RCC INSTITUTE OF INFORMATION TECHNOLOGY (NON-AICTE)
CANAL SOUTH ROAD, BELIAGHATA, KOLKATA – 700 015
(AFFILIATED TO MAKAUT, WB)

Model curriculum structure for 4 year UG programs for BCA

Sem	Major (Offline)	Minor (Blended Mode) (Management)	Multi Disciplinary (Offline)	Ability Enhancement (Offline)	Skill Enhancement (Online /Sessional)	Common Value added Course (SESSIONAL)	Total credits
I	(2 sub x 5 credits) Prog. for Problem Solving using C (3L + 2 P) Digital Electronics (3 L + 2 P)	(1 sub x 3 credits) Principles of Management	Basic Mathematics (3 credits)	General English (2 credits)	IT skills (2 credits)	Yoga/ Sports / Community Services (2 credits)	22
II	(2 sub x 5 credits) Computer Architecture (3L + 2P) Data Structure through C (3L + 2P)	(1 sub x 3 credits) Organization Behaviour	Applications of Multimedia (3 credits)	Technical & Professional Communication (2 credits)	Design Thinking (2 credits)	Environmental Studies/ NSS (2 credits)	22
III	(2 sub x 5 credits) Oops with Java (3L + 2P) Basics of Web Design Using Html, Css, Javascript (3L + 2P)	(1 sub x 4 credits) Principles of Marketing	Business System Analysis (3 credits)	The Indian Constitution (2 credits)	Soft Skill & Personality Development (2 credits)		21

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Sem	Major (Offline)	Minor (Blended Mode) (Management)	Multi Disciplinary (Offline)	Ability Enhancement (Offline)	Skill Enhancement (Online /Sessional)	Common Value added Course (SESSIONAL)	Total credits
IV	(2 sub x 5 credits) (1 sub x 4 credits) DBMS (3L + 2P) Operating System (3L + 1T) Python Programming (3L + 2P)	Human resource management (4 credits)		Society Culture and Human Behavior / Universal Human Values (UHV) (2 credits)			20
V	(2 sub x 5 credits) (1 sub x 4 credits) Php with Mysql (3L + 2P) Advanced DBMS (3L + 2P) Software Engg (3L + 1 T)	Operation Research (4 credits)			Internship to be started after exam of 4th sem (sem break) and completed within 5th sem (weekends) (4 credits)		22
VI	(2 sub x 5 credits) (2 sub x 4 credits) Introduction to AI & ML (3L + 2P) Unix And Shell Programming (3L + 2P) Data Communication and Networking (3L + 1T) Computer Graphics (3L + 1T)	Entrepreneurship (4 credits)					22

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Sem	Major (Offline)	Minor (Blended Mode) (Management)	Multi Disciplinary (Offline)	Ability Enhancement (Offline)	Skill Enhancement (Online /Sessional)	Common Value added Course (SESSIONAL)	Total credits
VII	2 sub x 5 credits 2 sub x 4 credits Data Mining & Data Warehousing (3L + 2P)/ Pattern Recognition (3L + 2P) Cyber Security (3L + 1 T) Introduction to Big Data Analysis (3L + 1T) Research Methodology (3L + 2P)				Project Management (4 credits)		22
VIII	1 sub x 5 credits Block Chain Technology (3L + 2P) / Cloud Computing (3L + 2P)				Research project 12 credits		17
	21 sub – 99 credits	**6 sub – 22 credits**	**3 sub – 09 credits**	**4 sub – 08 credits**	**3 sub & Int & Proj – 26 credits**	**2 sub – 4 credits**	**168**

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Note:

Normally all 5 credit courses will be either theory (3) + practical (2) [100+100 marks] or theory (4) + tutorial (1) [100 marks]

Normally all 4 credit courses will be either theory (3) + tutorial (1) or theory (4) [100 marks]

Normally all 3 credit courses will be theory (3) – Inter disciplinary (5 to 6 baskets) [100 marks]

Normally all 2 credit courses AEC/SEC/CVA would be theory or online course

4th year subjects could be foundation of Master's program (as masters would be of 1 year after 4 years UG)

7/8th semester Major subjects could include Projects in core, if required

100/200/300/400 level should be maintained as per UGC document

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SYLLABUS FOR BACHELOR OF COMPUTER APPLICATIONS (BCA)
2024 – 2025

COURSE	COURSE DETAILS
BCA	BACHELOR OF COMPUTER APPLICATIONS
MIM	MASTER IN MANAGEMENT
MDM	MULTI DISCIPLINARY MATHEMATICS
AEC	ABILITY ENHANCEMENT COURSE
SEC	SECTIONAL ELECTIVE COURSE
VAC	VALUE ADDITION COURSE

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Syllabus of Bachelor of Computer Application (BCA)
2024-2025

L T P - Indicates Theory Lectures (L), Tutorial(T) and Practical (P) classes per week.
1L Earns 1 credits; 1P Earns 0.5 credits; 1T Earns 1 Credit.

SEMESTER I							
Sl. No.	**Category**	**Course Code**	**Course Name**	**L**	**T**	**P**	**Credits**
Theory + Practical							
1	**Major (Offline)**	RCC-BCA101 RCC-BCA191	Programming for Problem Solving using C Programming for Problem Solving using C Lab	3	0	2	5
2		RCC-BCA102 RCC-BCA192	Digital Electronics Digital Electronics Lab	3	0	2	5
3	**Minor (Blended Mode)**	RCC-MIM101A	Principles of Management	3	0	0	3
4	**Multi-Disciplinary (Offline)**	RCC-MDM101	Basic Mathematics	3	0	0	3
5	**Ability Enhancement (Offline)**	RCC-AEC101	General English	2	0	0	2
6	**Skill Enhancement (Online / Sessional)**	RCC-SEC181	IT Skills	2	0	0	2
7	**Common Value-added Course (Sessional)**	RCC-VAC181A/ RCC-VAC181B/ RCC- VAC181C	Yoga/ Sports/ Community Services	0	0	2	2
			Total Credits				**22**

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Syllabus of Bachelor of Computer Application (BCA)
2024-2025

Course Name	Programming for Problem Solving using C	**Course Code**	RCC-BCA101
Semester	1st	**Program Name**	BCA
L:T:P	3:0:0	**Total Hours**	30

Course Pre-requisite: Basic computer knowledge.

Course Outcome (CO)

CO Number	Statement	Knowledge Level
RCC-BCA101.CO1	Recall the basic of computers programming.	Remembering
RCC-BCA101.CO2	Explain the fundamental concepts of C programming, such as decision making, control structures	Understanding
RCC-BCA101.CO3	Implement the concept of functions and arrays using C	Applying
RCC-BCA101.CO4	Implement C programs using pointers to solve computational problems.	Applying
RCC-BCA101.CO5	Analyze C code to detect errors, improvements in program logic or structure.	Analyzing
RCC-BCA101.CO6	Design C code for real life problem	Creating

Detailed Syllabus:

Module #	Contents	Contact Hours	CO Linked
1	**Introduction to Computers** Introduction to C Language-Background, C Programs, Identifiers, Data Types, Variables, Constants, Input/ Output Statements Arithmetic Operators and Expressions: Evaluating Expressions, Type Conversions.	6	CO1
2	**Conditional Control Statements** Relational and Logical Operators, If, If- Else, Switch-Statement and Examples. Loop Control Statements: For, While, DoWhile and Examples. Continue, Break and Go to statements Functions: Function Basics, User-defined Functions, Inter Function Communication, Standard Functions, Methods of Parameter Passing. Recursion-Recursive Functions.	8	CO2, CO3
3	**Arrays and Strings** Preprocessor Commands Arrays - Concepts, Using Arrays in C, Inter-Function Communication, Array Applications, Two-	8	CO3, CO5, CO6

	Dimensional Arrays, Multi-dimensional Arrays Strings - Concepts, C Strings, String Input/Output Functions, Arrays of Strings, String Manipulation Functions.		
4	**Pointers** Pointers for Inter-Function Communication, Pointers to Pointers, Pointer Arithmetic and Arrays, Passing an Array to a Function, Memory Allocation Functions, Array of Pointers, Programming Applications, Pointers to void, Pointers to Functions, Command Line Arguments.	8	CO3, CO4, CO5

Text Books:

T1 The C Programming Language by Brian W. Kernighan and Dennis M. Ritchie, *Prentice Hall Software Series*, *1978 (1st Edition) 1988 (2nd Edition)*

T2 Let Us C by Yashavant Kanetkar, *BPB Publications, 2016*.

