VEER NARMAD SOUTH GUJARAT UNIVERSITY – SURAT
Syllabus for T. Y. B. Sc (Computer Science)
Semester: 6
Paper 601

Paper Title: Software Engineering-II

1 Introduction to Coding
- **1.1** Programming Practices
  - **1.1.1** Structured programming practices
  - **1.1.2** Event driven programming practices
  - **1.1.3** Object oriented programming practices
  - **1.1.4** Coding style
- **1.2** Code verification
  - **1.2.1** Code reading & statics analysis
  - **1.2.2** Code inspection & reviews
  - **1.2.3** Unit testing

2 Software testing methods
- **2.1** Software testing fundamentals
  - **2.1.1** Testing objects
  - **2.1.2** Testing Principals & guidelines
  - **2.1.3** Testability
  - **2.1.4** Error, Fault, Failure & Defect.
  - **2.1.5** Test case
- **2.2** White box testing & techniques
  - **2.2.1** Introduction to white box testing & benefits & limitations
  - **2.2.2** Basis path testing
  - **2.2.3** Control flow testing
  - **2.2.4** Data flow based testing
- **2.3** Black box testing & techniques
  - **2.3.1** Introduction to Black box testing & benefits & limitations
  - **2.3.2** Equivalence Partitioning
  - **2.3.3** Boundary Value Analysis
- **2.4** Testing Process
  - **2.4.1** Levels of testing
  - **2.4.2** System testing
  - **2.4.3** Test plan
  - **2.4.4** Test case specification, execution & analysis
  - **2.4.5** Debugging

3 Software Project Management
- **3.1** Introduction of project management activities
- **3.2** Size, Cost & Effort estimation
  - **3.2.1** Single variable models based estimation-LOC & FP based estimation
  - **3.2.2** COCOMO Models
- **3.3** Feasibility study & Make-Buy decision
- **3.4** Project Scheduling
  - **3.4.1** Task network & average duration estimation
  - **3.4.2** Overview of PERT & CRM techniques for scheduling
  - **3.4.3** Scheduling using timeline Charts
- **3.5** Project team
  - **3.5.1** Roles in software projects
  - **3.5.2** Team Structures
- **3.6** Software Quality Assurance
  - **3.6.1** Verification & validations

3.6.2 Inspections, informal & formal reviews

3.7 Project monitoring

3.7.1 Project cost, schedule & milestone tracking

3.7.2 Reviews for project tracking

3.8 Risk management

3.8.1 Risk management overview

3.8.2 Risk management strategies

3.8.3 Risk identification & assessment

3.8.4 Risk mitigation ,monitoring & control

References:

1	Software Engineering: A Practitioner's Approach, 4e/5e	S. Pressmann	McGrawHill Publication
2	Integrated Approach to Software Engineering	Pankaj Jalote	Narosa Publication
3	Software Testing	Ron Patton	SAMS-Techmedia Publication
4	Practical Project Management	Ivan Bayross	Firewall Media
5	Microsoft Ofice Project 2003 Bible	Elanic Marmel	Wiley Publishing
6	Software Engineering	K. K. Aggrawal, Yogesh Singh	New Age International Publishers
7	Fundamentals of Software Engineering	carlo Ghezzi, Mehdi Jazayeri, Dino Mendrilo	PHI
8	Software Engineering	Ian Summwerville, Addison Wesley	Pearson Education
9	Software Engineering	K. L. James	PHI

VEER NARMAD SOUTH GUJARAT UNIVERSITY – SURAT
Syllabus for T. Y. B. Sc (Computer Science)
Semester: 6
Paper 602
Paper Title: Computer Networking II

1. Basics of TCP/IP

1.1 The TCP/IP protocol layer
1.2 IP addressing – IP Subnets – IP routing
1.3 Method of delivery – Unicast, Boradcast, Multicast and Anycast.
1.4 ICMP protocol , ARP protocol
1.5 Concepts of Port and Sockets.
1.6 User Datagram Protocol
1.7 TCP protocol

2. Email services and its basics

2.1 Architecture and Services
2.2 The User Agent
2.3 Message Formats , Message Transfer, Final Delivery Sytem
2.4 Simple mail transfer protocol (SMTP)
2.5 SMTP and Domain Name System
2.6WWW
2.7 HTTP

3. Concepts of Cellular phones

3.1 working and signaling system
3.2 GSM and CDMA technology
3.3 3G and 4G technology of mobile
3.4 GPRS System and its working.

