

***Faculty of Computer Science & Application  
P.K.University  
Shivpuri (MP)***



**Evaluation Scheme & Syllabus for  
Post Graduate Diploma in Computer Application  
(PGDCA)**

***(Effective from session 2019-20)***

*Department Of Computer Application*

***Post Graduate Diploma in Computer Application***  
***(Faculty of Computer Science & Application)***  
***P.K. University, Shivpuri (MP)***

**INTRODUCTION:**

The name of the programme shall be Post Graduation Diploma in Computer Applications (P.G.D.C.A.). The P.G.D.C.A. Programme will be a full-time one year Post Graduate Diploma Course in Computer Applications.

Ordinarily, in each class, not more than 60 students will be admitted.

**ELIGIBILITY FOR ADMISSION:**

Graduates possessing any faculty of any statutory University shall be eligible for admission to the P.G.D.C.A. course.

**NUMBER OF LECTURES AND PRACTICALS:**

Lectures and practicals should be conducted as per the scheme of lectures and practical's.

**PRACTICAL TRAINING AND PROJECT WORK:**

Towards the end of the second year of study, a student will be examined in the course "Project Work".

- a. Project Work may be done individually or in groups in case of bigger projects. However if project is done in groups, each student must be given a responsibility for a distinct module and care should be taken to monitor the progress of individual student.
- b. Student should take guidance from an internal guide and prepare a Project report on "Project Work" in 2 copies to be submitted to the Director of the Institute by 21<sup>st</sup> Feb. Wherever possible, a separate file containing source- code listings should also be submitted.
- c. The Project Work should be of such a nature that it could prove useful or be relevant from the commercial / management angle.
- d. The project report will be duly assessed by the Internal guide of the subject and marks will be communicated by the Director to the University after receiving the Seat numbers from the University along with marks of the internal credit for theory and practical to be communicated for all other courses.
- e. The project report should be prepared in a format prescribed by the University which also specifies the contents and the method of presentation.
- f. The project work will carry 50 marks for Internal assessment and 100 marks

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**ASSESSMENT**

The final total assessment of the candidate is made in terms of an internal assessment and external assessment for each course.

For each paper, 50% marks will be based on internal assessment and 100% marks will be based on external examination unless otherwise stated.

The division of the 50% marks allotted to internal assessment of theory papers is 20 marks for tutorial work, 10 marks for seminar and 10 marks for written test and 10 marks for attendance. The internal marks will be communicated to the University at the end of each semester, but before the semester examination. These marks will be considered for the declaration of the results

**EXAMINATION:**

Examinations shall be conducted at the end of the semester i.e. during November and May,

**STANDARD OF PASSING:**

Every candidate must secure 40% marks in both internal as well as external examination in each head of passing.

Reassessment of Internal marks In case of those students who have secured less than passing percentage of marks in internal i.e. less than 40%, the institute will administer a separate internal test. The results of which may be conveyed to the University as the Revised Internal Marks.

In case the result of the internal test as above, results in lower marks than the original, the original figure of the marks will prevail. In short, the rule is higher of the two figures of the marks. However, the institute will not administer any internal test, for any subject for those candidates who have already scored 40% or more marks in the internal examination.

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**BACKLOG:**

Candidates can keep terms for any semester of P.G.D.C.A., irrespective of the number of subjects in which he/she has failed in the previous P.G.D.C.A. semester examinations.

**CLASS:**

Here shall be numerical marking for each question. At the time of declaration of the result, the marks obtained by a candidate are converted into classes as shown below. The class will be awarded on the basis of aggregate marks scored by the student (i.e. out of 1600), provided he/she has passed in both the internal and external examinations of all the subjects in P.G.D.C.A. Part I.

**Total Marks**

First Class with Distinction	75% and above
First Class	60% and above upto 74%
Second Class	45% to 59%
Pass class	33% to 44%
Fail	below 33%

**REVISION OF SYLLABUS:**

As the Computer technology is changing very fast, revision of the syllabus should be revised after every 3 years.

**TEACHING AND PRACTICALS SCHEME:**

Minimum number of 1 and ½ hour sessions.

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**Semester I**

Subject Code	Subject Name	Theory	Internal	Practical Marks	Total
PGD101	Fundamentals of	70	30	-	100
PGD 102	C Programming	70	30	50	150
PGD 103	Soft Skills	70	30	-	100
PGD 104	Introduction to Internet Technology	70	30	50	150
PGD 105	Application s/w Packages	70	30	50	150
PGD-106	Seminar			50	50
	<b>Total</b>				<b>600</b>

**Semester II**

Subject Code	Subject Name	Theory	Internal	Practical Marks	Total
PGD 201	Object Oriented Prog. Concepts & C++	70	30	50	150
PGD 202	System Analysis and Design	70	30		100
PGD 203	Basic Java Programming	70	30	50	150
PGD 204	DBMS	70	30	50	150
PGD 205	Computerized Accounting Tally	70	30	50	150
PGD 206	Project .....(FI)		100	-	100
	<b>Total</b>				<b>800</b>

**Grand Total=600+800=1400**

**Practicals** – In IInd semester (C++, BlueJ,HTML,XML,PHP,Tally, SQL\*Plus)

Note: - (C) —Compulsory subject to be evaluated by the University. (FI) —Evaluated by the External.