Reference Books:

R1 C Programming: A Modern Approach by K.N. King, *W. W. Norton & Company, 2008*.

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Syllabus of Bachelor of Computer Application (BCA)
2024-2025

Course Name	Programming with C Lab	**Course Code**	RCC-BCA191
Semester	1st	**Program Name**	BCA
L:T:P	0:0:2	**Total Hours**	30

Course Pre-requisite:

Course Outcome (CO)

CO Number	Statement	Knowledge Level
RCC-BCA191.CO1	State the C programming syntax, basic commands, and common data structures.	Remembering
RCC-BCA191.CO2	Classify the basic C structures (if-else, loops, functions) work.	Understanding
RCC-BCA191.CO3	Execute different mathematical functions, array programming, string handling	Applying
RCC-BCA191.CO4	Develop analytical thinking for c function, recursion & pointer with C.	Analyzing
RCC-BCA191.CO5	Develop analytical thinking for C Recursion	Analyzing
RCC-BCA191.CO6	Evaluate the knowledge using Pointer in C	Evaluating

Detailed Syllabus:

Module #	Module Name	Experiment Topics	No of Labs Required	CO Linked
1	Input Output Statement using C	1. printf() and scanf() Functions 2. standard I/O functions	1	CO1
2	Operators in C language	Arithmetic, Relational, and Logical Operators	1	CO1
3	Control/Decision-Making Statements	if, if-else, and else-if Statements	1	CO2
4	Control structures	for, while, and do-while Loops	1	CO2
5	Math.h Library	Basic Mathematical Functions (sqrt(), pow(), fabs())	1	CO3
6	Arrays in C	One-Dimensional Arrays: Sum, Average, and Maximum of Elements	1	CO3
7	string.h library	String Operations (strlen(), strcpy(), strcat())	1	CO3
8	Functions	Function Types: void, return, and Parameter Passing	1	CO3, CO4
9	Recursion	Recursion with C	1	CO3, CO4, CO5

10	Pointers in C	Pointer with C	1	CO6

Text Books:

T1 The C Programming Language by Brian W. Kernighan and Dennis M. Ritchie, *Prentice Hall Software Series, 1978 (1st Edition) 1988 (2nd Edition)*

T2 Let Us C by Yashavant Kanetkar, *BPB Publications, 2016*.

Reference Books:

R1 C Primer Plus by Stephen Prata, *Addison-Wesley Publication; 6th Edition, 2013*.

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Syllabus of Bachelor of Computer Application (BCA)
2024-2025

Course Name	Digital Electronics	**Course Code**	RCC-BCA102
Semester	1st	**Program Name**	BCA
L:T:P	3:0:0	**Total Hours**	36

Course Pre-requisite:

Course Outcome (CO)

CO Number	Statement	Knowledge Level
RCC-BCA102.CO1	Recall the basic knowledge of digital electronics circuits and its levels.	Remembering
RCC-BCA102.CO2	Identify the structure of various number systems and its conversation.	Understanding
RCC-BCA102.CO3	Produce the basic requirements for a design application	Applying
RCC-BCA102.CO4	Evaluate various combinational and sequential circuits	Evaluating
RCC-BCA102.CO5	Inspect the logic functions, circuits, truth table and Boolean algebra expression	Analyzing
RCC-BCA102.CO6	Formulate various digital circuits using different types of electronics components.	Creating

Detailed Syllabus:

Module	Contents	Contact Hours	CO Linked
1	**Number Systems & Codes** Binary Number, Decimal Number, Octal Number, Hexadecimal Number, Conversion – Decimal to Binary, Binary to Decimal, Octalto Binary, Binary to Octal, Hexadecimal to Binary, Binary to Hexadecimal, Octal to Binary to Hexadecimal, Hexadecimal to Binary to Octal, Hexadecimal to Decimal, Decimal to Octal, Decimal to Hexadecimal, Octal to Decimal; 1's and 2's Complement, 9's and 10's Complement, Complement Arithmetic, BCD, BCD addition, BCD subtraction, Weighted Binary codes, non-weighted codes.	4	CO1, CO2
2	**Logic Gates** AND, OR, NOT, NAND, NOR, Exclusive–OR, Exclusive –NOR, Mixed logic.	2	CO3, CO6
3	**Boolean Algebra** Boolean Logic Operations, Basic Law of Boolean Algebra, Demorgan's Theorem, Principle of Duality.	4	CO5

4	**Minimization Techniques** Sum of Products, Product of Sums, Karnaugh Map [upto 4 variables].	4	CO3, CO5
5	**Multilevel Gate Network** Implementation of Multilevel Gate Network, Conversion to NAND-NAND and NOR-NOR Gate Networks.	2	CO3, CO6
6	**Arithmetic Circuits** Half Adder, Half Subtractor, Full Adder, Full Subtractor, Carry Look Ahead Adder, 4-Bit Parallel Adder	4	CO3, CO6
7	**Combinational Circuits** Basic 2-input and 4-input multiplexer, Demultiplexer, Encoder, Basic binary decoder, BCD to binary converters, Binary to Gray code converters, gray code to binary converters.	4	CO4, CO6
8	**Sequential Circuits** Latch, SR Flip Flop, D Flip Flop, T Flip Flop, JK Flip Flop, Master Slave Flip Flop	6	CO4, CO6
9	**Basics of Counters** Asynchronous [Ripple or serial] counter, Synchronous [parallel] counter **Basics of Registers** SISO, SIPO, PISO, PIPO, Universal Registers	6	CO5

Text Books:

T1 Digital Design by M. Morris Mano and Michael D.Ciletti, *Publisher: Pearson India Education Services Pvt. Ltd., 2006*.

T2 Digital Fundamentals by Thomas L. Floyd and R. David Maki, *Publisher: Pearson India Education Services Pvt. Ltd., 11th Edition, 2017.*

T3 Digital Electronics: Principles, Devices and Applications by Anil K. Maini, *Publisher: John Wiley & Sons (Asia) Pvt. Ltd., 2007.*

Reference Books:

R1 Digital Electronics: A Practical Approach by William Kleitz, *Pearson India Education Services Pvt. Ltd., 2006.*

R2 Digital Logic Design by Brian Holdsworth and Clive Woods, *Pearson India Education Services Pvt. Ltd., 2006; Version 4.8 printed on April 2018.*

R3 Digital Electronics: Principles and Applications by Roger L. Tokheim, *McGraw-Hill Education (India) Pvt. Ltd., 8th Edition, 2013.*

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Syllabus of Bachelor of Computer Application (BCA)
2024-2025

Course Name	Digital Electronics Lab	**Course Code**	RCC-BCA192
Semester	1st	**Program Name**	BCA
L:T:P	0:0:2	**Total Hours**	36

Course Pre-requisite:

Course Outcome (CO)

CO Number	Statement	Knowledge Level
RCC-BCA192.CO1	Recall the basic knowledge of digital electronics circuits and its levels.	Remembering
RCC-BCA192.CO2	Identify the structure of various IC's.	Understanding
RCC-BCA192.CO3	Produce the basic requirements for a design application	Applying
RCC-BCA192.CO4	Evaluate various combinational circuits	Evaluating
RCC-BCA192.CO5	Evaluate various sequential circuits	Analyzing
RCC-BCA192.CO6	Formulate various digital circuits using different types of electronics components.	Creating

Detailed Syllabus:

Module	Module Name	Experiment Topics	No of Labs Required	CO Linked
1	Introduction	1. Digital trainer kit 2. Breadboard 3. IC's	1	CO1
2	Logic Gates	1. AND Gate 2. OR Gate 3. NOT Gate	2	CO2, CO6
3	Universal Logic Gates	1. NAND Gate 2. NOR Gate	1	CO2, CO6
4	Binary Codes	1. Gray Codes 2. BCD Codes	2	CO3, CO6
5	Sequential Circuit	1. Adder 2. Subtractor 3. Multiplexer 4. Decoder	3	CO4, CO6
6	Combinational Circuits	1. Flip-Flop 2. Counter 3. Register	3	CO5

Text Books:

T1 Fundamentals of Digital Circuits by Anand Kumar, *Publisher: PHI; ISBN-108120352688, ISBN-13978-8120352681, 4th Edition, 2016*.

