 MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION, MUMBAI TEACHING AND EXAMINATION SCHEME FOR POST S.S.C. DIPLOMA COURSES																	
COURSE NAME : DIPLOMA IN INFORMATION TECHNOLOGY																	
COURSE CODE : IF																	
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)
				TH	TU	PR	PAPER HRS.	TH (1)		PR (4)		OR (8)		TW (9)			
								Max	Min	Max	Min	Max	Min	Max	Min		
1	Management \$	MAN	17601	03	--	--	03	100	40	--	--	--	--	--	--		
2	Mobile Computing	MCO	17632	03	--	02	03	100	40	50#	20	--	--	25@	10		
3	Elective (Any One)																
	Fiber Optic Communication	FOC	17633	03	--	02	03	100	40	--	--	--	--	25@	10		
	Object Oriented Modeling and Design	OOM	17630	03	--	02	03	100	40	--	--	--	--	25@	10	50	
4	Advanced Java Programming β	AJP	17085	03	--	04	--	--	--	50#	20	--	--	50@	20		
5	Scripting Technology	STE	17099	01	--	04	--	--	--	50#	20	--	--	25@	10		
6	Industrial Project β	IPR	17097	--	--	04	--	--	--	--	--	50#	20	50@	20		
7	Entrepreneurship Development β	EDE	17098	01	01	--	--	--	--	--	--	--	--	25@	10		
TOTAL				14	01	16	--	300	--	150	--	50	--	200	--	50	
Student Contact Hours Per Week: 31 Hrs. THEORY AND PRACTICAL PERIODS OF 60 MINUTES EACH. Total Marks : 750 @- Internal Assessment, # - External Assessment, No Theory Examination, \$ - Common to all branches, #* Online Examination, β - Common to CO/CM/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/EUCH/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/EUCH/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	--	--	03	100	--	--	--	100

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.

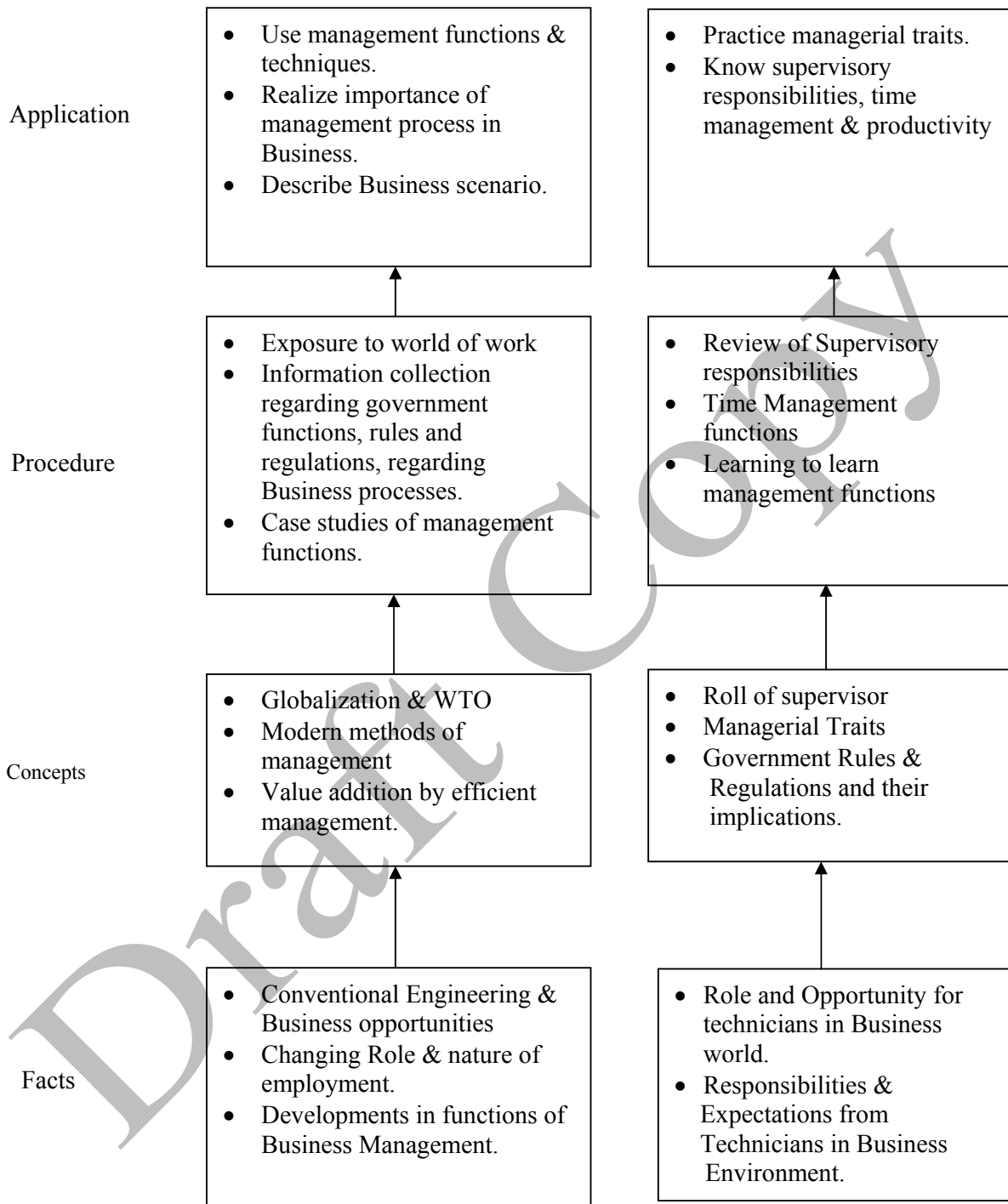
Contents of the this subject will enable the students to address various issues related to human resource, finance, materials, legislations etc. by use of basic principles of management. This will ensure that students will play their role effectively to enhance the quality of business output in total.

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
<p>Topic 1: Overview of Business</p> <p>Specific Objectives</p> <ul style="list-style-type: none"> ➤ State various business types and sectors ➤ Describe importance of globalisation <p>1.1. Types of Business</p> <ul style="list-style-type: none"> • Service • Manufacturing • Trade <p>1.2. Industrial sectors Introduction to</p> <ul style="list-style-type: none"> • Engineering industry • Process industry • Textile industry • Chemical industry • Agro industry • IT industry • Banking, Insurance, Retail, Hospitality, Health Care <p>1.3 Globalization</p> <ul style="list-style-type: none"> • Introduction • Advantages & disadvantages with respect to India 	02	06
<p>Topic 2: Management Process</p> <p>Specific Objectives</p> <ul style="list-style-type: none"> ➤ State various management principles ➤ Describe different management functions <p>2.1 What is Management?</p> <ul style="list-style-type: none"> • Evolution • Various definitions of management • Concept of management • Levels of management • Administration & management • Scientific management by F.W.Taylor <p>2.2 Principles of Management (14 principles of Henry Fayol)</p> <p>2.3 Functions of Management</p> <ul style="list-style-type: none"> • Planning • Organizing • Directing • Controlling • Decision Making 	08	16
<p>Topic 3: Organisational Management</p> <p>Specific Objectives</p> <ul style="list-style-type: none"> ➤ Compare different forms of organisation , ownership for a specific business ➤ Describe types of departmentation <p>3.1 Organization :</p> <ul style="list-style-type: none"> • Definition 	08	16

<ul style="list-style-type: none"> • Steps in organization <p>3.2 Types of organization</p> <ul style="list-style-type: none"> • Line • Line & staff • Functional • Project <p>3.3 Departmentation</p> <ul style="list-style-type: none"> • By product • By process • By function <p>3.4 Principles of Organisation</p> <ul style="list-style-type: none"> • Authority & Responsibility • Span of Control • Effective Delegation • Balance ,stability and flexibility • Communication <p>3.5 Forms of ownership</p> <ul style="list-style-type: none"> • Proprietorship • Partnership • Joint stock • Co-operative Society • Govt. Sector 		
Topic 4: Industrial Safety and Legislative Acts		
<p>Specific Objectives</p> <ul style="list-style-type: none"> ➤ Describe types of accidents & safety measures ➤ State provisions of industrial acts. <p>4.1 Safety Management</p> <ul style="list-style-type: none"> • Causes of accidents • Types of Industrial Accidents • Preventive measures • Safety procedures <p>4.2 Industrial Legislation - Necessity of Acts</p> <p>Important Definitions & Main Provisions of following acts:</p> <ul style="list-style-type: none"> • Indian Factory Act • Workman Compensation Act • Minimum Wages Act 	08	14
Topic 5: Financial Management (No Numerical)		
<p>Specific Objectives</p> <ul style="list-style-type: none"> ➤ Explain functions of financial management ➤ State the sources of finance & types of budgets. ➤ Describe concepts of direct & indirect taxes. <p>5.1 Financial Management- Objectives & Functions</p> <p>5.2 Capital Generation & Management</p> <ul style="list-style-type: none"> • Types of Capitals - Fixed & Working • Sources of raising Capital - Features of Short term, Medium Term & Long Term Sources <p>5.3 Budgets and accounts</p> <ul style="list-style-type: none"> • Types of Budgets 	08	16

