

### 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 2018
Purpose of Course	Make students aware and understand various types of Information Systems.
Course Objective	<ol style="list-style-type: none"> <li>1. Learn the different types of Information Systems.</li> <li>2. To emphasize on the application of information to business management.</li> </ol>
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	<p><b>Unit 1. Introduction</b></p> <ol style="list-style-type: none"> <li>1.1. Data &amp; Information</li> <li>1.2. Information need and benefits</li> <li>1.3. Input, Processing, Output and feedback</li> </ol> <p><b>Unit 2. Concepts of Systems</b></p> <ol style="list-style-type: none"> <li>2.1. Definition of system in an organization</li> <li>2.2. Types of systems               <ol style="list-style-type: none"> <li>2.2.1. Deterministic probabilistic systems</li> <li>2.2.2. Open and close systems</li> </ol> </li> </ol> <p><b>Unit 3. Introduction to various Information Systems</b></p> <ol style="list-style-type: none"> <li>3.1. Business information Systems               <ol style="list-style-type: none"> <li>3.1.1. Principal Function System in Business</li> <li>3.1.2. Product flow and Information Flow</li> <li>3.1.3. Principal Document Associated with Information Flow</li> </ol> </li> <li>3.2. ERP</li> <li>3.3. Management Information Systems               <ol style="list-style-type: none"> <li>3.3.1. Characteristics of MIS</li> <li>3.3.2. Development process of MIS</li> </ol> </li> <li>3.4. Decision support systems</li> </ol> <p><b>Unit 4. Transaction Processing Systems</b></p> <ol style="list-style-type: none"> <li>4.1. Overview of Transaction Processing System</li> <li>4.2. Transaction Processing methods &amp; objectives</li> <li>4.3. Transaction Processing Activities               <ol style="list-style-type: none"> <li>4.3.1. Data Collection</li> <li>4.3.2. Data Editing</li> <li>4.3.3. Data correction</li> <li>4.3.4. Data Manipulation</li> <li>4.3.5. Data Storage</li> </ol> </li> </ol>

	<p>4.3.6. Document Production and Reports</p> <p>4.4. Traditional transaction processing Applications</p> <p>4.4.1. Order Processing Systems</p> <p>4.4.2. Purchase Systems</p> <p>4.4.3. Accounting Systems</p> <p><b>Unit 5. Case Studies Based on TPS</b></p> <p>5.1. Online Admission Process, Hospital Management and Hotel Management.</p>
Reference Book	<ol style="list-style-type: none"> <li>1. Principles of information system, Ralf M. Stair &amp; George W. Reynolds - Thomson Learning Publisher.</li> <li>2. Introduction to system analysis and Design, NCC – Galgotia Publications</li> <li>3. Management information Systems – Text &amp; Applications, CVS Murthy – HPH</li> <li>4. Management information Systems – Organization and technology, K. C. Laudan &amp; J.P. Laudan – Prentice Hall India.</li> <li>5. Management information system, W. S. Jawadekar – Tata McGraw Hill.</li> <li>6. E-Business and IS Solutions, J. Buffam – Addison Wesley.</li> <li>7. Decision Support System and Intelligence Systems, Efraim Turban &amp; Jay E. Aronson – Addison Wesley</li> </ol>
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	<p>30% Internal assessment.</p> <p>70% External assessment.</p>

## 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 2018
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	<ol style="list-style-type: none"> <li>1. To make students understand steps to design the software.</li> <li>2. To make students understand various ways to test software.</li> <li>3. To make students aware of importance of documentation.</li> </ol>
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	<p><b>Unit 1. System Tools and Techniques</b></p> <ol style="list-style-type: none"> <li>1.1. Flow Diagram of Application <ol style="list-style-type: none"> <li>1.1.1. System Outline Chart</li> <li>1.1.2. System Flow Chart</li> <li>1.1.3. Decision table and Decision Tree</li> <li>1.1.4. Structured Chart (HIPO chart, Warnier–Orr chart)</li> </ol> </li> <li>1.2. Output Design</li> <li>1.3. Input Design</li> <li>1.4. UML Diagrams <ol style="list-style-type: none"> <li>1.4.1. Introduction</li> <li>1.4.2. Class Diagram</li> <li>1.4.3. Use Case Diagram</li> </ol> </li> </ol> <p><b>Unit 2. Information Systems Development</b></p> <ol style="list-style-type: none"> <li>2.1. Code Design</li> <li>2.2. Test Data Preparations</li> <li>2.3. Data Creation &amp; Conversion</li> </ol> <p><b>Unit 3. Software Testing</b></p> <ol style="list-style-type: none"> <li>3.1. Testing Fundamentals</li> <li>3.2. Testing Process</li> <li>3.3. White box and Black Box Testing</li> <li>3.4. Unit Testing</li> <li>3.5. Integrated Testing</li> </ol> <p><b>Unit 4. Application Change Over</b></p> <ol style="list-style-type: none"> <li>4.1. Types of Changeover</li> <li>4.2. User Training</li> </ol> <p><b>Unit 5. System Documentation and Maintenance</b></p> <ol style="list-style-type: none"> <li>5.1. Documentation Essentials</li> <li>5.2. Documentation Methods</li> </ol>

