

**Department of BCA**

**Academic Calendar and Academic Plan for AY 2024-25 (ODD SEMESTER)**

**SEMESTER -I**

**MAJOR**

**Full Marks: 100 (Theoretical ESE – 35 & Theoretical CA – 15; Practical ESE-20 & Practical CA- 30)**

<b>Name of the Paper</b>	<b>Unit Number</b>	<b>Topic</b>	<b>Name of Teacher</b>	<b>To be completed during the month and year</b>	<b>No of Practical Classes</b>	<b>No of Theoretical Classes</b>	<b>Continuous Internal Assessment in the Month of</b>
Programming in C BCAMJ101	UNIT I	Introduction to computers, Evolution, Generation of Computers, Computers Hierarchy, Different components of computer (CPU, ALU, different types of memory etc.), Number System – Binary, Hexa, Octal, BCD System, Introduction to operating environment.	SUSHANT KR. DAS	August, 2024	NA	2	August, 2024
	UNIT II	Introduction to Programming, Program Concept, Characteristics of Programming, Stages in Program Development, Algorithms, Notations, Flowcharts, Types of Programming Methodologies, Introduction to C Programming - Basic Program Structure in C, Variables and Assignments, Input and Output, Selection and Repetition Statements.	SUSHANT KR. DAS	September, 2024	4	6	September, 2024
	UNIT III	Top-Down Design, Predefined Functions, Programmer-defined Function, Local Variable, Recursion - Developing Recursive Definition of Simple Problems and their implementation.	SUSHANT KR. DAS	September, 2024	4	6	September, 2024
	UNIT IV	Introduction to Arrays, Declaration and	SUSHANT KR.	September,	3	3	September,

- NA – Not Applicable

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		Referring Arrays, Arrays in Memory, Initializing Arrays. Arrays in Functions, Multi-Dimensional Arrays, Searching in Array.	DAS	2024			2024
	UNIT V	Pointers - Simple use of Pointers (Declaring and Dereferencing Pointers to simple variables), Pointers to Pointers, Call-By-Value and Call-By-Reference Parameters.	SUSHANT KR. DAS	November, 2024	3	3	November, 2024
	UNIT VI	Structures - Member Accessing, Pointers to Structures, Structures and Functions, Arrays of Structures, Unions.	SUSHANT KR. DAS	November, 2024	3	3	November, 2024
	UNIT VII	Strings - Declaration and Initialization, Reading and Writing Strings, Arrays of Strings, String and Function, Strings and Structure, Standard String Library Functions.	SUSHANT KR. DAS	November, 2024	4	4	November, 2024
	UNIT VIII	File Handling – File opening modes, use of files for data input and output. merging and copy files.	SUSHANT KR. DAS	December, 2024	3	3	December, 2024

- NA – Not Applicable

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SEMESTER -I

MINOR

Full Marks: 100 (Theoretical ESE – 70 & Theoretical CA – 30)

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No of Practical Classes	No of Theoretical Classes	Continuous Internal Assessment in the Month of
Financial Accounting BCAMN101	UNIT I	Basic Idea of Book Keeping and Accounting. Accounting Principles. Accounting Concepts Important Accounting Conventions Accounting Concept vs. Accounting Convention	TUSHAR KANTI GHOSH	August, 2024	NA	6	August, 2024
	UNIT II	Accounting Process: Journal: Definition, Features, Classification, Journal Entry; ledger: Definition, Classification, Ledger posting; Difference between Journal and Ledger; Trial Balance: Definition, Importance, Errors, and Preparation of trial balance.	TUSHAR KANTI GHOSH	September, 2024	NA	6	September, 2024
	UNIT III	Cash Book: Definition, Features, Types of Cash Book and Preparation of cash book; Bank Reconciliation Statement: Definition, Causes of Preparation of Bank Reconciliation Statement, Preparation of Bank Reconciliation Statement.	TUSHAR KANTI GHOSH	September, 2024	NA	6	September, 2024
	UNIT IV	Preparation of Financial Statements of a profit-making trading firm with additional information, Preparation of Financial	TUSHAR KANTI GHOSH	October, 2024	NA	6	September, 2024

