FACULTY OF SCIENCE

SYLLABI FOR

POSTGRADUATE DIPLOMA

IN

COMPUTER APPLICATIONS

FOR

EXAMINATIONS 2015–2016
(SEMESTER SYSTEM)

--:O:--
Outline of the Syllabi and Courses for Post Graduate Diploma in Computer Applications for Examination – 2015-2016 (Semester System).

**FIRST YEAR (SEMESTER –I)**

<table>
<thead>
<tr>
<th>Paper Code</th>
<th>Paper Name</th>
<th>Lecture</th>
<th>Tutorial</th>
<th>Periods / Weeks</th>
<th>Exam. Marks</th>
<th>Int. Ass. Marks</th>
<th>Total Marks</th>
<th>Exam Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PGD-1001</td>
<td>Computer Fundamentals</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>80</td>
<td>20</td>
<td>100</td>
<td>3</td>
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<tr>
<td>PGD-1002</td>
<td>Computer Programming using C/C++</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>80</td>
<td>20</td>
<td>100</td>
<td>3</td>
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<tr>
<td>PGD-1003</td>
<td>Computer Based Accounting</td>
<td>5</td>
<td>1</td>
<td>0</td>
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<td>20</td>
<td>100</td>
<td>3</td>
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<tr>
<td>PGD-PR01</td>
<td>Practical Software Lab. (PGD – 1001)</td>
<td>0</td>
<td>0</td>
<td>12</td>
<td>60</td>
<td>15</td>
<td>75</td>
<td>4</td>
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<tr>
<td>PGD-PR02</td>
<td>Practical Programming Lab. in C/C++ (PGD – 1002)</td>
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<td>0</td>
<td>12</td>
<td>60</td>
<td>15</td>
<td>75</td>
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</table>

**TOTAL MARKS = 450**

**FIRST YEAR (SEMESTER –II)**

<table>
<thead>
<tr>
<th>Paper Code</th>
<th>Paper Name</th>
<th>Lecture</th>
<th>Tutorial</th>
<th>Periods / weeks</th>
<th>Exam. Marks</th>
<th>Int. Ass. Marks</th>
<th>Total Marks</th>
<th>Exam Hours</th>
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<tr>
<td>PGD-2001</td>
<td>DBMS Using SQL</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>80</td>
<td>20</td>
<td>100</td>
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<tr>
<td>PGD-2002</td>
<td>Web Based Applications and Electronic Commerce</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>80</td>
<td>20</td>
<td>100</td>
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<tr>
<td>PGD-2003</td>
<td>Data Communications and Networks</td>
<td>5</td>
<td>1</td>
<td>0</td>
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<td>20</td>
<td>100</td>
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<td>PGD-PR03</td>
<td>Practical RDBMS Lab. (PGD – 2001)</td>
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<td>PGD-PR04</td>
<td>Practical Web Programming Lab. (PGD – 2002)</td>
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<td>PGD-2004</td>
<td>Project Work: Project will involve Development of Business Application</td>
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<td>100</td>
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</table>

**TOTAL MARKS = 550**

**Note:** Pass Marks 40% marks in Theory, Internal Assessment and Practical separately. 50% marks for Project Work. 50% marks in Aggregate to qualify the examinations.
SEMESTER -I

Paper Title          : COMPUTER FUNDAMENTALS

Paper Code         : PGD-1001  Max. Marks : 80  Time : 3 Hrs.
Course Duration: 60 Lectures

Note:
   i. The Question Paper will consist of Four Sections.
   ii. Examiner will set total of **NINE** questions comprising **TWO** questions from each
       Section and **ONE** compulsory question of short answer type covering whole syllabi.
   iii. The students are required to attempt ONE question from each Section and the
        Compulsory question.
   iv. All questions carry equal marks unless specified.

SECTION - A

1. Basics of Computers and Number Systems
   Introduction to Computer (ALU, Memory, CU), Booting Process, Introduction to concepts: Bit, Byte, Word, Hardware, Operating System, System and Application Software, Machine, Assembly and High Level Languages, Compilers, Assemblers, Loaders and Linkers.
   ASCII and EBCDIC Codes, Binary, Octal, Decimal and Hexadecimal Number Systems and their Conversion, Integer and Floating Point Representation.

SECTION - B

2. Input and Output Devices: Various Input Devices such as keyboard, mouse and joystick, Output Devices: Monitors (CGA, EGA, VGA and SVGA), different types of Printers and Plotters.

