(NEP-2020)

Curriculum and Credit Framework for Under Graduate Programmes Four Years under Graduate Degree with Honours in Computer Applications (BCA)

Department of Computer Science and Engineering
Rajiv Gandhi University
(A Central University)
Rono Hills, Doimukh
Arunachal Pradesh-791112
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Programme Objectives and Programme Learning Outcomes

<u>Programme Objectives:</u>

PO1: This program's main goal is to give students a foundation in computer programming, computer fundamentals and business so they can use and manage enterprise software and information systems efficiently.

PO2: It exposes students to business software and information systems and assists them in analyzing the requirements for system development.

PO3: Students can choose to specialize on system software, mobile apps, website designing, or legacy application software with this course.

PO4: To create exceptional IT workers who can independently design live projects and put their academic knowledge into practice in the real world

PO5: To give students the chance to study contemporary information processing techniques and their applications.

PO6: To help students learn programming methods and how to use programming to solve problems

PO7: To educate students who want to pursue higher studies in computer science and related fields.

PO8: To familiarize students with a variety of modern, industry-standard Office productivity software programs.

Programme Learning Outcomes:

PLO1: Ability to apply knowledge of mathematics, computer Science and management in practice.

PLO2: Ability to enhance not only comprehensive understanding of the theory but its application too in diverse field.

PLO3:The program prepares the young professional for a range of computer applications, computer organization, techniques of computer networking, software engineering-Commerce, Web Designing, Big Data, IOT, Python and Advance JAVA.

PLO4: Ability to design a computing system to meet desired needs within realistic constraints such as safety, security and applicability in multidisciplinary teams with positive attitude.

PLO5: Ability to communicate effectively.

PLO6: In order to enhance programming skills of the young IT professionals, the program has introduced the concept of project development in each language/technology learnt during semester.

Course Structure of 1st Semester and 2nd Semester for four years UG Degree course with Honours in Computer Application (BCA)

Semester	MAJOR	CRDIT	MINOR	CRDIT	MULTI DISCIPLINARY	CRDIT	ABILITY ENHENCEMENT	CRDIT	SKILL ENHENCEMENT	CRDIT	VALUE ADDED	CRDIT	TOTAL CREDIT
I	CSE-CC-1110 Fundamentals of Computers and Digital Logics	4	CSE-MC-1110 Introduction to Web Designing	4	CSE-MD-1110 Basics Office Automation Tools CSE-MD-1120 Fundamental of Computers	3	AEC 1 XXX-AE-1110	4	SEC 1* CSE-SE-1110 Office Automation Tools	3	VAC 1** XXX-VA-XXXX	2	20
II	CSE-CC-1210 Introduction to Programming	4	CSE-MC-1210 Information Security Fundamentals and Practices	4	CSE-MD-1210 Basics of ICT Hardware CSE-MD-1220 Basics of Networking	3	AEC 2 XXX-AE-XXXX	4	SEC 2* CSE-SE-1210 ICT Hardware	3	VAC 2** XXX-VA-XXXX	2	20

Note:

Note: In the 1st and 2nd semester along with the Major course a BCA (Hons.) student has to choose

a) Two Minor Courses, one in each semester from Departments…………………….. as minor.

b) Two Multi-disciplinary Courses (MDC), one in each semester from any MDC course of discipline available in the college/university, which has neither been studied in 10+2 level nor chosen as Major or Minor course in the present programme by the student.

c) Two Skill Enhancement Course (SEC), one in each semester from any discipline including CSE.

d) Two Ability Enhancement Courses (AEC), one in each semester among the courses being offered by the other departments.

Course and Credit Details for the 1st and 2nd Semester BCA

CORECOURSE(CC)

SEMESTER	Course Code	Course Name	Credits			
			L	T	P	TOTAL
I	CSE-CC-1110	Fundamentals of Computers and Digital Logic	3	0	1	4
II	CSE-CC-1210	Introduction to Programming	2	0	2	4

MINOR COURSE(MC)

SEMESTER	Course Code	Course Name	Credits			
			L	T	P	TOTAL
I	CSE-MC-1110	Introduction to Web Technology	3	0	1	4
II	CSE-MC-1210	Information Security Fundamentals and Practices	2	0	2	4

SKILL ENHANCEMENT COURSE(SEC)

SEMESTER	Course Code	Course Name	Credits			
			L	T	P	TOTAL
I	CSE-SE-1110	Office Automation Tools	2	0	1	3
II	CSE-SE-1210	ICT Hardware	2	0	1	3

