

**SINGHANIA UNIVERSITY**  
Detailed Syllabus BCA

**SINGHANIA UNIVERSITY**  
**Bachelor of Computer Science (BCA)**  
**SYLLABUS & SCHEME (2018-2021)**

Subject Code	Subject Name	Year	Scheme			IA	ESE	Total Marks
			L	T	P			
BCA~101	Computer Fundamentals	Year 1	4			30	70	100
BCA~102	PC Package	Year 1	3	1		30	70	100
BCA~103	Accounting with Tally	Year 1	4			30	70	100
BCA~104	Operating System	Year 1	4			30	70	100
BCA~105	Internet & Web Page Designing	Year 1	3	1		30	70	100
BCA~106	Programming Methodology and C Programming	Year 1	4			30	70	100
BCA~107	Relational Database Management System	Year 1	3	1		30	70	100
BCA~108	Communicative English-1	Year 1	4			30	70	100
BCA~109	LAB-1: Coreldraw & Photoshop	Year 1			4	0	100	100
BCA~110	LAB-2 (Based on 102,103,104)	Year 1			4	0	100	100
BCA~111	LAB-3 (Based on 105,106,107)	Year 1			4	0	100	100
EVS~101	Environmental Studies Theory-1	Year 1	3	1		30	70	100
<b>TOTAL :</b>			<b>32</b>	<b>4</b>	<b>12</b>	<b>270</b>	<b>930</b>	<b>1200</b>
BCA~201	OOP with C++	Year 2	4			30	70	100
BCA~202	Data Structures & Algorithm	Year 2	3	1		30	70	100
BCA~203	Digital Electronics	Year 2	3	1		30	70	100
BCA~204A	Elementary Mathematics	Year 2	4			30	70	100
BCA~204B	Management Information System	Year 2	4			30	70	100
BCA~205	Programming with Java	Year 2	4			30	70	100
BCA~206	Data Communication & Network	Year 2	4			30	70	100
BCA~207	System Analysis and Design	Year 2	4			30	70	100
BCA~208	VB.NET	Year 2	3	1		30	70	100
BCA~209	Minor Project	Year 2			4	0	100	100
BCA~210	LAB-1 (Based on 201,202)	Year 2			4	0	100	100
BCA~211	LAB-2 (Based on 205,208)	Year 2			4	0	100	100
EVS~201	Environmental Studies Theory-2	Year 1	3	1		30	70	100
<b>TOTAL :</b>			<b>36</b>	<b>4</b>	<b>12</b>	<b>270</b>	<b>930</b>	<b>1200</b>

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BCA~301	ASP.NET through C#	Year 3	4			30	70	100
BCA~302	Web Development using PHP	Year 3	3	1		30	70	100
BCA~303	System Software Engineering	Year 3	3	1		30	70	100
BCA~304A	E-Commerce	Year 3	4			30	70	100
BCA~304B	Data Mining and Warehouse	Year 3	4			30	70	100
BCA~304C	Linux & Shell Programming	Year 3	4			30	70	100
BCA~304D	Core Python Programming	Year 3	4			30	70	100
BCA~305	Communicative English-2	Year 3	4			30	70	100
BCA~306	LAB-1 (Based on 301)	Year 3			4	0	100	100
BCA~307	LAB-2 (Based on 302, 303)	Year 3			4	0	100	100
BCA~308	Major Project/Seminar & Industrial Training	Year 3			12	0	300	300
	<b>TOTAL :</b>		<b>30</b>	<b>2</b>	<b>20</b>	<b>150</b>	<b>850</b>	<b>1000</b>
	<b>GRAND TOTAL :</b>							<b>3400</b>

## BCA – 3<sup>rd</sup> Year

### BCA-301: ASP.NET through C#

#### UNIT I

HTML - Concepts of Hypertext, Versions of HTML, Elements of HTML syntax, Head & Body Sections, Building HTML documents, Inserting texts, Images, Hyperlinks, Backgrounds and Colour controls, Different HTML tags, Table layout and presentation, Use of font size & Attributes. List types and its tags, Use of Frames and Forms in web pages, ASP & HTML Forms.

#### UNIT II

Overview of C#, C# and .NET, similarities & differences from JAVA, Structure of C# program, Language features: Type system, boxing and unboxing, flow controls, classes, interfaces, Serialization and Persistence, Serializing an Object, Deserializing an Object. Delegates and Reflection.

#### UNIT III

Overview of Dynamic Web page, introduction & features of ASP.NET, Understanding ASP.NET Controls, Applications, Web servers, installation of IIS, Web forms, web form controls -server controls, client controls, Adding controls to a web form, Buttons, Text Box , Labels, Checkbox, Radio Buttons, List Box. Adding controls at runtime. Running a web Application, creating a multiform web project, Form Validation: Client side validation, server Side validation, Validation Controls : Required Field Comparison Range. Calendar control, Ad rotator Control.

