, 'C' tokens , Character set, Keywords, Identifiers , Variables, Constants (character, integer, float, string, escape sequences, enumeration constant), Data Types (Built-in and user defined data types), Operators, Expressions, types of operators, Operator precedence and Order of evaluation, Character input and output, String input and output, Formatted input and output.

UNIT-II	Control Structures	08 Hours

Decision making structures: - if, if-else, switch and conditional operator, Loop control structures: - while, do while, for, Jump statements (control transfer statements viz. goto, break, continue, return)

UNIT-III	Functions	08 Hours

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Concept of function, Advantages of Modular design, Standard library functions, User defined functions: - declaration, definition, function call, parameter passing (by value), return statement, Recursive functions, Scope of variables and Storage classes.		
UNIT-IV	**Arrays**	**08 Hours**
Concept of array, Types of Arrays – One and Multidimensional array, Array Operations - declaration, initialization, accessing array elements, Memory representation of two-dimensional array (row major and column major) Passing arrays to function, Array applications		
UNIT-V	**Strings in C**	**04 Hours**
String Literals, string variables, declaration, definition, initialization, Syntax and use of predefined string functions		

Text Books:

T1: Let Us C by Yashavant Kanetkar

T2: C: The Complete Reference by Herbert Schildt

Reference Books:

R1. C Programming by K.R. Venugopal and Sudeep R. Prasad

R2. Programming in ANSI C by E. Balagurusamy

R3. Programming in C: A Practical Approach by Ajay Mittal

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Academic Year – 2024-2025 Semester -I
[BCA241101L]: C Programming

Teaching Scheme: PR: - 04 Hours/Week	Credit PR: 02	Examination Scheme: ISCE : 60 Marks End Sem. Exam : 40 Marks Total : 100 Marks

Course Prerequisites:Basic knowledge of computer operations and understanding of fundamental programming.

Course Objective:

1. To develop problem-solving skills using structured programming techniques.
2. To enable students to write efficient, maintainable, and modular C programs.
3. To provide hands-on experience with control structures, functions, arrays, and strings.

Course Outcome:
After successful completion of the course, students will able to:
CO1: Understand and apply the basic structure and syntax of C programs, including tokens, operators, and data types.
CO2:Develop C programs using decision-making and loop control structures to solve real-world problems.
CO3:Implement modular programming through the use of functions, including recursion and parameter passing.
CO4:Utilize arrays and perform operations such as searching, sorting, and matrix manipulation.
CO5:Work with string manipulation and predefined string functions effectively in C programs.

Lab Contents

Guidelines for Assessment

Continuous assessment of laboratory work is done based on overall performance and Laboratory assignments performance of student. Each Laboratory assignment assessment will assign grade / marks based on parameters with appropriate weightage. Suggested parameters for overall assessment as well as each Laboratory assignment assessment include- timely completion,

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performance, innovation, efficient codes, punctuality and neatness.	
List of Laboratory Assignments / Experiments (to be covered)	
1	Write and execute a simple C program to demonstrate the structure of a C program.
2	Implement programs to demonstrate the use of various C tokens.
3	Programs to handle character input and output operations.
4	Programs for formatted input and output.
5	Programs to implement decision-making structures (if, if-else, switch).
6	Programs to demonstrate loop control structures (while, do-while, for).
7	Programs to use break and continue statements within loops.
8	Programs to demonstrate nested structures and unconditional branching (goto statement).
9	Programs to use standard library functions and user-defined functions.
10	Implement recursive functions.
11	Programs to demonstrate scope of variables and storage classes.
12	Programs to declare, initialize, and access array elements.
13	Programs to perform operations on two-dimensional arrays.
14	Programs to demonstrate memory representation of two-dimensional arrays.
15	Programs for passing arrays to functions.
16	Array applications such as finding maximum and minimum, counting occurrences, linear search, sorting, and matrix operations.
17	Programs to declare, define, and initialize string variables.
18	Programs to use predefined string functions for various operations on strings.

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Academic Year – 2024-2025 Semester-I

[BCA241102T]: Database Management System

Teaching Scheme:	Credit	Examination Scheme:
TH: - 03 Hours/Week	TH: 03	In Sem. Evaluation: 20 Marks Mid Sem. Exam : 30 Marks End Sem. Exam : 50 Marks Total : 100 Marks

Course Objective:

1. Creation of Database and functions of Database Management System.
2. Database models, SQL and database operations, this creates a strong foundation for application database design.
3. Making aware of current databases used in industry.

Course Outcome:

After successful completion of the course, students will able to:

CO1. Understand file structure concepts, organization and applications.
CO2. Understand the database management system ,users and structure.
CO3. Understnad and implement the data models and relationship.
CO4. Implement use of SQL in querying database.
CO5. Understand the relational database design and normalization

Course Contents

UNIT-I	File Structure and Organisation	05 Hours
Introduction, Logical and Physical Files: File, File Structure, Logical and Physical File Definitions, Basic File Operations: Opening Files, Closing Files, Reading and Writing, Seeking ,File Organization-Field and Record structure in file, Record Types, Types of File Organisation: Files of Unordered Record, File of Ordered Record, Hash Files, Overview of Indexes: Dense Index ,Sparse Index		
UNIT-II	**Database Management System**	**06 Hours**
Introduction, Definition of DBMS,File Processing System VS DBMS: Limitation,Comparision,Advantages and Disadvantages of DBMS ,Users of DBMS: Database Designers, Application Programmer, Sophisticated Users, End Users,Capabilities of good DBMS,Overall System Structure.		
UNIT –III	**Data Models**	**10 Hours**
Introduction, Data Models: Object Based Logical Model,Record Based Logical Model: Relational Model,Network model,Hierarchical Model,Entity Relationship Model: Entity Set,Attribute,Relational Set,Entity Relationship Diagram,Extended features of ERD		
UNIT-IV	**Relational Databases**	**12 Hours**

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Introduction, Terms : Relation,Tuple,Attribute,Cordinality,Degree,Domain Keys: Super Key, Candidate Key, Primary Key, Foreign Key Relational Algebra: Operations : Select, Project, Union, Difference, Intersection,Cartesian Product.

UNIT-V	SQL(Structured Query Language) & Relational Database Design	07 Hours

SQL Commands and Queries: History, Basic Structure, DDL Commands, DML Commands , Simple Queries, Nested Queries, Aggregate Functions, Clauses, Normalization: Introduction, Anomalies of un normalized databases, Normalization, Normal Form: 1 NF,2 NF,3 NF

Text Books:

T1. AviSilberschatz, Henry F. Korth, S. Sudarshan, Database System Concepts, Sixth Edition
T2. Introduction to Database Systems, C,J Date, 8/e , Pearson, 2008.

Reference Books:

R1. Database Systems Concepts by Henry Korth and A.Silberschatz
R2. An Introduction to Database Systems by Bipin Desai
R3. File Structure by Micheal J.Folk,Greg,Riccardi
R4. Teach Yourself SQL in 14 days by Jeff Parkins and Bryan Morgan

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Academic Year – 2024-2025 Semester-I
[BCA241102L]: Database Management system

Teaching Scheme: PR: - 04 Hours/Week	Credit PR: 02	Examination Scheme: ISCE : 60 Marks End Sem. Exam : 40 Marks Total : 100 Marks

Course Objective:

1.Creation of Database and functions of Database Management System.

