VEER NARMAD SOUTH GUJARAT UNIVERSITY – SURAT
Bachelor of Computer Application

Program Structure	Semester-wise break up for the courses is given below:

SEMESTER - 3

Course Code	Title	Teaching per week		Course Credits	University Examination		Internal Marks	Total Marks
		Theory	Practical		Duration	Marks		
301	Statistical Methods	2	0	2	3 Hrs	70	30	100
302	Software Engineering-I	3	0	3	3 Hrs	70	30	100
303	Relational Database Management System (RDBMS)	4	0	4	3 Hrs	70	30	100
304	Data Structures	4	0	4	3 Hrs	70	30	100
305	Object Oriented Programming	4	0	4	3 Hrs	70	30	100
306	Practical	0	12	6	5 Hrs	140	60	200
	Foundation Elective (to be selected from NCC / NSS / Saptadhara)	0	2	2				
Total		17	14	25		490	210	700

For Practical:

1. Batch Size – 30 Maximum
2. In case of more than 10 students in a batch, separate batch should be considered.
3. The journal should be certified by the concerned faculty and also by the Head of the Department, failing which the student should not be allowed to appear for External Practical Examination.

SEMESTER - 4

Course Code	Title	Teaching per week		Course Credits	University Examination		Internal Marks	Total Marks
		Theory	Practical		Duration	Marks		
401	Information System	2	0	2	3 Hrs	70	30	100
402	Software Engineering-II	3	0	3	3 Hrs	70	30	100
403	Java Programming	4	0	4	3 Hrs	70	30	100
404	.NET Programming	4	0	4	3 Hrs	70	30	100
405	Web Designing	4	0	4	3 Hrs	70	30	100
406	Practical	0	12	6	5 Hrs	140	60	200
	Foundation Elective (to be selected from NCC / NSS / Saptadhara)	0	2	2				
Total		17	14	25		490	210	700

For Practical:

1. Batch Size – 30 Maximum
2. In case of more than 10 students in a batch, separate batch should be considered.
3. The journal should be certified by the concerned faculty and also by the Head of the Department, failing which the student should not be allowed to appear for External Practical Examination.

Program Passing Rules	As per University rules.

Course: 301 : Statistical Methods

Course Code	301
Course Title	Statistical Methods
Credit	2
Teaching per Week	2 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2015
Purpose of Course	To develop statistical problems solving abilities relevant to Computer Science.
Course Objective	1. To make students understand various statistical methods. 2. To develop the ability to compute descriptive statistics including diagrammatic representation and interpretation. 3. To be able to carry out simple linear regression analysis
Pre-requisite	None
Course Out come	Ability to use computers to analyze the data
Course Content	**Unit 1. Introduction and Presentation of statistical data** 1.1. Types of variables 1.2. Univariate, bivariate and multivariate data 1.3. Univariate and bivariate frequency distributions **Unit 2. Measure of central tendency-mean, median and mode** **Unit 3. Measures of dispersion (absolute as well as relative)** 3.1. Mean deviation 3.2. Standard deviation 3.3. Coefficient of mean deviation and coefficient of variation **Unit 4. Correlation** 4.1. Introduction 4.2. Types of correlation and scatter diagrams 4.3. Rank correlation coefficient **Unit 5. Regression** 5.1. Concept of dependent and independent variables 5.2. Introduction to liner regression 5.3. 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 Book	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. 3. Statistical Methods by S.P. Gupta – Sultan Chand & Co
Teaching Methodology	Class Work, Discussion, Self Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

Course: 302 : Software Engineering-I

Course Code	302
Course Title	Software Engineering - I
Credit	3
Teaching per Week	3 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2015
Purpose of Course	Computer software engineers apply the principles and techniques of computer science, engineering, and mathematical analysis to the design, development, testing, and evaluation of the software and the systems that enable computers to perform their many applications.
Course Objective	1. To make students understand how to engineer the software. 2. To make students understand various components of software process model and their working. 3. To make students understand the importance of requirement analysis. 4. To make students understand various approaches of system design.
Pre-requisite	Prior knowledge of some software
Course Out come	After studying this, students will be able to understand how software is engineered and importance of various aspects of software engineering. This course will also help students appreciate the role of various design principles. After successful completion students will be able to perform requirement analysis and system design for their applications.
Course Content	**Unit 1.** Introduction 1.1 What is software? 1.2 Software characteristics. 1.3 Software Engineering: definition. **Unit 2.** Software Engineering 2.1 Software Applications, Myths. 2.2 Software Engineering: Generic View. **Unit 3.** Software Process models 3.1 Introduction of Waterfall model. 3.2 Prototype model. **Unit 4.** Requirement analysis 4.1 Introduction. 4.2 Current Application Analysis. 4.3 Requirement gathering techniques & Fact Finding, Recording Outcome. 4.4 DFD, Data Dictionary and Process Specification. 4.5 Importance of Requirement Specifications. 4.6 Software Requirement Specification Document. **Unit 5.** System Design 5.1 Design model.