<ul style="list-style-type: none"> • 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. <p>5.4 Meaning & Examples of –</p> <ul style="list-style-type: none"> • Excise Tax • Service Tax • Income Tax • Value Added Tax • Custom Duty 		
<p>Topic 6: Materials Management (No Numerical)</p> <p>Specific Objectives</p> <ul style="list-style-type: none"> ➤ Describe concept of inventory, ABC analysis & EOQ. ➤ Describe purchase functions & procedures ➤ State features of ERP & MRP <p>6.1 Inventory Concept, its classification, functions of inventory</p> <p>6.2 ABC Analysis - Necessity & Steps</p> <p>6.3 Economic Order Quantity Concept, graphical representation, determination of EOQ</p> <p>6.4 Standard steps in Purchasing</p> <p>6.5 Modern Techniques of Material Management</p> <ul style="list-style-type: none"> • 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	16
<p>Topic 7: Quality Management</p> <p>Specific Objectives</p> <ul style="list-style-type: none"> ➤ State Principles of Quality Management ➤ Describe Modern Technique & Systems of Quality Management <p>7.1 Meaning of Quality</p> <p>Quality Management System – Activities, Benefits</p> <p>Quality Control - Objectives, Functions, Advantages</p> <p>Quality Circle - Concept, Characteristics & Objectives</p> <p>Quality Assurance – Concept, Quality Assurance System</p> <p>7.2 Meaning of Total Quality and TQM</p> <p>Components of TQM – Concept, Elements of TQM, Benefits</p> <p>7.3 Modern Technique & Systems of Quality Management like Kaizen, 5'S', 6 Sigma</p> <p>7.4 ISO 9001:2000 - Benefits, Main clauses.</p>	06	16
Total	48	100

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 : Diploma in Information Technology
Course Code : IF
Semester : Sixth
Subject Title : Mobile Computing
Subject Code : 17632

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:

Mobile computing is proving to be one of the most promising technological advances in computer science and engineering. Now it is a common place to see people sitting in hotels, meetings and open spaces checking their mails and appointments or chatting with friends. Thanks to mobile phones due to which we have moved from no one having access to the information, to everyone having access.

Mobile computing has revolutionized the way in which we work, connect and communicate to the world. Making information available from anywhere anytime is one set of challenges. Making information available all the time when the user is mobile and may be travelling is another set of challenges.

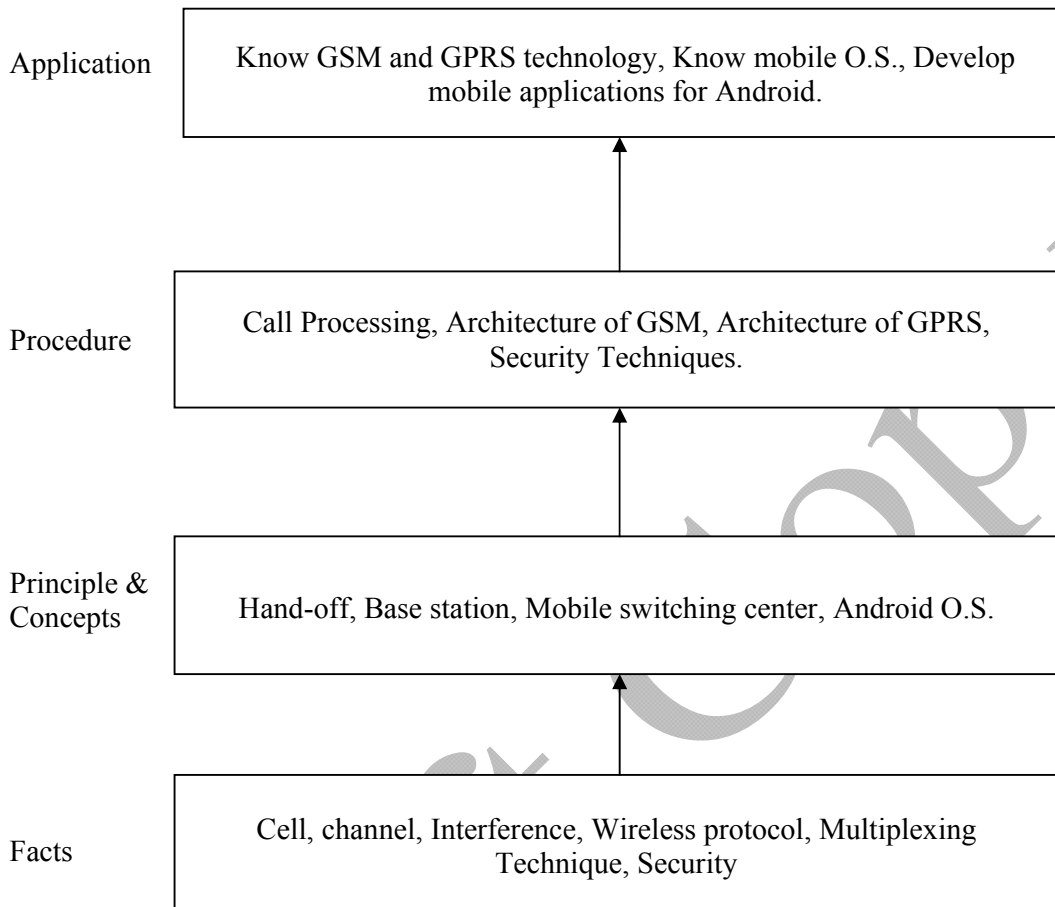
This subject will address these challenges and also discusses various communication technologies that facilitate mobile computing. This subject also provides the information about Android operating system which is becoming quite popular for high end mobile phones.

Objectives:

Students will be able to:

1. Understand cellular network concept.
2. Know wireless communication technologies used for mobile computing.
3. Know overall functioning of Global System for Mobile communications (GSM).
4. Understand call processing in GSM.
5. Understand GSM architecture
6. Understand GPRS architecture
7. Know 3G and 4G technologies
8. Know overview of Android mobile operating system.

Learning Structure:



Theory:

Topic No.	Contents	Hours	Marks
1	<p>Introduction to Mobile Computing</p> <p>Objectives:</p> <ul style="list-style-type: none"> ➤ Learn overview of Cellular Network. ➤ Know Mobile Computing Architecture. ➤ Understand different Cellular Concepts. <p>1.1 Introduction to Mobile Computing- Mobile Computing Functions, Mobile Computing Devices, Mobile Computing Architecture, Evaluation of Wireless Technology.</p> <p>1.2 Cellular Concepts- Frequency reuse, Channel assignment strategies, Handoff strategies. Interference and system capacity- Co-channel Interference, Adjacent channel Interference, Channel planning for wireless system, Power control for reducing Interference.</p> <p>1.3 Improve coverage and capacity in cellular system- Cell splitting, Sectoring, Repeaters for range extension, A micro cell zone concept.</p>	08	16
2	<p>Global System for Mobile Communication (GSM)</p> <p>Objectives:</p> <ul style="list-style-type: none"> ➤ Learn Services provided by GSM for Mobile User. ➤ Understand GSM Architecture. ➤ Learn Call Processing Techniques in GSM. <p>2.1 Introduction- GSM services and features, GSM architecture, GSM channel types, Example of GSM Call: GSM to PSTN call, PSTN to GSM call.</p> <p>2.2 GSM frame structure, Signal processing in GSM, Location tracking and call setup.</p>	10	22
3	<p>GSM Mobility Management</p> <p>Objectives:</p> <ul style="list-style-type: none"> ➤ Learn Call Origination and Termination Procedure. ➤ Know Mobility Data Bases. ➤ Understand VLR Overflow Control Algorithm. <p>3.1 GSM location update, Mobility database, Failure Restoration: VLR Failure Restoration, HLR Failure Restoration.</p> <p>3.2 VLR Identification algorithm, VLR overflow control: Algorithm 1. Registration, Algorithm 2 Cancellation, Algorithm 3 Call Origination, Algorithm 4 Call Termination.</p>	08	18
4	<p>General Radio Packet System (GPRS)</p> <p>Objectives:</p> <ul style="list-style-type: none"> ➤ Understand GPRS Architecture. ➤ Learn GPRS Network Operations. ➤ Basic Concept of 3G and 4G Technology. <p>4.1 GPRS Architecture, GPRS Networks Nodes, GPRS Network Operations, Data Services in GPRS, Applications and Limitations</p>	08	16

