

**Scheme of Instruction & Syllabi**  
**of**  
**Diploma in Computer Science and Engineering**  
**(Three Year Diploma Course)**  
**III Year**

(Effective Session 2014-15)

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**HOD CSE**

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**INVERTIS UNIVERSITY**  
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**STUDY AND EVALUATION SCHEME**  
**Diploma in Computer Science and Engineering**  
**(Effective from session 2014-2015)**  
**YEAR III, SEMESTER V**

S. No.	Course Code	SUBJECT	PERIODS			EVALUATION SCHEME					TOTAL	Credit
						SESSIONAL EXAM.				E-SEM.		
			L	T	P	CT	TA	AT	TOTAL			
<b>THEORY</b>												
1	DCS501	DBMS	3	1	0	20	10	10	40	60	100	4
2	DCS502	JAVA	3	1	0	20	10	10	40	60	100	4
3	DCS503	Management Information System	3	1	0	20	10	10	40	60	100	4
4	DCS504	Computer Hardware and Maintenance	3	1	0	20	10	10	40	60	100	4
5	DCS505	Computer Graphics	3	1	0	20	10	10	40	60	100	4
<b>PRACTICAL/TRAINING/PROJECT</b>												
6	DCS551	DBMS Lab	0	0	4	-	-	-	50	50	100	2
7	DCS552	JAVA Lab	0	0	4	-	-	-	50	50	100	2
8	DCS554	Repaired and Maintenance Lab	0	0	4	-	-	-	50	50	100	2
9	DCS555	Computer Graphics Lab	0	0	4	-	-	-	50	50	100	2
10	GP501	Discipline & General Proficiency	-	-	-	-	-	-	50	-	50	1
		<b>TOTAL</b>	<b>15</b>	<b>5</b>	<b>16</b>	<b>100</b>	<b>50</b>	<b>50</b>	<b>450</b>	<b>500</b>	<b>950</b>	<b>29</b>

**L-Lecture, T- Tutorial , P- Practical , CT – Cumulative Test ,TA –Teacher Assessment , AT – Attendance , E-Sem – End Semester Marks**

**STUDY AND EVALUATION SCHEME**  
**Diploma in Computer Science and Engineering**  
**(Effective from session 2014-15)**  
**YEAR III, SEMESTER VI**

S. No.	Course Code	SUBJECT	PERIODS			EVALUATION SCHEME					TOTAL	Credit
						SESSIONAL EXAM.				E-SEM.		
			L	T	P	CT	TA	AT	TOTAL			
<b>THEORY</b>												
1	DCS601	Web Technology	3	1	0	20	10	10	40	60	100	4
2	DCS602	Software Engineering	3	1	0	20	10	10	40	60	100	4
3	DCS603	Computer Networks	3	1	0	20	10	10	40	60	100	4
4	DAS604	Environment and Ecology	2	0	0	10	05	05	20	30	50	2
5	DCS604	Introduction to Cloud Computing	3	1	0	20	10	10	40	60	100	4
<b>PRACTICAL/TRAINING/PROJECT</b>												
6	DCS651	Web Technology Lab	0	0	4	-	-	-	50	50	100	2
7	DCS652	Project Lab	0	0	6	-	-	-	100	150	250	6
8	DCS653	Industrial Training and Seminar	0	0	2	-	-	-	100	-	100	2
9	GP601	Discipline & General Proficiency	-	-	-	-	-	-	50	-	50	1
		<b>TOTAL</b>	<b>11</b>	<b>03</b>	<b>12</b>	<b>70</b>	<b>35</b>	<b>35</b>	<b>480</b>	<b>410</b>	<b>950</b>	<b>29</b>
<b>L-Lecture, T- Tutorial , P- Practical , CT – Cumulative Test ,TA –Teacher Assessment , AT – Attendance , E-Sem – End Semester Marks</b>												

## DBMS (DCS501)

<b>L</b>	<b>T</b>	<b>P</b>
<b>3</b>	<b>1</b>	<b>-</b>

### Unit-1

#### Basic Concepts of DBMS

Introduction to Database Management System, Data Base Vs file oriented approach, Basic DBMS terminology.

