MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION, MUMBAI

TEACHING AND EXAMINATION SCHEME FOR POST S.S.C. DIPLOMA COURSES

COURSE NAME : COMPUTER ENGINEERING GROUP

COURSE CODE : CO

DURATION OF COURSE : 6 SEMESTERS For CO and 8 SEMESTERS for CD **WITH EFFECT FROM 2012-13**

SEMESTER : SIXTH **DURATION : 16 WEEKS**

PATTERN : FULL TIME - SEMESTER **SCHEME : G**

SR. NO	SUBJECT TITLE	Abbreviation	SUB CODE	TEACHING SCHEME			EXAMINATION SCHEME									SW (17600)
							PAPER HRS.	TH (1)		PR (4)		OR (8)		TW (9)		
				TH	TU	PR		Max	Min	Max	Min	Max	Min	Max	Min	
1	Management $	MAN	17601	03	--	--	1&½	50#*	20	--	--	--	--	--	--	
2	Software Testing	STE	17624	03	--	02	03	100	40	50#	20	--	--	25@	10	
3	Advanced Java Programming β	AJP	17625	03	--	04	02	100#*	40	50#	20	--	--	50@	20	
4	**Elective (Any One)**															
	Embedded System	ESY	17626	03	--	02	03	100	40	--	--	--	--	25@	10	50
	Advanced Microprocessor	AMI	17627	03	--	02	03	100	40	--	--	--	--	25@	10	
5	Linux Programming	LPR	17816	01	--	04	--	--	--	50#	20	--	--	25@	10	
6	Industrial Project β	IPR	17817	--	--	04	--	--	--	--	--	50#	20	50@	20	
7	Entrepreneurship Development β	EDE	17818	01	01	--	--	--	--	--	--	--	--	25@	10	
			TOTAL	**14**	**01**	**16**	**--**	**350**	**--**	**150**	**--**	**50**	**--**	**200**	**--**	**50**

Student Contact Hours Per Week: **31 Hrs.**

THEORY AND PRACTICAL PERIODS OF 60 MINUTES EACH.

Total Marks **: 800**

@- Internal Assessment, # - External Assessment, [ ] No Theory Examination, $ - Common to all branches, #* Online Examination,
β - Common to CM/IF/CW/CD

Abbreviations: TH-Theory, TU- Tutorial, PR-Practical, OR-Oral, TW- Term Work, SW- Sessional Work.

- Conduct two class tests each of 25 marks for each theory subject. Sum of the total test marks of all subjects is to be converted out of 50 marks as sessional work (SW).
- Progressive evaluation is to be done by subject teacher as per the prevailing curriculum implementation and assessment norms.
- Code number for TH, PR, OR and TW are to be given as suffix 1, 4, 8, 9 respectively to the subject code.

MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION, MUMBAI

TEACHING AND EXAMINATION SCHEME FOR POST S.S.C. DIPLOMA COURSES

COURSE NAME : DIPLOMA IN COMPUTER TECHNOLOGY

COURSE CODE : CM

DURATION OF COURSE : 6 SEMESTERS **WITH EFFECT FROM 2012-13**

SEMESTER : SIXTH **DURATION : 16 WEEKS**

PATTERN : FULL TIME - SEMESTER **SCHEME : G**

SR. NO.	SUBJECT TITLE	Abbreviation	SUB CODE	TEACHING SCHEME			EXAMINATION SCHEME									SW (17600)
							PAPER HRS.	TH (1)		PR (4)		OR (8)		TW (9)		
				TH	TU	PR		Max	Min	Max	Min	Max	Min	Max	Min	
1	Management $	MAN	17601	03	--	--	1&½	50#*	20	--	--	--	--	--	--	
2	Software Testing	STE	17624	03	--	02	03	100	40	50#	20	--	--	25@	10	
3	Advanced Java Programming β	AJP	17625	03	--	04	02	100#*	40	50#	20	--	--	50@	20	
4	**Elective (Any One)**															
	Object Oriented Modeling and Design	OOM	17630	03	--	02	03	100	40	--	--	--	--	25@	10	50
	Advanced Database Management	ADM	17631	03	--	02	03	100	40	--	--	--	--	25@	10	
5	Linux Programming	LPR	17816	01	--	04	--	--	--	50#	20	--	--	25@	10	
6	Industrial Project β	IPR	17817	--	--	04	--	--	--	--	--	50#	20	50@	20	
7	Entrepreneurship Development β	EDE	17818	01	01	--	--	--	--	--	--	--	--	25@	10	
		TOTAL		**14**	**01**	**16**	**--**	**350**	**--**	**150**	**--**	**50**	**--**	**200**	**--**	**50**

Student Contact Hours Per Week: **31 Hrs.**

THEORY AND PRACTICAL PERIODS OF 60 MINUTES EACH.

Total Marks **: 800**

@- Internal Assessment, # - External Assessment, [ ] No Theory Examination, $ - Common to all branches, #* Online Examination,
β - Common to CO/IF/CW/CD

Abbreviations: TH-Theory, TU- Tutorial, PR-Practical, OR-Oral, TW- Term Work, SW- Sessional Work.

- Conduct two class tests each of 25 marks for each theory subject. Sum of the total test marks of all subjects is to be converted out of 50 marks as sessional work (SW).
- Progressive evaluation is to be done by subject teacher as per the prevailing curriculum implementation and assessment norms.
- Code number for TH, PR, OR and TW are to be given as suffix 1, 4, 8, 9 respectively to the subject code.

Course Name : All Branches of Diploma in Engineering / Technology

Course Code : EJ/EN/ET/EX/EV/IC/IE/IS/MU/DE/ME/PG/PT/AE/CE/CS/CR/CO/CM/IF/ CW/EE/EP/EU/CH/CT/PS/CD/ED/EI/CV/FE/IU/MH/MI/TX/TC/FG

Semester : Sixth for EJ/EN/ET/EX/EV/IC/IE/IS/MU/DE/ME/PG/PT/AE/CE/CS/CR/ CO/CM/IF/CW/EE/EP/EU/CH/CT/PS/TX/TC/FG and Seventh for MH/MI/CD/ED/EI/ CV/FE/IU

Subject Title : Management

Subject Code : 17601

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
03	--	--	1&½	50#*	--	--	--	50

NOTE:

- **Two tests each of 25 marks to be conducted as per the schedule given by MSBTE.**
- **Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional Work (SW).**

Rationale:

Management concepts are universal and it is a multidisciplinary subject. They are equally applicable to different types industries like Manufacturing, Service and Trade as well as different kind of business activities like industry, army, school, hospital, retail shops etc. Also, at the end of diploma course polytechnic students are expected to enter in to the Industrial Environment. This environment is altogether different and new to the students. A proper introduction and understanding of management fundamentals is therefore essential for all these students.

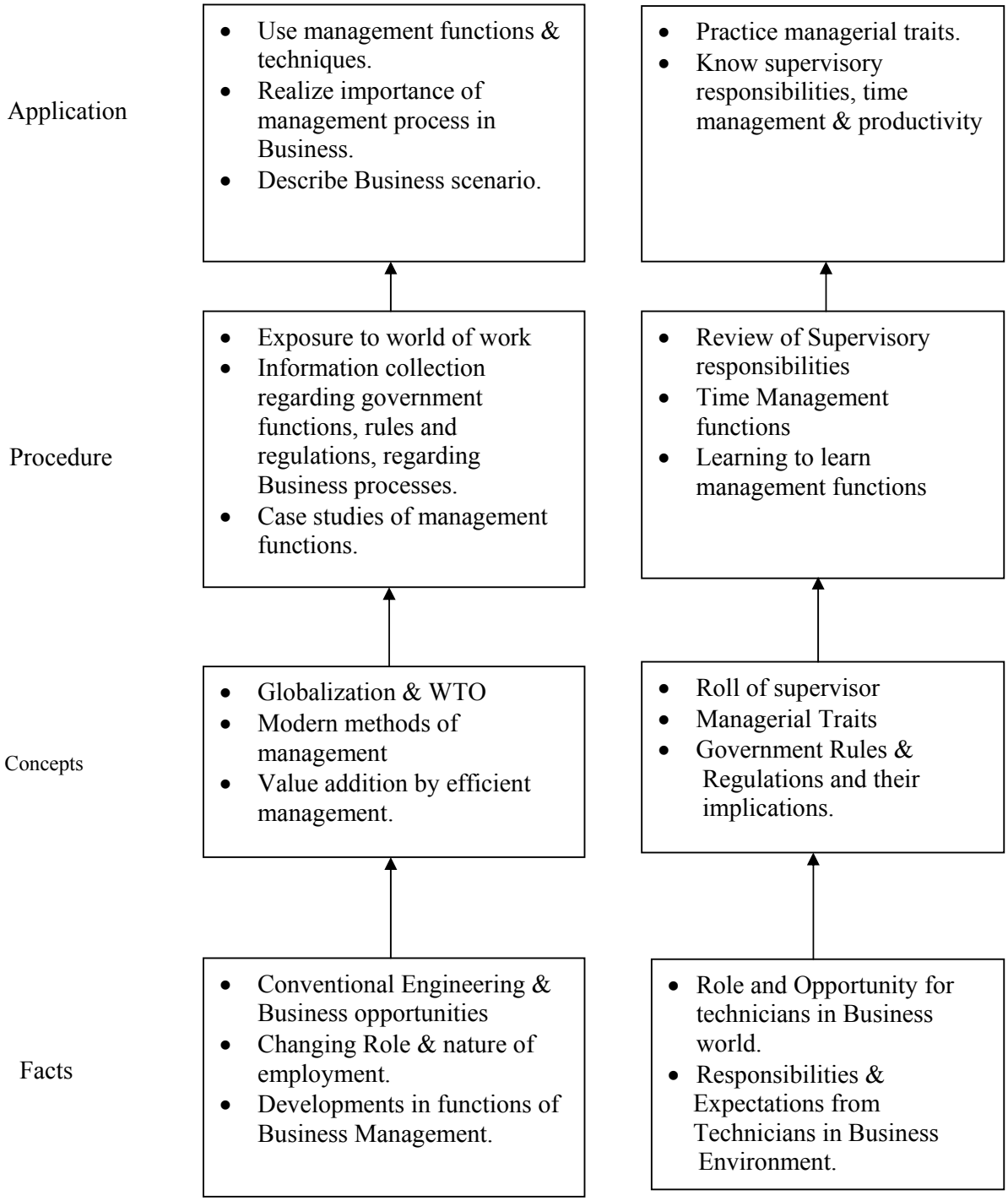
Contents of the this subject will enable the students to address various issues related to human resource, finance, materials, legislations etc. by use of basic principles of management. This will ensure that students will play their role effectively to enhance the quality of business output in total.

Objective:

The students will able to:

1. Get familiarized with environment related to business processes.
2. Know the management aspects of the organisations.
3. Understand Role & Responsibilities of a Diploma engineer.
4. Understand importance of quality improvement techniques.
5. Appreciate need and importance of safety in industries.
6. Understand process of Industrial finance and its management.
7. Know the latest trends in industrial management.