	of GPRS. 4.2 Introduction to 3G and 4G Technologies-UMTS, CDMA 2000, Any one 4G Technology (Case Study).		
5	Mobile Security Objectives: <ul style="list-style-type: none"> ➤ Understand need of Security. ➤ No different Security Techniques. 5.1 Information Security- Attacks, Component of Information Security. 5.2 Security Techniques and Algorithms- Streams Ciphering and Block Ciphering, Symmetric Key Cryptography, Public Key Cryptography. 5.3 Security Frame Works for Mobile Environment- 3GPP Security, Mobile VPN, Multifactor Security, Smart Card Security, Mobile virus, Mobile Worm.	08	16
6	Mobile Operating System Objectives: <ul style="list-style-type: none"> ➤ Know different Mobile Operating systems. ➤ Understand Android Architecture. ➤ Develop Android Based Applications. 6.1 Introduction to Mobile Operating System (Only features) - Windows CE, Symbian OS, Linux for Mobile Devices, Android. 6.2 Android Overview, Android Architecture, Life Cycle of Android Activity. 6.3 Android Tools Installation- JDK1.6, Eclipse Emulator, Android SDK Starter Package, Create Android Based simple Program like Hello Android on Emulator.	06	12
Total		48	100

List of Practical:

Sr. No.	Title of Experiment	No. of Hours
1	Perform installation of mobile phones.	02
2	Observe input/output signals of different sections of mobile phone.	02
3	Read contents of SIM card.	02
4	Understand and perform handset charging functionality.	02
5	Perform mobile handset testing.	02
6	Demonstration of handoff, frequency reuse and cell splitting.	02
7	Installation of Android tools: Jdk 1.5 and above, Sdk Android starter package, Eclipse emulator.	04
8	Write a program to display "Hello" on emulator.	04
9	Develop a small application to design a user interface. E.g. two text boxes and two buttons.	02
10	Develop a program to perform Encryption and Decryption using any programming language.	02

11	Prepare a report on features and services provided by different mobile service providers like Idea, Airtel etc.	02
12	Prepare a report on specifications of different handsets provided by different companies.	02
13	Industrial visit to mobile company-GSM (e.g. BSNL Airtel, BPL).	04

NOTE: First five experiments to be performed using specified GSM trainer kit.

Learning Resources:

1. Books:

Sr. No.	Author	Title	Publisher
1	Yi-Bang Lin, Imrich Chlamtac	Wireless and Mobile Network Architecture	Wiley India Edition (Wiley student edition)
2	Theodore S. Rappaport	Wireless Communications - Principles and Practice, Second edition	Pearson
3	Asoke K. Talukder	Mobile computing - Technology, applications and service creation, Second edition	Tata McGraw Hill Education
4	Prashant K Patra, Sanjit K Dash	Mobile Computing, Second Edition	Scitech Publication
5	Ed Burnette	Hello, Android- Introducing Google's Mobile Development Platform, Third Edition	Shroff Publishers and Distributors (SPD)

2. CDs, PPTs Etc.:

www.wiley.india.com (PPTs available)

www.pearsoned.co.in (After Registration resources are available)

3. IS, BIS and International Codes:

ISBN: 978-81-265-1560-8

ISBN: 978-81-317-3186-4

ISBN-13:978-0-07-011457-6

ISBN-10:978-0-07-011457-5

ISBN: 978-81-8371-457-0

ISBN-13:978-93-5023-292-7

Course Name : Diploma in Computer Engineering

Course Code : CO

Semester : Sixth

Subject Title : Fiber Optic Communication (Elective)

Subject Code : 17633

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:

Fiber optics is a branch of optics that deals with the study of propagation of light. We are living in an “**Information Age**” where efficient transfer of information is highly relevant. Traditional communication links are incapable of satisfying the demand for this information due to limitations imposed by the bandwidth constraints. Fiber optic systems are going to form the means of information transfer and hence have a very important role in the development of every sphere of life.

It is an applied technology subject that deals with the basic principles of transferring information with light as the carrier, the techniques involved and the relevant opto-electronic devices that facilitate the communication of information through the fiber optic technology.

Objectives:

The student will be able to

1. Understand the construction and working of fiber optic cable, light detectors and light sources.
2. Understand the reasons for loss of information in a FOC (Fiber Optic Cable).
3. Set up a fiber optic communication link for transmitting analog / digital signals.
4. Test the performance of the established link.

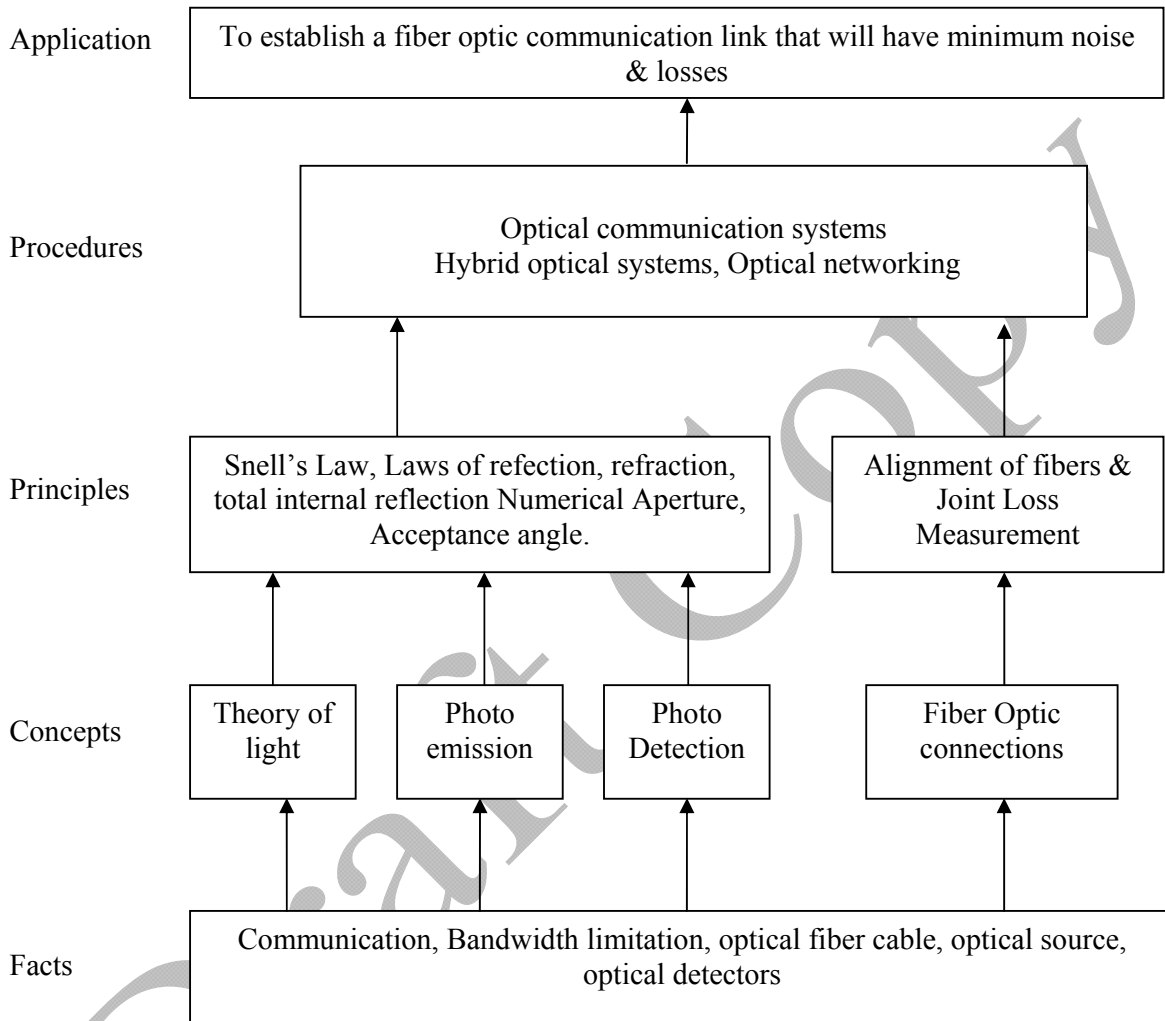
Intellectual Skills:

1. Identifying, Recording, Analysis.
2. Evaluation
3. Graphical analysis

Motor Skills:

1. Testing
2. Set up a fiber optic link for analog and digital signal transmission

Learning Structure:



Contents: Theory

Topic No.	Contents	Hours	Marks
1	<p>Introduction Specific Objectives:</p> <ul style="list-style-type: none"> ➤ State the need for fiber Optic communication ➤ Understand the advantages of FOC ➤ List the standards relevant with optical fiber communication <p>1.1 Need for fiber optic communication 1.2 Block diagram of a fiber optic communication system. 1.3 Advantages of optical fiber communication over Conventional electrical communication. 1.4 Spectral band designations used in optical fiber Communications. 1.5 Standard for optical fiber communication - Primary, Component Testing , system standards</p>	04	08
2	<p>Optical Fiber Specific objectives</p> <ul style="list-style-type: none"> ➤ Identify a fiber optic cable, ➤ Understand the structure and propagation of light along the fiber ➤ Understand the fabrication of fiber and the signal loss in fiber. <p>2.1 Basic Laws of optics. Reflection, Refraction, Absorption, Radiation, Scattering, Dispersion & polarization of light. 2.2 Refractive index, critical angle. 2.3 Numerical aperture & acceptance angle. 2.4 Fiber optic cable fabrication. 2.5 Classification of optical fibers on index profile and mode Profile. 2.6 Mechanical properties of fiber. 2.7 Losses in optical fibers. <ul style="list-style-type: none"> • Absorption Losses • Scattering Losses • Chromatic Losses • Bending loss • Attenuation 2.8 Signal distortion Inter-modal Dispersion.</p>	12	24
3	<p>Optical Sources and optical detectors. Specific Objectives</p> <ul style="list-style-type: none"> ➤ Identify the light sources and detectors and understand their characteristics <p>3.1 Concept of Absorption, spontaneous emission, stimulated emission. 3.2 Optical Sources <ul style="list-style-type: none"> • Light Emitting Diode (LED) – Edge Emitting LEDs. Surface Emitting LEDs. </p>	16	28

	<p>LED construction, working principle and characteristics of LED. LED spectral Bandwidth. Advantages and Disadvantages of LED.</p> <ul style="list-style-type: none"> • LASER- Light Amplification by Stimulated Emission and Radiation. Types of LASER – Solid laser, Liquid laser, Gas laser, Ruby laser, YAG Laser, He-Neon laser, carbon dioxide laser, GaAs injection laser. Laser diode construction, working principle and characteristics of laser diode. <p>Performance characteristics of Laser diode.</p> <ul style="list-style-type: none"> • Threshold current. • Efficiency • Noise • Spectral width • Reliability <p>Comparison of LED and LASER Diode</p> <p>3.3 Optical detectors.</p> <ul style="list-style-type: none"> • Photo diode- construction, working and characteristics, Advantages, disadvantages. • PIN photodiode- construction, working and advantages, disadvantages. • Avalanche photodiode - construction, working and characteristics, advantages, disadvantages. Comparison of different optical detectors. • Device characteristics: Responsivity, Dark current, photo detector noise 		
4	<p>Optical fiber Connections. Specific Objectives</p> <ul style="list-style-type: none"> ➤ To connect fibers and understand the various methods of splicing. ➤ To understand fiber couplers, their types and the function of optical Isolators and circulators <p>4.1 Fiber alignment and joint loss</p> <ul style="list-style-type: none"> • Longitudinal misalignment • Lateral misalignment. • Angular misalignment. <p>Joint Loss.</p> <p>4.2 Fiber splices.</p> <ul style="list-style-type: none"> • Fusion splice • Mechanical splice. • Multiple splices. <p>Comparison of fiber splices</p> <p>4.3 Fiber connectors.</p> <ul style="list-style-type: none"> • Types of fiber connectors. SMA, FDDI, DR, ST, SC, FC. <p>4.4 Fiber Couplers. Classification - core interaction type</p>	08	20

	Surface interaction type. 4.5 Optical isolators and circulators. 4.6 Optical Time domed reflectometer.		
5	Optical communication system. Specific Objectives ➤ To understand and apply the principles of fiber optic systems. 5.1 Wave division multiplexing. 5.2 Optical analog systems - block diagram 5.3 Optical digital systems - block diagram. 5.4 Hybrid multi channel analog and digital optical system. 5.5 Undersea optical systems. 5.6 Fundamentals of Optical networking (SONET)	08	20
Total		48	100

List of Practical:

Sr. No.	Title of Experiment	No. of Hours
1	To observe and study the dimension, material used and specification of different types of optical fiber cables.	02
2	To measure the input / output voltages for the transmission of analog and digital signal through a fiber optics transmitter - receiver system.	02
3	To measure numerical aperture and acceptance angle of a FOC	04
4	To measure attenuation and bending losses in a fiber optic system.	04
5	To study graphically the radiation emission patterns of LED (Red, Green Blue)	04
6	To study graphically the radiation emission patterns of laser diode.	04
7	To draw the characteristics of PIN diode and measure its dark current	04
8	To draw the characteristics of APD and measure its dark current	04
9	To demonstrate the use of any two fiber connectors.	04

Learning Resources:

1. Books:

Sr. No.	Author	Title	Publisher	Edition
1	Gerd Keiser	Optical Fiber Communications	McGraw Hill	4th
2	Harold Kolimbris	Fiber Optics Communication	Pearson	--
3	John. M.Senior	Optical Fiber Communication Principles & Practice	Pearson	3 rd
4	R.P.Khare	Fiber Optics & Opto electronics	Oxford	--
5.	Kushal Roy	Advanced Optical Fiber Communication	Scitech	--

2. CDs, PPTs Etc.:

- 1) www.thefoa.org/PPT/HSintro.ppt
- 2) www.mhhe.com/engcs/electrical/keiser/ppt.mhtml
- 3) tcil-india.com/new/new_site/white%20paper/OFC_presentation.ppt

3. Websites:

- http://en.wikipedia.org/wiki/Fiber-optic_communication
- communication.howstuffworks.com/fiber-optic-communications/fibe...

Course Name : Diploma in Information Technology

Course Code : IF

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:

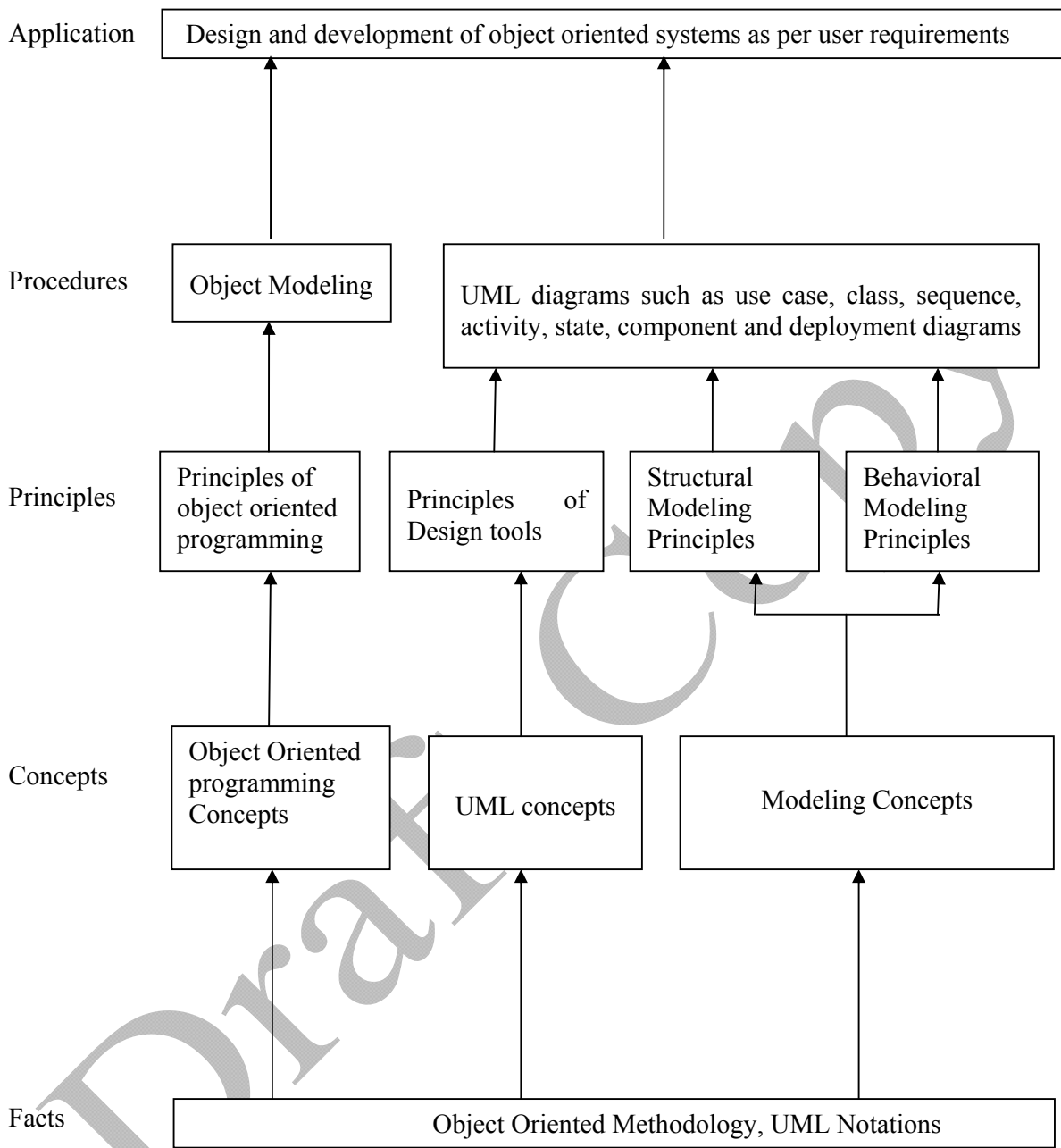
Modeling plays an important role in designing of an application. The real world scenarios and customer needs are mapped to models for an implementation. This subject presents an object oriented approach to software development. It facilitates to build a language independent design. Modeling is an essential 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:



Contents:

Topic and Contents	Hours	Marks
<p>Topic 1: Importance of Modeling Specific Objectives:</p> <ul style="list-style-type: none"> ➤ State importance of modeling ➤ State principles of modeling <p>Contents:</p> <ul style="list-style-type: none"> • 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
<p>Topic 2: Class Modeling Specific Objectives:</p> <ul style="list-style-type: none"> ➤ Define objects and classes ➤ Define relationship among classes ➤ Draw Class diagrams <p>Contents:</p> <p>2.1 Object and Class Concepts (12M)</p> <ul style="list-style-type: none"> • 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 <p>2.2 Multiplicity, Aggregation and Object Modeling (12M)</p> <ul style="list-style-type: none"> • 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
<p>Topics 3: Basic Behavioral Modeling Specific Objectives:</p> <ul style="list-style-type: none"> ➤ Define relationship among use cases ➤ Draw use case diagrams ➤ Draw sequence diagrams <p>Contents:</p> <p>3.1 Use case Diagram (12M)</p> <ul style="list-style-type: none"> • Notations for Use case diagram – use cases, Actors, Communication lines, System boundaries • Use case relationships - Include and extend, Use case generalization 	12	24

<ul style="list-style-type: none"> • Sample use case diagrams 3.2 Sequence Diagrams (12M) <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ➤ Define communication among activities ➤ Draw activity diagram ➤ Draw state chart diagram Contents: 4.1 Activity Diagram (12M) <ul style="list-style-type: none"> • 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) <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ➤ Define components, nodes ➤ Draw component diagram ➤ Draw deployment diagram Contents: 5.1 Component Diagram (4M) <ul style="list-style-type: none"> • Notations for component Diagram – component and interfaces, ports, connectors • Sample Component Diagram 5.2 Deployment Diagram (8M) <ul style="list-style-type: none"> • 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

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

Motor Skills:

1. Proper handling of computer system
2. Developing art of technical drawing

List of Practical:

1. Analyze and design the UML diagrams for the following systems (minimum3)
 - ATM system
 - Railway/Airline reservation system
 - Library management system
 - 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:

- <http://www.uml-diagrams.org/index-examples.html> (refer for case studies)
- http://www.tutorialspoint.com/uml/uml_class_diagram.htm
- <http://math-cs.gordon.edu/courses/cs211/ATMExample/>
- <http://uml-tutorials.tyrem.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 : 17085

Teaching and Examination Scheme

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

Rationale:

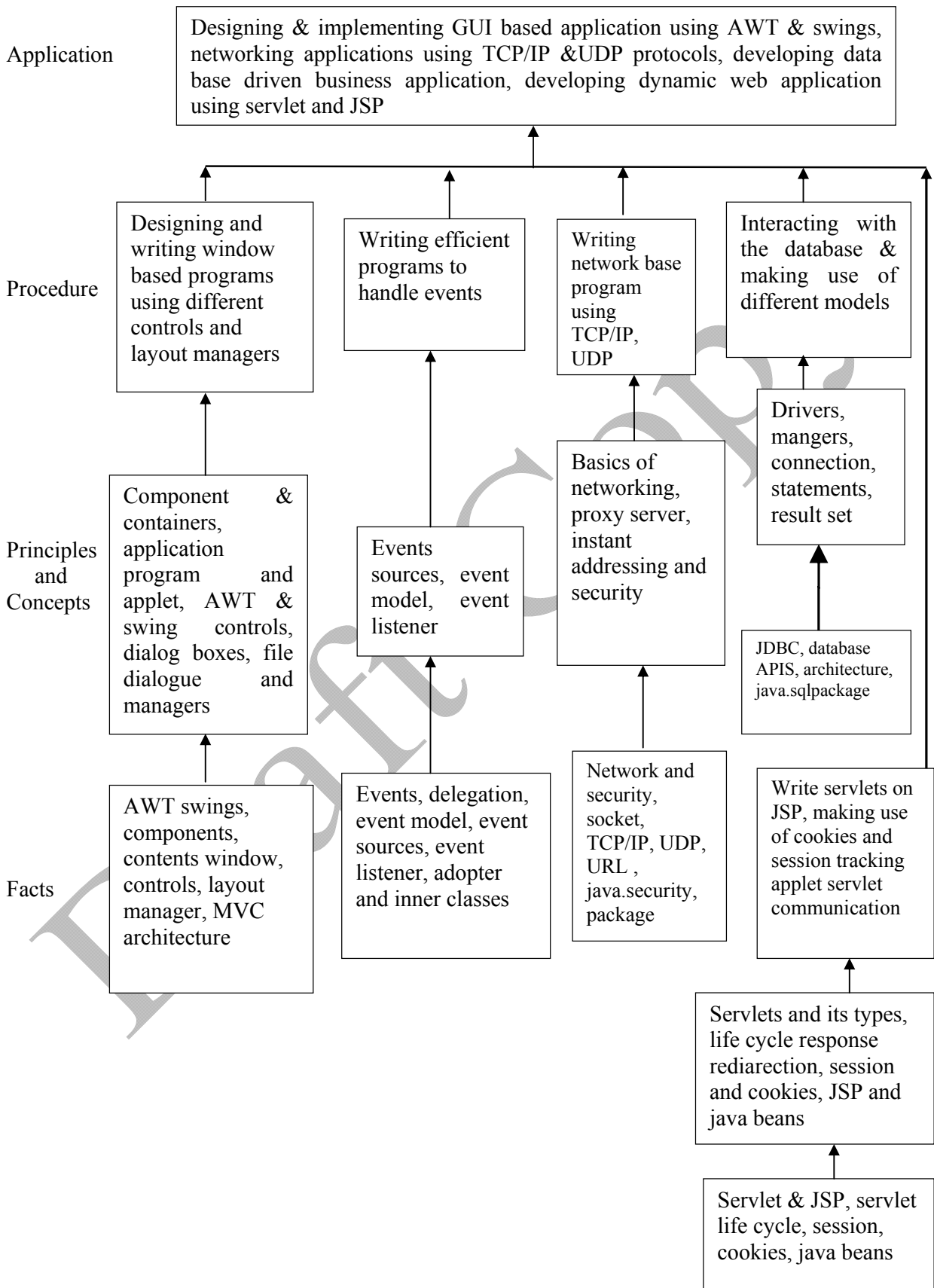
Nowdays, Internet has touched every aspect of life. If we are not connected to internet, it is like we are nowhere. Online presence is a must for businesses. If your enterprise is not online, you are far behind. Web presence has dominated the businesses worldwide.