MULTIDISCIPLINARY COURSE(MDC)

SEMESTER	Course Code	Course Name	Credits			
			L	T	P	TOTAL
I	CSE-MD-1110	Basics Office Automation Tools	2	0	1	3
	CSE-MD-1120	Fundamental of Computers	3	0	0	3
II	CSE-MD-1210	Basics of ICT Hardware	2	0	1	3
	CSE-MD-1220	Basics of Networking	3	0	0	3

Core Courses (CC)

CSE-CC-1110
Fundamentals of Computers and Digital Logic
Credit: 4(L-3 T-0 P-1)
Total Lectures:75 (Theory-45; Practical-30)

Course Objectives

CO-1. Bridge the fundamental concepts of computers with the present level of knowledge of the students.

CO-2.Familiarise operating systems, programming languages, peripheral devices, networking, multimedia and internet

CO-3 Understand binary, hexadecimal and octal number systems and their arithmetic.

CO-4. Understand how logic circuits and Boolean algebra form as the basics of digital computer.

CO-5. Demonstrate the building up of Sequential and combinational logic from basic Gates.

Course Learning Outcomes

On completion of this course the students will be able to:

CLO-1: Know the characteristics of various digital circuit components.
CLO-2: Understand the utilization of components.
CLO-3: Design and analyze small signal amplifier circuits.
CLO-4: Learn Postulates of Boolean algebra and to minimize combinational functions
CLO-5: Design and analyze combinational and sequential circuits
CLO-6: Know about the logic families and realization of logic gates.

UNIT – I
Current trends in Computer System, current hardware and software. Functional units comprising a typical computer configuration: input/output, fixed and removable data storage, internal storage, memory hierarchy, control and arithmetic/logic unit. Operating Systems, Windows, Linux etc.System software, Application software.

(10Lectures)

UNIT – II
Programming Concept: Flow charts and algorithms.Data communications concepts, transmission media; network concepts such as network types, network topologies and TCP/IP; Hardware essentials for a computer network; Internet, Multimedia, WWW, FTP, E-mail, Web pages.Concept of VPNs, Corporate Networks.Concept of Network security and management.

(10Lectures)

UNIT – III

Data types and Number systems, Binary number system, Octal & Hexadecimal number system, 1's & 2's complement, Binary Fixed-Point Representation, Arithmetic operation on Binary numbers, Overflow & underflow, Floating Point Representation, Codes, ASCII, EBCDIC codes, Gray code, Exces-3 & BCD, Error detection & correcting codes.

(15Lectures)

UNIT – IV

Logic Gates, AND, OR, NOT GATES and their Truth tables, NOR, NAND & XOR gates, Boolean Algebra, Basic Boolean Law's, Demorgan's theorem, MAP Simplification, Minimization techniques, K -Map, Sum of Product & Product of Sum.

(10Lectures)

UNIT – V

Combinational & Sequential circuits, Half Adder & Full Adder, Full subtractor, Flip-flops - RS, D, JK & T Flip-flops, Shift Registers, RAM and ROM, Multiplexer, Demultiplexer, Encoder, Decoder, Idea about Arithmetic Circuits, Program Control, Instruction Sequencing.

(15Lectures)

Recommended Books

1. ITL Education Solutions Limited,*Fundamentals of Computer*, First edition,Pearson Education (2010).
2. U K Singh, S Jain, AMaheshwari,*Fundamental of Computer Science and Information Technology*,1stEdition, SSDN Publication,2012.
3. Thomas Bartee,*Digital Computer Fundamentals*,*McGraw Hill Education*,2001. Albert Malvino, Jerald Brown,*Digital Computer   Electronics,* McGraw-Hill Education, 3rd edition,1992.

CSE-CC-1210
Introduction to Programming
Credit: 4(L-2 T-0 P-2)
Total Lectures: 90 (Theory-30; Practical-60)

CourseObjectives

CO-1. Understanding foundation concepts of information and information processing in computer systems: a matter of information, data representation, coding systems.

CO-2. Understanding of an algorithm and its definition.

CO-3. Understanding of a programming language syntax and its definition by example of C language.

CO-4. Knowledge of basic principles of imperative and structural programming

CO-5. Ability to write simple programs in C language by using basic control structures (conditional statements, loops, switches, branching, etc.).

