

VEER NARMAD SOUTH GUJARAT UNIVERSITY – SURAT
Bachelor of Computer Application (B.C.A) 2nd Year
Syllabus (As Per CBCS)

S. Y. B. C. A. Semester 3
Effective From: June-2012

Paper No.: 301

Paper Title: STATISTICAL METHODS

1. Introduction

2. Presentation of statistical data

- 2.1. Types of variables
- 2.2. Univariate, bivariate and multivariate data
- 2.3. Univariate and bivariate frequency distributions

3. Measure of central tendency-mean, median and mode

4. Measures of dispersion (absolute as well as relative)

- 4.1 Mean deviation
- 4.2 Standard deviation
- 4.3 Coefficient of mean deviation and coefficient of variation

5. Correlation

- 5.1 Introduction
- 5.2 Types of correlation and scatter diagrams
- 5.3 Rank correlation coefficient

6. Regression

- 6.1 Concept of dependent and independent variables
- 6.2 Introduction to liner regression
- 6.3 Line of regression (with one independent variable)

Methods should be explained conceptually and corresponding examples should be given. No proof should be given to any of the methods

Reference Books :

- 1. Introduction to mathematical statistics – Hogg RV & Cralg AL Tata McGraw Hill
- 2. An introduction to the theory of statistics – Yule UG & Kendall MG – Chailes Griffin & Co.

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S. Y. B. C. A. Semester 3
Effective From: June-2012

Paper No.: 302

Paper Title: SOFTWARE ENGINEERING - I

1. Introduction

- 1.1. Software, Software characteristics, Applications, Myths.
- 1.2. Software Engineering ,Generic View
- 1.3. Software Process models: Waterfall, Prototyping

2. Requirement analysis

- 2.1. Introduction
- 2.2. Current Application Analysis
- 2.3. Requirement gathering techniques & Fact Finding, Recording Outcome
- 2.4. DFD Data Dictionary and Process Specification
- 2.5. Importance of Requirement Specifications
- 2.6. Software Requirement Specification Document

3. System Design

- 3.1. Design model
- 3.2. Principal and Concepts
- 3.3. Functional Independence
- 3.4. Module & Sequence
- 3.5. Effective of Modular Design
- 3.6. Mapping of Requirements into Design
- 3.7. Design Documentation

Note: Case studies may be carried out at appropriate stages of the course.

Reference Books:

- 1. R. S. Pressman, Software Engineering – A Practitioners’ approach – McGraw Hill
- 2. Richard Fairley, Software Engineering concepts – McGraw Hill
- 3. Elias M : System Analysis & Design – Galgotia Pub.
- 4. Pankaj Jalota : An integrated approach to software engineering – Narosa.
- 5. Software Engineering A Concise Study – Kelkar - PHI
- 6. Richard Fairley : System Analysis & Design - Galgotia Publications
- 7. Sstzinger, Jackson, Burd: System Analysis & Design in changing world
- 8. Prof. S. Parthasathy & Prof. B.W. Khalkar : System Analysis & Design & Introduction to S/W Engineering.

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S. Y. B. C. A. Semester 3
Effective From: June-2012