4. Bluetooth technology

4.1 Bluetooth Architecture
4.2 Bluetooth Application
4.3 The Bluetooth protocol stack
4.4 Bluetooth Frame structure

References:

1	Networking Complete	-	BPB Publication
2	Mastering Local Area networks	Christa Anderson & Mark Minasi	BPB Publication
3	Computer Networks	Tenenbaum	PHI, New Delhi
4	Next Generation Wireless Applications	Paul Golding	Wiley Publication
5	GPRS and 3G Wireless Applications (Professional Developer's Guide)	Christoffer Andersson	John Wiley & Sons
6	Introduction to CDMA Technology	Lawrence Harte	Althos Publishing
7	IP Telephny Basics	Lawrence Harte, David Bowler, and Robert T. Flood	Althos Publications
8	Introduction to WiMax	Lawrence Harte	ISBN: 1-932813-74-3 Althos Publi.
9	Voice over Data Networks for Mangers	Lawrence Harte	Althos Publi.
10	Bluetooth end to end	Diane McMichael Gilster	Wiley ISBN:0764548875

VEER NARMAD SOUTH GUJARAT UNIVERSITY – SURAT
Syllabus for T. Y. B. Sc (Computer Science)
Semester: 6
Paper 603

Paper Title: INFORMATION SYSTEMS

1. Introduction
- 1.1. Data & Information
- 1.2. Information need and benefits
- 1.3. Input, Processing , Output and feedback

2. Concepts of Systems
- 2.1. Definition of system in an organization
- 2.2. Types of systems.
- 2.3 Business as an information system

3. Introduction to various Information Systems
- 3.1. Business information Systems
  - 3.1.1. ERP
- 3.2. Management Information Systems
  - 3.2.1. Characteristics of MIS
  - 3.2.2. Development process of MIS
- 3.3. Decision support systems and GDSS.

4. Transaction Processing Systems
- 4.1. Overview of Transaction Processing System
- 4.2. Transaction Processing methods & objectives
- 4.3. Transaction Processing Activities
- 4.4. Traditional transaction processing Applications
  - 4.4.1. Order Processing Systems
  - 4.4.2. Purchase Systems
  - 4.4.3. Accounting Systems

References:

1	Principles of information system	Ralf M. Stair & George W. Reynolds	Thomson Learning Publisher
2	Management information Systems– Text & Applications	CVS Murthy	HPH
3	Management information Systems – Organization and technology – Forth Edition	K.C.Laudan & J.P. Laudan	Prentice Hall India
4	Management information system	W.S.Jawadekar	Tata McGraw Hill

VEER NARMAD SOUTH GUJARAT UNIVERSITY – SURAT
Syllabus for T. Y. B. Sc (Computer Science)
Semester: 6
Paper 604

Paper Title: Java Programming – 2

1. **Threads in Java**
   - 1.1 Concepts of Thread
   - 1.2 Thread life cycle
   - 1.3 Creating and extending Thread
   - 1.4 Daemon Thread
   - 1.5 Implementing Runnable Interface
   - 1.6 Thread priorities

2. **Java Exception Handling**
   - 2.1 Categories of Errors
   - 2.2 Concepts of Exception handlings
   - 2.3 Types of exceptions
   - 2.4 Uncaught exceptions
   - 2.5 Nested Try clause
   - 2.6 Throw clause
   - 2.7 Finally Clause
   - 2.8 User defined exceptions
   - 2.9 Difference between Checked and Unchecked Exceptions
   - 2.10 Throw and Throws

3. **Java Applet**
   - 3.1 Life cycle of Applet
   - 3.2 Applet Class
   - 3.3 Invoking Applet
   - 3.4 Passing parameters to Applet
   - 3.5 AWT class
   - 3.6 FONT and COLOR class
   - 3.7 Applet Coordinates system
   - 3.8 Frame and Panels
   - 3.9 Displaying various shapes (Cirlce, line, polygons)
   - 3.10 Displaying messages on statusbar

4. **Event Handling of AWT controls**
   - 4.1 Concepts of Event Handling
   - 4.2 Various components and Event Handlings of Components:
     - 4.2.1 Button Events
     - 4.2.2 Checkbox Events
     - 4.2.3 RadioButton , Checkbox Events
     - 4.2.4 List Events
     - 4.2.5 Scrollbar events
     - 4.2.6 TextField events
     - 4.2.7 TextArea events
     - 4.2.8 Mouse Events
     - 4.2.9 Keyboard Events