Course LearningOutcomes

On completion of this course the students will be able to:

CLO-1: Understanding foundation concepts of information and information processing in computer systems: a matter of information, data representation, coding systems.
CLO-2:   Understanding of an algorithm and its definition.
CLO-3: Understanding of a programming language syntax and its definition by example of C language.
CLO-4: Knowledge of basic principles of imperative and structural programming.Write simple programs in C language by using basic control structures (conditional statements, loops, switches, branching, etc.).
CLO-5: Ability to create a programmable model for a problem given.
CLO-6: Understanding a function concept and how to deal with function arguments and parameters.
CLO-7: Use pointers and pointer arithmetic in the simple cases. Basic knowledge of working witharrays in C language.

UNIT – I

The problem-solving process and strategies; programming paradigms – procedural, structured, object oriented and generic approaches; algorithms; programs (algorithmdata structure); data abstraction.

(10Lectures)

UNIT – II

Basic data types and fundamental programming constructs (control structures); syntax and semantics of a higher-level language; variables, constants, operators, expressions, and assignment.

(10Lectures)

UNIT – III

functions as building blocks of structured programming; recursions; searching and sorting algorithms. Array data type and use of arrays; character data type and text processing; functional and procedural abstraction; Pointer data type and simple applications of pointers.

(15Lectures)

UNIT – IV

Principle of modeling (abstraction and decomposition); graphic models for structured programming; problems with structured programming; modular programming and abstract data types.

(15Lectures)

UNIT – V

Program design and evaluation (module coupling and module strength); problem solving using structured programming - coding, debugging and testing using C.

(10Lectures)

RecommendedBooks
1. Brian W. Kernighan, Dennis M. Ritchie,*The C Programming Language (ANSI C Version)*,PHI Learning.
2. Balaguruswamy,*Computing Fundamentals and C Programming,*McGraw Hill Education.
3. Doris Appleby, Julius J. VandeKopple,*Programming Language-Paradigm and Practice*,McGraw Hill Education.
4. J.B. Dixit,*Mastering C Programs,* Laxmi Publications; Reprint edition, 2013.

Minor Courses (MC)

CSE-MC-1110
Introduction to WEB Technology
Credit: 4(L-3 T-0 P-1)
Total Lectures:75 (Theory-45; Practical-30)

CourseObjectives

CO-1. Get introduced to core parts of a web.
CO-2. Analyze a webpage, identify its elements and attributes
CO-3. Create webpage with HTML, XHTML and various cascading style sheets.
CO-4. Build dynamic webpages using JavaScript (client-side programming).
CO-5. Create XML documents and schemas.

Course LearningOutcomes

On completion of this course the students will be able to:

CLO-1: Analyze a web page and identify its elements and attributes.
CLO-2: Create web pages using XHTML and Cascading Style Sheets.
CLO-3: Build dynamic web pages using JavaScript (Client-side programming).
CLO-4: Create XML documents and Schemas.
CLO-5: Build interactive web applications using CSS2. Explain the principle of transaction management design.

UNIT – I
Introduction to WWW: Protocols and programs, secure connections, application and development tools, the web browser, what is server, choices, setting up UNIX and Linux web servers, Logging users, dynamic IP, Web Design: Web site design principles, planning the site and navigation.

(10Lectures)

UNIT – II
Introduction to HTML: The development process, Html tags and simple HTML forms, web site structure Introduction to XHTML: XML, Move to XHTML, Meta tags, Character entities, frames and frame sets, inside browser.

(10Lectures)

UNIT – III
Dynamic HTML: Introduction of DHTML- HTML vs. DHTML, Advantages of DHTML, CSS of DHTML, Event Handling, Data Binding, Browser Object Models.
Style sheets: Need for CSS, introduction to CSS, basic syntax and structure, using CSS, background images, colors and properties, manipulating texts, using fonts, borders and

boxes, margins, padding lists, positioning using CSS, CSS2,CSS3

(15Lectures)

UNIT – IV
JavaScript:Client-side scripting, what is JavaScript, How to develop JavaScript, simple JavaScript, variables, functions, conditions, loops and repetition.

(10Lectures)

UNIT – V
XML: Introduction to XML, uses of XML, simple XML, XML key components, DTD and Schemas, Well formed, using XML with application.XML, XSL and XSLT. Introduction to XSL, XML transformed simple example, XSL elements, transforming with XSLT.

