

BHAVNAGAR UNIVERSITY
B.E.SEM-VII [IT]
IT-701: SOFTWARE ENGINEERING
WEF 2008

TEACHING SCHEME			EXAMINATION SCHEME			TOTAL MARKS	
THEORY HOURS	TUT. HOURS	PRACT. HOURS	THEORY		PRA/ORAL MARKS		T/W MARKS
			MARKS	HOUR			
4	0	2	100	3	25	25	150

Software Process : Framework, CMMI, Patterns, Assessment, Waterfall model, Incremental model, Evolutionary models, specialized models, the unified model.

Software Engineering Practice : Introduction, Communication practice, Planning Practice, Modeling practice, Construction Practice.

System Engineering : Computer based Systems, Modeling and simulation, Product Engineering.

Design Engineering : Design process and Design Quality, Design concepts, Design model, Pattern based software design.

Testing Strategies and Tactics : A strategic approach and issues, Strategies for conventional and object oriented software, Validation Testing, System Testing, Debugging, Black box and White Box Testing.

Project Management : The management spectrum, People, Product, Process, Project.

Estimation: Observation, Project Planning, Scope and feasibility, Estimation Models.

Project Scheduling: Basic concepts, Scheduling, Defining a task set and network, Tracking schedule and progress.

Risk Management: Reactive and Proactive risks, Software risks, Identification, Projection, Refinement, Mitigation, Monitoring and Management.

Quality Management: Quality concepts, Assurance, Reviews, SQA, ISO 9000.

Clean Room software Engineering : Clean room Approach, Functional Specification, Design, Testing

Reengineering: Business Process Reengineering, Software Reengineering, Reverse Engineering, Restructuring, Forward Engineering.

Practical and Term work:

The Practical and Term work will be based on the topics covered in the syllabus.

Texts Books:

Pressman R.S., Software Engineering: A Practitioner's Approach, McGraw Hill,(sixth edition)
 Sommerville I., Software Engineering, Pearson education.

Reference books :

Software Engineering: principles and practice, 2nd edition, Vanvilet, John Viley publication
 Software engineering: Theory and Practice, 2/e, Pfleeger, Pearson education
 Using UML: Software engineering with objects and components, stevens, Pearson Education

BHAVNAGAR UNIVERSITY
B.E.SEM-VII [IT]
IT-702: ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS

TEACHING SCHEME			EXAMINATION SCHEME			TOTAL MARKS
THEORY HOURS	TUT. HOURS	PRACT. HOURS	THEORY		PRA/ORAL MARKS	
			MARKS	HOUR		
4	0	2	100	3	25	25
						150

Introduction :

The AI problems, The Underlying Assumption. What is An AI Techniques. The Level of the Model, Criteria for success. Some general References. One Final Word.

Problems and state space search:

Problems, Problem spaces and search

Defining the problems As a state space search, production systems, production characteristics. Production system characteristics. And issues in the design of search programs. Additional Problems.

Heuristic Search Techniques:

Generate-and-test, Hill climbing, Best-First Search, Problem reduction, constraint satisfaction, Means-Ends Analysis.

Knowledge Representation Issues:

Representations And Mappings, Approaches to knowledge Representation

Using Predicate Logic:

Representation simple facts in Logic, Representing instance and task Relationships, computable functions and predicates, resolution. Representing Knowledge using rules.

Procedural versus declarative knowledge, logic programming, Forward versus Backward Reasoning.

Advance topics:

Game playing, Overview, and example domain

The Blocks world, components of A planning system, goal stack planning, Nonlinear, planning using constraint posting, Hierarchical planning, reactive systems, other planning Techniques.

Natural Language Processing:

Introduction, syntactic processing, semantic analysis, semantic analysis, discourse and pragmatic processing.

Connectionist models:

Introduction, Hopfield network, Learning in Neural Network, application of Neural Networks, Recurrent Networks, Distributed Representations, connectionist AI and symbolic AI.

Symbolic Reasoning under uncertainty:

Introduction to Non-monotonic Reasoning, Logics for Non-monotonic Reasoning.

Statistical Reasoning,

Probability and Bay's Theorem, Certainty Factors and rules-base systems, Bayesian Networks,

Dumpster, Shafter theory, fuzzy logic.

Weak-slot and Filler structure

Semantic nets, frames.

Expert Systems:

An Introduction to expert system, explanation facilities, expert system developments process, knowledge acquisition.

Introduction to prolog:

Introduction to prolog: syntax & Numeric function, Basic list Manipulation functions in prolog, functions, predicates & conditional, input, output & local variables, iteration & recursion, property lists & Arrays, Miscellaneous topics, LISP & other All programming languages.

Practical and Term work:

The practical and term work will be based on the topics covered in the syllabus.

References :

"Artificial intelligence"

-By Elaine rich and Kevin Knight (2nd Edition)Tata McGraw-Hill

Introduction to prolog programming By Carl Townsend

Introduction to Artificial Intelligence and Expert System, Patterson, Pearson Education

Artificial Intelligence: Structure and strategies for complex problem solving, 4/e, Luger, Pearson Education

PROLOG Programming for Artificial intelligence

-By Ivan Bratko (Addison-Wesley)

Programming with PROLOG -By Klocks in and mellish.

