Shri Rawatpura Sarkar University, Raipur

Examination Scheme & Syllabus

for

Post Graduate Diploma in Computer Application

Yearly

(Effective from the session: 2022-23)

Shri Rawatpura Sarkar University, Raipur
Faculty of Science
Post Graduate Diploma in Computer Application
Annual Examination Scheme
(Effective from the session: 2022-23)

S.N.	Course Code	Th/ Pr	Subject	Type of Course	Teaching hours per week			TC	Examination Scheme				Total Marks
									Theory		Practical		
					L	T	P		EX	IN	EX	IN	
1	YPG04-101	Th	Fundamentals of Computers & Information Technology	Foundation	4	1		5	70	30			100
2	YPG04-102	Th	PC Packages	Core	4	1		5	70	30			100
3	YPG04-103	Th	Introduction to Operating Systems	Core	4	1		5	70	30			100
4	YPG04-104	Th	Database Management System	Core	4	1		5	70	30			100
5	YPG04-105	Th	Logic Building through C Programming	Core	4	1		5	70	30			100
6	YPG04-106	Th	Android App Development	Core	4	1		5	70	30			100
7	YPG04-107	Th	Computer Networks	Core	4	1		5	70	30			100
8	YPG04-102P	Pr	Office Automation Lab	Core			2	1			35	15	50
9	YPG04-104P	Pr	Database Management System Lab	Core			2	1			35	15	50
10	PGDCA105P	Pr	Logic Building through C Programming Lab	Core			2	1			35	15	50
11	PGDCA108	Pr	Project Work	Core			4	2			100	50	150
Total Contact hrs. per week: 45				**Total Credit: 40**					**Grand Total Marks:**				**1000**

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<table>
<tr><td>Course Title</td><td colspan="5">Fundamentals of Computers and Information Technology</td></tr>
<tr><td>Course Code</td><td colspan="5">YPG04-101</td></tr>
<tr><td rowspan="2">Course Credits</td><td>L</td><td>T</td><td>P</td><td>TC</td><td></td></tr>
<tr><td>4</td><td>1</td><td></td><td>5</td><td></td></tr>
<tr><td>Prerequisites</td><td colspan="5">Basic knowledge about Computer Fundamentals and its various components.</td></tr>
<tr><td>Course Objectives</td><td colspan="5">• This course provides students with a working knowledge of the terminology, processes, and components associated with information technology.
• Students will receive experience with the Internet, current versions of hardware and software, networking, security, maintenance, information systems, and the application development process.</td></tr>
<tr><td>Course Contents</td><td colspan="5">UNIT – I
Brief History of Development of Computers, Computer System Concepts, Computer System Characteristics, Capabilities And Limitations, Types of Computers, Basic Components of A Computer System - Control Unit, ALU, Input/output Functions and Characteristics, Memory RAM, ROM, EPROM,PROM and other types of Memory.
UNIT – II
Input Output & Storage Units-: Keyboard, Mouse, Trackball, Joystick, Digitizing tablet, canners, Digital Camera, MICR, OCR, OMR, Barcode Reader, Voice Recognition, Light pen, Touch Screen, Monitors - characteristics and types of monitor -Digital, Analogy, Size, Resolution, Refresh Rate, Interlaced / Non Interlaced, Dot Pitch, Video Standard - VGA, SVGA, XGA etc.
UNIT – III
Printers And Its Types -Dot Matrix, Inkjet, Laser, Plotter, Sound Card And Speakers, Storage Fundamentals - Primary Vs Secondary Data Storage And Retrieval Methods - Sequential, Direct And Index Sequential, Various Storage Devices - Magnetic Tape, Magnetic Disks, Hard Disk Drives, Floppy Disks ,Optical Disks, Flash Drives Video Disk, MMC Memory Cards, Physical Structure of Floppy &Hard Disk, Drive Naming Conventions In PC.
UNIT – IV
Use of Communication and IT, Communication Process, Communication Types- Simplex, Half Duplex, Full Duplex, Serial And Parallel Communication, Types Of Network - LAN, W AN, MAN ,Internet, Topologies of LAN - Ring, Bus,</td></tr>
</table>