5. **Java Swing**
   - 5.1 Introduction to Swing
   - 5.2 Swing class and its hierarchy

5.3 Swing components
- 5.3.1 JFrame
- 5.3.2 Jwindow
- 5.3.3 Jlabel
- 5.3.4 JTextField
- 5.3.5 Jbutton
- 5.3.6 JRadioButton
- 5.3.7 JComboBox
- 5.3.8 JMenuBar
- 5.3.9 Layout Managers

6. Concepts of JDBC

6.1 Architecture of JDBC
6.2 JDBC API classes and Interfaces
6.3 Creating DSN for database
6.4 Connectivity with Java applet

References:

1	The Complete Reference Java2	Herbert Schildt	TMH, New Delhi
2	Mastering JAVA2	John Zukowski	BPB
3	Teach Yourself Java2 platform in 21 days	Lamey & Cadenhead	Teach Media
4	Java in Nut shell	-	O'Relly Publication
5	Java Language Reference	-	O'Relly Publication

VEER NARMAD SOUTH GUJARAT UNIVERSITY – SURAT
Syllabus for T. Y. B. Sc (Computer Science)
Semester: 6
Paper 605

Paper Title: Php/Mysql

1. Functions

1.1. Built-in functions

1.1.1. Sring Functions: chr, ord, strtolower, strtoupper, strlen, ltrim, rtrim, substr, strcmp, strcasecmp, strpos, strrpos, strstr, stristr, str_replace, strrev, echo, print

1.1.2. Math Functions: abs, ceil, floor, round, fmod, min, max, pow, sqrt, rand

1.1.3. Date Functions: Date, getdate, setdate, Checkdate, time, mktime

1.1.4. Array Functions: count, list, in_array, current, next, previous, end, each, sort, rsort, assort, array_merge, array_reverse

1.1.5. File Handling Functions: fopen, fread, fwrite, fclose, file_exists, is_readable, is_writable, fgets, file, file_get_contents, file_put_contents, ftell, fseek, rewind, copy, unlink, rename

1.1.6. Miscelleneous Functions: define, constant, include, require, header, die

1.2. User Defined Functions

2. Handling sessions and cookies

2.1. Concept of Session
2.2. Starting session
2.3. Modifying session variables
2.4. Unregistering and deleting session variable
2.5. Concept of Cookies
2.6. Handling of Cookies

3. How to upload files

4. Introduction of mySql

4.1. Installation of MySql
4.2. Types of tables in mySql
4.3. Query in mySql: select, insert, update, delete
4.4. Truncate
4.5. Alias
4.6. Order by
4.7. Backup and Restore
4.8. Database connectivity of PHP with mySql

References:

1	The complete Reference PHY	Stever Holzner	McGrow Hill
2	PHP 5.0 and MySql	Bible Tim Converse, Joyce Park, Clark Morgan	John Wiley & Sons
3	MySql	Bible , Steve Suehring	John Wiley & Sons
4	PHP Black Book	Peter Moulding	-
5	Beginning PHP 5.3	Matt Doyle	Wrox Publication

VEER NARMAD SOUTH GUJARAT UNIVERSITY – SURAT
Syllabus for T. Y. B. Sc (Computer Science)
Semester: 6
Paper - 606

Paper Title: Operating System - 2

1. Device Management

- 1.1. Device Management Function
- 1.2. Device Characteristics
- 1.3. Disk space Management
- 1.4. Allocation and Disk Scheduling Methods

2. Introduction to File System and File Management

- 2.1. File Concept
- 2.2. Operations on File
- 2.3. File Access Methods (Sequential Access and Direct Access)
- 2.4. Directory Systems File Management Functions.
- 2.5. File System and Directory Structure organization.
- 2.6. File Protection.

3. Microsoft Windows Management

- 3.1. System properties using My Computer
- 3.2. Concept of Domain
- 3.3. Windows Administration Tools
- 3.4. Event Viewer
- 3.5. Computer Management
- 3.6. System Tools
- 3.7. Storage
- 3.8. Introduction to Local Security Policy
- 3.9. Windows MMC & Snap-ins
- 3.10. System Configuration Utility (msConfig)

References:

1	Operating System Concepts	James Peterson	McGraw Hill
2	An OS Concept	Silberschatz	Addition Wesley Publication
3	An Operating Systems	W.Stallings	Pearson Education
4	Understanding Operating Systems	I.M.Flinn, A.M. Mchoes	Thomson Learning
5	Operating Systems	Donovan M	McGraw Hill Publication
6	Operating Systems : A Design Oriented Approach	Crowley	Tata McGraw Hill Publication
7	Operating Systems	S. Godbole	TMH.
8	Operating Systems : Design and Implementation, 3rd Edition	Tanenbaum & Woodhull	-