	5.2 Principal and Concepts. 5.3 Functional Independence. 5.4 Module & Sequence. 5.5 Effectiveness of Modular Design. 5.6 Mapping of Requirements into Design. 5.7 Design Documentation.
Reference Books	1. Software Engineering - A Practitioners' approach, R. S. Pressman – McGraw Hill. 2. Software Engineering concepts, Richard Fairley – McGraw Hill. 3. An Integrated Approach to Software Engineering, Pankaj Jalota – Narosa. 4. Software Engineering A Concise Study, Kelkar - PHI 5. Fundamentals of Software Engineering, 4th Edition, Rajib Mall - PHI 6. Software Engineering, 9th Edition, Ian Sommerville - Pearson Education 7. System Analysis & Design in changing world, Sstzinger, Jackson, Burd – Course Technology 8. System Analysis, Design & Introduction to S/W Engineering, Prof. S. Parthasathy & Prof. B.W. Khalkar – Master Academy, Nashik 9. System Analysis & Design, Elias M – Galgotia Pub. 10. System Analysis & Design, Richard Fairley - Galgotia Publications
Teaching Methodology	Class Work, Discussion, Self Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

Course: 303 : Relational Database Management System

Course Code	303
Course Title	Relational Database Management System
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2015
Purpose of Course	Give fundamental knowledge of Relational Database. The course also includes SQL & PL/SQL.
Course Objective	1. To make students understand Oracle architecture 2. To make students understand various components of database like Index Triggers etc. 3. To make students understand the importance of database in real world applications. 4. To make students aware of extracting the data in different ways.
Pre-requisite	Basic knowledge of Database Management System (DBMS) .
Course Out come	After learning this subject students will know how to store, retrieve and administer the data easily & efficiently.
Course Content	**Unit 1. Codd's Rules** **Unit 2. SQL** 2.1. Oracle Data Types 2.2. Oracle DDL(Create Table, Alter Table ,Drop Table) , DML(Insert, Update, Delete, Select) and TCL(Commit ,Rollback, SavePoint) Statements with integrity constraints. 2.3. Special Operators(in, not in, exist, like) 2.4. Oracle Functions 2.4.1. Scalar functions(String Functions, Numeric Functions, Date Functions, Conversion Functions) 2.4.2. Aggregate Functions 2.5. Range Searching and Pattern Matching 2.6. Manipulating Dates 2.7. Joins 2.7.1. Inner Join 2.7.2. Outer Join(Left, Right, Full) 2.7.3. Cross Join 2.8. Sub Queries 2.9. Using Union, Intersection and Minus Clause 2.10. Indexes (Create index, Drop Index, Types of Index) 2.11. Views (Read-only view, Updatable view) 2.12. Sequences **Unit 3. PL/SQL** 3.1. PL/SQL Block Structure 3.1.1. Using Variables, Constants and Data Type 3.1.2. User Defined Record 3.1.3. Assigning Values to Variables 3.1.4. Control Statements(IF…THEN statement, Loop, FOR...Loop, While Loop)

	3.2. Cursor (Explicit, Implicit) 3.3. Error handling in PL/SQL 3.3.1. Inbuilt Exceptions 3.3.2. User Defined Exception 3.4. Stored and Local Procedures & Functions **Unit 4. Database Triggers** 4.1. Definition of Trigger 4.2. Statement level Triggers 4.3. Row level Triggers **Unit 5. Database Packages** 5.1. Introduction 5.2. Components of Package 5.3. Create and Invoke Package
Reference Book	1. The Complete Reference, George Koch, Kevin Loney – Oracle Press 2. Database Management System, Oracle, SQL and PL/SQL, 2nd ed., Das Gupta & Radha Krishna, PHI 3. Oracle 9 PL/SQL Programming, Scott Urman – Oracle Press 4. Oracle SQL: The Essential Reference, David C. Kreines – O'Reilly 5. SQL, PL/SQL:The Programming Language Of Oracle, Ivan Bayross – BPB 6. Oracle PL/SQL Programming – Feuerstein & Peribyl – SPD O'Reilly 7. Learning Oracle SQL and PL/SQL: A Simplified Guide, Chatterjee – PHI
Teaching Methodology	Class Work, Discussion, Self Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