(15Lectures)

RecommendedBooks
1. Steven Holzner,*HTML Black Book*, Dremtech press.
2. Jeffrey C. Jackson ,*Web Technologies: A Computer Science Perspective*, Prentice Hall, 2006.
3. Craif Knuckles, David Yuen, *Web Applications: Concepts and Real-World Design*, Wiley India Pvt Ltd, 2006.

CSE-MC-1210
Information Security Fundamentals and Practices
Credit: 4(L-2 T-0 P-2)
Total Lectures:90 (Theory-30; Practical-60)

CourseObjectives

CO-1:Learn fundamentals of cryptography and its application to network security. □Understand network security threats, security services, and countermeasures.

CO-2: Understand vulnerability analysis of network security.□□Acquire background on hash functions; authentication; firewalls; intrusion detection techniques.

CO-3: Gain hands-on experience with programming and simulation techniques for security protocols. □Obtain background for original research in network security, especially wireless network and MANET security.

CO-4: Understand the trade-offs and criteria/concerns for security countermeasure development. Apply methods for authentication, access control, intrusion detection and prevention.

CO-5: Identify and mitigate software security vulnerabilities in existing systems

Course LearningOutcomes

CLO-1:Understand and explain the risks faced by computer systems and networks.

CLO-2: Identify and analyze security problems in computer systems and networks.

CLO-3: Explain how standard security mechanisms work.

CLO-3: Develop security mechanisms to protect computer systems and networks.

CLO-3: Write programs that are more secure.

CLO-3: Use cryptography algorithms and protocols to achieve computer security.

UNIT – I   (5Lectures)
Introduction to Information Security: Attacks, Vulnerability, Security Goals, Security Servicesand mechanisms. Conventional Cryptographic Techniques:Conventional substitution andtransposition ciphers, One-time Pad, Block cipher and Stream Cipher, Steganography

UNIT – II

Symmetric and Asymmetric Cryptographic Techniques: DES, AES, RSA algorithms Authentication and Digital Signatures: Use of Cryptography for authentication, Secure Hash function, Key management – Kerberos Program Security: Nonmalicious

UNIT – III   (10Lectures)

Program errors – Buffer overflow, Incomplete mediation, Time-of-check to Time-of- use Errors, Viruses, Trapdoors, Salami attack, Man-in-the- middle attacks, Covert channels Authentication and Digital Signatures: Use of Cryptography for authentication, Secure Hash function, Key management – Kerberos program Security: Nonmalicious

UNIT – IV   (10Lectures)

Security in Networks: Threats in networks, Network Security Controls – Architecture, Encryption, Content Integrity, Strong Authentication, Access Controls, Wireless Security, Honeypots, Traffic flow security, Firewalls – Design and Types of Firewalls, PersonaFirewalls, IDS, Email Security – PGP, S/MIME

UNIT – V   (5Lectures)

Program errors – Buffer overflow, Incomplete mediation, Time-of-check to Time-of- use Errors, Viruses, Trapdoors, Salami attack, Man-in-the- middle attacks, Covert channels
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RecommendedBooks

1. Security in Computing, Fourth Edition, by Charles P. Pfleeger, Pearson Education
2. Cryptography And Network Security Principles And Practice, Fourth or Fifth

   Edition, William Stallings, Pearson

3. Modern Cryptography: Theory and Practice, by Wenbo Mao, Prentice Hall.
4. Network Security Essentials: Applications and Standards, by William Stallings. Prentice Hall.
5. Linda Foulkes, *Learn Microsoft Office 2019*, Packt Publishing Limited; Illustrated edition (29 May 2020)
6. Cryptography And Network Security Principles And Practice, Fourth or Fifth Edition, William Stallings, Pearson
7. Modern Cryptography: Theory and Practice, by Wenbo Mao, Prentice Hall. Network Security Essentials: Applications and Standards, by William Stallings. Prentice Hall.

Skill Enhancement Courses (SEC)

CSE-SE-1110
Office Automation Tools
Credit: 3(L-2 T-0 P-1)
Total Lectures:60 (Theory-30; Practical-30)

CourseObjectives

CO-1. Explore the basic concepts of the desktop publishing through office tools.

CO-2.Creating Publications, Editing Publications through different formats.

CO-3. Explore the knowledge of data processing in worksheet.

CO-4. Students will surge their Knowledge about Presentation using Power Point.

CO-5. Groom the students with updated knowledge for online processing of data through Google office tools.