	Star, Mesh And Tree Topologies, Components of LAN -Media, , World Wide Web and Applications and Internet Services. **UNIT – V** Software and Its Need, Types of Software - System Software, Application Software, System Software - Operating System, Utility Program, Programming Languages, Assemblers, Compilers And Interpreter, Programming Languages- Machine, Assembly, High Level, Types of Viruses, Virus Detection and Prevention Methods.
Course Outcomes	• After completion of this course the students will be able to get basic knowledge of Computer Fundamental & its Application. • Defines computer with his/her own sentences. • Explains computers and data processing. • Defines hardware and software concepts. • Defines input and output units computers and Expresses memories hardware.
Text Books	• Computers Today, By S.K Basandra, Galgotia Publications. • Fundamentals of Information Technology Alexis Leon &Mathews Leon, Vikas Publishing.
Reference Books	• FIT Quick TEXT Rajeev Mathur, Golgotha Publications. • Anurag Seetha, "Introduction to Computers and Information Technology", Ram Prasad & Sons, Bhopal. • Alexis Leon & Mathews Leon, " Fundamentals of Information technology ", Vikas Publishing House, New Delhi.

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<table>
<tr><td>Course Title</td><td colspan="5">PC Packages</td></tr>
<tr><td>Course Code</td><td colspan="5">YPG04-102</td></tr>
<tr><td rowspan="2">Course Credits</td><td>L</td><td>T</td><td>P</td><td>TC</td><td></td></tr>
<tr><td>4</td><td>1</td><td></td><td>5</td><td></td></tr>
<tr><td>Prerequisites</td><td colspan="5">Basic knowledge about MS Office and Applications.</td></tr>
<tr><td>Course Objectives</td><td colspan="5">• Basic knowledge of Operating System and various packages of office suits.</td></tr>
<tr><td>Course Contents</td><td colspan="5">UNIT- I

Office Suites: - Introduction Operation System objective and function, The Evolution of operating Systems, Examples of operating system.

Different office suites, Microsoft Office XP Suite, What’s Special About Office, Product Activation, Menu Bars and Toolbars, Shared Tools, Objects, Linking, Embedding, Office Assistant and Online Help.

UNIT- II

Word Processing and MS-Word:- Introduction, Features of Word Processor, MS-WORD—a powerful word processor, Starting MS-Word, Chief Elements Of MS-Word Window, Displaying and Hiding the Toolbar, File operations in MS-WORD, Using Help Online, Customizing Office Assistant. Text Formatting, Document Formatting, Tables And Graphics, Mail Merge Views, Template and Wizard.

UNIT- III

Spreadsheet and MS-Excel:- Introduction , Starting MS-Excel , Spreadsheet and its Elements, Application Window , Document Window, Cell , Standard Toolbar, Formatting Toolbar, Workbook , Worksheet, Handling Files, Worksheet</td></tr>
</table>

	Formatting, Function and Operator, Chart and Web Object. **UNIT-IV** **Presentation Package And MS-PowerPoint:-** Introduction, Chief Elements of Presentation, Starting PowerPoint, Creating A Presentation, Creating A Presentation with Auto Content Wizard, Create a presentation using a design template, Creating a blank presentation, PowerPoint window and its Elements, Using Help Online, Customizing Office Assistant .Text Formatting in Slides , Table, Chart and other Drawing Objects, Slides, Views, Notes, Handouts**.** **UNIT-V** **Outlook Express:-** Introduction, WHAT IS outlook express?, Features of Outlook Express, starting outlook express, Concepts of CC and BCC, Email address, Reading a received message composing message, Replying And Forwarding Messages, attaching files, Creating signature in outlook express, Formatting message text, What is mime?, applying stationery, Inserting a hyperlink or HTML page into a message, Flagging an e-mail or news message, Importing messages from other e-mail programs.
Course Outcomes	• After completion of this course the students will be able to get basic knowledge of various operating systems and MS Office. • Prepare presentation and report on computer system • Identify the components of a computer system and demonstrate basic proficiency in commonly used applications. • Process, manipulate, and represent numeric data using the basic functions of spreadsheet software (i.e., MS Excel). • Understanding the key concepts of Information Technology to improvise organizational performance.
Text Books	• Computer Fundamentals: Concepts, Systems & Applications Sinha, P. K. BPB • Computer Today Basandra, S. K. rev ed Galgotia

Reference Books	• Digital Computer Fundamentals Bartee, T. C. 6th ed TMH • Fundamental Of Computers Rajaraman, V. 4th ed PHI