### Unit-2

#### DBMC Architecture

Data independence, General Architecture of a Data Base Management Software, Components of DBMS, Advantages and Disadvantages of DBMS.

### Unit-3

#### Data Modeling

Introduction to Data Models, Entities, Attributes, Introduction to entity sets, relationships sets and Attributes.

### Unit-4

#### Entities and Relationships

KEYS in entity & relationship sets: (a) super key, (b) candidate key, (c) primary key, (d) unique key, E-R Diagrams, Database Security & Integrity.

### Unit-5

#### Structured Query Language

Elementary ideas of Structured Query Language – SQL Commands –SQL Data Types, Basic Queries in SQL- Data Definition Language (DDL), Creating Tables, Inserting Values into a Table, Updating Column(s) of a Table, Deleting Row(s) From a Table, Dropping Columns.

#### Reference Books:

1. Database Management Systems by Henry F. Korth .
2. Fundamentals of Database Systems by Shamkant B. Navathe.

## JAVA (DCS502)

L T P  
3 1 -

### Unit-1

**The Java Language:** History and evolution of Java, Java's Lineage. Object Orientation concepts; Class, Object and its significance. Environment variable. Data Types, Variables and Array: Strongly typed Language, Primitive type, Non Primitive type, Scope & lifetime of the variables, Type Conversion and casting, Automatic Type promotions, Control Statements: Selection Statement, Iteration Statement.

**Introducing classes:** Class Fundamentals, Creating and Operating Objects, Constructor & initialization code block, Access Control, Modifiers, methods, Abstract Class & Interfaces, Defining Methods, Argument Passing Mechanism, Method Overloading.

### Unit-2

**Inheritance:** Use and Benefits of Inheritance in OOP, Types of Inheritance in Java, Inheriting Data Members and Methods. Overloading concept & Overriding Super Class Methods.

**Package:** Organizing Classes and Interfaces in Packages. Package as Access Protection Defining Package CLASSPATH Setting for Packages.

### Unit-3

**Exception Handling:** The Idea behind Exception ,Exceptions & Errors Types of Exception, Control Flow In Exceptions, Use of try, catch, finally, throw, throws in Exception Handling, In-built and User Defined Exceptions, Checked and Un-Checked Exceptions,

### Unit-4

**Thread :** Understanding Threads, Needs of Multi-Threaded Programming, Thread Life-Cycle, Thread Priorities, Synchronizing Threads, Inter Communication of Threads.

#### **The Java Library:**

**Array & String: Defining** an Array, Initializing & Accessing Array, Multi-Dimensional Array, and Operation on String, Mutable & Immutable String.

### Unit-5

**Database Programming using JDBC:** Introduction to JDBC, JDBC Drivers & Architecture.

#### **Text Book:**

1. Herbert Schildt, "The Complete Reference: Java" Seventh Edition, TMH.

#### **References:**

1. Herbert Schildt " Java Programming Cook Book" McGraw Hill.
2. Core Java™ 2 Volume I - Fundamentals, Seventh Edition Prentice Hall PTR
3. Core Java™ 2 Volume II - Fundamentals, Seventh Edition Prentice Hall PTR

## **Management Information System (DCS503)**

**L T P**  
**3 1 -**

### **Unit-1**

Introduction to Information system, Types of Information system, System Vs MIS, What is MIS, Importance and Need of MIS, Network and Internet, Types of information system TPS,DSS,MIS.Assumptions & limitations of each system.

### **Unit-2**

Structure of MIS, MIS vs Data Processing, Knowledge requirement of MIS, Information flow in MIS, MIS and Information Resource Management, Service Management, Availability Management.

### **Unit-3**

Information system in Business, Problem with MIS, Causes and solution, Problem Management, The Planning Process, Controlling process in an organization, Database Backup & Storage, Archive & Retrieve, Disaster Recovery, Database & Application Protection.

### **Unit-4**

Internet , Intranet, Extranet, Computer and internet Security, Access Management. Intrusion Detection, Security Information Management, Identity management, Release management.

### **Unit-5**

Inputs and outputs, Processors, Controls, Feedback,Environment, Boundaries and Interface, Examples of System, System Development Life Cycle, Problems Identification, Types of Feasibility - Operational,Technical, Economical, System Analysis, System Design,Testing, Implementation.

