

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: B.Sc. (Computer Science)- 1<sup>st</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
Paper I	Computer And Programming Fundamentals	1. Knowledge of Memory Management 2. Understanding of Operating System 3. Understanding of multithreaded processes 4. Understanding of solving problems and its techniques 5. Knowledge of various computer programming languages
Paper II	PC Software	1. Understanding of basics of Windows Operating System 2. Creating documents using MS Word 3. Creating Spreadsheets in MS Excel 4. Creating Power Point Presentations 5. Understanding of animation in Power Point

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: B.Sc. (Computer Science)- 2<sup>nd</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
Paper I	Programming in C	1. Understanding of basics concepts of C Programming Language 2. Understanding of Decision-making statements and branching statements 3. Knowledge of functions and its usages 4. Understanding of storage classes and its scope 5. Knowledge of arrays and usage of arrays in C
Paper II	Logical Organization of Computers	1. Understanding of number system 2. Knowledge of error correction and detection code 3. Understanding of logic gates 4. Knowledge of Registers and Counters

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: B.Sc. (Computer Science)- 3<sup>rd</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
Paper I	Data Structure	1. Knowledge of Strings and Pattern Matching Algorithms 2. Understanding role of Data Structure and its usage 3. Learning different types of Data Structure with their applications 4. Understanding of various Data Structure algorithms and use of Complexity
Paper II	Software Engineering	1. Knowledge of software development life cycle phases 2. Understanding of Software Requirement Analysis and Specifications 3. Understanding of Structured Analysis & Tools 4. Knowledge of Software Project Planning, Testing and Maintenance 5. Knowledge of Risk Management

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: B.Sc.(Computer Science)- 4<sup>th</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
Paper I	Object Oriented Programming with CPP	1. Understanding of basic and advanced features of Object-Oriented Programming (OOP) 2. Knowledge of Constructors and Destructors 3. Understanding of Dynamic Memory Management and Pointers 4. Knowledge of Polymorphism and Operator Overloading
Paper II	Operating System	1. Understanding of features and various types of Operating System 2. Knowledge of Process Management & Process Scheduling 3. Knowledge of Memory Management & Deadlocks 4. Understanding of Virtual Memory & File Management 5. Understanding of process synchronization

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: B.Sc.(Computer Science)- 5<sup>th</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
Paper I	Fundamentals of Database Systems	1. Understanding of Database and Database Management System 2. Understanding of various Database Management System Architecture 3. Knowledge of Data Models 4. Understanding the role of Relational Data Model and usage of Keys
Paper II	Web Designing	1. Understanding of Internet and its services 2. Knowledge about steps used for developing a website 3. Create webpages using HTML 4. Working with forms and frames in HTML

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: B.Sc.(Computer Science)- 6<sup>th</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
Paper I	Relational Database Management System	1. Understanding concepts of Relational Model 2. Knowledge of Functional Dependencies and Normalization 3. Implementing database queries using SQL 4. Knowledge of PL/SQL architecture
Paper II	Computer Networks	1. Understanding of different network models 2. Knowledge of guided and wireless transmission media 3. Understanding of Switching and Multiplexing 4. Knowledge of error correction and detection 5. Knowledge of routing algorithms and security issues

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: BCA 1<sup>st</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
BCA-111	Computer and Programming Fundamentals	<ol style="list-style-type: none"> <li>1. Understanding of basic concepts of Computers</li> <li>2. Knowledge of I/O devices and Operating Systems</li> <li>3. Understanding of using internet and its services</li> <li>4. Knowledge of various types of programming languages</li> <li>5. Knowledge of major threats for computer system</li> </ol>
BCA-112	Windows and PC Software	<ol style="list-style-type: none"> <li>1. Understanding of basics and advance concepts of Windows Operating System</li> <li>2. Knowledge of windows accessories</li> <li>3. Knowledge of creating documents using MS Word</li> <li>4. Understanding of spreadsheets and charts in MS Excel</li> <li>5. Knowledge of advanced features of MS-Excel</li> </ol>
BCA-113	Mathematical Foundations – I	<ol style="list-style-type: none"> <li>1. Knowledge of set theory, types of sets and operations on set</li> <li>2. Understanding of Venn Diagram</li> <li>3. Knowledge of lattices and Boolean Algebra</li> <li>4. Understanding of derivation of the functions and differentiation</li> </ol>
BCA-114	Logical Organization of Computers – I	<ol style="list-style-type: none"> <li>1. Understanding of number system, codes and representation of numbers</li> <li>2. Understanding of binary arithmetic</li> <li>3. Knowledge of Boolean Algebra and simplification of Boolean expressions using Boolean Laws and K-Map</li> <li>4. Knowledge of Logic gates and their working</li> <li>5. Knowledge of various combinational circuits using logic gates</li> </ol>
BCA-115	Communicative English	<ol style="list-style-type: none"> <li>1. Knowledge of comprehension</li> <li>2. Proficiency in composing the Fax, e-mails and text messages</li> <li>3. Knowledge of articles, prepositions, Subject verb agreement, tenses, voice, reported speech etc.</li> <li>4. Proficiency in writing official letters</li> <li>5. Understanding of RTI act 2005</li> </ol>
BCA-116	Programming in C	<ol style="list-style-type: none"> <li>1. Understanding of 'C' Language, its data types and input output functions</li> <li>2. Understanding of different types of operators and expressions in C</li> <li>3. Understanding of control structures of C language</li> <li>4. Knowledge of storage classes used in C</li> <li>5. Implementing programs based on various concepts of C</li> </ol>