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<table>
<tr><td>Course Title</td><td colspan="5">Introduction to Operating Systems</td></tr>
<tr><td>Course Code</td><td colspan="5">YPG04-103</td></tr>
<tr><td rowspan="2">Course Credits</td><td>L</td><td>T</td><td>P</td><td>TC</td><td></td></tr>
<tr><td>4</td><td>1</td><td></td><td>5</td><td></td></tr>
<tr><td>Prerequisites</td><td colspan="5">Basic knowledge about Window 95, Window 98, Millennium, Windows -XP.</td></tr>
<tr><td>Course Objectives</td><td colspan="5">Basic knowledge of a Hardware, Software and Operating System that controls the execution of application programs and acts as an interface between applications and the computer hardware.</td></tr>
<tr><td>Course Contents</td><td colspan="5">UNIT-I
DISKT OPERATING SYSTEM (DOS): - Introduction, History & Versions of DOS,DOS Basics-Physical Structure of Disk, Drive Name, FAT, File and Directory Structure and Naming Rules, Booting Process, DOS System Files. DOS Commands: Internal - DIR, MD, CD, RD, COPY, COPY CON, DEL,REN VOL, DATE, TIME, CLS, PATH, TYPE, VER etc. External - CHKDSK, XCOPY, PRINT, DISKCOPY, DOSKEY, TREE, MOVE, LABEL, FORMAT, SORT, FDISK, BACKUP, EDIT, MODE, ATTIRIB, HELP, SYS etc, Executable V/s Non Executable Files in DOS.

UNIT-II
WINDOWS XP: -Introduction to Windows XP and its Features, Hardware Requirements of Windows. Windows, Concepts, Windows Structure, Desktop, Taskbar, Start Menu, My Pictures, My Music, My Documents, Working with Recycle Bin - Restoring a deleted file, Emptying the Recycle Bin. Managing Files, Folders and Disk - Navigating between Folders, Manipulating Files and Folders, Creating New Folder, Searching Files and Folders. My Computer - Exploring Hard Disk, Copying and Moving Files and Folder from One Drive to Another.

UNIT-III
ADVANCED FEATURES OF WINDOWS XP:- Managing Hardware & Software – Installation of Hardware & software, Using Scanner Web Camera, Printers. System Tools - Backup, Character Map, Clipboard Viewer, Disk Defragmenter, Drive Space, Scandisk, System Information, System Monitor, and Disk Cleanup, Using Windows Update. Browsing the Web with Internet Explorer, Multiple User Features of Windows, Creating and Deleting User, Changing User</td></tr>
</table>

	password, etc. Accessibility Features of Windows - Sharing Folders and Drives, Browsing the Entire Network, Using Shared Printers. OLE – Embed/Link Using Cut and Paste an Embed/ Link Using Insert Object Manage Embedded/Linked Object. **UNIT-IV** **LINUX: -** History &Features of Linux, Linux Architecture, File System of Linux, Hardware Requirements of Linux, Various flavors of Linux, Linux Standard Directories, Functions of Profile and Login Files in Linux, Linux Kernel. **UNIT-V** **WORKING WITH LINUX**:- KDE &Gnome Graphical Interfaces, Various Types of Shell Available in Linux, Multi-User Features of Linux, Login and Logout from Linux System, Linux commands - bc, cal, cat, cd, clear, cmp, cp, mv, date, find, ls, pwd, mkdir, more, rm, rmdir, chgrp, chmod, chown, tty, wc, who, whois, grep, telnet, vi editor, Using Floppy, CD-ROM and Pen Drive in Linux, Permissions and Ownerships.
Course Outcomes	• After completion of this course the students will be able to get basic knowledge of various operating system and related component. • Understands the different services provided by Operating System at different level. • They learn real life applications of Operating System in every field. • Understands the use of different process scheduling algorithm and synchronization techniques to avoid deadlock. • They will learn different memory management techniques like paging, segmentation and demand paging etc
Text Books	• Operating System concepts by Silberscatz A and Peterson, J.L, PE- LPE. • Operating System Design & Implementation by Tanenbaum, A.S., PHI. • Shelly Cashman Series Microsoft Office 365 & Outlook 2019 Comprehensive by Corinne Hoisington.
Reference Books	• Operating System in Depth Design and Programming by Thomas Doeppner, Wiley India. • Operating System Concept & Design, Milenkovic M, McGraw Hill. • Mastering VBA for Microsoft Office 365 by Richard Mansfield