	<p>5.3. Developer and User Manuals</p> <p>5.4. Review &amp; monitoring Of Execution</p> <p>5.5. Application Change Management</p>
Reference Book	<ol style="list-style-type: none"> <li>1. Software Engineering – A Practitioners’ approach, R. S. Pressman – McGraw Hill</li> <li>2. Software Engineering concepts, Richard Fairley – McGraw Hill</li> <li>3. System Analysis &amp; Design, Elias M – Galgotia Pub.</li> <li>4. An integrated approach to software engineering, Pankaj Jalote – Narosa.</li> <li>5. Software Engineering a Concise Study – Kelkar – PHI</li> <li>6. System Analysis &amp; Design &amp; Introduction to S/W Engineering, Prof. S. Parthasarthy &amp; Prof. B. W. Khalkar</li> <li>7. Object Oriented Modelling and Designing with UML, Michael R Blaha &amp; James R Rumbaugh - Pearson</li> </ol>
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	<p>30% Internal assessment.</p> <p>70% External assessment.</p>

### 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 2018
Purpose of Course	To teach Object Oriented Programming (OOP) concepts through programming using Java as the programming language.
Course Objective	<ol style="list-style-type: none"> <li>1. To make students understand Object Oriented Programming (OOP).</li> <li>2. To make students understand various inbuilt Java classes and their working.</li> <li>3. To make students understand the importance of OOP methodology.</li> <li>4. To make students understand various types of OOP techniques.</li> </ol>
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 programming methodology and how to apply it in their application.
Course Content	<p><b>Unit 1. Introduction to Java</b></p> <ol style="list-style-type: none"> <li>1.1. Properties of Java</li> <li>1.2. Comparison of java with C++</li> <li>1.3. Java Compiler</li> <li>1.4. Java Interpreter</li> </ol> <p><b>Unit 2. Basic Concepts</b></p> <ol style="list-style-type: none"> <li>2.1. Identifier, Literals, Operators, Variables</li> <li>2.2. Keywords</li> <li>2.3. Data Types</li> <li>2.4. Branching: If – Else, Switch</li> <li>2.5. Looping: While, Do-while, For</li> <li>2.6. Type Casting</li> <li>2.7. Strings             <ol style="list-style-type: none"> <li>2.7.1. Basic String operations</li> <li>2.7.2. String comparison</li> <li>2.7.3. String Buffer class.</li> </ol> </li> </ol> <p><b>Unit 3. Classes and Objects</b></p> <ol style="list-style-type: none"> <li>3.1. Simple Class, Field</li> <li>3.2. Access Controls, Object creation</li> <li>3.3. Construction and Initialization</li> <li>3.4. Methods, this pointer</li> <li>3.5. Overloading Methods &amp; Constructors.</li> <li>3.6. Static members, static block, static class</li> <li>3.7. Inheritance, super, abstract class, overriding methods</li> <li>3.8. Interfaces</li> </ol>