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	<p>Introduction to Abstract Windowing Toolkit(AWT) & Swings Specific Objective</p> <ul style="list-style-type: none"> ➤ To design & develop Graphical user interface (GUI) programs using AWT and swing component. ➤ To arrange the GUI components using different layout managers. <p>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, separator, tables, trees, toggle button.</p>	16	24
02	<p>Event Handling Specific Objective</p> <ul style="list-style-type: none"> ➤ To write event driven programs using the delegation event model. ➤ To learn the concept of adapter classes & the inner classes. <p>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 WindowListener Interface, the WindowFocusListener Interface</p>	10	20

03	<p>Networking & Security Specific Objective: ➤ To learn the Java's built in support for network programming. ➤ To learn about SOCKETS, TCP, ISP, URL and the Java security package.</p> <p>3.1 Basics of Networking Socket, IP, TCP, UDP, Proxy Server, Internet Addressing</p> <p>3.2 The InetAddress Class Factory methods Instance methods</p> <p>3.3 TCP/IP Sockets Socket, Server Socket, methods</p> <p>3.4 URL URL Connection, http, URL Connection methods, creating & using TCP/IP client & server</p> <p>3.5 Security with Java: Theoretical introduction to java.security Package Permission class Policy class</p>	08	16
04	<p>Interacting with Database Specific Objective :</p> <p>➤ To create database driven business applications using the database API'S two tier and three tier models and the Java.Sql package</p> <p>4.1 JDBC, ODBC, & Other APIS JDBC two tier & three tier models</p> <p>4.2 Connecting to Database Driver Interface, Driver Manager class, Connection Interface, Statement Interface, the java.sql.package Establishing connection & retrieving information Resultset interface.</p>	06	20
05	<p>Servlets & JSP Specific Objectives :</p> <p>➤ To write web based applications using servlets, JSP and Java Beans. ➤ To learn about cookies session tracking.</p> <p>5.1 Servlet Type of Servlet, Servlet life cycle.</p> <p>5.2 Using servlets, response redirection.</p> <p>5.3 Basic concepts of sessions, cookies & session tracking</p> <p>5.4 Introduction to servlet chaining & filters, Introduction to applet servlet communication.</p> <p>5.5 JSP, expression, directives& declarations, Life cycle of a JSP page TLD & JSTL, Java beans.</p>	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.	4
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.	4
3	Write a program to perform addition of two nos. make use of textfield and button.	4
4	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	4
5	Write a program using swing to display a JComboBox in an applet with the items – cricket, football, hockey, tennis	4
6	Write a program to create a Jtree and recognize mouse clicks on it.	4
7	Write a program to create a JTable On JApplet Window.	4
8	Write a program to display the key pressed on Applet Window.	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
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 Information Technology
Course Code : IF
Semester : Sixth
Subject Title : Scripting Technology
Subject Code : 17099

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:

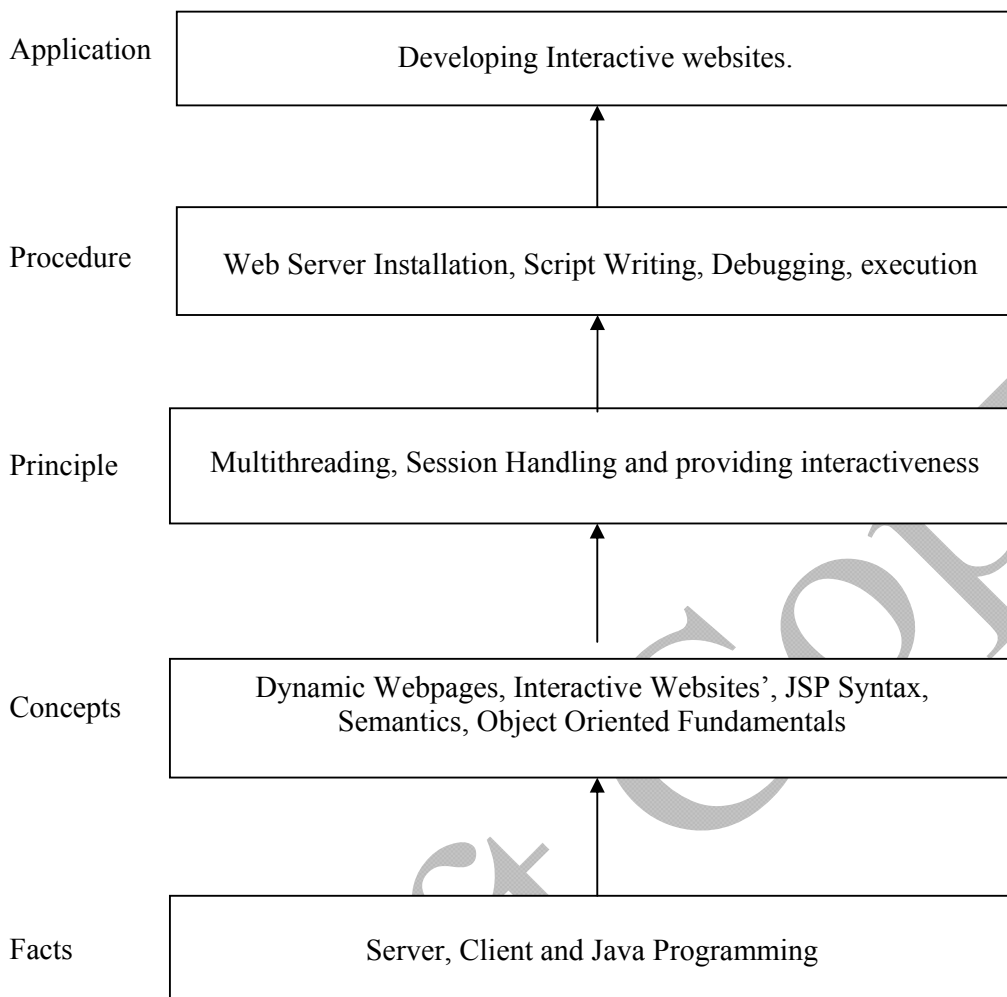
In today's world highly interactive websites have become effective way for ecommerce and advertising activities. JSP is the newer and better way to develop applications and deliver data to the users. It gives developers a simple yet powerful framework for creating Internet delivered applications and data. It provides a more convenient way to write/modify and present dynamically generated contents on Web Pages. This subject is designed for providing students hands on skills on how to build server side Java based applications as well as write client side scripts using JavaScript which is essential for instant validation.

Objectives:

Students will be able to:

1. Configure and manage Web Servers.
2. Integrating Web Technologies.
3. Write client side validation code with JavaScript.
4. Use elements of JSP for server side coding.
5. Develop interactive websites.
6. Write code using session management and thread management using JSP.
7. Write code for handling Events.
8. Establish database connectivity through JSP.