#### UNIT IV

Overview of ADO.NET, from ADO to ADO.NET. ADO.NET architecture, Accessing Data using Data Adapters and Datasets, using Command & Data Reader, binding data to data bind Controls,

Displaying data in data grid, XML in .NET , XML basics, attributes, fundamental XML classes: Document, textwriter, textreader.

#### UNIT-V

Web services: Introduction, State management- View state, Session state, Application state, SOAP, web service description language, building & consuming a web service, Web Application deployment. Caching, Threading Concepts, Creating Threads in .NET, managing threads, Thread Synchronization

#### TEXT & REFERENCE BOOKS:

- *ASP.NET 3.5 BLACK BOOK (COVERS C# AND VB 2008 CODES) - DREAMTECH PUBLICATION*
- *THE COMPLETE REFERENCE ASP.NET BY MATHEW MACDONALD - TMH*
- *PROFESSIONAL ASP.NET- WROX PUBLICATION*
- *INTRODUCTION TO .NET FRAMEWORK-WORX PUBLICATION*

## BCA-302: Web Development using PHP

### Unit-I

Introduction to PHP, History of PHP, Versions of PHP, Features of PHP, Advantages of PHP over Other Scripting Languages, Installation and Configuration of PHP, Data Types in PHP, PHP Syntax, Comments, PHP Variables and Constants, Scope of Variables, PHP String, String Manipulation, PHP Operators, Precedence of Operators, Expressions, Creating a PHP Script, Running a PHP Script.

### Unit-II

Basic HTML, Embedding PHP in HTML, Passing Information between Pages, PHP \$\_GET, PHP \$\_POST, PHP Conditional Statements, PHP Looping Statements, Break, Continue, Exit, PHP Functions: Built-in and User Defined Function, Regular Expression Functions, Mathematical, Date and Time Functions, PHP Arrays: Creating Array and Accessing Array Elements,

### Unit-III

PHP File Permissions, Working with Files: Opening, Closing, Reading, Writing a File; Working with Directory: Creating, Deleting, Changing a Directory; Working with Forms: Introduction to a Web Form, Processing a Web Form, Validating a Web Form, Input Validation, PHP with Client Side Scripting Language, Exception and Error Handling in PHP, Introduction to Cookies and Session Handling,

### Unit-IV

Working with Database: PHP-Supported Databases; Using PHP & My SQL: Installation and Configuration of My SQL on Windows, Checking Configuration, Connecting to Database, Selecting a Database, Adding Table and Altering Table in a Database, Inserting, Deleting and Modifying Data in a Table, Retrieving Data, Performing Queries, Processing Result Sets,

### Unit-V

Code Re-use, require(), include(), and the include\_path, File System Functions and File Input and Output, File Uploads, Use of CSS, Introduction to Object Oriented Programming with PHP, Installing and Configuring Apache to use PHP on Windows, php.ini File,

### TEXT & REFERENCE BOOKS:

- PHP & MY SQL, BY VIKRAM VASWANI, TMH PUBLICATIONS
- PHP ESSENTIALS, BY JULIE C. MELONI, BPB PUBLICATIONS
- PHP 5 AND MY SQL BIBLE, BY TIM CONVERSE AND JOYCE PARK, WILEY-DREAMTECH INDIA PUBLICATIONS
- WEB TECHNOLOGIES, BLACK BOOK, DREAMTECH PRESS
- ATKINSON, LEON. CORE PHP PROGRAMMING, NEW YORK: PRENTICE HALL
- LEARNING PHP 5, BY DAVID SKLAR PUBLISHER O'REILLY MEDIA
- MASTERING PHP, BY CHARLES, PUBLISHER: BPB
- EXPERT PHP AND MYSQL, WROX PROGRAMMER TO PROGRAMMER, WROX PRESS, 2010
- PHP FOR ABSOLUTE BEGINNERS, APRESS, 2009
- SAMS TEACH YOURSELF CSS IN 24 HOURS (2ND EDITION), SAMS PUBLISHING, 2006

## **BCA-303: System Software Engineering**

### **UNIT - I**

Software : Software Characteristics and Applications, Software Engineering - A Layered Technology, Software Process Models - Linear Sequential Model, Prototype & RAD Model, Incremental Model and Spiral Model. Project Metrics : Software Measurement–Size Oriented, Function Oriented Metrics, Extended Function Point Metrics.

