

### BCA SEMESTER-I

Code	Subject	L	Pr./ Tu	Cr	Ext. Exam.	Int. Exam.	Total Marks
1101	Business and technical communication skills	2	-	2	25	25	50
1102	Problem Solving using C	4	-	4	75	25	100
1103	Web Programming	4	-	4	75	25	100
1104	Computer Fundamentals and Operating System	4	-	4	75	25	100
1105	Office Automation Tools	-	2	2	25	25	50
1201	Problem Solving using C Lab	-	2	2	25	25	50
1202	Web Programming Lab	-	2	2	25	25	50
	Total			20			500

SEMESTER-I	1 Credit = 25 Marks Total Credits = 20 Total Marks = 20*25=500
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### BCA SEMESTER-II

Code	Subject	L	Pr./ Tu	Cr	Ext. Exam.	Int. Exam.	Total Marks
2101	Environmental science & RTI	2	-	2	25	25	50
2102	Programming Methodology and C++	4	-	4	75	25	100
2103	Database Management System	4	-	4	75	25	100
2104	Mathematics I	4	-	4	75	25	100
2105	Principles & Practice of Accounting	2	-	2	25	25	50
2201	Programming Methodology and C++ Lab	-	2	2	25	25	50
2202	Database Management System Lab	-	2	2	25	25	50
	Total			20			500

SEMESTER-II	1 Credit = 25 Marks Total Credits = 20 Total Marks = 20*25=500
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### BCA SEMESTER-III

Code	Subject	L	Pr./ Tu	Cr	Ext. Exam.	Int. Exam.	Total Marks
3101	Data structures	4	-	4	75	25	100
3102	JAVA Programming	4	-	4	75	25	100
3103	Mathematics II	4	-	4	75	25	100
3104	Computer Organisation & Architecture	4	-	4	75	25	100
3201	Data structures Lab	-	2	2	25	25	50
3202	JAVA Programming Lab	-	2	2	25	25	50
	Total			20			500

SEMESTER-III	1 Credit=25 Marks Total Credits = 20 Total Marks = 20*25=500
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### BCA SEMESTER-IV

Code	Subject	L	Pr./ Tu	Cr	Ext. Exam.	Int. Exam.	Total Marks
4101	Python Programming	4	-	4	75	25	100
4102	Introduction to Microprocessor	4	-	4	75	25	100
4103	Computer Networks	4	-	4	75	25	100
4104	Software Engineering	4	-	4	75	25	100
4201	Python Programming Lab	-	2	2	25	25	50
4202	Introduction to Microprocessor Lab	-	2	2	25	25	50
	Total			20			500

SEMESTER-IV	1 Credit=25 Marks Total Credits = 20 Total Marks = 20*25=500
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### BCA SEMESTER-V

Code	Subject	L	Pr./ Tu	Cr	Ext. Exam.	Int. Exam.	Total Marks
5101	Mobile Application	4	-	4	75	25	100
5102	Artificial Intelligence	4	-	4	75	25	100
5103	Cyber Security	4	-	4	75	25	100
5104	Multimedia and Application	2	-	2	25	25	50
5105	Elective1-Management Information System	4	-	4	75	25	100
5106	Elective 2 - Search Engine Optimization	4	-	4	75	25	100
5107	Elective 3 - Data Analysis and Visualization	4	-	4	75	25	100
5108	Mobile (Android) Application Lab		2	2	25	25	50
	Total			20			500

SEMESTER-V	1 Credit=25 Marks Total Credits = 20 Total Marks = 20*25=500
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### BCA SEMESTER-VI

Code	Subject	L	Pr./ Tu	Cr	Ext. Exam	Int. Exam.	Total Marks
6101	Cyber Laws and Intelligent Property Rights.	4	-	4	75	25	100
6102	Data Warehousing & Data Mining	4	-	4	75	25	100
6103	IOT	2	-	2	25	25	50
6104	Elective 1 - Machine Learning	4	-	4	75	25	100
6105	Elective 2 - Block Chain Technology	4	-	4	75	25	100
6106	Elective 3 - Big Data & Cloud Computing	4	-	4	75	25	100
6107	Project	-	6	6	75	75	150
	Total			20			500