Course Learning Outcomes

On completion of this course the students will be able to:

CLO-1: Documents, spreadsheets, make small presentations and would be acquainted with internet.
CLO-2: Efficient Internet Research
CLO-3: Spelling, Punctuation, and Grammar
CLO-4: General Office Skills; File Management, Record Filing, Telephone & Email Etiquette
CLO-5: Intuit QuickBooks Accounting
CLO-6: Creating Fillable Forms with Google forms

UNIT – I   (5 Lectures)
Introduction to Open Office, Microsoft Office and LibreOffice.Features, Creating, Saving and Opening Documents, Interface, Toolbars, Ruler, Menus, Keyboard Shortcut.

UNIT – II   (5Lectures)

Word/writer: Editing, Previewing, Printing & Formatting a Document, Find& Replace, Using Thesaurus, Using Auto- Multiple Functions, Mail Merge, Handling Graphics, Tables & Charts, Converting a word document into various formats like- Text, Rich Text format, Word perfect, HTML, PDF etc.

UNIT – III   (8Lectures)

Excel/Calc: Creating, Saving, closing, editing a Workbook, Inserting, Deleting Work Sheets, entering data in a cell, Copying and Moving from selected cells, entering formula, handling operators in Formula, Functions: Mathematical, Logical, statistical, text, financial, Date and Time functions, Using Function Wizard. Formatting a Worksheet: Formatting Cells – changing data alignment, changing date, number, character or currency format, changing font, adding borders and colors, Printing worksheets, Charts and Graphs – Creating, Previewing, Modifying Charts, LOOKUP/VLOOKUP.

UNIT – IV   (8Lectures)
PowerPoint/Impress: Creating, Opening and Saving Presentations, Working in Different Views, Working with Slides, Adding and Formatting Text, Formatting Paragraphs, Checking Spelling and Correcting Typing Mistakes, Making Notes Pages and Handouts, Drawing and Working with Objects, Adding Clip Art and other pictures, Designing Slide Shows using templates, Rehearse timing, Narration, Multimedia effects- Apply Transitions between Slides, Animate Slide Content, Set Timing for Transitions and Animations, Insert and Format Media, Encrypting presentations with a password, Running and Controlling a Slide Show, Printing Presentations.

UNIT – V   (4Lectures)

Google Office Tools: Creating, saving, downloading, sharing files/folders from Google drive, creating and sharing Google docs, import and export docs, creating and sharing Google sheet, import and export Google sheet, Google forms and form responses, creating Google slides for presentation.

RecommendedBooks
1. Linda Foulkes, *Learn Microsoft Office 2019*, Packt Publishing Limited; Illustrated edition (29 May 2020)
2. Bittu Kumar, *Mastering MS Office*, V&S Publishers (1 January 2017)
3. Kevin Wilson, *Exploring Microsoft Office: The Illustrated, Practical Guide to Using Office and Microsoft 365*, Elluminet Press; 1st edition (30 November 2020)
4. Wallace Wang, *Microsoft Office 2019 For Dummies*, Wiley (1 January 2018)
Diane L. Martin, *Office in a Minute*, Createspace Independent Pub; 2nd

CSE-SE-1210
ICT Hardware
Credit: 3(L-2 T-0 P-1)
Total Lectures:60 (Theory-30; Practical-30)

Course Objective:

CO1: To introduce the basic software and hardware components of a computer system.

CO2: To introduce the theory and practical implementation of SMPS, UPS in a computer system.

CO3: To introduce the process of different types of OS installation and troubleshooting.

CO4: To introduce a fair idea and practices in computer assembling and hardware troubleshooting.

Course Learning Outcomes:

CLO-1: Able to identify the different hardware parts of a computer system.

CLO-2: Understand the principles of SMPS/UPS and troubleshoot switch mode power supply.

CLO-3: Configure BIOS settings and their consequences.

CLO-4: Able to install and troubleshoot different types of Operating System.

Unit 1: Computer Fundamentals, Architecture of computer, System software, Application Software, Operating System basic concepts, Operating system types, softwares&hardwares, Basic fundamentals of AC and DC, Converters.
Practical Components: Identification of different parts of a computer system, Color wires and power flow identification.

Unit 2: SMPS & UPS: Features , Functions, Types, Circuit diagram of SMPS, UPS working principle.

Practical Components: SMPS installation, Isolated power testing, battery changing in UPS, Troubleshooting fuse, relay and circuits.

