CHAITANYA SCIENCE AND ARTS COLLEGE

(AUTONOMOUS)

PAMGARH, JANJGIR-CHAMPA (C.G.)

ACCREDIATED "A" GRADE BY NAAC

DEPARTMENT
OF
COMPUTER SCIENCE & APPLICATION

COURSE CURRICULUM & MARKING SCHEME

POSTGRADUATE PROGRAMME

POST GRADUATE DIPLOMA IN COMPUTER APPLICATIONS

PROGRAM CODE: CCDC02

FIRST & SECOND SEMESTER

Approved By	Board of Studies	Academic Council
Date	30/08/2025	04 SEP 2025

ACADEMIC YEAR 2025-26

SYLLABUS FRAMED ACCORDING TO THE NEP-2020

UNDER THE SCHEME OF CBCS (CHOICE BASED CREDIT SYSTEM)

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POST GRADUATE DIPLOMA IN COMPUTER APPLICATIONS
Course Scheme and Scheme of Examinations (Regular Stream)
(For students admitted from 2025-26 & onwards)

SEMESTER - I

Category	Course Code	Title of the Course	Hours	Total marks	Min Marks	Credit
Paper- I	PCAT101	Introduction to Computer Fundamental & Information Technology	60	100	40	4
Paper -II	PCAT102	PC Package & Tally	60	100	40	4
Paper -III	PCAT103	Programming in C	60	100	40	4
Paper -IV	PCAP104	MS Office – Lab 1	60	100	40	4
Paper -V	PCAP105	Programming in C – Lab 2	60	100	40	4
		TOTAL		**500**		**20**

***ESE:** End Semester Exam, ***CIE:** Continues Internal Evaluation, * **IA:** Internal Assessment

SEMESTER - II

Category	Course Code	Title of the Course	Hours	Total marks	Min Marks	Credit
Paper -VI	PCAT201	Operating System	60	100	40	4
Paper -VII	PCAT202	Web Technology	60	100	40	4
Paper - VIII	PCAT203	Relational Database Management Systems (ORACLE)	60	100	40	4
Paper - IX	PCAP204	Web Technology & RDBMS - Lab	60	100	40	4
Paper- X	PCAP205	Project	60	100	40	4
		TOTAL		**500**		**20**

PGDCA - I Semester

PAPER - I

FUNDAMENTALS OF COMPUTER & INFORMATION TECHNOLOGY

Subject Code: PCAT101

UNIT- I

Introduction to Computer and Information Technology: Brief history of development of computer & generations of computer, Computer system characteristics. Capabilities and limitations block diagram of computer. Types of computer-Analogs, Hybrid, digital, micro, mini, mainframe, super computer. Personal computer, types of PCs desktop, laptop, notebook, palmtop etc. INPUT/OUTPUT devices: keyboard, mouse, monitor, trackball, joystick, digitizing table, scanners, digital cameras, MICR, OCR, OMR, Bar-code reader, Voice recognition, light pen, touch screen, devices, printer, plotter.

UNIT- II

Storage device: Data storage and retrieval methods-sequential, direct and index sequential- various storage devices-magnetic tape, magnetic disks, cartridge tape, data drives hard disk drives, floppy disks, optical disks-CD, VCD, CDR, CDRW, DVD.

UNIT- III

Computer software: types of software, system software, application software, operating system, utility program, assemblers, compilers and interpreter. Operating system functions, Types batch, single user, multi user, multiprogramming, multiprocessing, Programming languages, machine, assembly, high level, 4GL, their merits and demerits. Computer virus – types of viruses, virus detection & prevention virus on network.

UNIT- IV

Data Communication & networks: analog and digital signals, modulations. Types of network LAN, WAN, MAN etc, Topologies of LAN ring, bus star, mesh and tree topologies, communication protocols TCP/IP protocol suit. Communication channels media twisted, coaxial fiber optic, serial and parallel communication, Network operating system (NOS), bridges, hub, routers, repeater and gateways. Modem working and characteristics. Types of connections- dialup leased lines, ISDN, broadband.