BHAVNAGAR UNIVERSITY
B.E.SEM-VII [IT]
IT-703:INFORMATION SECURITY

TEACHING SCHEME			EXAMINATION SCHEME			TOTAL MARKS	
THEORY HOURS	TUT. HOURS	PRACT. HOURS	THEORY		PRA/ORAL MARKS		T/W MARKS
			MARKS	HOUR			
4	0	2	100	3	25	25	150

Conventional Encryption: Conventional Encryption Model, Steganography, Classical Encryption Techniques

Conventional Encryption Techniques:

Simplified Des., Block Cipher Principles, Data Encryption Standards, Differential and linear cryptography principles, Block cipher Design Principles, Modes of operation. Algorithms Like Triple Des, international Data Encryption Algorithm, Blowfish, Rc5, Caast-128, Rc2, Characteristics of Advanced Symmetrical Block Cipher, issues of Conventional Encryption like Traffic distribution, Random Number Generation, Key Distribution.

Public Key Cryptography:

Principles of Public-key cryptography, Rsa Algorithm, Key Management, Elliptic curve Cryptography, diffie-Hellman Key Exchange

Number Theory:

Prime and Relative Prime Numbers, Modular Arithmetic, Euler's Theorem, Euclid's, Algorithm, discrete Logarithm tics, Message authentication and Hash functions, Authentication Requirement, functions, Message authentication code, Hash Functions, Security of Hash functions and Macs, Md5 Message digest Algorithm, secure Hash Algorithm, ripmd-160, Hmac

Introduction to E-Commerce:

Introduction to E-Commerce, Transactions on E-commerce, Requirement of security On E-commerce

Network Security:

Digital Signatures, Authentication Protocols, Digital Signature Standards, application Authentication Techniques Like Kerberos, X.509 directory Authentication Services, Active Directory Service of windows@ Nt/Windows@ 2000.

IP Security E-Mail Security:

IP Security Overview, Architecture, authentication Header, encapsulation Security, Payload, Combining Security Association, Key Management, Pretty Good Privacy's/Mime and types

Web Security:

Web Security Requirement, Ssl Transport Layer security, secure electronics, Transactions, firewall Design Principles, trusted Systems

Practical and Term work:

The practical and term work will be based on the topics covered in the syllabus

TEXT BOOKS:

CRYPTOGRAPHY AND NETWORK PRINCIPLES AND PRACTICE
 FOURTH EDITION, BY WILLIAM STALLINGS, PEARSON PUBLICATION

REFERENCE BOOKS:

1. WEB SECURITY, PRIVACY AND COMMERCE BY SIMSON GARFINKEL, O'REILLEY
2. PRINCIPLES OF INFORMATION SECURITY BY MICHAEL E WHITMAN AND HERBERT J MATTORD, THOMSON PUBLICATION
3. HACKING EXPOSED: NETWORK SECURITY, SECRETS AND SOLUTIONS BY MCCLURE AND SCAMBRA. TMH
4. INFORMATION SECURITY: PRINCIPLE AND PRACTISE, MERKOW, PEARSON EDUCATION
5. NETWORK SECURITY: PRIVATE COMMUNICATION IN PUBLIC WORLD, 2/E, CHARLIE KAUFMAN, RADIA PERLMAN, MIKE SPECINER, PHI PUBLICATION

BHAVNAGAR UNIVERSITY
B.E.SEM-VII [IT]
IT-704: ELECTIVE PAPER (1): ADVANCE OPERATING SYSTEM

TEACHING SCHEME			EXAMINATION SCHEME			TOTAL MARKS	
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INTRODUCTION: INTRODUCTION TO DIFFERENT LINUX, ORGANIZATION OF MAN PAGES, ESSENTIAL TASK OF SYSTEM ADMINISTRATOR

BOOTING AND SHUTTING DOWN: BOOTSTRAPING, BOOTING PC, USING BOOT LOADER:LILLO AND GRUB, BOOTING SINGLE USER MODE, WORKING WITH STARTUP SCRIPTS, REBOOTING AND SHUTTING DOWN

ROOT POWERS: OWNERSHIP OF FILES AND PROCESSES, SUPER USER, CHOOSING A ROOT PASSWORD, BECOMING ROOT, OTHER PSEUDO USERS.

USING LINUX: LOGGING IN AND OUT, CHANGING PASSWORD, USING MAN AND XMAN, USING INFO, USING JOE.

USING UTILITIES: FILE OPERATIONS (CP, MV, LPR, GREP, HEAD, TAIL, SORT, UNIQ, DIFF, FILE), USING ECHO,DATE, GZIP, GUNZIP, ZCAT, TAR, WHICH, WHEREIS, APROPOS, OBTAINING USER AND SYSTEM INFORMATION(WHO, FINGER, W), COMMUNICATION WITH OTHER USERS(WRITE, TALK, MESH, PINE)

LINUX FILE SYSTEM: DIRECTORIES AND ORDINARY FILES, WORKING WITH DIRECTORIES, ACCESS PERMISSIONS, LINKS.

THE SHELL: COMMAND LINE, STANDARD INPUT AND OUTPUT, REDIRECTION, PIPES, FILENAME GENERATION/ PATHNAME EXPANSION.

GRAPHICAL USER INTERFACES: COMPONENTS OF GUI, THE X-WINDOW SYSTEM, USING THE FVWM WINDOW MANAGER, USING THE MOTIF WINDOW MANAGER, CUSTOMIZING X-WORK ENVIRONMENT, CUSTOMIZING FVWM WINDOW MANAGER, CUSTOMIZING THE MOTIF WINDOW MANAGER.