2.Database models, SQL and database operations, this creates a strong foundation for application database design.

3. Making aware of current databases used in industry.

Course Outcome:

After successful completion of the course, students will able to:

CO1: Develop conceptual schema of database using conceptual model. Implement logical scheme of database.

CO2: Create and manage database with all integrity constraints. Perform various DDL and DML operations. Refine the scheme of database by applying normal forms.

CO3: Implement the transaction management protocols and crash recovery algorithms. Create views, procedures, functions and triggers on databases.

CO4: Create and manage NoSQL database, perform basic operations.

Lab Contents

Guidelines for Assessment

Continuous assessment of laboratory work is done based on overall performance and Laboratory assignments performance of student. Each Laboratory assignment assessment will assign grade/marks based on parameters with appropriate weightage. Suggested parameters for overall assessment as well as each Laboratory assignment assessment include- timely completion, performance, innovation, efficient codes, punctuality and neatness.

List of Laboratory Assignments/Experiments (minimum -- to be covered)

1	Introduction to SQL – DDL, DML, DTL basic data types
2	Create Database, select database, Drop database
3	Create Table, Drop table, Insert Query, Select Query
4	Operators, Expressions, where clause, AND & OR clauses

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5	Update Query/Delete Query, Like clause, Limit Clause
6	Order By, Group By, With Clause, Having Clause, Distinct keyword
7	Constraints, Joins
8	Functions : Date & Time, String, Functions, Aggregate Functions
9	Alter Command

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F.Y. BCA
AcademicYear–2024-2025Semester-I
[BCA241103T]: Software Engineering

TeachingScheme:	Credit	ExaminationScheme:
TH:-Hours/Week :03	TH: 03	InSem.Evaluation : 20Marks MidSem.Exam : 30Marks EndSem.Exam : 50 Marks Total : 100 Marks

CoursePrerequisites: Understanding of different systems.

CourseObjective:

1. To understand the basic view of software Engineering
2. To provide an idea of using various process models in the software industry according to given circumstances.
3. To understand requirement specification and engineering for software development.
4. To understand and evaluate software design and coding techniques in software development process.
5. To understand and manage the effective quality management in software development process.

CourseOutcome:

After successful completion of the course, students will able to:

CO1: Conceptualize the system engineering and its elements.

CO2: Able to describe key activities in software development and the role of software modeling.

CO3: Students will be able to implement various life cycle activities like Analysis, Design, Implementation, Testing and Maintenance while software development process

CO4: Students will able to do requirement analysis and specification process for software development..

CourseContents

UNIT-I	Overview of System Engineering	06 Hours
Introduction to System , Over View of System Design, Business System Concepts, Characteristics of a System Elements of a System , Types of Systems, Systems Models		
UNIT-II	**Introduction to Software Engineering**	**06 Hours**

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Definition of Software ,Characteristics of Software , Software Application Domain , Definition of Software Engineering , Need for software Engineering , Mc Call's Quality factors , The Software Process ,Software Engineering Practice ,Software Quality Assurance (SQA): Verification and Validation, SQA Plans, Software Quality Frameworks, ISO 9000 Models, CMM Models.		
UNIT-III	**Software Development Methodologies**	**05 Hours**
Introduction , Activities of SDLC ,Different Approaches and Models for System Development, Waterfall Model, Spiral Model, Prototyping Model ,RAD , Rational Unified Process		
UNIT-IV	**Requirement Engineering**	**08 Hours**
Introduction, Requirement Engineering Tasks, Establishing Groundwork for understanding of Software Requirement , Requirement Gathering, Feasibility study, Fact Finding Techniques, Software requirement Specification (SRS) ,Structure and contents of SRS, IEEE standard format for SRS.		
UNIT-V	**Analysis and Design Engineering**	**05 Hours**
Introduction , What is Software Design , Levels of software Design , Design activities , Modularization, concurrency, Cohesion and Coupling ,Requirement Analysis , Activities involved in requirement analysis , Introduction to Software analysis and design Tools ,Introduction to Object oriented Analysis and design ,User Interface design , Command line interface , Graphical User interface ,Case studies		

TextBooks:

T1. System Analysis And Design By Elias M Awad

T2. Software Engineering – A practitioner's approach by Roger S. Pressman, 9th Edition

ReferenceBooks:

R1. Systems Analysis and Design Methods - SIE by Jeffrey Whitten (Author), Lonnie Bentley (Author)

R2. Shooman, "Software Engineering Design, Reliability and Management" McGraw Hill 198

R3. Fairley "Software Engineering Concepts" " McGraw--Hill Series, New York

R4. Software Engineering, Ian Sommerville, seventh edition, Pearson education

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F. Y. BCA
Academic Year – 2024-2025 Semester-I
[BCA241104T]: Fundamentals of Computer

Teaching Scheme:	Credit	Examination Scheme:
TH: -Hours/Week : 03	TH: 03	In Sem. Evaluation: 20 Marks Mid Sem. Exam : 30 Marks End Sem. Exam : 50 Marks Total : 100 Marks

Course Objective:

1. Understanding System Fundamentals: Students should grasp the fundamental concepts of computer systems, including digital logic, data representation, and system components.

2. CPU and Memory Design: Gain an in-depth understanding of central processing unit (CPU) design, instruction set architecture (ISA), memory organization, and memory hierarchy.

3. Instruction Execution: Learn how instructions are fetched, decoded, and executed within the CPU, including pipelining concepts and performance optimization techniques.

4. Input / Output Systems: Understand the principles behind input/output (I/O) systems, including device interfaces, I/O organization techniques, and performance considerations.

5. Computer Arithmetic: Explore the principles of computer arithmetic, including fixed-point and floating-point number representation, arithmetic operations, and floating-point standards.

6. Parallel Processing: Study the concepts of parallel processing, multiprocessor systems, multicore processors, and their impact on system performance and scalability.

7. Memory Management: Learn about memory management techniques, virtual memory concepts, memory allocation strategies, and cache memory organization.

Course Outcome:

After successful completion of the course, students will able to:

CO1 Understanding of System Components: Students will demonstrate a comprehensive understanding of computer system components, including CPU, memory hierarchy, input/output systems, and their interactions.

CO2 Knowledge of Memory Systems: Students will gain knowledge of various number system and its inter conversion

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CO3 Proficiency in Computer Arithmetic: Students will demonstrate proficiency in computer arithmetic, including fixed-point and floating-point number representation, arithmetic operations, and IEEE floating-point standards.

CO4 Knowledge of Memory Systems: Students will gain knowledge of memory systems, including cache memory organization, virtual memory concepts, memory management techniques, and their impact on system performance.

CO5 Knowledge of Memory Systems: Students will gain knowledge of Input / Output interfaces.

CO6 Critical Thinking and Problem-Solving Skills: Students will develop critical thinking and problem-solving skills by tackling complex architectural problems, identifying performance bottlenecks, and proposing effective solutions.