Learning Structure:



Contents: Theory

Topic and Contents	Hours	Marks
Topic 1: Overview of Business **Specific Objectives** ➢ State various business types and sectors ➢ Describe importance of globalisation 1.1. Types of Business • Service • Manufacturing • Trade 1.2. Industrial sectors Introduction to • Engineering industry • Process industry • Textile industry • Chemical industry • Agro industry • IT industry • Banking, Insurance, Retail, Hospitality, Health Care 1.3 Globalization • Introduction • Advantages & disadvantages with respect to India	02	04
Topic 2: Management Process **Specific Objectives** ➢ State various management principles ➢ Describe different management functions 2.1 What is Management? • Evolution • Various definitions of management • Concept of management • Levels of management • Administration & management • Scientific management by F.W.Taylor 2.2 Principles of Management (14 principles of Henry Fayol) 2.3 Functions of Management • Planning • Organizing • Directing • Controlling • Decision Making	08	08
Topic 3: Organisational Management **Specific Objectives** ➢ Compare different forms of organisation , ownership for a specific business ➢ Describe types of departmentation 3.1 Organization : • Definition	08	08

• Steps in organization 3.2 Types of organization • Line • Line & staff • Functional • Project 3.3 Departmentation • By product • By process • By function 3.4 Principles of Organisation • Authority & Responsibility • Span of Control • Effective Delegation • Balance ,stability and flexibility • Communication 3.5 Forms of ownership • Proprietorship • Partnership • Joint stock • Co-operative Society • Govt. Sector		
Topic 4: Industrial Safety and Legislative Acts **Specific Objectives** ➢ Describe types of accidents & safety measures ➢ State provisions of industrial acts. 4.1 Safety Management • Causes of accidents • Types of Industrial Accidents • Preventive measures • Safety procedures 4.2 Industrial Legislation - Necessity of Acts Important Definitions & Main Provisions of following acts: • Indian Factory Act • Workman Compensation Act • Minimum Wages Act	08	06
Topic 5: Financial Management (No Numerical) **Specific Objectives** ➢ Explain functions of financial management ➢ State the sources of finance & types of budgets. ➢ Describe concepts of direct & indirect taxes. 5.1 Financial Management- Objectives & Functions 5.2 Capital Generation & Management • Types of Capitals - Fixed & Working • Sources of raising Capital - Features of Short term, Medium Term & Long Term Sources 5.3 Budgets and accounts • Types of Budgets	08	08

• Fixed & Variable Budget - Concept • Production Budget - Sample format • Labour Budget - Sample format • Profit & Loss Account & Balance Sheet - Meaning, sample format, meaning of different terms involved. 5.4 Meaning & Examples of – • Excise Tax • Service Tax • Income Tax • Value Added Tax • Custom Duty		
Topic 6: Materials Management (No Numerical) **Specific Objectives** ➢ Describe concept of inventory, ABC analysis & EOQ. ➢ Describe purchase functions & procedures ➢ State features of ERP & MRP 6.1. Inventory Concept, its classification, functions of inventory 6.2 ABC Analysis - Necessity & Steps 6.3 Economic Order Quantity Concept, graphical representation, determination of EOQ 6.4 Standard steps in Purchasing 6.5 Modern Techniques of Material Management • Material Resource Planning (MRP) - Functions of MRP, Input to MRP, Benefits of MRP • Enterprise Resource Planning (ERP) - Concept, list of modules, advantages & disadvantages of ERP	08	08
Topic 7: Quality Management **Specific Objectives** ➢ State Principles of Quality Management ➢ Describe Modern Technique & Systems of Quality Management 7.1 Meaning of Quality Quality Management System – Activities, Benefits Quality Control - Objectives, Functions, Advantages Quality Circle - Concept, Characteristics & Objectives Quality Assurance – Concept, Quality Assurance System 7.2 Meaning of Total Quality and TQM Components of TQM – Concept, Elements of TQM, Benefits 7.3 Modern Technique & Systems of Quality Management like Kaizen,5'S',6 Sigma 7.4 ISO 9001:2000 - Benefits, Main clauses.	06	08
Total	**48**	**50**

Learning Resources:
Books:

Sr. No	Author	Name of Book	Publisher
01	Dr. O.P. Khanna	Industrial Engineering & Management	Dhanpat Rai & Sons New Delhi
02	Banga & Sharma	Industrial Engineering & Management	Khanna Publication
03	Dr. S.C. Saksena	Business Administration & Management	Sahitya Bhavan Agra
04	W.H. Newman E. Kirby Warren Andrew R. McGill	The process of Management	Prentice- Hall

E Source:

nptel.iitm.ac.in
http://iete-elan.ac.in/subjects/amIndustrialMgmt.htm

Course Name : Computer Engineering Group

Course Code : CO/CD/CM

Semester : Sixth for CO/CM and Seventh for CD

Subject Title : Software Testing

Subject Code : 17624

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
03	--	02	03	100	50#	--	25@	175

NOTE:

- **Two tests each of 25 marks to be conducted as per the schedule given by MSBTE.**
- **Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional Work (SW).**

Rationale:

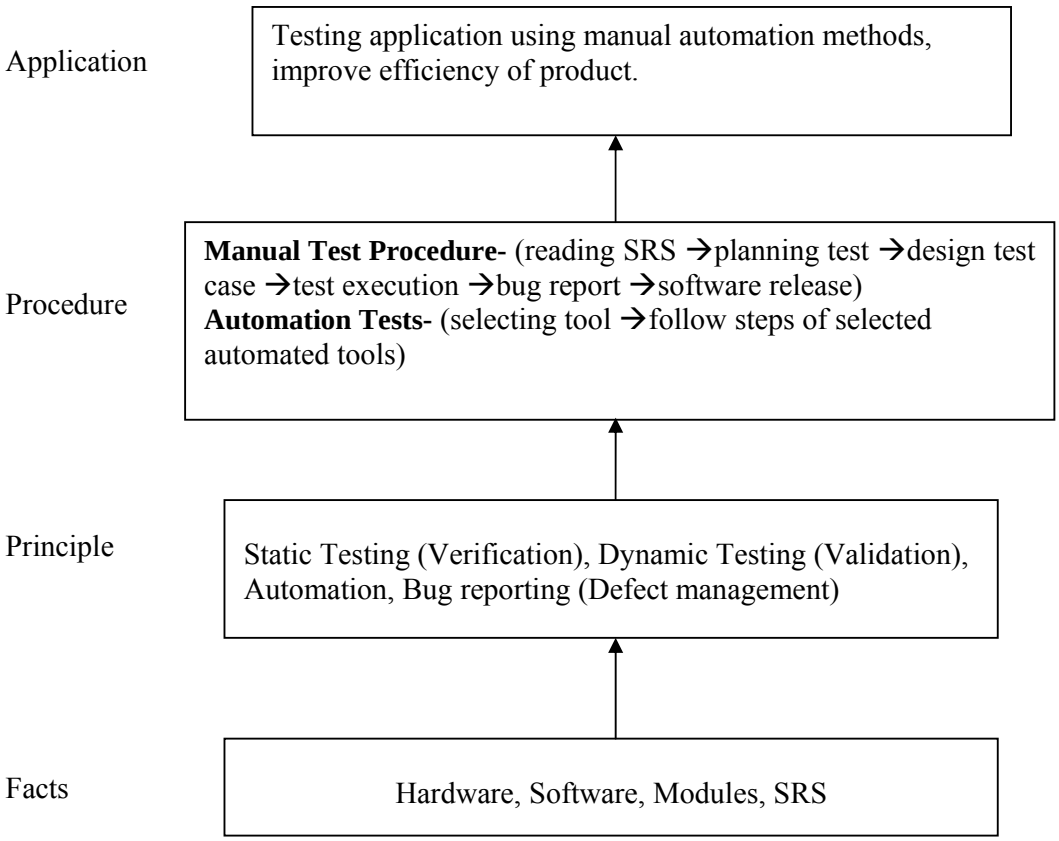
The complexity and size of today's software makes writing secure, bug-free code is extremely difficult, in such a situation testing of software before release is very essential. Software testing can be considered as "Quality Gate" which will pass / release only quality software. Students will learn how to find bugs/errors in any computer program, how to plan an effective test approach, how to clearly report findings and to tell when software is ready to release. Also it introduces various levels and types of testing so that students will be able to practically apply appropriate testing method on application. It also covers manual testing as well as expanding manual test efforts with various automation tools.

Objectives:

Students will be able to:

1. Understand how software testing fits into the software development process.
2. Learn various types and levels of software testing.
3. Develop the skills to find bugs in any type of software.
4. Learn how to effectively plan tests, communicate the bugs you find.
5. Use your new testing skill to test not just the software but also the product specification, the raw code and even the user's manual.
6. Understand STLC, test planning, test case writing and testing execution and defect management.
7. Understand the various automated testing tools to improve testing efficiency.

Learning Structure:



Theory:

Topic No.	Contents	Hours	Marks
1	**Basics of Software Testing** **Objectives:** ➢ **Understand the concept of Software Testing** ➢ **Understand the importance of Quality Software** 1.1 Software Quality, Definition of Software Testing, Role of Testing 1.2 Failure, Error, Fault, Defect, Bug Terminology 1.3 Objectives of Testing 1.4 Test Case 1.5 When to Start and Stop Testing of Software (Entry and Exit Criteria) 1.6 Skills for Software Tester 1.7 Quality Assurance, Quality Control, Verification and Validation, V Model	04	10
2	**Types of Testing** **Objectives:** ➢ **Understand the basic types of testing for software.** ➢ **Differentiate White box and Black box testing** 2.1 White Box Testing : Classification of White Box Testing 1. Static Testing- Inspections, Structured Walkthroughs, Technical Review 2. Structural Testing-Code Functional Testing, Code Coverage Testing, Code Complexity Testing 2.1 Black Box Testing: Techniques for Black Box Testing Requirement Based Testing, Positive and Negative Testing, Boundary Value Analysis, Decision Tables, Equivalence Partitioning, User Documentation Testing, Graph Based Testing. Sample Examples on White and Black Box Testing.	08	20
3	**Levels of Testing and Special Tests** **Objectives :** ➢ **Understand the various levels of testing.** ➢ **Understand some of special tests.** 3.1 Unit Testing: Driver, Stub 3.2 Integration Testing: Decomposition Based Testing - Top-Down Integration, Bottom-Up Integration, Bi-Directional Integration, Incremental Integration, Non-Incremental Integration 3.3 System Testing: Recovery Testing, Security Testing, Performance Testing, Load Testing, Stress Testing, Usability Testing, Compatibility Testing 3.4 Acceptance Testing: Acceptance criteria, Alpha Testing an Beta Testing 3.5 Special Tests: Smoke Testing and Sanity Testing, Regression Testing, Usability Testing, GUI Testing, Object Oriented Application Testing: Client-Server Testing, Web based Testing	12	24
4	**Test Management** **Objectives:** ➢ **Design and execute test cases.** ➢ **Understand the Test Report Process for recommending the product Understand the process of test planning.**	12	20

	➢ **Identify resources for test plan implementation and decide the staffing for release.** 4.1 Test Planning : Preparing a Test Plan, Scope Management, Deciding Test Approach, Setting Up Criteria for Testing, Identifying Responsibilities, Staffing, Training Needs, Resource Requirements, Test Deliverables, Testing Tasks 4.2 Test Management: Choice of Standards, Test Infrastructure Management, Test People Management, Integrating with Product Release 4.3 Test Process: Base Lining a Test Plan, Test Case Specification, Update of Traceability 4.4 Test Reporting: Recommending Product Release. Matrix, Executing Test Cases, Collecting and Analyzing Metrics, Preparing Test Summary Report		
5	**Defect Management** **Objectives:** ➢ **Find, handle and report defect by using standard technique.** ➢ **Understand the Defect life cycle.** 5.1 Introduction, Defect Classification, Defect Management Process 5.2 Defect Life Cycle, Defect Template 5.3 Estimate Expected Impact of a Defect, Techniques for Finding Defects, Reporting a Defect	06	14
6	**Testing Tools and Measurements** **Objectives:** ➢ **Understand the shortcomings of manual testing.** ➢ **Understand the use of automated test tools.** 6.1 Limitations of Manual Testing and Need for Automated Testing Tools 6.2 Features of Test Tool: Guideline for Static and Dynamic Testing Tool 6.3 Advantages and Disadvantages of Using Tools 6.4 Selecting a Testing Tool 6.5 When to Use Automated Test Tools, Testing Using Automated Tools 6.6 What are Metrics and Measurement: Types of Metrics, Project Metrics, Progress and Productivity Metrics	06	12
	Total	**48**	**100**

List of Practicals:

Sr. No.	Title of Experiments	No. of Hours
1	Software testing concept, types & methods.	02
2	Study system specification & designing test cases for Inventory & purchase order management.	02
3	Design test cases for college admission form	02
4	Design and write test cases for simple simple calculator application.	02
5	design test cases for Social site (Twitter, Facebook) login form	02

6	Design a set of test cases Pertaining to usage of mobile phone.	02
7	Design test cases for Notepad (MS Window based) Application.	04
8	Design test cases for MS-Paint application.	04
9	Design test cases for Withdrawn of amount from ATM Machine.	04
10	Using an Automated/ computerised tool, Atomizing and running test cases for WordPad (MS Windows based).	04
11	Implement test cases for MS Word application using an Automation Tool.	04
	Total	**32**

NOTE: All above Practicals may be performed on Windows or Linux Platform, using the tools mentioned in Table 2 Testing Softwares below.

Learning Resources:

1. Books:

Sr. No.	Author	Title	Publisher
1	Srinivasan Desikan Gopalaswamy Ramesh	Software Testing: Principles and Practices	PEARSON
2	M. G. Limaye	Software Testing: Principles, Techniques and Tools	Tata McGraw-Hill
3	Naresh Chauhan	Software Testing: Principles and Practices	Oxford

2. Testing Softwares:

Sr. No	Testing Tool	Types of Tools
1	Selenium	Freeware
2	Mantis Bug Tracker	Freeware
3	IBM Rational Functional Tester	Freeware
4	MS-Excel	Commercial
5	Bugzila	--
6	Test Director	--

Note: Other possible available testing tools can be used at institute level.