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: BCA 2<sup>nd</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
BCA-121	Advanced Programming in C	<ol style="list-style-type: none"> <li>1. Understanding of strings, structure and union</li> <li>2. Knowledge of pointers, pointer arithmetic, operators and comparison</li> <li>3. Knowledge of files handling in C</li> <li>4. Understanding of preprocessor directives, macros and command line arguments</li> </ol>
BCA-122	Logical Organization of Computers – II	<ol style="list-style-type: none"> <li>1. Understanding of sequential circuits such as Flip Flops, Registers and Counters with their working</li> <li>2. Knowledge of computer memory and its parameters</li> <li>3. Knowledge of designing Instruction, addressing modes and various modes of transfer</li> </ol>
BCA-123	Mathematical Foundations – II	<ol style="list-style-type: none"> <li>1. Knowledge of Propositional Logic and Quantifiers</li> <li>2. Understanding of mathematical Induction</li> <li>3. Knowledge of Group and rings with their operations</li> <li>4. Knowledge of matrix and its operations</li> <li>5. Understanding of Eigen values and Eigen Vectors</li> </ol>
BCA-124	Office Automation Tools	<ol style="list-style-type: none"> <li>1. Understanding of Desktop Publishing and its packages</li> <li>2. Creating pages using PageMaker</li> <li>3. Creating and formatting Word Documents</li> <li>4. Knowledge of Mail Merge</li> <li>5. Creating animated presentations</li> </ol>
BCA-125	Structured System Analysis and Design	<ol style="list-style-type: none"> <li>1. Understanding of system with its elements and types</li> <li>2. Understanding of System Development Life Cycle and its models</li> <li>3. Knowledge of structured analysis and its tools</li> <li>4. Understanding of cost/benefit analysis and forms design</li> <li>5. Knowledge of system testing and its types</li> </ol>
BCA-126	Personality Development	<ol style="list-style-type: none"> <li>1. Understanding of personality and its elements</li> <li>2. Knowledge of intrapersonal skills and role playing</li> <li>3. Knowledge of Group Discussion and Presentation Skills</li> <li>4. Knowledge of Interview Skills</li> <li>5. Understanding of Intelligent listening</li> </ol>

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: BCA 3<sup>rd</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
BCA-231	Object Oriented Programming Using C++	<ol style="list-style-type: none"> <li>1. Understanding of basic and advanced features of Object-Oriented Programming (OOP)</li> <li>2. Knowledge of Constructors and Destructors</li> <li>3. Understanding of Dynamic Memory Management and Pointers</li> <li>4. Knowledge of Polymorphism and Operator Overloading</li> </ol>
BCA-232	Data Structures	<ol style="list-style-type: none"> <li>1. Understanding role of Data Structure and its usage</li> <li>2. Learning different types of Data Structure with their applications</li> <li>3. Understanding of various Data Structure algorithms and use of Complexity</li> </ol>
BCA-233	Computer Architecture	<ol style="list-style-type: none"> <li>1. Knowledge of computer organization</li> <li>2. Understanding of Register transfer and Microoperations</li> <li>3. Working and significance of Central Processing Unit</li> <li>4. Knowledge of memory organization and Input-Output Interface</li> </ol>
BCA-234	Software Engineering	<ol style="list-style-type: none"> <li>1. Knowledge of software development life cycle phases</li> <li>2. Understanding of Software Requirement Analysis and Specifications</li> <li>3. Understanding of Structured Analysis &amp; Tools</li> <li>4. Knowledge of Software Project Planning, Testing and Maintenance</li> </ol>
BCA-235	Fundamentals of Database Systems	<ol style="list-style-type: none"> <li>1. Understanding of Database and Database Management System</li> <li>2. Understanding of various Database Management System Architecture</li> <li>3. Knowledge of Data Models</li> <li>4. Understanding the role of Relational Data Model</li> </ol>
BCA-236	Computer Oriented Numerical Methods	<ol style="list-style-type: none"> <li>1. Knowledge of Computer Arithmetic and Number Representation</li> <li>2. Understanding of Linear equations and ordinary differential equations</li> <li>3. Knowledge of Interpolation and Approximation</li> <li>4. Knowledge of Numerical Differentiation and Integration</li> </ol>