NETWORKING AND THE INTERNET: COMMUNICATING OVER THE NETWORK(USING FINGER, SENDING MAIL, USING TALK), NETWORKING UTILITIES(RLOGIN, TELNET, RHOSTS, RCP, FTP, RSH, PING, RWHO), INTERNET SERVICES, USING PINE AS A NEWS READER, BROWSING AROUND THE INTERNET(ARCHIE AND GOPHER).

THE VI EDITOR: TO CREATE AND EDIT FILE, COMMAND MODE, MOVING THE CURSOR, INPUT MODE, DELETING AND CHNGING TEXT, SEARCHING AND SUBSTITUTING FOR A STRING, YANK, PUT AND DELETE COMMAND, READING AND WRITING FILES.

THE BOURNE AGAIN SHELL: POSIX SHELLS, CREATING SHELL SCRIPT, COMMAND SEPARATION AND GROUPING, REDIRECTING STANDARD ERROR, JOB CONTROL, DIRECTORY STACK MANIPULATION, PROCESSES, PARAMETERS AND VARIABLES, POSITIONAL PARAMATERS, SPECIAL PARAMETERS, ALIAS, COMMAND LINE EXPANSION.

Practical and Term work:

The Practical and Term work will be based on the topics covered in the syllabus.

Minimum 6 experiments should be carried out

TEXT BOOKS:

RED HAT ENTERPRISE LINUX AND FEDORA CORE 4: THE COMPLETE REFERENCE, BY PETERSON, TMH

INTRODUCTION TO UNIX AND LINUX LAB MANUAL BY CATHERINE CREARY AND LEE COTTREL, TMH

A PRACTICAL GUIDE TO LINUX, SOBELL, PEARSON EDUCATION

LINUX ADMINISTRATION HANDBOOK, 2/E, NEMETH, PEARSON EDUCATION

LINUX KERNEL PROGRAMMING, 3/E, BECK, PEARSON EDUCATION.

BHAVNAGAR UNIVERSITY
B.E.SEM-VII [IT]
IT-704: ELECTIVE PAPER (2) MOBILE COMPUTING

TEACHING SCHEME			EXAMINATION SCHEME			TOTAL MARKS	
THEORY HOURS	TUT. HOURS	PRACT. HOURS	THEORY		PRA/ORAL MARKS		T/W MARKS
			MARKS	HOUR			
4	0	2	100	3	25	25	
						150	

Introduction:

History, Physical And technological Constraints, Impacts On Computer Science

Wireless Communications:

Radio propagation, media access, Wireless Communication Systems

Wireless Networks:

Packet Radio Network (GPRS), Wireless LAN/WAN

Mobile Networking:

Mobile-IP, Ad-Hoc Networks And Ad-Hoc Routing

Wireless Protocols:

Wireless TCP, WAP, And WML Scripting, Session Mobility,

Information Management:

Data Dissemination And Broadcast Models, Mobile Database And Mobile Transaction Location-independent And Location-Dependent Computing Models. Naming, Locating, And Routing, Mobility And Handoff, Location Awareness And Environmental Discovery

Mobile Applications And Services:

Mobile Agents, Transcoding And Proxy Architecture, Wireless Web And WAP, Security, Authentication In Mobile Application, Privacy issues

Case Study :

Satellite Networks, Satellite MAC, Multicast Over Satellite, Asymmetric Routing, TCP Over Satellite, LEO Constellation And LEO Routing.

New Topics:

Power Management And Energy- Awareness Computing, Information Appliances, Mobile Wireless Networks Simulation,

Text Books:

Mobile and personal communication and services – Raj Pandya , PHI
 Mobile IP, The internet Unplugged By James D. Solomon (PTR-PH)
 Mobile IP : Design Principles And Practice By Charles El Perkins
 (Addition Wesley Wireless Communication Series)
 Wireless Networking Handbook By Jim Geier (New Riders Publishing)

BHAVNAGAR UNIVERSITY
B.E.SEM-VII [IT]
IT-704: ELECTIVE PAPER (3) ADVANCE OBJECT ORIENTED PROGRAMMING(C#)

TEACHING SCHEME			EXAMINATION SCHEME			TOTAL MARKS	
THEORY HOURS	TUT. HOURS	PRACT. HOURS	THEORY		PRA/ORAL MARKS		T/W MARKS
			MARKS	HOUR			
4	0	2	100	3	25	25	
						150	

INTRODUCTION VISUAL STUDIO:

GET STARTED WITH VISUAL STUDIO,
DESIGNING WINDOWS FORM APPLICATION,
CODING AND TESTING AN APPLICATION

C# LANGUAGE ESSENTIALS :

WORKING WITH STRING AND NUMERIC DATA,
CODING CONTROL STRUCTURES,
CODING METHODS AND EVENT HANDLERS,
HANDLING EXCEPTION AND VALIDATING DATA,
WORKING WITH ARRAYS AND COLLECTIONS, WORKING WITH DATES AND STRINGS,
WORKING WITH CONTROLS AND MULTIFORM PROJECTS,
DEBUGGING AN APPLICATION

OBJECT ORIENTED PROGRAMMING:

CREATING AND USING CLASSES,
WORKING WITH INDEXERS, DELEGATES, EVENTS AND OPERATORS,
WORKING WITH INHERITANCE,
WORKING WITH INTERFACES AND GENERICS,
ORGANIZING AND DOCUMENTING CLASSES.

PRACTICAL AND TERM WORK:

THE PRACTICAL AND TERM WORK WILL BE BASED ON THE TOPICS COVERED IN THE SYLLABUS

TEXT BOOKS:

TRAINING AND REFERENCE: MURACH'S C# 2005, MURACH AND SPD.
A TEXT BOOK ON C#: A SYSTEMATIC APPROACH TO OBJECT ORIENTED PROGRAMMING, SELVI,
PEARSON EDUCATION
ESSENTIAL C# 2.0, MICHAELIS, PEARSON EDUCATION
PROGRAMMING C# - LIBERTY, O'REILLEY.