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		Statements of a not for profit organisation. Preparation of Financial Statements of a Company.					
	UNIT V	Sectional and Self Balancing Ledgers: Concept of Sectional Balancing, preparation of control accounts. Self-Balancing Ledger: advantages; Recording process; preparation of Adjustment accounts.	TUSHAR KANTI GHOSH	November, 2024	NA	6	November, 2024

**SEMESTER -I**

**MD (MULTIDISCIPLINARY COURSE)**

**Full Marks: 50 (Theoretical CA – 15 & Theoretical ESE – 35)**

<b>Name of the Paper</b>	<b>Unit Number</b>	<b>Topic</b>	<b>Name of Teacher</b>	<b>To be completed during the month and year</b>	<b>No of Practical Classes</b>	<b>No of Theoretical Classes</b>	<b>Continuous Internal Assessment in the Month of</b>
Information and Communication Technology MDC117	UNIT I	Introduction to ICT: Definition of ICT and its significance in today's world, Historical evolution of ICT and major milestones, ICT's role in Education, ICT's role in various industries and societal impacts.	DEBAPRASAD MITRA	August, 2024	NA	4	August, 2024
	UNIT II	Computer Systems and Architecture: Overview of computer hardware components, CPU, memory, storage devices, and peripherals, Basics of computer	DEBAPRASAD MITRA	August, 2024	NA	4	August, 2024

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		architecture and operating systems.					
	UNIT III	Software and Programming Fundamentals: Introduction to software types: system software, application software, and programming languages, Basics of algorithm design and problem-solving techniques.	DEBAPRASAD MITRA	September, 2024	NA	4	September, 2024
	UNIT IV	Data Communication and Networks: Understanding data transmission and communication protocols, Introduction to network topologies and architectures, Local Area Networks (LANs), Wide Area Networks (WANs), and the Internet.	DEBAPRASAD MITRA	September, 2024	NA	4	September, 2024
	UNIT V	Basics of Email: Traditional mail vs Email, Understanding of email addresses, setting up your own email account, Email providers, E-mail protocols, Format of an E-mail message, Description of E-mail Headers, E-mail contents and encoding, E-mail clients.	DEBAPRASAD MITRA	October, 2024	NA	3	October, 2024
	UNIT VI	Emerging Technologies: The importance of information security in ICT, Cloud Computing and Virtualization: Understanding cloud computing models (SaaS, PaaS, IaaS), Virtualization technologies and their role in cloud infrastructure, Evolution of mobile technologies and their impact on ICT, Exploration of cutting-edge technologies (e.g., Internet	DEBAPRASAD MITRA	November, 2024	NA	3	November, 2024

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		of Things, Artificial Intelligence, Virtual Reality).					
	UNIT VII	Ethical and Social Implications of ICT: Ethical considerations in the use of ICT and data privacy, ICT's impact on society, economy, and the environment.		December, 2024	NA	2	December, 2024

**SEMESTER -I**

**SKILL ENHANCEMENT COURSE**

**Full Marks: 50 (Practical CA – 30 & Practical ESE – 20)**

<b>Name of the Paper</b>	<b>Unit Number</b>	<b>Topic</b>	<b>Name of Teacher</b>	<b>To be completed during the month and year</b>	<b>No of Practical Classes</b>	<b>No of Theoretical Classes</b>	<b>Continuous Internal Assessment in the Month of</b>
Office Automation Software Lab BCASE101	UNIT I	Windows Basics: Introduction of windows OS, navigating the Windows 10 user interface, Creating accounts in Windows, Opening apps and programs, working with files, using the Start button and Start menu, Accessing and using the Action Center, Working with apps and programs on the taskbar, Customizing settings in Windows 10, including backgrounds, screensavers, and more, Using the Settings app and the Control Panel.	DEBAPRASAD MITRA	August, 2024	4	NA	August, 2024
	UNIT II	MS Word and Google Docs: Overview, creating, saving, opening, importing, exporting, and inserting files, formatting pages, paragraphs and sections, indents and outdents,	DEBAPRASAD MITRA	August, 2024	4	NA	August, 2024