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: BCA 4<sup>th</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
BCA-241	Advanced Data Structures	<ol style="list-style-type: none"> <li>1. Understanding of advanced binary trees</li> <li>2. Knowledge of Graphs and their traversal algorithms</li> <li>3. Understanding the usage of internal and external sorting</li> <li>4. Knowledge of files</li> </ol>
BCA-242	Advanced Programming Using C++	<ol style="list-style-type: none"> <li>1. Understanding of Dynamic Polymorphism &amp; Virtual Functions</li> <li>2. Understanding use of type conversion</li> <li>3. Knowledge of Inheritance and its types</li> <li>4. Understanding role of class templates and class hierarchy for Files I/O</li> </ol>
BCA-243	E-Commerce	<ol style="list-style-type: none"> <li>1. Knowledge of E-Commerce and management issues related to E-Commerce</li> <li>2. Knowledge of Applications in governance and Global Market</li> <li>3. Knowledge of products in B2C model and online banking</li> <li>4. Understanding the usage of B2B</li> <li>5. Knowledge of Emerging business Models</li> </ol>
BCA-244	Relational Database Management System	<ol style="list-style-type: none"> <li>1. Understanding concepts of Relational Model</li> <li>2. Knowledge of Functional Dependencies and Normalization</li> <li>3. Implementing database queries using SQL</li> <li>4. Knowledge of PL/SQL architecture</li> </ol>
BCA-245	Computer Oriented Statistical Methods	<ol style="list-style-type: none"> <li>1. Understanding of frequency distribution, cumulative frequency and methods of dispersion</li> <li>2. Knowledge of Probability Distribution and Correlation</li> <li>3. Knowledge of Regression and use of Baye's theorem in Decision making</li> <li>4. Comfortable using different methods of sampling and Statistical Inference</li> </ol>
BCA-246	Management Information System	<ol style="list-style-type: none"> <li>1. Knowledge of System and different levels of management</li> <li>2. Understanding role of Management Information System</li> <li>3. Knowledge about developing information systems</li> <li>4. Knowledge of Functional MIS and e-business systems</li> </ol>

**Course Outcomes**  
**Session: 2022-2023**  
**Class: BCA 5<sup>th</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
BCA-351	Web Designing Fundamentals	<ol style="list-style-type: none"> <li>1. Understanding of Internet, World Wide Web &amp; Web Browsers</li> <li>2. Understanding of developing Website using HTML</li> <li>3. Knowledge of structuring and formatting text</li> <li>4. Knowledge of handling tables, creating frames and layout in HTML</li> </ol>
BCA-352	Operating System-I	<ol style="list-style-type: none"> <li>1. Understanding of features and various types of Operating System</li> <li>2. Knowledge of Process Management &amp; Process Scheduling</li> <li>3. Knowledge of Memory Management &amp; Deadlocks</li> <li>4. Understanding of Virtual Memory &amp; File Management</li> </ol>
BCA-353	Artificial Intelligence	<ol style="list-style-type: none"> <li>1. Understanding concepts of Artificial Intelligence and expert system</li> <li>2. Understanding of Search Process in AI</li> <li>3. Knowledge of Natural Language Processing with its usage in Speech Recognition</li> </ol>
BCA-354	Computer Networks	<ol style="list-style-type: none"> <li>1. Understanding of basic concepts &amp; features of Computer Networks</li> <li>2. Knowledge of OSI Reference Model</li> <li>3. Understanding of Analog and Digital data &amp; Signals</li> <li>4. Knowledge of Data Link Layer Design issues</li> <li>5. Understanding of various Routing Algorithms</li> </ol>
BCA-355	Programming Using Visual Basic	<ol style="list-style-type: none"> <li>1. Knowledge of Event-Driven and Object-Based Languages</li> <li>2. Understanding of decision-making statements &amp; Arrays in VB</li> <li>3. Knowledge of General &amp; Event Procedures</li> <li>4. Implementing Simple Program Development using VB</li> </ol>
BCA-356	Multimedia Tools	<ol style="list-style-type: none"> <li>1. Knowledge of Multimedia Authoring and VRML</li> <li>2. Understanding usage of Images, Video and video standards</li> <li>3. Knowledge of Digital Audio, Quantization and Transmission of Audio</li> <li>4. Understanding of Image and Video Compression Techniques</li> </ol>