Paper No.: 303

Paper Title: RELATIONAL DATABASE MANAGEMENT SYSTEM

- 1. Codd's Laws for Full Functional Relational Database Management System**
- 2. Introduction to Oracle Tools**
 - 2.1. Oracle DBA
 - 2.2. SQL Plus
- 3. Interactive SQL**
 - 3.1. Oracle Data Types
 - 3.2. Oracle DDL & DML
(Create table, Alter Table, Update with multiple column, Updating to null values, Drop Table, Constraints like primary key, foreign key, muticolumn foreign key, foreign key restriction etc)
 - 3.3. Operators
 - 3.4. Oracle Functions
 - 3.5. Rang Searching
 - 3.6. Pattern Matching
 - 3.7. Manipulating Dates
 - 3.8. Joins (joining tables through Referential integrity, Equi-Joins, Joins of two tables, joining a table itself
 - 3.9. Sub Queries (DISTINCT with sub queries, predicates with sub queries ,Aggregate function in sub queries, HAVING clause, EXISTS operator)
 - 3.10. Using Union, Intersect and Minus Clause
 - 3.11. Indexes (Create index, Drop Index, Types of Index)
 - 3.12. Views (Updating views, Group Views, Views and Joins Vies and Sub Queries , Changing Values through view)
 - 3.13. Sequences
 - 3.14. Nested Tables & Var. Arrays
- 4. PL/SQL**
 - 4.1. PL/SQL Block Structure
 - 4.1.1. Using Variables,, Constants and Data Type
 - 4.1.2. User Defined Record
 - 4.1.3. Assigning Values to Variables
 - 4.1.4. Control Statements (IF...THEN statement, Loop, FOR...Loop, While Loop)
 - 4.2. Oracle Transactions
 - 4.3. Concurrency Control in Oracle
 - 4.4. Cursor (Explicit, Implicit)
 - 4.5. Error handling in PL/SQL
 - 4.5.1. Exception

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- 4.5.2. User Defined Exception
- 4.5.3. Unhandled Exception
- 4.5.4. Pragma Exception

5. Stored Procedures & Stored Functions

6. Database Triggers

Reference Books:

1. George Koch: The Complete Reference – Oracle Press
2. Oracle 8 PL/SQL Programming – Oracle Press
3. David C. Kreines: Oracle SQL: The Essential Reference – O'Reilly

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S. Y. B. C. A. Semester 3
Effective From: June-2012

Paper No.: 304

Paper Title: DATA STRUCTURES

1. Pointers

- 1.1. Pointers and memory storage
- 1.2. Operation on pointers
- 1.3. Arrays of pointers
- 1.4. Passing pointers to functions

2. Primitive Data Structures

3. Non - Primitive data structures

- 3.1. Arrays - its storage structures and operations
- 3.2. Stacks
 - 3.2.1. Stack Operations
 - 3.2.2. Applications of stack in Recursion and Polish Notations
- 3.3. Queues
 - 3.3.1. Types of queues: Simple, Circular, Double-ended, Priority
 - 3.3.2. Operations on queue
 - 3.3.3. Application of queue
- 3.4. Linked list
 - 3.4.1. Types of Limited Lists: Singly, Doubly, Circular
 - 3.4.2. Operations on linked list
 - 3.4.3. Applications Linked lists (Polynomial Manipulation)

4. Trees

- 4.1. Concept & Definitions
- 4.2. Types of Binary Tree
- 4.3. Operations on Binary Trees: Tree Traversals, Insertion & Deletion
- 4.4. Linked and Threaded Storage Representation of Binary Trees
- 4.5. Application of trees (Manipulation of Arithmetic Expression)

5. Sorting & Searching Techniques

- 5.1. Sorting
 - 5.1.1. Insertion Sort
 - 5.1.2. Selection Sort
 - 5.1.3. Quick Sort
 - 5.1.4. 2-way merges
 - 5.1.5. Bubble Sort
- 5.2. Searching:- Sequential, Binary.

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Reference Books:

1. An introduction to Data Structures with applications – Trembley – McGraw Hill
2. Algorithms – Data Structure Programs – Wirth, Niclus – PHI
3. Data Structures – A Programming Approach with C, Dharmender Singh Kushwaha, Arun Kumar Misra - PHI
4. Fundamentals of Data Structures, Horwitz, E. and Sahni – Computer Science Press.
5. The art of Computer Programming, Vols, 1-2, Kunth D – Addison Wessley
6. Schaum’s Outline of Data Structure with C++, John R.H. –TMH
7. Expert Data structure with C-R. B. Patel, Khanna Publication
8. The Complete Reference 'C' -Fourth Edition - Herbert Schildt - Tara MC Graw Hill
9. Programming Language in 'C' Gotfried -Tata MC Graw Hill.