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**Semester –I**

**Fundamentals of Information Technology [PGD 101]**

**UNIT -1 : Computer :**

Block Diagram of elements of digital computer-their functions.

Memory, CPU, I-O devices, Secondary storages, Magnetic Tape, Disk, CD-ROM. Other recent developments-Scanners, Digitizer, Plotters., Hardware and Software. Micro, Mini and Main-frame computers-their features. Introduction to Programming, Flowcharts and Algorithms. System software, application software, firmware machine, Assembly, and Higher Level Languages, Stored program Concept.

**UNIT -2 : Representation of Data:**

Binary, Octal, Hexadecimal, BCD, EBCDIC, ASCII Conversions. Simple Additions, Subtractions, Multiplications, Divisions (in Octal and Hexadecimals).

**UNIT -3: Boolean Algebra:**

Algebra Rules and Logic Circuits-AND, OR, NAND, NOR, Exclusive OR and NOR Truth tables. Gated flip-flops, Registers, Accumulators.

**UNIT -4 : Basic Concept of Networking and Data Communications:**

Introduction to LAN and basic communication concepts. OSI 7 layers, Topologies, Protocols, Ethernet, Arcnet, TCP/IP, Introduction to Virus and Vaccines, Applications, DTP, E-Mail and Internet.

**UNIT -5 : Operating System:**

Process management-FCFS, Round Robin, Priority based. Memory management-segmentation, paging, virtual memory. I-O management-concept of I-O port. File management-FAT, file handling functions. Software and hardware interrupts, I/O and Memory based Addresses, DMA channels. Broad view of Operating Systems: MS-DOS, UNIX, MS-WINDOWS.

**Books.**

Computers Today 3e: by Sanders.

Computers: by Trainor & Krasnewich (McGraw Hill).

Dr. A.K. Tripathi and Monika Tripathi., Laxmi Publication, New Delhi

Fundamentals of Computing: by Tucker, Cupper,

Operating System Concept: by Peterson Biberachaty. Operating System: by Millan Milenkoric.

Fundamentals of Computers: by Rajaraman.

Computer System and Programming in C –by

Advanced MS-DOS Programming (Microsoft press). Computer Networks: by Andrew S. Tenenbaum.

Computer Network and Distributed Processing: by James martin. Computer Studies: by C.S. French.

Elements of digital computer: by Thomas Bartee.

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**Semester –I**

**'C' Programming [PGD 102]**

**UNIT 1-Programming Fundamentals :** Program Concept, Algorithms, Flow Charts - Symbols, Rules for making Flow chart, Types of flowchart, Advantage & Disadvantage, techniques of problem solving : Programming Techniques – Top down, Bottom up, Modular, Structured - Features, Merits & Demerits, Programming Logic- Simple, Branching, Looping, Recursion, Cohesion & Coupling, Programming. Testing & Debugging & their Tools

**UNIT 2-Programming in C including features of 'C',-** Ctokens, Variables, Expressions, Identifiers, Keywords, Data Types, Constants, Operator and expression Operator: Arithmetic, Logical, Relational, Conditional and Bit wise Operators, Precedence and Associativity of Operators, Type conversion in expression, Basic input/output and library functions Single character input/output i.e. getch(), getchar(). getche(), putchar(),Formatted input output i.e. printf() and scanf().

**Branching Constructs:** If-else,switch, conditional operator & goto statements

If statement, If.....Else statement, Nesting of If....Else Statement, else if ladder, The ?: operator, goto statement, Switch statement, Compound statement, Loop controls, for, while, do-while loops, break, continue .

**UNIT 3- Functions:** Categories of functions User defined and library function , recursion, Function arguments, Return values and nesting of function, Recursion, Calling of functions, Scope and life of variables - local and global variable, Storage class specified - auto, extern, static, register.

**Arrays :** What is array, declaring initializing , 2D and 3D array. String: declaration, string functions – strcat,strcpy,strcmp,strlen,strstr.

**UNIT 4-Pointers:** Operations on pointers, pointers Basic of pointers and operators, Pointers and function, Array of pointers, Pointer and strings, Pointer to structure, Pointers within structure .

**The preprocessor:** #define, defining functions like macros, #error,#include, conditional compilation directives i.e. #if, #else, #elif and #ifdef & undef Structures : the concept of structure of structure , intilizing a structure, the structure tag, period operator , array of structure, structure and pointer, te arrow operator and nesting of structure. Unions : initialization and use of it in a program.

**UNIT 5-File Management:** Introduction – File handling, File structure, File handling function, File types, Streams, Text, Binary, File system basics, The file pointer, Opening a file, Closing a file, Writing a character, Reading a character, Using fopen(), getc(), putc(), and fclose(), Using feof(), Working with string fputs() and fgets(), Standard streams in C, Flushing a stream, Using fread() and fwrite(), Direct access file, fseek() and random access I/O, fprintf() and fscanf(), Command line arguments.

