

**PGDCA****SEMESTER I**

<b>SN</b>	<b>CODE</b>	<b>SUBJECT</b>	<b>Category</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
1	CSL103	Introduction to Programming Using C & Lab	DC	3	1	4	6
2	CSL106	PC Packages & PC Software Lab	DC	3	1	4	6
3	CSL107	Fundamentals of Computers & Information Technology	DC	3	1	0	4
4	HUN106	Business Communication	DC	2	0	0	2
5	CSL277	Web Technology-I	DC	3	1	2	45

## CSL 103 INTRODUCTION TO PROGRAMMING USING C & LAB

6 credits (3-1-4)

### Unit-1: Introduction to Computers

Evolution of Computers, Generation of Computers, Classification of Computers– Analog, Digital, Hybrid Computers. Classification of Computers according to Size- Super Computers, Mainframe Computers, Personal Computers (Different Types) and Terminals (Different types), characteristics of computers, advantages and disadvantages of computers, Block Diagram of a Digital Computer.

**Introduction to Programming:** Types of Programming Languages, Software, Classification of Software, Application software and System Software, Structured Programming, Algorithms and Flowcharts with Examples, Programming Logic.

**Introduction & the C character set:** History of C, Structure of a C program, Constants, variables and keywords, Types of C constants and variables, Rules for constructing variable names

### Unit-2: C Instructions

Type declaration and arithmetic instructions Integer and float conversions, Type conversion in assignment Operators in C, Hierarchy of operations Control Instructions

**Control Structures:** Decision control structures, logical operators, conditional operator, relational operators. Loop control structures- while, do-while, for Break statement, Continue statement, case control structure, go to statement

**Arrays:** One dimensional and multidimensional arrays Declaration, initialization, reading values into an array, displaying array contents

### Unit-3:

**Strings:** Basic concepts, standard library string functions- strlen, strcpy, strcmp, strcat&strrev. Two dimensional arrays of strings

**Functions:** Definition, function definition and prototyping, types of functions, passing values to functions, recursion, passing arrays to functions I/O functions- formatted & unformatted console I/O functions

**Storage classes in C:** Automatic, Register, Extern and Static Variables

### Unit-4: Pointers

Definition, notation. Pointers and arrays, array of pointers. Pointers and functions- call by value and call by reference. Pointers and strings.

**Structures and Unions:** Definition, declaration, accessing structure elements Array of structures Pointers and structures Unions – definition, declaration, accessing union elements type def statement.

**Unit-5: Files:** File opening modes String I/O in files, formatted disk I/O functions, Text mode and Binary mode, Record I/O in files Bitwise operators Bitwise AND, OR, exclusive OR, complement, right shift and left shift operators .

**C pre-processor:** Types of C pre processor directives, Macros- comparison with functions, File Inclusion.

### Text Books:

1. Kanetkar, Yashavant: "Let Us C", 4<sup>th</sup> Edition. BPB Publications.
2. Gottfried, Byron S: "Programming with C", 1996. Tata McGraw-Hill.

### Reference Books:

1. Balagurusamy, E: "Programming in ANSI C" 2<sup>nd</sup> Edition. Tata McGraw-Hill.
2. Deitel, H M and Deitel P J: "C How to Program", 2nd Edition. Prentice-Hall.

## CSL 106 PC PACKAGES & PC SOFTWARE LAB

6 credits (3-1-4)

**Unit-1:** Office Packages-Office activities and their software requirement, word Processing, spreadsheet, presentation graphics, database, introduction and comparison of various office suites like MS office, Lotus Office, Star Office, Open Office etc. MS Word Basics: Introduction to MS Office; Introduction to MSWord; Features & area of use. Working with MS Word.; Menus & Commands; Toolbars & Buttons; Shortcut Menus, Wizards & Templates; Creating a New Document; Different Page Views and layouts; Applying various Text Enhancements; Working with – Styles, Text Attributes; Paragraph and Page Formatting; Text Editing using various features ; Bullets, Numbering, Auto formatting, Printing & various print options

**Unit-2:** Advanced Features of MS-Word: Spell Check, Thesaurus, Find & Replace; Headers & Footers; Inserting – Page Numbers, Pictures, Files, Auto texts, Symbols etc.; Working with Columns, Tabs & Indents; Creation & Working with Tables including conversion to and from text; Margins & Space management in Document; Adding References and Graphics; Mail Merge, Envelops & Mailing Labels.