**Course Outcomes**  
**Session: 2022-2023**  
**Class: BCA 6<sup>th</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
BCA-361	Web Designing Using Advanced Tools	<ol style="list-style-type: none"> <li>1. Understanding of JavaScript &amp; VBScript</li> <li>2. Knowledge of Client Server Model</li> <li>3. Understanding of adding images and sound in CSS</li> <li>4. Understanding of XML with its structure</li> </ol>
BCA-362	Operating System-II	<ol style="list-style-type: none"> <li>1. Understanding of Process Synchronization in Operating System</li> <li>2. Understanding of Disk Scheduling and its algorithms</li> <li>3. Knowledge of Distributed Operating System and Linux OS</li> <li>4. Implementing shell programs in Linux</li> </ol>
BCA-363	Computer Graphics	<ol style="list-style-type: none"> <li>1. Understanding of basic concepts of computer graphics</li> <li>2. Knowledge of Point Plotting Techniques</li> <li>3. Understanding of 2-D and 3-D Graphics Transformations</li> <li>4. Knowledge of clipping and various clipping algorithms</li> </ol>
BCA-364	Internet Technologies	<ol style="list-style-type: none"> <li>1. Understanding of Internet and its Services</li> <li>2. Knowledge of various protocols used in TCP/IP Model</li> <li>3. Knowledge of search engines</li> <li>4. Understanding of VPN and Web Security</li> </ol>
BCA-365	Advanced Programming with Visual Basic	<ol style="list-style-type: none"> <li>1. Understanding of List controls in VB</li> <li>2. Knowledge about form designing and usage of forms in VB</li> <li>3. Knowledge of designing menus in VB</li> <li>4. Knowledge of File Handling &amp; File Controls</li> <li>5. Understanding of creating the database and usage of Database controls</li> </ol>
BCA-366	Programming in Core Java	<ol style="list-style-type: none"> <li>1. Understanding of basic concepts of Object-Oriented Programming (OOP)</li> <li>2. Knowledge of Class and Objects in Java</li> <li>3. Knowledge of Strings and Polymorphism in Java</li> <li>4. Knowledge of Inheritance, Exception Handling in Java</li> <li>5. Understanding of Applet Life Cycle, Applet Tag, AWT &amp; Containers in Java</li> </ol>

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: B.Sc. (Multimedia) 1<sup>st</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
Paper-101	Arts & Creativity	<ol style="list-style-type: none"> <li>1. Learn the Origin of Aesthetic, Principle of Art</li> <li>2. Perform Calligraphy and Sketching</li> <li>3. Learn the forms, Colour Wheel, Texture, Line Shape Etc</li> <li>4. Learn about Clay Modeling</li> </ol>
Paper-102	Communicative English	<ol style="list-style-type: none"> <li>1. Understand Growth and Development of English Language</li> <li>2. Learn about Usage of Dictionary and Thesaurus</li> <li>3. Learn about Errors in Sentence and Articulation</li> <li>4. Learn Voice Analysis, Pitch and Tempo</li> </ol>
Paper-103	Computer Fundamentals	<ol style="list-style-type: none"> <li>1. Learn about Block Diagram, Types of Functions and Memory</li> <li>2. Learn Types of Languages and Binary Arithmetic System</li> <li>3. Learn about the Logic Gates and Truth Tables</li> <li>4. Learn about Operating System and MS-Office</li> </ol>
Paper-104	Introduction to Computer Programming	<ol style="list-style-type: none"> <li>1. Understand C Fundamentals and Datatypes</li> <li>2. Understand Operators and Expressions, Decision Making</li> <li>3. Understand Array, Strings and Functions</li> <li>4. Understand Structure, Union and Pointers</li> </ol>
Paper-105	Fundamentals of Multimedia	<ol style="list-style-type: none"> <li>1. Learn about Key Elements and Applications of Multimedia</li> <li>2. Learn about Desktop Publishing and UI Design</li> <li>3. Learn about Process of Production and Various File Formats</li> <li>4. Learn about Animation and its Effects</li> </ol>

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: B.Sc. Multimedia 2<sup>nd</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
Paper-201	Communication Skills & Personality Development	1. Understand the basic of communication and persuasion 2. Learn about theories and models used in interpersonal communication 3. Understand the basic of personality, human growth and behavior 4. Learn about techniques used in personality development
Paper-202	Communicative Hindi	1. भाषा की प्रकृति और हिंदी भाषा को समझा है। 2. हिंदी का विकास और हिंदी के विविध रूपों का व्यावहारिक प्रयोग समझाया है। 3. नवीन सूचना प्रौद्योगिकी व एमिनेशन उद्योग समझाया है 4. गोदान का संदर्भ : समसामयिक परिवेश व निंदारास का सार समझाया है
Paper-203	Computer Graphics	1. Learn about the meaning of Graphics 2. Understand the basic elements of Computer Graphics 3. Learn about the Composite Transformations 4. Understand the Properties of Light
Paper-204	HTML Basics	1. Learn the basics of HTML language its tags and functions 2. Understand the process of static web designing 3. Learn about the layout designing of a web page 4. Understand the interface between HTML and other coding languages