Course Contents

UNIT-I	**Introduction to Computer Organization and Architecture**	7 Hours
Overview of computer organization and architecture, Historical perspective and evolution of computing systems, Role of computer organization in system design, Characteristics of Computers, Block diagram of computer, Types of computers and features, Types of Programming Languages (Machine Languages, Assembly Languages, High Level Languages)		
UNIT-II	**Digital Logic Fundamentals & Number System**	7 Hours
Introduction to Binary, Octal, Hexadecimal system, Inter Conversion, Simple Addition, Subtraction, Multiplication, Division, Boolean algebra and logic gates Combinational and sequential circuits, Arithmetic circuits (adders, subtractors)		
UNIT-III	**Central Processing Unit (CPU)**	**7 Hours**
CPU components and their functions (ALU, registers, control unit), Instruction Set Architecture (ISA) and instruction formats, CPU performance metrics (CPI, MIPS, clock cycle time)		
UNIT-IV	**Memory Hierarchy and Management**	**9 Hours**
Memory technologies (RAM, ROM, cache memory), Memory organization (virtual memory, paging, segmentation), Cache memory organization and operation (direct-mapped, set-associative, fully associative) Memory hierarchy and organization, Virtual memory concepts (paging, segmentation), Memory allocation techniques (contiguous allocation, paging, segmentation)		
UNIT-V	**I/O Organization Multiprocessor and Multicore Systems**	**9 Hours**
Input/output devices and interfaces, I/O organization techniques (programmed I/O, interrupt-driven I/O, DMA), I/O performance measures and optimization, Multiprocessor architecture, Parallel processing concepts, Multicore processors and architecture		

Text Books :

T1 "Computer Organization and Design: The Hardware/Software Interface" by David A. Patterson and John L. Hennessy

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T2 "Computer Architecture: A Quantitative Approach" by John L. Hennessy and David A. Patterson
T3 "Sructured Computer Organization" by Andrew S. Tanenbaum
T4 "Computer Systems: A Programmer's Perspective" by Randal E. Bryant and David R. O'Hallaron
T5 "Modern Operating Systems" by Andrew S. Tanenbaum and Herbert Bos
T6 "Computer Organization and Architecture: Designing for Performance" by William Stallings

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Academic Year – 2024-2025 Semester-I
[BCA241105T]: Organisation Behaviour

Teaching Scheme:	Credit	Examination Scheme:
TH: -Hours/Week : 03	TH: 03	In Sem. Evaluation: 20 Marks Mid Sem. Exam : 30 Marks End Sem. Exam : 50 Marks Total : 100 Marks

Course Prerequisites: Basic understaning of Systems and Business.

Course Objective:

1. To expose the students to the fundamentals of Organizational Behaviour (OB) - such as working with people, nature of organizations, communication, leadership and motivation of people.
2. To help students develop a conceptual understanding of OB theories.
3. To enable the students to put the ideas and skills of OB into practice

Course Outcome:

After successful completion of the course, students will able to:

CO1. To understand the behavior of organization
CO2. Understand individual behavior in organizations, including diversity, attitudes
CO3. Justify the role of leadership qualities, motivation
CO4. To understand the dynamics of individual and organizational behavior and relationships
CO5. To understand the importance of organizational behavior in managerial functions

Course Contents

UNIT-I	Introduction to Organizational Behavior	6 Hours
Definition, Evolution of the Concept of OB, Contributions to OB by major behavioral science disciplines, Challenge and Opportunities for OB managers, Models of OB study.		
UNIT-II	**Foundations of Individual Behavior Attitudes and Job Satisfaction**	**7 Hours**
Components of Attitude, Major Job Attitude, Job Satisfaction, Personality and Values, Personality Determinants, MBTI, Big – Five Model, Values, Formation, Types of Values, Perception, Factors influencing perception.		
UNIT-III	**Motivation and Leadership**	**8 Hours**
Concept of motivation, Definition, Theories of Motivation, Maslow's need Theory, ERG Theory, Two Factor Theory, McClelland"s Theory, Equity Theory, Concept of Leadership, Theories of leadership, Traits of good Leader, Difference between Leader and Manager.		
UNIT-IV	**Groups and Teams**	**7 Hours**

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Foundations of Group Behavior, Formation of Group, Group - Classification, Properties, Roles, norms, status, size and cohesiveness, Group decision making, Understanding teams, creating effective teams, Conflict Process, Conflict management communication.

UNIT-V	Organizational Culture	7 Hours

Foundations of organization structure, organization design, organization culture, organization change, managing across cultures, human resource management policies and practices, diversity at work.

Reference Books:

R1) Kavita Singh, Organizational Behavior, Vikas Publications
R2) Robbins, Timothy Judge, SeemaSanghi, Organizational Behavior, Stephen Pearson Prentice Hall,12 edition
R3) Fred Luthans, Organizational Behavior, McGraw Hill Inc.
R4) John Newstrom and Keith Davis, Organizational Behavior, Tata McGraw Hill, 11 edition
R5) AshwaThapa, Organizational Behavior
R6). Griffin, Ricky W: Organizational Behaviour, Houghton Mifflin co., Boston.
R7). Hellreigel, Don, John W. Slocum, Jr., and Richards W. Woodman:
R8) Organizational Behavior, south western college Publishing, Ohio.
R9) Hersey, Paul, Kenneth H. Blanchard and Dewey E Johnson: Management of Organizational Behaviour: R10) Utilising Human Resources, Prentice Hall, New Delhi.
R11)Ivancevich; John and Micheeol T. Matheson: Organizational Behaviour and Management, Tata McGraw-Hill, New Delhi.
R12) Luthans, Fred: Organizational Behaviour, McGraw-Hill, New York
R13) Newstrom, John W. and Keith Davis: Organizational Behavior: Human Behavior at Work, Tata McGraw-Hill, New Delhi.
R14) Robbins, Stephen P: Organizational Behavior, Prentice hall., New Delhi.
R15) Steers Richard m. and J. Stewart black: Organizational Behavior, Hrper Collins college Publishers, New York.
R16). Sukla, Madhukar: Understanding Organizations: Organization Theory and Practice in India, Prentice Hall, New Delhi.

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Academic Year – 2024-2025 Semester-I

[BCAAE241101L]: English Essentials

Teaching Scheme: PR:-Hours/Week:02	Credit PR:01	ExaminationScheme: ISCE : 30 Marks ESE : 20Marks Total : 50 Marks

CourseObjective:
Prepare students to equip with the tools to express themselves accurately and assertively in both written and spokenform, thereby improving their professional and personal interactions.

CourseOutcome:
After successful completion of the course, students will able to:
CO1: Recognize fundamentals of language to enhance communication skills.
CO2: Express coherent and precise professional written communication.
CO3: Articulate persuasive and informative communication..

Course Contents

UNIT-I	Mastery in Grammar	05 Hours
Common errors, Subject – Verb – Agreement, Modal Auxiliary Verbs, Voice.		
UNIT-II	**Language Luminaries**	**05 Hours**
Phonetics, Communication – Process, Barriers, Types, Interview Techniques, Idea ExchangeForum.		
UNIT-III	**Art of Technical Writing**	**05 Hours**
Agenda of the meeting, Minutes of the meeting, Advertisement Writing, Report Writing, Email Writing.		
UNIT-IV	**Comprehensive Writing and Presentation Skills**	**05 Hours**
Introduction, Structure, Process and Implementation, Visual Data Translation, Book Analysis, Character Interaction Writing		

List of Laboratory Assignments / Experiments(to be covered)

1	Exercises based on Unit – I.
2	List of phonetic sounds along with examples Unit - II
3	Draft an informal email after completion of Unit – III.
4	Enlist rules of presentation after completion of Unit – IV.