### **Text Books:-**

1. Goel Ritendra, *Computer Application in Management*, New Age International Publishers, NewDelhi.
2. Chowdhury G.G., *Text Retrieval Systems in information Management*, New Age International Publishers, New Delhi.
3. S.Shahjahan., *Management Information System*, New Age International Publishers, NewDelhi.
4. O Brian, "Introduction to Information System", MCGRAW HILL

## **COMPUTER HARDWARE & MAINTENANCE (DCS504)**

**L T P**  
**3 1 -**

### **Unit-1**

Component and peripheral devices, Connected with computer. Mother Board : BUS, Motherboard components, Battery, Connections on the Mother Board, Keeping CPU cool, Mother board trouble shooting.

### **Unit-2**

Key Board: Switches, Keyboard organization, Key board type trouble shooting. Mouse: Mouse type, Connecting Mouse, Trouble shooting Mouse.

HDD : Magnetic recording, Data Encoding Method, HDD feature, Head barking, HDD trouble shooting.

### **Unit-3**

Printers : Image formation method, Printing mechanism, DMP, Ink Jet, Laser Printer. How printer works and Troubleshooting.

### **Unit-4**

Network : Setting up N/W, Trouble Shooting N/W, Make your own computer.

### **Unit-5**

Software Installation, Windows and other S/w, Boot Process, How to use Pen deive and other devices. Power Supply: Operating characteristics, Types and maintenance.

### **Reference Books:**

## COMPUTER GRAPHICS (DCS-505)

**L T P**  
**3 1 -**

### Unit-1

**Introduction and Line Generation:** Graphic Displays- Random scan displays, Raster scan displays, Frame buffer and video controller, Points and lines, Line drawing algorithms, Circle generating algorithms, Mid-point circle generating algorithm.

### Unit-2

**Transformations:** Basic transformation, Matrix representations and homogenous coordinates, Composite transformations, Reflections and shearing.

**Windowing and Clipping:** Viewing pipeline, Viewing transformations, 2-D Clipping algorithms- Line clipping algorithms such as Cohen Sutherland line clipping algorithm, Polygon clipping – Sutherland Hodgeman polygon clipping.

### Unit-3

**Three Dimensional:** 3-D geometric primitives, 3-D Object representation, 3-D Transformation, 3-D viewing, projections, 3-D Clipping.

### Unit-4

**Curves and Surfaces:** Quadric surfaces, Spheres, Ellipsoid, Blobby objects, introductory concepts of Spline, B-spline and Bezier curves and surfaces.

### Unit-5

**Hidden Lines and Surfaces:** Back Face Detection algorithm, Depth buffer method, A- buffer method, Scan line method, basic illumination models – Ambient light, Diffuse reflection, Specular reflection and Phong model, Combined approach, Warn model, Intensity Attenuation, Color consideration, Transparency and Shadows.

### Text Books:

1. Donald Hearn and M Pauline Baker, “Computer Graphics C Version”, Pearson Education
2. Amrendra N Sinha and Arun D Udai,” Computer Graphics”, TMH

### References:

3. Donald Hearn and M Pauline Baker, “Computer Graphics with OpenGL”, Pearson Education
4. Steven Harrington, “Computer Graphics: A Programming Approach”, MH
5. Rogers, “Procedural Elements of Computer Graphics”, McGraw Hill



**DBMS Lab (DCS551)**

**L T P**  
**- - 4**

1. Execute query to create table.
2. Execute query based on DDL and DML language

**JAVA LAB (DCS552)**

**L T P**  
**- - 4**

1. WAP to print your name on the console.
2. WAP to create a calculator functions (addition, multiplication, division and subtraction of two numbers).
3. WAP to print the matrix.
4. WAP to print the addition of two matrixes.
5. WAP to print the multiplication of two matrixes.
6. WAP to overload the constructor.(**Compile time polymorphism**)
7. WAP to overload the method.(**Compile time polymorphism**)
8. Demonstrate the calling of constructor.
9. WAP to use command line arguments.
10. WAP to show the use of *this* keyword of java.