**Unit-3:** MS Excel: Introduction and area of use; Working with MS Excel.; concepts of Workbook & Worksheets; Using Wizards; Various Data Types; Using different features with Data, Cell and Texts; Inserting, Removing & Resizing of Columns & Rows; Working with Data & Ranges; Different Views of Worksheets; Column Freezing, Labels, Hiding, Splitting etc.; Using different features with Data and Text; Use of Formulas, Calculations & Functions; Cell Formatting including Borders & Shading; Working with Different Chart Types; Printing of Workbook & Worksheets with various options.

**Unit-4:** MS PowerPoint: Introduction & area of use; Working with MS PowerPoint; Creating a New Presentation; Working with Presentation; Using Wizards; Slides & its different views; Inserting, Deleting and Copying of Slides; Working with Notes, Handouts, Columns & Lists; Adding Graphics, Sounds and Movies to a Slide; Working with PowerPoint Objects; Designing & Presentation of a Slide Show; Printing Presentations, Notes, Handouts with print options.

**Unit-5 :**Outlook express: Setup email account with outlook, sending and receiving mail through outlook, concepts of CC and BCC, forwarding mail, Draft messages, formatting e-mail message, Concept of MIME Protocol, attaching files and items into messages, inserting hyperlink using outlook editor creating and using send and receive group emails, opening received messages, opening messages with attachment, replying to mail forwarding messages flagging for further action, setting email options, managing contacts with outlook, Setting up multiple email accounts on single machine.

**Reference Book:**

1. R. K. Taxali, Tata McGraw Hill.

## **CSL 107 FUNDAMENTALS OF COMPUTERS & INFORMATION TECHNOLOGY**

**4 credits (3-1-0)**

**Unit-1: Introduction to Number system and Codes**

Logic levels and pulse wave forms, Different number systems and their conversions (Decimal, Binary, Octal, Hexadecimal), 9's and 10's complement, 1's and 2's complement, Binary Arithmetic, BCD numbers, Floating point numbers, ASCII code, Gray code. (07 Hours)

**Unit-2: Boolean algebra and Gate networks**

Fundamental concepts of Boolean algebra, Inverter gates, AND gate, OR gate, NAND gate, NOR gate, X-OR gate, X-NOR gate, The universal property of NAND gate and NOR gate, Basic laws of Boolean algebra, DeMorgan's theorems, Boolean expressions for gate networks (SOP and POS), Simplification of Boolean expression, Karnaugh map (SOP and POS) with examples.

**Unit-3: Combinational Logic**

Adders (half and full), Parallel binary adders, Look ahead carry adder, Decoder, Encoder, Multiplexer, De-multiplexer with applications.

**Unit-4: Flip-Flops**

Latches, Edge triggered flip-flops (SR flip-flops, D flip-flops, JK flip-flops), Pulse triggered flip-flops (Master slave JK flip-flop), Timing diagrams.

**Unit-5: Registers and Counters**

Buffer registers, Modes of operation of registers (SISO, SIPO, PISO, and PIPO). Asynchronous counters (Four bit ripple counter, Decade counter), Synchronous counter (Four bit synchronous counter, Decade counter).

**Memory and Introduction to Microprocessor**

Classification of memory– Volatile, Non-Volatile, RAM, ROM, EPROM, E<sup>2</sup>PROM, Basic Components of a Microprocessor (Introductory ideas).

**Text Book:**

1. Floyd, Thomas L: "Digital Computer Fundamentals", 3rd Edition, 1997. University Book Stall.

**Reference Books:**

1. Malvino, Paul Albert and Leach, Donald P: "Digital Principles and Applications" 4th Edition, 2000. TMH.
2. Malvino, Paul Albert and Leach, Donald P: "Digital Computer Fundamentals" 3rd Edition, 1995. TMH.
3. Bartee, Thomas C: "Digital Computer Fundamentals" 6th Edition, 1995. TMH.