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<tr><td>Course Title</td><td colspan="5">Database Management System</td></tr>
<tr><td>Course Code</td><td colspan="5">YPG04-104</td></tr>
<tr><td rowspan="2">Course Credits</td><td>L</td><td>T</td><td>P</td><td>TC</td><td></td></tr>
<tr><td>4</td><td>1</td><td></td><td>5</td><td></td></tr>
<tr><td>Prerequisites</td><td colspan="5">Basic knowledge about oracle and other database.</td></tr>
<tr><td>Course Objectives</td><td colspan="5">• To understand the role of a database management system and its users in an organization.
• To understand database concepts, including the structure and operation of the relational data model.
• Construct simple and moderately advanced database queries using Structured Query Language (SQL).
• To understand the concept of transaction, its properties and how to persist the data in complex concurrent users environment.</td></tr>
<tr><td>Course Contents</td><td colspan="5">UNIT – I
Data base System Applications, data base System VS file System – View of Data – Data Abstraction – Instances and Schemas – data Models – the ER Model – Relational Model – Other Models – Database Languages – DDL – DML – database Access for applications Programs – data base Users and Administrator –Data base design and ER diagrams – Beyond ER Design Entities, Attributes and Entity sets, Relationships and Relationship sets – Additional features of ER Model – Concept Design with the ER Model.

UNIT – II
Introduction to the Relational Model – Integrity Constraint Over relations – Enforcing Integrity constraints – Querying relational data – Logical data base Design – Introduction to Views – Destroying altering Tables and Views. Relational Algebra – Selection and projection set operations – renaming – Joins – Division – Examples of Algebra overviews – Relational calculus – Tuple relational Calculus – Domain relational calculus –Expressive Power of Algebra and Calculus.</td></tr>
</table>

	UNIT - III Form of Basic SQL Query – Examples of Basic SQL Queries – Introduction to Nested Queries – Correlated Nested Queries Set – Comparison Operators – Aggregative Operators – NULL values – Comparison using Null , values – Logical connectivity's – AND, OR and NOT – Impact on SQL Constructs – Outer Joins – Disallowing, NULL values – Complex Integrity Constraints in SQL Triggers and Active Data bases. **UNIT - IV** Schema refinement – Problems Caused by redundancy – Decompositions – Problem related to decomposition – reasoning about FDS – FIRST, SECOND, THIRD Normal forms – BCNF – Lossless join Decomposition –Dependency preserving Decomposition – Schema refinement in Data base Design – Multi valued, Dependencies – FORTH Normal Form, Transaction Concept. **UNIT - V** Recovery and Atomicity – Log – Based Recovery – Recovery with Concurrent Transactions – Buffer, Management – Failure with loss of nonvolatile storage- Advance Recovery systems- Remote Backup systems, Data on External Storage.
Course Outcomes	Will be able to describe the basic concepts of RDMBS and relational data Model. • Be familiar with the relational database theory & be able to write relational algebra expressions for queries • Understand DML, DDL and will be able to construct queries using SQL by knowing the importance of data &its requirements in any applications. • Be familiar with the basic issues of transaction, its processing and concurrency control. • Be familiar with basic database storage structures and access techniques: file and page organizations, indexing methods including B-tree, and hashing. • Can successfully apply logical database design principles, including E-R diagrams and database normalization.

Text Books	1. Data base System Concepts, Silberschatz, Korth, McGraw Hill, 5th edition. 2. Data base Management Systems, Raghurama Krishnan, Johannes Gehrke, TATA McGraw Hill 3rd Edition.
Reference Books	1. Data base Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition. 2. Fundamentals of Database Systems, Elmasri Navrate Pearson Education 3. Introduction to Database Systems, C.J. Date Pearson Education.

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<table>
<tr><td>Course Title</td><td colspan="5">Logic Building through C Programming</td></tr>
<tr><td>Course Code</td><td colspan="5">YPG04-105</td></tr>
<tr><td rowspan="2">Course Credits</td><td>L</td><td>T</td><td>P</td><td>TC</td><td></td></tr>
<tr><td>4</td><td>1</td><td></td><td>5</td><td></td></tr>
<tr><td>Prerequisites</td><td colspan="5">Basic knowledge about C programming and problems.</td></tr>
<tr><td>Course Objectives</td><td colspan="5">• To differentiate and understand low-level and high-level programming languages.
• To understand modular programming concepts.
• To understand the use of rich set of data types in C appropriate to specific programming problems.
• Demonstrate the use of various operators.</td></tr>
<tr><td>Course Contents</td><td colspan="5">UNIT - I
Introduction: Computer systems, Hardware & software concepts. Problem Solving: Algorithm / pseudo code, flowchart, program development steps,
Computer Languages: machine, symbolic, and high -level languages, Creating and running programs: Writing, editing, compiling, linking, and executing.
Basics of C: Structure of a C program, identifiers, basic data types and sizes. Constants, variables, arithmetic, relational and logical operators, increment and decrement operators, conditional operator, assignment operators, expressions, type conversions, conditional expressions, precedence and order of evaluation, Sample programs.