Text & Reference Books:

01. Computer fundamentals, P.K. Sinha, BPB
02. Computer today by S.K. Basandra Galgotia Publications.
03. Fundamentals of information by Axexos Leon & Mathews Leon, Vikas Publishing House, New Delhi

PGDCA - I Semester

PAPER - II

PC PACKAGES & TALLY

Subject Code: PCAT102

UNIT- I

Fundamental of DOS & Windows: Fundamental of DOS booting process, internal and external commands, creating and executing batch files and directories creating text files. Introduction to windows features, various versions of windows, origin of windows parts of windows screen types and anatomy of windows using.

UNIT- II

Introduction to word processing (MS-word): Advantages of word processing, editing a file using paragraphs, bullets, indentation, Etc. Formatting features, printing the documents, it includes paper-size, margins, header and footer, page no., using macros. Advance word processing, header and footers. Finding text, mail merge and other application, mathematical calculations, table handing.

UNIT- III

Introduction to spread sheet (MS-Excel): Definition and advantages of electronic worksheet, working of spread sheet, range and related operations. Setting saving and retrieving work sheet file, inserting deleting coping & moving of data cells, inserting and deleting rows & columns, protecting cell printing a worksheet, erasing a worksheet, graphs, creation, types of graphs.

Introduction to PowerPoint (MS- PowerPoint): Creating a presentation, inserting/deleting slides, different slide views, editing slides, Slide transition & editing special effects inserting sound, picture, chart, organization chart.

UNIT- IV

Accounting software Tally ERP 9: Basic principles of double entry accounting system, creating new company security controls, groups, ledger, voucher type, modifying, new company, voucher entry, generating profit & loss account, trial balance and balance sheet, backup & restore.

Text & Reference Books:

01. Comdex Computer Course Kit (Windows 7 with office 2010), Gupta vikas, Dreamtech Publication.
02. Mastering MS Office 2000, Professional Edition by Courter, BPB Publication.
03. MS Office 2000 Training Guide by Maria, BPB Publication.
04. PC Software, Ravi Taxalli, BPB
05. Computer Fundamental by P.K. Sinha
06. Financial Accounting with Tally 9.001 edition by Vikas Gupta.
07. Mastering Tally ... ERP 9 By A.K. Nandhani.

PGDCA - I Semester

PAPER - III

PROGRAMMING IN C Subject

Code: PCAT103

COURSE OUTCOMES

CO1. Understanding the basic terminology used in computer programming.
CO2. Writing, compiling and debugging programs in C language using different data types.
CO3. Designing programs involving decision structures, loops and functions, arrays and strings.
CO4. Understanding pointers and use of structure and union.

UNIT-I

Fundamentals of C: Programming Concepts, Pseudocode, Algorithm, Flowchart, History and importance of C, Basic Structure and Execution of C Program, Constants, Variables, and Data Types, Operators and Expressions, Operator Precedence and Associativity, Managing Input and Output Operations.

UNIT-II

Branching & Looping: if statement, if...else statement, nesting of if else statement, else if ladder, switch statement, Goto statement. **Looping:** while loop, do while loop, for loop.
Arrays and Strings: One-dimensional arrays, Declaration and Initialization, Two- dimensional arrays, Declaration and Initialization, Character arrays.
String: Reading and Writing strings, String-handling functions.

UNIT-III

Functions: Need, Elements of user-defined functions, Definition of Functions, Function call and declaration, Category of Functions, Parameter Passing, Recursion, passing arrays to functions, Passing strings to functions.
Storage Classes: Scope, visibility and life time of variables.

UNIT-IV

Understanding Pointers: Accessing the address of a variable, declaration and initialization of pointer variables, accessing a variable through its pointer, pointer arithmetic, pointer to pointer, Array through pointers.
Structures and Unions: Defining structure, declaring structure variables, Accessing structure members, Structure initialization, Operation on individual members, Array of structures, Union.

Reference Books:

1. E. Balagurusamy – Programming in ANSI C, 3rd Edn., TMH, New Delhi; 2004.
2. Programming with C, B.S. Gottfried (TMH).
3. Y. Kanetkar – Let us C, 4th Edition, BPB Publication, New Delhi; 2002.
4. Kerighan& Richie the C programming language (PHI Publication).

PGDCA - II Semester

PAPER - VI

OPERATING SYSTEM

Subject Code: PCAT201

COURSE OUTCOMES

CO1. Recognizing the basic and types of operating system.

CO2: Understanding Process and CPU scheduling and deadlock handling to manage process.