**HUN 106 Business Communication**

**2 Credits (2-0-0)**

**Unit 1: Introducing Business Communication**

Concept, Nature, Scope, Types, Function, Communication models and process communication Channels– Formal, Informal, Downward, Upward and Horizontal, Essentials of effective communication, limitations of communication, Barriers of communication, Overcoming the barriers of communication, Grapevine

**Unit 2: Oral Communication**

Oral Communication, Effective oral communication, methods of oral communication, conversion skills, Presentation skills; Nonverbal communication, Interview skills – Interview process & requirements of a successful interview. Resume preparation and letter of Application.

**Unit 3: Corporate Communication**

Practices in Business communication- Group Discussions, Mock Interviews, Seminars, Importance of Listening, Individual.

**Unit 4: Group presentation and Report Writing**

Group presentation and Report Writing

**Unit 5: Business Writing & Correspondence**

Written Communication- Essentials of Written Communications, Basic Requirements of Business Letter, Business Letters & Memo Formats, Good News and Bad News Letter, Appearance Request, Letter, Sales Letter, Credit Letter, Complaints and Adjustment Letter, Quotation and offers.

**Recommended Books:**

1. Lesikar, R.V. and J.D. Pettit, Jr. Business Communication: Theory and Application Homewood III; Richard D. Irwin.
2. Sharma, R.C & K. Mohan. Business Report writing and Correspondence (TMH).
3. Aggarawal, Rohini; Business Communication and organization & Management (Taxmann's).
4. Taylor Shirley, Communication for Business, Pearson

**CSL-277 WEB TECHNOLOGY-1**

**5 credits (3-1-2)**

**Unit - I:**

**Web Essentials:** Clients, Servers, and Communication. The Internet Protocols, HTTP, HTTPS,

**Markup Languages:** An Introduction to HTML, History-Versions.

**Web Design:** Concepts of effective web design, Web design issues including Browser, Bandwidth and Cache, Display resolution, Look and Feel of the Website, Page Layout and linking, User centric design, Sitemap, Planning and publishing website, Designing effective navigation, URL, Web Browser.

**Unit – II: HTML**

Basics of HTML, formatting and fonts, commenting code, color, hyperlink, lists, tables, images, forms, Meta tags, Character entities, frames and frame sets, HTML Form and its controls, Browser architecture and Web site structure. Overview and features of HTML5

**Unit - III: CSS**

Need for CSS, introduction to CSS, basic syntax and structure, Concept of style sheet, using CSS, background images, colors and properties, manipulating texts, using fonts, borders and boxes, margins, padding lists, Positioning using CSS, Concept of Media Queries for responsive websites for devices CSS2, Overview and features of CSS3 and CSS4.

**Unit - IV**

**Java Script:** Introduction to Documents, Client side scripting with JavaScript, variables, functions, conditions, loops and repetition, Pop up boxes, Advance JavaScript: forms, Statements, functions, objects in JavaScript, Arrays, FORMS, Buttons, Checkboxes, Text fields and Text areas.

**Unit - V**

Introduction to XML, uses of XML, simple XML, Concept of Web Server, Web Server Architecture, Domain name registration, Web Hosting, Uploading website on server, FTP, FTP Clients, Downloading Website, basic concept of SEO, Use of social plugins for website including Facebook, Google MAP and Social Media Sharing, Using Bootstrap Layout ,Email Clients, Visitor Counter.

**Text Books:**

1. Burdman, Collaborative Web Development , Addison Wesley.
2. Bayross Ivan, Web Technologies Part II , BPB Publications.

**Reference Books:**

1. Robert. W. Sebesta, "Programming the World Wide Web", Fourth Edition, Pearson Education,
2. Deitel,Goldberg, "Internet & World Wide Web How To Program", Third Edition, Pearson Education.
3. Marty Hall and Larry Brown,"Core Web Programming" Second Edition, Volume I and II, Pearson Education,
4. Bates, "Developing Web Applications", Wiley,

PGDCA						
SECOND SEMESTER						
SN	CODE	SUBJECT	L	T	P	C
1	CSL-279	Database Management System	3	1	2	5
2	CSL 242	Information Security	3	1	0	4
3	CSL424	Data Communication & Computer Networks	3	1	0	4
4	CSL 232	Desktop Application Using VB.Net	3	1	4	6
5	CSL442	Web Technology	3	1	4	6

### CSL-279 Database Management System 1-2)

5 Credits (3-

#### Unit-1: Introduction

Elements of Database System, Characteristics of database approach, File system versus DBMS, data models, DBMS architecture and data independence. Role of DBA, DDL, DML and DCL.