Learning Structure:



Contents:

Topic No.	Name of Topic/Sub topic	Hrs.
1	<p>Introduction to Web Programming Environment Objectives :</p> <ul style="list-style-type: none"> ➤ Understand Importance of Client and server side scripting. ➤ Able to integrate JavaScript with a webpage. <p>1.1 Evolution of HTTP : HTTP Specification 1.2 Overview of Scripting, Introduction to Client Side Scripting and server side 1.3 Understanding Java Script 1.4 About Dynamic HTML (DHML) 1.5 Selecting a Development Environment for Java Script, JavaScript keywords, Including Inline script. 1.6 HTML and Java Script Integrating Script under the <head> tag, Integrating Script under the <body> tag, Importing the External Java Script, storing data in variables, Passing Function Arguments and recognizing variable scope. 1.7 Doing arithmetic, Assigning and comparing values, assigning logic, examining conditions and setting precedence.</p>	02
2	<p>Elements of Javascript and Basic Building Blocks Objectives :</p> <ul style="list-style-type: none"> ➤ Write JavaScript using various components. ➤ Write JavaScript for displaying various dialog messages. <p>2.1 Element Of JavaScript: JavaScript Statements (branching and looping) for controlling flow. 2.2 Employing Objects: Creating, Extending object and creating and adding array objects and elements, looping through the elements, Joining and slicing arrays, sorting array elements and catching exceptions. 2.3 Time: Date and Time components extracting and setting Date and Time. Working with numbers and strings Comparing numbers, working with floating point numbers, random numbers, uniting, splitting strings, finding characters in strings and setting numbers from string. 2.4 Referencing the window object: Introducing DOM, inspecting window properties, Displaying dialog messages, Scrolling and moving positions, opening new window, querying the browser, discovering what is enabled, controlling location and travelling through history.</p>	02
3	<p>Document Interaction, Event Handling and Forms Objectives :</p> <ul style="list-style-type: none"> ➤ Write JavaScript for interacting with the document. ➤ Write JavaScript for event handling. ➤ Process HTML forms and create dynamic effects. <p>3.1 Interacting with the Document: Extracting document info, addressing component arrays and component direct, setting and retrieving cookies and writing with JavaScript 3.2 Responding to user actions: Reacting to window events, responding to button clicks, acknowledging key strokes, recognizing mouse moves, Identifying focus</p>	02

Topic No.	Name of Topic/Sub topic	Hrs.
	3.3 Processing HTML forms : Applying values, Polling radio and checkboxes, choosing options, reacting to form changes, submitting valid forms 3.4 Creating dynamic effects: Swapping backgrounds, Toggling visibility, rotating image source, enlarging thumbnails, Animating elements.	
4	<p>JSP Introduction, Basic Elements, Objects, Data Control and Beans Objectives :</p> <ul style="list-style-type: none"> ➤ Understand the advantages of JSP and Server Side scripting. ➤ Write JSP code and set various properties. ➤ Understand and use JSP objects and error handling. <p>4.1 JSP Overview, Advantages and Disadvantages JSP Syntax and Semantics: The JSP Development Model, components of JSP page. Expressions, Scriptlets and Declarations: Expressions, Scriptlets, Declarations. Request Dispatching: Anatomy of Request Processing, Including Other Resources.</p> <p>4.2 Action elements : The useBean element, setProperty and getProperty elements, include element, forward element, plug-in element, optional plug-in elements</p> <p>4.3 Implicit JSP objects and error Handling: The request object, response object, application object, session object, out object, Exception objects, More implicit objects. Handling elements, scriptlets syntax and runtime errors and debugging.</p> <p>4.4 Data Control and User Recognition: Separating display and logic, setting scope for shared data, sharing request data, application data, session data, session tracking and considering server memory.</p> <p>4.5 Creating JavaBeans: What is a JavaBean? Adding a bean to the JSP page, Accessor Method and Mutator Method, setting the properties of the Bean (Bound, Constrained and Indexed), accessing the properties of the Beans.</p>	04
5	<p>JSP Tag Extensions Objectives:</p> <ul style="list-style-type: none"> ➤ Understand and use JSP tags. ➤ Understand the Tag handler life cycle. <p>5.1 Introduction to Custom Tags: Why Custom Tags, Developing your first Custom Tag, How Tag handlers, Works, tag Libraries, The Tag Handler API, The Tag, Handler Life Cycle, Defining Tag Attributes, the iteration of Tag interface, The Body tag Handler API.</p> <p>5.2 Expression Language: What is EL? EL syntax, Functions.</p> <p>5.3 The JSP Standard Tag Library (JSTL): Getting started with JSTL, Core Tags, XML Tags, SQL Tags, Formatting Tags.</p> <p>5.4 Simple Tag Extensions, Tag Files, and JSP Fragments: JSP Fragments, The Simple Tag Interface, Tag Files.</p>	02

Topic No.	Name of Topic/Sub topic	Hrs.
6	JSP Applications Objectives: a) Understand database access through JSP with JDBC. b) Understand the creation of data Source. c) Test and debug JSP code with JDBC connectivity.	04
	6.1 Connecting to a Database Using JNDI dataSource, the statement Interfaces, Result Sets.	
	6.2 Connecting to a Database Using JNDI dataSource, the statement Interfaces, Result Sets.	
	6.3 JSP Testing and Debugging: Building a Mental Model, Testing in Isolation, Debugging Tools.	
Total		16

Note:

Theory Part shall cover in practical session

LCD is necessary to teach this subject, without which effective teaching is not possible.

List of Practical:

Sr. No.	Title of Experiment	No. of Hours
1	Installation and configuration of Web Server.(preferably Apache Tomcat)	02
2	a. Write a JavaScript to display "Hello! World" and find the client browser name. b. Write a JavaScript to call a remote JavaScript at some address. c. Write a JavaScript to call a function if condition 1 is equals 0 is true otherwise write a message "Good! Morning" in alert box and exit. d. Illustrate different form of "for loop".	02
3	Write a JavaScript code for implementing Date object, Math object, Array object, Document object and Event object.	02
4	a. Design a suitable form and validate it using a JavaScript at client side. b. Write a HTML code to design a form with three radio buttons red, green blue. Write a JavaScript code that will change the background color of the page when user click on particular button.	02
5	a. Write a program for demonstration of Generic Servlets. b. Write a program for demonstration of HTTP Servlets. c. Write a simple JSP program and monitor the corresponding Servlet class.	02
6	a. Write a simple JSP program for Demonstrating use of all basic elements. b. Write a simple JSP program for Demonstrating use of expressions, declarations.	04
7	a. Write a JSP program for Demonstrating use of request dispatching. b. Write a simple JSP program for Demonstration of Session Management. c. Write a simple JSP program for Demonstration of Thread Management.	04
8	a. Write a JSP program for Demonstration of Event Listeners. b. Write a JSP program for Demonstration of Filters.	04
9	Write a JSP programs for Demonstration of all tags covered in chapter.	06
10	Write a JSP program for Demonstration of connecting to database using JDBC and JNDI data Source.	04

Total	32
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Note: For conducting practicals actual program statements should be framed by respective faculty.

Learning Resources:

1. Books:

Sr. No.	Author	Title	Publisher
1	Phill Hanna	The Complete Refernce: JSP 2.0	Tata-McGraw Hill
2	Deven N. Shah	A Complete Guide to Internet and Web Programming	DREAMTECH
3	Mice Mcgrath	JavaScript in easy steps	Tata-McGraw Hill
4	Mice Mcgrath	Java Server Pages in easy steps	Tata-McGraw Hill
5	Hans Bergsten	Java Server Pages	O'Reilly
6	Mathew Siple	Java Database Programming	Tata Mc-Graw Hill

2. Web Resources ,CDs, PPTs Etc.:

- <http://www.wileyindia.com> (PPTs available)
- <http://www.jsptut.com/>
- <http://www.roseindia.net/jsp/jsp.shtml>

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 Project

Subject Code : 17097

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, 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.