3. Memory: Primary and secondary memory: RAM, ROM, PROM, EPROM, Cache, Removable and non-removable secondary memory: Tapes, Disks, CDROM, DVD, comparison of these devices based on technology and speed. Organization of data on disks: Tracks, sectors, cylinders, heads, access time, seek time and latency time.


SECTION – C

5. Operating Systems – DOS, Windows and UNIX.
   Comparison of main features of DOS, UNIX and Windows Operating Systems.
   **DOS:** Internal DOS commands such as DIR, COPY, TYPE, DEL, DATE, and External commands such as UNDELETE, DELTREE, XCOPY, MOVE, and SCANDISK.
   **Windows:** GUI, Icons, Toolbar, Control panel, Explorer: Files and directory management under windows, Accessories, Network Neighborhood, System Tools, Recycle Bin, Installation of new software.
   **UNIX:** Overview of UNIX structure, general purpose UNIX commands such as date, echo, cal, bc, pwd, passwd, file and directory commands such as ls, mkdir, cp, mv, rm, process management commands such as ps, kill, communication commands such as news, mesg, wall; working with editor.
SECTION - D

6. **Word Processing Software**: Basics of Word Processing: creating, opening, saving, and printing document, using the Interface (Menu Toolbars), editing Text (Copy, Delete, Move etc.), Finding and Replacing Text, Spell Check, Autocorrect feature; Formatting: Character, Paragraph and Page formatting, adding Headers and Footers, setting up Multiple Columns.

7. **Spreadsheet Software**: Worksheet overview: Row, Column, Cells, Menus, creating, opening, saving, and printing worksheet; working with Ranges, working with Formulae and Functions (Statistical, Mathematical and String), number formatting.

8. **Presentation Software**: Basics features, selecting design templates, creating, saving and printing a simple presentation.

**References**:

5. Rajaraman, V.  : Fundamentals of Computers, PHI, New Delhi,
8. Norton, P.  : Complete guide to LINUX, Techmedia
Paper Title: COMPUTER PROGRAMMING Using C/C++

Paper Code: PGD-1002    Max. Marks: 80    Time: 3 Hrs.

Course Duration: 60 Lectures of one hour each.

Note:

i. The Question Paper will consist of Four Sections.
ii. Examiner will set total of **Nine** questions comprising **Two** questions from each Section and **One** compulsory question of short answer type covering whole syllabi.
iii. The students are required to attempt **One** question from each Section and the Compulsory question.
iv. All questions carry equal marks unless specified.

**SECTION - A**

**Problem Solving:**
Problem Identification, Analysis, Flow charts, Decision Tables, Pseudo code and algorithms, Program Coding, Program Testing and Execution.

**C Language Fundamentals:** Concept of variables and constants, structure of a C program, various operators, expression and their evaluation using rules of hierarchy, Assignment Statements, Control Structures, Sequencing, alteration and iteration.

**SECTION - B**

**Arrays:** Declaring arrays, initializing arrays, processing of arrays, passing arrays as arguments to functions Manipulating vectors and matrices, Pointers: Definition, Declaring pointers, accessing values via pointers, pointer arithmetic, pointer to strings, passing arguments using pointers, String functions, array of strings,

**SECTION - C**

**Structure and Unions:** Defining a structure type, declaring variables of structure type, initializing structures. Accessing Structure Elements, array of structures, nested structures, Unions; Declaring a Union, Accessing elements of a type union. Input/output files, User defined functions, Pre-Processors, Macros.

**SECTION – D**

**Object-Oriented Programming Language (C++ Language):** Features of OOPs: Data abstraction, Data encapsulation, Inheritance Polymorphism, Dynamic binding, Message Passing ; Tokens, expressions, data types, variables, operators, Control statements, Constructors and destructors, Objects, Classes, Simple Programs based on abovementioned concepts.

**References:**

1. Kanetkar, Yashavant : Let us C, BPB Publications, New Delhi, 8th
5. E. Balagurusamy : Object Oriented Programming with C++
Paper Title : COMPUTER BASED ACCOUNTING.

Paper Code : PGD-1003   Max. Marks : 80   Time : 3 Hrs.
Course Duration : 60 Lectures of one hour each.

Note:

i. The Question Paper will consist of Four Sections.

ii. Examiner will set total of **NINE** questions comprising **TWO** questions from each Section and **ONE** compulsory question of short answer type covering whole syllabi.

iii. The students are required to attempt ONE question from each Section and the Compulsory question.

iv. All questions carry equal marks unless specified.

