SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED [M.S.]

Choice Based Credit System (CBCS Pattern)

Faculty of Computer Studies

Syllabus of Bachelor of Computer Application (BCA) Third Year

Effective from Academic Year (2018-2019)

Under Graduate (UG) Program

Semester	Subject Code	Course Name	Credit		Total Credits
			Internal	External	
Semester – V	S5.CC.1	Windows Programming with C#.NET	1	3	**4**
	S5.CC.2	Advance Java	1	3	**4**
	S5.CC.3	Linux and Shell Programming	1	3	**4**
	S5.CC.4	Project	1	3	**4**
	S5.CC.5	Elective: 1. Cloud Computing 2. Distributed Computing 3. Digital Image Processing	1	3	**4**
	S5.SEC.1	Skills Enhancement Course (SEC) 1. Java script 2. MySQL 3. Accounting with Tally		2	**2**
	S5.Lab 1	Advance Java		2	**2**
	S5.Lab 2	Linux and Shell Programming		2	**2**
	S5.Lab 3	C#.NET		2	**2**
		Environmental Studies			
		TOTAL			**28**
Semester – VI	S6.CC.1	Adv. Networking Concept	1	3	**4**
	S6.CC.2	Software Engineering	1	3	**4**
	S6.CC.3	Linux Administration	1	3	**4**
	S6.CC.4	Software Testing	1	3	**4**
	S6.CC.5	Elective: 1. Mobile Communication 2. Data Mining and Data warehousing 3. Enterprise Resource Planning (ERP)	1	3	**4**
	S6.SEC.1	Skill Enhancement Course (SEC) 1. SQL Server 2. Macromedia Flash 3. Android Programming		2	**2**
	S6.Lab 1	Linux Administration		2	**2**
	S6.Lab 2	Software Testing		2	**2**
	S6.Lab 3	Seminar		2	**2**
		TOTAL			**28**

Name of Course	BCA Third Year
Semester	V Semester
Name of Subject	Windows Programming with C#.NET
Subject Code	S5.CC.1

Salient Features:

1. To understand the DOTNET framework.
2. To gain understanding of windows programming.
3. To teach student application development technology.

Utility of Course:

1. To impart the knowledge on basics concepts of object oriented programming.
2. To outline the various characteristics of c#.
3. To provide the familiarity in the concept of developing window application.
4. To converse an idea of creating application using ADO.Net.
5. To convey the idea of CLR and .Net framework.

Learning Objectives:

1. To develop background knowledge as well as core expertise in C#.
2. To understand the windows form creation and provide knowledge for creating windows applications.
3. To learn the object oriented concepts.

Prerequisites:

1. Adequate knowledge of Fundamental of C or C++.
2. Adequate knowledge of Basics of DBMS.

UNIT – I

1.	**Introduction**		**Lectures**	**Ref. No.**
	a)	Introduction to .Net Technology & Framework	01	1, 2
	b)	.Net Architecture	02	1, 2
	c)	Common Language Runtime(CLR)	01	1, 2
	d)	IDE Components	03	2
	e)	Intellisense	01	2
	f)	Project Types	01	2
	g)	Java vs C#	01	1

References:

Sr. No.	**Name of the Book**	**Author**	**Publication**
1.	Programming in C#	E Balagurusamy	Mc Graw Hill
2.	Visual C#.Net	C Muthu	Mc Graw Hill

UNIT – II

2.	Windows Applications and Windows Controls		Lectures	Ref. No.
	a)	Important Classes Used in Windows	01	2
	b)	Creating and Customizing Windows Form	02	1
	c)	TextBox and Label Control	01	2
	d)	Button, CheckBox and RadioButton	02	2
	e)	ListBox and ComboBox control	02	2
	f)	Menus and Dialog Boxes	03	2

References:

Sr. No.	Name of the Book	Author	Publication
1.	Programming in C#	E Balagurusamy	Mc Graw Hill
2.	Visual C#.Net	C Muthu	Mc Graw Hill

UNIT- III

3.	Functions, Arrays and Strings		Lectures Require	Ref. No.
	a)	C# Function	02	1, 2
	b)	Call by Value & Call by Reference	02	1, 2
	c)	Out Parameter	01	1, 2
	d)	Array and ArrayList class	02	1,2
	e)	Jagged Array	01	2
	f)	String Class	01	1

References:

Sr. No.	Name of the Book	Author	Publication
1.	Programming in C#	E Balagurusamy	Mc Graw Hill
2.	Visual C#.Net	C Muthu	Mc Graw Hill

UNIT- IV

4.	Properties, Indexers, Delegates & Events		Lectures Require	Ref. No.
	a)	Properties	02	1, 2
	b)	Indexers	02	1, 2
	c)	Delegates	01	1, 2
	d)	Multicast Delegates	01	1,2
	e)	Custom Events		1,2

References:

Sr. No.	Name of the Book	Author	Publication
1.	Programming in C#	E Balagurusamy	Mc Graw Hill
2.	Visual C#.Net	C Muthu	Mc Graw Hill

UNIT V

5.	Namespace, interface & Exception handling		Lectures Require	Ref. No.
	a)	Creating & using Namespace(DLL library)	02	2
	b)	Creating & using interface	02	1, 2
	c)	Try Catch Block	02	1, 2
	d)	Using Finally Block	01	1,2
	e)	Custom Exception	01	1,2

References:

Sr. No.	Name of the Book	Author	Publication
1.	Programming in C#	E Balagurusamy	Mc Graw Hill
2.	Visual C#.Net	C Muthu	Mc Graw Hill

UNIT VI

6.	Database Connectivity		Lectures Required	Ref. No.
	a)	Introduction ADO.Net	02	2
	b)	Advantages of ADO.Net	01	2
	c)	Developing a Simple ADO.NET Based	02	2
	d)	Retrieving & Updating Data From Tables	01	2
	e)	Disconnected Data Access Through Dataset Objects	02	2

References:

Sr. No.	Name of the Book	Author	Publication
1.	Programming in C#	E Balagurusamy	Mc Graw Hill
2.	Visual C#.Net	C Muthu	Mc Graw Hill

Name of Course	BCA Third Year
Semester	V Semester
Name of Subject	Advance Java Programming
Subject Code	S5.CC.2

Salient Features:

- To understand the Windows Programming with AWT and Applet
- To gain understanding of windows and web based programming.
- To teach student windows based and web based application development technology.

Utility of Course:

- To impart the knowledge on basics concepts of multithreading programming.
- To outline the various AWT classes.
- To provide the familiarity in the concept of developing window and web based application.
- To converse an idea of creating web based application using Servlet and JSP

Learning Objectives:

- To develop background knowledge as well as core expertise AWT, Frames, Applet etc.
- To understand the dynamic web page creation and provide knowledge for creating Dynamic Websites.
- To learn the Servlet and JSP.

Prerequisites:

- Adequate knowledge of Fundamental of C or C++ and Java.
- Adequate knowledge of Basics of DBMS.
- Adequate knowledge of HTML.

Unit – I

1.	**Multithreading**		**Lectures**	**Ref. No.**
	1.1	Creating and Executing Multiple Threads	02	1, 2,3
	1.2	Thread Life Cycle	01	1, 2,3
	1.3	Thread Methods and Thread Priorities	02	1, 2,3
	1.4	Thread Synchronization	02	1, 2,3

References:

Sr. No.	**Name of the Book**	**Author**	**Publication**
1.	Java The Complete Reference	Herbert Schildt	Mc Graw Hill
2.	Mastering Java2 J2SE1.4	John Zukouski	BPB Publication
3.	JAVA 2,J2SE 1.4	Dave Evans	Sybex

Unit – II

2.	Working with Frames, AWT Controls and Events		Lectures Required	Ref. No.
	a)	Frame class and its Methods	01	1, 2,3
	b)	Layout Managers	03	1, 2,3
	c)	Creating AWT controls-Button, TextField, Label, List, ComboBox	03	1, 2,3
	d)	Delegation Based Event Handling	01	1, 2,3
	e)	Event Classes and Interfaces	01	1, 2,3
	f)	Action Event and Mouse Event	01	1, 2,3
		Key Event and Window Event	01	1, 2,3

References:

Sr. No.	Name of the Book	Author	Publication
1.	Java The Complete Reference	Herbert Schildt	Mc Graw Hill
2.	Mastering Java2 J2SE1.4	John Zukouski	BPB Publication
3.	JAVA 2,J2SE 1.4	Dave Evans	Sybex

Unit- III

3.	Applet Programming		Lectures Require	Ref. No.
	a)	Creating and executing Applet	01	1, 2,3
	b)	Applet Life Cycle	01	1, 2,3
	c)	Passing Parameters to an Applet	01	1, 2,3
	d)	Graphics class		1, 2,3
	e)	JApplet	01	1, 2,3

References:

Sr. No.	Name of the Book	Author	Publication
1.	Java The Complete Reference	Herbert Schildt	Mc Graw Hill
2.	Mastering Java2 J2SE1.4	John Zukouski	BPB Publication
3.	JAVA 2,J2SE 1.4	Dave Evans	Sybex