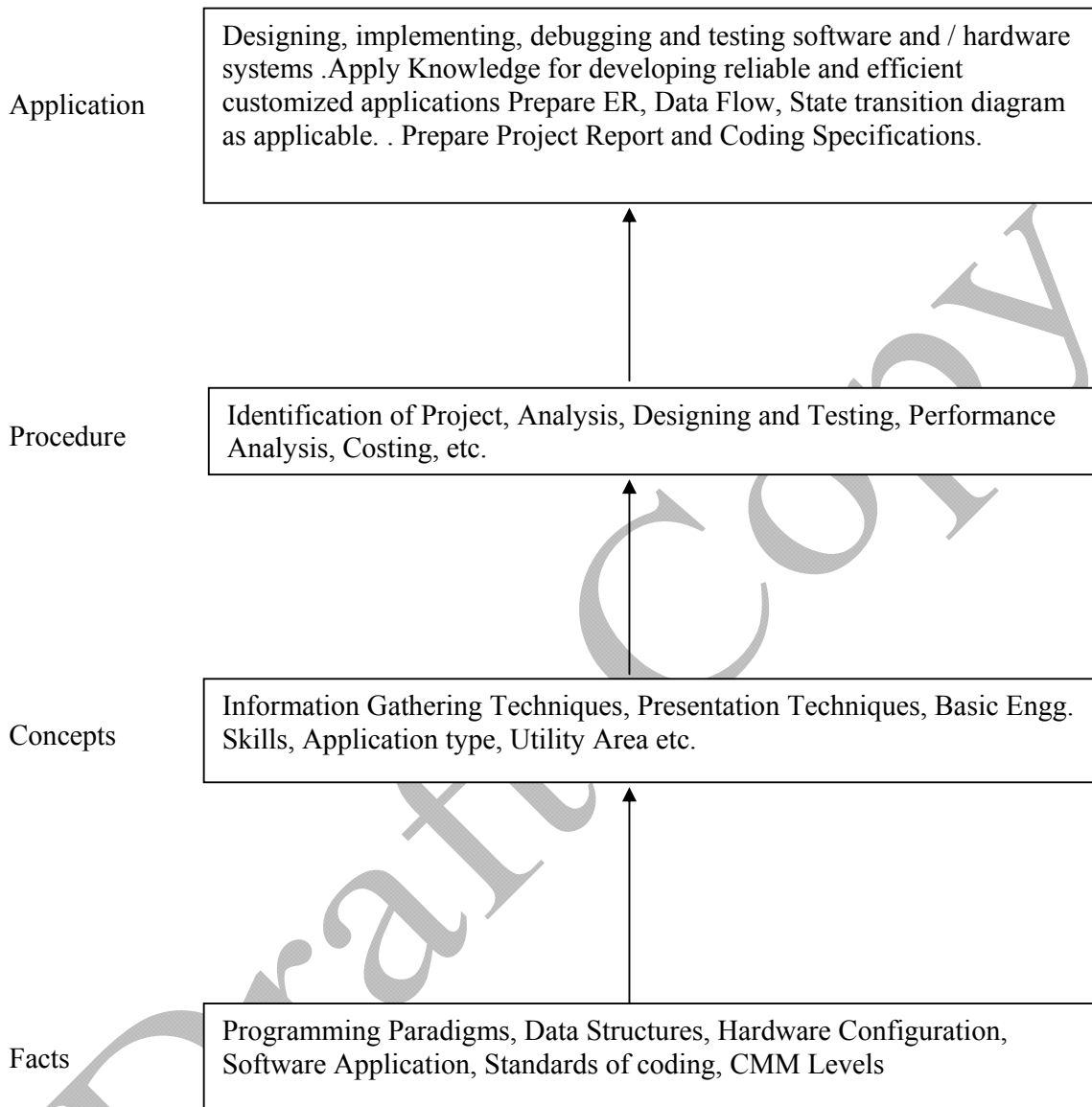
General Objectives:

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
<p>Software Oriented Projects</p>	<ol style="list-style-type: none"> 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 analysing and recognizing places and persons. Here we are assuming wearable computer means with spectacle mountable monitors and wallet size CPU.
<p>Hardware Oriented Projects</p>	<ol style="list-style-type: none"> 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 cognitive 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 : 17098

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS.	TH	PR	OR	TW	TOTAL
01	01	02	--	--	--	--	25@	25

Rationale:

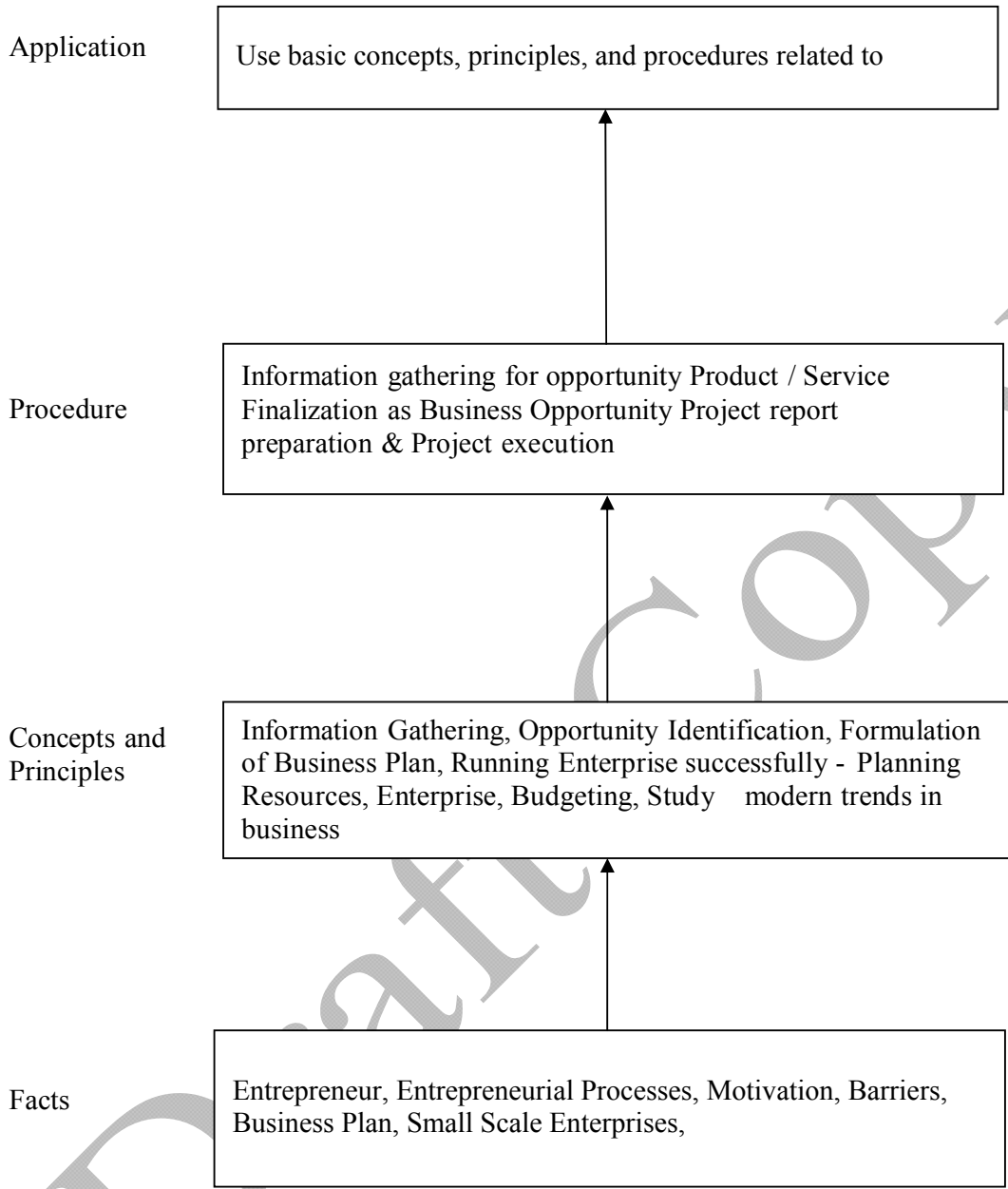
Globalization, liberalization & privatization along with revolution in Information Technology, have thrown up new opportunities that are transforming lives of the masses. Talented and enterprising personalities are exploring such opportunities & translating opportunities into business ventures such as- 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 <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • Marketing - Concept and Importance • Market Identification, Survey Key components • Market Assessment 	02
04	Business Finance & Accounts <ul style="list-style-type: none"> ➤ Business Finance <ul style="list-style-type: none"> • Cost of Project • Sources of Finance • Assessment of working capital • Product costing • Profitability • Break Even Analysis • Financial Ratios and Significance ➤ Business Account <ul style="list-style-type: none"> • Accounting Principles, Methodology • Book Keeping • Financial Statements • Concept of Audit 	03

05	<p>Business Plan & Project Report</p> <ul style="list-style-type: none"> • Business plan steps involved from concept to commissioning Activity Recourses, Time, Cost • Project Report • Meaning and Importance • Components of project report/profile (Give list) <p>5.1) Project Appraisal</p> <ol style="list-style-type: none"> 1) Meaning and definition 2) Technical, Economic feasibility 3) Cost benefit Analysis 	03
06	<p>Enterprise Management And Modern Trends</p> <p>➤ Enterprise Management:</p> <ul style="list-style-type: none"> • 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 <p>➤ Global Entrepreneur</p> <ul style="list-style-type: none"> • 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
4	Gautam Jain Debmuni Gupta	New Initiatives in Entrepreneurship Education & Training	E-mail : ediindia@sancharnet.in / olpe@ediindia.org Website : http://www.ediindia.org
5	Schaper, Michael Volery	Entrepreneurship- Small Business	Wiley India,2011
6	Alpana, Trehan	Entrepreneurship	Dreamtech, 2011