Course: 304 : Data Structures

Course Code	304
Course Title	Data Structures
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)
Review / Revision	June 2015
Purpose of Course	1. Computing systems are concerned with the storage and retrieval of information. 2. For systems to be economical the data must be organized (into data structures) in such a way as to support efficient manipulation (by algorithms). 3. Choosing the wrong algorithms and data structures makes a program slow at best and difficult to maintain and insecure at worst.
Course Objective	1. Get the detailed knowledge of basic data structures, role and importance of data structures in computer programming. 2. Distinguish the key difference between various data structures. 3. Recognize the problem properties and determine the use of appropriate data structures in different real world applications.
Pre-requisite	This course requires 1. Problem-solving, design and implementation skills. 2. Basic knowledge of programming language.
Course outcome	Students will be able to 1. Implement various operations of data structures and utilities using algorithm. 2. Select appropriate methods for organizing data files and implement file-based data structures.
Course Content	**Unit 1.** Introduction to data structures 1.1 Definition 1.2 Types of data structure 1.2.1 Primitive Data Structures 1.2.2 Non-primitive Data Structure (linear and non-linear) 1.3 Storage representation of primitive data structure (integer and character) **Unit 2.** Non-primitive linear Data structures 2.1 Arrays – its storage structures and Operations (insertion and deletion) 2.2 Stack 2.2.1 Stack operations 2.2.2 Applications of Stack (Recursion and Polish notations) 2.3 Queue 2.3.1 Types of Queues (Simple, Circular, Double-ended and Priority) 2.3.2 Operations on Queue 2.3.3 Application of Queue (Simulation) 2.4 Linked list 2.4.1 Types of Linked lists (Singly, Doubly, Circular)

	2.4.2 Operations on Linked list 2.4.3 Applications of Linked list (Polynomial manipulation) **Unit 3.** Non-primitive non-linear Data structures 3.1 Definition of Graph 3.2 Concept and Definition of Tree 3.3 Types of Binary Tree (Ordinary/Simple, Strictly and Complete Binary tree) 3.4 Operations on Binary tree (Traversals, Insertion and Deletion) 3.5 Storage representation of Binary tree (Linked, Sequential and Threaded) 3.6 Binary search tree 3.7 Application of tree (Manipulation of arithmetic expression) **Unit 4.** Sorting Techniques 4.1 Introduction 4.2 Types of Sorting (Insertion, Selection, Quick, 2-Way Merge and Bubble) **Unit 5.** Search Techniques and Balance trees 5.1 Introduction 5.2 Searching (Sequential and Binary) 5.3 Balance trees 5.3.1 AVL tree 5.3.2 2-3 tree
Reference Books	1. An introduction to Data Structures with applications, Trembley – Tata McGraw Hill. 2. Algorithms – Data structure programs, Wirth Niclaus - PHI. 3. Data structures – A Programming Approach with C, Dharmender Singh Kushwaha and Arun Kumar Misra – PHI. 4. Fundamentals of Data structures, Horwitz E. and Sahni – Computer Science Press 5. Schaum's outline of Data Structure with C++, John R. H. - Tata McGraw Hill. 6. Expert Data Structure with C, R. B. Patel - Khanna Publication 7. Data structures - a Pseudocode approach with C++, Richard F. Gilberg and Behrouz A. Forouzan - Thomson books
Teaching Methodology	Class Work, Discussion, Self Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