### **UNIT - II**

Software Project Planning: Objectives, Decomposition Techniques, and Empirical Estimation Models. Analysis Concept and Principles: Requirement Analysis, Analysis Principles.

### **UNIT – III**

Design Concepts and Principles: Design Process, Design Concepts, Design Principles, Effective Modular Design, Human Computer Interface Design, Interface Design Guidelines.

### **UNIT - IV**

S/W Quality Assurance : Quality Concepts, Reliability S/W Testing Models : S/W Testing Fundamentals, White and Black Box Testing, Basic Path Testing, Testing Strategies : Strategic Approach to S/W Testing, Unit Testing, Integration Testing, Validation Testing, System Testing,

### **UNIT - V**

S/W Reuse : Reuse Process, Classification and Retrieving Components, Economics of S/W Reuse ,CASE : Introducing to CASE, Taxonomy of Case Tools,

#### **TEXT & REFERENCE BOOKS :**

- *SOFTWARE ENGINEERING BY R.S.PRESSMAN*
- *AN INTEGRATED APPROACH TO SOFTWARE ENGINEERING BY PANKAJ JALOTE*

## **BCA-304A: E-Commerce**

### **UNIT-1**

**Introduction to Electronic Commerce** : Definition of Electronic Commerce, The scope of Electronic Commerce.

### **UNIT-2**

**Business Strategy in an Electronic Commerce** : The value chain, Competitive advantage, Business strategy.

### **UNIT-3**

**Business to Business Electronic Commerce** : Inter-organisational transactions, Electronic markets, Electronic data interchange (EDI), EDI: the nuts and bolts, EDI and Business Inter organisational E-Commerce.

### **UNIT-4**

**Designing (Technical, Detailed, High Level)**: Introduction to Technical Design and Construction. A Client Server Model of E-Commerce, Understanding Technical Design, Understanding Construction. Introduction to Detail Design. Any example of Applying Detailed Design: Introduction to High-Level Design, Understanding High-level Design, Performing High-Level Design, High Level design of Business transactions Applying High-Level design, Any Example of Applying High-level Design. Challenges and Opportunities in Applying High-Level Design.

### **UNIT-5**

**Testing & Implementation**: Introduction to Testing. Understanding Testing. Applying Testing. Challenges an Opportunities in Applying Verification and Validation.

**Implementation** : Understanding Implementation. Applying Implementation Planning. An Example of Applying Implementation Planning. Challenges and Opportunities Implementation Planning. guidance

#### **TEXT & REFERENCE BOOKS:**

- *FRONTIERS OF ELECTRONIC COMMERCE, BY- KALAKOTA, RAVI; STONE, TOM; WHINSTON, ANDREW B, ADDISON WESLEY PUBLISHING CO, ISBN 8178080575*
- *E-COMMERCE AN INDIAN PERSPECTIVE BY P. TJOSEPH, S.J. PRENTICE-HALL OF INDIA*

## **BCA-304B: Data Mining And Warehouse**

### **UNIT-I**

Data ware housing Definition, usage and trends, DBMS vs. data warehouse, Data marts, Metadata  
Data mining definition & application, DBMS vs. data mining, KDD versus data mining, data mining techniques, Data Preprocessing: need, data cleaning, integration & Transformation .

### **UNIT-II**

Multidimensional data mode, Data cubes, Schemas for Multidimensional Database: stars, snowflakes and fact constellations, Data warehouse process & architecture, OLTP vs. OLAP, types of OLAP, ROLAP vs. MOLAP, 3 – Tier data warehouse architecture,

### **UNIT-III**

Association Rule Mining, Single-Dimensional Boolean Association Rules Apriori algorithm, FP growth, Multi-Level Association Rules from Transaction Databases

### **UNIT-IV**

Classification and Prediction, Concepts of Decision Tree Induction and Bayesian Classification  
Cluster Analysis, Categorization of methods, Partitioning methods, K-Means algorithm, Outlier Analysis, Hierarchical methods.

### **UNIT-V**

Multidimensional Analysis and Descriptive Mining of Complex Data Objects, Spatial Databases, Multimedia Databases, Time Series and Sequence Data, Text Databases, Web Mining concepts

#### *TEXT & REFERENCE BOOK:*

- *DATA MINING – CONCEPTS & TECHNIQUES; JIAWEI HAN & MICHELINE KAMBER – ELSEVIER*
- *DATA WAREHOUSING FUNDAMENTALS; PAULRAJ PONNIAH, WILEY*
- *DATA MINING TECHNIQUES; ARUN PUJAR; 2001, UNIVERSITY PRESS; HYDERBAD.*
- *INTRODUCTION TO DATA MINING WITH CASE STUDIES; G.K. GUPTA, PHI*

## BCA-304C: Linux & Shell Programming

### UNIT – I

Linux introduction and file system - Basic Features, Different flavors of Linux. Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell. Linux File system-Boot block, super block, Inode table, data blocks, How Linux access files, storage files, Linux standard directories. Commands for files and directories cd, ls, cp, md, rm, mkdir, rmdir, pwd, file, more, less, creating and viewing files using cat, file comparisons – cmp & comm, View files, disk related commands, checking disk free spaces. Partitioning the Hard drive for Linux, Installing the Linux system, System startup and shut-down process.