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		creating lists and numbering. Headings, styles, fonts and font size, editing, positioning, viewing texts, searching and replacing text, inserting page breaks, page numbers, bookmarks, symbols, and dates. Using tabs and tables, header, footer, and printing,					
	UNIT III	MS Excel and Google Sheets: Worksheet overview, entering information, worksheet creation, opening and saving workbook, formatting numbers and texts, protecting cells, producing charts, and printing operations. Application of Excel for obtaining statistical parameters, Mean, Median, Mode, average, correlation, Regression, Data capturing using Google Forms.	DEBAPRASAD MITRA	September, 2024	4	NA	September, 2024
	UNIT IV	MS PowerPoint or Google Slides: Slide creation with PowerPoint, Presenting shows for corporate and commercial using PowerPoint.	DEBAPRASAD MITRA	September, 2024	3	NA	September, 2024
	UNIT V	Graphics and Image Editing Software: Overview of graphic design and image editing applications (e.g., Adobe Photoshop, GIMP), Understanding basic image editing techniques (e.g., cropping, resizing, retouching), Creating and manipulating graphics for various purposes.	DEBAPRASAD MITRA	October, 2024	3	NA	October, 2024
	UNIT VI	Web Browsing and Internet Applications: Navigating web browsers and utilizing essential features, Understanding internet protocols and security considerations, Exploring common internet applications (e.g., email clients, cloud storage, online collaboration	DEBAPRASAD MITRA	November, 2024	2	NA	November, 2024

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		tools).					
	UNIT VII	File Compression and Archiving Software: Introduction to file compression formats (e.g., ZIP, RAR), Compressing and decompressing files and folders, Managing archived files and folders.		December, 2024	2	NA	December, 2024

**SEMESTER -I**

**AEC**

**Full Marks: 50 (Theoretical CA – 15 & Theoretical ESE – 35)**

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No of Practical Classes	No of Theoretical Classes	Continuous Internal Assessment in the Month of
English/MIL Communication AEC-1	UNIT I	Types and modes of communications: Verbal, Nonverbal, Personal, Social, Business, Group, Effective and Miscommunications.	TUSHAR KANTI GHOSH	August, 2024	NA	5	August, 2024
	UNIT II	Dialogue and monologue, Group discussion, Interview, Public speech.	TUSHAR KANTI GHOSH	September, 2024	NA	5	September, 2024

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SEMESTER -III

MAJOR

Full Marks: 100 (Theoretical ESE – 35 & Theoretical CA – 15; Practical ESE-20 & Practical CA- 30)

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No of Practical Classes	No of Theoretical Classes	Continuous Internal Assessment in the Month of
Object Oriented Programming with C ++ BCAMJ301	UNIT I	Basics: Introduction to Object Oriented Programming and its Basic Features, Basic Components of C++, Characteristics of Object-Oriented Language, Structure of a C++ Program, Flow Control Statements in C++, Functions - Scope of Variables, Inline Functions, Recursive Functions, Pointers to Functions, C++ Pointers, Arrays, Dynamic Memory Allocation and De-Allocation	SUSHANT KR. DAS	September, 2024	3	3	September, 2024
	UNIT II	Differences Between Object Oriented and Procedure Oriented Programming, Abstraction, Overview of Object-Oriented Programming Principles, Encapsulation, C++ Classes, Objects, User Defined Types, Constructors and Destructors, this Pointer, Friend Functions, Data Abstraction,.	SUSHANT KR. DAS	September, 2024	4	4	September, 2024
	UNIT III	Polymorphism, Static and Dynamic Bindings, Function Overloading, Operator Overloading, Type Conversion.	SUSHANT KR. DAS	September, 2024	4	4	September, 2024
	UNIT IV	Class Inheritance, Base and Derived Classes, Base and Derived Class, Dynamic Binding through Virtual Functions, Pure Virtual Functions, Virtual	SUSHANT KR. DAS	September, 2024	3	3	September, 2024

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		Base Class, Abstract Classes, Virtual Destructors					
	UNIT V	Stream Classes Hierarchy, Stream I/O, File Streams, Overloading the Extraction and Insertion Operators, Error Handling during File Operations, Formatted I/O.	SUSHANT KR. DAS	November, 2024	3	3	November, 2024
	UNIT VI	Exception Handling- Benefits of Exception Handling, Throwing an Exception, the Try Block, Catching an Exception, Exception Objects, Exception Specifications, Re throwing an Exception, Uncaught Exceptions.	SUSHANT KR. DAS	November, 2024	3	3	November, 2024
	UNIT VII	Templates - Class Templates and Function Templates, simple generic classes and generic function, simple example programs. Introduction to Standard Template Library (STL).	SUSHANT KR. DAS	November, 2024	4	4	November, 2024