**Rules:**

ANSI C to be followed strictly

Structured programming techniques to be followed

**Books :**

- |  |  |
|--|--|
| 1. Let us C                              | Yashwant Kanitkar, BPB Publication         |
| 2. Programming in ANSI C                 | Balgurusamy Tata McGraw Hill               |
| 3. Computer Systems and Programming in C | Dr. A.K. Tripathi and Monika Tripathi      |
| 4. C Programming                         | Schaum's series                            |
| 5. The spirit of C                       | Mulish Cooper, Jaico Publishing            |
| 6. Programming with ANSI & Turbo C       | Kamthane, Pearson Education.               |
| 7. An introduction to C programming      | Amit Saxena, Anamaya Publishers, New Delhi |

**Practical :**

The practical should cover minimum 100 programs.

The practical term work should be done by the student. The print out of the programs should be kept in Term work file.



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**Semester –I**

**SOFT-SKILLS [PGD 103]**

**1) Self Development and Assessment**

Self-Assessment

Self-Awareness, Perception and Attitudes Values and Belief System Personal Goal Setting Career Planning,

Self-Esteem,

Building of Self-Confidence

**2) Components of communication, Principles of communication,**

barriers, listening skills, Verbal Communication Planning, Preparation, Delivery, Feedback and Assessment of activities like

- Public speaking

- Group Discussion

- Oral Presentation skills,

- Perfect Interview

- Listening and observation skills, Body language

- Use of Presentation graphics

- Use of Presentation aids, Study of communication.

**3) Written Communication**

Technical Writing–Technical Reports Project Proposals, Brochures, Newsletters, Technical Articles Technical Manuals Official/Business Correspondence

- Business letters

- Memos

- Progress report, Minutes of meeting, Event reporting,

- Use of style, Grammar and Vocabulary for effective technical writing,

- Use of : Tools, Guidelines for technical writing, Publishing

**4) Ethics and Etiquettes**

Business Ethics

Etiquettes in social as well as Office settings

Email etiquettes

Telephone Etiquettes

Engineering ethics and ethics as an IT professional, Civic Sense.

**5) Other Skills**

Managing time

Meditation

Understanding roles of Engineer and their Responsibility Exposure to work environment And culture in today's job Places Improving Personal Memory,

Study skills that include Rapid reading, Notes taking, Complex problem solving, creativity.

### **References for students for self-improvement by self-study**

Topic 1 : Any good book like

1. You Can Win – Shiv Khera – Macmillan Books – 2003 Revised Edition
2. 7 Habits of Highly effective people – Stephen Covey
3. Business Communication ? Asha Kaul
4. Business Communication - M. Balasubramanyam

Topic 2 and 3

1. John Collin, “Perfect Presentation”, Video Arts MARSHAL
2. Jenny Rogers “ Effective Interviews”, Video Arts MARSHAL
3. Raman Sharma, “ Technical Communications”, OXFORD
4. Sharon Gerson, Steven Gerson “Technical writing process and product”, Pearson Education Asia, LPE third edition.
5. R. Sharma, K. Mohan, Business correspondence and report writing”, TAG McGraw Hill ISBN 0-07-044555-9
6. Video for technical education catalog, National education and Information Films Ltd. Mumbai.
7. Management training and development catalog, National education and Information Films Ltd. Mumbai.
8. XEBEC, “Presentation Book 1,2,3”, Tata McGraw-Hill, 2000,ISBN 0-40221-3

Topic 4 and 5

1. Tim Hindle, “Reducing Stress”, Essential Manager series Dk Publishing
2. Sheila Cameron, “Business student Handbook”, Pitman Publishing
3. Dr. R. L. Bhatia, “ Managing time for competitive edge”
4. Lorayne Lucas “Memory Book”
5. Robert Heller, “Effective leadership”, Essential Manager series Dk Publishing
9. Newstrom Keith Davis, ” Organizational Behavior”, Tata McGraw-Hill, 0-07-460358-2

It is proposed that expert from industry be invited to conduct lectures and workshops to understand the industry soft-skill requirement.

### **Guidelines for term-work**

#### **List Of Possible Assignments:**

#### **1. Write a personal essay and or resume or statement of purpose which may include:**

- Who am I (family background, past achievements, past activities of significance)
- Strength and weakness (how to tackle them) (SWOT analysis)
- Personal Short-term Goals, long term goals and action plan to achieve them
- Self assessment on soft-skills

#### **2. Student could review and present to a group from the following ideas**

- Book review
- Biographical Sketch
- Any topic such as an inspirational story/personal values/beliefs/current topic
- Ethics and etiquettes and social responsibilities as professional.

#### **3. Student will present to a group from the following ideas**

- Multimedia based oral presentation on any topic of choice (Business/Technical)
- Public speaking exercise in the form of debate or elocution on any topic of choice

**4. Student will undergo two activities related to verbal/non-verbal skills from following**

- Appearing for mock personal interviews
- Participating in group discussion on current affairs/Social Issue/ethics and etiquettes
- Participating in games, role-playing exercises to highlight nonverbal skills.