CO3: Understanding logical and physical address space, paging and segmentation.

CO4: Learning Device Management and file system implementation and file system interface.

UNIT-I

Introduction to Operating System: What is an Operating System, Architecture of Operating Systems, Types of Operating Systems, Process Model, Process States and Transitions, System Calls.

UNIT – II

Process Management: Process Scheduling, Cooperating Processes, Inter-process Communication, CPU Scheduling: Scheduling Criteria, Scheduling Algorithms, Process Synchronization: Background, Deadlocks.

UNIT – III

Memory Management: Background, Logical versus Physical Address space, swapping, Contiguous allocation, Paging, Segmentation, Segmentation with Paging, Virtual Memory: Demand Paging.

UNIT – IV

Device Management: Device Management: Techniques for Device Management, Dedicated Devices, Shared Devices.

File-System Implementation: A Simple File System, Logical & Physical File System, File-System Interface: Access Methods, Directory Structure, Free-Space Management, Directory Implementation.

Reference Books:

1. Operating System Concepts, Silber Achatz and Galvin, Pearson Education Pub.
2. Operating Systems Internals and Design Principle, William Stallings, Prentice Hall Publishers.
3. Operating Systems, A. S. Tannenbaum, PHI.
4. Operating Systems - A Concept Based Approach, Dhananjay M. Dhamdhere, TMH.

PGDCA - II Semester

PAPER - VII

RELATIONAL DATABASE MANAGEMENT SYSTEM (ORACLE)

Subject Code: PCAT202

UNIT- I

Overview of Database Management: Data, information, data independence, database administration roles, DBMS architecture, different kinds of DBMS users' importance of data dictionary, contents of data dictionary, types of database languages. Data models: network, hierarchical, relational. Introduction to distributed database, client/server databases, object- relational databases, introduction to ODBC concept

UNIT- II

Relational Model: Entity relationship model as a tool for conceptual design-entities attributes and relationships. ER diagrams; concept of keys: candidate key, primary key, alternate key, foreign key; strong and weak entities, case studies of ER modeling generalization; specialization and aggregation, Converting an ER model into relational schema. Extended ER features, introduction to UML, Representation in UML diagram.

UNIT- III

Structured Query Language (SQL): Relational Algebra: select, project, cross product different types of joins (inner join, outer joins, self-join); set operations, tuple relational calculus, domain relational calculus, simple and complex queries using relational algebra, standalone and embedded query languages, introduction to SQL constructs (SELECT...FORM, WHERE... GROUP BY... HAVING ... ORDERBY...), INSERT, DELETE, UPDATE, VIEW definition and use, temporary tables, nested queries, and correlated nested queries, integrity constrains: Not null, unique, check, primary key, foreign key, reference, triggers.

UNIT- IV

Relational database design: Normalization concept in logical model; pitfalls in database design, update anomalies: functional dependencies join dependencies, Normal forms (INF, 2NF, 3NF). Boyce code normal form, decomposition, multi-valued dependencies, 4NF, 5NF. Issues in physical design; concepts of indexes, file organization for relational tables, de- normalization, clustering of tables, clustering indexes.

Text & Reference Books:

Database system concept, H. Korth and A. Silberschatz,TMH
Data Base Management System, C.J. Date, Narosha Publication.
An Introduction to database systems – Bipin Desai, Galgotia Publication.
SQL, PL/SQL Evan Bayross (2nd edition) BPB publications.

Practical List

1. Create a table "Company" with the following fields and insert the values for 10 employees		
Field Name	**Field Type**	**Field size**
Company Name	Character	15
Proprietor	Character	15
Address		
Level of Correlation: 0 – Nil; 1 –Low; 3 – Medium; 9 – High As per UGC Notification Character	25	
Supplier Name	Character	15
No of employees	Number	4
GP Percent	Number	6 with 2 decimal places

2. Using the above table display the Results:

a) Display all the records of the company which are in the ascending order of GP percent.

b) Display the name of the company whose supplier name starts with "T".

c) Display the details of the company whose GP percent is greater than 20 and order by GP Percent.

d) Display the detail of the company having the employee ranging from 300 to 1000.

e) Display the name of the company whose supplier is same as the Tata's.