	<p>3.8.1. Introduction to Interfaces.  3.8.2. Interface Declaration.  3.8.3. Inheriting and Hiding Concepts.  3.8.4. Inheriting, Overloading and Overriding Methods.  3.8.5. Interfaces Implementations.</p> <p><b>Unit 4. Packages, The Applet Classes</b>  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 (&lt;APPLET&gt;), Applet Viewer  4.7. Passing Parameters to Applets</p> <p><b>Unit 5. Exceptions</b>  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</p>
Reference Books	<ol style="list-style-type: none"> <li>1. Java Programming Language – Ken Arnold James Gosling, David Holmes: –Addison Wesley (Pearson Education)</li> <li>2. Java – The complete reference, – Herbert Schildt: – Tata McGraw Hill</li> <li>3. Java 2 From Scratch: – Steven Haines: –PHI.</li> <li>4. Programming in Java – E-Balaguruswamy: – Tata McGraw Hill</li> <li>5. Java: How to Program: – Deitel &amp; Deitel: – PHI</li> </ol>
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 2018
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	<p>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.</p> <p>To make students understand basic VB.Net programming and will also take through various advanced concepts related to VB.Net programming language.</p>
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 programming methodology and how to apply it for their application.
Course Content	<p><b>Unit 1. Overview of Microsoft .NET Framework</b></p> <p>1.1. The .NET Framework</p> <p style="padding-left: 20px;">1.1.1. Managed Code MSIL, Metadata and JIT Compilation - Automatic Memory Management.</p> <p>1.2. The Common Language Runtime (CLR)</p> <p>1.3. The .NET Framework class Library</p> <p><b>Unit 2. Programming in Visual basic .net</b></p> <p>2.1. IDE</p> <p>2.2. Variables and Data Types</p> <p style="padding-left: 20px;">2.2.1. Boxing and Unboxing</p> <p style="padding-left: 20px;">2.2.2. Enumerations</p> <p style="padding-left: 20px;">2.2.3. Data Type Conversion Functions</p> <p style="padding-left: 20px;">2.2.4. Statements</p> <p>2.3. String &amp; Date Functions and Methods</p> <p>2.4. Modules, Procedures and Functions</p> <p style="padding-left: 20px;">2.4.1. Passing variable number of arguments</p> <p style="padding-left: 20px;">2.4.2. Optional arguments</p> <p>2.5. Using Arrays and Collections</p> <p>2.6. Control Flow Statements</p> <p style="padding-left: 20px;">2.6.1. Conditional Statements</p> <p style="padding-left: 20px;">2.6.2. Loop Statements</p> <p style="padding-left: 20px;">2.6.3. MsgBox and InputBox</p>

	<p><b>Unit 3. Introduction to Windows controls</b></p> <p>3.1. Working with Tool Box Controls</p> <p>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</p> <p>3.1.2. Container Controls</p> <p>3.1.3. Data - Data Set, Data Grid</p> <p>3.1.4. Component - Image list, error provider, Help provider, Timer</p> <p>3.2. Working with Menus and Dialogue Boxes</p> <p>3.3. Exception Handling</p> <p>3.3.1. Structured Error Handling</p> <p>3.3.2. Unstructured Error Handling</p> <p><b>Unit 4. Object Oriented Programming</b></p> <p>4.1. Creating Classes, Object Construction &amp; Destruction</p> <p>4.1.1. Properties, Methods, Events</p> <p>4.1.2. Access Specifiers: Public, Private, Protected, Protected Friend</p> <p>4.1.3. Me, MyBase and MyClass keywords</p> <p>4.2. Abstraction, Encapsulation &amp; Polymorphism</p> <p>4.3. Interfaces &amp; Inheritance</p> <p><b>Unit 5. Database access using ADO.NET</b></p> <p>5.1. Visual Database Tools</p> <p>5.2. ADO .NET Object Model</p> <p>5.3. ADO .NET Programming</p>
Reference Book	<ol style="list-style-type: none"> <li>1. Visual Basic .NET Programming (Black Book) - By Steven Son Holzner, DreamTech Publication</li> <li>2. Mastering Visual Basic.NET by Evangelos Petroustos BPB Publication</li> <li>3. Moving to VB.NET: Strategies, Concepts, and Code - by Dan Appleman – Apress Publication</li> <li>4. Microsoft Visual Basic .NET Step by Step - by Michael Halvorson, PHI Publication</li> <li>5. Database Programming with Visual Basic.NET and ADO.NET - by F. Scott Barker – Sams Publication</li> <li>6. Beginning .NET Web Services Using Visual Basic .NET - by Joe Bustos and Karlli Watson, Wrox Publication</li> <li>7. .NET – Complete Development Cycle - by G. Lenz, T. Moeller, Pearson Education</li> <li>8. Professional VB.NET, 2nd Edition - by Fred Barwell, et al – Wrox Publication</li> </ol>
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 2018
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	<p><b>Unit 1. Introduction to Html</b></p> <ol style="list-style-type: none"> <li>1.1. Difference between HTML and HTML5</li> <li>1.2. Structure of HTML page</li> <li>1.3. Text Formatting Tags</li> <li>1.4. Block Formatting Tags (header, footer, aside, nav, div, h1-h6, p, hr, pre, section, blockquote, abbr)</li> <li>1.5. Lists</li> <li>1.6. Links and bookmarks</li> <li>1.7. Tables</li> <li>1.8. Form controls (with HTML5 input types colour, email, url, number, date, range)</li> <li>1.9. Frames</li> <li>1.10. Image and Image Maps</li> <li>1.11. HTML5 Audio &amp; Video Tags</li> </ol> <p><b>Unit 2. Introduction to CSS</b></p> <ol style="list-style-type: none"> <li>2.1 Introduction to CSS (What is CSS?, Use of CSS)</li> <li>2.2 Benefits of Cascading Style Sheets</li> <li>2.3 Applying a style sheet to a document <ol style="list-style-type: none"> <li>2.3.1. External Style Sheet</li> <li>2.3.2. Importing Style Sheet</li> <li>2.3.3. Embedding style sheet</li> <li>2.3.4. Inline Style</li> </ol> </li> <li>2.4 Properties: Font, Text, Margin, Border, List, Colour &amp; Background, Box</li> </ol> <p><b>Unit 3. Java Script</b></p> <ol style="list-style-type: none"> <li>3.1 Static, Dynamic and Active Page</li> <li>3.2 DHTML Events <ol style="list-style-type: none"> <li>3.2.1 Window, Form, Keyboard, Mouse</li> </ol> </li> </ol>