SEMESTER-VI	1 Credit=25 Marks Total Credits = 20 Total Marks = 20*25=500
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**SEMESTER- I**

<b>Branch: BCA</b>	<b>Semester-I</b>
<b>Subject Code: 1101</b>	<b>Lecture: 02 Credit: 02</b>
<b>Course Opted</b>	<b>Ability Enhancement Compulsory Course – 1</b>
<b>Subject Title</b>	<b>BUSINESS AND TECHNICAL COMMUNICATION SKILLS</b>

**Course Objectives**

- To demonstrate the fundamental concepts of interpersonal and professional communication.
- To encourage active listening with focus on content, purpose, ideas.
- To facilitate fluent speaking skills in social, academic and professional situations.
- To train in reading strategies for comprehending academic and business correspondence.
- To promote effective writing skills in business, technology and academic arenas.

**Course Outcomes**

- Enable the students' ability to write error free while making an optimum use of correct Business Vocabulary & Grammar.
- Will enable the students to distinguish among various levels of organizational communication and communication barriers while developing an understanding of Communication as a process in an organization.
- They will be able to draft effective business correspondence with brevity and clarity.
- Enhance critical thinking by designing and developing clean and lucid writing skills.
- Enhance verbal and non-verbal communication ability through presentations.

<b>Module</b>	<b>Sr. No.</b>	<b>Topic and Details</b>	<b>No. of Lectures Assigned</b>	<b>Marks Weightage</b>
<b>UNIT- I</b>	1.	<b>Communication</b> Basics of Communication, Process of Communication, Components of Communication, Factors of Communication, Barriers to Communication – Physical, Psychological, Semantics, Organizational and Interpersonal Barriers; How to overcome Barriers.	3	6
	2.	<b>Methods of Communication</b> Verbal (Written & Oral) Non-verbal - Non Verbal Communication- Personal appearance; Facial Expression, Movement, Posture, Gesture, Eye Contact	2	4
<b>UNIT- II</b>	3.	<b>Basic grammar and Grammar in context</b> Parts of speech, Verb, Tenses: Form and use, Articles and Prepositions, Transformations of sentences, Common Errors	3	6
	4.	<b>Vocabulary Building</b> Root words (Etymology), Meaning of Words in Context, Synonyms & Antonyms, Collocations, Prefixes & Suffixes, Standard Abbreviations	2	4
<b>UNIT -</b>	5.	<b>Parts of a Formal Letter and Formats</b> Parts/Elements of a Formal Letter - Letter heads	5	10

III		and/or Sender's Address, Dateline, Inside Address, Reference		
		Line(Optional), Attention Line(Optional), Salutation, o Subject Line, Body, Complimentary Close, Signature Block, Enclosures/Attachments, Complete/Full Block Format		
	6.	<b>Types of Letters in Both Formal Letter Format and Emails</b> Claim & Adjustment Letters, Request/Permission Letters <b>Emails-</b> Format of Emails, Features of Effective Emails, Language and style of Emails	3	6
UNIT- IV	7.	<b>Reading and Summarization of passages, reports, chapters, books</b> Graphic Organizers for Summaries - Radial Diagrams like Mind Maps, Flow Charts, Tree Diagrams, Cyclic Diagrams. Point-form Summaries- One-sentence Summaries of Central Idea	3	6
	8.	<b>Technical Writing:</b> What is Technical Writing, Role of a Technical Writer, Steps of Technical Writing Process <b>SRS Software Requirement Specifications:</b> Introduction, Goals <b>Report Writing:</b> Characteristics of writing a good report, Steps in Report Writing, Structure of Report, Types of Reports	4	8
<b>TOTAL</b>			<b>25</b>	<b>50</b>