#### Unit-2: E-R Modeling

Entity types, entity set, attribute and key, relationships, relation types, roles and structural constraints, weak entities, enhanced E-R and overview of object modeling. Specialization and generalization.

#### Unit-3: Relational Data Model

Relational model concepts: The catalog, base tables and views. Relational Data Objects - Domains and Relations: Domains, relations, kinds of relations, relations and predicates, relational databases. Relational constraints, relational algebra.

**SQL:** SQL queries, programming using SQL (PL/SQL), Integrity Constraints, Roles and privileges.

#### Unit-4:

**Data Normalization:** Functional dependencies, Normal form up to 3rd normal form & BCNF

**File and system structure :** overall system structure, file organization, logical and physical file organization, sequential and random, hierarchical, inverted, multi list, indexing and hashing, Btree index files.

#### Unit-5:

**Concurrency Control:** Transaction processing, locking techniques, database recovery, security and authorization. Overview of recovery techniques and Database Security.

#### Text Books:

1. Silberschatz Abraham, Korth Henry & Sudarshan S., Database Systems Concepts, McGraw Hill, 1997.
2. Date C.J., an Introduction to Database Systems, Addition Wiley.

#### Reference Books:

1. Bipin Desai, An Introduction to Database Systems, Galgotia Publications, 1991.

### CSL-242 : Information Security 0)

4 Credits (3-1-

#### Unit I: Introduction

History, What is Information Security?, Critical Characteristics of Information, Security Model, Components of an Information System, Securing the Components, The Security Problem in Computing: Confidentiality, integrity, The meaning of computer Security, Computer

Criminals or Sources of threats, Attacks classification, Methods of Defense, availability of Security policies, security mechanisms, assurance

### **Unit II: Cryptography**

Cryptography: Substitution Ciphers, Transpositions, Making "Good" Encryption algorithms, The Data Encryption Standard, The AES Encryption Algorithms, Public Key Encryptions, Uses of Encryption.

### **Unit III: Program Security**

Program Security: Secure Programs, Non malicious Program Errors, viruses and other malicious code, Targeted Malicious code, controls Against Program Threats, Protection in General- Purpose operating system protected objects and methods of protection memory and addmens protection, File protection Mechanisms, User Authentication Designing Trusted O.S: Security polices, models of security, trusted O.S design, Assurance in trusted O.S. Implementation examples. , The SDLC, The Security SDLC

### **Unit IV: Data base Security**

Data base Security (Security requirements in databases, Access control and authorization in databases, Inference control) Reliability and integrity, Sensitive data, Inference, multilevel database, proposals for multilevel security. Security in Network: Threats in Network, Network Security Controls, Firewalls, Intrusion Detection Systems, Secure E-Mail.

### **Unit V: Management & Ethical Issues**

Assurance and Evaluation of Secure Information Systems , Malicious software ,Administrating Security (Risk Analysis, Security Planning, Organizational Security Policies), Legal Privacy and Ethical Issues in Computer Security: Protecting Programs and data, Information and the law, Rights of Employees and Employers, Software failures, Computer Crime, Praia, Ethical issues in Computer Security, case studies of Ethics.

### **Text Books**

1. W. Stallings, "Computer Security: Principles and Practice," 2 st Edition, Prentice Hall, ISBN: 0132775069, 2011.

### **Reference Books**

1. AtulKahate, "Cryptography and Network Security", McGraw Hill Education India (Pvt Ltd),2nd edition, ISBN 10: 0070151458, 2009.
2. M. Stamp, "Information Security: Principles and Practice," 2 st Edition, Wiley, ISBN: 0470626399, 2011.
3. M. E. Whitman and H. J. Mattord, "Principles of Information Security," 4•st Edition, Course Technology, ISBN: 1111138214, 2011.