### UNIT-II

Essential linux commands Understanding shells, Processes in linux – process fundamentals, connecting processes with pipes, Redirecting input output, manual help, Background processing, managing multiple processes, changing process priority with nice, scheduling of processes at command, cron commands, kill, ps, who, sleep, Printing commands, touch, file related commands - wc, cut, dd, etc. Mathematical commands- bc, expr. Creating and editing files with vi & vim editor.

### UNIT-III

System administration: Common administrative tasks, configuration and log files, Role of system administrator, Managing user accounts-adding & deleting users, changing permissions and ownerships, Creating and managing groups, modifying group attributes, Temporary disable user's accounts, creating and mounting file system, file security & Permissions, becoming super user using su. Getting system information with uname, host name, disk partitions & sizes, users, kernel. Backup and restore files, installing and removing packages with rpm command. KDE & Gnome graphical interfaces.

### UNIT-IV

Shell programming- Basic of shell programming, Various types of shell available in Linux, comparisons between various shells, shell programming in bash, read command, conditional and looping statements, case statements, parameter passing and arguments, Shell variables, system shell variables, shell keywords, Creating Shell programs for automate system tasks. Simple filter commands – pr, head, tail, cut, paste, sort, uniq, tr. Filter using regular expressions – grep, egrep, and sed.

### UNIT-V

Basic networking administration: Setting up a LAN using Linux, choosing peer to peer vs client/server model, setting up an Ethernet Lan, configuring host computers, checking Ethernet connecting, connecting to Internet, common networking administrative tasks, configuring Ethernet, initializing Ethernet Interface, ifconfig, netstat and netconfig commands, TCP/IP network, DNS services, routing using Linux Installation & Administration of mail server, ftp server and Apache web server.

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### TEXT & REFERENCE BOOKS:

- *UNIX - CONCEPTS & APPLICATIONS (THIRD ED.) - SUMITABHA DAS, TATA MCGRAW HILL PUBLICATIONS.*
- *UNIX FOR PROGRAMMERS AND USERS (THIRD ED.) - GRAHAM GLASS & KING ABLES, PEARSON EDUCATION INDIA, (LOW PRICES EDITION).*
- *FEDORA CORE 6 BIBLE*
- *RED HAT LINUX 9 BIBLE – CRISTOPHER NEGUS, IDG BOOKS INDIA LTD.*
- *USING LINUX BY JACK T ACKETT, DAVID GUNTER, PHI, EEE EDITION*
- *LINUX INSTALLATION AND ADMINISTRATION, NICHOLAS WELLS, COURSE TECHNOLOGY (VIKAS PUBLISHING, NEW DELHI).*
- *UNIX SHELL PROGRAMMING - YASHWANT KANETKAR, BPB PUBLICATIONS,*
- *RED HAT LINUX UNLEASHED T ECHMEDIA (BPB PUBLICATIONS)*
- *LINUX NETWORKING AND SECURITY - WELLS, COURSE T ECHNOLOGY (VIKAS PUBLISHING, NEW DEHI*



## **BCA-304D: Core Python Programming**

### **UNIT I**

Python: Introduction , History , Versions, Features of Python, Variables, Keywords , Comments , Installing Python, Data Types

### **UNIT II**

Built in Functions , Sequence Type – Str, List, Tuple, Dictionary , Set , Frozenset , Boolean, Bye, ByteArray , Range Function , input function

### **UNIT III**

Conditional Statements, pass statement , assert statement , break statement, continue statement , Indentation in Python, if , else , elif block, Loops , Operators in Python

### **UNIT IV**

Creating Strings, Length of String, Indexing of String, Slicing the Strings, Repeating the Strings, Concatenation of String , Comparing String , Removing Spaces from a String

### **UNIT V**

Functions : Defining , Calling a function, Returning result from a function, Returning multiple values from a Function, Local and Global Variable

### **References:**

1. Introducing Python: Modern Computing in Simple Packages by Bill Lubanovic
2. Python Programming: A Modular Approach | With Database, Mobile, and Web Applications | First Edition || By Pearson
3. Learn Python 3 The Hard Way by Zed. A Shah