#### Text Book:

1. Urmila Rai, S M Rai, "Business Communications", Himalaya Publishing House, 2004

#### Reference Books:

1. Fluency in English - Part II, Oxford University Press, 2006.
2. Business English, Pearson, 2008.
3. Language, Literature and Creativity, Orient Blackswan, 2013.
4. Language through Literature, Dr. Gauri Mishra, Dr. Ranjana Kaul, Dr. Brati Biswas, 2016
5. Sanjay Kumar & PushpLata (2018). Communication Skills with CD. New Delhi: Oxford University Press.
6. Hemphill, P.D., McCormick, D. W., & Hemphill, R. D. (2001). Business Communication with writing improvement exercises. Upper Saddle River, NJ: PrenticeHall.
7. Locker, KittyO. Kaczmarek, Stephen Kyo. (2019). Business Communication: Building Critical Skills, Mcgraw-hill.
8. Murphy, H.(1999). EffectiveBusiness Communication. Mcgraw-Hill.
9. Raman, M., &Sharma, S. (2016). Technical Communication: Principles and Practice. New Delhi: Oxford University Press.

<b>Branch: BCA</b>	<b>Semester-I</b>
<b>Subject Code: 1102</b>	<b>Lecture: 04 Credit: 04</b>
<b>Course Opted</b>	<b>Core Course-1 (Theory)</b>
<b>Subject Title</b>	<b>PROBLEM SOLVING USING C</b>

### Course Objectives:

- To teach students a programming language.
- To help them learn problem solving techniques.
- To teach the student to write programs in C and to solve the problems

### Course Outcomes:

Students will be able

- To develop logic which will help them to create programs in C.
- Demonstrate an understanding of computer programming language concepts.
- Design and develop computer programs, analyze, and interpret the concept of pointers, declarations, initialization, operations on pointers and their usage.
- By learning the basic programming constructs they can easily switch over to any other language in future.
- Develop applications

Module	Sr. No.	Topic and Details	No. of Lectures Assigned	Marks Weightage
UNIT - I	1.	<b>Introduction to problem solving :</b> Concept: Steps in problem solving - (Define Problem, Analyze Problem, Explore Solution), Problem solving techniques - (Trial& Error, Brain Storming, Divide & Conquer) , Algorithms and Flowcharts (Definitions, Characteristics, Advantage& Disadvantages, Symbols, Examples), Pseudo-code(Definition, Conditional statements, Loops), etc.	5	10
	2.	<b>Overview of programming languages:</b> Definition of the program, Concept- Source code, Object code, Compilation, Interpretation, Execution, Input and Output, Debugging etc., Expressions, control structures; subroutines, Storage management; scoping rules; bindings for names, Storage types: Automatic , external, register and static variables	4	8
UNIT - II	3	<b>Introduction to 'C' Language :</b> History of C Programming , Structures of 'C' , Programming, Simple example, Basic Input/ Output, Function as building blocks. Language Fundamentals : Character set, C Tokens, Keywords, Identifiers, Variables, Constant, Data Types, Comments	4	8
	4	<b>Operators :</b> Types of operators, Precedence and Associativity, Expression. Statement and types of statements, Built in	6	12

		Operators and function., Console based I/O and related built in I/O Function: printf(), scanf(), getch(), getchar(), putchar(),etc; Concept of header files, Preprocessor directives: #include, #define, Conditional statements and Loops		
<b>UNIT-III</b>	5	<b>Control structures</b> Decision making structures : If, If-else , Nested If –else, Switch, Loop Control structures : While, Do-while, For, Nested for, while, do-while loop, Jumping statements: break, continue, goto, exit.	8	16
	6	<b>Functions:</b> Definition, Basic types of function, Declaration and definition, Function call, Types of function, Parameter passing, Call by value, Call by reference, Scope of variables, Recursion, String: Declaration, string Functions, String Manipulations	6	12
	7.	<b>Pointers :</b> Introduction to pointers, Pointer notation, Pointer arithmetic, Null Pointer	3	6
<b>UNIT-IV</b>	8.	<b>Arrays:</b> Definition, Declaration, Initialization, Bounds checking, One-Dimensional Array, Two-Dimensional Array, Passing array to a function, pointer to Array.	6	12
	9.	<b>Structure and Union:</b> Introduction to Structure, Definition, Declaration of Structure Variables, .Dot Operator, Nested Structure, Array of Structure, pointer to structure, Introduction to Union, Difference between Structure and Union .	4	8
	10.	<b>File Handling:</b> Concept of File, Definition, File operations(create, open, read, move , write, close), File opening Mode, Closing a file, Input/output operations, Creating and reading a file, Command Line Argument.	4	8
<b>TOTAL</b>			<b>50</b>	<b>100</b>