Unit- IV

4.	Graphics Programming Using Swing		Lectures Require	Ref. No.
	a)	Working with 2D Basic Shapes	02	1, 2,3
	b)	Using Color	01	1, 2,3
	c)	Using Font	01	1, 2,3
	d)	Displaying Images	01	1, 2,3

References:

Sr. No.	Name of the Book	Author	Publication
1.	Java The Complete Reference	Herbert Schildt	Mc Graw Hill

2.	Mastering Java2 J2SE1.4	John Zukouski	BPB Publication
3.	JAVA 2,J2SE 1.4	Dave Evans	Sybex

Unit V

5.	**Java Collection**		**Lectures Require**	**Ref. No.**
	a)	Collections and Hierarchy of Collection Framework	02	1, 2,3
	b)	Collection Interface	01	1, 2,3
	c)	ArrayList and LinkedList	02	1, 2,3
	d)	Difference between ArrayList and Vector	01	1, 2,3
	e)	Queue and PriorityQueue	02	1, 2,3
		Hashtable	01	1, 2,3

References:

Sr. No.	**Name of the Book**	**Author**	**Publication**
1.	Java The Complete Reference	Herbert Schildt	Mc Graw Hill
2.	Mastering Java2 J2SE1.4	John Zukouski	BPB Publication
3.	JAVA 2,J2SE 1.4	Dave Evans	Sybex

Unit VI

6.	**Servlet and JSP**		**Lectures Required**	**Ref. No.**
	a)	Web Terminology - Static and Dynamic webpage	01	1, 2,3
	b)	Installing Apache Tomcat 7.0	01	1, 2,3
	c)	Servlet vs CGI and Servlet Life Cycle	01	1, 2,3
	d)	Handling get and post request	02	1, 2,3
	e)	Advantage of JSP over Servlet	01	1, 2,3
	d)	JSP Scripting Elements	01	1, 2,3
	e)	JSP Implicit Objects	01	1, 2,3
	f)	JSP Directive Elements	01	1, 2,3

References:

Sr. No.	**Name of the Book**	**Author**	**Publication**
1.	Java The Complete Reference	Herbert Schildt	Mc Graw Hill
2.	Mastering Java2 J2SE1.4	John Zukouski	BPB Publication
3.	JAVA 2,J2SE 1.4	Dave Evans	Sybex

Name of Course	BCA Third Year
Semester	V Semester
Name of Subject	Linux and Shell Programming
Subject code	S5.CC.3

Silent Features:

Linux is a powerful, free and open source code Operating System available in market.it can be used for both purposes like desktop and server use.so from smartphones to cars, supercomputers and home appliances, the Linux operating system is everywhere. So by learning this subject student will capable, not only to learn the basic functions and task of operating system but also they can develop and release their own software on internet without any cost.

Objectives:

- This course shall build a platform for students to start their own enterprise
- For Making Student Job Ready
- To become familiar with open source software and user interface.
- To securely handle OS without any viruses and malwares.
- For easily use free software available on internet.
- To understand the basic operating system command.
- To understand the basic concept of shell programming

Utility of the course:

- Awareness of existing demanding trends in IT industry in order to get placement & research in open source market.
- Understand the Linux OS architecture.
- Install and use different types of distributions available in market.

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Prerequisite:

1. Basics of Operating System covered in Semester I.

UNIT-I

Sr. No.	Introduction		Lectures Required	Ref. No
1	1.1	Features of Linux OS	1	1,2,3
	1.2	Features of Linux OS	2	1,2,3
	1.3	Installation steps of Linux	2	1,2,3
	1.4	Linux kernel	1	1,2
	1.5	Linux boot loader	1	1
	1.6	Booting process of Linux OS	1	1

References:

Sr. No	Name of Book	Writer	Publication
1	Red Hat Linux 7 Unleashed	Bill Ball ,David Pitts	Techmedia SAMS publication
2	UNIX System Administration Handbook	Evi Nemeth,Garth Snyder,Scott Seebass	Person Education Asia (LPE)(III Edition)
3	Red Hat Linux and Fedora Unleashed	Bill Ball and Hoyt Duff	

UNIT-II

Sr. No.	Working with Linux OS		Lectures Required	Ref. No
2)	2.1	Working with the Linux File System	1	1,2,3
	2.2	Logging into and working With Linux	2	1,2,3
	2.3	Changing User Information	2	1,2,3
	2.4	Linux Shell	1	1,2,3
	2.5	Text Editors in Linux	2	1,2
	2.6	Working with permissions	1	1,3

References:

Sr. No	Name of Book	Writer	Publication
1	Red Hat Linux 7 Unleashed	Bill Ball ,David Pitts	Techmedia SAMS publication
2	UNIX System Administration Handbook	Evi Nemeth,Garth Snyder,Scott Seebass	Person Education Asia (LPE)(III Edition)
3	Red Hat Linux and Fedora Unleashed	Bill Ball and Hoyt Duff	

UNIT-III

Sr. No.	Linux Commands and Utilities		Lectures Required	Ref. No
3	3.1	Adduser , alias, at ,cat , cd, chmod , chown ,cp, cpio, dd,df,dc,dir,du,find,finger,grep,zip,unzip,gzip,halt,hostname,ifconfig,kill,login,look, lpc, lpd ,lpr, lprm, ls, mail, man,mde, mkdir,mor,mount, mv,netstat,passwd,ping, ps,pwd,rm, rmdir,shutdown,sort, su,tar,tree,moun, umount,unzip,vi,wc, who,whoami,zip.	9	1,2, 3,

References:

Sr. No	Name of Book	Writer	Publication
1	Red Hat Linux 7 Unleashed	Bill Ball ,David Pitts	Techmedia SAMS publication
2	UNIX System Administration Handbook	Evi Nemeth,Garth Snyder,Scott Seebass	Person Education Asia (LPE)(III Edition)
3	Red Hat Linux and Fedora Unleashed	Bill Ball and Hoyt Duff	

UNIT IV

Sr. No.	Basic Shell Scripting		Lectures Required	Ref. No
4)	4.1	Types of shells	2	1,2,3
	4.2	Shell functionality, Environment	1	2,3
	4.3	Writing First Scritpt and executing basic script	2	2,3
	4.4	Variables	1	1,2
	4.5	Mathematical Expressions	2	2,3

References:

Sr. No	Name of Book	Writer	Publication
1	UNIX Shell programming	Kanetkar	BPB Publication
2	UNIX System Administration Handbook	Evi Nemeth,Garth Snyder,Scott Seebass	Person Education Asia (LPE)(III Edition)

UNIT-V

Sr. No.	Shell programming in Linux		Lectures Required	Ref. No
5)	5.1	Conditional Statements in shell Scripting.	2	1,2,
	5.2	Looping Statements in shell Scripting-While,For,Until	2	1,2
	5.3	Break and Continue	3	1,2
	5.4	Logical operators-AND,OR,NOT	2	1,2

References:

Sr. No	Name of Book	Writer	Publication
1	UNIX Shell programming	Bill Ball ,David Pitts	Techmedia SAMS publication
2	UNIX System Administration Handbook	Evi Nemeth,Garth Snyder,Scott Seebass	Person Education Asia (LPE)(III Edition)

UNIT-VI

Sr. No.	Functions and File Manupulations.		Lectures Required	Ref. No
6)	6.1	Processing File line by line	1	1,2
	6.2	Functions in Shell.	2	1,2,3
	6.3	Command line Arguments in shell Scripting	1	1,2,3
	6.4	Grep command and patterns	2	1,2,3

References:

Sr. No	Name of Book	Writer	Publication
1	UNIX Shell programming	Bill Ball ,David Pitts	Techmedia SAMS publication
2	UNIX System Administration Handbook	Evi Nemeth,Garth Snyder,Scott Seebass	Person Education Asia (LPE)(III Edition)

Name of Course	B.C.A. Third Year
Semester	V Semester
Name of Subject	Cloud Computing
Subject Code	S5.CC.5 (Core Course Elective – I)

Silent Features:
It is most demanding area in IT industry. Every organization now days, trying to migrate to cloud computing from different perspectives. It is associated with architectural modelling and service providing. Other areas like resource pooling, cost economics, elasticity of organization also use clouds. Thus it has become extremely important to understand the key defining features of cloud computing.

Learning Objectives:
- To Study basics of cloud computing, and comprehend the terminology, tools and technologies associated with today's top cloud platforms.
- To provide the programmer's perspective of working of Cloud Computing.
- Implement Simple Cloud programs to solve simple problems.

Utility of the course:
Awareness of existing demanding trends for Clouds and Virtualizations in the IT industry in order to get placement as well as in research

Prerequisite:
Knowledge about Computer Hardware and Networking.