3. Web Resources:

1. http://www.selenium.com
2. http://en.wikipedia.org/wiki/Test_automation
3. http://en.wikipedia.org/wiki/Software_testing#Testing_tools
4. http://www.softwaretestingsoftware.com

Course Name : Computer Engineering Group

Course Code : CO/CM/CW/IF/CD

Semester : Sixth for CO/CM/CW/IF and Seventh for CD

Subject Title : Advanced Java Programming

Subject Code : 17625

Teaching and Examination Scheme

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
03	--	04	02	100#*	50#	--	50@	200

Rationale:

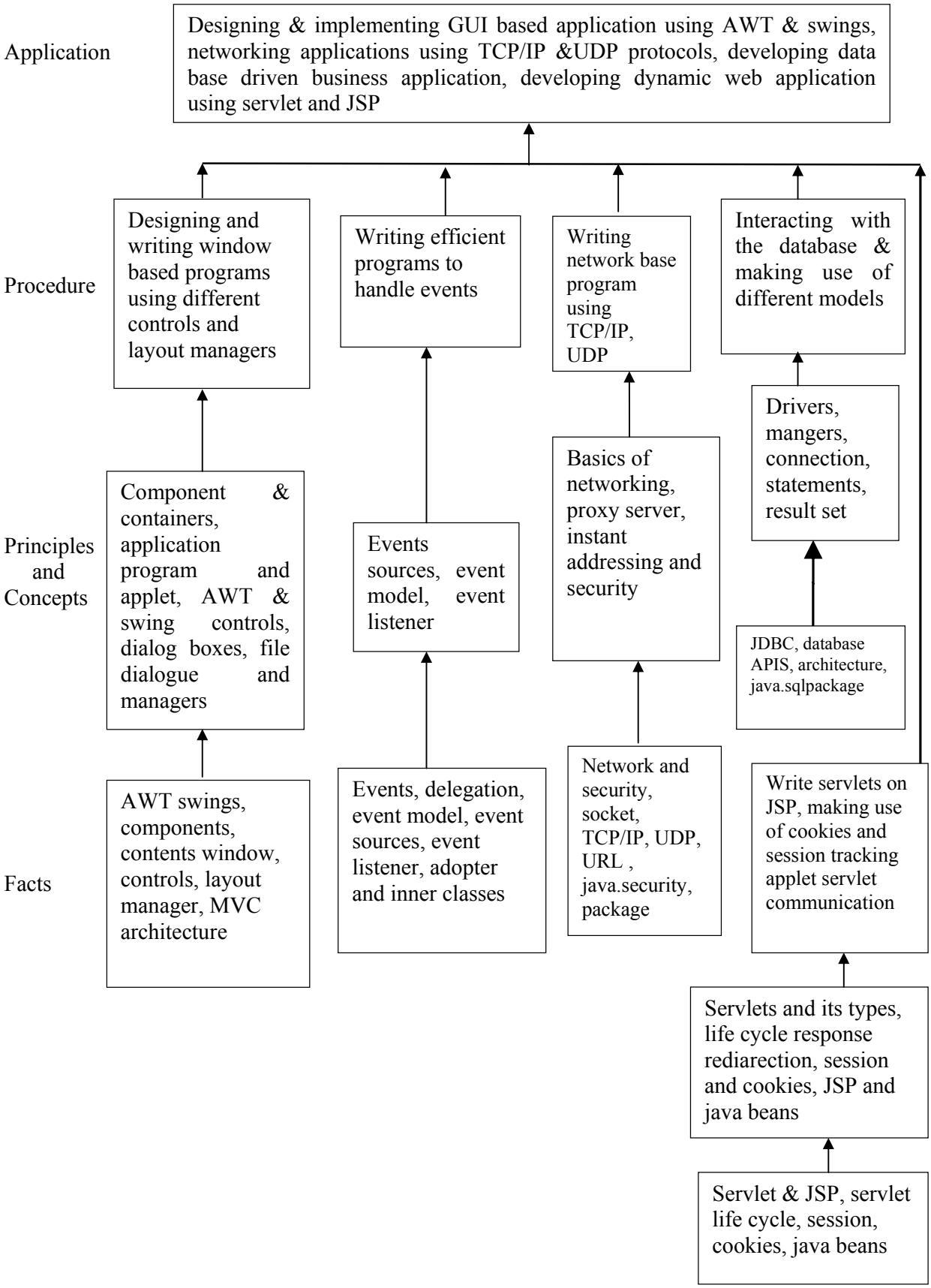
Now days, Internet has touched every aspect of life. If we are not connected to internet, it is like we are nowhere. Online presence is a must for businesses. If your enterprise is not online, you are far behind. Web presence has dominated the businesses worldwide.

Java technology is more suitable for web applications development. It has market dominance in the development of online applications. Java is the preferred choice of the programmers and the enterprises globally.

This subject will equip the students with the required knowledge and the skill needed for the development of robust, powerful and scalable enterprise level web applications. It gives students hands-on experience on GUI Technologies viz. AWT and Swings, event handling mechanisms and network programming. Security issues are also taken into considerations.

The most important aspect of web applications - Database Interaction - is also nicely covered. The performance critical areas of the online applications which the Java technology deals with the ease and in a flexible manner by the use of advanced server side components - servlets - are also systematically covered. The students will be able to understand the concepts like servlet chaining, filtering, sessions, cookies and the most important Applet - Servlet communication. Students will also learn the JSP and the Java Beans.

Learning Structure:



Contents: Theory

Topic No.	Name of the Topic	Hours	Marks
01	**Introduction to Abstract Windowing Toolkit(AWT) & Swings** Specific Objective ➢ To design & develop Graphical user interface (GUI) programs using AWT and swing component. ➢ To arrange the GUI components using different layout managers. 1.1 Component, container, window, frame, panel. 1.2 Creating windowed programs & applets. 1.3 AWT controls & layout managers Understanding the use of AWT controls: labels, buttons, checkbox, checkbox group, scroll bars, text field, text area Understanding the use of layout managers: flowLayout, borderLayout, gridLayout, cardLayout, gridbagLayout, menubars, menus, dialog boxes, file dialog. 1.4 Introduction to swing Swing features, MVC Architecture, Combo Boxes, progress bar, tool tips, seperator, tables, trees, toggle button.	16	24
02	**Event Handling** Specific Objective ➢ To write event driven programs using the delegation event model. ➢ To write programs using adapter classes & the inner classes. 2.1 The delegation Event Model Event sources, Event listeners, Event classes. The Action Event class, The Component Event class, the Container Event class, the Focus Event class, the Item Event class, the Key Event class, the Mouse Event class, the Text Event class, the Window Event class. 2.2 Adapter classes 2.3 Inner classes 2.4 Event listener interfaces The ActionListener Interface, the ComponentListener Interface, the ContainerListener Interface, the FocusListener Interface, the ItemListener Interface, the KeyListener Interface, the MouseListener Interface, the MouseMotion Interface, the TextListener Interface, the WindowsListener Interface, the WindowFocusListener Interface	10	20

03	**Networking & Security** Specific Objective: ➢ To learn the Java's built in support for network programming. ➢ To write program to demonstrate connectivity through software SOCKETS, TCP, ISP, URL and the Java security package. 3.1 Basics of Networking Socket, IP, TCP, UDP, Proxy Server, Internet Addressing 3.2 The InetAddress Class Factory methods Instance methods 3.3 TCP/IP Sockets Socket, Server Socket, methods 3.4 URL URL Connection, http, URL Connection methods, creating & using TCP/IP client & server 3.5 Security with Java: Theoretical introduction to java.security Package Permission class Policy class	08	16
04	**Interacting with Database** Specific Objective : ➢ To create database driven business applications using the database API'S two tier and three tier models and the Java.Sql package 4.1 JDBC, ODBC, & Other APIS JDBC two tier & three tier models 4.2 Connecting to Database Driver Interface, Driver Manager class, Connection Interface, Statement Interface, the java.sql.package Establishing connection & retrieving information Resultset interface.	06	20
05	**Servlets & JSP** Specific Objectives : ➢ To write web based applications using servlets, JSP and Java Beans. ➢ To write servlet for cookies and session tracking. 5.1 Servlet Type of Servlet, Servlet life cycle. 5.2 Using servlets, response redirection. 5.3 Basic concepts of sessions, cookies & session tracking 5.4 Introduction to servlet chaining & filters, Introduction to applet servlet communication. 5.5 JSP, expression, directives& declarations, Life cycle of a JSP page TLD & JSTL, Java beans.	08	20
	Total	**48**	**100**

List of Practical:

Sr. No.	Title of Experiment	No. of Hours
1	Write a program to design a form using the components textfield, label, checkbox, button, list.	2
2	Write a program to demonstrate the use of Border layout showing four buttons at four sides of an applet with captions left, right, top and bottom.	2
3	Write a program using AWT to create a menubar in a frame where menubar contains menu items such as File, Edit, View and the submenu under the File menu item should contain New and Open	2
4	Write a program using swing to display a JcomboBox in an applet with the items – cricket, football, hockey, tennis	2
5	Write a program to create a Jtree and recognize mouse clicks on it.	4
6	Write a program to create a JTable On JApplet Window.	4
7	Write a program to display the key pressed on Applet Window.	4
8	Write a program to perform addition of two nos. make use of textfield and button.	4
9	Write a program making use of Adapter class.	4
10	Write a program to retrieve hostname and IP Address in InetAddress class.	4
11	Write a program to use URL connection class and display 1) Protocol 2) HostName 3) PortNumber 4) File Name.	4
12	Write a program that demonstrates TCP/IP based communication between Client and Server. Client send "HELLO" to Server and Server replies "HI…" to Client.	4
13	Write a program to send data to Table "XYZ" in database using prepared statement and retrieve data from same Table "XYZ" and display on screen.	4
14	Write a Servlet to display the user name and password accepted from the client.	4
15	Write a Servlet for demonstrating the concept of Session and Cookie.	4
16	Write a simple Program to design a login JSP pages.	4
17	Mini Project	8
	Total Hours	**64**

Learning Resources:

Books to be referred:

Sr. No	Author	Title	Publisher
1	Herbert Sheild	Complete Reference	Tata McGraw
2	Kogent learning Solution	Advance JAVA	DreamTech Press
3	Sharnam Shah & Vaishali Shah	Java EE6 for Beginners	SPD
4	Kogent learning Solution	Java Server Programming Black Book	DreamTech Press

Practical Contents:

Student will install the following software under the guidance of their Teacher.

1) JDK 1.5 or higher, JRE (JAVA SOFTWARE)
2) NetBeans (or any IDE)
3) Database (any one)
4) Tomcat web Server
5) Special attention on Servlet and JSP from Projects point of view.

Course Name : Diploma in Computer Engineering

Course Code : CO/CD

Semester : Sixth

Subject Title : Embedded System (Elective)

Subject Code : 17626

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
03	--	02	03	100	--	--	25@	125

NOTE:

- **Two tests each of 25 marks to be conducted as per the schedule given by MSBTE.**
- **Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional Work (SW).**

Rationale:

Now a day, we are surrounded with most of the embedded systems such as microwave oven, washing machine, DVD Player, Mobile Phone, I-Pod so on. In the earlier days, the embedded systems were designed using microprocessors like 8085, Z80 etc. Since the early eighties, small scale embedded has used microcontrollers such as Intel 8031, 8051, 8052 or Motorola 68HC05.

The advent in last few years of technology that embeds low level and high level processing hardware elements and Application Specific Processor in to single chip has given the added dimension to the embedded system that are multiprocessor system on a single VLSI chip called as System On Chip (SOC)and are smart as well as highly sophisticated.