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S. Y. B. C. A. Semester 3
Effective From: June-2012

Paper No.: 305

Paper Title: OBJECT ORIENTED PROGRAMMING

1. Principles of object oriented programming

- 1.1. Procedures oriented programming Vs object oriented programming
- 1.2. Basic concepts of object oriented programming (Encapsulation, Polymorphism etc)
- 1.3. Benefits of object oriented programming
- 1.4. Structure & Classes
- 1.5. Encapsulation and Data Hiding
- 1.6. Constructors
- 1.7. Friend Function
- 1.8. Inline Function
- 1.9. Dynamic Object Creation & destruction
- 1.10. Destructor

2. Object Oriented Properties

- 2.1. Introduction to Object Oriented Properties
- 2.2. Abstraction
- 2.3. Polymorphism
 - 2.3.1. Operator Overloading
 - 2.3.2. Function Overloading and Type Conversion
- 2.4. Inheritance
 - 2.4.1. Type of Inheritance
 - 2.4.2. Constructors and Destructor Calls during Inheritance
- 2.5. Dynamic Polymorphism
 - 2.5.1. Overriding
 - 2.5.2. Virtual Function
 - 2.5.3. Abstract Class

3. Data Files

- 3.1. Manipulators (In-Built , User Defined)
- 3.2. File Modes
- 3.3. File Functions
- 3.4. Error Handling During File Operation

4. Exception Handling

- 4.1. Introduction to Exception
- 4.2. Try ... Catch

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Reference Books:

1. Let us C++ by Yaswant Kanitkar TMH Publication
2. Programming with C++ by E Balaguruswamy BPB Publication
3. Herbert Schildt: The Complete Reference C++ TMH
4. Stroustrup : The C++ Programming Language – Addison Wesley
5. Robert Lofore OOP in Turbo C++ - Galgotia Publication
6. Lippman : C++ Primer – Addison Wesley
7. Probal Sengupta : Object Oriented Programming Fundamentals & Applications – PHI

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Syllabus (As Per CBCS)

S. Y. B. C. A. Semester 3
Effective From: June-2012

Paper No.: 306
Paper Title: Practical

All Students have to carry out practical work in Subjects – 303, 304 & 305

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Bachelor of Computer Application (B.C.A) 2nd Year
Syllabus (As Per CBCS)

S. Y. B. C. A. Semester 3
Effective From: June-2012

No	Course Type	Subject	Credit	Hrs.	Internal Marks	External Marks	External Exam Duration	Total Marks
301	Foundation compulsory	Statistical Methods	2	2	30	70	3 Hrs	100
302	CORE Elective	Software Engineering-I	3	3	30	70	3 Hrs	100
303	CORE	RDBMS	4	4	30	70	3 Hrs	100
304	CORE	Data Structures	4	4	30	70	3Hrs	100
305	CORE	Object Oriented Programming	4	4	30	70	3 Hrs	100
306	CORE	Practical	6	12	60	140	5 Hrs	200
	Foundation Elective	To be Selected from the list (eg NCC/NSS/Saptdhara)	2	2				
TOTAL			25	31	210	490		700

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Bachelor of Computer Application (B.C.A) 2nd Year
Syllabus (As Per CBCS)

S. Y. B. C. A. Semester 4
Effective From: June-2012

Paper No.: 401

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
 - 2.2.1. Deterministic probabilistic systems
 - 2.2.2. Open and close systems

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

4. Transaction Processing Systems

- 4.1. Overview of Transaction Processing System
- 4.2. Transaction Processing methods & objectives
- 4.3. Transaction Processing Activities
 - 4.3.1. Data Collection
 - 4.3.2. Data Editing
 - 4.3.3. Data correction
 - 4.3.4. Data Manipulation
 - 4.3.5. Data Storage
 - 4.3.6. Document Production and Reports
- 4.4. Traditional transaction processing Applications
 - 4.4.1. Order Processing Systems
 - 4.4.2. Purchase Systems
 - 4.4.3. Accounting Systems
- 4.5. Case Studies Based on TPS for Railway Reservation, Online Admission Process, Hospital Management and Hotel Management.