UNIT – I

1.	Enterprise computing: a retrospective		Lecturers Required	Ref. No.
	1.1	Introduction	1	1
	1.2	Mainframe architecture	2	1
	1.3	Client-server architecture	2	1
	1.4	3-tier architectures with TP monitors	2	1

References:

1)	Enterprise Cloud Computing: Technology, Architecture, Application By Gautam Shroff

UNIT – II

2.	The internet as a platform and Software as a service		Lecturers Required	Ref. No.
	2.1	Internet technology and web-enabled applications	2	1
	2.2	Web application servers	2	1
	2.3	Internet of services	2	1
	2.4	Emergence of software as a service	2	1
	2.5	Successful SaaS architectures	2	1
	2.6	Dev 2.0 platforms	2	1
	2.7	Cloud computing	2	1

References:

1.	Enterprise Cloud Computing: Technology, Architecture, Application By Gautam Shroff

UNIT – III

3.	Cloud computing platforms		Lecturers Required	Ref. No.
	3.1	Infrastructure as a service: Amazon EC2	3	1
	3.2	Platform as a service: Google App Engine	3	1
	3.3	Microsoft Azure	3	1

References:

1.	Enterprise Cloud Computing: Technology, Architecture, Application By Gautam Shroff

UNIT – IV

4.	Web services, AJAX and mashups		Lecturers Required	Ref. No.
	4.1	Web services: SOAP and REST	2	1
	4.2	SOAP versus REST	2	1
	4.3	AJAX: asynchronous ‘rich’ interfaces	2	1
	4.4	Mashups: user interface services	2	1

References:

1.	Enterprise Cloud Computing: Technology, Architecture, Application By Gautam Shroff

UNIT – V

5.	Data in the cloud		Lecturers Required	Ref. No.
	5.1	Relational databases	3	1
	5.2	Cloud file systems: GFS and HDFS	3	1
	5.3	BigTable, HBase and Dynamo	3	1
	5.4	Cloud data stores: Datastore and SimpleDB	3	1

References:

1.	Enterprise Cloud Computing: Technology, Architecture, Application By Gautam Shroff

UNIT – VI

6.	MapReduce and extensions		Lecturers Required	Ref. No.
	6.1	Parallel computing	3	1
	6.2	The MapReduce model	3	1
	6.3	Parallel efficiency of MapReduce	3	1
	6.4	Relational operations using MapReduce	3	1
	6.5	Enterprise batch processing using MapReduce	3	1

References:

1.	Enterprise Cloud Computing: Technology, Architecture, Application By Gautam Shroff

Name of Course	B.C.A. Third Year
Semester	V Semester
Name of Subject	Distributed Computing
Subject Code	S5.CC.5 (Core Course Elective – II)

Pre-requisites:

1. Computer Networks
2. Operating Systems
3. C Programming

Course / Learning Objectives:

1. Introduce distributed computing environment.
2. Emphasize on design techniques and constraints of distributed computing environment.
3. Emphasize on analysis of distributed computing environment.

Course Outcomes/ Utility of Course:

1. Distinguish between distributed computing and parallel computing.
2. Understand concepts of architectural Styles, Communication, and Synchronization.
3. Demonstrate different naming & synchronization technologies
4. Explore various distributed concepts.

Salient Features:

1. Helps to understand Concepts of distributed computing environment
2. Motivate to Use distributed architectures instead of central and / or parallel
3. Help to understand working of various existing distributed systems.

UNIT – I

1.	**Introduction**		**Lecturers Required**	**Ref. No.**
	1.1	Definition of distributed system	1	1
	1.2	Goals	2	1
	1.3	Types of Distributed systems	4	1

References:

2)	Distributed Systems Principles and Paradigms, Second Edition- by Andrew S. Tanenbaum, Maarten Van Steen. PHI ISBN-978-81-3498-4

UNIT – II

2.	**Architectures**		**Lecturers Required**	**Ref. No.**
	2.1	Architectural styles	02	1
	2.2	System Architectures: 2.2.1 Centralized Architectures, 2.2.2 Decentralized Architectures 2.2.3 Hybrid Architectures	03	1

	2.3	Architectures Versus Middleware	03	1
		2.3.1 Interceptors 2.3.2 General Approaches to Adaptive Software	03	1
	2.4	Self-Management in Distributed systems 2.4.1 The Feedback Control Model 2.4.2 Example: Systems Monitoring with Astrolabe	03	1

References:

1)	Distributed Systems Principles and Paradigms, Second Edition- by Andrew S. Tanenbaum, Maarten Van Steen. PHI ISBN-978-81-3498-4

UNIT – III

3.	**Processes**		**Lecturers Required**	**Ref. No.**
	3.1	Threads	03	1
	3.2	Virtualization	03	1
	3.3	Clients	03	1
	3.4	Servers	03	1
	3.5	Code Migration	03	1

References:

1)	Distributed Systems Principles and Paradigms, Second Edition- by Andrew S. Tanenbaum, Maarten Van Steen. PHI ISBN-978-81-3498-4

UNIT – IV

4.	**Communication**		**Lecturers Required**	**Ref. No.**
	4.1	Fundamentals	01	1
	4.2	Remote Procedure Call 4.2.1 Basic RPC Operation 4.2.2 Parameter Passing 4.2.3 Asynchronous RPC	03	1
	4.3	Message oriented communication 4.3.1 Message Oriented Transient Communication (Berkely Sockets) 4.3.2 Message Oriented Persistent Communication (Message Queuing Model)	04	1
	4.4	Stream oriented communication	03	1
	4.5	Multicast communication	04	1

References:

1)	Distributed Systems Principles and Paradigms, Second Edition- by Andrew S. Tanenbaum, Maarten Van Steen. PHI ISBN-978-81-3498-4

UNIT – V

5.	Naming		Lecturers Required	Ref. No.
	5.1	Names, Identifiers, and Addresses	02	1
	5.2	Flat Naming 5.2.1 Simple Solutions Broadcasting & Multicasting Forwarding Pointers	02	1
	5.3	Structured Naming	02	1
	5.4	Attribute-Based Naming	02	1

References:

1)	Distributed Systems Principles and Paradigms, Second Edition- by Andrew S. Tanenbaum, Maarten Van Steen. PHI ISBN-978-81-3498-4

UNIT – VI

6.	Synchronization		Lecturers Required	Ref. No.
	6.1	Clock synchronization: 6.1.1 Physical clocks 6.1.2 Global Positioning System 6.1.3 Clock synchronization Algorithms	02	1
	6.2	Logical Clocks 6.2.1 Lamport's Logical Clock 6.2.2 Vector Clocks	03	1
	6.3	Mutual Exclusion: 6.3.1 Centralized Algorithm 6.3.2 A Decentralized Algorithm 6.3.3 A Distributed Algorithm 6.3.4 A Token Ring Algorithm	05	1
	6.4	Election Algorithms 6.5.1 Traditional Election Algorithms (Bully, Ring Algorithm) 6.5.2 Election in Wireless Environments	02	1

References:

1)	Distributed Systems Principles and Paradigms, Second Edition- by Andrew S. Tanenbaum, Maarten Van Steen. PHI ISBN-978-81-3498-4

Name of Course	B.C.A. Third Year
Semester	V Semester
Name of Subject	Digital Image Processing
Subject code	S5.CC.3 (Core Course Elective – III)

Prerequisites:

- Must learn how to code. Python and C++ languages are highly recommended
- Must also learn how to read programming languages that you do not know
- Must have a background on discrete digital signal processing. Discrete digital signal processing will help you understand concepts such as how filtering really works. It can also help you understand how computers perceive an image.
- Finally, try running source codes available on the internet and create such codes on your own.

Course Objectives:

- To learn fundamental concepts of Digital Image Processing
- To study basic image processing operations
- To understand image analysis algorithms
- To expose students to current applications in the field of digital image processing

Course Outcomes:

- Review the fundamental concepts of a digital image processing system.
- Analyze images in the frequency domain using various transforms.
- Evaluate the techniques for image enhancement and image restoration.
- Categorize various compression techniques.
- Interpret Image compression standards.
- Interpret image segmentation and representation techniques.

Salient Features:

- Confidence building
- Ability to understand the problem and find solutions
- Developing and maintaining projects

UNIT-I

Sr. No.	**Introduction to MATLAB**		**Lectures Required**	**Ref. No**
1	1.1	Introduction	1	2,3
	1.2	Advantages and Disadvantages of MATLAB	2	1,2,3
	1.3	MATLAB Environment	2	1,2,3
	1.4	Using MATLAB Scratch Pad	1	2,3,4
	1.5	Variables and Arrays	2	2,4
	1.6	Multidimensional Arrays	1	2,4
	1.7	Scalar and Array Operations	2	2,4

References:

Sr. No	Name of Book	Writer	Publication
1	Digital Image Processing	R.C. Gonzalez, R.E. Woods and S.L. Eddins	Second Edition, Pearson Education
2	Digital Image Processing using MATLAB	R.C. Gonzalez, R.E. Woods and S.L. Eddins	Second Edition, Pearson Education
3	Fundamentals of Image Processing	A.K. Jain	PHI publication
4	MATLAB Programming for Engineers	Stephen J. Chapman	Third Edition, Thomson Learning

UNIT-II

Sr. No.	Introduction to Digital Image Representation		Lectures Required	Ref. No
2)	2.1	Elements of Digital Image Processing System	2	1,2,3,4
	2.2	Digital Image Representation	2	1,2,3,4
	2.3	Reading, displaying and writing images	3	1,2,3,4
	2.4	Data classes and Image types	2	1,2,3,4
	2.5	Converting between data classes and image types	3	2,4
	2.6	Introduction to M-function Programming	3	2,4

References:

Sr.No	Name of Book	Writer	Publication
1	Digital Image Processing	R.C. Gonzalez, R.E. Woods and S.L. Eddins	Second Edition, Pearson Education
2	Digital Image Processing using MATLAB	R.C. Gonzalez, R.E. Woods and S.L. Eddins	Second Edition, Pearson Education
3	Fundamentals of Image Processing	A.K. Jain	PHI publication
4	MATLAB Programming for Engineers	Stephen J. Chapman	Third Edition, Thomson Learning

UNIT-III

Sr. No.	Intensity Transformation and Spatial Filtering		Lectures Required	Ref. No
3)	3.1	Background	1	1,2,3,4
	3.2	Intensity Transformation Functions Using imadjust( ) Using log( )	4	1,2,3,4
	3.3	Histogram Processing and function plotting	4	1,2,3,4
	3.4	Spatial filtering Linear spatial filtering Non-Linear spatial filtering	6	1,2,3,4

References:

Sr. No	Name of Book	Writer	Publication
1	Digital Image Processing	R.C. Gonzalez, R.E. Woods and S.L. Eddins	Second Edition, Pearson Education
2	Digital Image Processing using MATLAB	R.C. Gonzalez, R.E. Woods and S.L. Eddins	Second Edition, Pearson Education
3	Fundamentals of Image Processing	A.K. Jain	PHI publication
4	MATLAB Programming for Engineers	Stephen J. Chapman	Third Edition, Thomson Learning

UNIT-IV

Sr. No.	Frequency Domain Processing		Lectures Required	Ref. No
4)	4.1	Introduction to Discrete Fourier Transformation(DFT)	3	1,2,4
	4.2	Computing and visualizing 1D-DFT	2	1,2,4
	4.3	Computing and visualizing 2D-DFT	2	1,2,4
	4.4	Filtering in frequency domain	3	1,2,4

References:

Sr. No	Name of Book	Writer	Publication
1	Digital Image Processing	R.C. Gonzalez, R.E. Woods and S.L. Eddins	Second Edition, Pearson Education
2	Digital Image Processing using MATLAB	R.C. Gonzalez, R.E. Woods and S.L. Eddins	Second Edition, Pearson Education
3	Fundamentals of Image Processing	A.K. Jain	PHI publication
4	MATLAB Programming for Engineers	Stephen J. Chapman	Third Edition, Thomson Learning

UNIT-V

Sr. No.	Image Restoration		Lectures Required	Ref. No
5)	5.1	A model of image Degradation/Restoration Process	1	1,2,4
	5.2	Noise models	2	1,2,4
	5.3	Restoration Techniques	2	1,2,4
	5.4	Geometric Transformation	2	1,2,4
	5.5	Image Registration	1	1,2,4

References:

Sr. No	Name of Book	Writer	Publication
1	Digital Image Processing	R.C. Gonzalez, R.E. Woods and S.L. Eddins	Second Edition, Pearson Education
2	Digital Image Processing using MATLAB	R.C. Gonzalez, R.E. Woods and S.L. Eddins	Second Edition, Pearson Education
3	Fundamentals of Image Processing	A.K. Jain	PHI publication
4	MATLAB Programming for Engineers	Stephen J. Chapman	Third Edition, Thomson Learning

UNIT-VI

Sr. No.	Color Image Processing		Lectures Required	Ref. No
6)	6.1	Color Image Representation	1	1,2,3
	6.2	Converting to ther color spaces	1	1,2,3
	6.3	The Basics of color image processing	1	1,2,3
	6.4	Spatial filtering of color images	1	1,2,3

References:

Sr. No	Name of Book	Writer	Publication
1	Digital Image Processing	R.C. Gonzalez, R.E. Woods and S.L. Eddins	Second Edition, Pearson Education
2	Digital Image Processing using MATLAB	R.C. Gonzalez, R.E. Woods and S.L. Eddins	Second Edition, Pearson Education
3	Fundamentals of Image Processing	A.K. Jain	PHI publication
4	MATLAB Programming for Engineers	Stephen J. Chapman	Third Edition, Thomson Learning

Name of Course	BCA Third Year
Semester	V
Name of Subject	JavaScript
Subject Code	S5.SEC.1 (Elective – I)

Prerequisites:

1. Basic knowledge of object-oriented programming concepts
2. Basic knowledge of HTML

Course Objectives:

1. What JavaScript is and where it is used.
2. Basic programming concepts like variables, data types and conditional statements.
3. What functions are and why they're useful.
4. The basic syntax of the JavaScript programming language.
5. Implementation of different types of object in JavaScript.
6. To introduce concept of regular expression.

Course Outcomes:

1. Use operators, variables, arrays, control structures, functions and objects in JavaScript.
2. Identify popular JavaScript Libraries.
3. Use regular expressions for form validation.
4. Use Array, Math and String methods to access proper data.
5. To build dynamic web pages and web applications.

Salient Features:

1. Able to use concept of JavaScript to develop dynamic webpages
2. Abe to use built in functions in web applications

Practical Assignments –

Sr. No.	Name of Assignment
1	Write a JavaScript program to print “Hello World”.
2	Write a JavaScript program to perform all arithmetic operations.
3	Write a JavaScript program to find out entered number is even or odd.
4	Write a menu driven program in JavaScript, which has following options (Use of switch statement). 1. Addition 2. Subtraction
5	Write a JavaScript program to display series 1, 2, …, 10 using while loop.
6	Write a JavaScript program to display multiplication table of any number entered through the keyboard using do - while loop.

7	Write a JavaScript program to find the factorial value of any number entered through the keyboard using for loop.
8	Write a JavaScript program to demonstrate concept of global and local variables.
9	Write a recursive function in JavaScript to obtain the factorial value of any number entered
10	Write a JavaScript program to demonstrate array methods.
11	Write a JavaScript program to demonstrate math methods.
12	Write a JavaScript program to demonstrate string methods.
13	Write a JavaScript program to demonstrate concept of regular expression.

Reference:

Sr. No.	Name of the Book	Author	Publication
1	JavaScript 2.0 - The Complete	Thomas Powell and Fritz Schneider	McGraw-Hill 2nd Edition

Name of Course	B.C.A. Third Year
Semester	V Semester
Name of Subject	MySQL
Subject Code	S5.SEC.1 (Elective – II)

Prerequisites:

- Basic knowledge of operating system & DBMS.

Course Objectives:

- To understand what is MySQL & its uses.
- To understand basic SQL queries.
- To understand different numerical, string & date handling function.
- Implementation and representation of different type relations in table.
- To understand back and restore procedure.
- To understand repairing database.

Course Outcomes:

- Detailed understanding of MySQL database.
- Knowledge of writing SQL queries.
- Knowledge of maintaining relation between table and database normalization.
- Understanding different numerical, string handling and date handling function.

Salient Features:

- Able to use concept database normalization.
- Abe to use maintaining relationship between tables and joining table.

1) SQL* formatting commands
2) To create a table, alter and drop table.
3) To perform select, update, insert and delete operation in a table.
4) To make use of different clauses viz where, group by, having, order by, union and intersection,
5) To study different constraints.
6) To use oracle function viz aggregate, numeric, conversion, string function.
7) To understand use and working with joins.
8) To make use of transaction control statement viz rollback, commit and save point.
9) To make views of a table.
10) To make indexes of a table.
11) To understand working with PL/SQL
12) To implement Cursor on a table.
13) To implement trigger on a table

Books Recommended:

1. Baron Schwartz , High Performance MySQL, O'Reilly, 2012.
2. Vikram Vaswani , The Complete Reference MySQL , McGraw Hill Educations, 2004.

Name of Course	B.C.A. Third Year
Semester	V Semester
Name of Subject	Accounting with Tally
Subject Code	S5.SEC.1 (Elective – III)

Prerequisites:

- Basic knowledge of operating system.

Course Objectives:

- To understand Accounting and Accounting with Inventory.
- To understand Creating and understanding groups.
- To understand different types of ledgers.
- To understand different types of voucher types.
- To understand backup and restore procedure.
- To understand different reports.

Course Outcomes:

- Detailed understanding of Tally software.
- Knowledge of creating company and inventory.
- Knowledge of maintaining ledger, vouchers etc.
- Understanding different function of tally.

Salient Features:

- Able to use concept balance sheet.
- Abe to use maintaining details accounting of the organization.

1. Demonstrate company creation.
    - Accounting only
    - Accounting with inventory
2. Demonstrate create/ display / Alter group.
    - Single group
    - Multiple groups
3. Demonstrate create / display / Alter ledger.
    - Single ledger
    - Multiple ledger
4. Demonstrate voucher type.
    - Create voucher type
    - Alter voucher
5. Demonstrate accounting voucher creation / deletion / cancellation
    - Payment voucher
    - Receipt voucher
    - Sales voucher
    - Purchase voucher
    - Contra entry
    - Debit Note
    - Credit note
    - Journal entry
6. Demonstrate backup facility.

- Single file
- Multiple file

7. Demonstrate restore facility.
    - Single file
    - Multiple files
8. Demonstrate multiple accounting print.
    - Account book
        i. Individual ledger
        ii. Single ledger
        iii. Cash book
        iv. Bank book
9. Demonstrate export facility.
10. Display reports
    - Balance sheet
    - Profit and loss account
    - Trial balance
    - Ledger
11. Display trial balance by creating
    - New column
    - Alter column
    - Auto column
12. Demonstrate create inventory item
13. Demonstrate accounting features.