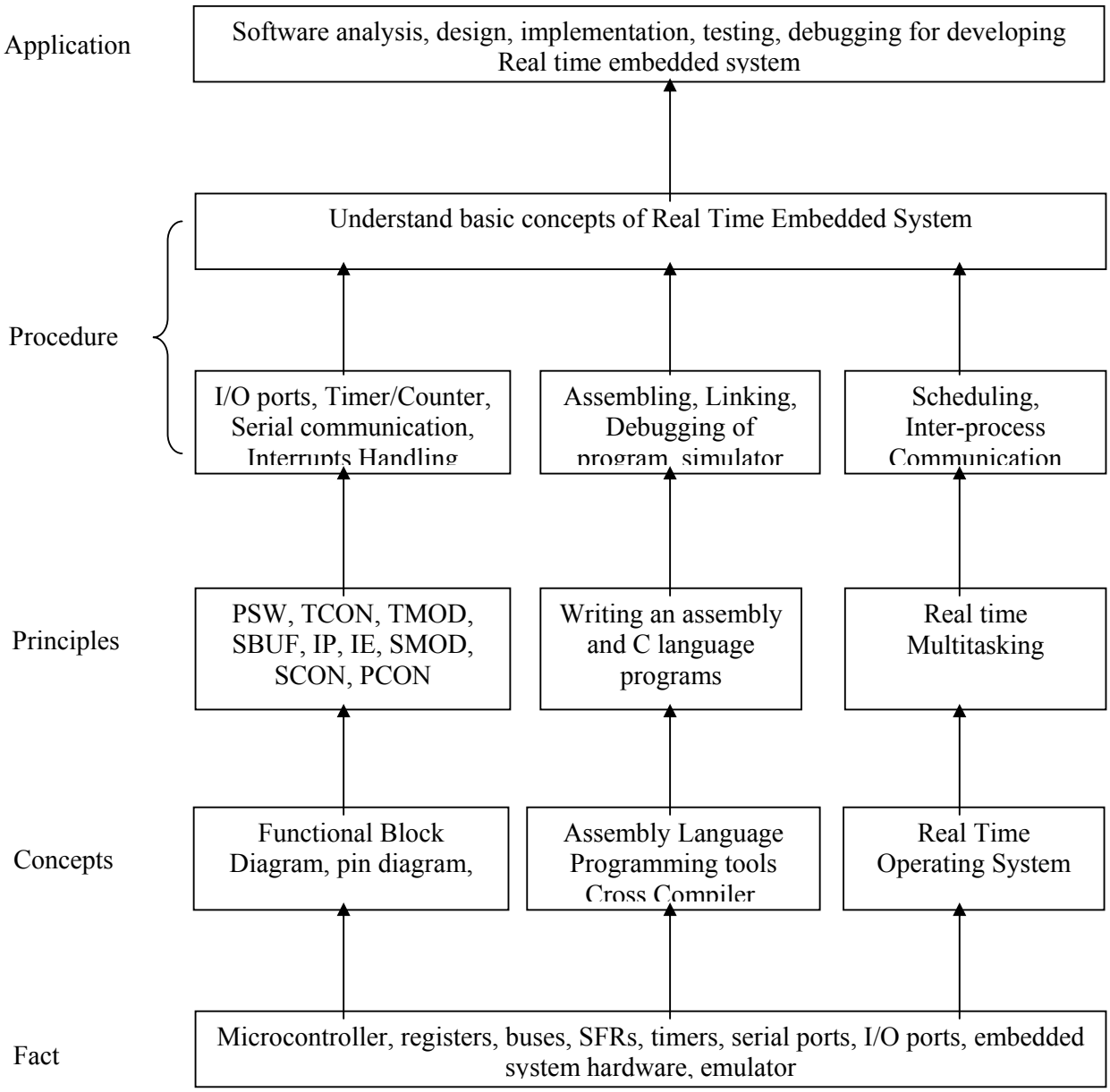
Embedded System deals with computer hardware with software embedded in it. This subject will introduce the 8051 microcontroller architecture, hardware overview of 8051, memory organization, instruction set, interrupts, timers, I/O ports, Serial communication protocols and embedded system with Real Time Operating System (RTOS).

General objectives:

The students will be able to

1. Know the hardware overview of 8051.
2. Write embedded program in C or Assembly language.
3. Understand the function of embedded system hardware such as processor, I/O devices, Watchdog timer, Oscillator, Reset circuitry, Power supply.
4. Know memory organization in 8051.
5. Interface various devices using serial and parallel ports.
6. Understand the concept of Real Time Operating System.

Learning Structure:



Contents: Theory

Name of Topics	Hours	Marks
Topic 1: 8051 - Microcontroller Objective: Students will be able to ➢ Draw the architecture of 8051 ➢ Identify the functions of different pins of 8051 ➢ Identify status of different flags 1.1 Introduction to 8051 family Microcontroller 1.2 8051 Microcontroller • Salient features • Pins description, • Architecture of 8051 • Special function Register (SFR) • Memory Organization • I/O Ports, Timer/counters, Interrupt structure • Serial Port Interface • Boolean Operation • Power Down Operation	08	16
Topic 2: Instruction Set of 8051 Objective: Students will be able to ➢ Use the different types of instructions ➢ Interpret addressing modes of instructions ➢ Write syntax of the instructions 2.1 Instruction Set of 8051 • Programmers model of 8051 • Operand types • Assembler Directives • Addressing modes • Data transfer, Arithmetic, logical, Control transfer instructions • Simple programs such as addition, subtraction, multiplication, division in assembly and 'C' • Execution of program using cross compiler like Keil IDE, SPJ, RIDE	08	16
Topic 3: I/O Ports, Timers/Counters, Interrupts and Serial Communication programming Objective: Students will be able to ➢ Configure the different ports as input or output ➢ Use of timer/ counter in different modes ➢ Understand interrupts handling 3.1 Port Structure and Simple I/O port programming 3.2 Timer/Counter Programming in assembly and C 3.3 Serial Port programming in assembly and C 3.4 Interrupt programming in assembly and C	10	16
Topic 4: 8051 Interfacing Application Objective: Students will be able to ➢ Understand the interfacing of display ➢ Learn the function of ADC and DAC ➢ Know the application of Stepper motor 4.1 Interfacing of seven segment display & LCD display Interfacing diagram & pin out of 2x16 LCD 4.2 Interfacing of 4x4 Keyboard, ADC & DAC- interfacing diagram &	08	16

programming. 4.3 Interfacing of stepper motor- interfacing diagram & Programming function		
Topic 5: Embedded Systems Objective: Students will be able to ➢ Know the embedded system ➢ Learn different software and hardware development tools ➢ Understand embedded software development cycle 5.1 Introduction to Embedded System, Processor in system, different Hardware Units, advantages, Applications, Software embedded into system, System-On-Chip, Concept of Device Driver 5.2 Software & Hardware development tools , IDE, Compiler, Debugger, Simulator, Emulator, In circuit Emulator(ICE), Target Board, Device Programmer 5.3 Embedded software development cycle	08	18
Topic 6: RTOS & Inter-process Communication Objective: Students will be able to ➢ Understand the concepts of RTOS ➢ Know the concept multitasking, task synchronization ➢ Understand the concepts of deadlock, starvation 6.1 Concepts of RTOS, Need of RTOS in Embedded systems 6.2 Multitasking 6.3 Task synchronization & Mutual Exclusion 6.4 Starvation, Deadlock, Multiple process 6.5 Basics of Inter-process Communication	06	18
Total	**48**	**100**

Practical:

Skills to be developed:

Intellectual skills:

1. Use of programming language constructs in program implementation.
2. To be able to apply different logics to solve given problem.
3. To be able to write program using different implementations for the same problem
4. Study different types of errors as syntax semantic, fatal, linker & logical
5. Debugging of programs
6. Understanding different steps to develop program such as
   - Problem definition
   - Analysis
   - Design of logic
   - Coding
   - Testing
   - Maintenance (Modifications, error corrections, making changes etc.)

Motor skills:

1. Proper handling of Computer System.

List of Practical

It is expected that students should perform following practical's using pc and any cross C complier such as Keil, SPJ, RIDE etc.

1. Write a Program to toggle bits of P1 continuously forever with some delay.

2. Write a Program to generate square wave of 1 kHz on pin P1.0.
3. Write a program that continuously gets 8 bit data from Port 0 and sends it to Port 1, while simultaneously creating square wave of 200 µsec on pin P2.1. Use timer 0 to create square wave.
4. Write a program that will generate a square wave with a period of 20 ms on pin P3.0 using Timer 1 interrupt.
5. Write a program to turn ON the LED connected to Port P1.3 pin on the occurrence of INT1 and turn OFF the LED after a delay of 20 msec.
6. Write a program to transfer the message "MSBTE" serially at baud rate 4800, 8 bit data, 1 stop bit.
7. Write a Program for Interfacing ADC
8. Write a Program for interfacing DAC to generate Saw tooth, Square wave, triangular wave, staircase wave.
9. Write a Program to Interface 4x4 matrix keyboard.
10. Write a Program to display "WELCOME" on 2x16 LCD.
11. Write a Program to Interface stepper motor in clockwise and anti-clockwise direction

Learning Resources:
Books:

Sr. No.	Name of Book	Author	Publication
1	The 8051 Microcontroller and Embedded System using Assembly and C (Second Edition)	Muhammad Ali Mazidi, Janice Gillispie Mazidi, Rolin D. McKinlay	Pearson Education
2	The 8051 Microcontroller and Embedded System using assembly and C	Kenneth J. Ayala Dhananjay V Gadre	Cengage Learning India Pvt. Ltd.
3	Introduction to Embedded Systems	Shibu K.V.	Tata McGraw Hill
4	Embedded Systems Architecture, Programming, Design	Raj Kamal	Tata McGraw Hill

Websites:

1. http://www.embeddedindia.com/
2. http://www.esacademy.com/
3. www.EmbeddedTechJournal.com

Course Name : Diploma in Computer Engineering

Course Code : CO/CD

Semester : Sixth

Subject Title : Advanced Microprocessor (Elective)

Subject Code : 17627

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
03	--	02	03	100	--	--	25@	125

NOTE:

- **Two tests each of 25 marks to be conducted as per the schedule given by MSBTE.**
- **Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional Work (SW).**

Rationale:

Microprocessors are heavily used in Computers, Xerox machines, ATM machines, high end medical devices etc. It is evolved from 4 bit to 64 bit microprocessor. The rapid progress in microprocessor leads to many advanced microprocessors and microcontrollers that give user a good interface to make functions and controlling operations easy and fast.

The 8086 microprocessor has certain limitations. So the microprocessors like 80286, 80386, 80486 and Pentium are evolved. The 80286 was milestone in the microprocessor. Many techniques like memory protection, multitasking, segmentation introduced in 80286 and carry forward even in the latest microprocessors. Advanced microprocessors are the current requirement of the market.

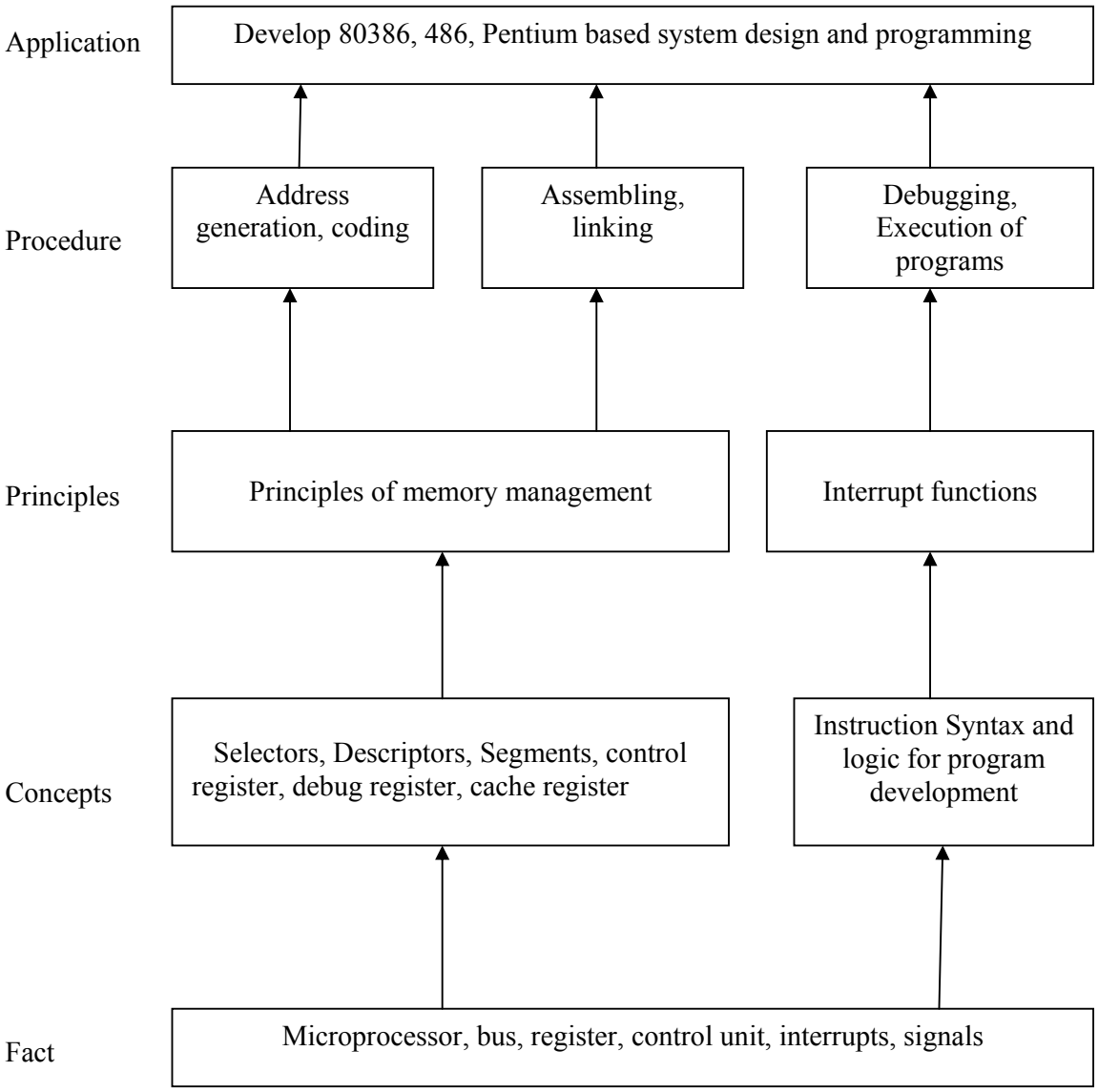
This subject covers the concepts of advanced microprocessors and their architecture, memory management, interrupts etc. It also covers interesting programming on interrupts of x86 microprocessor.