**5. Student will submit one technical document from the following:**

- Project proposal
- Product brochure
- Literature survey on any one topic
- User Manual
- Technical Help

**6. Student will submit one business document from the following**

- A representative official correspondence
- Minutes of meeting
- Work progress report

**7. Students will participate in one or two activities from following:**

- Team games for team building
- Situational games fro role playing as leaders, members
- Organizing mock events
- Conducting meetings

**8. Faculty may arrange one or more sessions from following :**

- Yoga and mediation
- Stress management, relaxation exercises and fitness exercises
- Time management and personal planning sessions
- Improving memory skills
- Improving leadership skills
- Reading comprehension skills & notes taking skills

**9. Students' own SWOT Analysis**

Students are expected to keep a personal record of any six activities that they conduct in the soft skill laboratory in the form of a journal. All students need note to do the same assignments. Institute having a freedom within the framework to customize set of activities to be followed.

**Assessment Guidelines for term-work assessment**

**1. Written Communications 20 marks**

- Students could submit for example
- Personal resume, essay
- Technical document or business document

**2. Spoken communication 20 marks**

- One elocution event of say 8-10 minutes individually
- One group discussion or group presentation event

**3. Overall participation in soft skills based lab activities 10 marks**

- Attendance and enthusiasm
- Participation and contribution in event management, organizing
- Group games, group exercises, interpersonal skills observed
- Quality of journal for soft skills laboratory indicating personal progress, participation. Guidelines for batch wise Time management for laboratory sessions (Two hour session at a time)

1. Batches could be of size 25 to 30 students.
2. Written communication exercises could be done for whole batch at same time. (3 sessions)
3. Spoken communications exercises can be done with around 10-15 students covered in one two hour slot so total need for exercises. (2 sessions).
4. Group discussions could be done for groups of 5-8 students at a time for half so total need for two group discussions for each student of the batch will be required. (2 sessions)
5. Sessions could be organized for trainers to give directions, knowledge, experience sharing or common viewing of training material on Video etc. (4 sessions)
6. Group exercises for team building, role playing and interaction with professional. (3 sessions)

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**Semester –I**

**INTRODUCTION TO INTERNET TECHNOLOGY [PGD 104]**

**UNIT- 1 : Introduction of Internet :** What is Internet , Services Of Internet , H/W & S/W Requirements to Connect to the Internet .E-mail, Introduction of WWW, Web Server and Web Client , Difference between the web and the Internet , Internet Service Provider (ISP). Web publishing Concepts, Domain name Registration, Space on Host Server for Web site.

**UNIT- 2: Choosing an Internet Service Provider :** Location , Stability , Customer services , Performance , Pricing , Establishing an Internet Account.

**E-mail Basics:** Running an E-mail Program , Sending mail, Reading mail, Replying to mail, Deleting mail. Newsgroups, mailing Lists , Chatting.

**UNIT – 3:** Data Transmission Protocols, Client/Server Architecture & its Characteristics, FTP & its usages. Telnet Concept, Remote Logging, Protocols, Terminal Emulation. Message Board, Internet chatting - Voice chat, text chat.

**UNIT – 4 : An Introduction to Internet Explorer :** Starting Internet Explorer , A Quick Tour with Internet Explorer , At the Helm in internet Explorer, Viewing Various file Types .

**Internet Search Engines:** What is Search Engines , How do Search Engines work ?, Types of Search Engines.

**UNIT -5 : Creating a Web Page :** What is HTML , What can You Do with HTML , Creating , Saving and Viewing HTML documents , Applying Structure Tags , Applying Common Tags and attributes Images, Hyperlinks, Backgrounds and Colour controls, Different HTML tags, Table layout and presentation, Use of font size & Attributes, List types and its tags. Use of Frames and Forms in web pages.

Creating a New Web, Opening an Existing Web, Creating , Opening and Saving Web Pages , Entering and Editing Text. Printing Page , Spell Checking, Finding or Replacing Text.

**Book References:**

Alexis Leon and Mathews Leon - Internet for every one (Tech World) Douglas Comer - The Internet Book (prentice Hall)  
SYBEX- bpb publication – Internet Complete (Second edition)

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**Semester –I**

**APPLICATION SOFTWARE PACKAGES [PGD 105]**

**UNIT -1 : MS Windows:**

Introduction to M.S. Windows; Features of Windows; Various versions of Windows & its use; Working with Windows; My Computer & Recycle bin ; Desktop, Icons and Windows Explorer; Screen description & working styles of Windows; Dialog Boxes & Toolbars; Working with Files & Folders; Shortcuts & Autostarts; Accessories and Windows Settings using Control Panel; Start button & Program lists; Installing new Hardware & Software.

**UNIT -2 : Basics Of Word**

Creating word documents; The word window , Entering Text . Editing Document text; Selecting Text, Copying and Moving Text. Applying Text Enhancements; Applying Fonts and Font Styles in Word, Highlighting Text For Distinctive Look . Aligning and Formatting ; Aligning Text, Using Indentation Options, Setting Line Spacing Options, Using Tabs. Creating Lists, Numbers and Symbols ; Numbering and Bullets, Creating Special Characters. Replacing and checking Text ; Creating and Applying Frequently Used Text, Finding and Replacing Text , More about Spelling and Grammar, Using the Thesaurus Command. Getting Into Print ; Using Print Preview, Changing Page Orientation and Paper Size, Aligning Text Vertically, Setting Margins, Printing Options.