	<p>3.3 Java Script</p> <p>3.3.1 Overview of Client &amp; Server-Side Scripting</p> <p>3.3.2 Structure of JavaScript</p> <p>3.3.3 Data Types and Variables</p> <p>3.3.4 Operators: Arithmetic Operator, Assignment Operator, Comparison Operator, Logical Operator, Conditional Operator</p> <p>3.3.5 Control Structure: If...Else, While, Do...While, For</p> <p>3.3.6 Functions</p> <p><b>Unit 4. Design Web Sites Using Bootstrap</b></p> <p>4.1. Bootstrap Introduction</p> <p>4.2. Grid Structure</p> <p>4.3. Table, Colours, Alerts, Form Controls</p> <p>4.4. Buttons and Button Groups</p> <p><b>Unit 5. Hosting Web Pages</b></p> <p>5.1. Domain Name System</p> <p>5.2. Concept of Uploading the Web-site</p> <p>5.3. Protocols</p> <p>5.4. Window based FTP (Upload &amp; Download)</p> <p>5.5. Role of Web Server in Web Publishing</p> <p>5.6. Communication between Web Server &amp; Web Browser</p>
Reference Books	<ol style="list-style-type: none"> <li>1. Advanced HTML companion – Keith S. &amp; Roberts - AP Professional</li> <li>2. HTML &amp; CSS: The Complete Reference - Thomas Powell - McGraw Hill Education</li> <li>3. HTML Unleashed, Darnell Rick – Techmedia</li> <li>4. HTML, XHTML, and CSS Bible - Steven M. Schafer - Wiley Publications</li> <li>5. Cascading Style Sheets- The Definitive Guide, E. A Meyer – O’Reilly</li> <li>6. Java Scripting Programming for Absolute Beginner, Harris - PHI</li> <li>7. JavaScript Step by Step, Suehring - PHI</li> <li>8. Bootstrap in 24 Hours, Sams Teach Yourself - Jennifer Kyrnin</li> <li>9. Learning Bootstrap 4 - Matt Lambert - Packt Publishing</li> <li>10. Bootstrap Responsive Web Development - Jake Spurlock - O'Reilly Media.</li> </ol>
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 2018
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 make students practically learn the concepts taught in Paper nos. 403, 404, 405. And using the skills of Papers 404 & 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 able to solve practical problems relating to Java and develop a small website using VB .NET, HTML, 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 must 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 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.