**Text Book:**

1. C – programming E.Balagurusamy, Tata McGray Hill, 1990

**Reference Books:**

1. C: The Complete Reference (Fourth Edition), Herbert Schildt, Tata McGraw-Hill Education Pvt. Ltd., 2000
2. Ramkumar and Agrawal, “Programming in ANSI C”, Tata McGraw Hill, 1996.
3. Y.P Kanetkar, “Let Us “C””, , Infinity Science Press,2008

<b>Branch: BCA</b>	<b>Semester-I</b>
<b>Subject Code: 1201</b>	<b>Lecture: 02</b> <b>Credit: 02</b>
<b>Course Opted</b>	<b>Core Course-1 (Practical)</b>
<b>Subject Title</b>	<b>PROBLEM SOLVING USING C LAB</b>

### Course Objectives:

- To enable the students to learn a programming language.
- To learn problem solving techniques
- To teach the student to write programs in C and to solve the problems.

### Course Outcomes:

The student would be able

- Read, understand and trace the execution of programs written in C language.
- Write the C code for a given algorithm.
- Implement Programs with pointers and arrays, perform pointer arithmetic, and use the pre-processor. •
- Write programs that perform operations using derived data types.
- Implement simple file operations

<b>Module</b>	<b>Sr. No.</b>	<b>Topic and Details</b>	<b>No. of Lectures Assigned</b>	<b>Marks Weightage</b>
<b>UNIT- I</b>	1.	Simple Program, Implementation of Operators : Built in Operators and function, Arithmetic, Logical, Relational, bitwise, Precedence and Associativity, composite statements. Unary, binary and ternary operators.	5	10
	2.	Concept of header files, Preprocessor directives: #include, #define. And macros implementations , Implementation of Storage types: Automatic external, register and static variables		
<b>UNIT- II</b>	3.	Console based I/O and related built in I/O function: printf(), scanf(), getch(), getchar(), putchar();	12	24
	4.	Control Statement: Decision Making Statements, if, Nested if, if-else, Nested if-else, if-else-if, switch, etc. The Conditional Expression; Iterative Statements- The for loop, . The while loop, The do-while loop; Jumping Statements- The goto& label ,The break & continue, The exit() function		
<b>UNIT- III</b>	5.	Implementation of Functions: Defining and accessing, passing arguments, Function prototypes, function calling mechanism, call by value, call by reference, recursive function; String Manipulations	5	10
	6.	Pointer Declaration and Initialization of Pointer variables, pointer Arithmetic, Pointers and Character Strings		
	7.	Implementation of 1-D and multi dimension Array, One- Dimensional Array, Two-Dimensional Array, Passing array to a function, pointer to Array.		

<b>UNIT-IV</b>	8.	Programs Using Structure and Union : Defining and Declaring Structure Variables, .Dot Operator, Nested Structure, Array of Structure, pointer to structure, Examples of Union.		
	9.	Programs using I/O Operations File Handling : File operations(create, open, read, move, write, close)	3	6
	10.	Input/output operations on file Character by –(fgetc, fputc), Reading and writing files		
<b>TOTAL</b>			<b>25</b>	<b>50</b>

**Text Book:**

1. C – programming E.Balagurusamy, Tata McGray Hill, 1990

**Reference Books:**

1. C: The Complete Reference (Fourth Edition), Herbert Schildt, Tata McGraw-Hill Education Pvt. Ltd., 2000
2. Ramkumar and Agrawal, "Programming in ANSI C", Tata McGraw Hill, 1996.
3. Y.P Kanetkar, "Let Us "C", , Infinity Science Press,2008

<b>Branch: BCA</b>	<b>Semester-I</b>
<b>Subject Code: 1103</b>	<b>Lecture: 04</b> <b>Credit: 04</b>
<b>Course Opted</b>	<b>Core Course-2 (Theory)</b>
<b>Subject Title</b>	<b>WEB PROGRAMMING</b>

**Course Objectives:**

- To give insight about latest technologies to design and develop web applications using client- side scripting, server-side scripting, and database connectivity.

