



**3-Year Diploma Engineering Curriculum and
Syllabus for Computer Science & Engineering (CSE)**

Sixth Semester

Course Code	Course Title	Contact Hrs. / Week			Credit
		L	T	P	
Theory					
TIUSD-601	Career Advancement Skill Development-VI	2	1	0	3
TIUDCS-602	System Programming	2	1	0	3
TIUDCS-603	Software Engineering	2	1	0	3
TIUDCS-604	Computer Graphics	2	1	0	3
TIUDCS-605	Operations Research	2	0	0	2
Practical					
TIUDCS-691	Advanced Database Management System Lab	0	0	3	2
TIUDCS-692	PC Maintenance Lab	0	0	3	2
TIUDCS-693	Internet Technologies Lab	0	0	3	2
TIUDCS-694	Computer Graphics Lab	0	0	3	2
TIUDCS-695	Advanced Java Programming Lab	0	0	3	2
TIUDCS-696	CST Project work	0	0	2	1
TIUDCS-697	Seminar on CST Project Work	0	0	2	1
TIUDCS-698	General Viva Voce	0	0	2	1
Sessional					
TIUCSL-681	Entrepreneurship Skill Development-VI	0	0	3	2
Total Credits					29



SYLLABUS

System Programming

TIUDCS-602

: 2-1-0

Credit: 3

Module 1 Language Processors

Introduction — Evolution of the components of a programming system: Assemblers, loaders, macros, compilers, formal systems — Language processing activities — Fundamentals of language processing & specification.

Module 2 Machine Structure, Machine Language & Assembly Language

General Machine Structure — Machine Language: Long way, no looping, address modification using instructions as data, address modification using index registers — Assembly Language Programs (using Literals also).

Module 3 Assemblers

Elements of Assembly Language Programming — General Design Procedure of System Software — Design Specification of an Assembler: Synthesis & Analysis phase — Pass Structure of an Assembler: Two-pass translation — Design of a Two-pass assembler: data structures & algorithms.

Module 4 Macro Language & Macro Processor

Macro Instructions — Features of a Macro Facility: Macro definition & call – Macro expansion – Nested macro calls – Advanced macro facilities: conditional macro expansion, time loops expansion, semantic expansion — Design of a Two-pass Macro Processor: data structures & algorithms.

Module 5 Loaders & Linkers

Basic Loader Functions — Absolute Loader: Design — Bootstrap Loader: Overview — Machine-Dependent Loader features: Relocation, program linking, tables and logic for a linking loader — Machine-Independent Loader features: Automatic library search, loader options, overlay programs — Direct-Linking Loader: Concepts & Algorithm — Relocation & Linking Concepts — Concepts of Overlays.

Approved By:

External Expert

VC

Registrar

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Module 6 Compilers & Interpreters

Aspects of Compilation — Memory Allocation — Basic Compiler Functions: Grammars, Lexical analysis, Syntactic analysis, Code generation — Compiler Construction: seven phases — Compilation of Expressions — Compilation of Control Structure — Code Optimization: Machine-independent and Machine-dependent — Interpreters: Use of interpreters, Overview of interpretation.

Reference books

1. Systems Programming/Srimanta Pal/Oxford University Press
2. Systems Programming / John J. Donovan / Tata McGraw Hill
3. Systems Programming and Operating Systems / D.M. Dhamdhare / Tata McGraw Hill

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Software Engineering

TIUDCS-603

: 2-1-0

Credit: 3

Software Engineering and Life Cycle

The evolving role of Software –software engineering, Phases in Software Engineering. Software Crisis/ challenges. Software Life Cycle Model, Spiral Model, Prototype Model.

Software Requirement Analysis

What is Software Requirement ? Feasibility study, Requirement Analysis, Software Requirement Specification (SRS).

Software Design

Basics of Software Design; Data Design; Architectural Design Evolution of software design; Fundamental Design concepts-Abstraction, Refinement, Information hiding, Structure, Modularity, Software architecture, Data structure, Concurrency, Verification; Effective Modular Design, Basic concepts of Data Flow-Oriented Design & Object-Oriented Design.

Software planning & scheduling

Project planning, scheduling & staffing

Software Cost Estimation

Basics of Software Cost estimation; Software Cost Estimation Techniques –Expert Judgment; & COCOMO.

Software Testing

Testing Objectives; Test plan; Model of software testing, & Testing Strategies

Software Quality Assurance, & maintenance

Software quality concept; Software Quality Assurance (SQA); SQA activities; Basics of Software maintenance, Enhancing maintainability during development;

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Reference books

1. Software Engineering, A Practitioner's Approach / Roger S. Pressman / McGraw-Hill
2. Software Engineering Concepts / Richard E. Fairly / Tata McGraw Hill
3. Software Engineering Principles and Practice / Hans Van Vliet / Wiley
4. An Integrated Approach to Software Engineering / Pankaj Jalote / Narosa Pub. House
5. Fundamental of Software Engineering / Rajib Mall / Prentice Hall of India.