T2 Digital Design by M. Morris Mano and Michael D. Ciletti, *Pearson India Education Services Pvt. Ltd., 2006.*

Reference Books:

R1 Mastering Digital Electronics, Principle, Devices and Applications- jyoti Sekhar Banerjee, Shovan Nandi, Arpita Chakraborty, ISBN-13: 978-8193894217, *Aryan Publishing House, 1st Edition, 2020.*

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Syllabus of Bachelor of Computer Application (BCA)
2024-2025

Course Name	Principles of Management	**Course Code**	RCC-MIM101
Semester	1st	**Program Name**	BCA
L:T:P	3:0:0	**Total Hours**	36

Course Pre-requisite:

Course Outcome (CO)

CO Number	Statement	Knowledge Level
RCC-MIM101.CO1	Recall the basic knowledge of management, managerial functions, theories	Remembering
RCC-MIM101.CO2	Explain the conceptual knowledge of function of planning with decision making in detail.	Understanding
RCC-MIM101.CO3	Illustrate the concept of organizing for effective functioning of management.	Applying
RCC-MIM101.CO4	Practice the theories of leadership and motivation.	Applying
RCC-MIM101.CO5	Select the techniques Controlling and resistance	Evaluating
RCC-MIM101.CO6	Illustrate the concepts of managerial change and resistance to change	Analyzing

Detailed Syllabus:

Module #	Contents	Contact Hours	CO Linked
1	**Introduction to Management** ● Definition and nature of management, Management as a Science or an Art, Management as a Profession, Difference between Management & Administration, Levels of Management, Significance of Management, Limitations of Management ● Roles and skills of a Manager, Quality of a good Manager, Business Environment (Micro & Macro) ● Evolution of Management Theories ● Functions of management (Planning, Organizing, Staffing, Leading, Controlling)	9	CO1

2	**Planning and Decision Making** ● Definition, Importance and Limitations of planning ● Types of plans (strategic, tactical, operational) ● Steps in planning · ● MBO – Meaning, Process ● Decision Making - Meaning, Steps, Techniques, Significance & Limitations	9	CO2, CO3
3	**Organizing** ● Organizational structure: Determinants and Forms: Formal and Informal Organization, Line, Functional, Line & Staff, Project, Matrix · ● Departmentalization and span of control · ● Authority, responsibility, and delegation ● Centralization and Decentralization	6	CO3, CO4
4	**Motivating and Leading** ● Motivation: Definition, Theories: Maslow's need hierarchy, Alderfer's ERG, Herzberg's Two-Factor Theory, McGregor's Theory X and Theory Y, McClelland's Need Theory· ● Leadership-- definition and styles (Autocratic, Democratic, and Laissez-faire) **Communication** ● Definition, Process of Communication. Verbal & Non-Verbal, Importance & Barriers to communication	7	CO4
5	**Controlling and resistance to management** ● Controlling: Definition, control process ● Types of control (feed forward, feedback) ● Concept of resistance to change ● Overcoming resistance to change	5	CO5, CO6

Text Books:

T1 Essentials of Management, Weihrich and Koontz, et al, *Tata McGraw Hill, 11th Edition, 2020.*
T2 Management, Robbins, S. P, *Prentice Hall, 2005*.

Reference Books:

R1 Management (6e), Stoner James. A., Freeman Edward and Gilbert Daniel, *Pearson, 2018.*
R2 Management-Text & Cases ,V.S.P Rao & Hari Krishna, Excel Books, *ANURAG JAIN 1st Edition 2002.*

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Syllabus of Bachelor of Computer Application (BCA)
2024-2025

Course Name	Basic Mathematics	**Course Code**	RCC-MDM101
Semester	1st	**Program Name**	BCA
L:T:P	3:0:0	**Total Hours**	32

Course Pre-requisite: Basic computer knowledge.

Course Outcome (CO)

CO Number	**Statement**	**Knowledge Level**
RCC-MDM101.CO1	Recall the basic concepts of algebraic methods	Remembering
RCC-MDM101.CO2	Solve problems using algebraic techniques	Applying
RCC-MDM101.CO3	Understanding Differential calculus	Understanding
RCC-MDM101.CO4	Apply integration to solve computational problems	Applying
RCC-MDM101.CO5	Execute geometric representations in different dimensions	Analyzing
RCC-MDM101.CO6	Evaluate the mathematical problem on basic engineering mathematics	Evaluating

Detailed Syllabus:

Module #	**Contents**	**Contact Hours**	**CO Linked**
1	**Algebra:** Sets, Union, intersection, complement, mapping, notion of group, ring, field with simple examples; Polynomials, division algorithm, fundamental theorem of classical algebra (without proof), Permutations and combinations, binomial theorem, Descartes rule of sign and their application, relation between roots and coefficients, symmetric function of roots, transformation of polynomial equations. Matrices, addition and multiplication of matrices, inverse matrix, solution of linear equations in three variables by Cramer's rule, solution of three-line linear equations by matrix inversion method.	8	CO1, CO2
2	**Differential calculus:** Limits of function and continuity, fundamental properties of continuous functions (without proof), derivative and differential, rules of differentiation, Rolle's theorem, mean value theorem, Taylor's and Maclaurin's theorems with Cauchy's and Lagrange's forms of reminder, differential equation.	6	CO3, CO6

3	**Integral calculus:** Rules of integration of indefinite integrals, solution of definite integrals and their elementary properties, idea of improper integrals.	4	CO4, CO6
4	**Dimensional geometry:** Transformation of rectangular axes, invariants, plane polar equation of a straight line, introduction of circle and conic, introduction of graph theory & basic automata.	4	CO5, CO6

Text Books:

T1 Engineering Mathematics, Vol:1 & Vol:2, Sastry, *PHI, 4th Edition, 2008*.
T2 Engineering Mathematics, Arumugam, *SCITECH, 2009*.

Reference Books:

R1 University Algebra through 600 Solved Problems, N. S. Gopalakrishnan, *New Age International, 2016.*

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Syllabus of Bachelor of Computer Application (BCA)
2024-2025

Course Name	GENERAL ENGLISH	**Course Code**	RCC-AEC101
Semester	1	**Program Name**	BCA
L:T:P	2:0:0	**Total Hours**	24

Course Pre-requisite: Class XII level English Grammar

Course Outcome (CO)

CO Number	Statement	Knowledge Level
RCC-AEC101.CO1	Revise basics of English grammar	Remembering
RCC-AEC101.CO2	Classify precise communication in English based on LSRW skills.	Applying
RCC-AEC101.CO3	Comprehend complex written and verbal data.	Understanding
RCC-AEC101.CO4	Communicate effectively and appropriately in the English language in real life situations.	Analysing
RCC-AEC101.CO5	Assess LSRW skills through hands-on exercises	Evaluating
RCC-AEC101.CO6	Reinforce English language structures already learned through repetitive exercises and revision.	Creating

Detailed Syllabus:

Module	Contents	Contact Hours	CO Linked
1	**English Grammar:** **History of Language:** Language families, History of English language, Language learning problems, strategies for successful language learning. **Basic English Grammar:** Sentence, Subject, Predicate, Phrase, Clause, Articles, Parts of Speech, Voice, Degree, Gerunds, Preposition, Conjunction, Interjection, Sentence transformation, Subject verb agreement.	6	CO1, CO2
2	**Listening and Reading:** **Listening Skills and their importance:** Active listening, passive listening, active listening strategies, ways to be a good listener **Listening comprehension**- play an audio and ask them questions based on it **Reading Skills and their importance:** reading strategies- skimming, scanning	6	CO2, CO3, CO4
3	**Speaking** Tone, intonation, voice modulation Oral Presentation with or without PPT Role Play Activities	6	CO3, CO4

4	**Business Correspondence/ Writing:** Business/ Formal Letter Cover Letter and Resume	6	CO3, CO4, CO5, CO6

Text Books:

T1 English Grammar: The Basics, Michael McCarthy. *Routledge, 2021*.
T2 English Grammar and Composition, SC Gupta. *Arihant, 2014*.
T3 English for Engineers, NP Sudharshana, C Savitha et al. *Cambridge University Press. 2018*.
T4 A History of English language, AC Baugh and Thomas Cable. *Routledge, 2013*.
T5 A History of English Language, AN Dwivedi. *Prakash Book Depot, 2020*.
T6 A Handbook for Letter Writing, SC Gupta. *Arihant Publications, 2016*.
T7 English for All, Nilanjana Gupta. *Macmillan Education, 2018*.