STUDENTS ARE SUPPOSED TO SELECT ONE PAPER FROM THE GENERUIC ELECTIVE SUBJECTS

VEER NARMAD SOUTH GUJARAT UNIVERSITY – SURAT
Syllabus as per CBCS
T.Y.B.Sc.(Computer Sci.) Semester – 6
Effective From: June-2013
GENERIC ELECTIVE (IDS) – 607-1

Subject: Introduction of Datawarehousing & Datamining

1. **INTRODUCTION AND DATA WAREHOUSING**
   - 1.1 Introduction,
   - **1.2** Data Warehouse,
   - **1.3** Multidimensional Data Model,
   - **1.4** Data Warehouse Architecture,
   - **1.5** Implementation
   - **1.6** Data Warehousing to Data Mining

2. **DATA PREPROCESSING, LANGUAGE, ARCHITECTURES, CONCEPT DESCRIPTION**
   - 2.1 Preprocessing, Cleaning, Integration, Transformation, Reduction, Discretization,
   - **2.2** Concept Hierarchy Generation, Data Mining Primitives, Query Language,
   - **2.3** Graphical User Interfaces, Architectures,
   - **2.4** Concept Description, Data Generalization, Characterizations.
3. **ASSOCIATION RULES**
   - 3.1 Association Rule Mining,
   - **3.2** Single-Dimensional Boolean Association Rules from Transactional Databases
4. **CLASSIFICATION AND CLUSTERING**
   - 4.1 Classification and Prediction,
   - **4.2** Issues, Decision Tree Induction,
   - **4.3** Bayesian Classification, Association Rule Based,
   - **4.4** Prediction,
   - **4.5** Types of data, Categorization of methods.

References:

1	Data Mining: Concepts and Techniques	J. Han, M. Kamber	Harcourt India / Morgan Kauffman, 2001
2	Data Mining: Introductory and Advanced Topics	Margaret H.Dunham	Pearson Education 2004
3	Data Warehousing in the real world	Sam Anahory, Dennis Murry	Pearson Education 2003
4	Principles of Data Mining	David Hand, Heikki Manila, Padhraic Symth	PHI 2004.
5	Building the Data Warehouse 3rd Edition	W.H.Inmon	Wiley, 2003.
6	Data Warehousing, Data Mining & OLAP	Alex Bezon, Stephen J.Smith	MeGraw-Hill Edition, 2001
7	Data Warehousing Fundamentals	Paulraj Ponniah	Wiley-Interscience Publication, 2003

VEER NARMAD SOUTH GUJARAT UNIVERSITY – SURAT
Syllabus as per CBCS
T.Y.B.Sc.(Computer Sci.) Semester – 6
Effective From: June-2013
GENERIC ELECTIVE (IDS) – 607-2

Subject: Software Quality Assurance

1 Introduction to Software Quality & Quality Assurance

- **1.1** Definition of Quality & Software Quality
- **1.2** Quality Factors & Models
- **1.3** Quality Control & Assurance

2 Software Quality Assurance

- **2.1** SQA & its Activities
- **2.2** Software Reviews & Audits
  - **2.2.1** Defect identification & removal
  - **2.2.2** Formal technical reviews—Guidelines for meeting & record keeping
  - **2.2.3** Requirement Reviews
  - **2.2.4** Design Reviews
  - **2.2.5** Code Reviews
- **2.3** Introduction to Statistical Quality Assurance
- **2.4** Quality Assurance Standards
  Overview: ISO 9000 , 9001:2000 and 9001:2008,CMM & CMMi.