UNIT - II
Bit-wise Operators: logical, shift, rotation, masks. Selection – Making Decisions: Two - way selection: if - else, null else, nested-if, examples, Multi- way selection: switch, else-if, examples. Strings: concepts, C strings. Iterative: Loops -while, do-while and for statements, break, continue, initialization an updating, event and counter. Controlled loops, looping applications: Summation, powers, smallest and largest.</td></tr>
</table>

	UNIT - III **Arrays:** Arrays-concepts, declaration, definition, accessing elements, storing elements, Strings and string manipulations, 1-D arrays, 2-D arrays and character arrays, string manipulations, multidimensional arrays, array applications: Matrix Operations, checking the symmetric of a Matrix. **Functions** -Modular programming: Function basics, parameter passing, storage classes (extern, auto, register, static), scope rules, block structure, user defined functions, standard library functions, recursive functions. Recursive solutions for Fibonacci series and Towers of Hanoi. Header files, C pre-processor. Examples C programs on Passing 1-D arrays and 2-D arrays to functions. **UNIT - IV** **Pointers:** Pointers concepts, initialization of pointer variables, pointers and function arguments, passing by address – dangling memory, address arithmetic, Character pointers and functions, pointers to pointers, pointers and multidimensional arrays, dynamic memory management functions, command line arguments. **UNIT - V** **Enumerated, Structure and Union:** Derived types – structures, structure declaration, definition and initialization of structures, accessing structures, nested structures, arrays of structures, structures and functions, pointers to structures, self referential structures, unions, & typed, bit-fields, program applications. **File Handling:** Input and output – concept of a file, text files and binary files, Formatted I/O, file I/O operations, example programs.
Course Outcomes	After completion of the course study, students will be able to- • Use and differentiate between basic concepts of computer hardware and software. • Use data representation for the fundamental data types in C. • Perform conversions between binary & Hexadecimal & Decimal date representations. • Read, understand and trace the execution of programs written in C language. • Control the sequence of the program and give logical outputs.
Text Books	• "The C –Programming Language" by B.W. Kernighan, Dennis M. Ritchie, PHI. • "Programming in C" by E. Balagurusamy (TMH). • "C Programming: A Problem - Solving Approach" by Forouzan, E. V. Prasad,

	Giliberg, Cengage, 2010.
Reference Books	1. "Programming in C" by Stephen G. Kochan, 3/e Pearson, 2000. 2. "C Programming Laboratory Handbook For Beginners" by Sidnal, Wiley India.

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<table>
<tr><td>Course Title</td><td colspan="5">Android App Development</td></tr>
<tr><td>Course Code</td><td colspan="5">YPG04-106</td></tr>
<tr><td rowspan="2">Course Credits</td><td>L</td><td>T</td><td>P</td><td>TC</td><td></td></tr>
<tr><td>4</td><td>1</td><td></td><td>5</td><td></td></tr>
<tr><td>Prerequisites</td><td colspan="5">Familiarity with basics of Computer Programming terminologies. A basic understanding of any of the programming languages, especially Java programming language, will help you learn the concepts of Android programming faster.</td></tr>
<tr><td>Course Objectives</td><td colspan="5">The main objectives to give the subject Mobile Application Development in Android are:
Understand the requirements of Mobile programming environment.
Learn about basic methods, tools and techniques for developing Apps
Explore and practice App development on Android Platform
Develop working prototypes of working systems for various uses in daily lives</td></tr>
<tr><td>Course Contents</td><td colspan="5">UNIT – I
Introduction: What is Android, Android versions and its feature set, The various Android devices on the market, Advantages and Disadvantages of Android, Application Components.
UNIT-II
Android Architecture, Android Development, Environment – System Requirements, Android Emulator, Install Android, Environment testing with hello world application, Dalvik Virtual Machine |DVM
UNIT-III
Graphical User Interface Screen with views (12): Displaying Text with Text View, Retrieving Data from Users, Using Buttons, Check Boxes and Radio Groups, Getting Dates and Times from Users, Android Event Handling Using Indicators to Display Data to Users, Adjusting Progress with Seek Bar, Working with Menus
UNIT - IV
Database (10): Structure of Android Application, Android Internal Storage, File, read-write in file, Data - saving, retrieving, and loading: Overview to storing data in file, Shared preferences,
UNIT - V
SQLite primer, store data using SQLite database, Crud (Create, read, delete and update) in database. Publish your app.</td></tr>
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Course Outcomes	• After completion of this course the students will be able to apply their basic knowledge of Java programming. • You'll learn about layouts by building a contact profile page for Android device's address book. • You'll understand styling apps using Flutter themes. • You'll start from building a Hello World app with Flutter while learning the fundamentals of Flutter widgets. • This course will cover a quick introduction to setting up Flutter SDK, Android Studio IDE, and Android Emulator locally on your own machine.
Text Books	• Beginning Android Application Development by Wei-Meng Lee, Wrox Publication. • Android Programming with Kotlin for Beginners by John Horton
Reference Books	• Unlocking Android Developer's Guide By Frank Ableson • Android Developer's Guide Charlie Collins and RobiSen,Manning. Publication Co. • Head First Android Development: A Brain-Friendly Guide