REFERENCE BOOKS:

C# ESSENTIALS – ALBAHARI, O'REILLEY.
C# COOKBOOK 2ND EDITION, HILYARD, O'REILLEY.
DOT NET FRAMEWORK ESSENTIALS, THAI, O'REILLEY.

BHAVNAGAR UNIVERSITY
B.E.SEM-VII [IT]
IT-704: ELECTIVE PAPER(4) ADVANCE INTERNET PROGRAMMING

TEACHING SCHEME			EXAMINATION SCHEME			TOTAL MARKS	
THEORY HOURS	TUT. HOURS	PRACT. HOURS	THEORY		PRA/ORAL MARKS		T/W MARKS
			MARKS	HOUR			
4	0	2	100	3	25	25	
						150	

ADVANCE SWING GRAPHICAL USER INTERFACE COMPONENTS

WEB BROWSER USING JEDITOR PANE AND JTOOLBAR, SWING ACTIONS, JSPLITPANE AND JTABBEDPANE , MULTIPLE DOCUMENT INTERFACE, DRAG AND DROP, INTERNATIONALIZATION, ACCESSIBILITY

MODEL VIEW CONTROLLER

ARCHITECTURE, OBSERVABLE CLASS AND OBSERVER INTERFACE, JLIST, JTABLE, JTREE

GRAPHICS PROGRAMMING WITH JAVA2D AND JAVA3D

CO-ORDINATES, GRAPHICS CONTEXTS AND GRAPHICS OBJECTS, JAVA 2D API(SHAPES AND IMAGE PROCESSING), JAVA 3D API(INSTALLING JAVA 3D API, JAVA 3D SCENES)

JAVABEANS COMPONENT MODEL

INTRODUCTION, USING BEANS, PREPARING A CLASS TO BE A JAVABEAN , CREATING A JAVABEAN (JAVA ARCHIVE FILES), PROPERTIES, BOUND PROPERTIES, INDEXED PROPERTIES AND CUSTOM EVENTS, CUSTOMIZING JAVA BEANS FOR BUILDER TOOLS.

JAVA DATABASE CONNECTIVITY

RELATIONAL DATABASE MODEL, SQL, MANIPULATING DATABASES WITH JDBC, STORED PROCEDURES, BATCH PROCESSING, JDBC2.0 OPTIONAL PACKAGE JAVAX.SQL

SERVELETS

OVERVIEW AND ARCHITECTURE, SETTING UP APACHE TOMCAT SERVER, HANDELING HTTP GET AND POST REQUESTS, REDIRECTING REQUESTS TO OTHER RESOURCES, MULTITIER APPLICATIONS.

JAVA SERVER PAGES

OVERVIEW, IMPLICIT OBJECTS, SCRIPTING, STANDARAD ACTIONS (<JSP:INCLUDE>, <JSP:FORWARD>, <JSP:USEBEAN>, <JSP:PLUGIN>), PAGE DIRECTIVE, INCLUDE DIRECTIVE.

PRACTICAL AND TERM WORK:

THE PRACTICAL AND TERM WORK WILL BE BASED ON THE TOPICS COVERED IN THE SYLLABUS.

TEXT BOOKS:

HOW TO PROGRAM ADVANCED JAVA, DEITEL AND DEITEL, PREN HALL

JAVA PROGRAMMING: ADVANCE TOPICS, WIGGLESWORTH, THOMSON LEARNING AND AUTODESK PRESS

LEARNING JAVA, NIEMEYER, O'REILLY

JAVA SWING, LOY, O'REILLY

DATABASE PROGRAMMING WITH JDBC AND JAVA, GEORGE REESE, O'REILLY

JAVA SERVELETS AND JSP COOKBOOK, PERRY, O'REILLY

ECLIPSE BY HOLTZENER, O'REILLY

BHAVNAGAR UNIVERSITY
B.E.SEM-VII [IT]
IT-704: ELECTIVE PAPER (5) ERP AND DATA WAREHOUSE MANAGEMENT

TEACHING SCHEME			EXAMINATION SCHEME			TOTAL MARKS
THEORY HOURS	TUT. HOURS	PRACT. HOURS	THEORY		PRA/ORAL MARKS	
			MARKS	HOUR		
4	0	2	100	3	25	25
						150

BASIC CONCEPTS OF ERP: INTRODUCTION TO ERP, WHAT IS ERP, EVOLUTION OF ERP, ADVANTAGES OF ERP, OVERVIEW TO THE ENTERPRISE, INTEGRATED MANAGEMENT INFORMATION, BUSINESS MODELLING, INTEGRATED DATA MODEL.

RE-ENGINEERING AND ERP: BUSINESS PROCESS REENGINEERING, PROCESS MODELLING, CLIENT SERVER COMPUTING AND INTEGRATED DATABASES.

PLANNING, DESIGN AND IMPLEMENTATION OF ERP: TRADITIONAL SYSTEM DEVELOPMENT, DEVELOPMENT PROCESS, PLANNING, REQUIREMENT ANALYSIS, DESIGN, ALTERNATIVE DESIGN OPTIONS, DETAILED DESIGN, IMPLEMENTATION STEPS.