3 Technical Metrics for Quality Measurement

- **3.1** Metrics & Measurements and Measurement Principals
- **3.2** Attributes of Effective Software Metrics
- **3.3** Overview of Project, Product & process related metrics
- **3.4** Metrics for Analysis model
  - **3.4.1** Function based metrics
  - **3.4.2** Bang metrics
- **3.5** Metrics for design model
  - **3.5.1** High level Design Metrics
  - **3.5.2** Component Level Design Metrics
- **3.6** Metrics for Source Code, Testing & Maintenance
- **3.7** Software Reliability & its Measurement

References:

1	Software Engineering: A Practitioner's Approach, 4e/5e	Roger S. Pressmann	McGrawHill Publication.
2	Software Quality for Producing Practical and Consistent Software	Mordechai Ben-Monachem, Gray S. Marliss	Thomson Learning
3	Software Quality Assurance	Milind Limaye	McGraw Hill.
4	CMM in Practice	Pankaj Jalote	Pearson Education
5	ISO 9001:2000 for software organizations	Swapna Kishor, Rajesh Naik,	Tata McGraw Hill.
6	Software Engineering	K. K. Aggrawal, Yogesh Singh	New Age International Publishers.
7	Fundamentals of Software Engineering	carlo Ghezzi, Mehdi Jazayeri, Dino Mendrilo	PHI.
8	Software Engineering	Ian Summwerville, Addison Wesley	Pearson Education.
9	Software Engineering	K. L. James	PHI

VEER NARMAD SOUTH GUJARAT UNIVERSITY – SURAT
Syllabus as per CBCS
T.Y.B.Sc.(Computer Sci.) Semester – 6
Effective From: June-2013
GENERIC ELECTIVE (IDS) – 607-3

Subject: ORGANIZATION STRUCTURE & BEHAVIOUR

1. Introduction to Organization
- 1.1. What makes an organization
- 1.2. Structure of organization
- 1.3. What is Management
- 1.4. Scope of Management

2. Need for Management
- 2.1. Role of Management
- 2.2. Manager's Role (Interpersonal Role, Information Role and Decisional Role)
- 2.3. Managerial Skills (Technical Skills, Human Skills, Conceptual Skills)

3. Attitude
- 3.1. Meaning of Attitudes
- 3.2. Characteristics of Attitudes

4. Motivation
- 4.1. What is motivation?
- 4.2. Nature and Characteristics of Motivation
- 4.3. Importance & Benefits of Motivation

5. Leadership
- 5.1. What is Leadership?
- 5.2. Characteristics of Leadership
- 5.3. Leadership Styles
- 5.4. Leadership Skills (Technical Skills, Human Skills, Conceptual Skills. Personal Skills)

6. BPO & Call Center
- 6.1. What is B.P.O?
- 6.2. What is out-sourcing? Benefits of outsourcing
- 6.3. What is Call Center?
- 6.4. Call center setup & functions

References:

1	Management & Organization Development	-	Ahmed Abod Rachna Prakashan, New Delhi
2	Organization Behaviour	Aplewhite Philip	Prentice hall
3	Management & Organization Development	Argyris Chris	McGraw Hill
4	Human Behaviour at work	Davis Keeth	Tata McGraw Hill
5	Organization Behaviour	L.M. Prasad	-

Semester VI course Structure:

Note: Students are suppose to do a small project which is equivalent to practical (8 hrs)
Practical Batch size : 15 students in a batch

SR No	Course	Papers Code	Paper Title	Theory Credit	Theory Hours	Practical Credit	Practical Hours	Total credits	Total Hours
1.	Core Compulsary Computer	601	Software Engineering-II	2	2	0	0	18	18
		602	Computer Networking-II	2	2	0	0		
		603	Information Systems	2	2	0	0		
		604	Java Programming-II	2	2	2	2		
		605	Php/ MySql	2	2	2	2		
		606	Operating System-II	2	2	0	0		
			Project			2	8		
2.	Generic Elective	607-1	Intro. to Dataware. & Datamining	2	3	NIL		02	03
		607-2	Software Quality Assurance						
		607-3	Org. Structure & Behavior						
3	Foundation Compulsory			2	3	0	0	02	03
4	Foundation Elective			2	2			02	02
Total				18	20	6	12	24	26

SR No	Course	Papers Code	Paper Title	Theory(Marks) Internal	Theory(Marks) Ext.	Practical(Marks) Inernal	Practical(Marks) Ext.	Total Credits
1.	Core Compulsory Computer	601	Software Engineering-II	20	50	0	0	18
		602	Computer Networking-II	20	50	0	0	
		603	Information Systems	20	50	0	0	
		604	Java Programming-II	20	50	10	20	
		605	Php/ MySql	20	50	10	20	
		606	Operating System-II	20	50	0	0	
			Project			40	80	
2.	Generic Elective	607-1	Intro. to Dataware. & Datamining	30	70	NIL		02
		607-2	Software Quality Assurance					
		607-3	Org. Structure & Behavior					
3	Foundation Compulsory			30	70	NIL		02
4	Foundation Elective							