Course: 305 : Object Oriented Programming

Course Code	305
Course Title	Object Oriented Programming
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2015
Purpose of Course	Understand object oriented programming concepts and skills necessary for developing programs using C++.
Course Objective	C++ runs on a variety of platforms, such as Windows, Mac OS, and the various versions of UNIX.This course has been designed for the beginners to help them understand the basic to advanced concepts related to C++ Programming languages. To make students understand the importance of OOP methodology. To make students understand exception handling and file handling. To make students understand various types of OOP programming techniques.
Pre-requisite	Basic knowledge of what is computer program and C programming language
Course Out come	After studying this, students will be able to understand how OOP principles work and importance of various coding techniques of OOP. This course will also help students appreciate the role of Exception handling and File handling techniques. After successful completion students will be able to follow particular programming methodology and will understand how to apply it for their application.
Course Content	**Unit 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 **Unit 2. Object Oriented Properties** 2.1. Introduction to Object Oriented Properties 2.2. Abstraction 2.3. Inheritance 2.3.1. Type of Inheritance 2.3.2. Constructors and Destructor Calls during Inheritance 2.3.3. Abstract Class **Unit 3. Polymorphism** 3.1 Static Polymorphism

	3.1.1 Operator Overloading 3.1.2 Function Overloading and Type Conversion 3.2 Dynamic Polymorphism 3.2.1 Overriding 3.2.2 Virtual Function **Unit 4. Data Files** 4.1 Manipulators (In-Built , User Defined) 4.2 File Modes 4.3 File Functions 4.4 Error Handling During File Operation **Unit 5. Exception Handling** 5.1 Introduction to Exception 5.2 Try ... Catch
Reference Book	1. Let us C++, Yaswant Kanitkar - TMH Publication 2. Programming with C++, E Balaguruswamy - BPB Publication 3. C++ and Object Oriented Programming Paradigm, Jana - PHI 4. The Complete Reference C++, Herbert Schildt - TMH 5. The C++ Programming Language, Stroustrup – Addison Wesley 6. OOP in Turbo C++, Robert Lafore - Galgotia Publication 7. C++ Primer, Lippman – Addison Weslev 8. Object Oriented Programming Fundamentals & Applications, Probal Sengupta – PHI
Teaching Methodology	Class Work, Discussion, Self Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

Course: 306 : Practical

Course Code	306
Course Title	Practical
Credit	6
Teaching per Week	12 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2015
Purpose of Course	Through practical implementation the students can understand learn computer programming in a better way.
Course Objective	The Objective of this course is to enable students Solve practical Problem in P-303, P- 304, P-305.
Pre-requisite	Programming in C and DBMS
Course Out come	After completion of this course, the students will be able to implement practical problems related to Data Structures, RDBMS and Object Oriented programming.
Course Content	Practical based on Papers 303, 304 and 305
Reference Book	As per papers 303, 304 and 305.
Teaching Methodology	Lab. Work
Evaluation Method	30% Internal assessment. 70% External assessment.

Course: 401 : Information System

Course Code	401
Course Title	Information System
Credit	2
Teaching per Week	2 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2015
Purpose of Course	Make students aware and understand various types of Information Systems.
Course Objective	1. Learn the different types of Information Systems. 2. To emphasize on the application of information to business management.
Pre-requisite	NIL
Course Out come	After completion of the course the students will understand and appreciate the basic concepts of Information System, importance of MIS for an organization and will be able to contribute effectively in the development and implementation of MIS in different types of organization.
Course Content	**Unit 1. Introduction** 1.1. Data & Information 1.2. Information need and benefits 1.3. Input, Processing , Output and feedback **Unit 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 **Unit 3. Introduction to various Information Systems** 3.1. Business information Systems 3.1.1. Principal Function System in Business 3.1.2. Product flow and Information Flow 3.1.3. Principal Document Associated with Information Flow 3.2. ERP 3.3. Management Information Systems 3.3.1. Characteristics of MIS 3.3.2. Development process of MIS 3.4. Decision support systems **Unit 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 **Unit 5. Case Studies Based on TPS** 5.1. Online Admission Process, Hospital Management and Hotel Management.
Reference Book	1. Principles of information system, Ralf M. Stair & George W. Reynolds - Thomson Learning Publisher. 2. Introduction to system analysis and Design, NCC – Galgotia Publications 3. Management information Systems – Text & Applications, CVS Murthy – HPH 4. Management information Systems – Organization and technology, K.C.Laudan & J.P. Laudan – Prentice Hall India. 5. Management information system, W.S.Jawadekar – Tata McGraw Hill. 6. E-Business and IS Solutions, J.Buffam – Addison Wesley. 7. Decision Support System and Intelligence Systems, Efraim Turban & Jay E. Aronson – Addison Wesley
Teaching Methodology	Class Work, Discussion, Self Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