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SEMESTER -III

MAJOR

Full Marks: 100 (Theoretical ESE – 35 & Theoretical CA – 15; Practical ESE-20 & Practical CA- 30)

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No of Practical Classes	No of Theoretical Classes	Continuous Internal Assessment in the Month of
Digital Logic and Computer Organization BCAMJ302	UNIT I	Introduction to Number System - Positional number systems; Binary, Octal, Hexadecimal and Decimal number systems; conversion of a number in one system to the other; Representation of signed numbers- signed magnitude, one's complement, 2's complement representation techniques, Merits of 2's complement representation scheme; Various binary codes- BCD, excess -3, Gray code; Binary arithmetic- addition, subtraction, multiplication and division of unsigned binary numbers.	DEBAPRASAD MITRA	September, 2024	NIL	4	September, 2024
	UNIT II	Logic gates: Basic logic operations- logical sum(or), logical product (AND), complementation (not), Anti coincidence (EX-OR)and coincidence (EX-NOR) operations: Truth tables of Basic gates; Boolean Variables and Expressions; Demorgan's theorem; Universal gates- NAND and NOR; Boolean expressions Simplification- Algebraic technique, Karnaugh map technique, 3 variable and 4 variable Karnaugh map.	DEBAPRASAD MITRA	September, 2024	2	4	September, 2024

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	UNIT III	Combinational Circuits: Half adder, full adder, binary magnitude comparator, adder/subtractor circuits, multiplexer and demultiplexer circuits, BCD adder/subtractor; ALU; parity generators, code converters, priority encoders, PLAs.	DEBAPRASAD MITRA	September, 2024	2	3	September, 2024
	UNIT IV	Sequential circuits: flip- flops, - RS, clocked RS, D, JK, T flip-flops,: Race condition, Master Slave JK: Registers, Universal Shift Registers; Counters- Binary, decade; modulo-r divider; Practical IC's; Sequential Machine design.	DEBAPRASAD MITRA	September, 2024	2	3	September, 2024
	UNIT V	Register Transfer and Micro operations: Register Transfer Language, Register Transfer, Bus & Memory Transfer, Arithmetic Micro operations, Logic Micro operations, Shift Micro operation.	DEBAPRASAD MITRA	November, 2024	NIL	3	November, 2024
	UNIT VI	Basic Computer Organization: Instruction codes, Computer Registers, Computer Instructions, Timing & Control, Instruction Cycles, Memory Reference Instruction, Input - Output & Interrupts, Complete Computer Description & Design of Basic Computer.	DEBAPRASAD MITRA	November, 2024	NIL	3	November, 2024
	UNIT VII	Processor and Control Unit: Hardwired vs. Micro programmed Control Unit, General Register Organization, Stack Organization, Instruction Format, Data Transfer & Manipulation, Program Control, RISC, CISC, Pipelining - Pipelined datapath and control - Handling Data hazards & Control hazards. Introduction to Parallelism.	DEBAPRASAD MITRA	November, 2024	NIL	3	November, 2024

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	UNIT VIII	Memory and I/O Systems: Peripheral Devices, I/O Interface, Data Transfer Schemes, Program Control, Interrupt, DMA Transfer, I/O Processor. Memory Hierarchy, Processor vs. Memory Speed, High-Speed Memories, Cache Memory, Associative Memory, Interleave, Virtual Memory, Cache Mapping Techniques, Memory Management.	DEBAPRASAD MITRA	December, 2024	NIL	3	December, 2024
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- NA – Not Applicable

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SEMESTER -III

MINOR

Full Marks: 100 (Theoretical ESE – 70 & Theoretical CA – 30)