General Objectives:

Students will be able to:

1. Explain memory management and concept of pipelining.
2. Understand the concept of paging.
3. Understand the superscalar architecture of Pentium.
4. Design a program in assembly language using different functions of DOS and BIOS.

Learning structure:



Contents:

Topic No.	Name of the Topic	Hours	Marks
1	**32-bit Microprocessor - Intel 80386.** Salient features, internal architecture, Register organization (General-purpose register, segment register, status and control register, instruction pointer. Segment descriptor cache register. System address registers LDTR, GDTR, Debug register, Test registers, control registers. **Addressing modes of 80386**, real, PVAM, paging, virtual 8086 mode. Address translation in real, PVAM, paging, Enabling and disabling paging (Machine Status word)	14	30
2	**Introduction to Pentium Processor** Salient features of Pentium, System architecture, Superscalar Execution, Separate code & data cache, Floating Point Exceptions, Branch prediction. Introduction to Pentium-pro processor, Special Pentium-pro features, Introduction to Pentium -2 processor, Pentium – 3 processor, Intel MMX Architecture.	16	32
3	**RISC Architecture** The advantages of RISC, Basic features of RISC processors, Hybrid architecture- RISC and CISC convergence, Design Issues of RISC processors, Features of sun Ultra SPARC	10	18
4	**Interrupts of X86 Microprocessor:** Introduction to X86 interrupts (Hardware, software and exceptions), Interrupt vector table, Interrupt processing sequence. Hardware or exception interrupts (Singles step, divide by zero/overflow, non-maskable, breakpoint, overflow) software interrupts (INT, INTO instructions) introduction to.com and.exe programs, DOS& BIOS Interrupts- INT 21H, INT 25H, INT 26H, INT 10H, INT 16H, INT 17H.	08	20
	Total	**48**	**100**

Skills to be developed:

Intellectual skills:

1. Use of programming language constructs in program implementation.
2. To be able to apply different logics to solve given problem.
3. To be able to write program using different implementations for the same problem
4. Study different types of errors as syntax semantic, fatal, linker & logical
5. Debugging of programs
6. Understanding different steps to develop program such as
    - Problem definition
    - Analysis
    - Design of logic
    - Coding
    - Testing
    - Maintenance (Modifications, error corrections, making changes etc.)

Motor Skills:

1. Proper handling of Computer System.

List of Practical:

1. Write an ALP to read password & validate the user.
2. Write an ALP to display the status of keys described in 02H functions of BIOS INT 16H.
3. Write an ALP to simulate CLS (Clear Screen) command.
4. Write an ALP to simulate DEL (Delete file) and REN (Rename file) command.
5. Write an ALP to display the attribute and date/ time of any file.
6. Write an ALP to simulate MD (Make directory), RD (Remove Directory) commands.
7. Write an ALP to simulate CD (Change directory) and PWD (Present Working Directory) commands.
8. Write an ALP to display the status of Flag register and Machine Status Word register of 286 on the screen.
9. Write an ALP to display the status of Flag register and Machine Status Word register of 386 on the screen.
10. Write an ALP to demonstrate CPUID instruction of Pentium Processor

Learning Resources
Reference Books:

Sr. No.	Name of Book	Author	Publication
1	Advanced microprocessor & peripheral	A. K. Ray. K. M. Bhurchandi	TATA McGraw Hill
2	IBM PC Assembly Language and Programming	Peter Abel	Prentice Hall India
3	The Pentium Processor	James L. Antanakos	Pearson Publication

2. Websites:

1. www.intel.com
2. www.pcguide.com/ref/CPU
3. www.CPU-World.com/Arch/
4. www.techsource .com / engineering- parts/microprocessor.html

Course Name : Computer Engineering Group

Course Code : CO/CD/CM/CW

Semester : Sixth for CO/CM/CW and Seventh for CD

Subject Title : Linux Programming

Subject Code : 17816

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
01	--	04	--	--	50#	--	25@	75

NOTE:

- **Two tests each of 25 marks to be conducted as per the schedule given by MSBTE.**
- **Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional Work (SW).**

Rationale:

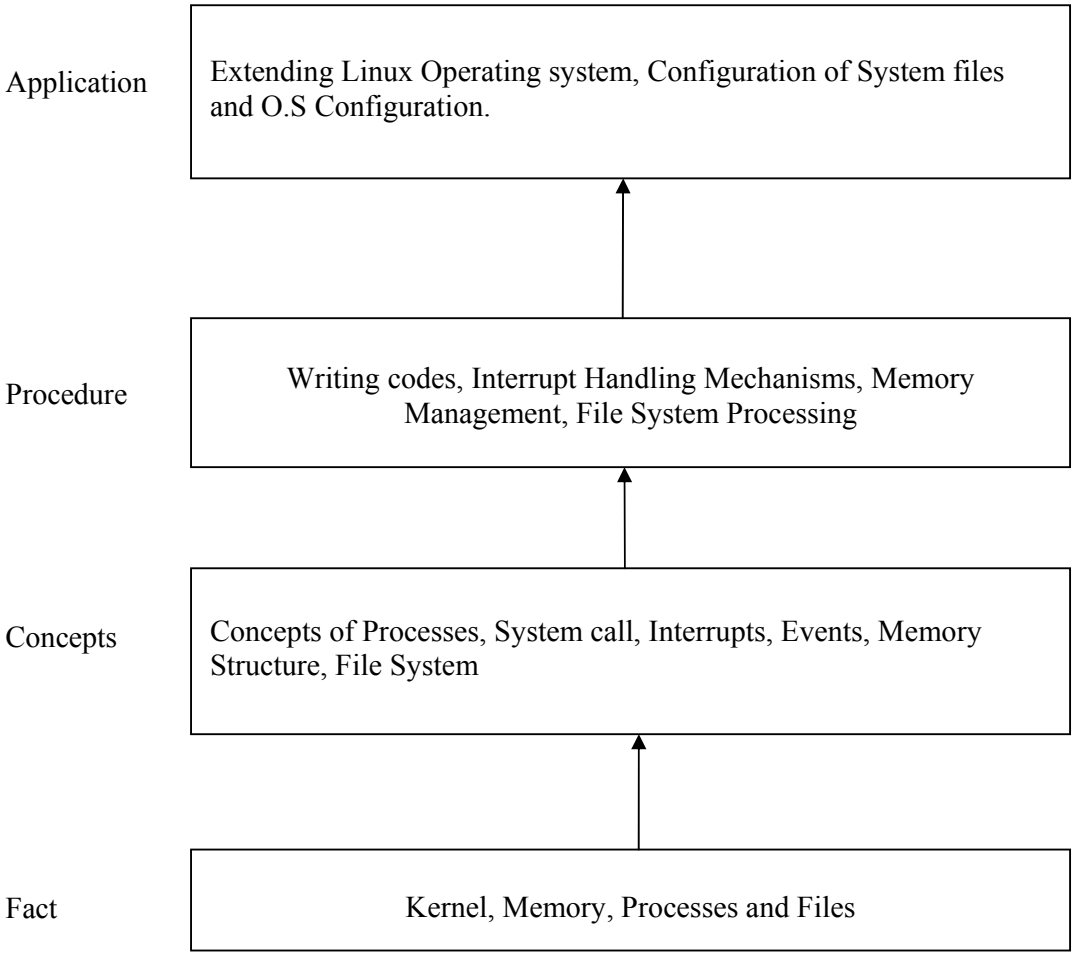
Linux is one of the most successful open source operating system which includes all the features of modern operating systems like virtual memory, virtual file systems, lightweight processes, signals, inter process communications etc. Linux is well supported and demand for Linux programmer is increasing. This subject aims at extending the knowledge of operating systems and give students exposure to Kernel and system calls. Probing beyond the superficial features, students will get valuable insights into how things really work inside their machine. Thus Advanced Linux programming aims at giving students practice of writing codes that directly talk to the kernel.

General Objectives:

Students will be able to

1. Understand Kernel Basics.
2. Understand use of System Calls.
3. Understand file operations as carried by Linux O.S.
4. Understand Memory Management Basics, processes and process handling.
5. Understand interrupt handlers and exception handling.

Learning Structure:



Contents:

Sr. No.	Name of Topic/Sub topic	Hrs
1	**Linux Shell and Commands Overview** **Objectives :** ➢ Describe shell and its basic. ➢ Implement process related commands. ➢ Mount and Unmount media. 1.1 About Linux Looking in to the Linux kernel The GNU Utilities The Linux Desktop environment 1.2 Linux Distributions Core Linux distribution Specialized Linux distribution The Linux console 1.3 Monitoring Program Peeking at the processes Real time process monitoring Stopping processes 1.4 Monitoring Disk Space Monitoring media Using the df command Using the du command 1.5 Working with the data Files Storing Data Searching the Data Compressing Data Archiving Data	02

Sr. No.	Name of Topic/Sub topic	Hrs
2	**Environment Variables and File permissions** **Objectives :** ➢ Implement Set and unset Local and Global Environment Variables. ➢ State special files and utilities to track and manage user accounts. ➢ State special files and utilities to track and manage groups. ➢ Describe use of Linux File security system. 2.1 Environment variables Global environment variables Local environment variables Setting Environment Variables Setting Local environment variables Setting Global environment variables 2.2 Removing Environment Variables Default Shell Environment Variables Setting the PATH Environment Variables 2.3 Local System Environment Variables Logging Shell Interactive Shell Non- Interactive Shell Variable Arrays, Using Command Aliases 2.4 Linux Security The /etc/passwd file ,The /etc/shadow file Adding a new user, Removing the user Modifying the user 2.5 Using Linux Groups The /etc/group file Creating New group Modifying group 2.6 Decoding File Permission Using File Permission symbols Default File Permission Changing Security Setting Changing permission Changing ownership and sharing files	02

Sr. No.	Name of Topic/Sub topic	Hrs
3	**Script Building and Conditional Commands** **Objectives :** ➢ Write and execute script files. ➢ Use Input-Output Redirection and pipes. ➢ Use Mathematical Operations in a shell script. 3.1 Using Multiple Commands, Creating a Script File Displaying Messages 3.2 Using Variables Environmental Variables, User Variables The back tick 3.3 Redirecting Input and Output Output Redirection, Input Redirection Pipes 3.4 Performing Math The expr command ,Using brackets A floating-point solution Existing the script Checking the exit status The exit command 3.5 Working with the if-then Statement The if-then-else Statement Nesting ifs 3.6 The test Command Numeric comparisons String comparisons File comparisons 3.7 Compound Condition Testing Advanced if-then features Using double parentheses Using double brackets The case Command	04

Sr. No.	Name of Topic/Sub topic	Hrs
4	**Looping commands and Working with User Input** **Objectives :** ➢ Use iterations in shell script. ➢ Use structured commands to control the flow of shell script. ➢ Write script for handling command line parameter. ➢ Write script for interacting with the user. 4.1 The for Command Reading values in a list , Reading complex values in a list Reading a list from a variable Reading a value from command Changing The field separator Reading the directory using the wildcards 4.2 The while Command Basic while formats Using multiple test command The until command Nesting Loops Looping on File Data Controlling the loop The break command The continue command Processing the Out of a Loop 4.3 Command Line Parameters Reading parameter Reading the program name Testing parameter 4.4 Special Parameter Variable Counting parameters Grabbing all the data Being shifty	04

Sr. No.	Name of Topic/Sub topic	Hrs
5	**Presenting data and Creating functions** **Objectives :** ➢ Use data redirection to the file. ➢ Create own redirection. ➢ Build basic screen functions. ➢ Create function library**.** 5.1 Understanding Input and Output Standard file description Redirecting errors Redirecting Output in script 5.2 Creating your Own Redirection Creating output file descriptors Redirecting file description Creating a read /write file description Closing file description Listing Open file description 5.3 Suppressing Command Output Using Temporary Creating a local temporary file Creating a temporary file in /tmp Creating a local temporary directory Logging Message 5.4 Basic Script Function Creating Function Using function Returning value The default exit status Using the return command Using function Output 5.5 Using a Variable Function Passing parameter to a Function Handling Variable in a Function Array Variable And Function Passing Array to a Function Returning Array from Function Function Recursion	02

Sr. No.	Name of Topic/Sub topic	Hrs
6	**Using sed and gawk, Writing Scripts for System Administrator** **Objectives :** ➢ Use sed and gawk tools to manipulate contents of text files. ➢ Use command line editor for working with text elements. ➢ Write script for system administration**.** 6.1 Text manipulation The sed editor The gawk program 6.2 The sed Editor Basic More substitution option using address Deleting line Inserting and appending text Changing line The transfer command Printing revisited Using files with sed	02
	Total	**16**