**Advanced Formatting Techniques in Word :**

Formatting Pages; Formatting Sections, Creating and Modifying Page Numbers, Creating Headers and Footers , Taking Care of Loose Ends .Working With Columns ; Working With Newspaper Columns, Revising Column Structure. Constructing High-Quality Tables ; Creating and Revising Tables , Modifying Table Structure , Formatting Tables , Using Tables Calculatingly. Working Smarter with Word ; Using Templates. Creating Outlines in Word ; Creating an Outline , Modifying an Outline

**UNIT -3 :MS-Access**

Concepts & terms : database tables ,relational databases , records , fields , controls & objects , queries & dynasets, forms ,reports ,properties , wizards , macros , Access requirements , starting & quitting access , the access workspace & tool, views . Creating database & tables with & without wizard , field name , data types & properties , adding & deleting fields in fields , renaming fields & their caption , resizing fields , freezing columns , primary key field & indexing fields. **Form:** Form wizard , saving & modifying forms : Entering & Editing data , Finding , sorting& displaying data , queries & dynasets , creating & using select queries , using wild cards in queries , reformatting dynasets.

**Reports :** Creating reports, previewing reports, printing reports, modifying, saving. Relational databases – definition, purpose, creation, viewing, deleting. Expressions , Macros.

#### **UNIT -4 :Creating Excel worksheet:**

Entering and Editing Cell Entries ; The excel Application Window , Workbooks and Worksheets, Moving the Cell Pointer, Entering Text and Numbers , Revising Text and Numbers. Working with Numbers ; Creating Formulas, Formatting numbers. Changing Worksheet Layout ; Adjusting Column Width and Row Height, Inserting and Deleting Rows and Columns, Inserting and Deleting Cells , Moving and Copying Cell Contents , Naming a Worksheets , Selecting Worksheets , Copying and Moving Worksheets, Inserting and Deleting Worksheets, Other Formatting Options

; Aligning Text , Border and Color. Printing in Excel ; Print Preview, Changing Page Setup , spelling Checking worksheet

#### **Advanced Techniques in Excel**

Using Functions and References ; Using Functions , Entering Functions, Relative and Absolute Cell References. Naming Ranges ; Naming Ranges , Using Names . Creating Easy-to-Understand Charts ; Pie Charts , Series Charts , Creating Charts , Moving , Sizing , and Printing Chart Objects . Editing and Formatting Charts ; Adding a Data Series , Deleting a Data Series , Modifying and Formatting Charts.

#### **UNIT -5 :Creating Power Point Presentation:**

Creating a Basic Presentation , Building Presentations, Modifying Visual Elements , Formatting and Checking Text , Adding Objects, Applying Transitions , Animation Effects and Linking , Preparing handouts , Taking the Show on the Road and All commands of Desk Top Publishing(DTP) ,(Pagemaker, Corel-Draw, Photo Paint).

#### **Books:**

1. Microsoft Office 97 : Will Train , Gini Courter, Annette Marquis bpb Publication.

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**SEMESTER II**

**OBJECT ORIENTED PROGRAMMING CONCEPTS & C++ [PGD 201]**

**UNIT-I**

**Overview of C++:** Object oriented programming, Introducing C++ classes, Concepts of object oriented programming. Classes & Objects : Classes, Structure & classes, Union & Classes, Friend function, Friend classes, Inline function, Scope resolution operator, Static class members: Static data member, Static member function, Passing objects to function, Returning objects, Object assignment.

**UNIT-II**

Array, Pointers references & The Dynamic Allocation operators : Array of objects, Pointers to object, Type checking C++ pointers, The This pointer, Pointer to derived types, Pointer to class members, References: Reference parameter, Passing references to objects, Returning reference, Independent reference, C++ 's dynamic allocation operators, Initializing allocated memory, Allocating Array, Allocating objects.

Constructor & Destructor: Introduction, Constructor, Parameterized constructor, Multiple constructor in a class, Constructor with default argument, Copy constructor, Default Argument, Constructing two dimensional Array, Destructor.

**UNIT-III**

Function & operator overloading : Function overloading, Overloading constructor function finding the address of an overloaded function, Operator Overloading: Creating a member operator function, Creating Prefix & Postfix forms of the increment & decrement operation, Overloading the shorthand operation (i.e. +=, -= etc), Operator overloading restrictions, Operator overloading using friend function, Overloading New & Delete, Overloading some special operators, Overloading [ ], ( ), -, comma operator, Overloading << .

**UNIT-IV**

Inheritance : Base class Access control, Inheritance & protected members, Protected base class inheritance, Inheriting multiple base classes, Constructors, destructors & Inheritance, When constructor & destructor function are executed, Passing parameters to base class constructors, Granting access, Virtual base classes .