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: B.Sc. Multimedia 3<sup>rd</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
Paper-301	Content Writing & Scripting	1. Learn about the Language, Dialect and Script 2. Learn about the Formal Communication 3. Understand the Writing for Dynamic Website 4. Learn about the Linking and Developing a Screenplay
Paper-302	Photography	1. Learn about the Evolution of Photography 2. Learn about the different type of Photography 3. Understand about the Camera Features 4. Understand the concept of Post-Production
Paper-303	Animation Techniques	1. Learn about the Principle of Animation 2. Learn about Computer Language for Animation 3. Understand the concept 2D & 3D Coordinated System 4. Learn about Motion Control
Paper-304	Website Designing using Dreamweaver	1. Understand the basic environment of Dreamweaver 2. Learn about Linking and Editing to other Websites 3. Understand the concept of CSS design 4. Learn about Elements of Dreamweaver

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: B.Sc. (Multimedia) 4<sup>th</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
Paper-401	Data Communication & Networking	<ol style="list-style-type: none"> <li>1. Understand the Data Communication Technologies</li> <li>2. Learn about Computer Network and Topologies</li> <li>3. Understand Client Server Models</li> <li>4. Learn about Error Correction Codes and Cable Types</li> </ol>
Paper-402	Audio Production	<ol style="list-style-type: none"> <li>1. Understand the Principle of Sound and Audio Equipments</li> <li>2. Learn about Acoustic and Reverbrant Sounds</li> <li>3. Learn Audio Effect and Functions</li> <li>4. Analysing and Editing of Audio using Adobe Premier Pro</li> </ol>
Paper-403	Video Production	<ol style="list-style-type: none"> <li>1. Learn about Working of Video Camera and Components</li> <li>2. Understand the Concept of Video Camera and its Properties</li> <li>3. Learn about Production Stages</li> <li>4. Understand the Concept of Lighting Equipments and its Techniques</li> </ol>
Paper-404	2D Animation(Flash)	<ol style="list-style-type: none"> <li>1. Understand Working in Adobe Flash Editor</li> <li>2. Understand Types of Tweens</li> <li>3. Learn Sound Buttons and Action Script</li> <li>4. Learn about Layers, Effects and Rendering</li> </ol>
Paper-405	Web Programming Using PHP	<ol style="list-style-type: none"> <li>1. Learn the basics of PHP</li> <li>2. Learn Strings, Array and Reading Data in Web Pages</li> <li>3. Learn about OOP Concepts</li> <li>4. Learn about SQL and MySQL</li> </ol>

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: B.Sc. (Multimedia) 5<sup>th</sup>Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
Paper-501	Applications of Multimedia	1. Understand the Multimedia Based Presentations and Multimedia Kiosks 2. Understand the use of Multimedia in Training and Education, Museum and Galleries 3. Understand the Concept Generation of Multimedia Project and Stages of Multimedia Production 4. Learn about Gaming Consoles and LAN Gaming
Paper-502	Communication Technologies	1. Understand the brief introduction to Mass Communication Technologies 2. Learn about Wireless Networking issues & Standards 3. Learn about Radio Bands and Frequencies, Infrastructure and Ad-hoc Network 4. Understand Television Standards and Display Technology
Paper-503	Web Technologies	1. Learn about Website and URL 2. Create an OWL-S Ontology for Web Services and Semantic Search Technology 3. Learn about Terminology and Applications, Active X Components and XML 4. Understand the Social Network and its Development
Paper-504	Special Effects	1. Understand the Adobe After Effects and its Applications 2. Understand Motion Paths and Layer Management 3. Understand the Concept of Modes, Masks and Mattes 4. Learn about Nesting, Formatting and Randomizing text

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: B.Sc.(Multimedia) 6<sup>th</sup>semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
Paper-601	Information Security	<ol style="list-style-type: none"> <li>1. Understand the basics of cryptography</li> <li>2. Learn about program security and security in conventional operating systems</li> <li>3. Understand identification and authentication</li> <li>4. Learn about database management systems security</li> </ol>
Paper 602	Interactive Courseware Designing	<ol style="list-style-type: none"> <li>1. Understand the basic and advanced features of Courseware</li> <li>2. Learn about ADDIE Model</li> <li>3. Understand Courseware development life cycle</li> <li>4. Understand features of smart classrooms</li> </ol>
Paper 603	Mobile Computing	<ol style="list-style-type: none"> <li>1. Learn about Mobile Computing</li> <li>2. Understand the Global Systems for Mobile Communications (GSM)</li> <li>3. Learn about Mobile Network Layer</li> <li>4. Learn about Mobile Transport Layer</li> </ol>
Paper 604	Organization Portfolio	<ol style="list-style-type: none"> <li>1. Understand the basic and development of Portfolio</li> <li>2. Understand Electronic portfolio development</li> <li>3. Creating a portfolio shell</li> <li>4. Understand the portfolio building and evaluation</li> </ol>