**Course Outcomes:**

- To design web pages using HTML5 language, applying stylish information to web pages using CSS.
- To develop interactive web pages using JavaScript.
- To develop dynamic pages on the web server using PHP language and implement Database Driven Websites.
- Understand the various platforms, devices, display resolutions, viewports, and browsers that render websites
- To develop and implement client-side and server-side scripting language programs

<b>Module</b>	<b>Sr. No.</b>	<b>Topic and Details</b>	<b>No. of Lectures Assigned</b>	<b>Marks Weightage</b>
<b>UNIT- I</b>	1.	<b>Introduction to web and Security Concepts</b> HTTP:Overview – HTTP Basics, Client request, Server response; HTTP Headers; Session Management – Persistent connections, Cookies. General concepts on web server: Configuration and Administration; virtual hosting, General concepts of caching proxy server , Web security, Digital signatures, Digital Certificates, Encryption, and Authentication	8	16
	2.	<b>HTML5</b> Basics of HTML elements and Tags. Introduction of HTML5 (evolutions, limitation of HTML4, advantages of HTML5, Overview of HTML5)	2	4
<b>UNIT- II</b>	3.	<b>Page Layout of Semantic Elements</b> (Header, Navigation, Section & Articles, Footer, aside and more. Organizing Text in HTML, Links and URLs in HTML, Tables in HTML, Images on a Web Page, Image Formats, Image Maps, Colors, FORMs in HTML, Frames in HTML Interactive Elements, Working with Multimedia - Audio and Video File Formats, HTML elements for inserting Audio / Video on a web page	7	14
	4.	<b>HTML5 Web Forms</b> HTML 5 Global Attributes Displaying a Search Input Field, Contact Information Input Fields, Utilizing Date and Time Input Fields, Number Inputs, Selecting from a Range of Numbers, Selecting Colors, Creating an Editable Drop-Down, Requiring a Form Field, Autofocusing a Form Field, Displaying Placeholder Text, Disabling Autocomplete,	7	14

		Restricting Values		
<b>UNIT-III</b>	5.	<b>CSS:</b> Understanding the Syntax of CSS, CSS Selectors, Inserting CSS in an HTML Document, CSS properties to work with background of a Page, CSS properties to work with Fonts and Text Styles, CSS properties for positioning an element	8	16
	6.	<b>JavaScript:</b> Using JavaScript in an HTML Document, Programming Fundamentals of JavaScript - Variables, Operators, Control Flow Statements, Popup Boxes, Core JavaScript (Properties and Methods of Each) : Array, Boolean, Date, Function, Math, Number, Object, String, RegExp, Events and Event Handlers, Browser Objects - Window, Navigator, History, Location, Document, Cookies, Document Object Model, Form Validation using JavaScript.	12	24
<b>UNIT-IV</b>	7.	<b>INTRODUCTION TO PHP AND SQL:</b> - Server-side web scripting, Installing PHP, SQL, Adding PHP to HTML, Syntax and Variables, Passing information between pages.	6	12
<b>TOTAL</b>			<b>50</b>	<b>100</b>

**Text Book :**

1. Web Programming, Guy W. Lecky Thompson, 2009, Cengage Learning

**Reference Books:**

1. Web Design The complete Reference, Thomas Powell, Tata McGrawHill
2. HTML and XHTML The complete Reference, Thomas Powell, Tata McGrawHill
3. JavaScript 2.0 : The Complete Reference, Second Edition by Thomas Powell and Fritz Schneider
4. PHP : The Complete Reference By Steven Holzner, Tata McGrawHill

<b>Branch: BCA</b>	<b>Semester-I</b>
<b>Subject Code: 1202</b>	<b>Lecture: 02</b> <b>Credit: 02</b>
<b>Course Opted</b>	<b>Core Course-2 (Practical)</b>
<b>Subject Title</b>	<b>WEB PROGRAMMING LAB</b>

**Course Objectives:**

- To develop web applications using client-side scripting, server-side scripting, and database connectivity.