Virtual functions & Polymorphism : Virtual function, Pure Virtual functions, Early Vs. late binding

**UNIT-V**

The C++ I/O system basics : C++ streams, The basic stream classes: C++ predefined streams, Formatted I/O, Formatting using the ios members, Setting the format flags, Clearing format flags, An overloaded form of setf ( ),

Examining the formatted flags, Setting all flags, Using width() precision() and fill(), Using manipulators to format I/O, Creating your own manipulators.

**Book References :**

**C++ The complete reference** - Herbert Schildt,- TMH Publication

**Object Oriented Programming C++** - R. Lafore

**Object Oriented Programming with C++** - R. Subburaj, Vikas Publishing House, New Delhi.

**C++**- E. Balguruswamy, , TMH Publication

**Practical :** The practical should cover minimum 100 programs.

The practical term work should be done by the student. The print out of the programs should be kept in Term work file.



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***SEMESTER II***

**SYSTEM ANALYSIS AND DESIGN [PGD 202]**

**Unit I**

Overview Of Systems Analysis And Design  
Systems Development Life Cycle  
Concept And Models  
Requirements Determination  
Logical Design  
Physical Design  
Test Planning Implementation Planning  
Performance Evaluation  
Communication,  
Interviewing  
Presentation Skills  
Group Dynamics  
Risk And Feasibility Analysis  
Group-Based Approaches

**Unit II**

JAD  
Structures Walkthroughs  
Design And Code Reviews  
Prototyping  
Database Design  
Software Quality Metrics  
Application Categories  
Software Package  
Evaluation And Acquisition

**Unit III**

Information Requirement Analysis  
Process Modeling With Physical  
Logical Data Flow Diagrams  
Data Modeling  
Logical Entity Relationship Diagrams  
Developing A Proposal  
Feasibility Study  
Cost Estimation

#### **Unit IV**

Systems Design  
Design Of Input And Control  
Design Of Output And Control  
File Design  
Database Design  
Process Design  
User Interface Design  
Prototyping  
Software Constructions  
Documentation

#### **Unit V**

Application Development Methodologies  
CASE Tools  
Information Engineering  
Structured Systems Analysis  
Design Methodologies  
Object Oriented Methodologies  
Application Development Data Modelling  
Process Modeling  
User Interface Design  
Prototyping  
Use Of Computer Aided Software Engineering  
(CASE) Tools In The Analysis  
Design Of Information Systems  
Implementation Of Information Systems

Revision of Unit 1  
Revision of Unit 2  
Revision of Unit 3  
Revision of Unit 4  
Revision of Unit 5

**Books: V.Rajaraman, PHI**

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***SEMESTER II***

**JAVA PROGRAMMING [PGD 203]**

**Objectives:** - 1) To learn object oriented concepts.  
2) To understand the fundamentals and to develop the skill of Programming in Basic Java.

**UNIT – 1:**

**Introduction to JAVA**

History of Java Features of Java JDK Environment  
The Java Virtual Machine  
Garbage Collection

**UNIT – 2 :**

**Programming Concepts of Basic Java**

Identifiers and Keywords  
Data Types in Java  
Java coding Conventions  
Expressions in Java  
Control structures, decision making statements  
Arrays and its methods.

**UNIT -3:**

**Objects and Classes**

Object Fundamentals Pass by value 'this' reference  
Data hiding and encapsulation  
Overloading Overriding Constructors Finalization  
Subclasses (Inheritance)  
Relationship between super class object and subclass object  
implicit subclass object to super class object Conversion  
Dynamic method dispatch.

**UNIT -4:**

**Language Features**

scope rules  
static data, static methods, static blocks  
all modifiers of class, method, data members and variable  
Abstract Classes  
Interfaces Inner classes Wrapper Classes packages Package access  
importing packages and classes user define packages.

## UNIT -5:

### Exception Handling

Types of Exceptions try, catch, finally, throws keywords creating your own exception exceptions and Inheritance Multithreading, Multithreading Concept, Thread Life Cycle

### Abstract Window Toolkit

Components and Graphics

Containers, Frames and Panels

Layout Managers Border Layout Flow Layout

Grid Layout

Card Layout

AWT all Components Event Delegation Model Event Source and Handlers

Event Categories, Listeners, adapters

Anonymous Classes :-Applets

-Applet Life Cycle

-Applet Context

-Inter applet communication

Java utility Packages , classes, Interfaces

HashTable Vector Math Random System String

StringBuffer

### Books:

Author	Title	Publisher & Address
Cay S. Horstmann, Gary Cornell	CCore Java 1.2 Vol-1 & Vol -2 Fundamentals	The Sun Microsystems Press, New Delhi.
Jerry R. Jackson & Alan L. McClellan	Java By Example 1.2	The Sun Microsystems Press, New Delhi
Peter Van der Linden	Just Java	The Sun Microsystems Press, New Delhi
Peter Van der Linden	Not Just Java, Second Edition	The Sun Microsystems Press, New Delhi

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***(Faculty of Computer Science & Application)***  
***P.K. University, Shivpuri (MP)***  
***SEMESTER II***

**COMPUTERIZED ACCOUNTING TALLY [PGD 204]**

**Objectives:-** 1) The major objective of this subject is to provide a strong formal foundation in computerized Accounting,(Tally package), technology and practice to the participants to groom them into well-informed accounting application .  
2) To acquire knowledge in Accounting.