Course: 402 : Software Engineering – II

Course Code	402
Course Title	Software Engineering-II
Credit	3
Teaching per Week	3 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2015
Purpose of Course	Computer software engineers apply the principles and techniques of computer science, engineering, and mathematical analysis to the design, development, testing, and evaluation of the software and the systems that enable computers to perform their many applications.
Course Objective	1. To make students understand steps to design the software. 2. To make students understand various ways to test software. 3. To make students aware of importance of documentation.
Pre-requisite	Basic knowledge of Software Engineering.
Course Out come	After learning this subject students will know the importance of designing, testing and documenting the software.
Course Content	**Unit 1. System Tools and Techniques** 1.1. Flow Diagram Of Application 1.1.1. System Outline Chart 1.1.2. System Flow Chart 1.1.3. Decision table and Decision Tree 1.1.4. Structured Chart(HIPO chart, Warnier –Orr chat) 1.2. Output Design 1.3. Input Design 1.4. UML Diagrams 1.4.1. Introduction 1.4.2. Class Diagram 1.4.3. Use Case Diagram **Unit 2. Information Systems Development** 2.1. Code Design 2.2. Test Data Preparations 2.3. Data Creation & Conversion **Unit 3. Software Testing** 3.1. Testing Fundamentals 3.2. Testing Process 3.3. White box and Black Box Testing 3.4. Unit Testing 3.5. Integrated Testing **Unit 4. Application Change Over** 4.1. Types of Changeover 4.2. User Training **Unit 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
Reference Book	1. Software Engineering – A Practitioners' approach, R. S.Pressman – McGraw Hill 2. Software Engineering concepts, Richard Fairley – McGraw Hill 3. System Analysis & Design, Elias M – Galgotia Pub. 4. An integrated approach to software engineering, Pankaj Jalote – Narosa. 5. Software Engineering A Concise Study – Kelkar – PHI 6. System Analysis & Design & Introduction to S/W Engineering, Prof. S. Parthasarthy & Prof. B.W. Khalkar 7. Object Oriented Modeling and Designing with UML, Michael R Blaha & James R Rumbaugh - Pearson
Teaching Methodology	Class Work, Discussion, Self Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

Course: 403 : Java Programming

Course Code	403
Course Title	Java Programming Language
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2015
Purpose of Course	To teach object oriented programming concepts through programming using Java as the computer language.
Course Objective	1. To make students understand object oriented programming. 2. To make students understand various inbuilt java classes those are available along with its working. 3. To make students understand the importance of OOP methodology. 4. To make students understand various types of OOP programming techniques.
Pre-requisite	Prior Knowledge of C/C++
Course Out come	After studying this, students will be able to understand how OOP principles work and importance of various coding techniques of OOP. This course will also help students to appreciate the role of inbuilt classes. After successful completion students will be able to follow particular programming methodology and how to apply it for their application.
Course Content	**Unit 1. Introduction to Java** 1.1. Properties of Java 1.2. Comparison of java with C++ 1.3. Java Compiler 1.4. Java Interpreter **Unit 2. Basic Concepts** 2.1. Identifier, Literals , Operators , Variables 2.2. Keywords 2.3. Data Types 2.4. Branching: If – Else, Switch 2.5. Looping : While, Do-while , For 2.6. Type Casting. 2.7. Strings 2.7.1. Basic String operations 2.7.2. String comparison 2.7.3. String Buffer class. **Unit 3. Classes and Objects** 3.1. Simple Class, Field 3.2. Access Controls, Object creation 3.3. Construction and Initialization 3.4. Methods, this pointer 3.5. Overloading Methods & Constructors. 3.6. Static members, static block, static class 3.7. Inheritance, super, abstract class, overriding methods

	3.8. Interfaces 3.8.1. Introduction to Interfaces. 3.8.2. Interface Declaration. 3.8.3. Inheriting and Hiding Constants. 3.8.4. Inheriting, Overloading and Overriding Methods. 3.8.5. Interfaces Implementations **Unit 4. Packages, The Applet Classes** 4.1. Package Naming, Type Imports 4.2. Package Access, Package Contents 4.3. Package Object and Specification 4.4. Applet Basics, Applet Architecture 4.5. Applet skeleton, Applet Display Methods 4.6. HTML APPLET Tag (<APPLET>), Applet Viewer 4.7. Passing Parameters to Applets **Unit 5. Exceptions** 5.1. Introduction to Exceptions 5.2. Exception Types, User defined Exception 5.3. Throw, Throws 5.4. Try, Catch and Finally 5.5. Thread 5.5.1. Introduction to Threads 5.5.2. Thread Model 5.5.3. Priority of Threads 5.5.4. Inter Thread Communication 5.5.5. Synchronization
Reference Books	1. Java Programming Language – Ken Arnold James Gosling, David Holmes:–Addison Wesley (Pearson Education) 2. Java – The complete reference, – Herbert Schildt :– Tata McGraw Hill 3. Java 2 From Scratch: – Steven Haines:–PHI. 4. Programming in Java – E-Balaguruswamy: – Tata McGraw Hill 5. Java : How to Program :– Deitel & Deitel: – PHI
Teaching Methodology	Class Work, Discussion, Self Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