**COMPUTER HARDWARE & MAINTENANCE (DCS554)**

**L T P**  
**- - 4**

1. Study of devices on motherboard
2. Study of Key board & Keyboard decoder
3. Study of Video Adopter & display controllers
4. Study of Floppy Drive, CD Drive and Hard Disk.
5. Study of Multifunction Input/Output controllers

## COMPUTER GRAPHICS (DCS555)

**L T P**  
**- - 4**

1. Write a program for line drawing by using DDA Method.
2. Write a program for line drawing by using Bresenham's Method.
3. Write a program for the moving of two ball in the same direction.
4. Write a program for the falling of character of text from top to bottom.
5. Write a program for the moving of two balls coming towards each other and after collision they return back towards their previous direction
6. Write a program moving of text from left to right.
7. Write a program for moving a circle from left to right in each move the color of circle is should be changed.
8. Write a program for the rotation of triangle.
9. Write a program for the scaling of triangle.
10. Write a program to draw a triangle inside the another triangle.
11. Write a program for translation of triangle.
12. Write a program to rotate a line about one end point of the line.

## Web Technology (DCS601)

**L T P**  
**3 1 -**

### Unit-1

#### Introduction to Web Based System Development:

History of web, Growth of the Web, Protocols, governing the web, Introduction to Cyber Laws in India,

### Unit-2

**HTML:** HTML Formatting Tags, Links, List, Tables, Frames, Forms, Comments in HTML.

### Unit-3

**Web Scripting:** DHTML, JavaScript Introduction, documents, and documents, forms, Statements, Functions, Object in JavaScript, Events and Event Handling Arrays, FORMS, Buttons, Checkboxes, Text fields and Text areas.

### Unit-4

**XML:** Introduction, Displaying an XML document, Data Interchange with an XML document, document type definitions.

### Unit-5

Designing web pages of your polytechnic etc.

### References:

1. Beginning Visual C# 2008, John Wiley, Wrox, May 2008.
2. Microsoft .Net for Programmers, Fergal Grimes, SPI, 2002.
3. Programming with C#, E. Balagurusamy, TMH, 1st Edition.
4. Collaborative Web Development, Burdman, Addison Wesley, 1st Edition, 1999.
5. Developing E-Commerce Sites, Sharma, Sharma, Addison Wesley, 1st Edition.
6. Web Technologies Part II, Ivan Bayross, BPB Publications, 2008.

## Software Engineering (DCS602)

**L T P**  
**3 1 -**

### Unit-1

**Introduction to Software Engineering:** Software Components, Software Characteristics, Software Engineering Processes, Software Quality Attributes. Software Development Life Cycle (SDLC) Models: Water Fall Model, Prototype Model, Spiral Model.

### Unit-2

#### **Software Requirement Specifications (SRS)**

Requirement Engineering Process: Elicitation, Analysis, Documentation, Review. Feasibility Study, Data Flow Diagrams, SRS Document.

### Unit-3

**Software Design:** Basic Concept of Software Design, Modularization, Structure Charts, Pseudo Codes, Flow Charts, Coupling and Cohesion Measures, LOC and Function Point (FP) Based Measures.

### Unit-4

**Software Testing:** Testing Objectives, Unit Testing, Integration Testing, Acceptance Testing, Regression Testing, Top-Down and Bottom-Up Testing. Introduction to Structural Testing (White Box Testing), Functional Testing (Black Box Testing), Alpha and Beta Testing.

### Unit-5

**Software Maintenance:** Need for Maintenance, Categories of Maintenance: Preventive, Corrective and Perfective Maintenance. Software Configuration Management Activities, Change Control Process. Introduction to Software Risk Analysis and Management.

### References:

1. R. S. Pressman, Software Engineering: A Practitioners Approach, McGraw Hill.
2. Rajib Mall, Fundamentals of Software Engineering, PHI Publication.
3. K. K. Aggarwal and Yogesh Singh, Software Engineering, New Age International Publishers.
4. Pankaj Jalote, Software Engineering, Willey

## **COMPUTER NETWORKS (DCS603)**

**L T P**  
**3 1 -**

### **Unit-1**

Introduction Concepts: Goals and Applications of Networks, Advantages of computer network. Network Topologies, Types of Transmission Media, Switching methods.