Reference Books:

R1 Business Correspondence and Report Writing, R. C. Sharma and K. Mohan. *Tata McGraw Hill, 2017.*
R2 Higher English Grammar & Composition, P K De Sarkar. *Book Syndicate Pvt Ltd, 2022*.
R3 English For All, Dr. Vinod Kumar. *Adhyayan Publishers, 2019*.

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Syllabus of Bachelor of Computer Application (BCA)
2024-2025

Course Name	IT Skills	**Course Code**	RCC-SEC181
Semester	1st	**Program Name**	BCA
L:T:P	2:0:0	**Total Hours**	22

Course Pre-requisite:

Course Outcome (CO)

CO Number	Statement	Knowledge Level
RCC-SEC181.CO1	Recall the components of Computer System, functionality of an operating system and application of ICT	Remembering
RCC-SEC181.CO2	Explain the basic of Computer networks	Understanding
RCC-SEC181.CO3	Apply office packages to create Chart, Technical report writing using power point.	Applying
RCC-SEC181.CO4	Execute a simple IT-based solution for a real-world problem.	Analyzing
RCC-SEC181.CO5	Evaluating the basic applications of DBMS	Evaluating
RCC-SEC181.CO6	Design a simple IT-based solution for a real-world problem.	Creating

Detailed Syllabus:

Module #	Contents	Contact Hours	CO Linked
1	**Computer Fundamentals:** What is Computer, Basic Applications of Computer; Components of Computer System, Central Processing Unit (CPU), VDU, Keyboard and Mouse, Other input/output Devices, Computer Memory, Concepts of Hardware and Software; Concept of Computing, Data and Information; Applications of ICT, Introduction to Windows, Components of Windows/Linux, Customizing the Desktop, Files and Folders.	6	CO1
2	**Basic of Computer networks :** WWW and Web Browsers: Basic of Computer networks; LAN, WAN; Concept of Internet; Applications of Internet;	6	CO2

	connecting to internet; What is ISP; Knowing the Internet; Basics of internet connectivity related troubleshooting, World Wide Web; Web Browsing software, Search Engines; Understanding URL; Domain name; IP Address; Using e-governance website, Indian IT Act, Intellectual Property Rights – issues. Application of information Technology in Railways, Airlines, Banking, Insurance, Inventory Control, Financial systems, Hotel management, Education, Video games, Telephone exchanges, Mobile phones, Information kiosks, special effects in Movies**.**		
3	**Office packages**: Different Operators used in Excel, Working with Calculation and Functions, Working with Chart, Technical report writing using power point.	6	CO3, CO4
4	**Basic of Database:** Data Manipulation-Concept: Database, Relational Database, Integrity, And Manipulation of Data: Query, Data Entry, Form, Reports.	4	CO5, CO6

Text Books:

T1 CompTIA IT Fundamentals All-in-One Exam Guide by Mike Meyers and Scott Jernigan, *McGraw Hill, 2nd Edition, 2019.*

T2 Absolute Beginner's Guide to Computer Basics by Michael Miller, *Que Publishing, 2009*.

Reference Books:

R1 Excel: QuickStart Guide from Beginner to Expert by William Fischer, *CreateSpace Independent Pub. 2016.*

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Syllabus of Bachelor of Computer Application (BCA)
2024-2025

Course Name	Yoga	**Course Code**	RCC-VAC181A
Semester	1st	**Program Name**	BCA
L:T:P	0:0:2	**Total Hours**	22

Course Pre-requisite:

Course Outcome (CO)

CO Number	Statement	Knowledge Level
RCC-VAC181A.CO1	Define the meaning of Yoga	Remembering
RCC-VAC181A.CO2	Discuss the importance of Yoga & its values	Understanding
RCC-VAC181A.CO3	Practice different yogic postures, pranayama, asanas and meditation	Applying
RCC-VAC181A.CO4	Illustrate the concept of health, healing, and disease by the influence of Yoga	Analyzing
RCC-VAC181A.CO5	Evaluate/ Justify the effect of yoga in Stress management and Yogic dietary considerations	Evaluating
RCC-VAC181A.CO6	Understand the need of Yoga& Meditation for healthy living	Understanding

Detailed Syllabus:

Module #	Contents	Contact Hours	CO Linked
1	**Introduction to Yoga:** Concept & principles, aims and objectives, Role of Yoga in character building, Therapeutic values of Yoga, Role of Yoga practices in developing concentration, will power and discipline, Difference between Yoga Asana and physical exercises, Importance of Yoga in daily life.	8	CO1, CO2
2	**Asanas & Pranayam :** Positions of Asanas: Guidelines, importance and limitations. Yoga Poses Standing, Sitting, and Lying Down. (Any three asanas from each) **Pranayam:** Definition, guidelines for the practice of pranayama, importance, limitations. **Meditation:** The Role of Meditation in human life - Mental Hygiene, Frustration, Conflicts, stress management	10	CO3

3	**Yoga and Health:** Need of Yoga for health, The role of Yoga in stress management and yogic dietary considerations	4	CO4, CO5, CO6

Text Books:

T1 Light on Yoga, by B.K.S. Iyengar, *Thorsons, 2006*.
T2 Practical Yoga For Everyone by Howard Murphet, *Orient BlackSwan, 2001*.
T3 Yoga & Stress Management by Acharya Yatendra, *Fingerprint! Publishing, 2019.*

Reference Books:

R1- The Key Muscles of Yoga by Ray Long , *Independent Publisher, 2009*.
R2 -The Heart of Yoga: Developing a Personal Practice by T.K.V. Desikachar, *Inner Traditions, 1999.*

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SYLLABUS FOR BACHELOR OF COMPUTER APPLICATIONS (BCA)
2024 – 2025

COURSE	COURSE DETAILS
BCA	BACHELOR OF COMPUTER APPLICATIONS
MIM	MASTER IN MANAGEMENT
MDM	MULTI DISCIPLINARY MODE
AEC	ABILITY ENHANCEMENT COURSE
SEC	SECTIONAL ELECTIVE COURSE
VAC	VALUE ADDITION COURSE

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Syllabus of Bachelor of Computer Application (BCA)
2024-2025

L T P - Indicates Theory Lectures (L), Tutorial(T) and Practical (P) classes per week.
1L Earns 1 credits; 1P Earns 0.5 credits; 1T Earns 1 Credit.

SEMESTER II							
Sl. No.	**Category**	**Course Code**	**Course Name**	**L**	**T**	**P**	**Credits**
Theory + Practical							
1	**Major (Offline)**	RCC-BCA201	Data Structure through C	3	0	0	3
2		RCC-BCA291	Data Structure through C Lab	0	0	2	2
3		RCC-BCA202	Computer Architecture	3	0	0	3
4		RCC-BCA292	Computer Architecture Lab	0	0	2	2
5	**Minor (Blended Mode)**	RCC-MIM201	Organization Behaviour	3	0	0	3
6	**Multi-Disciplinary (Offline)**	RCC-MDM201	Applications of Multimedia	3	0	0	3
7	**Ability Enhancement (Offline)**	RCC-AEC201	Technical & Professional Communication	2	0	0	2
8	**Skill Enhancement (Online / Sessional)**	RCC-SEC281	Design Thinking	2	0	0	2
9	**Common Value-added Course (Sessional)**	RCC-VAC281A / RCC-VAC281B	Environmental Studies	0	0	2	2
			NSS	0	0	2	
			Total Credits				**22**

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Syllabus of Bachelor of Computer Application (BCA)
2024-2025

Course Name	Data Structure through C	**Course Code**	RCC-BCA201
Semester	2nd	**Program Name**	BCA
L:T:P	3:0:0	**Total Hours**	36