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Textbook:

1. M Ashraf Rizvi, Effective Technical Communication, McGraw Hill Education India, 2nd Ed., 2017.
2. Meenakshi Raman and Sangeeta Sharma, Technical Communication: Principles and Practice, OxfordUniversity Press India, 3rd Ed., 2015.
Professional Communication (Global Goo English) by Dr. P. Prasad. Katson Books

Reference Books:

1. Paul V Anderson, Technical Communication, Cengage Learning, 9th Ed., 2017.
2. Susan Thurman, Only Grammar Book You Will Ever Need, Adams, 2003.
Practical English Grammar & Composition by SC Gupta, 2012.

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Academic Year – 2024-2025 Semester-I
[BCAVA241101T]: Generic IKS

Teaching Scheme:	Credit	Examination Scheme:
TH: -Hours/Week : 02	TH: 02	ISE : 20 Marks MSE : 30 Marks ESE : 50 Marks Total : 100 Marks

Course Prerequisites: Historical background of India

Course Objective:

1. Understand the foundational concepts and key tenets of Indian knowledge systems.
2. Understand various philosophical and spiritual traditions within the Indian context.
3. Examine the historical evolution of Indian literature, art, and science..

Course Outcome:

After successful completion of the course, students will able to:

CO1: Recollect the ancient Indian rich heritage through philosophy, science, spirituality and health.
CO2: Explain wisdom and moral framework to shape management skills , interpersonal and social interaction patterns required in every step of life's journey.
CO3: Develop collaborative learning to solve socio economical and Environmental problems.

Course Contents

UNIT-I	Introduction to Indian Knowledge Systems and Vedic Corpus	5 Hours

Overview of Indian Knowledge system with Ancient Indian Knowledge in Action. Shrutis with synopsis of Vedas. Message in Vedas. Application of concept in Vedas. Glimpses of Upanishads. Message of Upanishads.

UNIT-II	Wisdom through Smrutis and Foundation of Indian Education	6 Hours

Classification of Indian philosophy with Unique features. Science based knowledge from Darshanas. Wisdom through Ages, Glimpses of Kautilyas Arthashastra (Mind map on Statecraft, leadership and ethics, and Governance. for better management), Management Principles from Mahabharata. Indigenous Indian Education System overview.

UNIT-III	Health wellness and Psychology	5 Hours

Introduction wellness through Indian medical system, Glimpses of Yoga Shastra, Mind body consciousness complex. Ancient Indian approach to psychology, Contributions of Yoga to the world.

UNIT-IV	Foundational concepts for Science, Engineering and Technology through (IKS)	6 Hours

Ancient Indian Mathematics and its contribution to the world. Introduction to mathematics (number system). Binary Mathematics and Geometry.Metallurgy (Iron and steel in India and alloys). Mining and ore extraction.Surgical instruments and ship building. The great Indian Architecture and

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irrigation systems	
Guidelines for Assessment	
Assessment is a continuous assessment based on submission of the assignments, timely completion, attendance and understanding.	
List of Assignments	
1	Participation in class discussions and activities
2	Weekly quizzes to assess understanding of concepts
3	Theme based poster presentation exploring a specific aspect of Indian knowledge systems
4	Case Studies from ancient Indian knowledge and Foundational aspects of Ashtanga yoga

Text Books:

T1: An Introduction to Indian Knowledge Systems: Concepts and Applications, B Mahadevan, V R Bhat, and Nagendra Pavana R N; 2022 (Prentice Hall of India).

T2: Indian Knowledge Systems: Vol I and II, Kapil Kapoor and A K Singh; 2005 (D.K. Print World Ltd).

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F.Y. B CA
AcademicYear–2024-2025 Semester-II
[BCA241201T]: Programming in C++

TeachingScheme: TH:-Hours/Week :03	Credit TH: 03	ExaminationScheme: In Sem.Evaluation : 20Marks Mid Sem.Exam : 30Marks End Sem.Exam : 50 Marks Total : 100 Marks

Course Prerequisites:Core JAVA

Course Objective:

1. Students will be able to understand the concepts of OOProgramming and handle program for the same.
2. To develop programming skill and to solve engineering related problems using Object Oriented Programming Concepts.

Course Outcome:

After successful completion of the course,students will able to:

CO1: Understanding the concepts of C++.
CO2: Implementing the concept of classes and object to various real-world scenario**.**
CO3: Understand & Apply of the concept of Polymorphism**.**
CO4: Understand & Apply of the concept of Inheritance.
CO5: Implementation, use of file streams and exception handling.

Course Contents

UNIT-I	Introduction to OOPs	06 Hours

OOP's paradigm, evolution of programming language, Introduction to Object Oriented Programming: Object and Classes, Features of Object Oriented Programming, Data abstraction and encapsulation, Inheritance, Polymorphism, Dynamic Binding, Resilience to change, Reusability of Code, Modularity of Code, Data Types in C++, Operator and Expression Decision making and Branching Statement strings representation, string manipulation.

UNIT-II	**Programming Basics**	06 Hours

Modular programming: Classes, Object and Methods: Class Fundamentals, Declaring and Creating object, Accessing class, members and methods. Subclasses, scope of the function. Object initialization and Clean up: Constructor, parameterized Constructor, Constructor Overloading, Destructors order of construction and destruction, Static Member with constructors and destructors.

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UNIT-III	Polymorphism	08 Hours
Introduction, overloadable operators, unary operator overloading, operator keyword, binary operator overloading, concatenation of strings, comparison operator, assignment operator overloading, overloading of new and delete data conversion. Virtual Functions: Need for virtual functions, pointer to derived class objects, abstract classes, dynamic binding, virtual destructor, friend function		
UNIT-IV	**Inheritance**	**08Hours**
Inheritance: Defining a subclass, forms of inheritance, inheritance and member accessibility, constructor and destructor in derived class, overloaded member functions, Multilevel inheritance, Multiple Inheritance, Hybrid Inheritance, Hierarchical inheritance.		
UNIT-V	**File I/O Streams and Exception handling**	**07Hours**
Files: Stream Classes, Character Stream, Byte Stream, Using Stream I/O, Serialization Exception handling: Exception Handling Fundamentals, The try Block, the catch Exception Handler The try/throw/catch sequence, Uncaught Exception		

LabContents

GuidelinesforAssessment

Continuous assessment of laboratory work is done based on overall performance and Laboratory assignments performance of student. Each Laboratory assignment assessment will assign grade/marks based on parameters with appropriate weightage. Suggested parameters for overall assessment as well aseachLaboratoryassignmentassessmentinclude-timelycompletion,performance,innovation, efficient codes,punctualityand neatness.

ListofLaboratoryAssignments/Experiments(minimum--tobecovered)

1	Fundamental Programming with Classes, Object and Methods using C++
2	Programming with Object initialization .
3	Programming for polymorphism concepts.
4	Implementation of virtual function, friend function
5	Demonstration of Inheritance concepts.
6	Use of input output streams using file handling.
7	Programs on exception handling.