Course: 404 : .NET Programming

Course Code	404
Course Title	.NET PROGRAMMING
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	June 2015
Purpose of Course	This syllabus has been prepared for the beginners to help them understand basic VB.Net programming. After completing this, students will get a moderate level of expertise in VB.Net programming from where they can take themselves to next levels.
Course Objective	To make students understand VB.Net as simple, modern, object-oriented computer programming language developed by Microsoft to combine the power of .NET Framework and the CLR with the productivity benefits that are the hallmark of Visual Basic. To make students understand basic VB.Net programming and will also take through various advanced concepts related to VB.Net programming language.
Pre-requisite	The students of BCA should have skills in Programming techniques using Object Oriented Concepts.
Course Out come	After studying this course, students will be able to understand the basic concepts of .Net framework and importance of various coding techniques. This course will also help students understand the role of CLR. After successful completion students will be able to follow particular programming methodology and how to apply it for their application.
Course Content	**Unit 1. Overview of Microsoft .NET Framework** 1.1. The .NET Framework 1.1.1. Managed Code MSIL, Metadata and JIT Compilation - Automatic Memory Management. 1.2. The Common Language Runtime (CLR) 1.3. The .NET Framework class Library **Unit 2. Programming in Visual basic .net** 2.1. IDE 2.2. Variables and Data Types 2.2.1. Boxing and Unboxing 2.2.2. Enumerations 2.2.3. Data Type Conversion Functions 2.2.4. Statements 2.3. String & Date Functions and Methods 2.4. Modules, Procedures and Functions 2.4.1. Passing variable number of arguments 2.4.2. Optional arguments 2.5. Using Arrays and Collections 2.6. Control Flow Statements 2.6.1. Conditional Statements 2.6.2. Loop Statements

	2.6.3. MsgBox and InputBox **Unit 3. Introduction to Windows controls** 3.1. Working with Tool Box Controls 3.1.1. 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 3.1.2. Container Controls 3.1.3. Data - Data Set, Data Grid 3.1.4. Component - Image list, error provider, Help provider, Timer 3.2. Working with Menus and Dialogue Boxes 3.3. Exception Handling 3.3.1. Structured Error Handling 3.3.2. Unstructured Error Handling **Unit 4. Object Oriented Programming** 4.1. Creating Classes, Object Construction & Destruction 4.1.1. Properties, Methods, Events 4.1.2. Access Specifiers: Public, Private, Protected, Protected Friend 4.1.3. Me, MyBase and MyClass keywords 4.2. Abstraction, Encapsulation & Polymorphism 4.3. Interfaces & Inheritance **Unit 5. Database access using ADO.NET** 5.1. Visual Database Tools 5.2. ADO .NET Object Model 5.3. ADO .NET Programming
Reference Book	1. Visual Basic .NET Programming (Black Book) - By Steven Son Holzner , DreamTech Publication 2. Mastering Visual Basic.NET by Evangelos Petroutsos 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 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
Teaching Methodology	Class Work, Discussion, Self Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