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<table>
<tr><td>Course Title</td><td colspan="5">Computer Networks</td></tr>
<tr><td>Course Code</td><td colspan="5">YPG04-107</td></tr>
<tr><td rowspan="2">Course Credits</td><td>L</td><td>T</td><td>P</td><td>TC</td><td></td></tr>
<tr><td>4</td><td>1</td><td></td><td>5</td><td></td></tr>
<tr><td>Prerequisites</td><td colspan="5">Basic knowledge about data communication.</td></tr>
<tr><td>Course Objectives</td><td colspan="5">• Prove the correctness and analyze the running time of the basic algorithms for those classic problems in various domains.
• Apply the algorithms and design techniques to solve problems. Analyze the complex it various problems indifferent domains.</td></tr>
<tr><td>Course Contents</td><td colspan="5">UNIT – I

Introduction:- OSI, TCP/IP and other networks models, Examples of Networks: Novell Networks, Arpanet, Internet, Network Topologies WAN, LAN, MAN. Physical Layer: Transmission media copper, twisted pair wireless, switching and encoding asynchronous communications; Narrow band, broadband ISDN and ATM.

UNIT-II

Data link layer: Design issues, framing, error detection and correction, CRC, Elementary Protocol-stop and wait, Sliding Window, Slip, Data link layer in HDLC, Internet, ATM. Multiple Access Protocols – Link Layer Addressing – ARP –DHCP –Ethernet –Hubs, BRIDGES and SWITCHES , RINGS TOPOLOGY, Physical Ring–Logical Ring. Medium Access sub layer: ALOHA, MAC addresses, Carrier sense multiple accesses. IEEE 802.X Standard Ethernet, wireless LAN, Bridges.

UNIT – III

Network Layer: Forwarding and Routing – Network Service Models – Virtual Circuit and Datagram Networks – Router – Internet Protocol (IP)– IPv4 and IPv6 – ICMP – Link State Routing – Distance Vector Routing – Hierarchical Routing – RIP –OSPF–BGP–BROADCAST AND MULTICAST Routing–MPLS- MOBILE – IP SCE.</td></tr>
</table>

	UNIT – IV **Transport Layer:** Transport Layer Services – Multiplexing and De Multiplexing – UDP – Reliable Data Transfer – Go Back-N and Selective Repeat. Connection-Oriented Transport: TCP – Segment Structure – RTT estimation – Flow Control – Connection Management – Congestion Control – TCP Delay Modeling – SSL and TLS. Integrated and Differentiated Services. **UNIT - V** **Application Layer:** Principles of Network Applications – The Web and HTTP – FTP – Electronic Mail – SMTP – Mail Message Formats and MIME – DNS – Socket Programming with TCP and UDP. Multimedia Networking: Internet Telephony – RTP – RTCP – RTSP. Network Security: Principles of Cryptography – Firewalls – Application Gateway–Attacks and Countermeasures.
Course Outcomes	• After successful completion of this course, students should be able to: Prove the correctness and analyze the running time of the basic algorithms for those classic problems in various domains. • Apply the algorithms and design techniques to solve problems. Analyze the complex it various problems indifferent domains. • Apply channel allocation, framing, error and flow control techniques. • Describe the functions of Network Layer i.e. Logical addressing, subnetting & Routing Mechanism • Explain the different Transport Layer function i.e. Port addressing, Connection Management, Error control and Flow control mechanism
Text Books	1. Data Communications and Networking–Behrouz A. Forouzan.3rd edition. 2. James F. Kurose and Keith W. Ross, "Computer Networking: A Top-Down Approach Featuring the Internet", Pearson.
Reference Books	1. Computer Networks: A Systems Approach Book by Bruce S. Davie and Larry L. Peterson. 2. Computer Networking: A Top-Down Approach Book by Jim Kurose.