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Computer Graphics

TIUDCS-604

: 2-1-0

Credit: 3

Introduction to Graphic Presentation of Picture

Definition of Computer Graphics –Different Steps to Present a Picture –Picture Files –
Display Files –Pixel, Raster graphics, Vector graphics

Overview of Graphics System

Cathode Ray Tubes -Raster Scan Displays -Random Scan Displays -Flat Panel Displays.

Output Primitives

Points & lines –Line drawing algorithm –Bresenham's line drawing algorithm –Circle
generating algorithm –Properties of circle –Midpoint circle algorithm –Ellipse generating
algorithm –Properties of Ellipse –Mid point ellipse algorithm.

Geometric Transformations

Basic Transformations –Translation –Rotation –Scaling –Homogeneous Co-ordinates –Other
Transformations –Reflections in Different Lines, Axis & Points –Shear.

Viewing Projections

Parallel Projections –Perspective Projections –Windowing –Clipping -Normalized View
Volume –View Port Clipping, hidden line and surface removal

Computer Animations

Design of animation sequence –General Computer Animation Function –Raster Animation –
Computer Animation Language –Key Frame System –Morphing.

Reference books

1. Computer Graphics / Hearn & Baker
2. Computer Graphics / Harrington
3. Computer Graphics / Rankin



Operations Research

TIUDCS-605

L-T-P: 2-0-0

Credit: 2

Module 1 Introduction

Origin and Development of O R - Meaning of O R, Scope of O R, Characteristics of O R, Uses and limitation of O R.

Module 2 Linear Programming

Introduction, Formulation of the L.P.P., Graphical solution method (only introduction), Canonical & Standard form of L.P.P.

Linear Programming Method: Basic solution, Degenerate solution, Basic Feasible solution, Associated Cost vector, Improved Basic Feasible solution, Optimum Basic Feasible solution. (Definitions only) — Simplex method, Artificial Variable technique up to optimality, (Big M method).

Duality in Linear Programming: Concept of duality, Primal problem, Dual problem (Definitions only), Writing Dual problem from Primal problem and vice versa.

Dual Simplex Method

Revised Simplex Method: Introduction, standard form of Revised Simplex method, computational procedure, Revised Simplex method vs. Simplex method.

Module 3 Transportation Problem

Mathematical formulation, Initial basic feasible solution (North–West corner rule), row minima, column minima, matrix minima method, Vogel's Approximation method (VAM).

Optimality test (U-V method), Unbalanced T.P (Definition only).

Module 4 Assignment Problem

Mathematical formulation; Optimality test; Unbalanced A.P. (Definition only)

Module 5 Project management

Introduction to network analysis – Definitions of project, job, events, networks – Construction of the arrow diagram (network) – **Critical Path Method**: Determination of critical paths & calculation of floats – **Project Evaluation & Review Technique** – Resource Allocation Technique: Project scheduling with constraints resources.

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Reference books

1. Operation Research / Kanti Swarup & P.K. Gupta / S. Chand
2. Operation Research / R. Paneerselvan / PHI
3. Operation Research, An Introduction / Hamoya Saha / PHI
4. Operation Research / P.K. Gupta & D.S. Hira
5. Operation Research / Mustafi
6. Theory & Problems on Quantitative Techniques. Management Information System & Data Processing / S.K. Chakraborty

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Advanced Database Management System Lab
TIUDCS-691

L-T-P: 0-0-3

Credit: 2

Module 1 Working with Procedure

Introduction to procedure.
Creating stored procedures using SQL*Plus, Procedure Builder.
Concept of parameters.
Methods for passing parameters.
Server-side procedure
Client-side procedure.

Module 2 Working with Functions

Introduction to function and stored function.
Creation of functions and stored functions.
Calling a function.
Comparing procedures and functions.
Benefits of stored procedure and functions.

Module 3 Working with Database Triggers

Concept of triggers.
Designing triggers.
Components of a trigger.
Creation of triggers.
Firing sequence of database triggers
Implementation of triggers.
Benefits of database triggers.

Module 4 Working with Forms (Advanced)

Introduction of Multiple form application.
Trigger and its components.
Defining triggers.
Using and debugging of triggers.
Query triggers.
Form triggers.
Validation using triggers.
Navigation triggers.
Transaction processing and its characteristics.

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Module 5 Working with Report (Advanced)

Creating report using wizard.
Creating queries and groups
Creating and using report parameters
Triggers in report

Reference books

ORACLE DEVELOPER 2000 / Ivan Bayross.