INTRODUCTION TO DATA MINING, WAREHOUSING AND VISUALIZATION: DATA WAREHOUSE ROLES AND STRUCTURES, APPLICATIONS OF DATA WAREHOUSE, COST OF DATA WAREHOUSING, FOUNDATIONS OF DATA MINING, DATA CORRELATION, DATA EXPLORATION, DATA VISUALIZATION

DATA WAREHOUSE BASICS: STORES, WAREHOUSES AND MARTS, DATA WAREHOUSE ARCHITECTURE, METADATA, METADATA EXTRACTION, IMPLEMENTING THE DATA WAREHOUSE.

DATA MINING AND VISUALIZATION: CONCEPT, OLAP, ROLAP, MOLAP, DIFFERENT TECHNIQUES OF DATA MINING, MARKET BASKET ANALYSIS.

USE OF ARTIFICIAL INTELLIGENCE: FUZZY LOGIC AND LINGUISTIC AMBIGUITY, ARTIFICIAL NEURAL NETWORKS, GENETIC ALGORITHMS AND GENETICALLY EVOLVED NETWORKS

DESIGNING AND BUILDING THE DATA WAREHOUSE: ENTERPRISE MODEL APPROACH TO DATA WAREHOUSE DESIGN, DATA WAREHOUSE PROJECT PLAN, PROJECT DEFINITION, PROJECT SCOPE, ECONOMIC FEASIBILITY ANALYSIS, SPECIFYING THE ANALYSIS AND DESIGN TOOLS, DATA WAREHOUSE ARCHITECTURE SPECIFICATION AND DEVELOPMENT.

PRACTICAL AND TERM WORK:

THE PRACTICAL AND TERM WORK WILL BE BASED ON THE TOPICS COVERED IN THE SYLLABUS

TEXT BOOKS:

ENTERPRISE RESOURCE PLANNING, ALEXIS LEON, TMH
 DATA WAREHOUSING, DATA MINING AND OLAP BY BERSON, TMH
 DATA WAREHOUSING BY MOHANTY, SOUMENDRA, TMH
 MODERN DATA WAREHOUSING, MINING AND VISUALIZATION: CORE CONCEPTS, MARAKAS, PEARSON EDUCATION
 ENTERPRISE RESOURCE PLANNING, SUMNER, PEARSON EDUCATION
 AN INTRODUCTION TO BUILDING THE WAREHOUSE, IBM PRESS AND PHI
 DATA WAREHOUSE MANAGEMENT WITH DB2 UDB V8.1 WAREHOUSE MANAGER, IBM PRESS AND PHI
 INTRODUCTION TO BUSINESS INTELLIGENCE AND DATA WAREHOUSING, IBM PRESS AND PHI

BHAVNAGAR UNIVERSITY
B.E.SEM-VII [IT]
IT-705: ELECTIVE PAPER (1) MOBILE APPLICATION DEVELOPMENT

TEACHING SCHEME			EXAMINATION SCHEME			TOTAL MARKS
THEORY HOURS	TUT. HOURS	PRACT. HOURS	THEORY		PRA/ORAL MARKS	
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4	0	2	100	3	25	25
						150

- **OVERVIEW TO THE SUBJECT**
J2ME INTRODUCTION, WIRELESS TECHNOLOGY, RADIO NETWORKS, MICROWAVE TECHNOLOGY, MOBILE RADIO NETWORKS, MESSAGING, PDA, MOBILE POWER, SET-TOP BOXES.
- **J2ME ARCHITECTURE AND DEVELOPMENT ENVIRONMENT**
ARCHITECTURE, DEVICE REQUIREMENT, RUNTIME ENVIRONMENT, MIDLet PROGRAMMING, J2ME WIRELESS TOOLKIT
- **CURRENT PRACTISES AND PATTERNS**
KEEPING APPLICATION SMALL AND SIMPLE, MANAGING COMPUTATION TO THE SERVER AND USE OF NETWORK CONNECTION, MINIMIZE NETWORK TRAFFIC, AUTOMATIC DATA SYNCHRONIZATION.
- **COMMANDS, ITEMS, AND EVENT PROCESSING**
USER INTERFACES, DISPLAY CLASS, PALM OS EMULATOR, COMMAND CLASS AND LISTENER, ITEM CLASS AND LISTENER, EXCEPTION HANDELLING
- **HIGH LEVEL DISPLAY**
SCREEN CLASS, ALERT CLASS, FORM CLASS, ITEM CLASS, LIST CLASS, TEXTBOX CLASS, TICKER CLASS.
- **LOW LEVEL DISPLAY**
CANVAS, USER INTERACTION, GRAPHICS, CLIPPING REGIONS, ANIMATION
- **RECORD MANAGEMENT SYSTEMS**
RECORD STORAGE, WRITING-READING-SORTING-SEARCHING RECORDS, RECORD ENUMERATION,
- **J2ME DATABASE CONCEPTS**
DATA, DATABASES, SCHEMA, INDEXING
- **JDBC OBJECTS**
CONCEPT, DRIVER TYPES , PACKAGES, PROCESS, DATABASE CONNECTION, STATEMENT OBJECT, RESULTSET, TRANSACTION PROCESSING, METADATA, EXCEPTION.
- **JDBC AND EMBEDDED SQL**
MODEL PROGRAMS, TABLES, INDEXING, INSERTING DATA INTO TABLES, SELECTING DATA FROM TABLE, METADATA, DELETING DATA FROM A TABLE.
- **PERSONAL INFORMATION MANAGER**
PIM DATABASES, CONTACT DATABASES, EVENT DATABASES, TO DO DATABASES, ERROR HANDELLING, MODEL PIM APPLICATION

PRACTICAL AND TERM WORK:

THE PRACTICAL AND TERM WORK WILL BE BASED ON THE TOPICS COVERED IN THE SYLLABUS.