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Reference Books:

1. Ralf M. Stair & George W. Reynolds - Principles of information system Thomson Learning Publisher.
2. NCC – Introduction to system analysis and Design – Galgotia Publications
3. CVS Murthy – Management information Systems – Text & Applications-HPH
4. K.C.Laudan & J.P. Laudan - Management information Systems – Organization and technology – Forth Edition – Prentice Hall India.
5. W.S.Jawadekar – Management information system – Tata McGraw Hill.
6. J.Buffam – E-Business and IS Solutions – Addition Wesley.
7. Efraim Turban & Jay E. Aronson – Decision Support System and Intelligence Systems – Additional Wesley.

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S. Y. B. C. A. Semester 4
Effective From: June-2012

Paper No.: 402

Paper Title: SOFTWARE ENGINEERING - II

1. Business Blue Print

- 1.1. Flow Diagram Of Application
- 1.2. Output Design
- 1.3. Input Design
- 1.4. Freezing Business Blue Print

2. Information Systems Development

- 2.1. Code Design
- 2.2. Test Data Preparations
- 2.3. Module Testing

3. Software Testing

- 3.1. Testing Fundamentals
- 3.2. Functional and Structural Testing
- 3.3. Testing Process

4. Application Change Over

- 4.1. Integrated Testing
- 4.2. Data Creation & Conversion
- 4.3. Types of Changeover
- 4.4. User Training

5. System Documentation And Maintenance

- 5.1. Documentation Essentials
- 5.2. Documentation Methods
- 5.3. Developer and User Manuals
- 5.4. Review & monitoring Of Execution
- 5.5. Application Change Management

Note: Case studies may be carried out at appropriate stages of the course.

Reference Books :

- 1. R.S.Pressman, Software Engineering – A Practitioners’ approach – McGraw Hill
- 2. Richard Fairley, Software Engineering concepts – McGraw Hill
- 3. Elias M : System Analysis & Design – Galgotia Pub.
- 4. Pankaj Jalota : An integrated approach to software engineering – Narosa.
- 5. Software Engineering A Concise Study – Kelkar - PHI

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6. Richard Fairley : System Analysis & Design - Galgotia Publications
7. Sstzinger, Jackson, Burd: System Analysis & Design in changing world
8. Prof. S. Parthasarthy & Prof. B.W. Khalkar : System Analysis & Design & Introduction to S/W Engineering.

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S. Y. B. C. A. Semester 4
Effective From: June-2012

Paper No.: 403

Paper Title: JAVA PROGRAMMING LANGUAGE

1. Introduction to Java

- 1.1. Properties of Java
- 1.2. Comparison of java with C++

2. Java Developer's Kit (JDK) and its uses

- 2.1. Java Compiler
- 2.2. Java Interpreter
- 2.3. Java Debugger
- 2.4. Applet Viewer

3. Basic Concepts

- 3.1. Identifier, Literals , Operators , Variables
- 3.2. Keywords
- 3.3. Data Types

4. Control Structures

- 4.1. Branching: If – Else, Switch
- 4.2. Looping : While, Do-while , For

5. Classes and Objects

- 5.1. Simple Class
- 5.2. Fields
- 5.3. Access Controls
- 5.4. Object Creation
- 5.5. Construction and Initialization
- 5.6. Methods
- 5.7. This
- 5.8. Overloading Methods
- 5.9. The main Method

6. Interfaces

- 6.1. Introduction to Interfaces
- 6.2. Interface Declaration
- 6.3. Inheriting and Hiding Constants
- 6.4. Inheriting, Overloading and Overriding Methods
- 6.5. Interfaces Implementations

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7. Exceptions

- 7.1. Introduction to Exceptions
- 7.2. Creating Exception Types
- 7.3. Throw
- 7.4. Try, Catch and Finally

8. Threads

- 8.1. Introduction to Threads
- 8.2. Thread Model
- 8.3. Priority of Threads
- 8.4. Inter Thread Communication
- 8.5. Synchronization