TextBooks:

T1. Object-Oriented Programming with C++, E. Balaguruswamy Tata McGraw Hill 4th Edition 2002.

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ReferenceBooks:

R1. Mastering, C++, T. Rajkumar, K.R Venugopal, T Ravikumar Tata McGraw Hill 1st Edition 2012.
R2. C++ Complete Reference, Herbert Schildt, Tata McGraw Hill, 4th Edition 2003.
R3. C++ and Object-Oriented Programming Paradigm, Debasish Jana, PHI, 3rd Edition, 2005

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F.Y. B CA
AcademicYear–2024-2025 Semester-II
[BCA241201L]: Programming in C++

TeachingScheme: LAB:-Hours / Week: 04	Credit: Lab: 02	ExaminationScheme: ISCE : 60 Marks ESE : 40 Marks Total : 100 Marks

Course Prerequisites: Basic knowledge of computer operations and understanding of fundamental programming concepts especially C Programming.

Course Objective:

1. To acquire an understanding of basic object-oriented concepts and the issues involved in effective class design.
2. To enable students to understand and implement object oriented concepts along with constructors, destructors, operator overloading, exception handling and file handling in C++ programs

Course Outcome:

After successful completion of the course, students will able to:
CO1: Demonstrate an understanding of the principles and concepts of Object-Oriented Programming
CO2: Apply C++ programming skills to create well-structured programs involving functions, data members, and member functions.
CO3: Design and implement constructors, destructors, and operator overloading to manage memory and operations efficiently.
CO4: Utilize inheritance and polymorphism to create programs with dynamic behavior.
CO5: Implement exception handling and file operations to build robust and user-friendly applications

Lab Contents

Guidelines for Assessment

Continuous assessment of laboratory work is done based on overall performance and Laboratory assignments performance of student. Each Laboratory assignment assessment will assign grade/marks based on parameters with appropriate weightage. Suggested parameters for overall assessment as well as each Laboratory assignment assessment include- timely completion, performance, innovation, efficient codes, punctuality and neatness.

List of Laboratory Assignments/Experiments (to be covered)

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1.	Write and execute a simple CPP programs to demonstrate the structure of a CPP program.
2.	Develop simple programs to understand the use of manipulators in CPP.
3.	Writing program to simple input and output operations using CPP style of coding.
4.	Implement the programs based on reference variable and scope resolution operator
5.	Programs based on inline functions to understand its features.
6.	Program on function with default arguments.
7.	Fundamental Programming with Classes, Object and Methods using C++
8.	Programming with Object initialization and Clean up
9.	Programs based upon friend function
10.	Demonstrating difference between instance and class variables using static keyword
11.	Programs exhibiting the working of polymorphism using function overloading
12.	Programs exhibiting the working of polymorphism using operator overloading
13.	Demonstration of Inheritance concepts.
14.	Programs based on abstract class using virtual and pure virtual function
15.	Implementing the concept of runtime polymorphism (Function Overriding)
16.	Use of input output streams using file handling.
17.	Working on binary file handling
18.	Program to demonstrate the working of exception handling mechanism

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Academic Year – 2024-2025 Semester - II
[BCA241202T]: Advance Database Management System

Teaching Scheme:	Credit	Examination Scheme:
TH: - Hours/Week : 03	TH: 3	In Sem. Evaluation : 20 Marks Mid Sem. Exam : 30 Marks End Sem. Exam : 50 Marks Total : 100 Marks

Course Objective:

1. Creation of Database and functions of Database Management System.

2. Database models, SQL and database operations, this creates a strong foundation for application database design.

3. Making aware of current databases used in industry**.**

Course Outcome:

After successful completion of the course, students will able to:

CO1. Understand database concepts, applications, data models, schemas and instances.
CO2. Implement the relational database design and data modelling using entity-relationship (ER) model.
CO3. Use of SQL in querying the database.
CO4. Learn the concept of transaction processing, protocol
CO5. Learn the new emerging Technologies and Applications in database**..**

Course Contents

UNIT-I	Database Design	5 Hours

Database Design:- Database Tables and Normalization – The Need for Normalization – The Normalization Process: Inference Rules for Functional Dependencies (proof not needed) - Minimal set of Functional Dependencies - Conversion to First Normal Form, Conversion to Second Normal Form, Conversion to Third Normal Form - Improving the Design - Surrogate Key Considerations - Higher Level Normal Forms: Boyce/Codd Normal Form, Fourth Normal Form, Join dependencies and Fifth Normal Form – Normalization and Database Design.

UNIT-II	Data Storage and Querying	8 Hours

Data Storage and Querying:- RAID – File Organization – Organization of Records in Files – Indexing and Hashing: Basic concept, Ordered Indices, B+ tree Index Files: Structure of a B+- Tree (structure only, algorithms not needed) - B tree index files – Static Hashing – Dynamic Hashing – Query Processing: Overview - Selection Operation.

UNIT-III	Advance SQL	8 Hours

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Introduction ,Objectives ,Basics Concepts of SQL ,History of SQL, The Form of a basic SQL Query ,SQL Statements , Data Manipulation Language (DML) ,Viewing the Structure of a Table , SQL SELECT Statements, Using SQL for Web Site ,SQL SYNTAX ,The SQL SELECT Statement , INSERT statement, UPDATE statement ,Joining tables ,Arithmetic Operations ,Operator Precedence.		
UNIT-IV	**Transaction Processing**	**5 Hours**
Transaction processing and Error recovery - Concepts of transaction processing, ACID properties, concurrency control, Serializability, locking based protocols, Timestamp based protocols, recovery and logging methods.		
UNIT-V	**Distributed Database**	**4 Hours**
What is Distributed Database System? Types of Distributed Database Systems. Advantages and Disadvantages of Distributed Databases. Components of Distributed Database Systems .Current Trends in Distributed Databases.		

Lab Contents

GuidelinesforAssessment

Continuous assessment of laboratory work is done based on overall performance and Laboratory assignments performance of student. Each Laboratory assignment assessment will assign grade/marks based on parameters with appropriate weightage. Suggested parameters for overall assessment as well as each Laboratory assignment assessment include- timely completion, performance, innovation,efficient codes, punctuality and neatness.

List of Laboratory Assignments/Experiments (minimum -- to be covered)

1	Introduction to graphs based query language using neo4j, implementation of graph queries.
2	MySQL database - creation and manipulation.
3	Creation of ER model.
4	Implement the database using MySQL and manipulate tables.
5	Converting the ER model to schema diagram.
6	Implement the front end pages.

Text Books:

T1. Data mining and knowledge discovery handbook, Second edition , Springer, ODED MAIMON, LIOR ROKACH

T2. Data Mining Introductory and advanced topics- Margaret Dunham, Prentice Hall

Reference Books:

R1. Alexis Leon, Mathews Leon, (leon press), Database Management System.