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<table>
<tr><td>Course Title</td><td colspan="5">Office Automation Lab</td></tr>
<tr><td>Course Code</td><td colspan="5">YPG04-102P</td></tr>
<tr><td rowspan="2">Course Credits</td><td>L</td><td>T</td><td>P</td><td>TC</td><td></td></tr>
<tr><td></td><td></td><td>2</td><td>1</td><td></td></tr>
<tr><td>Prerequisites</td><td colspan="5">Basic knowledge of Microsoft Application.</td></tr>
<tr><td>Course Objectives</td><td colspan="5">1. Student should be able to understand the basic knowledge of Microsoft Application.
2. Office tools course would enable the students in crafting professional word documents,excel spread sheets, power point presentations using the Microsoft suite of office tools.
3. To familiarize the students in preparation of documents and presentations with office automation tools.</td></tr>
<tr><td>Course Contents</td><td colspan="5">MS WORD:
Adding text, editing text, finding and replacing text, formatting text, character/line/paragraph spacing, working with styles and text indentation. Saving document with and without password.
Working with page layout, page setup i.e. setting margins, changing page size, changing page orientation and applying page background.
Printing a document. Inserting page numbers, headers and footers, footnote, endnote, date and time, pictures, objects, shapes etc.
Creating bulleted and numbered lists. Working with tables, paragraphs and columns.
Reviewing (track changes, adding comments etc.) and proof reading a document i.e.spells check grammar etc.
Creating and working with table of content.Mail merge.
MS EXCEL:
Entering data, formatting data i.e. applying borders, various formats (currency formats,number formats etc.), fonts etc.
Creating custom lists, using auto fill, find and replace and editing text (cut, copy, pasteand paste special).</td></tr>
</table>

	Working with formulae and functions. Applying conditional formatting to data. Sorting and filtering data (auto and advanced filter). Performing Subtotals. What-if-analysis using goal seek, scenarios and solver.Pivot tables and data tables (one and two table input). Working with charts (2D and 3D). Adding comments, password protection to the workbook.Working with page layout and printing options. **MS POWERPOINT:** Creating and formatting slides in a presentation. Create a master slide with a logo, footer, and font.Add notes to each slide. Insert a graphic or picture.Implement a background. Place a text box in the title slide with your name.Insert transitions for each slide. Applying various effects (custom animation and transitional effects) in a presentation.
Course Outcomes	After completion of this course the students will be able to • Apply their basic knowledge of Microsoft Application. • To perform documentation. • To perform accounting operations. • To perform presentation skills.
Text Books	1. Windows XP Complete Reference. BPB Publications. 2. MS Office XP Complete BPB Publication.
Reference Books	1. MS Windows Xp Home Edition Complete, Bpb Publication. 2. Joe Habraken, Microsoft Office 2000, 8 in 1, By, Prentice Hall Of India.

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<table>
<tr><td>Course Title</td><td colspan="5">Database Management System Lab</td></tr>
<tr><td>Course Code</td><td colspan="5">PGDCA104P</td></tr>
<tr><td rowspan="2">Course Credits</td><td>L</td><td>T</td><td>P</td><td>TC</td><td></td></tr>
<tr><td></td><td></td><td>2</td><td>1</td><td></td></tr>
<tr><td>Prerequisites</td><td colspan="5">Basic knowledge about MS – Access.</td></tr>
<tr><td>Course Objectives</td><td colspan="5">• The student should be made to learn to create and use a database & Be Familiarized with a query language.
• Have hands on experience on DDL Commands & have a good understanding of DML Commands and DCL commands.</td></tr>
<tr><td>Course Contents</td><td colspan="5">LIST OF EXPERIMENTS:-
1. Creation of a database and writing SQL queries to retrieve information from the database.
2. Performing Insertion, Deletion, Modifying, Altering, Updating and Viewing records based on conditions.
3. Creation of Views, Synonyms, Sequence, Indexes, Save point.
4. Creating an Employee database to set various constraints.
5. Creating relationship between the databases.
6. Study of PL/SQL block.
7. Write a PL/SQL block to satisfy some conditions by accepting input from the user.
8. Write a PL/SQL block that handles all types of exceptions.
9. Creation of Procedures.
10. Creation of database triggers.</td></tr>
</table>

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Course Outcomes	• At the end of the course, the student should be able to Design and implement a database schema for a given problem-domain. Create and maintain tables using PL/SQL. • Be familiar with the basic issues of transaction, its processing and concurrency control. • Be familiar with basic database storage structures and access techniques: file and page organizations, indexing methods including B-tree, and hashing. • Can successfully apply logical database design principles, including E-R diagrams and database normalization.
Text Books	1. Database System Concepts, Silberschatz, Korth, McGraw-Hill, 5th edition. 2. DBMS, Raghurama Krishnan, TATA McGraw Hill 3rd Edition.
Reference Books	1. Johannes Gehrke, TATA McGraw Hill 3rd Edition. 2. Introduction to Database Management System - Navin Prakash, Tata McGraw Hill.