9. Strings

- 9.1. Basic String Operations
- 9.2. String Comparison
- 9.3. String Buffer Class

10. Packages

- 10.1. Package Naming
- 10.2. Type Imports
- 10.3. Package Access
- 10.4. Package Contents
- 10.5. Package Object and Specification

11. The Applet Classes

- 11.1. Applet Basics
- 11.2. Applet Architecture
- 11.3. Applet skeleton
- 11.4. Applet Display Methods
- 11.5. HTML APPLET Tag (<APPLET>)
- 11.6. Passing Parameters to Applets

Reference Books:

1. Ken Arnold James Gosling, David Holmes – Java Programming Language Third Edition – Addition Wesley (Pearson Education)
2. Patrics Naughton – Java – The complete reference – Tata McGraw Hill
3. Samuel A. Rebelsky – Experiments in Java : An Introductory Lab Manuals – Addition Wesley (Pearson Education)
4. Steven Haines – Java 2 From Scratch PHI.
5. E-Balaguruswamy – Programming in Java
6. Java : How to Program – Deitel & Deitel - PHI

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S. Y. B. C. A. Semester 4
Effective From: June-2012

Paper No.: 404

Paper Title: .NET PROGRAMMING

1. Overview of Microsoft .NET Framework

- 1.1. The .NET Framework
- 1.2. The Common Language Runtime (CLR)
- 1.3. The .NET Framework class Library

2. Visual Basic .NET Programming

- 2.1. Working with Tool Box Controls
 - 2.1.1. Common controls – Label, Text Box, Button, Check Box, Radio Button, Date Time Picker, List Box, Combo box, Picture Box, Rich Text Box, Tree View, Tool Tip, Progress bar, Masked Text box, Notify Icon, Link Label, Checked List box
 - 2.1.2. Container
 - 2.1.3. Data – Data Set, Data Grid
 - 2.1.4. Component – Image list, error provider, Help provider, Timer
- 2.2. Working with Menus and Dialogue Boxes
- 2.3. Exception Handling
 - 2.3.1. Structured Error Handling
 - 2.3.2. Unstructured Error Handling
- 2.4. Using Modules and Procedures
- 2.5. Using Arrays and Collections

3. Object Oriented Programming

- 3.1. Creating Classes, Object Construction & Destruction
- 3.2. Abstraction, Encapsulation & Polymorphism
- 3.3. Interfaces & Inheritance

4. Database access using ADO.NET

- 4.1. Visual Database Tools
- 4.2. ADO .NET Object Model
- 4.3. ADO .NET Programming

Reference Books:

- 1. Visual Basic .NET Programming (Black Book) - By Steven Son Holzner , DreamTech Publication
- 2. Mastering Visual Basic.NET by Evangelos Petroustos BPB Publication
- 3. Moving to VB.NET : Stategies, Concepts, and Code - by Dan Appleman – Apress Publication
- 4. Microsoft Visual Basic .NET Step by Step - by Michael Halvorson, PHI Publication
- 5. Database Programming with Visual Basic.NET and ADO.NET - by F.Scott Barker – Sams Publication

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6. Beginning .NET Web Services Using Visual Basic .NET - by Joe Bustos and Karlli Waston, Wrox Publication
7. .NET – Complete Development Cycle - by G. Lenz, T. Moeller, Pearson Education
8. Professional VB.NET, 2nd Edition - by Fred Barwell, et al – Wrox Publication

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S. Y. B. C. A. Semester 4
Effective From: June-2012