### **Unit-2**

Introduction to OSI reference model, Types of Error, Detection and Correction, Sliding Window protocols.

### **Unit-3**

Connecting devices: Repeater, hub, bridge. Routing, IP address, IPv6. Introduction to Congestion control

### **Unit-4**

Introduction to Data compression techniques, Cryptography.

### **Unit-5**

File Transfer, Access and Management, Electronic mail, HTTP, WWW, Introduction to Firewalls.

### **References :**

1. Forouzen, "Data Communication and Networking", TMH
2. A.S. Tanenbaum, Computer Networks, Pearson Education
3. W. Stallings, Data and Computer Communication, Macmillan Press
4. Anuranjan Misra, "Computer Networks", Acme Learning

## **ENVIRONMENT AND ECOLOGY (DAS604)**

**L T P**  
**2 - -**

### **Unit-1**

Introduction to Environmental Science - Definition and scope and need for public awareness  
Ecosystems ,Concept, structure and functions, restoration of damaged ecosystems  
Biodiversity – Definition, description at national and global level, threats and conservation

### **Unit-2**

Natural Resources - Renewable and non-renewable and their equitable use for sustainability,  
Material cycles – carbon, nitrogen and sulphur cycle. Conventional and Non-conventional  
Energy Sources – fossil fuel-based, hydroelectric, wind, -nuclear and solar energy, biomass,  
biodiesel, hydrogen as an alternative fuel.

### **Unit-3**

Transportation and industrial growth Social Issues Related to Environment–Sustainable  
development, reset lement and rehabilitation Environmental ethics.

### **Unit-4**

Environmental Changes and Human Health Environmental Pollution–Definition, causes and  
effects, control measures for water, air, soil, noise, thermal pollution,

### **Textbook:**

Environmental Studies, J Krishna wamy , R J Ranjit Daniels, Wiley India.

### **Reference Books:**

- 1.Environmental Science, Bernard J. Nebel, Richard T. Right, 9780132854467, Prentice Hall Professional 1993.
- 2.Environment and Ecology, R K Khandal, 978-81-265-4277-2, Wiley India.
- 3.Environmental Science, 8<sup>th</sup> Ed ISV, Botkin and Keller, 9788126534142,Wiley India.
- 4.Environmental Studies, R Rajagopalan, 978-0195673937, Oxford University Press
- 5.Textbook of Environmental Science and Technology, M.Anjireddy, BS Publications

## **Introduction to Cloud Computing (DCS604)**

**L T P**  
**3 1 -**

### **Unit-1**

Define cloud computing, Components of a computing cloud, Differentiating types of cloud: Public, Private, Hybrid,

### **Unit-2**

Cloud Computing Models: Software as a service: SaaS, Platform as a service: PasS, Hardware as a service: HasS, Infrastructure as a service: IaaS.

### **Unit-3**

Connecting devices: Repeater, hub, bridge. Routing, gateways, Network Types, IP Classes and subnets, CIDR

### **Unit-4**

Introduction to Cloud security, User Authentication, Firewall and Cloud database

### **Unit-5**

Amazon, Google, IBM Cloud, Microsoft and others adopting the cloud, Simple Storage Service-S3, Overview of buckets and Object, Amazon elastic block storage EBS.

### **Text Books:**

- Cloud Computing: Principles and Paradigms, Editors: Raj Kumar Buyya, James Bromberg, Andrej M Goscinski, Wiley, 2011.
- Visible Ops private Cloud: From Virtualization to private Cloud in 4 Practical's steps, Andi Mann, Kurt Milne, Jeanne Mcrain IT Process Institute, In: first edition (April 8, 2011)

### **Reference Book:**

- Cloud Computing Explained: Implementation Handbook for Enterprises, John Rotan, Recursive Press (November 2, 2009)

## Web Technology Lab (DCS651)

<b>L</b>	<b>T</b>	<b>P</b>
-	-	<b>4</b>

1. Create a HTML web page for shopping use various HTML tags.
2. Create a student xml document with dtd.
3. Create a login page in HTML and validate with JavaScript.
4. Designing web page of your college.
5. Design a web page of yours.