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<table>
<tr><td>Course Title</td><td colspan="5">Problem Solving & Logic Building using C Lab</td></tr>
<tr><td>Course Code</td><td colspan="5">PGDCA105P</td></tr>
<tr><td rowspan="2">Course Credits</td><td>L</td><td>T</td><td>P</td><td>TC</td><td></td></tr>
<tr><td></td><td></td><td>2</td><td>1</td><td></td></tr>
<tr><td>Prerequisites</td><td colspan="5">Basic knowledge about C programming.</td></tr>
<tr><td>Course Objectives</td><td colspan="5">• To differentiate and understand low-level and high-level programming languages
• To understand modular programming concepts
• To understand the use of rich set of data types in C appropriate to specific programming problems.
• Demonstrate the use of various operators.</td></tr>
<tr><td>Course Contents</td><td colspan="5">List of Experiments:
(At least Ten experiments are to be performed by each student)
1. Write a C program to take the radius of a sphere as input and print the volume and surface area of that sphere.
2. Write a C program to take a 5-digit number as input and calculate the sum of its digits.
3. Write a C program to take three sides of a triangle as input and verify whether the triangle is an isosceles, scalene or an equilateral triangle.
4. Write a C program that will take 3 positive integers as input and verify whether they form a Pythagorean triplet or not.
5. Write a C program to print all prime numbers between a given ranges of numbers.
6. Write a C program to define a function that will take an integer as argument and return the sum of digits of that integer
7. Write a C program to define a macro that can calculate the greater of two of its arguments. Use this macro to calculate the greatest of 4 integers.
8. Write a C program to define a recursive function that will print the reverse of its integer argument.
9. Write a C program to print the sum of first N even numbers using recursive</td></tr>
</table>

	function. 10. Write a C program to sort an array using Bubble sort technique.
Course Outcomes	• Use and differentiate between basic concepts of computer hardware and software. • Use data representation for the fundamental data types in C and perform conversions between binary- hexadecimal decimal date representations. • Read, understand and trace the execution of programs written in C language. • Control the sequence of the program and give logical outputs.
Text Books	1. C Programming Laboratory by Dr. Nandini S. Sidnal, Wiley India, 2012. 2. C language author by Balaguruswami.
Reference Books	1. C language author by Yashwanth Kanitkar. 2. C language author by Brian Kernighan.

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<table>
<tr><td>Course Title</td><td colspan="5">Project Work</td></tr>
<tr><td>Course Code</td><td colspan="5">YPG04-108</td></tr>
<tr><td rowspan="2">Course Credits</td><td>L</td><td>T</td><td>P</td><td>TC</td><td></td></tr>
<tr><td></td><td></td><td>4</td><td>2</td><td></td></tr>
<tr><td>Prerequisites</td><td colspan="5">Basic knowledge of working with Computer Fundamentals and such as program as object oriented programming etc.</td></tr>
<tr><td>Course Objectives</td><td colspan="5">• In this project we will student will generate on record for every student must be maintained at least for 6 months records.</td></tr>
<tr><td>Course Contents</td><td colspan="5"><u>INTERNAL EVALUATION</u>

For internal evaluation wherever required as per scheme, the concerned faculty members must keep a detailed record of activities performed. At least 2 tests must be conducted evenly distributed in the semester and syllabus, each having a weight age of 25% (in case more than 2 tests conducted, best 2 performances may be considered). Further the entire semester attendance is evaluated for 25% weight age and fully a comprehensive subject viva on the assignments (at least two) shall have a weight age of 25%.

The record for every student must be maintained at least for 6 months after the end of examination, foil/counter foil must be submitted to the Examination Section before the start of theory examination. The format (for 20 marks weight age) is attached herewith.

1. Subject code.
2. Subject name
3. Year
4. Study Institute code.
5. Name &address of Study Institute.</td></tr>
</table>

	6. Name of Class Coordinator.
Course Outcomes	• After completion of this course the students will be able to apply for PG Diploma in Computer Application certification.