Paper No.: 405

Paper Title: WEB DESIGNING

1. Creating Web Sites

- 1.1. Using Front Page
- 1.2. Table
- 1.3. Form
- 1.4. Frame
- 1.5. Link Bars
- 1.6. Theme
- 1.7. Font
- 1.8. Picture
- 1.9. DHTML Effects
 - 1.10. Styles
 - 1.11. Publish
 - 1.12. Using HTML
 - 1.13. Structure
 - 1.14. Text and Paragraph Formatting Tags
 - 1.15. Headings
 - 1.16. Lists
 - 1.17. Links
 - 1.18. Table
 - 1.19. Form
 - 1.20. Frame
 - 1.21. Image Maps
 - 1.22. Audio & Video Tags
 - 1.23. CSS (Embedded & Importing)
 - 1.24. Properties : Font, Text, Margin, Border, List, Color &Background, Box

2. DHTML & Java Script

- 2.1. Static, Dynamic and Active Page
- 2.2. DHTML Events
 - 2.2.1. Window, Form, Keyboard, Mouse
- 2.3. Java Script
 - 2.3.1. Overview of Client & Server Side Scripting
 - 2.3.2. Structure of JavaScript
 - 2.3.3. Basic Commands of JavaScript
 - 2.3.3.1. Functions
 - 2.3.3.2. Operators
 - 2.3.3.3. Looping Statements

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3. Hosting Web Pages

- 3.1. Domain Name System
- 3.2. Protocols
 - 3.2.1. Window based FTP (Upload & Download)
- 3.3. Role of Web Server in Web Publishing
 - 3.3.1. Communication between Web Server & Web Browser

4. 2D Animation (Using Flash 5.0)

- 4.1. Introduction
- 4.2. Toolbox & Toolbars
- 4.3. Types of Animation
 - 4.3.1. Key Frame
 - 4.3.2. Tweening
 - 4.3.2.1. Shape
 - 4.3.2.2. Motion
- 4.4. Use of Movie Clips, Buttons, Graphics
- 4.5. Scripting
 - 4.5.1. Basic Actions
 - 4.5.1.1. Go To, Play, Stop, Get URL, FSCCommand, LoadMovie
- 4.6. Layers
 - 4.6.1. Concepts
 - 4.6.2. Uses
 - 4.6.3. Inserting and Deleting
 - 4.6.4. Motion guide Layer
- 4.7. Publishing Animation

Reference Books:

1. Microsoft FrontPage 2000 – T.J. O’Leary - TMH
2. Microsoft FrontPage 2000 24 Hours – Roger C. - Techmedia
3. Advanced HTML companion – Keith S. & Roberts _ AP Professional
4. Mastering Photoshop 6.0 – BPB publications Steve Romaniello
5. Flash Bible – IDG Books India Reinhardt, Robert
6. Flash: Magic – Techmedia Emberton, David J.
7. The Complete Reference HTML – TMH Powel, Thomas A.
8. HTML Unleashed – Techmedia Darnell Rick
9. Microsoft FrontPage 2002 24 Hours – Techmedia (SAMS), Rogers Cadenhead
10. Java Scripting Programming for Absolute Beginner- Harris PHI
11. JavaScript Step by Step – Suehring PHI
12. Cascading Style Sheets- The Definitive Guide E-A Meyer – O’Reilly

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S. Y. B. C. A. Semester 4
Effective From: June-2012

Paper No.: 406
Paper Title: Practical

All Students have to carry out practical work in Subjects – 403, 404 & 405

VEER NARMAD SOUTH GUJARAT UNIVERSITY – SURAT
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Syllabus (As Per CBCS)

S. Y. B. C. A. Semester 4
Effective From: June-2012

No	Course Type	Subject	Credit	Hrs.	Internal Marks	External Marks	External Exam Duration	Total Marks
401	Foundation compulsory	Information System	2	2	30	70	3 Hrs	100
402	CORE Elective	Software Engineering – II	3	3	30	70	3 Hrs	100
403	CORE	Java Programming	4	4	30	70	3 Hrs	100
404	CORE	.Net Programming	4	4	30	70	3Hrs	100
405	CORE	Web Designing	4	4	30	70	3 Hrs	100
406	CORE	Practical	6	12	60	140	5 Hrs	200
	Foundation Elective	To be Selected from the list (eg NCC/NSS/Saptdhara)	2	2				
TOTAL			25	31	210	490		700