## **CSL 424 Data Communication & Computer Networks 1-0)**

**4 Credits (3-**

### **Unit 1: Data Communications**

Introduction, Communication Systems, Signal and data, Transmission modes, Synchronous and synchronous transmission, Circuits, channels and multichanneling, Signaling, Encoding and decoding, Error detection and Recovery, Flow control, Sliding Window, Congestion Management, Multiplexing [FDM, TDM, CDM, WDM] and Spreading [DS. FH], Concept of Modulation, Baseband versus Broadband; Pulse Code Modulation (PCM), Shift Keying [ASK, FSK, PSK, QPSK, DPSK]; Encoding techniques and CODEC; Classification of Modems, Standards and Protocols, Protocols used by Modem to Transfer files, Establishing a Connection (Internet connectivity); Digital Subscriber Loop (DSL)

### **Unit 2: Communication Network Fundamentals**

Introduction, Switching techniques: Circuit Switching, Packet switching, Datagram, Virtual circuit and Permanent Virtual Circuit, Connectionless and connection oriented communication, Message switching, Cell switching (ATM); Telephone network signaling Network topologies, Layering the communication process, Open Systems Interconnection (OSI) model, Data encapsulation; Protocols, services and layering, PDU/SDU; TCP/IP suite, Hour-glass model, Internet Architecture and Protocol overview.

### **Unit 3: Media Access Control**

Introduction, Access Techniques (STDM, FDMA, TDMA, Spread Spectrum techniques and CDMA, DSSS, FHSS); Media Access Control: Aloha and Slotted Aloha, Media Access Control Address, Polling, CSMA, CSMA/CA, CSMA/CD and Reservation Aloha, Digital hierarchies [SONET/SDH]

### **Network Components**

Introduction, LAN Hardware, LAN Operating Systems, Transmission Media: Guided Media (Twisted pair, Co-axial cable, Optical fiber); Unguided Media (Radio, VHF, microwave, satellite, Infrared); Fiber Optics Communication Components (Source, Channel Detector).

### **Unit 4: Link Control and MAC Protocols**

Framing, Error Detection and Correction; Window-based Flow Control; Logical Link Control, HDLC Protocol, Point-to-Point Protocol (PPP), X.25 CCITT standard for packet data transmission; Media access control, Random Access Techniques, Scheduling Mechanisms.

### **Local Area Network (LAN)**

LAN topologies and protocols; IEEE 802 Standard; Ethernet (Standard, Fast, Gigabit), Token Ring, FDDI, Wireless LANs (802.11x); Connecting LANs: Repeaters, Bridges, Switches, Routers; Virtual LANs

### **Unit 5: Wide Area Network (WAN)**

Network Layer Addressing and Routing concepts (Forwarding Function, Filtering Function); Routing Methods (Static and dynamic routing, Distributed routing, Hierarchical Routing); Distance Vector Protocol, Link State protocol, Open Shortest Path First (OSPF); Internet Protocol (IP): Addressing & Routing; Internet Control Message Protocol, (ICMP), Address Resolution Protocol (ARP), Dynamic Host Control Protocol (DHCP), Network Address Translation (NAT), IPv6, Mobile IP Process-to-Process delivery in Transport Layer: User Datagram Protocol (UDP), Transmission Control Protocol (TCP), congestion control

### **Wireless Networks**

Radio Communications, Cellular Radio, Mobile Telephony (GSM & CDMA), Satellite Networks (VSAT), Mobile Adhoc Networks (MANET).

### **Security and Management**

Cryptography, IPsec, SSL/TLS, PGP, secure HTTP, proxy, firewall, VPN; Simple Network Management Protocol (SNMP), Network policies.

### **Text Books:**

1. Behrouz A Forouzan, "Data Communication and Networking", Tata McGraw-Hill, 2008
2. William Stallings, "Data and Computer Communications", Pearson Education, 2008.
3. Tomasi Wayne, "Introduction to Data Communications and Networking", Pearson Education, 2007.

### **ReferenceBooks:**

1. A. S. Tanenbaum, "Computer Networks", Fourth Edition, Pearson Education.
2. A. Leon-Gracia and I. Widjaja, "Communication Networks", Tata McGraw Hill, 2004.
3. K. Pahlavan and P. Krishnamurthy, "Principles of Wireless Networks", EEE/ Prentice Hall of India, 2003.