Course: 405 : Web Designing

Course Code	405
Course Title	Web Designing
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)
Review / Revision	June 2015
Purpose of Course	Design is the process of collecting ideas, and aesthetically arranging and implementing them, guided by certain principles for a specific purpose. Web design is a similar process of creation, with the intention of presenting the content on electronic web pages, which the end-users can access through the internet with the help of a web browser. This course deals with designing of websites.
Course Objective	To make students aware of web terminology and website development tools. The student can know the real functions of website development.
Pre-requisite	Basic knowledge of Windows based applications. Some very basic acquaintance with computers and the WWW is assumed.
Course outcome	The students will be able to create, organize and design websites.
Course Content	**Unit 1. Introduction to Html and CSS** 1.1. Design and develop web pages using HTML tags 1.1.1. Structure 1.1.2. Text Formatting Tags 1.1.3. Block Formatting Tags 1.1.4. Headings 1.1.5. Lists 1.1.6. Links 1.1.7. Tables 1.1.8. Forms 1.1.9. Frames 1.1.10. Image Maps 1.1.11. Audio & Video Tags 1.2. Design and develop web pages using CSS 1.2.1. Introduction to CSS (What is CSS? ,Use of CSS) 1.2.2. Benefits of Cascading Style Sheets 1.2.3. Applying a style sheet to a document 1.2.3.1. External Style Sheet 1.2.3.2. Importing Style Sheet 1.2.3.3. Embedding style sheet 1.2.3.4. Inline Style 1.2.4. Properties : Font, Text, Margin, Border, List, Color & Background, Box **Unit 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. Data Types and Variables 2.3.4. Operators :Arithmetic Operator, Assignment Operator, Comparison Operator, Logical Operator, Conditional Operator 2.3.5. Control Structure : If…Else, While, Do…While, For 2.3.6. Functions **Unit 3. Creating Web Sites Using Front Page** 3.1. Table 3.2. Form 3.3. Frame 3.4. Link Bars 3.5. Theme 3.6. Font 3.7. Picture 3.8. DHTML Effects 3.9. Styles 3.10. Publish **Unit 4. Hosting Web Pages** 4.1. Domain Name System 4.2. Concept of Uploading the Web-site 4.3. Protocols 4.3.1. Window based FTP (Upload & Download) 4.3.2. Role of Web Server in Web Publishing 4.3.3. Communication between Web Server & Web Browser **Unit: 5 Introduction to jQuery** 5.1. Syntax Overview 5.2. Selectors 5.3. Events 5.4. Effects 5.4.1. Hide 5.4.2. Show 5.4.3. Fade 5.4.4. Slide 5.4.5. Animate 5.4.6. Stop 5.4.7. Callback and Functions 5.4.8. Chaining 5.5. jQuery HTML 5.5.1. Get 5.5.2. Set 5.5.3. Add 5.5.4. Remove 5.6. CSS, Styling, & Dimensions 5.7. Traversing 5.7.1. Ancestors 5.7.2. Descendants 5.7.3. Siblings 5.7.4. Filtering

Reference Books	1. Microsoft FrontPage 2000, T.J. O'Leary - TMH 2. Microsoft FrontPage 2000 24 Hours, Roger C. – Techmedia 3. Microsoft FrontPage 2002 24 Hours), Rogers Cadenhead – Techmedia (SAMS 4. HTML 4U, Rohit Khurana – A.P.H. Publishing Corporation 5. Advanced HTML companion – Keith S. & Roberts - AP Professional 6. The Complete Reference HTML, Powel, Thomas A – TMH. 7. HTML Unleased, Darnell Rick – Techmedia 8. Cascading Style Sheets- The Definitive Guide, E. A Meyer – O'Reilly 9. Java Scripting Programming for Absolute Beginner, Harris - PHI 10. JavaScript Step by Step, Suehring - PHI 11. Learning jQuery , Jonathan Chaffer, Karl Swedberg- Packt publication 12. JQuery For Dummies, Lynn Beighley - Wiley Publications.
Teaching Methodology	Class Work, Discussion, Self Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.

Course: 406 : Practical

Course Code	406
Course Title	Practical
Credit	6
Teaching per Week	12 Hrs
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)
Review / Revision	June 2015
Purpose of Course	Through practical implementation the students can understand learn computer programming in a better way.
Course Objective	The Objective of this course is to enable students to Solve practical Problem in P-403 and Using the skills of P- 404, P-405 develop a small website as a project
Pre-requisite	Programming skill , Relational Database System
Course Out come	After completion of this course, the student will be solve practical problems relating to Java and develop a small website using VB.net , HTMDL, DHTML.
Course Content	Practical journal should be prepared having minimum 15 practical problems (and in case of Java) should be implemented for practical subject. In Subject P-404 and P-405 .NET Technology and Web designing student have to develop a small project which should be assigned by the faculty as a part of practical at the beginning of the semester. The journal should be certified by the concerned faculty and also by the Head of the Department, failing which the student should not be allowed to appear for External Practical Examination
Reference Book	As per paper numbers 403, 404 & 405
Teaching Methodology	Lab Work
Evaluation Method	30% Internal assessment. 70% External assessment.