**SECTION - A**

1. **Accounting**: Principles, concepts and conventions, double entry system of accounting, introduction of basic books of accounts of sole proprietary concern, control accounts for debtors and creditors, closing of books of accounts and preparation of trial balance.

2. **Final Accounts**: Trading, profit and loss accounts and balance sheet of sole proprietary concern with normal closing entries.

**SECTION - B**

3. **Introduction to Manufacturing Account**, final accounts of partnership firms, limited company.

4. **Introduction to Computerized Financial Accounting**, coding logic and codes required, master files, Transaction files, Introduction to documents used for data collection, processing of different files, outputs obtained.

**SECTION - C**

5. **Introduction to Computerized Inventory Control**, types of inventory and associated documents, Inventory reports-nature and types, Inventory Control : ABC and Ageing analysis, Methods of Stock validation : LIFO, FIFO, actual bases, Interfacing Inventory with Financial Accounting, Purchasing Sub-Systems, Sales Order processing.

6. **Introduction to Computerised Payroll & Invoicing Applications**, Exposure to : Structure, Processing and Reports, Interfacing these applications to financial Accounting.

**SECTION - D**

7. **Use of Accounting package Tally** : Introduction to Tally, Groups, Ledgers, Vouchers, Orders, Cost Centers and Categories. Stock. Reports in Tally
References:

Paper Title: Software Lab.

Paper Code: PGD-PR01  Max. Marks: 60  Time: 4 Hrs.

Objective: This course is to familiarize students with different O.S., Word Processing and UNIX.

**DOS:** Internal DOS commands such as DIR, COPY, TYPE, DEL, DATE, and External commands such as UNDELETE, DELTREE, XCOPY, MOVE, and SCANDISK.

**Windows:** GUI, Icons, Toolbar, Control panel, Explorer: Files and directory management under windows, Accessories, Network Neighborhood, System Tools, Recycle Bin, Installation of new software.

**UNIX:** Understanding Unix directory structure commands such as date, echo, cal, bc, pwd, passwd, file and directory commands such as ls, mkdir, cp, mv, rm, process management commands such as ps, kill, communication commands such as news, msg, wall, working with editor

**Word Processing Software:** Basics of Word Processing: creating, opening, saving, and printing document, using Menu Toolbars, editing Text (Copy, Delete, Move etc.), Finding and Replacing Text, Spell Check, Autocorrect feature; Formatting: Character, Paragraph and Page formatting, adding Headers and Footers, setting up Multiple Columns.

**Spreadsheet Software:** Row, Column, Cells, Menus, creating, opening, saving, and printing worksheet; working with Ranges, working with Formulae and Functions (Statistical, Mathematical and String), number formatting

**Presentation Software:** Basics features, selecting design templates, creating, saving and printing a simple presentation.

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Paper Title: Programming Lab in C & C++.

Paper Code: PGD-PR02  Max. Marks: 60  Time: 4 Hrs.

This laboratory course will be based on paper **PGD-1002** (Computer Programming and Problem Solving).
SEMESTER -II

Paper Title: DATABASE MANAGEMENT SYSTEM Using SQL

Course Duration: 60 Lectures

Note:

i. The Question Paper will consist of Four Sections.
ii. Examiner will set total of NINE questions comprising TWO questions from each Section and ONE compulsory question of short answer type covering whole syllabi.
iii. The students are required to attempt ONE question from each Section and the Compulsory question.
iv. All questions carry equal marks unless specified.

SECTION - A


SECTION - B


SECTION - C

5. Introduction to SQL*Plus: Introduction to SQL, Oracle Data types, Starting SQL *Plus, Querying database tables, Conditional retrieval of rows, Working with Null Values, Matching a pattern from a table, Ordering and Grouping the Result of a Query; ROLLUP Operation: Getting Sub Totals, CUBE Operation: Getting Cross Tabs, Command Summary of SQL *Plus Editor.


7. Data Manipulation and Control: Data Definition Language (DDL), Creating Tables, Inserting Values into a Table, Updating Column(s) of a Table, Deleting Row(s) From a Table, Dropping a Column, Introduction to VIEWs, Manipulating the Base table(s) through VIEWs, Rules of DML Statements on Join Views, Dropping a VIEW, Inline Views, Materialized Views.
SECTION - D


References:

1. Desai, B.C. : An Introduction to Database Systems, Galgotia Pub. New Delhi,
5. James T. Perry : Understanding ORACLE, BPB Publications
7. Rowski, Bob : Oracle Client server Computing, BPB publications
Paper Title: WEB BASED APPLICATIONS AND ELECTRONIC COMMERCE.