Unit 3: BIOS introduction, CMOS introduction and setup, POST,

Practical Component: BIOS/CMOS setup , BIOS configuration, Dual booting implementation.

Unit 4: Operating System: Introduction, types,functions& features; Windows 10 , Linux Ubuntu and Fedora, Android.

Practical Component: OS installation, DOS commands, Safe mode boot operations, Windows diagnostic tools, system restore, windows recovery, linux server and services configuration.

Unit 5: Networking : Introduction to LAN, MAN , WAN, Cables: CAT, STP and Fiber, STP cable color codes, RJ 45 and other LAN connectors, Creating a LAN network, troubleshooting a LAN and Wifi 802.11 Network.

Practical Component: Create and configure a LAN network, configure and troubleshoot aadhoc and wifi network.

References:

1. The Complete Reference PC Hardware, Craig Zacker, McGraw Hill
2. Learning PC Hardware, Ramesh Bangia, Khanna publishers.

Multi-Disciplinary Courses (MD)

CSE-MD-1110
Basics Office Automation Tools
Credit: 3(L-2 T-0 P-1)
Total Lectures:60 (Theory-30; Practical-30)

Course Objectives

CO-1. Explore the basic concepts of the desktop publishing through office tools.

CO-2.Creating Publications, Editing Publications through different formats.

CO-3. Explore the knowledge of data processing in worksheet.

CO-4. Students will surge their Knowledge about Presentation using Power Point.

CO-5. Groom the students with updated knowledge for online processing of data through Google office tools.

Course Learning Outcomes

On completion of this course the students will be able to:

CLO-1: Documents, spreadsheets, make small presentations and would be acquainted with internet.
CLO-2: Efficient Internet Research
CLO-3: Spelling, Punctuation, and Grammar
CLO-4: General Office Skills; File Management, Record Filing, Telephone & Email Etiquette
CLO-5: Intuit QuickBooks Accounting
CLO-6: Creating Fillable Forms with Google forms

UNIT – I   (5 Lectures)
Introduction to Open Office, Microsoft Office and LibreOffice.Features, Creating, Saving and Opening Documents, Interface, Toolbars, Ruler, Menus, Keyboard Shortcut.

UNIT – II   (5Lectures)

Word/writer: Editing, Previewing, Printing & Formatting a Document, Find& Replace, Using Thesaurus, Using Auto- Multiple Functions, Mail Merge, Handling Graphics, Tables & Charts, Converting a word document into various formats like- Text, Rich Text format, Word perfect, HTML, PDF etc.

UNIT – III   (8Lectures)

Excel/Calc: Creating, Saving, closing, editing a Workbook, Inserting, Deleting Work Sheets, entering data in a cell, Copying and Moving from selected cells, entering formula, handling operators in Formula, Functions: Mathematical, Logical, statistical, text, financial, Date and Time functions, Using Function Wizard. Formatting a Worksheet: Formatting Cells – changing data alignment, changing date, number, character or currency format, changing font, adding borders and colors, Printing worksheets, Charts and Graphs – Creating, Previewing, Modifying Charts, LOOKUP/VLOOKUP.

UNIT – IV   (8Lectures)
PowerPoint/Impress: Creating, Opening and Saving Presentations, Working in Different Views, Working with Slides, Adding and Formatting Text, Formatting Paragraphs, Checking Spelling and Correcting Typing Mistakes, Making Notes Pages and Handouts, Drawing and Working with Objects, Adding Clip Art and other pictures, Designing Slide Shows using templates, Rehearse timing, Narration, Multimedia effects- Apply Transitions between Slides, Animate Slide Content, Set Timing for Transitions and Animations, Insert and Format Media, Encrypting presentations with a password, Running and Controlling a Slide Show, Printing Presentations.

UNIT – V   (4Lectures)

Google Office Tools: Creating, saving, downloading, sharing files/folders from Google drive, creating and sharing Google docs, import and export docs, creating and sharing Google sheet, import and export Google sheet, Google forms and form responses, creating Google slides for presentation.