R2. AviSilberschatz, Henry F. Korth, S. Sudarshan, Database System Concepts, Sixth Edition

R3. Data Ware housing: Concepts, Techniques, Products and Applications, C.S.R. Prabhu, Prentice Hallof India, 2001

R4. Vikram Vaswani , MySQL™ : The complete reference

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F. Y. - BCA
Academic Year – 2024-2025 Semester - II
[BCA241202L]: Advance Database Management System

Teaching Scheme: LAB:-Hours / Week: 04	Credit: Lab: 02	Examination Scheme: ISCE : 60 Marks ESE : 40 Marks Total : 100 Marks

Course Objective:

1. Creation of database .
2. To explore the relational database and implement CRUD Operation using SQL.
3. To gain a knowledge of No-SQL databases.
4. To enhance schema design skills .
5. To gain knowledge of object oriented database

Course Outcome:

After successful completion of the course, students will able to:

CO1 Apply Demonstrate Basics of database concepts.

CO2 Apply Demonstrate CRUD Operation using SQL.

CO3 Apply Demonstrate database concepts using MYSQL .

CO4 Apply Demonstrate database concepts using Neo4j

CO5 Apply Demonstrate Object oriented database concepts

Lab Contents

Guidelines for Assessment

Continuous assessment of laboratory work is done based on overall performance and Laboratory assignments performance of student. Each Laboratory assignment assessment will assign grade/marks based on parameters with appropriate weightage. Suggested parameters for overall assessment as well as each Laboratory assignment assessment include- timely completion, performance, innovation, efficient codes, punctuality and neatness.

List of Laboratory Assignments/Experiments (to be covered)

1.	Introduction to SQL – DDL, DML, DTL basic data types..
2.	Create Database, select database, Drop database

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3.	Create Table, Drop table, Insert Query, Select Query.
4.	Operators, Expressions, where clause, AND & OR clauses.
5.	Update Query/Delete Query, Like clause, Limit Clause.
6.	Order By, Group By, With Clause, Having Clause, Distinct keyword.
7.	Constraints, Joins, Union Clause, NULL Clause, Alias Syntax
8.	Alter Command, Truncate Table, Transactions Locks, Sub Queries, Auto increment, Priviliges
9.	Functions : Date & Time, String, Functions, Aggregate Functions.
10.	Synonym: Introduction , Create, Synonym as alias for table & view, drop
11.	Sequence: Introduction , alter sequence, drop
12.	View: Introduction, types, alter, drop
13.	Index: Introduction, types, alter, drop.
14.	Queries, Sub Queries and nested queries. Basic operations on open source NoSQL database
15.	Primary introduction to DBA- User create, alter user, Grant, Revoke
16.	Introduction to graphs based query language using neo4j, implementation of graph queries
17.	MySQL database - creation and manipulation.
18.	Creation of ER model.
19.	Implement the database using MySQL and manipulate tables
20.	Converting the ER model to schema diagram
21.	Object oriented database and queries

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AcademicYear–2024-2025 Semester-II

[BCA241203T]: Mathematics I

Teaching Scheme:	Credit	ExaminationScheme:
TH:-Hours/Week:03	TH: 03	In Sem. Evaluation: 20 Marks MidSem.Exam :30 Marks EndSem.Exam :50 Marks Total : 100 Marks

Course Objective:

1. The understand mathematical concepts.
2. To implement concepts of mathematics in computer applications.
3. To understand the data and information representation using Mathematical
4. To understand analysis of problem statements for problem solving using Mathematical .

Course Outcome:

After successful completion of the course,students will able to:
CO1: Provide a basic understanding of fundamental mathematical concepts such as sets, functions, matrix algebra, and discrete mathematics.
CO2: This course enables the students to use mathematical models and techniques to analyze and understand problems in computer science.
CO3: This course demonstrates how the mathematical principles give succinct abstraction of computer science problems and help them to efficiently analyze.

CourseContents

UNIT-I	Set Theory and Logic	06 Hours

Sets– Set Theory, Need for Sets, Representation of Sets, Set Operations, cardinality of set, Types of Sets – Bounded and Unbounded Sets, Countable and Uncountable Sets, Finite and Infinite Sets, Countably Infinite and Uncountably Infinite Sets, power set, Propositional Logic- logic, Propositional Equivalences, Application of Propositional LogicTranslating English Sentences, Proof by Mathematical Induction and Strong Mathematical Induction.

UNIT-II	Relations and Counting	06 Hours

Relations: Properties, n-ary Relations and Applications, Representing Relations , Closures of Relations, Equivalence Relations, Partial Orderings, partitions, Hasse Diagram, Lattices, Chains and Anti-Chains, Transitive Closure and Warshall's Algorithm

Counting - The Basics of Counting, rule of Sum and Product, Permutations and Combinations, Binomial Coefficients and Identities, Generalized Permutations and Combinations, The Pigeonhole Principle.

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UNIT-III	Functions	06 Hours
Functions, properties of functions (domain, range), composition of functions, surjective (onto), injective (one-to-one) and bijective functions, inverse of functions. Some useful functions for Computer Science: Exponential and Logarithmic functions, Polynomial functions, Ceiling and Floor functions.		
UNIT-IV	**Elementary Graph Theory**	**06 Hours**
Basic terminologies of graphs, connected and disconnected graphs, subgraph, paths and cycles, complete graphs, digraphs, weighted graphs, Euler and Hamiltonian graphs. Trees, properties of trees, concept of spanning tree. Planar graphs. Definitions and basic results on the topics mentioned		
UNIT-V	**Matrix Algebra**	**10 Hours**
Types of matrices, algebra of matrices–addition, subtraction, and multiplication of matrices, determinant of a matrix, symmetric and skew-symmetric matrices, orthogonal matrix, rank of a matrix, inverse of a matrix, applications of matrices to solve system of linear equations, Eigen values and Eigen vectors, Caley-Hamilton theorem.		

TextBooks:

T1. Kenneth H. Rosen, Discrete Mathematics And Its Applications, Tata Mcgraw-Hill, Isbn 978-0-07-288008-3, 7th Edition.

T2. C L Liu, "Elements Of Discrete Mathematics", Tata Mcgraw-Hill, Isbn 10:0-07-066913-9..

ReferenceBooks:

R1. Trivedi, K.S., " Probability, Statistics, Design Of Experiments And Queuing Theory, With Applications Of Computer Science", Prentice Hall Of India, New Delhi

R2. C L Liu, "Elements Of Discrete Mathematics", Tata Mcgraw-Hill, Isbn 10:0-07-066913-9.

R3. . Kulkarni, M.B., Ghatpande, S.B. And Gore, S.D., "Common Statistical Tests" Satyajeet Prakashan, Pune

R4.. J.N. Kapur And H.C. Saxena, "Mathematical Statistics", S. Chand Publications, 20th Ed.

R5. John P. D'angelo & Douglas B. West, "Mathematical Thinking–Problem Solving And Proofs" Prentice Hall, 2nd Ed..