Name of Course	BCA Third Year
Semester	V Semester
Name of Subject	Advance Java Programming
Subject Code	S5.Lab1

Salient Features:

- To understand the Windows Programming with AWT and Applet
- To gain understanding of windows and web based programming.
- To teach student windows based and web based application development technology.

Utility of Course:

- To impart the knowledge on basics concepts of multithreading programming.
- To outline the various AWT classes.
- To provide the familiarity in the concept of developing window and web based application.
- To converse an idea of creating web based application using Servlet and JSP

Learning Objectives:

- To develop background knowledge as well as core expertise AWT, Frames, Applet etc.
- To understand the dynamic web page creation and provide knowledge for creating Dynamic Websites.
- To learn the Servlet and JSP.

Prerequisites:

- Adequate knowledge of Fundamental of C or C++ and Java.
- Adequate knowledge of Basics of DBMS.
- Adequate knowledge of HTML.

Practical List

1. Write a program for demonstration of creating multiple threads.
2. Write a program for demonstration of thread methods.
3. Write a program for demonstration of thread synchronization.
4. Write a program for demonstration of creating frame and layout managers.
5. Write a program for demonstration of using AWT controls.
6. Write a program for demonstration of Action Event.
7. Write a program for demonstration of creating Applet.
8. Write a program for demonstration of passing parameters to Applet.
9. Write a program for demonstration of accessing data from database.
10. Write a program for demonstration of modifying data from database.
11. Write a program for demonstration of ArrayList and LinkedList.
12. Write a program for demonstration of creating servlet application.
13. Write a program for demonstration of creating jsp application.

Name of Course	BCA Third Year
Semester	V Semester
Name of Subject	Linux and Shell Programming
Subject code	S5.Lab.2

Silent Features:

Linux is a powerful, free and open source code Operating System available in market.it can be used for both purposes like desktop and server use.so from smartphones to cars, supercomputers and home appliances, the Linux operating system is everywhere. So by learning this subject student will capable, not only to learn the basic functions and task of operating system but also they can develop and release their own software on internet without any cost.

Objectives:

- This course shall build a platform for students to start their own enterprise
- For Making Student Job Ready
- To become familiar with open source software and user interface.
- To securely handle OS without any viruses and malwares.
- For easily use free software available on internet.
- To understand the basic operating system command.
- To understand the basic concept of shell programming

Utility of the course:

- Awareness of existing demanding trends in IT industry in order to get placement & research in open source market.
- Understand the Linux OS architecture.
- Install and use different types of distributions available in market.

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Prerequisite:

2. Basics of Operating System covered in Semester I.

PRACTICAL List:

1) Introduction to Red Hat Linux.
2) Red Hat installation.
3) Simple commands in Linux
   (files and directory related commands-cat,cp,sort,touch,vi,mkdir,cd,rm ,rmdir, etc…)
4) WAP for Arithmetical operations in Shell Script
5) WAP for conditional Operators
6) WAP for Looping Statements.
7) WAP for Switch Case.
8) WAP for String operations.
9) WAP for File Handling.

Name of Course	B.C.A. Third Year
Semester	V Semester
Name of Subject	Windows Programming with C#.NET
Subject Code	S5.Lab.3

Salient Features:

- To understand the DOTNET framework.
- To gain understanding of windows programming.
- To teach student application development technology.

Utility of Course:

- To impart the knowledge on basics concepts of object oriented programming.
- To outline the various characteristics of c#.
- To provide the familiarity in the concept of developing window application.
- To converse an idea of creating application using ADO.Net.
- To convey the idea of CLR and .Net framework.

Learning Objectives:

- To develop background knowledge as well as core expertise in C#.
- To understand the windows form creation and provide knowledge for creating windows applications.
- To learn the object oriented concepts.

Prerequisites:

- Adequate knowledge of Fundamental of C or C++.
- Adequate knowledge of Basics of DBMS.

Practical List

1. Write a program for demonstration of creating simple windows application.
2. Write a program for demonstration of Text Box and Button control.
3. Write a program for demonstration of List Box and Combo Box Control.
4. Write a program for demonstration of designing Menus.
5. Write a program for demonstration of using dialog boxes.
6. Write a program for demonstration of C# functions.
7. Write a program for demonstration of Array.
8. Write a program for demonstration of creating properties.
9. Write a program for demonstration of creating Indexers.
10. Write a program for demonstration of creating Delegates.
11. Write a program for demonstration of creating custom namespace.
12. Write a program for demonstration of handling exception.
13. Write a program for demonstration of creating and using custom exception.
14. Write a program for demonstration of accessing data from database.
15. Write a program for demonstration of modifying data from database.

Name of Course	BCA TY
Semester	VI Semester
Name of Subject	Advance Networking Concepts
Subject Code	S6.CC.1

Prerequisites:

- Understanding of how connection oriented and connectionless network operate.
- Basic understanding of network.

Course Objectives:

- To understand the basics of wireless voice and data communication technologies.
- To study about the wireless communication Techniques.
- To understand different routing algorithms.
- To understand security and privacy issues in wireless environments.

Course Outcomes:

- Evaluate the usability of mobile devices such as smart phones.
- Select appropriate network technologies in commercial and enterprise applications.
- Assess the capabilities of next generation networks and role of network technologies.

Salient Features:

- Covers evolutionary path network communication from different generations.
- Detailed discussions on routing protocol and transport layer technologies.
- Brief overview of virtual LAN

UNIT-I

Sr. No.	Review of Basic Concepts		Lectures Required	Ref. No
1	1.1	What is Network, Benefits of Networking	1	1,2
	1.2	Network Architecture – Protocol Hierarchies	2	1,2
	1.3	Reference Model	2	1,2
	1.4	Connection oriented & Connectionless Services	1	1,2
	1.5	Underlying Technologies- IP Address, LAN & WAN	2	1,2

References:

Sr. No	Name of Book	Writer	Publication
1	Data and Computer Communications	William Stallings	Pearson Education
2	Computer Networks	Andrew S. Tanenbaum	Prentice Hall

UNIT-II

Sr. No.	LAN Hardware		Lectures Required	Ref. No
2)	2.1	Network Interface card	1	2

	2.2	Ethernet Technology 10 Base 2 & 10Base 5, 10 Base T	2	2
	2.3	Network Device Router & Switch	1	2
	2.4	Repeaters	2	2
	2.5	Wireless LAN	1	2

References:

Sr.No	Name of Book	Writer	Publication
1	Data and Computer Communications	William Stallings	Pearson Education
2	Computer Networks	Andrew S. Tanenbaum	Prentice Hall

UNIT-III

Sr. No.	The Internet Layer & Routing Protocols		Lectures Required	Ref. No
3)	3.1	IP-Datagram	1	1,2
	3.2	ICMP - Types of Messages	2	1,2
	3.3	BOOTP and DHCP	2	1,2
	3.4	Routing Protocol	2	1,2
	3.5	RIP, OSPF, BGP	2	1,2

References:

Sr.No	Name of Book	Writer	Publication
1	Data and Computer Communications	William Stallings	Pearson Education
2	Computer Networks	Andrew S. Tanenbaum	Prentice Hall

UNIT-IV

Sr. No.	The Transport Layer		Lectures Required	Ref. No
4)	4.1	The transport service- services primitives	2	1,2
	4.2	Sockets	2	1,2
	4.3	Elements of transport protocols	2	1,2
	4.4	TCP Frame Format	2	1,2
	4.5	UDP Protocol	1	1,2

References:

Sr. No	Name of Book	Writer	Publication
1	Data and Computer Communications	William Stallings	Pearson Education
2	Computer Networks	Andrew S. Tanenbaum	Prentice Hall

UNIT-V

Sr. No.	Client –server Model & Network Security		Lectures Required	Ref. No
5)	5.1	Client-Server Model	2	1,2
	5.2	Internet- Email	1	1,2
	5.3	Cryptography, symmetric key algorithm	2	1,2
	5.3	Firewalls	2	1,2
	5.5	Virtual Private Networks	2	1,2

References:

Sr. No	Name of Book	Writer	Publication
1	Data and Computer Communications	William Stallings	Pearson Education
2	Computer Networks	Andrew S. Tanenbaum	Prentice Hall

UNIT-VI

Sr. No.	Virtual LANs		Lectures Required	Ref. No
6)	6.1	Virtual LAN Concepts	1	1,2
	6.2	Trucking with ISL and 802.1Q	2	1,2
	6.3	VLAN Trucking Protocol (VTP)	2	1,2
	6.4	VLAN Configuration	1	1,2
	6.5	VTP Configuration	1	1,2

References:

Sr. No	Name of Book	Writer	Publication
1	CCENT/CCNA ICND1 (Second Edition)	Wendell Odom	Cisco Press
2	CCNA ICND2 (Third Edition)	Wendell Odom	Cisco Press

Name of Course	BCA Third Year
Semester	VI Semester
Name of Subject	Software Engineering
Subject code	S6.CC.2

Prerequisites:

- Adequate knowledge of programming languages.
- Must know the mathematical functions for developing and maintaining the mathematical algorithms.