Recommended Books

1. Linda Foulkes, *Learn Microsoft Office 2019*, Packt Publishing Limited; Illustrated edition (29 May 2020)
2. Bittu Kumar, *Mastering MS Office*, V&S Publishers (1 January 2017)
3. Kevin Wilson, *Exploring Microsoft Office: The Illustrated, Practical Guide to Using Office and Microsoft 365*, Elluminet Press; 1st edition (30 November 2020)
4. Wallace Wang, *Microsoft Office 2019 For Dummies*, Wiley (1 January 2018)
   Diane L. Martin, *Office in a Minute*, Createspace Independent Pub; 2nd

CSE-MD-1120
Fundamentals of Computer
Credit: 3(L-2 T-0 P-1)
Total Lectures:60 (Theory-30; Practical-30)

Course Objective:

CO1: To learn the fundamentals of Computer Fundamentals.

CO2: To learn the concepts of number system and operating system'

CO3: To gain knowledge on software and applications.

CO4: To brief the students about word processing and editing tools.

CO5: To introduce a fair idea and practices in computer assembling and hardware

Course Learning Outcomes:
On completion of this course the students will be able to:

CLO-1: Identify different components within the computer system

CLO-2: Understand the fundamentals of computer system

CLO3: Identify different components within the computer system

CLO4: Understand different types of input and output devices

CLO5: Demonstrate the working concepts of different devices connected to computer

CLO7: Understand the use of Word processing, Spreadsheet and Presentation

UNIT-I   15 Hours

The basics of Internet, World Wide Web, Static, Dynamic and Active web page, Overview of Protocols - Simple Mail Transfer Protocol, Gopher, Telnet Emails, TFTP, Simple Network Management Protocol, Hyper Text Transfer Protocol, Client server computing concepts.

UNIT-II   15 Hours

Software and its Types (system Software, Application Software, Firmware Software) Computer Languages and its types (Machine Language, Assembly Language, High Level Language: Merits and Demerits of Computer Languages), translators: Compiler, Linker, Interpreter, Loader, computer virus and its types (Troian, Malware, Spyware etc.), Antivirus Software

UNIT-III   15 Hours

Number system: Decimal, Binary Octal, Hexadecimal, Conversion of one number system to another, arithmetic operations, Complement, introduction to operating system, Architecture, Types of Operating System, Parallel, Distributed & Real time Operating, System, Multiprogramming, Multitasking, Time sharing, Memory Management, File Management

UNIT-IV   15 Hours

Problem Solving techniques: Introduction, Problem solving procedure.
Algorithm: Steps involved in algorithm development, Algorithms for simple problems (To find largest of three numbers, factorial of a number, check for prime number, check for palindrome, Count number of odd, even and zeros in a list of integers) Flowcharts: Definition, advantages, Symbols used in flow charts. Flowcharts for simple
problems mentioned in algorithms. Pseudocode.

UNIT-V   15 Hours

Using word processing: Features of Word processing software, Opening and Closing of documents, Text creation and Manipulation, Formatting of text, Table handling Spell check, language setting and thesaurus,
Using Spread sheet tool: Basics of Spreadsheet, features, Formulas and Functions, header and footer, deleting or inserting cells, , Rows and Columns, Goal Seek, Sorting and Filter, Creating charts.
Using Slide Presentation Tool: Basics of power point, Preparation and Presentation of Slides, Master Slides, setup Slide Show, Formatting and Clip Arts, PowerPoint Views, Assigning Slide Transitions, Header/Footer, Word Art, Templates

Recommended Books

1. P.K Sinha and Priti Sinha, "Computer Fundamentals", BPB Publications'
2. Alexix Leon and Mathewes Leon, "Fundamentals of Information Technolog/',Leon Tech World
3. Suresh K Basandra, "Computer Systems Today, Galgotia Publications'
4. V. Rajaraman, "Fundamentals of Computers", IEEE.
5. Peter Nortan ,"introduction to computers", Tata McGraw Hill

CSE-MD-1210
Basics of ICT Hardware
Credit: 3(L-2 T-0 P-1)
Total Lectures:60 (Theory-30; Practical-30)

Course Objective:

CO1: To introduce the basic software and hardware components of a computer system.

CO2: To introduce the theory and practical implementation of SMPS, UPS in a computer system.

CO3: To introduce the process of different types of OS installation and troubleshooting.

CO4: To introduce a fair idea and practices in computer assembling and hardware troubleshooting.

Course Learning Outcomes:
On completion of this course the students will be able to:

CLO-1: Able to identify the different hardware parts of a computer system.

CLO-2: Understand the principles of SMPS/UPS and troubleshoot switch mode power supply.

CLO-3: Configure BIOS settings and their consequences.