List of Practicals:
Intellectual Skills

1. Implement various Linux commands.
2. Create user accounts and assign various permission
3. Write shell scripts
4.

Motor Skills
Effective use of computer system and proper use of Linux operating system

Sr. No.	Title of Experiment	No. of Hours
1	Implement following commands with their options: • ps and kill. • df and du. • mount and umount.	04
2	Implement grep and tar.	04
3	Implement setting of global and local environment variable, shell environment variables.	04
4	• Create users, groups .Set permissions and ownership. • View the /etc/passwd file and describe its syntax. • View the /etc/shadow file and describe its syntax. • View the /etc/group file and describe its syntax.	04
5	Implement setting up and releasing of special permissions (SGID, SUID and sticky bit) and state their effects.	04
6	Implement I/O Redirection and Pipes.	04

7	• Write shell script to demonstrate use of conditional and loop control statements. • Write a shell script that shows effects of quotes on the Output of a variable. • Write a shell script that looks through all the files in the current directory for the string POSIX and then prints the name of these files to the standard output.	06
8	Write shell script to implement following test commands : • For string comparisons. • For numeric comparisons. • For file comparisons	06
9	Write shell script that : • Uses command line parameters. • Counts number of parameters. • Implements shift command. • Implements processing option with parameter values.	04
10	Write shell script : • To implement redirection of Input script. • For redirecting file descriptors. • Creating input file descriptor.	06
11	Practice sed editor and gawk utility.	06
12	• Write a shell script using functions. Modify it to handle function with parameters, function returning values. • Write shell script for handling array variables. • Write shell script that uses function returning true or false result.	06
13	• Write a shell script which checks disk space and store the value to the variable and display it. • Write a shell script that tests connectivity with the PCs whose IPs are provided as command line parameters.	06
	Total	**64**

Learning Resources:

Books:

Sr. No.	Author	Title	Publisher
1	Richard Blum	Linux: Command Line and Shell Scripting	Wiley India
2	Richard Pearson	Linux : Complete Reference	Tata McGraw Hill
3	Jon Emmons Terry Clark	Easy Linux Commands	SPD Publication
4	Neil Mathew	Beginning Linux Programming	Wiley India

Course Name : Computer Engineering Group

Course Code : CO/CM/IF/CW/CD

Semester : Sixth for CO/CM/IF/CW and Seventh for CD

Subject Title : Industrial Projects

Subject Code : 17817

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
--	--	04	--	--	--	50#	50@	100

Rationale:

In the field of Computer and Information Technology various technologies (hardware and Software) needs to be integrated and proper paradigms needs to be implemented to develop any kind of computer applications . Hence it becomes essential to get hands on experience for developing industrial applications. This subject is essential to understand the implementation of the system development process i.e. analyse, design, coding, debugging and testing. This will help the students to acquire skills and attitudes to work as programmer, Network administrator, and Technical assistant.

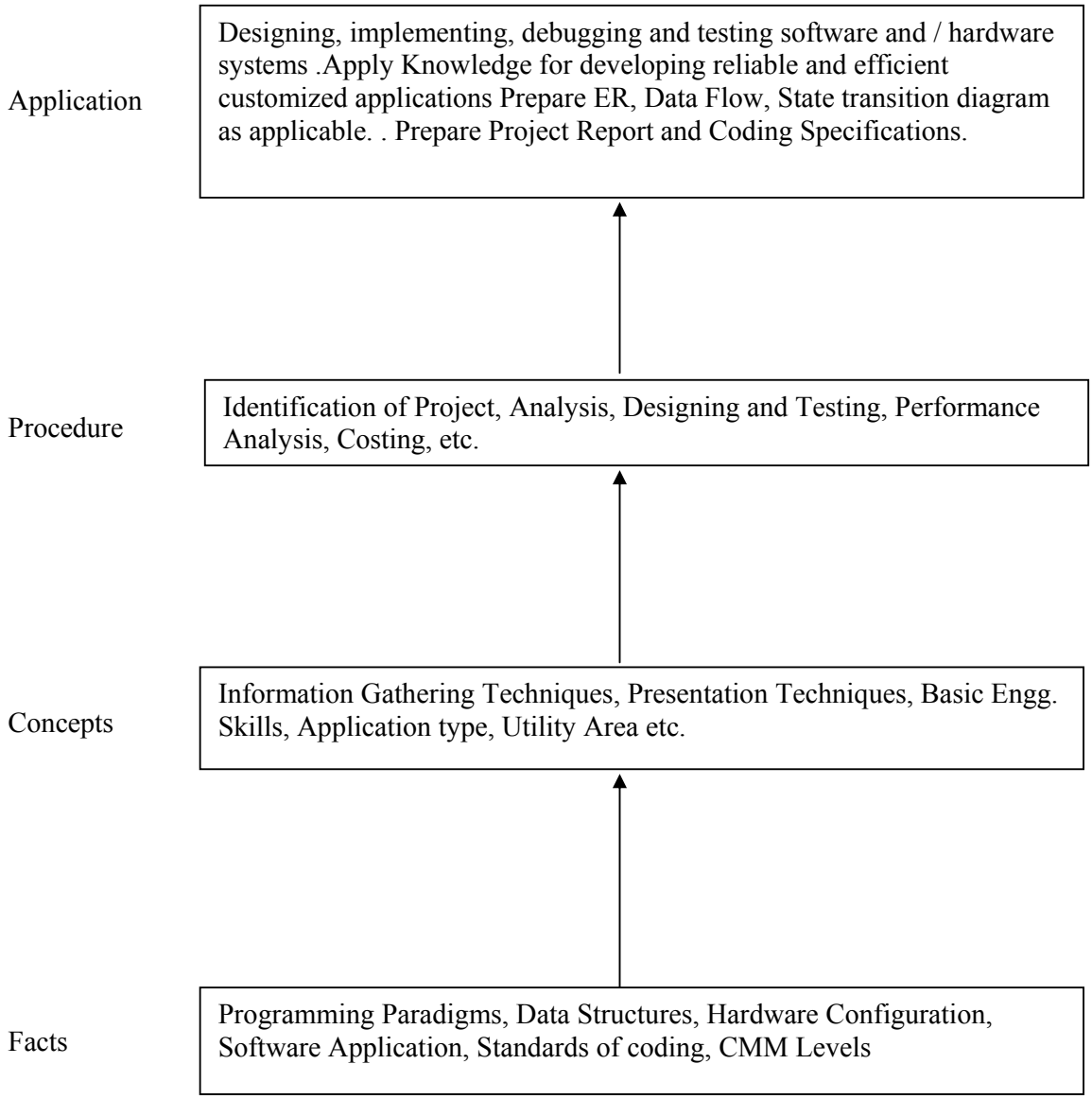
Furthermore the student will be able to find out various sources of technical information and develop self-study techniques to prepare a project and write a project report.

General Objectives:

The students should be able to:

1. Work in Groups, Plan the work, and Coordinate the work.
2. Develop leadership qualities.
3. Develop Innovative ideas.
4. Practically implement the acquired knowledge.
5. Develop basic technical Skills by hands on experience.
6. Document and Write project report.
7. Develop skills to use latest technology in Computer/Information Technology field.
8. Analyse the different types of Case studies.
9. Testing of software and hardware.
10. Maintaining systems and accessories.

Learning Structure:



Note: **1.** One Project from any one of the following groups.
2. Form a group of maximum four students.

Contents:

Two hours should be allotted for giving the Instructions for preparing a Project Report (Refer Guideline Document for Format of Project Report)

Group	Projects
Software Oriented Projects	1. Develop Application Software for Hotels / Hospital / Shopping Mall / Cinema Theatre / Commercial Complex / Educational Institute / Industrial Complex / utility services on Mobile / smart phones, mobile phone games, GIS, GSM, CDMA coding for various applications. 2. Develop In-house Systems. 3. Case Studies Related to Industries - Operation / Maintenance / Repair and Fault Finding. (Refer Guideline Document). 4. Develop Information Processing System. 5. Develop Web Based Applications using Web Technologies. 6. Develop Network monitoring system. 7. Develop systems for financial organisation. 8. Develop System Program based system like compilers, editors, spreadsheets, mini database systems. 9. Develop mobile phone based software to transfer pathological data to smart phone of Doctor to take second opinion before prescription 10. Design and Implement Disaster Management software by taking help from Gigapan images which are coming from floated cameras in the cyclones. 11. Design and implement software to check virus and malware of mobile phones 12. Design local language operating system/Graphical User Interface for Tablet PC. 13. Design wearable computers for the physically challenged person. We are assuming that due some accident persons vision is blurred. Here microphone should whisper in the ear of this person by taking input from camera images and anaysing and recognizing places and persons. Here we are assuming wearable computer means with spectacle mountable monitors and wallet size CPU.
Hardware Oriented Projects	1. Develop Intrusion Detection System(IDS) and Intrusion Prevention System(IPS) 2. Develop Speech Recognition System. Focus should be on Machine learning. 3. Develop Image Processing Systems. 4. Develop Expert Systems. Here use cognative concept. 5. Develop Artificial Intelligence based Systems. Use neural network concept here. 6. Develop various types of Interfacing Applications. 7. Develop device Controllers. 8. Design and implement energy saving devices for example people sensing fans and auto-off at the railway station, bus station 9. Holiday sensing traffic light controllers, which will modify automatically traffic lights time according to number of vehicles. We are assuming on holidays traffic is heavy.

	10. Create panoramic images using Gigapan cameras. This camera is giving various frames. 11. Design automatic human body vital parameters by sensors to dignose the human. 12. Design cheaper night vision camera suitable for military operations. Keep program in the microcontrollers to process images. 13. Design operating system for washing machine or refrigerator. This is based on RTOS.
Seminar	Seminar on any relevant latest technical topic based on latest research, recent trends, new methods and developments in the field of Computer Engineering / Information Technology.

Learning Resources:

1. Magazines:

Sr. No.	Magazines
1.	IEEE Transactions/Journals
2.	Computer Today.
3.	PC Quest.
4.	Data Quest
5.	Any Journal Related to Computer/Information Technology/Electronics field.
6.	Computer World
7.	Chip
8.	IT World

2. Website:

Using any search engine, such as http://www.google.co.in/ the relevant information can be searched on the Internet.

Course Name : Computer Engineering Group

Course Code : CO/CM/IF/CW/CD

Semester : Sixth for CO/CM/IF/CW and Seventh for CD

Subject Title : Entrepreneurship Development

Subject Code : 17818

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS.	TH	PR	OR	TW	TOTAL
01	01	--	--	--	--	--	25@	25

Rationale:

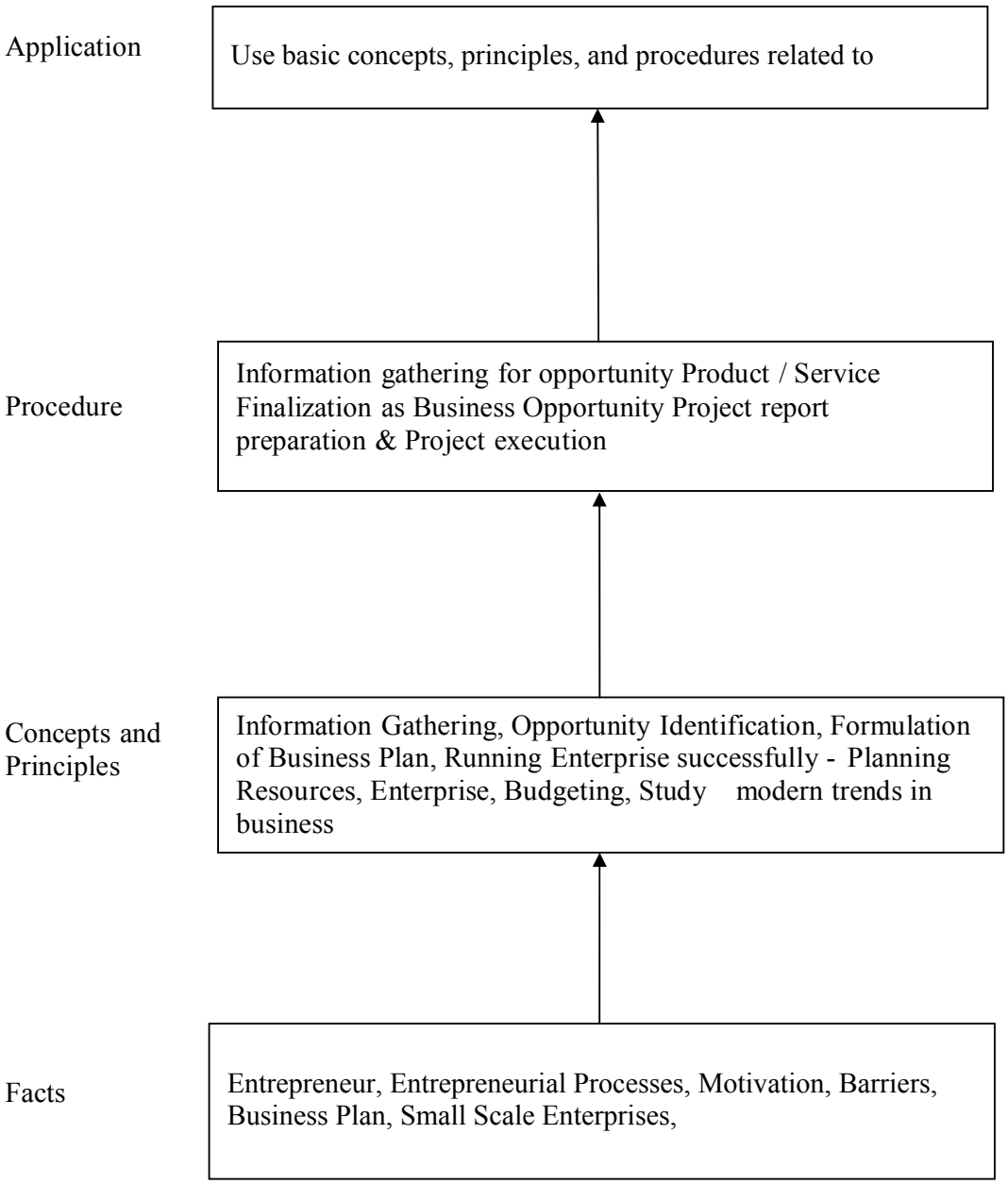
Globalization, liberalization & privatization along with revolution in Information Technology, have thrown up new opportunities that are transforming lives of the masses. Talented and enterprising personalities are exploring such opportunities & translating opportunities into business ventures such as- BPO, Contract Manufacturing, Trading, Service sectors etc. The student community also needs to explore the emerging opportunities. It is therefore necessary to inculcate the entrepreneurial values during their educational tenure. This will help the younger generation in changing their attitude and take the challenging growth oriented tasks instead of waiting for white- collar jobs. This subject will help in developing the awareness and interest in entrepreneurship and create employment for others.

Objectives:

Students will be able to

1) Identify entrepreneurship opportunity.
2) Acquire entrepreneurial values and attitude.
3) Use the information to prepare project report for business venture.
4) Develop awareness about enterprise management.

Learning Structure:



Topic	Name of Topic	Hours
01	**Entrepreneurship, Creativity & Opportunities** • Concept, Classification & Characteristics of Entrepreneur • Creativity and Risk taking, Risk Situation, Types of risk & risk takers. • Business Reforms. • Process of Liberalization. • Reform Policies. • Impact of Liberalization. • Emerging high growth areas. • Business Idea Methods and techniques to generate business idea. • Transforming Ideas in to opportunities transformation involves • Assessment of idea &Feasibility of opportunity • SWOT Analysis	03
02	**Information and Support Systems** • Information Needed and Their Sources: • Information related to project, Information related to support system, Information related to procedures and formalities • Support Systems • Small Scale Business Planning, Requirements. • Govt. & Institutional Agencies, Formalities • Statutory Requirements and Agencies.	02
03	**Market Assessment** • Marketing - Concept and Importance • Market Identification, Survey Key components • Market Assessment	02
04	**Business Finance & Accounts** ➢ Business Finance • Cost of Project • Sources of Finance • Assessment of working capital • Product costing • Profitability • Break Even Analysis • Financial Ratios and Significance ➢ Business Account • Accounting Principles, Methodology • Book Keeping • Financial Statements • Concept of Audit	03

05	**Business Plan & Project Report** • Business plan steps involved from concept to commissioning Activity Recourses, Time, Cost • Project Report • Meaning and Importance • Components of project report/profile (Give list) 5.1) **Project Appraisal** 1) Meaning and definition 2) Technical, Economic feasibility 3) Cost benefit Analysis	03
06	**Enterprise Management And Modern Trends** ➢ Enterprise Management: • Essential roles of Entrepreneur in managing enterprise • Product Cycle: Concept and importance • Probable Causes Of Sickness • Quality Assurance: Importance of Quality, Importance of testing • E-Commerce: Concept and Process ➢ **Global Entrepreneur** • Assess yourself-are you an entrepreneur? • Prepare project report and study its feasibility.	03
	Total	**16**

List of Assignments:

1. Write the SWOT Analysis required for an successful entrepreneur.
2. Collect the required information, formalities and supporting systems for starting a small scale business.
3. Collect information regarding key parameters required for market analysis of an electrical industry.
4. Search for current available sources of finance to start a new business and write a report.
5. Write a report on different accounting methods, financial statements and audit.
6. Write a report on preparing a good business plan.
7. Collect information on E-commerce system and write a report on how it is useful for entrepreneurs.
8. Prepare a report on how to become a successful entrepreneur?

Learning Resources:

1) Books:

Sr. No.	Author	Title	Publisher
1	J. S. Saini B. S. Rathore	Entrepreneurship Theory and Practice	Wheeler Publisher, New Delhi
2	Prepared by Colombo plan staff college for Technician Education.	Entrepreneurship Development	Tata Mc Graw Hill Publishing co. ltd. New Delhi.

3	J. B. Patel D. G. Allampally	A Manual on How to Prepare a Project Report	EDI STUDY MATERIAL Near Village Bhat , Via Ahmadabad Airport & Indira Bridge, P.O. Bhat 382428 , Gujrat,IndiaP.H. (079) 3969163, 3969153 E-mail : ediindia@sancharnet.in/olpe@ediindia.org Website : http://www.ediindia.org
4	Gautam Jain Debmuni Gupta	New Initiatives in Entrepreneurship Education & Training	
5	Schaper, Michael Volery	Entrepreneurship-Small Business	Wiley India,2011
6	Alpana, Trehan	Entrepreneurship	Dreamtech, 2011

Course Name : Diploma in Computer Technology

Course Code : CM

Semester : Sixth

Subject Title : Object Oriented Modeling and Design (Elective)

Subject Code : 17630

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
03	--	02	03	100	--	--	25@	125

NOTE:

- **Two tests each of 25 marks to be conducted as per the schedule given by MSBTE.**
- **Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional Work (SW).**

Rationale:

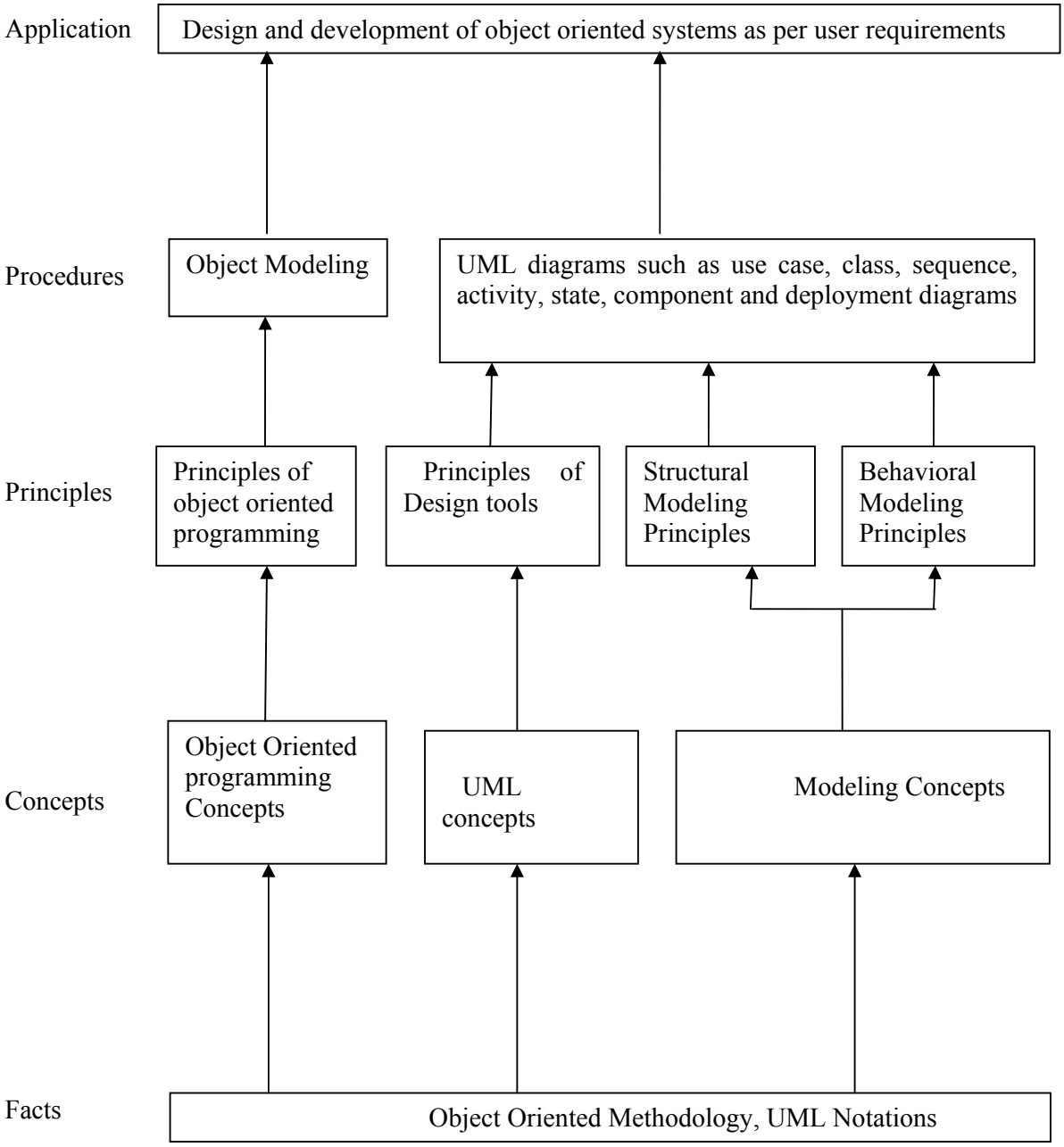
Modeling plays an important role in designing of an application. The real world scenarios and customer needs are mapped to models for an implementation. This subject presents an object oriented approach to software development. It facilitates to build a language independent design. Modeling is an essential part of large software projects. Modeling promotes better understanding of requirements, design a solution to the problem and then software implementation. Graphical notations used to model a variety of systems help the developer to visualize a problem before implementation. Object Oriented Modeling is more than just a way of programming

General Objectives:

Student will be able to

1. Understand object oriented concepts
2. Capture high level requirement into modeling concepts
3. Ensure user's need
4. Create custom UML profile to accurately model different system domains

Learning Structure:



Theory:

Topic and Contents	Hours	Marks
Topic 1:Importance of Modeling **Specific Objectives:** ➢ State importance of modeling ➢ State principles of modeling **Contents:** • Object Orientation • Object Oriented Development and Themes - OO methodology, Three Models • OO Themes: Abstraction, Encapsulation, Combining data and behavior • Modeling as Design techniques - Brief overview of OMT by Rumbaugh, Importance of Modeling, Four principles of Modeling • Introducing the UML – overview, conceptual model, architecture, software development lifecycle	06	16
Topic 2: Class Modeling **Specific Objectives:** ➢ Define objects and classes ➢ Define relationship among classes ➢ Draw Class diagrams **Contents:** **2.1 Object and Class Concepts (12M)** • Objects, Classes, Class Diagrams • Values and Attributes • Operations and Methods • Link and Association concepts -Links and Associations, Multiplicity, Association and Names, Ordering ,Association Classes, Qualified Association • Generalization and Inheritance -Use of Generalization, Sample Class Model **2.2 Multiplicity , Aggregation and Object Modeling (12M)** • Multiplicity, Aggregation • Aggregation Versus Association • Propagation of operations • Multiple Inheritance ,Metadata and Constraints-Metadata, Constraints on objects and links • Object modeling • Object instances • Sample Object Model	12	24
Topics 3: Basic Behavioral Modeling **Specific Objectives:** ➢ Define relationship among use cases ➢ Draw use case diagrams ➢ Draw sequence diagrams **Contents:** **3.1 Use case Diagram (12M)** • Notations for Use case diagram – use cases, Actors, Communication lines, System boundaries • Use case relationships - Include and extend, Use case generalization • Sample use case diagrams	12	24

3.2 Sequence Diagrams (12M) • Notations for Sequence diagram – Objects / Participants, Time, events, Activation Bars , signals , message arrows, synchronous and asynchronous messages, return message, create and destroy message • Structured control - optional, conditional, parallel, loop execution • Sample sequence diagrams		
Topics 4: Advanced Behavioral Modeling **Specific Objectives:** ➢ Define communication among activities ➢ Draw activity diagram ➢ Draw state chart diagram **Contents:** **4.1 Activity Diagram (12M)** • Notations for Activity Diagram - Actions and Activity nodes, initialization and completion, Decisions, Join and fork • Doing multiple tasks at the same time -Swim lanes • Sample Activity Diagram **4.2 State Diagram (12M)** • Notations for State diagram - initial state, final state, transitions and conditions, activity, event, • Nested state diagram, concurrent / composite state diagram • Sample state diagram	12	24
Topics 5: Architectural modeling **Specific Objectives:** ➢ Define components, nodes ➢ Draw component diagram ➢ Draw deployment diagram **Contents:** **5.1 Component Diagram (4M)** • Notations for component Diagram - component and interfaces, ports, connectors • Sample Component Diagram **5.2 Deployment Diagram (8M)** • Notations for Deployment diagram - nodes, artifacts, node instances, communication between nodes, • Sample Deployment diagram	06	12
Total	**48**	**100**

Skills to be developed:

Intellectual Skills: Students will be able

- ➢ To apply different logic to solve given problem.
- ➢ To apply the UML to solve a number of common modeling problem
- ➢ To model system from concept to executable artifacts using object oriented techniques.