**Course Outcomes:**

- To design web pages using HTML5 language, applying stylish information to web pages using CSS.
- To develop interactive web pages using JavaScript.
- To develop dynamic pages on the web server using PHP language and implement Database Driven Websites.
- To develop and implement client-side and server-side scripting language programs

<b>Module</b>	<b>Sr. No.</b>	<b>Topic and Details</b>	<b>No. of Lectures Assigned</b>	<b>Marks Weightage</b>
<b>UNIT-I</b>	1.	<b>Use of Basic Tags, Image maps, Tables, Forms and Media</b> Design webpages using the given tools inHTML Navigation, Section & Articles, Footer, aside and more. Organizing Text in HTML, Links and URLs in HTML, Tables in HTML, Images on a Web Page, Image Formats, Image Maps, Colors, FORMs in HTML, Frames in HTML Interactive Elements, Working with Multimedia - Audio and Video File Formats, HTML elements for inserting Audio / Video on a web page	<b>12</b>	<b>25</b>
<b>UNIT-II</b>	2.	<b>CSS</b> Syntax of CSS, CSS Selectors, Inserting CSS in an HTML Document, CSS properties to work with background of a Page, CSS properties to work with Fonts and Text Styles, CSS properties for positioning an element	<b>5</b>	<b>10</b>
<b>UNIT-III</b>	3.	<b>Java Script Control and looping statements and Java Script reference</b> Using JavaScript design, a web page; Control Flow Statements, Design a web page demonstrating different conditional statements.Design a web page demonstrating different looping statements; Popup Boxes, Core JavaScript (Properties and Methods of Each) : Array, Boolean, Date, Function, Math, Number, Object, String, regExp, Events and Event Handlers	<b>5</b>	<b>10</b>

<b>UNIT-IV</b>	4.	<b>PHP &amp; SQL</b> Demonstrate program in PHP, Installing PHP, SQL, Adding PHP to HTML, Syntax and Variables, Passing information between pages.	<b>3</b>	<b>5</b>
<b>TOTAL</b>			<b>25</b>	<b>50</b>

**Text Book :**

1. Web Programming, Guy W. Lecky Thompson, 2009, Cengage Learning

**Reference Books:**

1. Web Design The complete Reference, Thomas Powell, Tata McGrawHill
2. HTML and XHTML The complete Reference, Thomas Powell, Tata McGrawHill
3. JavaScript 2.0 : The Complete Reference, Second Edition by Thomas Powell and Fritz Schneider
4. PHP : The Complete Reference By Steven Holzner, Tata McGrawHill

<b>Branch: BCA</b>	<b>Semester-I</b>
<b>Subject Code: 1104</b>	<b>Lecture: 04</b> <b>Credit: 04</b>
<b>Course Opted</b>	<b>Core Course 3</b>
<b>Subject Title</b>	<b>COMPUTER FUNDAMENTALS AND OPERATING SYSTEM</b>

**Course Objectives:**

- To understand the proper working of operating system.
- To develop understanding of Computer operating system, its structures, functioning and algorithms.
- To ensure that students gain a solid understanding of the fundamental concepts modern multitasking operating system.

**Course Outcomes:**

- Learners will be able to describe basic concepts, mechanisms used by operating systems.
- Learners will be able to compare process scheduling algorithms, apply synchronization primitives and evaluate deadlock conditions and to analyze virtual memory management algorithms.