Course Objectives:

- To develop software engineering skills and testing plans.
- To understand system concepts and its application in Software development.
- To enhance skills of designing and testing software.
- To learn technical skills to assure production of quality software.

Course Outcomes:

- Ability to learn various methods of software development.
- Ability to apply various software testing techniques

Salient Features:

- Improve your skills & build Confidence
- Ability to understand the problem and find solutions
- Lifelong learning and readily adapt to new software engineering environments.

UNIT-I

Sr. No.	**Introduction to Software Engineering**		**Lectures Required**	**Ref. No**
1	1.1	The Evolving Role of Software	2	1,2
	1.2	Software	1	1,2
	1.3	Software Characteristics	2	1,2
	.4	Software Applications	2	1,2
	1.5	Software Evolution	2	1,2
	1.6	Software Crisis & Horizon	1	1,2
	1.7	Software Myths	2	1,2

References:

Sr. No	**Name of Book**	**Writer**	**Publication**
1	Software Engineering(5 th edition)	R.Pressmen	M C Graw Hill
2	Software Engineering(4 th edition)	R.Pressmen	M C Graw Hill

UNIT-II

Sr. No.	**Process Of Software**		**Lectures Required**	**Ref. No**
2	2.1	Software Engineering	1	1
	2.2	Software Process	1	1
	2.3	The Waterfall Model	2	1,2
	2.4	Incremental Process Models	2	1,2

	2.5	Evolutionary Process Models	2	1,2
	2.6	Spiral Model	1	1,2

References:

Sr.No	Name of Book	Writer	Publication
1	Software Engineering	R.Pressmen	M C Graw Hill
2	Software Engineering 7th / 8th Edition	IAN Sommerville	Pearson Edition

UNIT-III

Sr. No.	A Generic View of Process		Lectures Required	Ref. No
3	3.1	Software Engineering – A Layered Technology	1	1,2
	3.2	Process Framework	1	1,2
	3.3	Personal and Team Process Models	1	1,2
	3.4	Personal Software Process (PSP)	1	1,2
	3.5	Team Software Process (TSP)	1	1,2
	3.6	Process Technology	1	1,2
	3.7	Product and process	1	1,2

References:

Sr.No	Name of Book	Writer	Publication
1	Software Engineering	R.Pressmen	M C Graw Hill
2	Software Engineering 7th / 8th Edition	IAN Sommerville	Pearson Edition

UNIT-IV

Sr. No.	AGILE DEVELOPMENT		Lectures Required	Ref. No
4	4.1	What Is Agility?	1	1
	4.2	What Is an Agile Process?	2	1
	4.3	The Politics of Agile Development	2	1
	4.4	Agile Process Models	2	1
	4.5	Feature Driven Development (FDD)	2	1

References:

Sr. No	Name of Book	Writer	Publication
1	Software Engineering	R.Pressmen	M C Graw Hill

UNIT-V

Sr. No.	5. Software Engineering Practice		Lectures Required	Ref. No
5	5.1	Software Engineering Practice	1	1
	5.2	The Essence of Practice	1	1
	5.3	Core Principles	1	1
	5.3	Communication Practices	1	1
	5.5	Planning Practices	1	1
	5.6	Modeling Practices	1	1
	5.7	Analysis Modeling Principles	1	1
	5.8	Design Modeling Principles	1	1

References:

Sr. No	Name of Book	Writer	Publication
1	Software Engineering 7th / 8th Edition	IAN Sommerville	Pearson Edition

UNIT-VI

Sr. No.	System Engineering		Lectures Required	Ref. No
6	6.2	6.1 Computer-Based Systems	2	1,2
	6.3	6.2 The System Engineering Hierarchy	1	1,2
	6.4	6.2.1 System Modeling	1	1,2
	6.5	6.2.2 System Simulation	1	1,2

References:

Sr. No	Name of Book	Writer	Publication
1	Software Engineering	R.Pressmen	M C Graw Hill
1	Software Engineering 7th / 8th Edition	IAN Sommerville	Pearson Edition

Name of Course	BCA Third Year
Semester	VI Semester
Name of Subject	Linux Administration
Subject code	S6.CC.3

Silent Features:

Linux is a powerful, free and open source code Operating System available in market.it can be used for both purposes like desktop and server use.so from smartphones to cars, supercomputers and home appliances, the Linux operating system is everywhere. So by learning this subject student will capable, not only to learn the basic functions and task of operating system but also they can develop and release their own software on internet without any cost.

Objectives:

- This course shall build a platform for students to start their own enterprise
- For Making Student Job Ready
- To become familiar with open source software and user interface.
- To securely handle OS without any viruses and malwares.
- For easily use free software available on internet.
- To understand the basic operating system command.
- To understand the basic concept of Linux operating system administration

Utility of the course:

- Awareness of existing demanding trends in IT industry in order to get placement & research in open source market.
- Understand the Linux OS architecture.
- Install and use different types of distributions available in market.
- Understand the different Linux administration commands.
-

Prerequisite:

- Basics of Operating System covered in Semester I.

UNIT I

Sr. No.		Managing Accounts	Lectures Required	Ref. No
I	1.1	Managing User Accounts, Managing Groups	1	1,2,3
	1.2	Managing Passwords	2	1,2,3
	1.3	Granting System Administrator Privileges to Regular Users	2	1,2,3
	1.4	The User Login Process	1	1,2

References:

Sr. No	Name of Book	Writer	Publication
1	Red Hat Linux 7 Unleashed	Bill Ball ,David Pitts	Tec media SAMS publication
2	UNIX System Administration Handbook	Evi Nemeth,Garth Snyder,Scott Seebass	Person Education Asia (LPE)(III Edition)
3	Red Hat Linux and Fedora Unleashed	Bill Ball and Hoyt Duff	

UNIT-II

Sr. No.	Managing the File system		Lectures Required	Ref. No
II	2.1	Working with the Linux File System	1	1,2,3
	2.2	Working with ext3 File system	2	1,2,3
	2.3	Other File system Available to Fedora Core Linux	2	1,2,3
	2.4	Creating a File system , Mounting File systems	1	1,2,3

References:

Sr. No	Name of Book	Writer	Publication
1	Red Hat Linux 7 Unleashed	Bill Ball ,David Pitts	Techmedia SAMS publication
2	UNIX System Administration Handbook	Evi Nemeth,Garth Snyder,Scott Seebass	Person Education Asia (LPE)(III Edition)
3	Red Hat Linux and Fedora Unleashed	Bill Ball and Hoyt Duff	

UNIT-III

Sr. No.	Printing with Fedora		Lectures Required	Ref. No
III	3.1	Overview of Fedora Printing	9	1,2,3,
	3.2	Configuring and Managing Print Services		
	3.3	Creating and Configuring Local Printers		
	3.4	Creating Network Printers		
	3.5	Console Print Controls		
		Using the Common UNIX Printing System (CUPS) GUI		

References:

Sr. No	Name of Book	Writer	Publication
1	Red Hat Linux 7 Unleashed	Bill Ball ,David Pitts	Tec media SAMS publication
2	UNIX System Administration Handbook	Evi Nemeth,Garth Snyder,Scott Seebass	Person Education Asia (LPE)(III Edition)
3	Red Hat Linux and Fedora Unleashed	Bill Ball and Hoyt Duff	

UNIT-IV

Sr. No.		System Administration	Lectures Required	Ref. No
IV	4.1	System services and run levels.	2	1,2,3
	4.2	Controlling services with administrative tools (chkconfig & GUI based services)	1	2,3
	4.3	Performing system maintenance.	2	2,3
	4.4	Managing s/w with RPM	1	1,2
	4.5	Communication commands	2	2,3

References:

Sr. No	Name of Book	Writer	Publication
1	Red Hat Linux 7 Unleashed	Bill Ball ,David Pitts	Techmedia SAMS publication
2	UNIX System Administration Handbook	Evi Nemeth,Garth Snyder,Scott Seebass	Person Education Asia (LPE)(III Edition)
3	Red Hat Linux and Fedora Unleashed	Bill Ball and Hoyt Duff	

UNIT-V

Sr. No.		Backup and Restore	Lectures Required	Ref. No
V	5.1	Backup strategies and operation.	2	1,2,3
	5.2	Choosing backup hardware and media	2	1,2
	5.3	Using backup s/w and commands	2	1,2
	5.4	Managing users and groups	2	1,2,3

References:

Sr. No	Name of Book	Writer	Publication
1	Red Hat Linux 7 Unleashed	Bill Ball ,David Pitts	Techmedia SAMS publication
2	UNIX System Administration Handbook	Evi Nemeth,Garth Snyder,Scott Seebass	Person Education Asia (LPE)(III Edition)
3	Red Hat Linux and Fedora Unleashed	Bill Ball and Hoyt Duff	

UNIT-VI

Sr. No.		Networking and shell scripting in Linux	Lectures Required	Ref. No
VI	6.1	Network configuration tools	1	1,2,3
	6.2	Working with DHCP	2	1,2,3
	6.3	Using NFS	1	1,2,3
	6.4	Introduction to SAMBA	1	1,2,3
	6.5	Introduction to DNS and Apache Web Server	2	1,2,3
	6.6	Working with shell scripting in Linux.	2	1,2,3

References:

Sr. No	Name of Book	Writer	Publication
1	Red Hat Linux 7 Unleashed	Bill Ball ,David Pitts	Techmedia SAMS publication

2	UNIX System Administration Handbook	Evi Nemeth,Garth Snyder,Scott Seebass	Person Education Asia (LPE)(III Edition)
3	Red Hat Linux and Fedora Unleashed	Bill Ball and Hoyt Duff	

Sr. No	**Name of Book**	**Writer**	**Publication**
1	Red Hat Linux 7 Unleashed	Bill Ball ,David Pitts	Techmedia SAMS publication
2	UNIX System Administration Handbook	Evi Nemeth,Garth Snyder,Scott Seebass	Person Education Asia (LPE)(III Edition)
3	Red Hat Linux and Fedora Unleashed	Bill Ball and Hoyt Duff	

Name of Course	B.C.A. Third Year
Semester	VI Semester
Name of Subject	Software Testing
Subject code	S6.CC.4

Prerequisites:

- Adequate knowledge of programming languages.
- Adequate knowledge of Software engineering concepts.