3. Create a table named "Student" with the following fields and insert the values.

Field Name	**Field Type**	**Field Size**
Student Name	Character	15
Student Code	Number	6
Address	Character	25
Course Name	Character	15
Percentage	Number	4 with 2 decimal places

Insert the appropriate values in the table.

4. Using the above table display the Results:

a) Display the average percentage of students.

b) Display the names of the students whose percentage is greater than 80.

c) Display the details of the student who got the highest percentage.

d) Display the details of the students whose percentage is between 50 and 70.

e) Display the details of the students whose percentage is greater than the percentage of the roll no=17CA01

5. Create a Table Publisher and Book with the following fields:

Field Name	Field Type	Field Size
Publisher Code	VarChar	5
Publisher Name	VarChar	10
Publisher city	VarChar	12
Publisher State	VarChar	10
Title of book	VarChar	15
Book Code	VarChar	5
Book Price	VarChar	5

Use DML commands

6. Using the above table display the Results
   - b) Insert the records into the table publisher and book.
   - c) Describe the structure of the tables.
   - d) Show the details of the book with the title "DBMS".
   - e) Show the details of the book with price>300.
   - f) Show the details of the book with publisher name "PHI".
7. Using the above table display the Results
   - a) Select the book code, book title, publisher city is "Delhi".
   - b) Select the book code, book title and sort by book price.
   - c) Count the number of books of publisher starts with "BalaGurusamy".
   - d) Find the name of the publisher starting with "S".
8. Write a PL/SQL Program to add two numbers
9. Write a PL/SQL program to display ODD or EVEN numbers
10. Write a PL/SQL program to generate Fibonacci number.

PGDCA - II Semester

PAPER - VII

WEB TECHNOLOGY

Subject Code: PCAT204

COURSE OUTCOMES

CO1: Analysis the basics of Internet, its use and evolution
CO2: General Introduction to WWW, connections and basics of E-mail. CO3: Website development basics using HTML and its tags.
CO4: Learning Basics of PHP and MySQL.

UNIT-I

Internet: Evolution & Protocols of internet, Applications of Internet, Internet Vs Internet, Growth of Internet, History of Internet. WWW, World Wide Web (WWW) History, Working, Web Browsers, client server architecture. Connectivity - Dial-up, Leased line, VSAT etc., URLs, Domain names, Portals, Applications. E-Mail: Concepts, Basics of Sending & Receiving, E-mail, Free E-mail services.

UNIT-II

Searching the Web, HTTP, URLs, Web Servers, Web Protocols. Web Publishing Concepts, Domain Name Registration, HTML, Design Tools, HTML Editors, Image Editors.
Introduction to HTML, HTML Concepts of Hypertext, Versions of HTML, Elements of HTML Syntax, Head & Body Sections, HTML tags, Inserting Texts formatting, text style. Images, Hyperlinks, Backgrounds and Colour Controls, Table Layout and Presentation, Use of Font Size & Attributes, List types and its Tags, Forms.

UNIT-III

PHP Introduction to PHP, Server-side scripting, Role of Web Server software, including files, comments, variables and scope, echo and print, Operators: Logical, Comparison and Conditional operators, Branching statements, Loops, break and continue PHP functions. Passing information between pages, HTTP GET and POST method, String functions: strlen, strops, strstr, strcmp, substr, str_replace, string case, Array constructs: array(), list() and foreach(), PHP advanced functions: Header , Session, Cookie, Object Oriented Programming using PHP: class, object, constructor, destructor and inheritance.

UNIT-IV

MySQL Features of MySQL, data types, Introduction to SQL commands-SELECT, DELETE, UPDATE, INSERT, PHP functions for MySQL operations: mysql_connect, mysql_select_db, mysql_query, mysql_fetch_row, mysql_fetch_array, mysql_fetch_object, mysql_result, Insertion and Deletion of data using PHP, Displaying data from MYSQL in webpage.

Reference Books:

M.L. Young: Complete Reference b: Internet; 2nd Edition; Tata Mc Graw Hill,2006.
Thomas A. Powel ; Web Design : C.R.; Second Edition; TMH, 2009.
Thomas A. Powel ; HTML & XHTML : C.R.; Fourth Edition; TMH, 2008.
Harely Hahn: The Internet, Tata Mc Graw Hill.
G. Robertson: Hands on HTML, BPB Publications.
Joel Sklar: Principles of Web Design, BPB Publications