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: M.Sc. 1<sup>st</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
MS-15-11	Web Engineering	<ol style="list-style-type: none"> <li>1. Understand the basic concepts of Web</li> <li>2. Design web pages using HTML5 and CSS</li> <li>3. Understand objects and data validation in Java Script</li> <li>4. Build dynamic website using server side PHP programming and Database Connectivity</li> <li>5. Understand XML Documents</li> </ol>
MS-15-12	Data Structures and Algorithms	<ol style="list-style-type: none"> <li>1. Analyse worst-case running times of algorithms using asymptotic analysis</li> <li>2. Understand and implement the basic and advanced concepts of Data structures</li> <li>3. Understand various techniques of problem solving</li> <li>4. Identify the type of problem and solve it using appropriate technique</li> <li>5. Understand the NP-Hard and NP-Complete problems</li> </ol>
MS-15-13	Software Engineering	<ol style="list-style-type: none"> <li>1. Understand different software life cycle models and their needs</li> <li>2. Understand the concepts of software project planning</li> <li>3. Design ER diagrams and DFDs</li> <li>4. Understand the concepts of Software Reliability</li> <li>5. Understand Software testing and Maintenance with its types</li> </ol>
MS-15-14	Discrete Mathematical Structures	<ol style="list-style-type: none"> <li>1. Understand the basic concepts of sets, function and relations</li> <li>2. Understand the concepts of Propositional Logic and Quantifiers</li> <li>3. Understand Logic and Counting Principles</li> <li>4. Understand Lattices, Boolean Algebra and their uses</li> <li>5. Understand the concepts of Graphs and Trees</li> </ol>



**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: M.Sc. 2<sup>nd</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
MS-15-21	Java Programming	<ol style="list-style-type: none"> <li>1. Learn the basic features of JAVA programming</li> <li>2. Develop programs using different concepts of OOPs</li> <li>3. Develop programs using Java I/O and Applet Programming</li> <li>4. Design and Implement Graphics programming using AWT and Layouts</li> </ol>
MS-15-22	Linux and Shell Programming	<ol style="list-style-type: none"> <li>1. Understand the basic concepts and commands of Linux</li> <li>2. Understand the file management and process manipulation in Linux</li> <li>3. Understand Regular Expressions and System calls in Linux</li> <li>4. Understand the C environment under Linux and do the system administration and communication in Linux</li> <li>5. Develop shell programs in Linux</li> </ol>
MS-15-23	Theory of Computation	<ol style="list-style-type: none"> <li>1. Design various finite state machine for real life problems</li> <li>2. Differentiate between applications of different kind of machines</li> <li>3. Solve the tractable and intractable problems using various approaches</li> <li>4. Understand the need and importance of Turing machines and their suitability</li> </ol>
MS-15-24	Compiler Design	<ol style="list-style-type: none"> <li>1. Understand overall process of compilation</li> <li>2. Understand parsing techniques in compilers</li> <li>3. Design parse tables for different parsing techniques</li> <li>4. Analyze semantic analysis, building symbol table, handling storage management and error detection</li> <li>5. Understand the concept of code generation and optimization</li> </ol>

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: M.Sc. 3<sup>rd</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
MS-15-31	Object Oriented Analysis and Design using UML	<ol style="list-style-type: none"> <li>1. To understand the fundamental concepts of UML, relationships and diagrams of UML.</li> <li>2. To know how UML provides extensible mechanisms</li> <li>3. To know how to identify objects, classes, relationships and attributes draw class diagram.</li> <li>4. To learn the concepts of state modeling and draw state diagram</li> <li>5. To understand the interaction modeling, use-case modeling and activity modeling.</li> </ol>
MS-15-32	Advanced Database Systems	<ol style="list-style-type: none"> <li>1. Understand the various areas of database design.</li> <li>2. Understand the concepts of object-oriented database and query optimization methods.</li> <li>3. Understand the usage of database in different applications viz. Temporal multimedia, spatial database etc.</li> <li>4. Understand the basic concept of Big Data.</li> <li>5. Understand the software interoperability, versioning and failure related issues of big data.</li> </ol>
MS-15-33	Computer Networks	<ol style="list-style-type: none"> <li>1. Characterize the various types of computer networks and standards</li> <li>2. Learn the protocols layering of OSI and TCP/IP models</li> <li>3. Understand the concept of data communication and its components</li> <li>4. Understand the design issues related to LAN</li> <li>5. Understand the concepts of routing, addressing, congestion control and security issues in networks</li> </ol>
MS-15-34	Advanced Operating Systems	<ol style="list-style-type: none"> <li>1. Understand the hardware and software concepts of Distributed Operating System</li> <li>2. Understand the communication process in distributed systems</li> <li>3. Understand the synchronization in distributed OS</li> <li>4. Learn distributed file system and its implementation</li> <li>5. Understand the concepts of Real time and Mobile Operating Systems</li> </ol>