Course Objectives:

- To develop software engineering skills and testing plans.
- To understand system concepts and its application in Software development.
- To enhance skills of designing and testing software.
- To learn technical skills to assure production of quality software.

Course Outcomes:

- Ability to learn various methods of software development.
- Ability to apply various software testing techniques

Salient Features:

- Improve your skills & build Confidence
- Ability to understand the problem and write test cases for software testing
- Lifelong learning and readily adapt to new software testing environments.

UNIT-I

Sr. No.	Quality concepts			Lectures Required	Ref. No
1	1.1	Quality		1	1,2
	1.2	Software Quality			1,2
		1.2.1	McCall's Quality Factors	1	1,2
		1.2.2	ISO 9126 Quality Factors	1	1,2
		1.2.3	Targeted Quality Factors	1	1,2
	1.3	The Cost of Quality		1	1,2
	1.4	Quality and Security		1	1,2
	1.5	Quality Control		1	1,2
	1.6	Quality Assurance		1	1,2

References:

Sr. No	Name of Book	Writer	Publication
1	Software Engineering	R.Pressmen	M C Graw Hill
2	Software Testing Concepts and Tools	NageswaraRoo	Dreamtech Publication

UNIT-II

Sr. No.	Software Quality Assurance		Lectures Required	Ref. No
2	2.1	Software Quality Assurance	1	1,2
	2.2	Software Reviews	1	1,2
	2.3	Formal Technical Reviews	2	1,2
	2.4	Software Reliability	2	1,2
	2.5	The SQA Plan	1	1,2

References:

Sr.No	Name of Book	Writer	Publication
1	Software Engineering	R.Pressmen	M C Graw Hill
2	Software Testing Concepts and Tools	NageswaraRoo	Dreamtech Publication

UNIT-III

Sr. No.	SOFTWARE TESTING STRATEGIES		Lectures Required	Ref. No
3	3.1	A Strategic Approach to Software Testing	2	1,2
	3.2	Unit Testing	1	1,2
	3.3	Integration Testing	2	1,2
	3.4	Validation Testing	1	1,2
	3.5	System Testing	1	1,2
	3.6	The Art Of Debugging	1	1,2

References:

Sr.No	Name of Book	Writer	Publication
1	Software Engineering	R.Pressmen	M C Graw Hill
2	Software Testing Concepts and Tools	NageswaraRoo	Dreamtech Publication

UNIT-IV

Sr. No.	TESTING APPLICATION		Lectures Required	Ref. No
4	4.1	Software Testing Fundamentals	1	1,2
	4.2	Internal and External Views of Testing	2	1,2
	4.3	White-Box Testing	3	1,2
	4.4	Basic Path Testing	3	1,2
	4.5	Control Structural Testing	2	1,2
	4.6	Black Box Testing	2	1,2

References:

Sr.No	Name of Book	Writer	Publication
1	Software Engineering	R.Pressmen	M C Graw Hill
2	Software Testing Concepts and Tools	NageswaraRoo	Dreamtech Publication

UNIT-V

Sr. No.	WEBAPPS FOR TESTING		Lectures Required	Ref. No
5	5.1	Testing Concepts for WebApps	2	1,2
	5.2	The Testing Process-An Overview	1	1,2
	5.3	Content Testing	1	1,2
	5.3	User interface Testing	1	1,2
	5.5	Navigation Testing	2	1,2
	5.6	Security Testing	2	1,2

References:

Sr. No	Name of Book	Writer	Publication
1	Software Engineering	R.Pressmen	M C Graw Hill

2	Software Testing Concepts and Tools	NageswaraRoo	Dreamtech Publication

UNIT-VI

Sr. No.		PRODUCT METRICS	Lectures Required	Ref. No
6	6.1	A frame work for product metrics	1	1,2
	6.2	Metrics for the requirements model	1	1,2
	6.3	Metrics for design model	1	1,2
	6.4	Metrics for source code	1	1,2
	6.5	Metrics for testing	1	1,2

References:

Sr. No	Name of Book	Writer	Publication
1	Software Engineering	R.Pressmen	
2	Software Testing Concepts and Tools	NageswaraRoo	Dreamtech Publication

Name of Course	BCA TY
Semester	VI Semester
Name of Subject	Elective- Mobile Communication
Subject Code	S6.CC.5 (Core Course Elective – I)

Prerequisites:

- Understanding of how TCP/IP networks operate
- Basic understanding of radio communication concepts and signaling protocol.

Course Objectives:

- To understand the basics of wireless voice and data communication technologies.
- To study about the wireless communication Techniques.
- To understand measurement and performance of mobile and wireless system.
- To understand security and privacy issues in wireless environments.

Course Outcomes:

- Evaluate the usability of mobile devices such as smart phones.
- Select appropriate wireless technologies in commercial and enterprise applications.
- Assess the capabilities of next generation networks and role of mobile technologies.

Salient Features:

- Covers evolutionary path of modern wireless communication networks from different generations.
- Detailed discussions on cellular technologies.
- Brief overview of emerging wireless networking technologies such as IEEE 802.11, HIPERLAN ,Bluetooth.

UNIT-I

Sr. No.	Introduction		Lectures Required	Ref. No
1	1.1	Application	2	1,2
	1.2	A Short History Of Wireless Communication	2	1,2
	1.3	A Market For Mobile Communication	2	1,2
	.4	Some Open Research Topic	1	1,2
	1.5	A Simplified Reference Model	2	1,2

References:

Sr. No	Name of Book	Writer	Publication
1	Mobile Communications Second Edition	Jochen Schiller	Pearson Education
2	Mobile Cellular Telecommunications Second Edition	William C.Y.Lee	Mc-Graw-Hill

UNIT-II

Sr. No.	Introduction To Cellular Mobile System		Lectures Required	Ref. No
2)	2.1	Introduction	1	2
	2.2	Basic Cellular System	2	2

	2.3	Performance Criteria	1	2
	2.4	Operation Of Cellular System	2	2
	2.5	Planning A Cellular System	1	2
	2.6	Analog Cellular System	2	2

References:

Sr.No	Name of Book	Writer	Publication
1	Mobile Communications Second Edition	Jochen Schiller	Pearson Education
2	Mobile Cellular Telecommunications Second Edition	William C.Y.Lee	Mc-Graw-Hill

UNIT-III

Sr. No.	Medium Access Control		Lectures Required	Ref. No
3)	3.1	Motivation For Specialized MAC	1	1,2
	3.2	SDMA	2	1,2
	3.3	FDMA	2	1,2
	3.4	TDMA	2	1,2
	3.5	CDMA	2	1,2

References:

Sr.No	Name of Book	Writer	Publication
1	Mobile Communications Second Edition	Jochen Schiller	Pearson Education
2	Mobile Cellular Telecommunications Second Edition	William C.Y.Lee	Mc-Graw-Hill

UNIT-IV

Sr. No.	Telecommunication System		Lectures Required	Ref. No
4)	4.1	GSM	3	1,2
	4.2	DECT	3	1,2
	4.3	TETRA	3	1,2

References:

Sr. No	Name of Book	Writer	Publication
1	Mobile Communications Second Edition	Jochen Schiller	Pearson Education
2	Mobile Cellular Telecommunications Second Edition	William C.Y.Lee	Mc-Graw-Hill

UNIT-V

Sr. No.	Wireless LAN		Lectures Required	Ref. No
5)	5.1	Infra-red Vs radio transmission	2	1,2
	5.2	Infrastructure and analog Network	1	1,2
	5.3	IEEE 802.11	2	1,2
	5.3	HIPERLAN	2	1,2
	5.5	Bluetooth	2	1,2

References:

Sr. No	Name of Book	Writer	Publication
1	Mobile Communications Second Edition	Jochen Schiller	Pearson Education
2	Mobile Cellular Telecommunications Second Edition	William C.Y.Lee	Mc-Graw-Hill

UNIT-VI

Sr. No.	Mobile Network Layer		Lectures Required	Ref. No
6)	6.1	Mobile IP	3	1,2
	6.2	Dynamic Configuration Protocol	3	1,2
	6.3	Mobile ad-hoc Networks	3	1,2

References:

Sr. No	Name of Book	Writer	Publication
1	Mobile Communications Second Edition	Jochen Schiller	Pearson Education
2	Mobile Cellular Telecommunications Second Edition	William C.Y.Lee	Mc-Graw-Hill

Name of Course	B.C.A. Third Year
Semester	VI Semester
Name of Subject	Data Mining & Data Warehousing
Subject code	S6.CC.5 (Core Course Elective - II)

Prerequisites:
Basic Programming, Mathematics-Statistics, Database Concepts

Course Objectives:

- To introduce the basic concepts of Data Mining and Data Warehouse techniques.
- Examine the types of the data to be mined and apply preprocessing methods on raw data.
- Discover interesting patterns, analyse supervised and unsupervised models and estimate the accuracy of the algorithms.