Course Duration: 60 Lectures of one hour each.

Note:
   i. The Question Paper will consist of Four Sections.
   ii. Examiner will set total of **NINE** questions comprising **TWO** questions from each Section and **ONE** compulsory question of short answer type covering whole syllabi.
   iii. The students are required to attempt ONE question from each Section and the Compulsory question.
   iv. All questions carry equal marks unless specified.

SECTION - A
Introduction to HTML/DHTML: Building blocks of HTML, lists, links, images, tables, frames, forms, Introduction to cascading style sheets (CSS).

SECTION - B
Fundamentals of Java: Java Vs. C++, Byte code, Java virtual machine, constants, variables, data types, operators, expressions, control structures, defining class, creating objects, accessing class members, Inheritance: Basics, member access, method overloading, using abstract classes, using Final to prevent overriding/Inheritance.

SECTION - C
String Handling, Arrays, Packages and Interfaces: Defining a package, understanding CLASSPATH, Importing packages, Introduction to Interfaces, defining and using interfaces, Exception Handling: Fundamentals, exception types, using Try and catch, Introduction to Applet Programming.

SECTION - D

References :
1. Naughton, Patrick & Schidt, Herbert : Java The Complete Reference.,TMH
2. Phillips : Using HTML, PHI,
3. Liang : An Introduction to Java Programming by PHI, DHTML, New Delhi.
Paper Title: DATA COMMUNICATIONS AND NETWORKS.

Paper Code : PGD-2003
Max. Marks : 80
Time : 3 Hrs.
Course Duration: 60 Lectures of one hour each.

Note:
   i. The Question Paper will consist of Four Sections.
   ii. Examiner will set total of **NINE** questions comprising **TWO** questions from each Section and **ONE** compulsory question of short answer type covering whole syllabi.
   iii. The students are required to attempt **ONE** question from each Section and the Compulsory question.
   iv. All questions carry equal marks unless specified.

**SECTION - A**

**Introduction to Computer networks and applications:** Network Structure and Architecture, Network Hardware and Software (protocol hierarchies, design issues for layers, interfaces and services: connection oriented and connection less), Network structure and architecture-point to point, multicast, broadcast, Classification of networks on the basis of Geographical Span (PAN, LAN, MAN and WAN), LAN topologies (Bus, Ring, Star, Mesh, Tree and Hybrid). Network Connecting Devices: Repeaters, Hubs, Bridges, Routers, Gateways and Switches, Network Reference models: OSI model, TCP/IP model. Comparison between OSI and TCP/IP.

**SECTION - B**

**Introduction to Data Communication:** Analog Signal, Digital Signal, Analog vs Digital Communication; Fourier analysis, Band Width Limitation, Data rate of a channel; Physical Layer: Transmission media: Guided (Twisted-pair, Coaxial and Optical fiber) and Unguided (Radio, Microwave and infrared), Switching: Circuit switching, Packet Switching, Message Switching, Telephone system, modems. Modulation techniques: AM, PM, FM; Multiplexing Techniques: definition and Types.

**SECTION – C**


**SECTION - D**

**The Network Layer:** Design Issues, Routing Algorithms (Shortest Path, Flooding, Flow Based, Distance Vector, Link State, Broadcast, Hierarchical Routing), Congestion Control Algorithms and their general principles (Leaky Bucket, Token Bucket); Internetworking: tunneling, Internet Routing, fragmentation.

**References :**
1. Tanenbaum, Andrew S. : "Computer Networks", PHI.
2. Behrouz A. Forouzan  "Data Communication & Networking", TMH
Paper Title: DBMS Lab.

Paper Code: PGD-PR03  Max. Marks: 60  Time: 4 Hrs.
This laboratory course will mainly comprise of Software development using ORACLE. Program design and development for some general purpose database applications (e.g. library, hospital, banking, university, hotel management etc.)

Paper Title: Web Programming Lab.

This laboratory course will be based on PGD-2002.

Paper Title: Project Work.

Paper Code: PGD-2004  Max. Marks: 100
Project on any database application using any database development tool is to be developed.