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: M.Sc. 4<sup>th</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
MS-15-41	Advanced Web Technology	<ol style="list-style-type: none"> <li>1. Design web sites for various requirements</li> <li>2. Design web applications using both client and server-side programming.</li> <li>3. Understand and apply JavaScript and PHP in depth</li> </ol>
MS-15-42	Computer Graphics	<ol style="list-style-type: none"> <li>1. Gain knowledge about graphics hardware devices and software used</li> <li>2. Develop algorithms for scan converting geometrical primitives such as lines, circles, ellipses, and curves along with algorithms for filling polygons, required for designing real-world applications</li> <li>3. Design algorithms for carrying out manipulations in pictures using geometric transformations, viewing transformations, and clipping operations</li> <li>4. Model 3-dimensional objects and apply viewing, visible –surface determination, and shading techniques to the models for achieving realism</li> <li>5. Understand various input-output and animation techniques used in graphics</li> </ol>
MS-15-43	Advanced Computer Architecture	<ol style="list-style-type: none"> <li>1. Know the classes of computers, and new trends and developments in computer architecture</li> <li>2. Understand the various techniques to enhance a processors ability to exploit Instruction-level parallelism (ILP), and its challenges</li> <li>3. Understand distributed and shared memory MIMD architectures and interconnection networks used in them</li> <li>4. Understand symmetric shared-memory architectures and improvements in this architecture</li> <li>5. Understand multiprocessor cache coherence using the directory based and snooping class of protocols and software-based cache coherence protocols</li> </ol>
MS-15-44	Elective I: Cloud Computing	<ol style="list-style-type: none"> <li>1. Articulate the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art cloud computing</li> <li>2. Identify the architecture and infrastructure of cloud computing</li> <li>3. Explain federated and multimedia cloud computing architectures</li> <li>4. Explain the core issues of security, privacy, and interoperability in cloud computing</li> <li>5. Understand SLAs life cycle and management</li> <li>6. Analyze and design applications for clouds using Python language</li> </ol>

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: B.Com.(Voc.) 1<sup>st</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
B.Com. (Voc.)-105	Computer Fundamentals and Logic Organization	<ol style="list-style-type: none"> <li>1. Understanding of basics of computer in terms of Architecture, memory and networking</li> <li>2. Learn about Input /Output and Storage Devices</li> <li>3. Understanding of Number system, Boolean Algebra and Combinational Circuits</li> <li>4. Understanding of Sequential Circuits and Computer Memory</li> <li>5. Knowledge of Addressing Modes, Modes of Transfer and Instruction Cycle</li> </ol>
B.Com. (Voc.)-106	Business Data Processing and PC Software-I	<ol style="list-style-type: none"> <li>1. Understanding of basic data processing and file organization</li> <li>2. Creating documents using MS Word</li> <li>3. Editing and formatting documents in MS Word</li> <li>4. Knowledge of Libre Office</li> <li>5. Creating spreadsheets in MS Excel and usage of Formula in MS Excel</li> </ol>

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: B.Com.(Voc.) 2<sup>nd</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
B.Com. (Voc.)-205	Programming in C	<ol style="list-style-type: none"> <li>1. Understand the basic concepts of C Programming</li> <li>2. Learn about Data Types, expressions and statements</li> <li>3. Learn about different Operators and expressions in C</li> <li>4. Understand Input /Output, decision making and branching statements</li> <li>5. Understanding of Arrays, Functions, Pointer, Structure and Unions and implementing simple programs</li> </ol>
B.Com. (Voc.)-206	Business Data Processing and PC Software II	<ol style="list-style-type: none"> <li>1. Understand Processing Software, Working with different views, slides</li> <li>2. Learn about Adding and formatting Text, Printing Presentations</li> <li>3. Understand Desktop Publishing Concepts, need and applications Overview of DTP Packages: MS Word, Page Maker</li> <li>4. Learn about Statistical Software, Data Analysis using software, SPSS</li> <li>5. Knowledge of Mobile applications</li> </ol>