CLO-4: Able to install and troubleshoot different types of Operating System.

Unit 1:   **15 Hours**
Computer Fundamentals, Architecture of computer, System software, Application Software, Operating System basic concepts, Operating system types, software & hardware, Basic fundamentals of AC and DC, Converters.
Practical Components: Identification of different parts of a computer system, Color wires and power flow identification.

Unit 2:   **15 hours**
SMPS & UPS: Features , Functions, Types, Circuit diagram of SMPS, UPS working principle.

Practical Components: SMPS installation, Isolated power testing, battery changing in UPS, Troubleshooting fuse, relay and circuits.

Unit 3:   **10 hours**

 BIOS introduction, CMOS introduction and setup, POST,

Practical Component: BIOS/CMOS setup , BIOS configuration, Dual booting implementation.

Unit 4:   **10 hours**

 Operating System: Introduction, types, functions& features; Windows 10 , Linux Ubuntu and Fedora, Android.

Practical Component: OS installation, DOS commands, Safe mode boot operations, Windows diagnostic tools, system restore, windows recovery, linux server and services configuration.

Unit 5:   **10 hours**

Networking : Introduction to LAN, MAN , WAN, Cables: CAT, STP and Fiber, STP cable color codes, RJ 45 and other LAN connectors, Creating a LAN network, troubleshooting a LAN and Wifi 802.11 Network.
Practical Component: Create and configure a LAN network, configure and troubleshoot aadhoc and wifi network.

References:

1. The Complete Reference PC Hardware, Craig Zacker, McGraw Hill
2. Learning PC Hardware, Ramesh Bangia, Khanna publishers.

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CSE-MD-1220
Basics of Networking
Credit: 3(L-2 T-0 P-1)
Total Lectures:60 (Theory-30; Practical-30)

Course Objective:

CO1: This course introduces to install, configure, and troubleshoot a computer network.

CO2: This course first introduces the fundamental building blocks that form a modern network, such as protocols, topologies, hardware, and network operating systems.

CO3: It then provides in-depth coverage of the most important concepts in contemporary networking, such as TCP/IP, Ethernet, wireless transmission, and security.

Course Learning Outcomes:
On completion of this course the students will be able to:

CLO-1: Able to understand how computer networks are organized with the layered concepts.

CLO-2: Will be familiar with different network devices and their uses and functions.

CLO-3: Will be familiar with internets, different types and uses and 2G-5G et.

CLO-4: Able to install and set up of video conferencing and VoIP

Unit I: 15 Hours
Define computer network, identifying basic networking elements and describing roles of Clients, Server, Peers, and Transmission Media & Protocols Network Services: File, print, Message, Database Application Identifying Differences bet. Centralized & distributed network architecture Identifying appropriate transmission media to meet a business need .Cable Media & Wireless Media, Network Connectivity devices, Modern repeaters, Hubs Bridges, Multiplexes and routers

Unit II: 15 hours
Identifying 7 Layers of OSI
Physical Layer: Connection types used in Computer Network, Common Physical technfologies used in computer
Network: BUS, Ring, Star, Cellular, Analog & Digital Signals, bandwidth
Data link Layer: Purpose of data link Layer, Switching Methods, Routing, Network layer connection services, Bridging
Transport Layer: Purpose of transport layer, Address name resolution, Flow control, Error

control Session Layer: Purpose of Session Layer, Session Administration, Dialog control methods
Presentation Layer: Purpose of Presentation Layer, Application Layer: Purpose of Application Layer

Unit III: **10 hours**
Identifying Network Classes, obtain register IP address, Domains, how Host name, host table and DNS work. Windows Internet naming services (WINS), Subnets, Subnets mask Assigning and managing IP subnets.

Unit IV: **10 hours**
Introduction to Windows XP /Vista and Windows 7 as desktop operating systems and Sharing files and folders in Windows Network, Printing in Windows Network.
Introduction to Windows 2003 and windows 2008 as Network operating system ,

Unit V: **10 hours**
Basics of Internet and Intranet: Types of Internet connections: Dialup, Broadband, Leased Line, Wi-Fi, Wi-Max, 2G, 3G, 4G, WWW, E- mails, Search Engines, Social Networking, Cloud application, Audio-video Conferencing, Voice over Internet Protocol (VOIP).

References:

1. Computer Networking Andrew S. Tanenbam , PHI
2. Nader Mir F., Computer and Communication Networks, Pearson Education.

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