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No of Practical Classes	No of Theoretical Classes	Continuous Internal Assessment in the Month of
Introduction to Algebra (BCAMN301)	Unit I	Abstract Algebra: Sets, Union and Intersection, Complement, Mapping, Composition, notion of a Group, Ring, Field with simple examples.	ATANU CHATTOPADHYAY	September, 2024	NA	3	September, 2024
	Unit II	Complex Numbers: Modulus and amplitude, Euler's formula, De Moivre's theorem.	ATANU CHATTOPADHYAY	September, 2024	NA	3	September, 2024
	Unit III	Theory of equations: Polynomials, Division algorithm, Fundamental theorem of classical algebra (Proof not required), Descartes rule of sign and its application, Relation between roots and coefficients; symmetric function of roots, Transformation of polynomial equation, Cardan's solution of cubic equation,	ATANU CHATTOPADHYAY	September, 2024	NA	4	September, 2024
	Unit IV	Permutation and Combinations: Simple problems.	ATANU CHATTOPADHYAY	October, 2024	NA	2	October, 2024
	Unit V	Linear Algebra: Matrices, Addition and Multiplication of Matrices, Determinants, Inverse of a Matrices; Solution of system of linear equations in three variables by Cramer's rule and matrix inversion methods, Vector spaces, Subspaces, Bases and Dimensions, Coordinates, Linear	ATANU CHATTOPADHYAY	November, 2024	NA	3	November, 2024

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		Transformation, The Algebra of Linear Transformations.					
	Unit VI	Vector Algebra: Scalars and vectors, vector addition, linear combination of vectors, condition of colinearity of three points, scalar and vector products, scalar triple product and vector triple product.	ATANU CHATTOPADHYAY	December, 2024	NA	3	December, 2024
	Unit VII	Analytical Two Dimensional Geometry: Translation and rotation of rectangular axes, invariants, general equation of second degree, Reduction to standard forms and classification. Plane polar equations of a straight line, circle and conic.	ATANU CHATTOPADHYAY	December, 2024	NA	3	December, 2024

- NA – Not Applicable

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SEMESTER -III

AECCE

Full Marks: 50 (Theoretical CA – 15 & Theoretical ESE – 35)

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No of Practical Classes	No of Theoretical Classes	Continuous Internal Assessment in the Month of
English Communication AECCE301	UNIT I	Types and modes of communications: Verbal, Nonverbal, Personal, Social, Business, Group, Effective and Miscommunications.	TUSHAR KANTI GHOSH	September, 2024	NA	6	September, 2024
	UNIT II	Dialogue and monologue, Group discussion, Interview, Public speech.	TUSHAR KANTI GHOSH	October, 2024	NA	7	October, 2024

- NA – Not Applicable

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SEMESTER -III

MD (MULTIDISCIPLINARY COURSE)

Full Marks: 50 (Theoretical CA – 15 & Theoretical ESE – 35)

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No of Practical Classes	No of Theoretical Classes	Continuous Internal Assessment in the Month of
Indian Astronomy (MDC303)	UNIT I	Astronomical Scales: Astronomical Distance, Mass and Time, Scales, Brightness, Radiant Flux and Luminosity, Measurement of Astronomical Quantities Astronomical Distances, Stellar Radii, Masses of Stars, Stellar Temperature. Basic concepts of positional astronomy: Celestial Sphere, Geometry of a Sphere, Spherical Triangle, Astronomical Coordinate Systems, Geographical Coordinate Systems, Horizon System, Equatorial System, Diurnal Motion of the Stars, Conversion of Coordinates. Measurement of Time, Sidereal Time, Apparent Solar Time, Mean Solar Time, Equation of Time, Calendar. Basic Parameters of Stars: Determination of Distance by Parallax Method; Brightness, Radiant Flux and Luminosity, Apparent and Absolute magnitude scale, Distance Modulus; Determination of Temperature and Radius of a star; Determination of Masses from Binary orbits; Stellar	MADHUMITA NAG	August, 2024		10	August, 2024