TEXT BOOKS:

THE COMPLETE REFERENCE: J2ME – JAMES KEOGH, TMH PUBLICATION

REFERENCE BOOKS:

J2ME IN A NUTSHELL –KIM TOPLEY, O'REILLEY
 ECLIPSE BY HOLZNER, O'REILLEY

BHAVNAGAR UNIVERSITY
B.E.SEM-VII [IT]
IT-705: ELECTIVE PAPER (2) OBJECT ORIENTED MODELING AND DESIGN

TEACHING SCHEME			EXAMINATION SCHEME			TOTAL MARKS	
THEORY HOURS	TUT. HOURS	PRACT. HOURS	THEORY		PRA/ORAL MARKS		T/W MARKS
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4	0	2	100	3	25	25	
						150	

-INTRODUCTION:

, OBJECT ORIENTATION, DEVELOPMENT, THEMES AND USEFULNESS

-MODELING: ABSTRACTION, THREE MODEL CONCEPTS, OBJECT AND CLASS CONCEPTS, LINK AND ASSOCIATION CONCEPTS, GENERALIZATION AND INHERITANCE

-ADVANCED CLASS AND OBJECT: CONCEPTS, ASSOCIATION ENDS, N-ARY ASSOCIATIONS, AGGREGATION, ABSTRACT CLASSES, MULTIPLE INHERITANCE, METADATA, REIFICATION, CONSTRAINTS, DERIVED DATA, PACKAGES

-STATE MODELING, EVENTS, STATES, TRANSITIONS, AND CONDITIONS, STATE DIAGRAM, STATE DIAGRAM BEHAVIOR, NESTED STATE DIAGRAM, NESTED STATES, SIGNAL GENERALIZATION, CONCURRENCY, RELATION OF CLASS AND STATE MODELS.

-DEVELOPMENT STAGES AND LIFECYCLES, SYSTEM CONCEPTIONS, DOMAIN CLASS MODEL, DOMAIN STATE MODEL, DOMAIN INTERACTION MODEL, ITERATING THE ANALYSIS, APPLICATION INTERACTION MODEL, APPLICATION CLASS MODEL, APPLICATION STATE MODEL.

-SYSTEM DESIGN OVRVIEW:, ESTIMATING PERFORMANCE, MAKING A REUSE PLAN, BREAKING SYSTEM INTO SUBSYSTEMS, INDETIFYNG CONCURRENCY, ALLOCATION OF SUBSYSTEMS, MANAGEMENT OF DATA STORAGE, HANDELING GLOBAL RESOURCES, CHOOSING A SOFTWARE CONTROL STRATEGY, HANDELING BOUNDARY CONDITIONS, SETTING TRADE OFF PRIORITIES

-CLASS DESIGN OVERVIEW: REALIZING USE CASES, DESIGNING ALGORITHMS, RECURSING DOWNWARDS, REFACTORING, DESIGN OPTIMIZATION, RECTIFICATION OF BEHAVIOR, ADJUSTMENT OF INHERITANCE, ORGANIZING A CLASS DESIGN.

PRACTICAL AND TERM WORK:

THE PRACTICAL AND TERM WORK WILL BE BASED ON THE TOPICS COVERED IN THE SYLLABUS.

TEXT BOOKS:

OBJECT ORIENTED MODELING AND DESIGN WITH UML, 2ND EDITION, MICHAEL BLAHA AND JAMES RAMBAUGH, PHI

OBJECT ORIENTED ANALYSIS AND DESIGN: WITH APPLICATION, 2/E, BOOCH, PEARSON EDUCATION

REFERENCE BOOKS:

1. HEAD FIRST OBJECT ORIENTED ANALYSIS AND DESIGN –BRETT D MCLAUGHLIN, GARY POLLICE AND DAVID WEST, O'REILLEY
2. SYSTEM ANALYSIS AND DESIGN: AN OBJECT ORIENTED APPROACH WITH UML –DENNIS JOHN WILEY PUBLICATIONS.
3. LEARNING UML –SI ALUIR O'REILLEY

BHAVNAGAR UNIVERSITY
B.E.SEM-VII [IT]
IT-705: ELECTIVE PAPER (3) WEB PROGRAMING AND DESIGN

TEACHING SCHEME			EXAMINATION SCHEME			TOTAL MARKS	
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-WEB APPLICATION BASICS: HTML, DYNAMIC CONTENT, INTERNET INFORMATION SERVICES, CLASSIC ASP, ASP.NET

-ASP.NET APPLICATION FUNDAMENTALS: SIMPLE APPLICATION, COMPILATION, ASSEMBLIES, CODING OPTIONS, PIPELINE

-THE PAGE RENDERING MODEL: RENDERING CONTROLS AS TAGS, PACKAGES UI AS COMPONENTS, ADDING CONTROLS USING VISUAL STUDIO, LAY OUT CONSIDERATION

-CUSTOM RENDEREDE CONTROLS: THE CONTROL CLASS, CREATING A CUSTOM CONTROL, CONTROLS AND EVENTS, HTML TEXT WRITER AND CONTROLS, CONTROLS AND VIEW STATE. COMPOSITE CONTROLS VERSUS RENDERED CONTROL, CUSTOM COMPOSITE CONTROLS, USERS CONTROLS, WHEN TO USE EACH TYPE OF CONTROLS. CONTROL VALIDATION, TREEVIEW, MULTIVIEW

-WEB PART DEVELOPMENT; ARCHITECTURE, WEB PART MANAGER AND WEB ZONES, MASTER PAGES, THEMES, SKINS CONFIGURATION, WEB BASED SECURITY, AUTHENTICATION, MANAGING USERS AND LOGINS, AUTHORIZING USERS

-DATABINDINGS, REPRESENTING COLLECTION WITH AND WITHOUT DATABINDING, ACCESSING DATABASES, DATA SOURCES, DATABOUND CONTROLS. PERSONALIZATION, CONFIGURATION AND TRACKING SESSION STATES.