Motor Skills:

- ➢ Proper handling of computer system
- ➢ Developing art of technical drawing

List of Practical:

Analyze and design the UML diagrams for the following systems (minimum 3)

1. ATM system
2. Railway/Airline reservation system
3. Library management system
4. Hospital management system and other similar systems

Learning Resources:

1. Books:

Sr. No.	Author	Title	Publisher
1	Blaha and Rumbaugh	Object oriented modeling and design with UML 2.0 (second edition)	Pearson
2	Booch, Rumbaugh, Jacobson	The unified modeling language user guide (second edition)	Pearson education
3	Miles and Hamilton	Learning UML 2.0	SPD O'REILLY

2. Websites:

1. http://www.uml-diagrams.org/index-examples.html (refer for case studies)
2. http://www.tutorialspoint.com/uml/uml_class_diagram.htm
3. http://math-cs.gordon.edu/courses/cs211/ATMExample/
4. http://uml-tutorials.trireme.com/

Course Name : Diploma in Computer Technology

Course Code : CM

Semester : Sixth

Subject Title : Advanced Database Management (Elective)

Subject Code : 17631

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
03	--	02	03	100	--	--	25@	125

NOTE:

- **Two tests each of 25 marks to be conducted as per the schedule given by MSBTE.**
- **Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional Work (SW).**

Rationale:

In the present era, it is very essential to develop and arrange data in such a way that it solves a complex problem efficiently. Advanced database management is a subject which gives emphasis on managing the data which is available on internet. The students will be able to handle, manage and transform online data in a secure environment and gain the knowledge of emerging database technology such as multimedia database, digital library database and mobile database.

General Objectives:

To develop following skills:

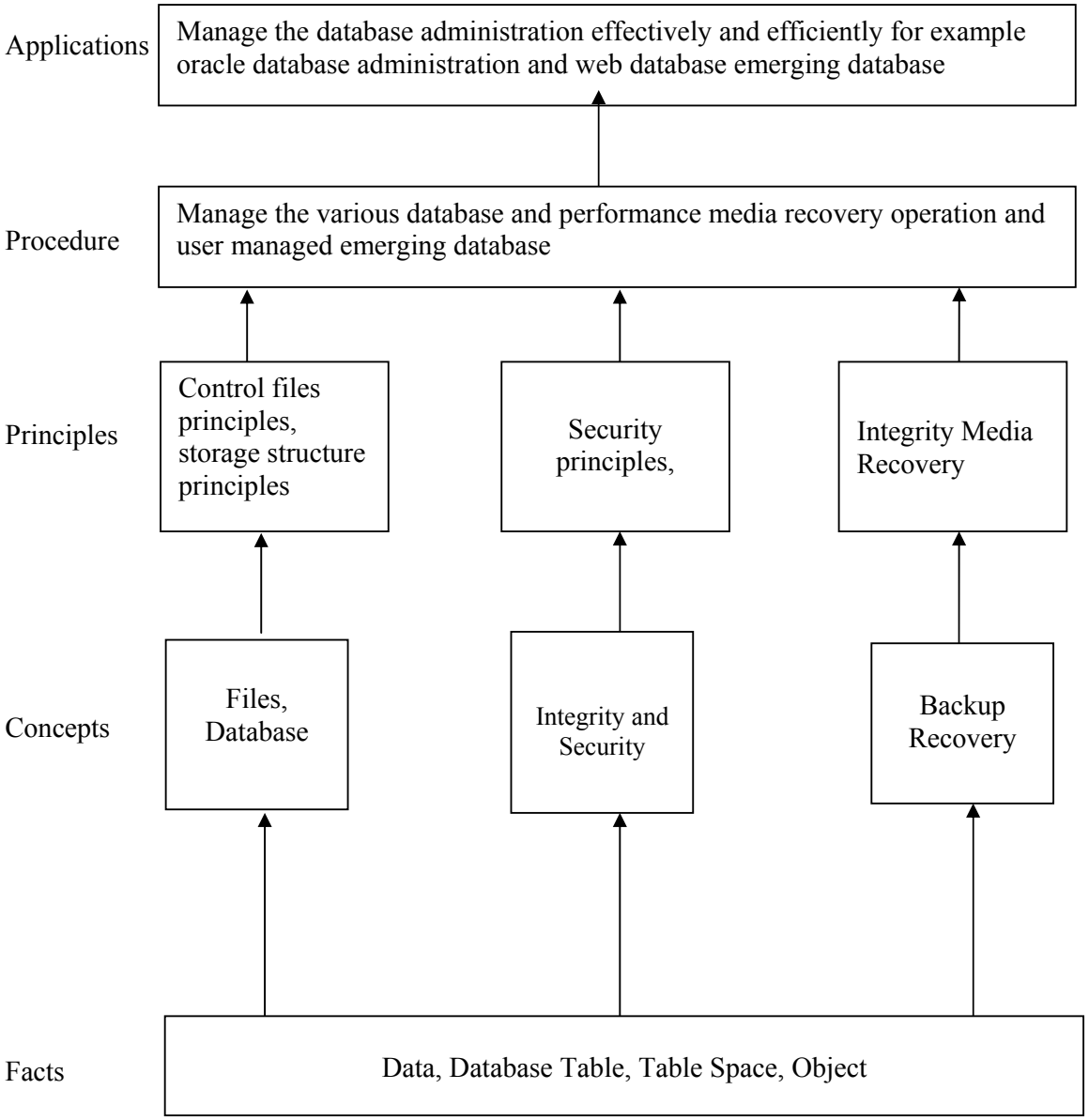
Intellectual skills:

1. To learn the installation of oracle 8i or Higher Versions.
2. To learn system and object privileges.
3. To know database backup and recovery.
4. To understand emerging databases.
5. To understand the database application development.

Motor skills:

1. Proper installation of oracle 8i or Higher Versions.

Learning Structure:



Theory: Contents

Topic No.	Content	Hours	Marks
1	**Introduction to Database Management System** Specific Objectives **:** ➢ To study the basics of DBMS. ➢ To understand the concept of parallel & distributed DBMS. ➢ To understand the Architecture of DBMS. ➢ To understand the background processes. 1.1 Definition of DBMS 1.2 Benefits of DBMS 1.3 Introduction to Database system • Overview of parallel DBMS • Distributed DBMS • Advantages of Distributed DBMS 1.4 Oracle database architecture • Logical structure • Physical structure 1.5 System Global Area (SGA) • Database buffers cache • Redo log buffers • Shared pool 1.6 Program Global Area (PGA) • Background processes • System Monitor (SMON) • Processes Monitor(PMON) • Database Writer(DBWR) • Log Writer(LGWR) • ARCHiver	08	16
2	**Table space, user management and database security** Specific Objectives : ➢ To understand how to manage the users. ➢ To use the system privileges. ➢ To use the object Privileges. ➢ To use Revoking Privileges given. 2.1 Creating table spaces • Table spaces • Oracle system table space • Create table space • Creating a table space using SQL plus 2.2 Modifying Existing User password 2.3 Managing user in oracle • Privileges • System Privileges • Object Privileges • Granting Privileges • Referencing a table Belonging to Another User • Granting Privileges when Grantee has been given GRANT Privilege	10	20

	• Revoking Privileges Given • Revoking Permissions Using the REVOKE Statement • Roles 2.4 Creating A DBA User. 2.5 Database Security • Goals of Database Security • Threats to Database Security • Types of Database Security Issues • Discretionary Access Control • Granting & Revoking Privileges • Audit Trails • Mandatory Access Control		
3	**Backup and Recovery** Specific Objectives : ➢ To understand the importance of database backup. ➢ To understand the need of database recovery. ➢ To learn different recovery techniques. 3.1 Introduction 3.2 Database backup 3.3 Why plan backup? 3.4 Hardware protection and redundancy 3.5 Transaction logs 3.6 Importance of backup 3.7 Database Recovery 3.8 Data storage 3.9 Causes of failure 3.10 Recovery concepts and terminology 3.11 Recovery facilities • Backup mechanism • Logging • Check points 3.12 Recovery Techniques • Deferred update • Immediate update • Shadow paging 3.13 Detached transaction Actions 3.14 Recovery in multi-database system 3.15 Database recovery from catastrophic failures	10	20
4	**Emerging Database Technologies** Specific Objectives : ➢ To understand internet database ➢ To learn the concept of multimedia database ➢ Detailed study of the mobile database 4.1 Introduction 4.2 Internet Databases • Internet technology • World Wide Web technology • Advantages and disadvantages of web databases 4.3 Digital Libraries • Introduction to digital libraries • Components of digital libraries	12	24

	• Need for digital libraries • Technical developments in digital libraries • Technical Areas in digital libraries • Access to digital libraries • Database for digital libraries • Potential benefits of digital libraries 4.4 Multimedia Databases • Multimedia sources • Multimedia database queries • Multimedia database applications 4.5 Mobile databases • Architecture of mobile databases • Characteristics of mobile computing • Mobile DBMS • Commercial mobile databases		
5	**Database Application Development** Specific Objectives : ➢ To learn the components of client - server system ➢ To identify the difference between two tier and three tier application in java ➢ To know the key components of web application ➢ To create three tier web application using java 5.1 Client - Server Architecture • Partitioning on application 5.2 Database in a two tier architecture • Database access from java program 5.3 Three tier Application using Java Server Pages web application (JSP) 5.4 Key consideration in three tier applications 5.5 Key benefits of three tier application	04	12
6	**Introduction to data warehousing and data mining** Specific Objectives : ➢ To understand the basic concept of data warehousing ➢ To know the need of data warehousing ➢ To know the success of data warehousing ➢ To understand the architecture of data warehousing ➢ To learn the data mining tools 6.1 Basic concepts of data warehousing 6.2 The need for data warehousing 6.3 Data warehousing success 6.4 Data warehouse architectures 6.5 Some characteristics of data warehouse data 6.6 Data mining • Data mining techniques • Data mining application	04	08
	Total	**48**	**100**

Practical Contents:

- Students must also do a mini project covering practical knowledge gained in the subject & submit a brief project report in manual/work book. This report should also include the importance of the project from industry point of view.
- Experiments including mini project shall be stored in the CD and updated after every practical session.
- Students shall maintain a manual/work-book giving details of the work-carried out during every practical session.
- Assessment shall be done based on the manual/work-book and the CD. This CD along with manual/work book shall be submitted as term-work.

List of Practical:

Sr. No.	Title of Experiment	No. of Hours
1	Demonstration of Installation of Oracle Database Softwares.	02
2	Create a database SQL plus & with Database Control & viewing parameters with database control.	02
3	Use Enterprise manager to create alter & drop a table space.	02
4	To enterprise manager to grant system & object Privileges.	02
5	Create & User Password profiles.	02
6	Run a whole database backup & backup the control file to trace with SQL plus & manage Recovery management backups.	04
7	Recovery the data from loss of control file & multiplex online redo log fill.Recovery a lost of multiplexed online log file and recovery the data from loss of non critical data files.	04
8	Implementation of accessing database from a java program.	04
9	Application on Dynamic web Pages.	04
10	Case study - Data warehousing Or Mini Project on any other topic.(Use Java)	06

Learning Resources:

Books:

Sr. No.	Author	Title	Publisher
1	Sharnam Shah,Vaishali Shah	Oracle for Professionals	SPD
2	Shio Kumar Singh	Database Systems	Pearson
3	Alexis Leon,Mathews Leon	Database Management System	LeonVIKAS
4	Jeffery A. Hoffer V. Ramash, Heikki Topi	Modern Database Management	Pearson

Websites:

www.wielyIndia.com
www.javacoffeebreak.com/articles/jdbc