<b>Module</b>	<b>Sr. No.</b>	<b>Topic and Details</b>	<b>No. of Lectures Assigned</b>	<b>Marks Weightage</b>
<b>UNIT- I</b>	1.	<p><b>Introduction:</b> Definition of Computer, Features, Block Diagram of Computer System, Computer Generations.</p> <p><b>Primary Memory Devices:</b> RAM, ROM, PROM, EPROM, CACHE Memory, Registers. <b>Number Systems:</b> Binary, Octal Decimal Hexadecimal and Their interconversion, Computer Arithmetic.</p> <p><b>Computer Software:</b> System and Application Software. Utility programs: Anti-plagiarism software, Anti-virus, Disk Cleaning, Defragmentation, Compression/ Decompression of files.</p> <p><b>Types of Computers :</b> Digital, Analog, Hybrid Computers, General purpose Computers, Micro Computers, Mini Computers, Mainframes, Super Computers</p>	4	8
	2.	<p><b>Secondary Storage Devices:</b> : Sequential and Direct Access Devices, Magnetic and Optical Storage, Flash Drive/USB Pendrive; I/O Devices- Keyboards, Scanners, Digitizers, Plotters, LCD, Plasma Display, Pointing Devices –Mouse, Joystick, Touch Screens</p> <p>Introduction to Network devices – Hubs, Switches, Routers, NAS, MODEM, Access Points</p> <p><b>Printers:</b> Impact and Non-Impact Printers.</p> <p><b>Computer Languages:</b> Machine, Assembly, High Level.</p> <p><b>Operating System:</b> Purpose of Operating Systems, OS Structure, Services of Operating System.</p>	4	8

UNIT- II	3.	<b>Computer System:</b> Architecture, Instruction cycle, Process Control Block. <b>Types of Operating System(Explain concepts):</b> Single processor systems, Multiprogrammed, Batch, Time sharing- Interactive, Multitasking, Multiprocessor systems, Parallel systems, Distributed systems, Special purpose systems, Real Time systems, Multimedia systems Handheld Systems	8	16
	4.	<b>Processes:</b> Concept, process states:-5 state model, Scheduling, Operations on Processes, Cooperating Process and Process Synchronization. <b>Threads:</b> Concept, Multithreading models, Threading issues	8	16
UNIT- III	5.	<b>CPU Scheduling:</b> I/O burst cycle, Context Switching, Scheduling:-Short Term, Long Term, Scheduling Criteria, Algorithms (FCFS, SJF, RR, Priority). <b>Memory Management:-</b> Main memory organization and management, Virtual memory organization:-Paging, Segmentation, Virtual memory management algorithms and issues.	8	16
	6.	<b>Deadlocks:</b> System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock	8	16
UNIT- IV	7.	<b>Main Memory:</b> Background, Logical address space, Physical address space, MMU, Swapping, Contiguous Memory Allocation, Segmentation, Paging, Structure of the Page Table <b>Virtual Memory:</b> Background, Demand Paging, Copy-on- Write, Page, Replacement, Allocation of Frames, Thrashing <b>Mass-Storage Structure:</b> Overview, Disk Structure, Disk Scheduling, Disk Management.	6	12
	8	<b>File-System Interface:</b> File Concept, Access Methods, Directory and Disk Structure	4	8
<b>TOTAL</b>			<b>50</b>	<b>100</b>

#### Text Books:

1. P. K. Sinha&PritiSinha , “Computer Fundamentals”, BPB Publications, Sixth Edition
2. Silberschatz, Galvin, Gagne ”Operating System Principles” John Wiley & Sons, 7<sup>th</sup> Edition

#### Reference Books:

1. Dr. Madhulika Jain, “Information Technology Concept”, BPB Publication 2<sup>nd</sup> Edition.
2. Andrew Tanenbaum, Modern Operating Systems, Prentice Hall.
3. William Stallings, Operating Systems, Prentice Hall.
4. Harvey M. Deitel, An introduction to operating systems. Addison-Wesley.
5. Andrew Tanenbaum& Albert Woodhull, Operating Systems: Design and Implementation. Prentice-Hall.
6. Naresh Chauhan, Principles of Operating Systems, Oxford Press
7. Achyut S. Godbole, AtulKahate, Operating Systems, Tata McGraw Hill
8. Abraham Silberschatz, Peter Galvin, Greg Gagne, Operating System Concepts, Wiley,8<sup>th</sup>Edition

<b>Branch: BCA</b>	<b>Semester-I</b>
<b>Subject Code: 1105</b>	<b>Lecture: 02</b> <b>Credit: 02</b>
<b>Course Opted</b>	<b>Skill Enhancement -1</b>
<b>Subject Title</b>	<b>OFFICE AUTOMATION TOOLS</b>

**Course Objective:**

- To familiarize the students in preparation of documents and presentations with office automation tools, internet and internet tools.