-DIAGNOSTICS AND DEBUGGING: PAGE AND APPLICATION TRACING, DEBUGGING WITH VISUAL STUDIO, MANAGING AND DEPLOYING WEB APPLICATION

PRACTICAL AND TERM WORK:

THE PRACTICAL AND TERM WORK WILL BE BASED ON THE TOPICS COVERED IN THE SYLLABUS.

TEXT BOOKS:

1. MICROSOFT ASP.NET 2.0 STEP BY STEP – GEORGE SHEPHERD, MICROSOFT PRESS AND PHI
2. ASP.NET UNLEASHED 2/E ,WALTHER, PEARSON EDUCATION.
3. MICROSOFT SQL SERVER 2005 DATABASE ESSENTIALS STEP BY STEP – MICROSOFT PRESS AND PHI
4. ASP.NET THE COMPLETE REFERENCE – MACDONALD, TMH
5. MICROSOFT ADO.NET 2.0 STEP BY STEP – REBECCA M RIORDAN, MICROSOFT PRESS AND PHI

REFERENCE BOOKS:

1. PROGRAMING ASP.NET, LIBERTY, O'REILLEY
2. ASP.NET COOKBOOK – KITTEL, O'RELLIEY
3. MURACH'S ASP.NET WITH C# 2005, SPD
4. MURACH'S ASP.NET WITH VB 2005, SPD

BHAVNAGAR UNIVERSITY
B.E.SEM-VII [IT]
IT-705: ELECTIVE PAPER(4) ADVANCED WEB DEVELOPMENT TOOLS

TEACHING SCHEME			EXAMINATION SCHEME			TOTAL MARKS	
THEORY HOURS	TUT. HOURS	PRACT. HOURS	THEORY		PRA/ORAL MARKS		T/W MARKS
			MARKS	HOUR			
4	0	2	100	3	25	25	
						150	

INTRODUCTION:

OVERVIEW OF PHP, DIFFERENT VERSIONS, BENEFITS AND DRAWBACKS OF RUNNING PHP AS A SERVER SIDE SCRIPT.

INSTALLING WEB SERVER:

INTERNET INFORMATION SERVER, FEATURES OF IIS, IIS INSTALLATION, TESTING IIS. APACHE, DOWNLOADING AND INSTALLING APACHE ON WINDOWS AND LINUX, TESTING AND CONFIGURING APACHE.

SETTING UP AND CONFIGURING PHP WITH APACHE AND IIS:

DOWNLOADING AND INSTALLING PHP, TESTING PHP/IIS SETUP, TESTING PHP/APACHE SETUP.

BASICS OF PHP:

PHP AND HTML, DATA TYPES, VARIABLES, CONSTANTS, ARRAYS, CONDITIONAL STATEMENTS, ITERATIONS.

FUNCTIONS:

USER DEFINED FUNCTIONS, BUILTIN FUNCTIONS, PHP SERVER VARIABLES, WORKING WITH DATE AND TIME, MATHEMATICAL OPERATIONS, STRING FUNCTIONS.

FORMS:

FORM ELEMENTS, ADDING ELEMENT TO A FORM, UPLOADING FILES TO THE WEB SERVER.

DATABASE DRIVEN PROGRAMMING:

DOWNLOADING AND INSTALLING MYSQL, CHANGING THE DEFAULT DATABASE STORAGE ENGINE, INTERACTION BETWEEN PHP AND MYSQL, PHP AND MYSQL INTERACTION USING FORM.

OBJECT ORIENTED PROGRAMMING:

OBJECTS, CLASSES, INSTANTIATING AND ACCESSING METHODS AND PROPERTIES, CONSTRUCTORS, DESTRUCTORS, CLASS CONSTANTS, \$THIS KEYWORD, SELF AND PARENT KEYWORDS, EXTENDING A CLASS, ABSTRACT CLASS, OBJECT INTERFACES, OBJECT CLONING, FINAL KEYWORD.

PRACTICAL AND TERM WORK:

THE PRACTICAL AND TERM WORK WILL BE BASED ON THE TOPICS COVERED IN THE SYLLABUS.

TEXT BOOKS:

PHP 5.1 FOR BEGINNERS – IVAN BAYROSS , SHARNAM SHAH, X-TEAM AND SPD.
 LEARNING PHP AND MYSQL, MICHELE E. DAVIS AND JON A. PHILLIPS, O'REILLEY.