- NA – Not Applicable

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		Spectral Classification, Hertzsprung-Russell Diagram.					
	UNIT II	Astronomical techniques: Basic Optical Definitions for Astronomy (Magnification Light Gathering Power, Resolving Power and Diffraction Limit, Atmospheric Windows), Optical Telescopes (Types of Reflecting Telescopes, Telescope Mountings, Space Telescopes), Detectors and Their Use with Telescopes (Types of Detectors, detection Limits with Telescopes). Physical principles: Gravitation in Astrophysics (Virial Theorem, Newton versus Einstein), Systems in Thermodynamic Equilibrium.	MADHUMITA NAG	September, 2024		10	September, 2024
	UNIT III	The sun (Solar Parameters, Solar Photosphere, Solar Atmosphere, Chromosphere. Corona, Solar Activity, Basics of Solar Magneto-hydrodynamics. Helioseismology). The solar family (Solar System: Facts and Figures, Origin of the Solar System: The Nebular Model, Tidal Forces and Planetary Rings, Extra-Solar Planets. Stellar spectra and classification Structure (Atomic Spectra Revisited, Stellar Spectra, Spectral Types and Their Temperature Dependence, Black Body Approximation, H R Diagram, Luminosity Classification)		September, 2024		10	September, 2024
	UNIT IV	The milky way: Basic Structure and Properties of the Milky Way, Nature of Rotation of the Milky Way (Differential	MADHUMITA NAG	October, 2024		10	October, 2024

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		Rotation of the Galaxy and Oort Constant, Rotation Curve of the Galaxy and the Dark Matter, Nature of the Spiral Arms), Stars and Star Clusters of the Milky Way, Properties of and around the Galactic Nucleus. Galaxies: Galaxy Morphology, Hubble's Classification of Galaxies, Elliptical Galaxies (The Intrinsic Shapes of Elliptical, de Vaucouleurs Law, Stars and Gas). Spiral and Lenticular Galaxies (Bulges, Disks, Galactic Halo) The Milky Way Galaxy, Gas and Dust in the Galaxy, Spiral Arms.					
	UNIT V	Large scale structure & expanding universe: Cosmic Distance Ladder (An Example from Terrestrial Physics, Distance Measurement using Cepheid Variables), Hubble's Law (Distance-Velocity Relation), Clusters of Galaxies (Virial theorem and Dark Matter).	MADHUMITA NAG	November, 2024		10	November, 2024

- NA – Not Applicable

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Academic Calendar and Academic Plan for AY 2024-25 (ODD SEMESTER)

SEMESTER -V

CORE

Full Marks: 100 (Theoretical ESE – 35 & Theoretical CA – 15; Practical ESE-20 & Practical CA- 30)

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No of Practical Classes	No of Theoretical Classes	Continuous Internal Assessment in the Month of
Software Engineering (BCAC501)	UNIT I	Software Engineering fundamentals: Definition of software, Software lifecycle, Comparison between software life cycles and hardware life cycles, program, software product, software engineering; Define Software process, software project, software product; Software engineering: A layered technology; Software engineering paradigm. Software life cycle models: Classical waterfall model, Iterative waterfall model, Prototyping model, Evolutionary model, Iterative model, Spiral Model, RAD model .	SUSHANT KR DAS	August, 2024	2	3	August, 2024
	UNIT II	Feasibility Study and its importance; Cost Benefit Analysis; Requirements analysis and specifications: Introduction, Data & Fact Gathering Techniques, SRS, Good and Bad SRS.	SUSHANT KR DAS	September, 2024	2	2	September, 2024
	UNIT III	Design: Introduction,	SUSHANT KR DAS	September, 2024	3	3	September,

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		Classification of design activity(Preliminary design, Detailed design), Cohesion & Coupling, Approaches to Software Design(Function oriented design, Object oriented design), Structured Analysis, Structured Design, DFD, Structured Chart, Data Dictionary, Introduction to ERDs; Introduction to CASE Tools; Introduction to UML; Introduction to User Interface Design.					2024
	Unit IV	Coding: Introduction to Coding, Coding standards and guidelines; Debugging: Introduction to Debugging, Debugging approaches; Software Testing: Introduction to testing, Verification &Validation, Unit testing, Black-box testing, White- Box testing, Grey Box Testing, Integration testing, System testing, Performance testing, Mutation Testing, Path Testing with Cyclomatic complexity.	SUSHANT KR DAS	September, 2024	3	3	October, 2024
	UNIT V	Software Reliability: Introduction to Software Reliability, Reliability Metrics; Software Quality Assurance, Software Quality, ISO 9000, SEI CMM; Software Maintenance: Introduction, Types of	SUSHANT KR DAS	September, 2024	2	3	November, 2024