**UNIT – 1 :** Introduction to Accounting, Advantages of accounting, Books of accounts, Classification of Accounts, Financial Statements, Inventory management, Computerized Accounting, Need of Computerized Accounting, Accounts Organization, Accounts group, Loans Liabilities, Assets and Budget.

**UNIT – 2 :**

Accounting Software's Introduction to tally Software, Features of Tally Screen, Company information, Creating new Company, Gateway, Selection of Company, selection of Options, Buttons at Gateway, Working with multiple Companies, Company Features, Configuration- General, Numeric Symbols, Voucher Entry, Creation of Voucher Screen, invoice Order Entry, Printing.

**UNIT -3 :**

Accounts info menu, Account Groups- create new group, creation of primary group. Normal and advance information, Ledger Accounts, cost categories, Cost Centers. Creation of Budget, Types of budget. Voucher- Voucher Entry, creation of Vouchers Screen, types of Voucher, Selection of Voucher types, Post Dated Voucher, printing of Vouchers, Cheque Printing, advance Features of account Voucher.

**UNIT – 4 :**

Inventory info, Features of Inventory info. Configure- Inventory Info, balance Sheet, Audit Trail, Ratio Analysis. Display-Accounting Report Display, Inventory report Display, and MIS Report Display. Printing Reports, Export, Export of Data. Maintenance- Bank Reconciliation, House Keeping, Data Maintenance. Security- Users and Password, Security Controls, Types of Security, Creation New Security Levels and Tally Audit.

**Practical :**

Tally Software – All Accounting Problems Viz. Balance sheet, Profit & Loss, Cash Book, Loans, Cost Accounting, Vouchers, Budget, Sales and Purchase, Assets & Liabilities, Inventory Management, Financial Statements, Books of accounts, Ledger, etc.on Tally & MS-Office.

**Book References :**

1. Accounting with Tally : K.K. Nadhani, BPB Publication
2. Tally Tutorial : K.K. Nadhani and A.K. Nadhani, BPB Publication.
3. Advances Accounts Vol-I : M.C. Shukla, T.S.Grewal and S.G,Gupta, S.Chand & Company,
4. Accounting Principles : Anthony R.N. and J.S. Richard, Irwin Inc.
5. Advanced Accountancy By P.C. Tulsian, Tata McGraw HILL Publication.
6. Tally By S.B. Kishor (Dasganu)
7. Fundamentals of Computers – ITL Education Solutions Ltd. (Pearson)

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**Data Base Management Systems [PGD 205]**

**Objectives:-** 1) The major objective of this subject is to provide a strong formal foundation in database concepts, technology and practice to the participants to groom them into well-informed database application developers.  
2) To acquire knowledge and to develop skill in data base management.

**UNIT -1 :Introduction**

History : Advantages and limitations of DBMS; Users of DBMS, Software Modules in DBMS; Architecture of DBMS. Role of DBA, Data Independence.

**Modeling Techniques** Different Types of Models, Introduction to ERD.

**UNIT -2 : Overview of Database Management System :**

Introduction of Network Database, Relational Database, Hierarchical Database, Codd's 12 Rules; Concept of Domain Tuple, cardinality; Comparison between HDB-NDB-RDB.

**Relational Algebra**

Select, Project, Union, Intersection, Difference, Cartesian Product, Simple Join. Queries to be solved based on the above.

**UNIT -3 : Normalisation :**

Advantages & disadvantages of Normalisation; 1NF-2NF-3NF-BCNF rules with examples; Anomalies, Functional dependency.

**Integrity Constraints**

Entity-Domain-Referential integrity rules; Assertion and Triggers concept.

**UNIT -4: Recovery Mechanisms**

Recovery from various problems of volatile and non-volatile storage devices; Concept-properties-states of Transaction; Introduction to mechanisms such as - Log, Checkpoint and Shadow Paging.

**Concurrency Controls**

Problems of concurrent Transactions; Control Mechanisms such as - Locks, Time-Stamps, Optimistic Scheduling and

**UNIT -5: Distributed Databases**

Concepts, Data Distributions Techniques.

**Data Warehousing and Data Mining**

Concept, Architecture, Various tools in Data Warehousing, Tools in

Data Mining, Difference between Data mining and normal query. **Practical:**

## SQL commands.

List of SQL commands to be covered  
Create/drop a Database  
Create /Modify/Alter/Drop Table  
DML Commands  
Insert, Update, Delete, Select  
Aggregate Function  
Max, Min, Avg, Count, Sum  
GROUP BY  
ORDER BY HAVING

### Books Recommended:

Introduction To Database Systems.  
Data Base System Concept.  
Data Management Systems  
Principals of Database Management  
By James Martin.