Course Pre-requisite:

Course Outcome (CO)

CO Number	Statement	Knowledge Level
RCC-BCA201.CO1	Recall the basic knowledge of various Data Structure.	Remembering
RCC-BCA201.CO2	Identify the concept of memory representation in Data Structure.	Understanding
RCC-BCA201.CO3	Implement the concept of different linear and non linear data structures	Applying
RCC-BCA201.CO4	Evaluate the various real life applications of Data Structure	Evaluating
RCC-BCA201.CO5	Compare between various searching and sorting algorithm along with their complexity	Analyzing
RCC-BCA201.CO6	Formulate different types of tree data structures	Creating

Detailed Syllabus:

Module	Contents	Contact Hours	CO Linked
1	**Introduction to Data Structure** Abstract Data Type	1	CO1
2	**Dynamic Memory Allocation** Difference between static and dynamic memory allocation, Functions such as malloc(), calloc(), realloc(), free()	2	CO2
3	**Arrays** 1D, 2D and Multi-dimensional Arrays	3	CO3
4	**Linked Lists** Singly, Circular Singly and Doubly Linked Lists	5	CO2, CO3
5	**Stacks** Array and linked representation of Stack, Prefix, Infix and Postfix expressions and conversion using stack, applications of stack	5	CO4
6	**Queues** Array and Linked representation of Queue, Circular Queue, De-queue, Priority Queues	5	CO4
7	**Searching and Sorting** Linear Search, Binary Search, Comparison of Linear and Binary Search with respect to time complexity, Bubble Sort,	7	CO5

	Selection Sort, Insertion Sort, Merge Sort, Comparison of Sorting Techniques with respect to time complexity.		
8	**Trees** Introduction to Tree, Binary Tree, Binary Search Tree (Traversal, Insertion and Deletion)	5	CO3, CO6
9	**Hashing** Introduction to Hashing, Different hashing functions, Collision and resolving techniques	3	CO4
	TOTAL	**36**	

Text Books:

T1 *"Data Structure using C"* by Reema Thareja, Publisher: Oxford Higher Education, ***2014.***
T2 *"Classic Data Structures"* by Debasis Samanta, Publisher: Prentice Hall India Learning Private Limited, 2nd Edition, ***2009.***
T3 "Data Structures" by Seymour Lipschutz, Publisher: McGraw Hill Education, ***2014.***

Reference:

R1 *"Fundamentals of Data Structures in C"* by Ellis Horowitz, Sartaj Sahni and Susan Anderson Freed, Publisher: Universities Press, 2nd Edition, ***2008***.
R2 *"Data Structure using C"* by E Balagurusamy, Publisher: McGraw Hill Education, ***2017.***

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Syllabus of Bachelor of Computer Application (BCA)
2024-2025

Course Name	Data Structure through C Lab	**Course Code**	RCC-BCA291
Semester	2nd	**Program Name**	BCA
L:T:P	0:0:2	**Total Hours**	36

Course Pre-requisite:

Course Outcome (CO)

CO Number	Statement	Knowledge Level
RCC-BCA291.CO1	Recall the basic knowledge of various data structure and their memory representation.	Remembering
RCC-BCA291.CO2	Implement the concept of different linear data structures	Applying
RCC-BCA291.CO3	Evaluate the various real life applications of data structure	Evaluating
RCC-BCA291.CO4	Compare between various searching and sorting techniques	Analyzing
RCC-BCA291.CO5	Identify the complexity of different searching and sorting algorithms.	Understanding
RCC-BCA291.CO6	Formulate different types of tree data structures	Creating

Detailed Syllabus:

Module #	Module Name	Experiment Topics	No of Labs Required	CO Linked
1	Arrays	1. Programs related to 1D, 2D array 2. Programs related to matrix	6	CO1
2	Linked List	Program related to singly linked list, circular linked list and doubly linked list	10	CO2
3	Stack	Stack implementation using array and linked list	4	CO3
4	Queue	Queue implementation using array and linked list	4	CO3
5	Searching and Sorting	1. Programs related to different searching technique 2. Programs related to different sorting technique	8	CO4, CO5
6	Tree	Tree implementation using linked list	4	CO6

Text Books:

T1 *"Data Structure using C"* by Reema Thareja, Publisher: Oxford Higher Education, ***2014.***

T2 *"Classic Data Structures"* by Debasis Samanta, Publisher: Prentice Hall India Learning Private Limited, 2nd Edition, ***2009.***

T3 "Data Structures" by Seymour Lipschutz, Publisher: McGraw Hill Education, ***2014.***

Reference:

R1 *"Fundamentals of Data Structures in C"* by Ellis Horowitz, Sartaj Sahni and Susan Anderson Freed, Publisher: Universities Press, 2nd Edition, ***2008***.

R2 *"Data Structure using C"* by E Balagurusamy, Publisher: McGraw Hill Education, ***2017.***

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Syllabus of Bachelor of Computer Application (BCA)
2024-2025

Course Name	Computer Architecture	**Course Code**	RCC-BCA202
Semester	2nd	**Program Name**	BCA
L:T:P	3:0:0	**Total Hours**	36

Course Pre-requisite:

Course Outcome (CO)

CO Number	Statement	Knowledge Level
RCC-BCA202.CO1	Describe how a computer system works and implemented.	Remembering
RCC-BCA202.CO2	Classify the varied formats and instruction codes used by various CPUs.	Understanding
RCC-BCA202.CO3	Relate students with the computer system's memory and I/O organisation	Applying
RCC-BCA202.CO4	Illustrate an overview of a computer system's control unit	Analyzing
RCC-BCA202.CO5	Reframe the use of vector and parallel processing	Evaluating
RCC-BCA202.CO6	Design the simple structure of common microprocessors	Creating

Detailed Syllabus:

Module	Contents	Contact Hours	CO Linked
1	**Data Representation:** Number Systems – decimal, binary, octal, hexadecimal, alphanumeric representation, [r-1]'s complement, r's complement, Fixed point representation – Integer representation, arithmetic addition, arithmetic subtraction, overflow, decimal fixed-point representation, Floating point representation, IEEE 754 floating point representation. **Computer arithmetic:** Addition algorithm of sign magnitude numbers, Subtraction algorithm of sign magnitude numbers, Addition algorithm of signed 2's complement data, Subtraction algorithm of signed 2's complement data, Multiplication algorithm, Booth's algorithm, Division algorithm.	4	CO1
2	**Register transfer and micro-operations:** Register transfer language, Register transfer, Bus system for registers, Memory transfers – memory read, memory write, Micro	**4**	CO2

	operations – register transfer micro operations, arithmetic micro operations, logic micro operations, shift micro operations, Binary adder, binary Adder Subtractor, binary incrementer, arithmetic circuit for arithmetic micro operations, One stage logic circuit, Selective set, Selective complement, Selective clear, ask, Insert, Clear		
4	**Basic Computer organization and design:** Instruction codes, direct address, Indirect address & Effective address, List of basic computer registers, Computer instructions: memory reference, register reference & input – output instructions, Block diagram & brief idea of control unit of basic computer, Instruction cycle. **Micro programmed control:** Control memory, Address sequencing, Micro program examples	**5**	CO3
5	**Central processing unit:** General register organization, Stack organization, Register stack, Memory stack, Stack operations – push & pop, Instruction format, Types of CPU organization [single accumulator, general register & stack organization] & example of their instructions, Three, two, one & zero address instruction, Data transfer, data manipulation & program control instructions, Basic idea of different types of interrupts [external, internal & software interrupts], Difference between RISC & CISC	**5**	CO4
6	**Pipeline and vector processing:** Parallel processing, Flynn's classification, Pipelining, Example of pipeline, space time diagram, speedup, Basic idea of arithmetic pipeline, example of floating-point addition/ subtraction using pipeline	**4**	CO5
7	**Input – output organization:** Peripheral devices, Input – output interface, Isolated I/O, Memory mapped I/O, Asynchronous data transfer: strobe & handshaking, Programmed I/O, Interrupt initiated I/O, Basic idea of DMA & DMAC Input – output processor	**5**	CO3
8	**Memory organization:** Memory hierarchy, Main memory definition, types of main memory, types of RAM, ROM, difference between SRAM & DRAM, Cache memory, CAM, Memory mapping, TLB, Auxiliary memory, diagrammatic representation of magnetic disk & hard disk drive, Definitions of seek time, rotational delay, access time, transfer time, latency	**5**	CO1, CO4
9	**Microprocessor 8085**: Introduction to Microprocessor – Architecture of Microprocessor 8085, Machine Language	**4**	CO6

	and Assembly Language-Addressing modes-types of instruction format-Data Transfer type instructions-Arithmetic and logical instructions–Branching instructions, Assembly Language Programs – Addition– Subtraction–Multiplication (8-bit) – Division (8-bit) Largest/Smallest etc.		