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		Maintenance; Software Reuse.					
	UNIT VI	Software Project Management: Introduction, Project planning, SPMP document; Metrics for project size estimation: Introduction, LOC, FP; Project Estimation Techniques: Introduction, Expert Judgment Technique, Software Metrics: LOC, KLOC, PM, Delphi Cost Estimation, COCOMO (Basic, Intermediate, Complete); Scheduling: Introduction, WBS, Activity Network, CPM, Gantt Charts, PERT Charts; Organization & Team Structure; Staffing; Risk Management; Software Configuration Management.	SUSHANT KR DAS	December, 2024	3	3	December, 2024

- NA – Not Applicable

Department of BCA

Academic Calendar and Academic Plan for AY 2024-25 (ODD SEMESTER)

**SEMESTER -V**

**CORE**

**Full Marks: 100 (Practical ESE – 40 & Practical CA – 60)**

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No of Practical Classes	No of Theoretical Classes	Continuous Internal Assessment in the Month of
Minor Project and Entrepreneurship (BCAC502)	Unit I	Project Management Concepts: Concept and Characteristics of a Project, Types of Projects, Project Management (Need, Knowledge Areas, Project Manager, Project Management Triangle, Project Scope and Scope Creep, Importance of Project Management).	TUSHAR KANTI GHOSH	August, 2024	PROJECT REPORT	3	August, 2024
	Unit II	Project Management Life Cycle: Project Management Life Cycle Phases, Project Management Process (Project Process, Process Group, Process Interactions, Customization, Process Group and Knowledge Area Matrix)	TUSHAR KANTI GHOSH	August, 2024	PROJECT REPORT	3	August, 2024
	Unit III	Project Planning: Planning Need, Importance of Planning, Planning Process, Work Breakdown Structure and Organization Breakdown Structure, Roles, Responsibility and Team Work, Feasibility Studies.	TUSHAR KANTI GHOSH	September, 2024	PROJECT REPORT	3	September, 2024
	Unit IV	Project Evaluation: Investment Analysis of Projects (Time Value of Money, Interest Rates, Compounding/ Discounting, Payback Period, Average	TUSHAR KANTI GHOSH	September, 2024	PROJECT REPORT	3	September, 2024

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		Rate of Return, Net Present Value, Profitability Index, Internal Rate of Return), Sources of Finance.					
	UNIT V	Project Scheduling: Importance of Project Scheduling, Scheduling Techniques (Gantt Chart and Line of Balance, Network Analysis - CPM/PERT, Slack and Float).	TUSHAR KANTI GHOSH	September, 2024	PROJECT REPORT	3	September, 2024
	UNIT VI	Project Cost Control: Direct and Indirect Cost, Normal Cost and Crash Cost, Time- Cost Trade-off Analysis - Optimum Project Duration, Resource Allocation and Leveling.	TUSHAR KANTI GHOSH	September, 2024	PROJECT REPORT	3	September, 2024
	UNIT VII	Legal and Quality Aspects of Project Management: Project Contract (Types of Contract, Sub-Contracting, Tenders, Payment to Contractors), Project Audit.	TUSHAR KANTI GHOSH	September, 2024	PROJECT REPORT	3	September, 2024
	UNIT VIII	IT in Projects: Overview of types of Software for Projects, Major Features of Project Management Software like MS Project, Criterion for Software Selection.	TUSHAR KANTI GHOSH	September, 2024	PROJECT REPORT	3	September, 2024
	UNIT IX	Entrepreneurship: Meaning & Concept of Entrepreneurship, Conditions needed for Entrepreneurship (Social Factors, Economic Factors, Psychological Factors, Legal Factors, Education & Technical Knowhow, Financial Assistance), Qualities of a Prospective Entrepreneur.	TUSHAR KANTI GHOSH	October, 2024	Entrepreneurship Plan	3	October, 2024
	UNIT X	Entrepreneurial Motivation: McClelland's N-Ach Theory (Need for Affiliation, Need for Power, Need for Achievement), Self-Analysis, Personal	TUSHAR KANTI GHOSH	October, 2024	Entrepreneurship Plan	3	October, 2024