By C.J.Date  
By Korth.  
By Alexis Leon, Mathew Leon  
By James Martin. Computer Database Organization

Relational database design  
(Jackson) Introduction to Data Management Systems by Atul Kahate Fundamentals of Database Systems by Elmasri, Navathe  
Prentice Hall for Micro Computers applications

**Practical :** The practical should cover minimum 100 programs.  
The practical term work should be done by the student. The print out of the programs should be kept in Term work file.

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**(PROJECT IN) VISUAL BASIC 6.0 [PGD 206]**

**Objectives :**

Visual Basic 6 is the front end tool which is used for programming in applications like Microsoft Office and is supported by in different flavours by Microsoft Excel and PowerPoint. In fact VBA is used in creating applications of all types, including ActiveX controls, Client Applications, Internet Information Server Application designer, integrated visual database tools and Data Environment, ActiveX Data Objects (ADO) and the Dynamic HTML page designer.

**INTRODUCTION TO VB 6.0**

**a. VB Environment**

- i. Menu Bar, Toolbars, Tool Box
- ii. Project explorer
- iii. Properties Window
- iv. Form Designer
- v. From Layout

**b. VB The language**

- i. Variable, Constants, Datatypes, User defined Datatypes
- ii. Scope of variable (Global, Local, Modular, static)
- iii. Control Flow Statements (IF, IIF, Select Case)
- iv. Looping, nesting (Do While, Do until, For, for Each, Exit)
- v. Arrays
- vi. User defined Procedure, Functions
- vii. VB Functions
  - 1. Date
  - 2. Mathematical
  - 3. String
  - 4. Conversion

**c. Visual Basic Controls from Toolbox**

- i. Properties
- ii. Methods
- iii. Events
- iv. Other Controls
  - 1. Microsoft Windows Common Controls (6.0)
  - 2. Microsoft windows Common controls-3(6.0)
  - 3. Control Arrays (adding controls at runtime & design time)

**d. Managing Menus**

- i. Creating and modifying menu at Design time
- ii. Programming menu commands
- iii. Shortcuts keys & menus at runtime

## VALIDATING AND PROCESSING USER INPUTS

Overview , Importance , Types of validation, Implementing Form level and field level validations, Text box Properties, Using Events, validate Event

## USING DEBUGGING TOOLS

- a Types of errors & debug menu
  - I. Types of errors
  - II. Debug menu
- b Testing the application
  - I. Immediate window
  - II. Using debug and local window
  - III. Setting watch expression
- c Implementing error handler
  - I How VB Handles the runtime error
  - II VB error handler
- d VB error handling options
  - I. How VB handles the runtime error
  - II. Disabling the error handler
- e Inline error handling

## DATABASE CONNECTIVITY

- a How VB access data
  - i Data access interface
  - ii Relational database concepts b Introduction to OLE DB & ADO
    - i What is OLE DB
    - ii How OLE DB relates to ADO
  - iii SQL Statements
  - iv ADO Data Control
- Using ADO
- Connecting to data source
- Binding controls (DataCombo, DataList, DataGrid v Coding ADO
- Creating record set
- Adding records in record set
- Modify, Delete, Search vi Data Environment
- vii Introduction to crystal Report ( 7.0 or above)

## Books Recommended

MCS D MSCS Training Guide VB 5.0  
Evangelos Petroustos Mastering Visual Basic 6.0  
IDG Visual Basic 6 Programming Black Book  
Perpy Greg Visual Basic 6.0 in 21 days  
Jerke Noel Visual Basic 6.0 –The Complete Reference

**Practical :** The practical should cover minimum 100 programs.  
The practical term work should be done by the student. The print out of the programs should be kept in Term work file.

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**PROJECT & SEMINAR REPORT GUIDELINES**

A project report has to be submitted as per the rules described in (IInd Sem.). Some additional guidelines regarding the Project Report are:

**Number of Copies:**

The student should submit two hard-bound copies of the Project Report.

**Acceptance/Rejection of Project Report:**

The student must submit a Synopsis of the project report to the Institute for approval. The Director holds the right to accept the project or suggest modifications for resubmission. Only on acceptance of draft project report, the student should make the final copies.

**Format of the Project Report:**

The student must adhere strictly to the following format for the submission of the Project Report.

**a. Paper:**

The Report shall be typed on white paper, A4 size or continuous computer stationary bond, for the final submission. The Report to be submitted to the P.K. University must be original and subsequent copies may be photocopied on any paper.

**b. Typing:**

The typing shall be of standard letter size, double spaced and on one side of the paper only, using black ribbons and black carbons.

**c. Margins:**

The typing must be done in the following margins :

Left ----- 35mm, Right ----- 20mm

Top ----- 35mm, Bottom ----- 20mm

**d. Binding:**

The Report shall be rexin bound in black. Plastic and spiral bound Project Reports not be accepted.

**e. Front Cover:**

The front cover should contain the following details:

**TOP:** The title in block capitals of 6mm to 15mm letters.

**CENTRE:** Full name in block capitals of 6mm to 10mm letters.

**BOTTOM:** Name of the University, Year of submission - all in block capitals of 6mm to 10mm letters on separate lines with proper spacing and centering.