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: B.Com. (Voc.) 3<sup>rd</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
B.Com. (Voc.)-305	Data Structure	<ol style="list-style-type: none"> <li>1. Understand the basics of Data Structure and its types</li> <li>2. Learn about Queue and its operations</li> <li>3. Learn about Single Linked Lists and Doubly Linked List</li> <li>4. Understand Trees Concepts and B-Tree</li> <li>5. Understand Files and different types of file organization</li> </ol>
B.Com. (Voc.)-306	Fundamentals of Data Base Management system	<ol style="list-style-type: none"> <li>1. Understand the Data Base Management System and its elements</li> <li>2. Learn about Architecture of Data Base and types of Data Base Users</li> <li>3. Understand Data Model, Types and E R Diagram</li> <li>4. Understanding of Normalization and its types</li> <li>5. Knowledge of SQL Commands and usage of Oracle in Business</li> </ol>

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: B.Com. (Voc.) 4<sup>th</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
B.Com. (Voc.)-405	Programming in Java	<ol style="list-style-type: none"> <li>1. Learn about basic concepts of Java</li> <li>2. Learn about input/output and control statements</li> <li>3. Understand methods, access control, static and fixed methods</li> <li>4. Understand GUI components, common GUI event types, Listener Interfaces and Event Handling</li> <li>5. Understand Layout Managers, Graphics and Java 2D, Graphics context and Graphics object, Jslider</li> </ol>
B.Com. (Voc.)-406	Advanced Computer Applications	<ol style="list-style-type: none"> <li>1. Understand types of networks and network topologies</li> <li>2. Learn about Transmission Media, ISDN, B-ISDN and different Protocols used in OSI and TCP/IP Model</li> <li>3. Understand applications of Information Technology in Business,</li> <li>4. Knowledge of E- Business, Net banking and Electronic Payment system</li> <li>5. Learn about E- governance and its applications</li> <li>6. Understand social and ethical aspects of IT, cyber Laws, cyber security</li> </ol>

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: B.Com. (Voc.) 5<sup>th</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
B.Com. (Voc.)-505	Web Technology	<ol style="list-style-type: none"> <li>1. Understand the basics of Internet</li> <li>2. Learn about HTML Tags</li> <li>3. Understand Java Script</li> <li>4. Learn about Java Script Document Object Model</li> <li>5. Design web Pages &amp; Scripts</li> </ol>
B.Com. (Voc.)-506	System Analysis & Design	<ol style="list-style-type: none"> <li>1. Understand System Analysis &amp; Design, Information System</li> <li>2. Learn about System Development Life Cycle</li> <li>3. Learn about System Analyst &amp; its Role</li> <li>4. Learn about Input, Output Design, Form Design</li> <li>5. Understand System Testing, Auditing, Maintenance, Threats to Security</li> </ol>

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: B.Com. (Voc.) 6<sup>th</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
B.Com. (Voc.)-605	Social Networking and Data Analytics	<ol style="list-style-type: none"> <li>1. Understand basics of Social Networking with its evolution and applications</li> <li>2. Learn about trends in social media, organize, access and share information using social networks</li> <li>3. Understand Messaging services as social networking, business applications of social networking, social and ethical aspects, legislations</li> <li>4. Learn about concepts of Big Data and Hadoop</li> <li>5. Understand basics of Data Warehousing and OLAP</li> </ol>
B.Com. (Voc.)-606	Enterprise Resource Planning	<ol style="list-style-type: none"> <li>1. Understand the concept of Enterprise with its Functions</li> <li>2. Learn about ERP concept, origin and need and reasons of growth of ERP</li> <li>3. Learn about different ERP technologies</li> <li>4. Learn about various ERP Modules such as Finance, sales, distribution, manufacturing, Inventory management</li> <li>5. Understand CRM, vendors for ERP, implementing ERP solutions</li> </ol>

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: M.Com 3<sup>rd</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
M. Com-301	Computer Applications in Business	<ol style="list-style-type: none"> <li>1. Understand Computer Systems, Basic Computer Organizations</li> <li>2. Understand the Input/ Output Devices &amp; Storage Devices</li> <li>3. Learn about Software, Types, Application Software- word processing, Spread sheets</li> <li>4. Understand Databases, tables, queries, reports and form-generation</li> <li>5. Learn about Information Technology in Business, topologies, WWW, Video Conferencing, Broadband Networks</li> </ol>

**Course Outcomes**  
**Session: 2018-2019 to 2022-2023**  
**Class: M.Com. 4<sup>th</sup> Semester**

<b>Paper Code</b>	<b>Subject</b>	<b>Course Outcomes</b>
MC- 401	IT & E-Commerce	<ol style="list-style-type: none"> <li>1. Understand concept of E-Commerce with its types and applications</li> <li>2. Understand Business models in E-commerce and Electronic Payment System</li> <li>3. Learn about Online Fund Transfer such as RTGS, ATM, Online share market operations</li> <li>4. Understand Online Marketing and Web based advertising with its advantages</li> <li>5. Understand SEO with its techniques</li> <li>6. Learn about Cloud computing, ERP, security issues in E- Commerce and Cyber Laws</li> </ol>