**Course Outcomes:**

- On completion, the students would be able to make word documents, spreadsheets, power point presentations using the Microsoft suite of office tools.

<b>Module</b>	<b>Sr. No.</b>	<b>Topic and Details</b>	<b>No. of Lectures Assigned</b>	<b>Marks Weightage</b>
<b>UNIT-I</b>	1.	Operating Computer using GUI based OS, Communicating using the Internet, WWW & Web Browsers, Communication & Collaboration. Browsers and its types, internet browsing, searching - Search Engines - Portals - Social Networking sites- Blogs - viewing a webpage, downloading and uploading the website. Creating an email-ID, e-mail reading, saving, printing, forwarding and deleting the mails, checking the mails, viewing and running file attachments, addressing with cc and bcc.	4	8
<b>UNIT-II</b>	2.	<b>Introduction to MS-WORD:</b> Applications and its Usages; Working with documents: Basics, starting Word, creating document, parts of Word window, mouse and keyboard operations, designing a document, opening, closing of document creating styles / tables / drawing tools / printing documents- selection, cut, copy, paste; Toolbars, operating on text; Printing, saving, Creating a template; Tables, borders, pictures, text box operations; Mail Merge, hyperlink, bookmark, cross-reference, Track changes, page layouts, Wrapping, Setting Document styles, Table of Contents, Index, Page Numbering; Shortcut keys	7	14
<b>UNIT-III</b>	3.	<b>Introduction to MS EXCEL:-</b> Applications and its Usages; Working with spreadsheets: navigating, Excel toolbars and operations, Formatting; copying data between worksheets; entering formula, chart creation; data forms, Formatting Spreadsheets, Mathematical Formulas, Working with sheets – Sorting, Filtering, Validation, Consolidation, and Subtotal, Creating & Using Templates, Pivot Tables, Tracking Changes Functions in Excel ROUND( ), SQRT ( ), MAX( ), MIN( ), AVERAGE( ), COUNT( ), SUMIF( ), SUMIF( ), ABS( ), ROMAN( ), UPPER( ), LOWER( ), CELL( ), TODAY( ), NOW( ),	7	14

UNIT-IV	4.	<b>Introduction to MS POWER POINT:-</b> Working with Power Point Window, Standard Tool Bar, Formatting tool bar, Drawing tool Bar, Moving the Frame, Inserting Clip Art, Picture, Slide, Text Styling, Send to back, Entering data to graph, Organization Chart, Table, Design template, Master Slide, Animation Setting, Saving and Presentation , auto Content Wizard, Adding Effects to the Presentation- Setting Animation & transition effect. Printing Handouts, Generating Standalone Presentation viewer. <b>INTRODUCTION TO MS-ACCESS:-</b> Introduction, What is Database, Creating a New Database, Creating Tables, Working with Forms, Creating queries, running queries, Creating Reports, Types of Reports, Printing of documents, Importing data from other databases viz. MS Excel etc.	7	14
<b>TOTAL</b>			<b>25</b>	<b>50</b>

**Text Book:**

1. Computer fundamentals by P.K. Sinha, BPB Publications, 2004

**Reference Books:**

1. Computers today by Sanders, McGraw-Hill, 1988
2. W.Stallings “ Data and Computer Communication”, 7th Edition, Prentice Hall, 2004
3. Dr. S. B. Kishor, INFORMATION AND COMMUNICATION TECHNOLOGY, 3<sup>rd</sup> Ed. published by DAS GANU Prakashan, Nagpur on Sep. 2015. (1<sup>st</sup> Ed. July 2013, 2<sup>nd</sup> Ed. Sep. 2014)) (ISBN : 978-93-81660-73-7)