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Academic Year 2024-2025 Semester - II

[BCA241204T]: Computer Network

Teaching Scheme:	Credit	Examination Scheme:
TH:-03Hours/Week	TH:03	ISCE : 20Marks Mid Sem. Exam : 30 Marks End Sem. Exam : 50 Marks Total : 100 Marks

Course Objective:

1. To get familiar with basics of networking concepts, functions of various layers in networking architecture.
2. To know the basics of transmission techniques and media used in networking environments
1. To Understand the components used in networking and different protocols
2. It explains about DNS and network management protocols.
3. To acquire the knowledge about network security

Course Outcome:

After successful completion of the course, students will able to:

CO1: Gain the basic knowledge of transmission media, modes, network topologies and working of various layers in ISO/OSI, TCP/IP reference model.
CO2: Describes/summarizes different switching techniques & Data Transmission Media.
CO3: Obtain knowledge about wired and wireless LAN.
CO4: Obtain the skills of sub-netting and TCP & UDP.
CO5: Describes various network security mechanism & application protocol standards.

Course Contents

UNIT-I	Introduction	6 Hours

Network as an infrastructure for data communication, Applications of Computer network, Network Architecture, Types of computer Networks, Protocols and Standards, The OSI Reference Model, The TCP/IP Protocol Suite, Comparison between OSI and TCP/IP Reference model.

UNIT-II	The Physical Layer	6 Hours

Functions of Physical Layer, Data and Signals: Analog and Digital signals, Transmission Impairment, Data Rate Limits, Performance, Data Transmission Media: Guided Media, Unguided Media and Satellites, Bandwidth Utilization: Multiplexing and Spreading, Switching: Circuit switching, Message switching & Packet Switching, Telephone, Mobile and Cable network for data Communication.

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UNIT-III	The Data Link Layer	6 Hours
Functions of Data Link Layer, Data Link Control: Framing, Flow and Error Control, Error Detection and Correction, High-Level Data Link Control(HDLC) & Point - to – Point protocol(PPP), Wired LAN: Ethernet Standards and FDDI, Wireless LAN : IEEE 802.11x and Bluetooth Standards, Token Bus,Token Ring and Virtual LAN		
UNIT-IV	**Network Layer & Transport Layer**	**8Hours**
Functions of Network Layer, Virtual circuits and Datagram Subnets, IPv4 Addresses: Address Space, Notations, Classful addressing, Classless addressing, Subnetting and Network Address Translation(NAT), IPv4 Datagram format and fragmentation, IPv6 Address Structure and advantages over IPv4. Functions of Transport Layer, Elements of Transport Protocols: Addressing, Establishing and Releasing Connection, Flow Control & Buffering, Error Control, Multiplexing & Demultiplexing, Crash Recovery, User Datagram Protocol(UDP):User Datagram, UDP Operations, Uses of UDP, RPC, Transmission Control Protocol(TCP): TCP Services, TCP Features, TCP Segment Header.		
UNIT-V	**Application Layer & Network Security**	**8Hours**
Functions of Application layer, Application Layer Protocols: DNS, DHCP, WWW, HTTP, HTTPs, TELNET, FTP, SMTP, POP, IMAP. A Model for Network Security, Principles of cryptography: Symmetric Key and Public Key, Digital Signature.		

Reference Books:

R1. Computer Networks by Andrew S. Tanenbaum 4ed
R2. Data Communication and Networking by Behroz A. Forouzan, TMH, 4 ed.
R3. Cryptography and Network Security by Atual Kahate, TMH 2 ed.
R4. Cryptography and Network Security by William Stalling
R5. Computer Networks and Internets with Internet Applications by Douglas E. Comer
R6. Data and Computer Communication by William Stallings 9 ed., Pearson Education, 2007
R7. Network Security by Ankit Fadia

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AcademicYear 2024-2025 Semester-II

[BCA241205T]: Operating System

Teaching Scheme: TH: -Hours/Week : 03	Credit TH: 03	Examination Scheme: InSem. Evaluation: 20Marks Mid Sem. Exam : 30 Marks End Sem. Exam : 50 Marks Total : 100 Marks

Course Objective:

1. To Learn and understand the fundamentals of Operating Systems.
2. To Learn principles of modern operating systems

Course Outcome:

After successful completion of the course, students will able to:

CO1:Basic knowledge of operating system and Concept of Process and process scheduling.
CO2: Implement disk scheduling, memory management, CPU Scheduling.
CO3: Explain the file structure, file system, directory system.
CO4: Identify system Parameter, used to evaluate system performance.
CO5: Storage structure and secondary data storage management and concepts.
CO6: Overall computer system functioning by Operating system.

Course Contents

UNIT-I	Basics of Operating Systems	06 Hours

Introduction: Basics of Operating Systems: Definition – Generations of Operating systems – Types of Operating Systems, Batch, multiprocessing, multitasking, timesharing, OS Service, System Calls, OS structure: Layered, Monolithic, Microkernel Operating Systems – Concept of Virtual Machine, concept OS Design, BASH Shell scripting: Basic shell commands, shell as a scripting language. Concept of Open source operating systems with examples e.g. Linux, Android

UNIT-II	Process Management & CPU Scheduling	06 Hours

Processes: Definition, Process Relationship Process states, Process State transitions, Process Control Block, Context switching, Process scheduling, Inter-process Communication: Inter-process Communication, IPC types, IPC in Client-Server, RTOS.CPU Scheduling: Definition, Scheduling objectives, Types of Schedulers, Scheduling criteria: CPU utilization, Throughput, Turnaround Time, Waiting Time, Response Time (Definition only) , Scheduling algorithms : Preemptive and Non-preemptive , FCFS – SJF – RR

UNIT-III	Process Synchronization And Deadlock	08 Hours

Synchronization concept , Synchronization Requirement Critical Section Problem & Solutions(only Semaphore and Monitors) Deadlock concepts Deadlock prevention & avoidance with single instance and multiple instances of resources ,Deadlock Detection with single instance and multiple ,instances of resources ,Numerical exercise based on Deadlock ,Deadlock Recovery.

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UNIT-IV	Memory Management	8 Hours
Basic Memory Management: Definition, Logical and Physical address map, Memory allocation: Contiguous Memory allocation – Fixed and variable partition – Internal and External fragmentation and Compaction, Paging: Principle of operation – Page allocation – Hardware support for paging, Protection and sharing – Disadvantages of paging. Virtual Memory: Basics of Virtual Memory – Hardware and control structures – Locality of reference, Page fault, Working Set, Dirty page/Dirty bit – Demand paging (Concepts only)		
UNIT-V	**I/O Management & Secondary Storage**	**6 Hours**
Principles of I/O Hardware: I/O devices, Device controllers, Direct memory access Principles of I/O Software: Goals of Interrupt handlers , Device drivers , Device independent I/O software , Secondary-Storage Structure: Disk structure ,concept of Disk scheduling algorithm.		

Text Books:

T1. Operating System Principles (7th International Edition)Peter Baer Galvin, Greg Gagne Abraham Silverschatz

T2. Operating Systems : Design and Implementation - Andrew S. Tanenbaum

Reference Books:

R1. Operating System : Achyut Godbole,TMH,2ndEd
R2. Operating System : Galvin,Wiley,8th Ed.
R3. System Programming & OS : D.M. Dhamdhere, TMH,2ndEd
R4. Red Hat Bible Core Fedora Linux : Christopher Negus (Wiley Pub.)
R5. Operating System : Andrew Tanenbaum, PHI,3rd Ed.
R6. Operating Systems: Internals and design Principles, W. Stallings, Pearson Ed., LPE, 6th Ed.