Text Books:

T1 *"Computer System Architecture",* by Mano M Morris, 3rd Edition, Publication : Pearson, ***2017.***
T2 *" Computer Organization and Architecture"*, by T.K.Ghosh, Publisher : Tata McGraw Hill Education, ***2009.***
T3 *" Computer Fundamentals: Architecture and Organization "*, by B.Ram, 5th Edition, Newage Publications, ***2018.***

Reference Books :

R1 *"Computer Organization and Architecture",* by J.P.Hayes, 3rd Edition, Tata McGrew Hill Publications, ***1998.***
R2 " *Computer Organization and Architecture"* by Rajaraman, Publication : Prentice Hall India Learning Private Limited, ***2007.***

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Syllabus of Bachelor of Computer Application (BCA)
2024-2025

Course Name	Computer Architecture Lab	**Course Code**	RCC-BCA292
Semester	2nd	**Program Name**	BCA
L:T:P	0:0:2	**Total Hours**	16

Computer Architecture Syllabus Lab

CO Number	Statement	Knowledge Level
RCC-BCA292.CO1	Recall the fundamentals of digital electronics circuits and their levels.	Remembering
RCC-BCA292.CO2	Memorized the arithmetic operation using ICs	Remembering
RCC-BCA292.CO3	Create the fundamental specifications for a design application.	Applying
RCC-BCA292.CO4	Experiment the sequential circuit performance	Analyzing
RCC-BCA292.CO5	Reframe 8085 microprocessor architecture and design	Evaluating
RCC-BCA292.CO6	Perform mathematical operations and data handling programs with an 8085 microprocessor.	Analyzing

Detailed Syllabus:

Module	Module Name	Experiment Topics	No of Labs Required	CO Linked
1	Fundamental idea in digital electronics	Basic gates and Universal gates.	1	CO1
2	Arithmetic operation using ICs	Implementation of Half & full adder. Half & full Subtractor,	2	CO2
3	Design Implementation	Combinational circuit	2	CO3
4	Perform and Execution	Sequential circuit	2	CO4
5	Understand architecture of microprocessor 8085	Study of architecture of microprocessor 8085.	1	CO5
6	Programming with an 8085 kit/simulator	1. Addition of two 8-bit numbers, Addition of two 16-bit numbers. Subtraction of two numbers. 2. Multiplication of two 8- bit nos. using repeated Addition. Division of two 8- bit nos. using repeated Subtraction	8	CO6

		3. Find 1's & 2's complement of a 8 bit number 4. Find largest and smallest Number From an array. 5. Transfer Block of data bytes from one memory location to another 6. Arrange data bytes in ascending/descending order. 7. Packing and unpacking of BCD numbers.		

Text Books:

T1 *"Microporcessor Architecture, Programming and Application with 8085",* by Ramesh S Gaonkar, 6th Edition, ***2018.***

T2 *"A text book of 8085 Microprocessor and Microcontroller"* by Anoop Singh Poonia, Dinesh Kumar Yadav and Naveen Kumar, Publication : Satya Prakashan,, ***2024.***

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Syllabus of Bachelor of Computer Application (BCA)
2024-2025

Course Name	Organizational Behaviour	**Course Code**	RCC-MIM201
Semester	2nd	**Program Name**	BCA
L:T:P	3:0:0	**Total Hours**	36

Course Pre-requisite:

Course Outcome (CO)

CO No.	Statement	Knowledge Level
RCC-MIM201.CO1	Recall the fundamental concepts and history of organizational behaviour	Remembering
RCC-MIM201.CO2	A clear understanding about individual behaviour aspects.	Understanding
RCC-MIM201.CO3	Illustrate the concept of group dynamics and conflict management within organizations.	Applying
RCC-MIM201.CO4	Analyse the role of power, politics in shaping behaviour and organizational outcomes.	Analysing
RCC-MIM201.CO5	Examine the challenges, opportunities of managing diversity in organizations.	Analysing
RCC-MIM201.CO6	Generate insights into global and cross-cultural aspects of organizational behaviours.	Creating

Module	Name of the Topic	Contact Hours	CO Linked
1	**Introduction to Organizational Behaviour** ● Definition and scope of organizational behaviour ● Interdisciplinary character of OB ● Historical development of organizational behaviour ● Importance of studying organizational behaviour ● Challenges for OB	8	CO1

2	**Individual Behaviour** ● Personality: Definition, Big-Five Personality Model, MBTI, Sigmund Freud's Psychoanalytic Theory of Personality ● Perception: Attribution Theory, Common Shortcuts in Judging Others (Halo effect, Contrast effect, Stereotyping, Selective perception), Projection, Bounded rationality Common biases and errors in decision making. ● Attitudes: Components of attitude Learning theories (Classical conditioning, Operant conditioning) Red Hot Stove, Reinforcement & Punishment ● Job satisfaction	10	CO2
3	**Group and Team Dynamics** ● Types of groups in organizations, Stages of group development, Groupthink, Social Loafing ● Conflict management- Types, Conflict Process, Conflict handling ● Negotiation: Skills, Types, Negotiation Process, Third Party Negotiations	8	CO3
4	**Power and Political behaviour** ● Definition, Sources of Power, Power tactics, Factors contributing to Political Behaviour	4	CO4
5	**International Organizational Behaviour** ● Definition, nature, characteristics ● Cross-cultural differences and their impact on behaviour ● Organizational behaviour trends and future challenges	6	CO5, CO6
	Total	**36**	

Text Books:

T1 *"Organizational Behaviour"* by Stephen P. Robbins, Alig publication, PEARSON Indian Edition, 18th Edition, ***2019.***
T2 *"Essentials of Organizational Behavior"*, by Stephen P. Robbins, Pearson publications, 14th Edition, ***2019.***
T3 *"Organizational behavior",* by Fred Luthans, Publisher: McGraw-Hill, 12th Edition, ***2010.***

Reference Books:

R1 *"Organizational behaviour, Text, Cases and Games"*, by K. Aswathappa, Himalaya Publishing House, 7th Edition, ***2006.***
R2 *"Organizational behavior"*, by J S Chandan, Vikas Publishing House, ***2014.***
R3 *"Organizational Behaviour*", by Khanka S., S Chand & Company, ***2007.***

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Syllabus of Bachelor of Computer Application (BCA)
2024-2025

Course Name	Applications of Multimedia	**Course Code**	RCC-MDM201
Semester	2nd	**Program Name**	BCA
L:T:P	3:0:0	**Total Hours**	36

Course Pre-requisite: Basic knowledge of computer

Course Outcome (CO)

CO Number	Statement	Knowledge Level
RCC-MDM101.CO1	Learn the basic knowledge and technical aspect of Multimedia Systems	Remembering
RCC-MDM101.CO1	Understand the history of typography and font designing	Understanding
RCC-MDM101.CO1	Produce the techniques behind the usage of a still image and its functions.	Applying
RCC-MDM101.CO1	Illustrate the standards available for different audio and video applications	Analyzing
RCC-MDM101.CO1	Evaluate the issues and obstacles encountered by Web authors in deploying Web based applications	Evaluating
RCC-MDM101.CO1	Design different applications of 3D animation	Creating

Detailed Syllabus:

Module	Contents	Contact Hours	CO Linked
1	**Multimedia:** Introduction to multimedia, Components and its application, Uses of multimedia. Web and Internet multimedia applications, Transition from conventional media to digital media.	4	CO1
2	**Making Multimedia:** Impact of multimedia, Hardware - Macintosh and Windows production platforms, other peripherals - Connections, Memory and Storage devices, Multimedia software.	4	CO1
3	**Text:** Usage of various font and text in multimedia, Families and faces of fonts, outline fonts, bitmap fonts international character sets and hypertext, Digital fonts techniques.	4	CO2
4	**Image:** Still Images – Colour Science, Colour Models, Colour palettes, Dithering, 2D Graphics, Image Compression and File Formats: Bitmaps, GIF, JPEG, JPEG 2000, PNG, TIFF, EXIF, PS, PDF, Vector, and 3D Drawing. Natural Light.	6	CO3
5	**Sound:** MIDI and Digital Audio, Audio File Formats.	4	CO4

6	**Video:** Video Basics, how video works, Analog & Digital video, video compression techniques, various recording file formats and standards (JPEG, MPEG), DVI technology. Video compression based on motion compensation, MPEG-1, MPEG-2, MPEG-4, MPEG-7	6	CO4
7	**Multimedia Authoring and Multi-modal Communication:** Video conferencing, Networking support, Trans-coding, Authoring Basics, Introduction of Authoring Tools.	4	CO5
8	**Animation:** Principle of Animations. Animation Techniques Animation File Formats, Morphing.	4	CO6
	TOTAL	**36**	

Text Books:

T1 *"Multimedia: Making it work*" by Tay Vaughan, Publisher : McGraw-Hill Osborne, 8th Edition, ***2011.***

T2 *"Multimedia: Computing, Communications Applications"* by R Steinmetz and K Naharstedt, Pearson publications,***2002.***

T3 *"Multimedia (System, Technology & Communication)",* by Sujata Pandey & Manoj Pandey, Publication : S.K. Kataria & Sons, ***2012.***

T4 *"Multimedia Systems"* by John F Koegel Buford, Publisher: Pearson Education India, ***2002.***

Reference Books:

R1 *"Multimedia Handbook"* by Keyes Jessica, Publisher : McGraw-Hill, ***1997.***

R2 *"Multimedia System Design"* by K. Andleigh and K. Thakkar, Publisher: PHI, ***1996.***

R3 *"Digital Multimedia"* by Nigel Chapman and Jenny Chapman, Publisher : Wiley, 3rd Edition, ***2018.***

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Syllabus of Bachelor of Computer Application (BCA)
2024-2025

Course Name	Technical and Professional Communication	**Course Code**	RCC-AEC201
Semester	2nd	**Program Name**	BCA
L:T:P	2:0:0	**Total Hours**	24

Course Pre-requisite: General English

Course Outcome (CO)

CO Number	Statement	Knowledge Level
RCC-AEC201.CO1	Recall basics of technical English communication process	Remembering
RCC-AEC201.CO2	Summarize methods of effective technical communication in English	Understanding
RCC-AEC201.CO3	Sketch ways of strategic verbal and non-verbal communication in English	Applying
RCC-AEC201.CO4	Categorize communication in English in a task-oriented manner	Analyzing
RCC-AEC201.CO5	Determine English proficiency level (beginner, intermediate, advanced)	Evaluating
RCC-AEC201.CO6	Collaborate individual and group technical English communication tasks within real life situations	Creating

Detailed Syllabus:

Module #	Contents	Contact Hours	CO Linked
1	**INTRODUCTION TO COMMUNICATION SKILLS:** The Process of Communication- Verbal and non-verbal communication- Kinesics, Haptics, Proxemics, Chronemics, Posture, Eye Contact- Gesture- The Communication Cycle- Noise- Language as a Tool of Communication- Encoding Process- Decoding Process	2	CO1, CO2
2	**ELEMENTS OF TECHNICAL COMMUNICATION**: Levels of Communication (Extra personal, Interpersonal, Intrapersonal, Organizational, Mass)- Flow of Communication (Upward, Downward, Lateral, Diagonal)- Professionalism- Overcoming Barriers of Communication	2	CO3
3	**LISTENING & SPEAKING SKILLS** **Listening Strategies** Difference between hearing and listening- Types of listening- Note taking skills	6	CO4, CO5

	Speaking Strategies Pronounciation- Word Stress- Sentence Stress- Sentence Rhythm- Pitch- Volume- Pause **Tasks** Conversation Practice- Dialogue Practice- Interview- Group Discussion		
4	**READING SKILLS** **Reading Strategies** Punctuation- Note Making Skills- Interpreting Flow chart, bar graph, pie chart- mind mapping **Reading Comprehension** Strategies and Techniques- Solving reading comprehension passages through literary texts 1. The Road Not Taken by Robert Frost 2. The Fly by Katherine Mansfield 3. The Eyes are not Here by Ruskin Bond	6	CO4, CO5
5	**WRITING** **Elements of Technical Writing** Acronyms- Abbreviations- Jargon- Redundancy- Idioms- Phrases **Writing Tasks** Precis Writing- Notice Writing- Email Writing- Technical Report-Meeting Minutes	8	CO5, CO6

Text Books:

T1 *"Technical Communication: Principles and Practice"*by Raman, Meenakshi & Sharma, Sangeeta., Publisher: Oxford University Press,

Reference Books:

1. Kumar, S. (2015). *Effective Technical Communication*. Tata McGraw-Hill Education.
2. Kothari, C. R., & Garg, G. (2016). *Professional Communication: A Handbook for Engineers and Scientists*. Macmillan.
3. Singh, A. (2017). *Technical Writing for Engineers and Scientists*. PHI Learning.
4. Saha, S., & Das, A. (2016). *Technical Communication: A Practical Approach*. S. Chand Publishing.

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Syllabus of Bachelor of Computer Application (BCA)
2024-2025

Course Name	Design Thinking	**Course Code**	RCC-SEC281
Semester	2nd	**Program Name**	BCA
L:T:P	2:0:0	**Total Hours**	24

Course Pre-requisite: Basic computer knowledge.

Course Outcome (CO)

CO Number	Statement	Knowledge Level
RCC-SEC281.CO1	Recall the key phases of the design thinking process	Remembering
RCC-SEC281.CO2	Understanding for the basic of Operating System	Understanding
RCC-SEC281.CO3	Classify the concept of OOPs	Understanding
RCC-SEC281.CO4	Relate the basic concept of DBMS in a real-world problem	Applying
RCC-SEC281.CO5	Analyze the applications of AI tools	Analyzing
RCC-SEC281.CO6	Explain the basic concept of internet	Remembering

Detailed Syllabus:

Module #	Contents	Contact Hours	CO Linked
1	**Fundamental of design thinking:** Introduction to design thinking, design thinking process, tools and frameworks, applications of real-world problem	4	CO1
2	**Basic of Operating Systems:** Definition of an Operating System, functions and services of an OS, types of OS (e.g., Batch, Time-Sharing, Real-Time, Distributed, Network, Embedded), OS and hardware interaction, evolution of OS	4	CO2
3	**Introduction to Object-Oriented Programming:** Definition of OOP, characteristics of OOP	4	CO3

	advantages of OOP, comparison between procedural programming and OOP, objects and classes, encapsulation, abstraction, inheritance, polymorphism		
4	**Introduction to DBMS:** Introduction to file-based systems, structure of file-based systems, operations in file-based systems, database concepts and architecture, database Design	4	CO4
5	**Application of AI Tools:** Application of AI tools in healthcare, education, business operations, finance etc., benefits of applying AI Tools	4	CO5
6	**Basic concept of internet:** A brief understanding on machine intelligence, communication and web technology, internet, world wide web, introduction to cyber Security, issues and challenges of cyber security	4	CO6

Text Books:

T1 *"Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation"* by Tim Brown, Publisher: HarperCollins e-books, ***2009.***

T2 ***"****Fundamentals of Database Systems"* by Ramez Elmasri and Shamkant B. Navathe, 7th Edition, Publisher: Pearson Education India, ***2015.***

T3 *"Artificial Intelligence: A Guide to Intelligent Systems"* by Michael Negnevitsky, Publisher: Addison-Wesley, ***2011.***

T4 *"Operating System Concepts"* (9th Edition) by Abraham Silberschatz, Peter B. Galvin, and Greg Gagne, Publisher: John Wiley & Sons Inc, ***2013.***

Reference Books:

R1 *"Artificial Intelligence: A Very Short Introduction"* by Margaret A. Boden, Publisher: OUP Oxford, ***2018.***

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Syllabus of Bachelor of Computer Application (BCA)
2024-2025

Course Name	Environmental Studies	**Course Code**	RCC-VAC281A
Semester	2nd	**Program Name**	BCA
L:T:P	2:0:0	**Total Hours**	24

Course Outcome (CO)

CO Number	Statement	Knowledge Level
RCC-VAC281A.CO1	Remember the basic concepts related to environment & ecology	Remembering
RCC-VAC281A.CO2	Explain the concept of environment, Ecosystems, Biodiversity and Conservation	Understanding
RCC-VAC281A.CO3	Illustrate the concept of environmental Protection	Applying
RCC-VAC281A.CO4	Classify different renewable energy sources	Applying
RCC-VAC281A.CO5	Examine the scientific problem related to air, water, noise & land pollution	Analyzing
RCC-VAC281A.CO6	Assess the insights of Environmental Movements	Evaluating

Module	Name of the Topic	Contact Hours	CO Linked
1	**Fundamentals of Environment:** Introduction, Multidisciplinary nature, Scope and importance; the need for environmental education. Concept of sustainability and sustainable development	4	CO1
2	**Ecosystems:** Definition, Structure: food chains, food webs and function of ecosystem: Energy flow, nutrient cycle and ecological succession. Ecological Interactions, Biodiversity and Conservation – Levels, India as a mega-biodiversity nation, Threats to biodiversity, Ecosystem and biodiversity services.	8	CO2
3	**Environmental Pollution - Types: -** Air pollution, Water pollution, Land pollution, Noise pollution; pollutants, Effects of pollution, Control and Remedial measures.	4	CO5
4	**Environmental Protection** Environmental Protection- Report of the Club of Rome: Sustainable Development, Different Renewable Energy Sources- Wind Power, Water Power, Bio Fuel/ Solid Bio Mass, Geothermal Energy, Nuclear Power.	6	CO3, CO4
5	Environmental Movements- Chipko movement; Narmada Bachao movement; Tehri Dam conflict	2	CO6
	Total	**24**	

Text Books:

T1 *"Environmental Management* " by G.N. Pandey, Vikas Publishing House Pvt. Ltd., ***1997.***

T2 *"Environmental Science"* by Cunningham, Publisher: Brown (William C.) Co ,U.S**.** 3rd Edition, ***1995.***

T3 *"Environmental Studies",* by R. Rajagopalan, Publisher: Oxford University Press, 3rd Edition, ***2015.***

Reference Books:

R1 "*Environmental Pollution Control Engineering"* by New Age International Publication, 3rd Edition, ***2018.***

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SYLLABUS FOR BACHELOR OF COMPUTER APPLICATIONS (BCA)
2024 – 2025

COURSE	COURSE DETAILS
BCA	BACHELOR OF COMPUTER APPLICATIONS
MIM	MASTER IN MANAGEMENT
MDM	MULTI-DISCIPLINARY MULTIMEDIA
AEC	ABILITY ENHANCEMENT COURSE
SEC	SECTIONAL ELECTIVE COURSE
VAC	VALUE ADDITION COURSE

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Syllabus of Bachelor of Computer Application (BCA)
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L T P - Indicates Theory Lectures (L), Tutorial(T) and Practical (P) classes per week.
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SEMESTER III							
Sl. No.	**Category**	**Course Code**	**Course Name**	**L**	**T**	**P**	**Credits**
Theory + Practical							
1	**Major (Offline)**	RCC-BCA301	Objects Oriented Programming with Java	3	0	0	5
2		RCC-BCA391	Objects Oriented Programming with Java Lab	0	0	2	
3		RCC-BCA302	Basics of Web Design Using Html, Css, Javascript	3	0	0	5
4		RCC-BCA392	Basics of Web Design Using Html, Css, Javascript Lab	0	0	2	
5	**Minor (Blended Mode)**	RCC-MIM301	Principles of Marketing	4	0	0	4
6	**Multi Disciplinary (Offline)**	RCC-MDM303	Business System Analysis	3	0	0	3
7	**Ability Enhancement (Offline)**	RCC-AEC301	The Indian Constitution	2	0	0	2
8	**Skill Enhancement (Online / Sessional)**	RCC-SEC301	Soft Skill & Personality Development	2	0	0	2
			Total Credits				**21**

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SEMESTER IV							
Sl. No.	**Category**	**Course Code**	**Course Name**	**L**	**T**	**P**	**Credits**
Theory + Practical							
1	**Major (Offline)**	RCC-BCA401	Database Management System	3	0	0	5
2		RCC-BCA491	Database Management System Lab	0	0	2	
3		RCC-BCA402	Operating System	3	1	0	4
4		RCC-BCA403	Python Programming	3	0	0	5
5		RCC-BCA493	Python Programming Lab	0	0	2	
6	**Minor (Blended Mode)**	RCC-MIM401	Human resource management	4	0	0	4
7	**Ability Enhancement (Offline)**	RCC-AEC401A/ RCC-AEC401B	(A) Society Culture and Human Behavior / (B) Universal Human Values (UHV)	2	0	0	2
			Total Credits				**20**

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SEMESTER V							
Sl. No.	**Category**	**Course Code**	**Course Name**	**L**	**T**	**P**	**Credits**
Theory + Practical							
1	**Major (Offline)**	RCC-BCA501	Php with Mysql	3	0	0	5
2		RCC-BCA591	Php with Mysql Lab	0	0	2	
3		RCC-BCA502	Advanced DBMS	3	0	0	5
4		RCC-BCA592	Advanced DBMS Lab	0	0	2	
5		RCC-BCA503	Software Engineering	3	1	0	4
6	**Minor (Blended Mode)**	RCC-MIM501	Operation Research	4	0	0	4
7	**Skill Enhancement (Online / Sessional)**	RCC-SEC581	Internship	0	0	4	4
			Total Credits				**22**

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SEMESTER VI							
Sl. No.	**Category**	**Course Code**	**Course Name**	**L**	**T**	**P**	**Credits**
Theory + Practical							
1	**Major (Offline)**	RCC-BCA601	Introduction to AI & ML	3	0	0	5
2		RCC-BCA691	Introduction to AI & ML Lab	0	0	2	
3		RCC-BCA602	Unix And Shell Programming	3	0	0	5
4		RCC-BCA692	Unix And Shell Programming Lab	0	0	2	
5		RCC-BCA603	Communication and Networking	3	1	0	4
6		RCC-BCA604	Computer Graphics	3	1	0	4
7	**Minor (Blended Mode)**	RCC-MIM601	Entrepreneurship	4	0	0	4
			Total Credits				**22**

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SEMESTER VII							
Sl. No.	**Category**	**Course Code**	**Course Name**	**L**	**T**	**P**	**Credits**
Theory + Practical							
1	**Major (Offline)**	RCC-BCA701A/ RCC-BCA701B	(A) Data Mining & Data Warehousing / (B) Pattern Recognition	3	0	0	5
2		RCC-BCA791A/ RCC-BCA791B	(A) Data Mining & Data Warehousing Lab / (B) Pattern Recognition Lab	0	0	2	
3		RCC-BCA702	Cyber Security	3	1	0	4
4		RCC-BCA703	Introduction to Big Data Analysis	3	1	0	4
5		RCC-BCA704	Research Methodology	3	0	0	5
6		RCC-BCA794	Research Methodology Lab	0	0	2	
7	**Skill Enhancement (Online / Sessional)**	RCC-SEC781	Project Management	0	0	4	4
			Total Credits				**22**

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SEMESTER VIII							
Sl. No.	**Category**	**Course Code**	**Course Name**	**L**	**T**	**P**	**Credits**
Theory + Practical							
1	**Major (Offline)**	RCC-BCA801A/ RCC-BCA801B	(A) Block Chain Technology / (B) Cloud Computing	3	0	0	5
2		RCC-BCA891A/ RCC-BCA891B	(A) Block Chain Technology Lab / (B) Cloud Computing Lab	0	0	2	
3	**Skill Enhancement (Online / Sessional)**	RCC-SEC881	Research Project	0	0	12	12
			Total Credits				**17**