- NA – Not Applicable

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		Efficacy, Culture & Values, Risktaking Behaviour, Technology Backup.					
	UNIT XI	Introduction to various form of business organization (sole proprietorship, partnership, corporations, Limited Liability company), mission, vision and strategy formulation.	TUSHAR KANTI GHOSH	November, 2024	Entrepreneurship Plan	3	November, 2024
	UNIT XII	Entrepreneurial Skills: Creativity, Problem Solving, Decision Making, Communication, Leadership Quality.	TUSHAR KANTI GHOSH	December, 2024	Entrepreneurship Plan	3	December, 2024

- NA – Not Applicable

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SEMESTER -V

DISCIPLINE SPECIFIC ELECTIVE (DSE)

Full Marks: 50 (Theoretical ESE – 35 & Theoretical CA – 15)

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No of Practical Classes	No of Theoretical Classes	Continuous Internal Assessment in the Month of
Introduction to Cyber Security (BCADSE501)	UNIT I	Introduction to Cyber Security: Cybersecurity objectives, Cybersecurity roles, Differences between Information Security & Cyber security. Confidentiality, integrity, & availability, Authentication & nonrepudiation, Types of attack.	DEBAPRASAD MITRA	August, 2024	NA	3	August, 2024
	UNIT II	Cryptography Concepts & Techniques: Introduction, Plaintext & Cipher text, Substitution Techniques, Transposition Techniques, Encryption & Decryption, Symmetric & Asymmetric key Cryptography, Key Range & Key Size.	DEBAPRASAD MITRA	August, 2024	NA	5	August, 2024
	UNIT III	Symmetric Key Algorithm: Introduction, Algorithm types & Modes, Overview of Symmetric Key Cryptography, DES(Data Encryption Standard) algorithm, IDEA(International Data Encryption Algorithm) algorithm, RC5(Rivest Cipher 5) algorithm.	DEBAPRASAD MITRA	September, 2024	NA	5	September, 2024
	UNIT IV	Asymmetric Key Algorithm, Digital Signature and RSA: Introduction, Overview of Asymmetric key Cryptography, RSA algorithm, NP-hard, Symmetric & Asymmetric key	DEBAPRASAD MITRA	September, 2024	NA	5	September, 2024

- NA – Not Applicable

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		Cryptography together, Digital Signature, Basic concepts of Message Digest and Hash Function (Algorithms on Message Digest and Hash function not required).					
	UNIT V	Firewall: Introduction, Types of firewall, Firewall Configurations, DMZ Network	DEBAPRASAD MITRA	September, 2024	NA	3	September, 2024
	UNIT VI	Future Implications & Evolving Technologies: New & emerging IT & IS technologies, Mobile security issues, risks, & vulnerabilities, Cloud concepts around data & collaboration.	DEBAPRASAD MITRA	October, 2024	NA	4	October, 2024
	UNIT VII	Electronic Mail Security: Basics of mail security, Pretty Good Privacy, S/MIME.	DEBAPRASAD MITRA	November, 2024	NA	3	November, 2024

- NA – Not Applicable

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SEMESTER -V

DISCIPLINE SPECIFIC ELECTIVE (DSE)

Full Marks: 50 (Theoretical ESE – 35 & Theoretical CA – 15)

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No of Practical Classes	No of Theoretical Classes	Continuous Internal Assessment in the Month of
Data Science (BCADSE502)	UNIT I	Introduction to data science, Exploratory data analysis, Linear regression and regularization, Model selection and evaluation.	SUSHANT KR DAS	August, 2024	NA	4	August, 2024
	UNIT II	Classification: kNN, decision trees, SVM; Ensemble methods: random forests, Naïve Bayes and logistic regression.	SUSHANT KR DAS	September, 2024	NA	4	September, 2024
	UNIT III	Feature engineering and selection, Clustering: k-means, hierarchical clustering, Dimensionality reduction: PCA and SVD	SUSHANT KR DAS	October, 2024	NA	4	October, 2024
	UNIT IV	Text mining and information retrieval, Network Analysis, Recommender systems.	SUSHANT KR DAS	November, 2024	NA	4	November, 2024

- NA – Not Applicable