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F.Y. BCA
Academic Year – 2024-2025 Semester-II
[BCAAE241102]: Environmental Studies I

Teaching Scheme: Lab:-Hours/Week:02	Credit TH: 01	ExaminationScheme: TW: 50 Marks Total : 50 Marks

CourseObjective:

1. This course aims to familiarize students with basic environmental concepts, their relevance to business operations, and forthcoming sustainability challenges.
2. This course will equip students to make decisions that consider environmental consequences.
3. This course will enable future business graduates to become environmentally sensitive and responsible managers

CourseOutcome:

After successful completion of the course, students will able to:

CO1: Explore the basic environmental concepts and issues relevant to the business and management field.
CO2. Recognize the interdependence between environmental processes and socio-economic dynamics.
CO3. Determine the role of business decisions, policies, and actions in minimizing environmental degradation.
CO4. Identify possible solutions to curb environmental problems caused by managerial actions.
CO5. Develop skills to address immediate environmental concerns through changes in business operations, policies, and decisions.

Course Contents

UNIT-I	Introduction to environmental Studies	4 Hours
Multidisciplinary nature of environmental studies; Scope and importance, Concept of sustainability and sustainable development.		
UNIT-II	**Ecosystems**	**8 Hours**
What is an ecosystem?, Energy flow in an ecosystem: food chains, food webs and ecological succession. Case studies of the following ecosystems , Forest ecosystem , Grassland ecosystem , Desert ecosystem , Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries		
UNIT-III	**Natural Resources : Renewable and Non-renewable Resources**	**10 Hours**
Land resources and land use change; Land degradation, soil erosion and desertification. Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations. Water: Use and over-exploitation of surface and ground water, floods, droughts conflicts overwater (international & inter-state). Energy resources : Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies		
UNIT-IV	**Biodiversity and Conservation**	**10 Hours**

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Levels of biological diversity: genetic, species and ecosystem diversity; Biogeographic zones of India; Biodiversity patterns and global biodiversity hot spots . India as a mega-biodiversity nation; Endangered and endemic species of India , Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.Ecosystem and biodiversity services : Ecological, economic, social, ethical, aesthetic and informational value
TextBooks: T1. Environmental Science- Bharti Public T2. Introduction to Environmental Science- G. Tyler Miller, Scott Spool man. T3. A Text Book Of Environmental Science by P. C. J
ReferenceBooks: R1. Carson, R. 2002. Silent Spring. Houghton Mifflin Harcourt. R2. Gleeson, B. and Low, N. (eds.) 1999. Global Ethics and Environment, London, Routledge R3. Odum, E.P., Odum, H.T. & Andrews. 1971. Fundamentals of Ecology. Philadelphia: Saunders

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AcademicYear 2024-2025 Semester-II

[BCAVA241102]: Advance English

Teaching Scheme:	Credit	Examination Scheme:
Lab:-2 Hours/Week	TH:01	TW : 50 Marks Total : 50 Marks

Course Objective:

Students should be able to understand

1. Understand the role of communication in personal & professional success.
2. Develop awareness of appropriate communication strategies.
3. To enhance the verbal communication of students.
4. To focus on Formal and Informal Conversation, etiquettes.
5. Ethically use, document and integrate sources.
6. Practice critical thinking to develop innovative and well-founded perspectives related to theStudent's emphases.
7. Use technology to communicate effectively in various settings and contexts.
8. Demonstrate appropriate and professional ethical behavior.

CourseOutcome:

On completion of the course, student will be able to–

CO1: Understand and apply effective communication methods and Listening skills.
CO2: Display competence in oral, written, and visual communication.
CO3: Respond to industry professionals and recruiters and effectively answer interview questions,and clearly understand what to do before, during and after an interview.
CO4: Demonstrate positive group communication exchanges.
CO5: Display competence in written communication and use current technology related to the communication field
CO6: Respond effectively to cultural communication differences and communicate ethically

CourseContents

UNIT-I	Communication Skills	4 Hours

Communication: Meaning, Nature, Importance and Purpose of Communication, Types of Communication, Process of Communication, Communication Network in an Organization, Strategy for Effective Communication, Verbal and Non-Verbal Communication, Barriers to Communication, Essentials of Good Communication, Communication Techniques.

UNIT-II	Body Language	10 Hours

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Body Language : 1.Communicating with Your Body-Interpret a New Language, The Power of Para verbal Communication, Bodies Speak Louder than Words 2.How to Read Body Language- Head Movement, Translate Gestures into Words, Open vs. Closed Body Language, Watch Eye Movement 3.Body Language Assumptions-Common Postures, Personal Space Invasion, Reactive Movements, Fidgeting and Boredom 4.Male vs. Female Variations- Facial Expressions by Gender, Personal Space Differences, Common Female Body Language, Common Male Body Language 5.Nonverbal Signals- Gestures and Hand Signals, Sending Signals to Others, It's ,Not What You Say, It's How You Stand, What is Your Posture Communicating? 6. Facial Expressions- Emotions Displayed, Micro-Expressions, Facial Action Coding System (FACS), Universal Facial Expressions 7. Body Language in the Workplace-Communicate with Power, Cultural Differences, Building Rapport and Trust, Using Mirroring.

UNIT-III	Interview and Presentation skills	8 Hours

Interview Skills: Preparing for the Job Interview: Importance and Factors Involving Job Interview; Characteristics of Job Interview; Job Interview Process, How you should prepare for a job interview, find out about companies, overcome nerves, decide which clothes to wear, vocabulary about your hard and soft skills, and answering questions using the STAR technique, Job Interview Techniques-Mannersand etiquettes to be maintained during an interview.
Presentation Skills: Preparing a PowerPoint Presentation, Greeting and introducing, Presenting a Paper, Group Discussions. Preparing for and Facing a Job Interview.

UNIT-IV	Group Discussion Preparation	10 Hours

GD Introduction: What is a Group Discussion?, Who holds a Group Discussion?, How is a GD Conducted? Why is a "GD" conducted?, Why GD is important?,GD: Approach(Carefully craft the opening gambit, Use Key Word Approach, Apply Shock Strategy GD: Do's and Don'ts, GD: Communications, Types of GD topics: Techniques, GD: Ettiquette, GD: Content Discuss Solved Case Studies and Conduct GD in Class on different topics, Experience sharing by Industry people &Alumni.

List of Laboratory Assignments/Experiments (to be covered)

1.	Understanding and implementation of effective communication and Listening skills
2.	Implementation in oral, written, and visual communication
3.	Implementation of Interview skills
4.	Group communication exchanges
5.	Written communication and use current technology related to the communication field

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6.	Implementation effectively to cultural communication differences and communicate ethically

Reference Books:

R1: Communicating at work: Strategies for success in business and the professions: Adler, Elmhorst, & Lucas (2013). NE: McGraw Hill.
R2: The Definitive Book of Body Language Allan Pease
R3: The Art of Public Speaking by Dale Carnegie
R4: On Writing Well: The Classic Guide to Writing Nonfiction by William Zinsser
R5: Five Stars: The Communication Secrets to Get from Good to Great (Hardcover) by Carmine Gallo

Weblinks:

W1: www.google.com
W2: www.citehr.com

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