PC Maintenance Lab
TIUDCS-692

L-T-P: 0-0-3

Credit: 2

- Job 1** To locate and identify the most common components (parts) in a modern PC (PC, PC-AT to Pentium).
- Job 2** To install and configure FDD and HDD.
- Job 3** To be familiar with and to be able to troubleshoot motherboard.
- Job 4** To be familiar with SMPS.
- Job 5** To install video card, sound card, etc.
- Job 6** To install DMP, inkjet and laser printing; to undertake preventive maintenance and to troubleshoot DMP.
- Job 7** To disassemble and reassemble a total PC system.
- Job 8** To practice anti-virus software installation and virus removal.
- Job 9** To install Windows 95/98/NT, UNIX, Linux.

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Internet Technologies Lab
TIUDCS-693

L-T-P: 0-0-3

Credit: 2

Module 1 Internet Basics

Familiarity with internet browser (MS-Explorer, Netscape)
Working with browser window tool bar, menu bar
Browsing a given web site address, Searching a particular topic through search engines.
Familiarity with E-Mail, sending viewing printing e-mail message.
Use of mailbox (inbox, outbox) in outlook express. Use of attachment facility available in e-mailing.

Module 2 Web Server

Familiarity with web server – IIS, PWS etc. – Configuring web server – Creating virtual directory.

Module 3 Internet Services

Concept and familiarity of various internet services (www, http, ftp, chat etc).

Module 4 HTML / Applet

Creating simple HTML file, place it in web server and access it from client Browser.
Creating a HTML form incorporating GUI components (Command button, text box, radio button, check box, combo box etc).
Creating a simple applet and embedding it in HTML file.
Writing applet to incorporate GUI components (Command button, text box, radio button, check box, combo box etc).
Writing applet to incorporate events.

Module 5 Active Server Pages

Introduction to Active Server Pages.
Elements of ASP (Scripts, Objects, Components).
Making your first Active Server Page.
Introducing VB Script: Variables, Mathematical operators, functions — Logical operators, Loop, Conditional statements — String Function, Date and Time Function, Subroutine — Formatting Display, Adding Components to scripts — Handling Event driven programming
Working with ASP: Using HTTP — Writing simple ASP files — Controlling Execution

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of server side scripts — Problems on HTML forms to get user information and retrieving HTML form contents — Working with query string.

ASP Session: Introduction to session — Familiarity and working with session objects (simple problems) — Using session events — Familiarity and working with cookies.

ASP Application: Introduction to ASP Application features of ASP Application — Creating a Simple ASP Application, Setting the properties of ASP Application — Using Application objects and Application events.

ASP Components: Using Components in ASP (Simple problems) — Creating Components with page scope, session scope, Application scope — Working with browser capability component, file access components , counter components etc.(Simple problems)

Database management through ASP: Brief overview of ActiveX Data Objects — Using ADO to access a database from ASP (Simple Problem) — Opening, closing database connection — Executing SQL statements.

Computer Graphics Lab **TIUDCS-694**

: 0-0-3

Credit: 2

- Job 1** To practice point plotting, line and regular figure algorithms.
- Job 2** Raster scan line and circle drawing algorithm.
- Job 3** To practice clipping and windowing algorithms for points, lines and polygons.
- Job 4** To practice 2-D / 3-D transformations.
- Job 5** Simple fractal representation.
- Job 6** To practice filling algorithms.
- Job 7** To create animation using Flash.

Reference books

1. Computer Graphics / Hearn & Baker
2. Computer Graphics / Harrington
3. Computer Graphics / Rankin

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Advanced Java Programming Lab
TIUDCS-695

: 0-0-3

Credit: 2

Client & server side programming.

Enterprise architecture styles, Servlet, JSP: Introduction, Architecture/Life cycle, Different types of JSP architectures and relative comparison. JSP tags, Directives, Scripting elements, Actions, Scriptlets.

EJB

Introduction, Applications, Drawbacks, Different types of enterprise beans, Services provided by EJB container.
JNDI: Introduction and applications, Comparison between LDAP and JNDI

JDO (Java Data Objects)

Introduction, Integration of EJB and JDO.

JDBC

Introduction, Database driver, Different approaches to connect an application to a database server, Establishing a database connection and executing SQL statements, JDBC prepared statements, JDBC data sources.

References

1. "Professional JAVA Server Programming", Allamaraju and Buest ,SPD Publication
2. "Beginning J2EE 1.4" Ivor Horton, SPD Publication.
3. "Advanced Programming for JAVA 2 Platform" Austin and Pawlan, Pearson
4. Internet & Java Programming by Krishnamoorthy & S. Prabhu(New Age Publication)

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