## **CSL-232Desktop Application using VB.Net 4)**

**6 credits (4-0-**

### **Unit-1:**

**NET Framework:**, Common Type System, Common , .NET class library Garbage Collection, Application installation & Assemblies.

**VB.NET IDE:** Start Page, Menu and Tool Bar, Toolbox, Solution Explorer, Properties Window, Task List and Output Window, Server Explorer.

### **Unit-2:**

Variables, Constants, Keywords, Data types, Operators, Decisions with if statement, Select Case statements, Loops, Arrays.

**Strings:** Substring Method, Trim Method, Equals, Replace and Insert Methods, Split and Join Method, InStr Method.

### **Unit-3:**

An Introduction to Functions and Subs, Create your own Subs , Create a Function ,Class and Objects, Create Properties in your Classes, Error Handling, Working with Textbox, Buttons, Labels, Checkbox, Radio Buttons, List box, Combo Box, Picture Box, Menu, Events: The Click Event, The Key Down Event, The Form Load Event

### **Unit-4:**

**ADO.NET:** ADO.NET Data Namespaces, SqlConnection, SqlCommand, SqlDataAdapter, DataSet Class, Data View.

### **Unit-5:**

**Working with Text Files:** Introduction to Text File, Open Text File, Read Text File Line by Line, Write to Text File in VB .NET, Appending Text to File, Copy File, Move File, Delete File.

**Text Books:**

1. Blair Richard & Crosland Jonathan, Beginning VB.NET (2 Edition), WROX
2. Steven Holzner, Visual Basic NET 2003, Pearson Education

**CSL 442 Web Technology  
4)**

**6 Credits (3-1-**

**Unit-1:**

Introduction to PHP, Installation and configuration of LAMP on Linux & Windows, Importance of php.ini file and httpd.conf file, PHP echo & print, PHP Variables, PHP Constant, PHP Operators, Conditional Statements, if, PHP If...Else, nested if... else..., PHP Switch, PHP Looping, PHP Global arrays \$\_SERVER, \$\_POST, \$\_GET, \$\_POST, \$\_REQUEST, \$\_SESSION, \$\_COOKIE )

**Unit-2:**

PHP & HTML Form

HTML Form, HTML Control Text box, Button, Checkbox, Radio Button, List Box, Drop down list Box, Image, File Upload

PHP \$\_GET, PHP \$\_POST. PHP Functions Built in functions and user defined function. Exception handling, require (), include()

**Unit-3:**

Introduction to MySQLi, Creating Database & Tables, Import & Export data, Backup & Restore Data, Database connectivity, MySQL Connect, MySQL Create, MySQL Insert, MySQL Select, MySQL Select with limit, MySQL Where, MySQL Order By, MySQL Update, MySQL Delete, Handling multimedia data (sound, Image, Video), Display Parent Child Data.

**Unit-4:**

PHP Session, Creating Session, Reading & Writing Session, Session related functions session\_start(), session\_id(), isset() session\_regenerate\_id() session\_destroy() unset(), Handling Form with Session.

PHP Cookies, Understand the difference between session and cookie, Initialization of cookie variable, setcookie() function

Cookie properties, Setting a cookie in PHP, Retrieving PHP cookies Expiring/Deleting PHP cookies, Sending Email, Uploading files.

**Unit-5:**

Introduction to Word Press and its usages, Word Press Installation, A Quick Tour of Word Press Dashboard and its working interface, Building a Website using with Word Press Dashboard and Theme, Installation of Plugin and Themes with Word Press and Making Navigation and Page, Using Word Press Plugin SEO, Contact Form, Social Plugins, Post & Pages, Uploading Web site on Web Server.

**Text Books:**

1. Burdman, *Collaborative Web Development*, Addison Wesley.
2. Bayross Ivan, *Web Technologies Part II*, BPB Publications.

**Reference Books:**

1. Gundavarma Shishir, *CGI Programming on the World Wide Web*, O'Reilly & Associate.
2. DON Box, *Essential COM*, Addison Wesley.
3. Mick Olinik & Raena Jackson Armitage, *The Word Press Anthology*, site point