REFERENCE BOOKS:

OBJECT ORIENTED PHP – PETER LAVIN NO STARCH PRESS AND SPD.
 AJAX FOR BEGINNERS –IVAN BAYROSS, SHARNAM SHAH, X-TEAM AND SPD

BHAVNAGAR UNIVERSITY
B.E.SEM-VII [IT]
IT-705: ELECTIVE PAPER (5) IMAGE PROCESSING

TEACHING SCHEME			EXAMINATION SCHEME			TOTAL MARKS	
THEORY HOURS	TUT. HOURS	PRACT. HOURS	THEORY		PRA/ORAL MARKS		T/W MARKS
			MARKS	HOUR			
4	0	2	100	3	25	25	
						150	

Introduction:

Background, Digital image Representation, fundamental Steps in image Processing. Elements of Digital image signal Processing Systems

Digital image Fundamentals:

Elements of Visual perception, image signal Representation, imaging system specification, Building image Quality, Role of Computers.

Image Transforms:

DFT, Properties Of 2-Dimensional Fourier Transform, FET, Walsh Transform, Hadamard Transform, DCT, Harr Transform, The Slant Transform

Image Enhancement:

Enhancement By Point Processing, Spatial Filtering, Enhancement in Frequency Domain, Color Image Processing

Image Restoration:

Degradation Model, circulant And Block Circulant Matrices, Algebraic Approach To Restoration, Inverse Filtering

Image Segmentation:

Detection of Discontinuities, Edge Linking and Boundary Detection, Region Oriented Segmentation, Use of Motion in Segmentation

Image Compression:

Fundamentals, Image compression Models, Error Free Compression, Lossy Compression, Image Compression Standards.

Representation:

Representation Schemes, Boundary Descriptors, Regional Descriptors, File formats, Recognition, Elements Of image Analysis, Patterns And Pattern classes, Decision Theoretic Methods, Structural Methods.

Practical and Term work :

The Practical and Term work will be based on the topics covered in the syllabus.

Text Books :

Digital image Processing By Rafael C. Gonzalez And Richard Elwood's, Addison Wesley, 1993
 Fundamentals of Digital image processing By Anil K. Jani, Prentice Hall, 1989.
 Computer Vision And image processing By Scott E. Umbaugh;, Prentice Hall, 1998.

Reference Books:

Mastering Matlab 5 By Duane Hansel man And Bruce Littlefield, Prentice Hall, 1998.
 Pattern Classification And Scence Analysis By Richard O. Duane And Peter E. Hart, John wiley And Sons, 1973.

Digital image processing, third Edition By Jahne, Springer-Verlag, 1995.
 Patern Recognition Engineering By Morton Nadler And Eric P. Smith, John wiley and Song, 1993.
 Clustering and classification By P. Arabie, L.J.Hubert, And G. De Soete. Wolrd Scientific, 1996.
 Digital image processing and computer Vision By Robert J. Schalkoff, John Wiley and sons, 1989.

BHAVNAGAR UNIVERSITY
B.E.SEM-VII [IT]
IT-705: ELECTIVE PAPER (6) Mobile Operating System using C++

TEACHING SCHEME			EXAMINATION SCHEME				TOTAL MARKS
THEORY HOURS	TUT. HOURS	PRACT. HOURS	THEORY		PRA/ORAL MARKS	T/W MARKS	
			MARKS	HOUR			
4	0	2	100	3	25	25	150

Mobile Operating System using C++

It covers the following areas: development tools, application development, E32 User Library, resource management, descriptors, arrays, file server, stream store, active objects and client server architecture.

The subject explores the essential programming techniques required by all Symbian OS developers and acts as a foundation course to the more specialised Application UI and Application Engines courses. Details of these courses are available on request.

Objective:

- Develop simple programs for emulated environments and target devices
- Use Symbian OS development tools competently
- Debug and test Symbian OS code
- Understand the functionality of the fundamental components of the OS
- Use the Symbian OS memory management model
- Use descriptors, arrays and stream stores
- Implement an active object framework in simple applications and understand its relationship to the Symbian OS client server architecture

Content

1. **Introduction to the Symbian platform**
 Key features
 Key platform components and their organization
 Application structure: Engines and UIs
 Overview of Symbian OS Development – DevKits, CustKits and SDKs: what they’re used for.
2. **EPOC Development Tools**
 DevKit, CustKit, SDK installation, usage and documentation
 Basic CodeWarrior commands
 Symbian platform build tools
 Unique Identifiers
 Differences between target and emulated platforms
3. **Application Development**
 Building programs: GUI vs. console apps
 Using simple programs as templates
 Debugging and testing techniques
 Special Symbian OS coding conventions
4. **System Structure**
 Architecture and implications
 Kernel mode v user mode operation
 Types of function call (user, executive and server requests)
5. **Resource Management**
 Overview of memory leaks
 Detecting memory leaks using the memory leak and alloc failure tools
 Two phase construction pattern
 Exception handling using TRAPD
 Using the cleanup stack for resource management
6. **Descriptors**
 Motivation for Descriptors (c.f. C Strings)
 Descriptor Classes and their key features
7. **Arrays**
 Dynamic array overview
 Use of Segmented vs. Flat arrays
 Arrays for fixed/variable sized elements

8. **Active Objects**

Why AOs

Life cycle of AOs

CActive and CActiveScheduler classes

Implementing simple AOs

9. **Using Servers**

Client Server Architecture overview

Sessions and sub-sessions

Associated cleanup issues

10. **File Server and Stream Store**

Using file server sessions

Basic direct stream store functionality

Overview of different stream stores

Books:

1. Symbian OS C++ for Mobile Phones (Symbian Press) by Richard Harrison (Author)

2. Developing Series 60 Applications: A Guide for Symbian OS C++ Developers (Nokia Mobile Developer Series) by Leigh Edwards

3. Developing Series 60 Applications: A Guide for Symbian OS C++ Developers (Nokia Mobile Developer Series) by Leigh Edwards