Course Outcomes:
Students who complete this course should be able to

- Process raw data to make it suitable for various data mining algorithms.
- Discover and measure interesting patterns from different kinds of databases.
- Apply the techniques of clustering, classification, association finding, feature selection and visualization to real world data.

Salient Features:
Data mining helps in analyzing and summarizing different elements of information. Mining process is a form where in which all the data and information can be extracted for the purpose of future benefit. It helps in

- It helps to identify the shopping patterns
- Increases website optimization:
- It is beneficial for marketing campaigns:
- Determining customer groups:
- Increases brand loyalty:

UNIT-I

Sr. No.	**Introduction**		**Lectures Required**	**Ref. No**
1	1.1	Basic Data Mining task	1	1,2
	1.2	Data Mining Vs Knowledge discovery in databases	3	1,2
	1.3	Data mining metrics	3	1,2
	1.4	Social Implication of Data Mining	2	1,2

References:

Sr. No	**Name of Book**	**Writer**	**Publication**
1	Data Mining – Introductory and Advanced Topics	Margaret H. Dunham & S. Shridhar	Pearson Education
2	Data Warehousing Fundamentals	Paulraj Ponniah	

UNIT-II

Sr. No.	**Related Concepts**		**Lectures Required**	**Ref. No**
2)	2.1	Database/OLTP systems	1	1,2
	2.2	Information Retrieval	4	1,2

	2.3	Decision Support Systems	3	1,2
	2.4	Dimensional Modeling	1	1,2
	2.5	OLAP 2.6 Web Search Engines	3	1,2

References:

Sr. No	Name of Book	Writer	Publication
1	Data Mining – Introductory and Advanced Topics	Margaret H. Dunham & S. Shridhar	Pearson Education
2	Data Warehousing Fundamentals	Paulraj Ponniah	

UNIT-III

Sr. No.		Data Mining Techniques	Lectures Required	Ref. No
3)	3.1	Introduction.	1	1,2
	3.2	Statistical perspective on Data Mining	2	1,2
	3.3	Decision Tree	2	1,2
	3.4	Method Overloading	2	1,2
	3.5	Neural networks	3	1,2

References:

Sr. No	Name of Book	Writer	Publication
1	Data Mining – Introductory and Advanced Topics	Margaret H. Dunham & S. Shridhar	Pearson Education
2	Data Warehousing Fundamentals	Paulraj Ponniah	

UNIT-IV

Sr. No.		Classification	Lectures Required	Ref. No
4)	4.1	Introduction	2	1,2
	4.2	Statistical based algorithms	2	1,2
	4.3	Distance based algorithms Create Package	2	1,2
	4.4	Decision tree based algorithms	3	1,2
	4.5	Neural network based algorithm	2	1,2

References:

Sr. No	Name of Book	Writer	Publication
1	Data Mining – Introductory and Advanced Topics	Margaret H. Dunham & S. Shridhar	Pearson Education
2	Data Warehousing Fundamentals	Paulraj Ponniah	

UNIT-V

Sr. No.		Clustering	Lectures Required	Ref. No
5)	5.1	Introduction	1	1,2
	5.2	Hierarchical algorithms	1	1,2
	5.3	Partitional algorithms	1	1,2
	5.4	Clustering large databases	2	1,2

References:

Sr. No	Name of Book	Writer	Publication
1	Data Mining – Introductory and Advanced Topics	Margaret H. Dunham & S. Shridhar	Pearson Education
2	Data Warehousing Fundamentals	Paulraj Ponniah	

UNIT-VI

Sr. No.	Association Rules		Lectures Required	Ref. No
6)	6.1	Introduction	1	1,2
	6.2	Basic algorithms	1	1,2
	6.3	Parallel and distributed algorithms	1	1,2

References:

Sr. No	Name of Book	Writer	Publication
1	Data Mining – Introductory and Advanced Topics	Margaret H. Dunham & S. Shridhar	Pearson Education
2	Data Warehousing Fundamentals	Paulraj Ponniah	

Name of Course	BCA Third Year
Semester	VI Semester
Name of Subject	Enterprise Resource Planning
Subject Code	S6.CC.5 (Core Course Elective III)

Prerequisites:
Basic Programming, Mathematics-Statistics, Database Concepts

Course Objectives:

- To introduce the basic concepts of Enterprise Resource Planning.
- To introduce Business modeling and data modeling.
- To introduce ERP and related technologies such as OLAP, Data Mining, data ware housing etc.

Course Outcomes:
Students who complete this course should be able to

- Understand how to process row data to make it suitable for various decision Support Systems.
- Discover and measure ERP modules for manufacturing (CAD/ CAM).

Salient Features:

- ERP helps in analyzing and summarizing different elements of information. ERP process is a form where in which all the data and information can be extracted for the purpose of future benefit.
- Understand different ERP Modules, ERP – A Manufacturing Perspective and **ERP Market**

Unit – I

1.	**1. Introduction to ERP**		**Lectures**	**Ref. No.**
	1.1	Evolution of ERP	01	1
	1.2	What is ERP?	01	1
	1.3	Advantages of ERP	01	1

References:

Sr. No.	**Name of the Book**	**Author**	**Publication**
1.	Enterprise Resource	Alexis Leon	TATA McGraw Hill

Unit – II

2.	**Enterprise – An Overview**		**Lectures**	**Ref. No.**
	2.1	Integrated Management Information	01	1
	2.2	Business Modelling	03	1
	2.3	Integrated Data Model	03	1

References:

Sr. No.	Name of the Book	Author	Publication
1.	Enterprise Resource	Alexis Leon	TATA McGraw Hill

Unit- III

3.	ERP and Related Technologies		Lectures Require	Ref. No.
	3.1	BPR	01	1
	3.2	MIS	01	1
	3.3	DSS	01	1
	3.4	EIS		1
	3.5	Data Warehousing	03	1
	3.6	Data Mining	03	1
	3.7	OLAP	02	1
	3.8	Supply Chain Management	02	1

References:

Sr. No.	Name of the Book	Author	Publication
1.	Enterprise Resource	Alexis Leon	TATA McGraw Hill

Unit- IV

4.	ERP – A Manufacturing Perspective		Lectures Require	Ref. No.
	4.1	ERP	02	1
	4.2	CAD / CAM	01	1
	4.3	MRP and BOM	01	1
	4.4	Close loop MRP	01	1
	4.5	Manufacturing Resource Planning and Distribution Requirements Planning	02	1
	4.6	JIT and Kanban	02	1
	4.7	Data Management	02	1
	4.8	Benefits of PDM	02	1
	4.9	MTO and MTS	02	1
	4.10	ATO, ETO, CTO	03	1

References:

Sr. No.	Name of the Book	Author	Publication
1.	Enterprise Resource	Alexis Leon	TATA McGraw Hill

Unit V

5.	ERP Modules		Lectures Require	Ref. No.
	5.1	Finance	02	1
	5.2	Plant Maintenance	01	1
	5.3	Quality Management	02	1
	5.4	Materials Management	01	1

References:

Sr. No.	Name of the Book	Author	Publication
1.	Enterprise Resource	Alexis Leon	TATA McGraw Hill

Unit VI

6.	ERP Market		Lectures Required	Ref. No.
	6.1	Benefits of ERP	01	1
	6.2	SAP AG	01	1
	6.3	Oracle Corporation	01	1
	6.4	QAD	02	1

References:

Sr. No.	Name of the Book	Author	Publication
1.	Enterprise Resource	Alexis Leon	TATA McGraw Hill

Name of Course	B.C.A. Third Year
Semester	VI Semester
Name of Subject	SQL Server
Subject Code	S6.SEC.1 (SEC I)

Prerequisites:

- Basic knowledge of operating system & DBMS.

Course Objectives:

- To understand what is MS SQL Server & its uses.
- To understand basic SQL queries.
- To understand different numerical, string & date handling function.
- Implementation and representation of different type relations in table.
- To understand backup and restore procedure.
- To understand repairing database.
- To understand procedures and triggers

Course Outcomes:

- Detailed understanding of MS SQL Server database.
- Knowledge of writing SQL queries.
- Knowledge of DDL, DML, DCL commands
- Knowledge of maintaining relation between table and database normalization.
- Understanding different numerical, string handling and date handling function.

Salient Features:

- Able to use concept database normalization.
- Able to use maintaining relationship between tables and joining table.
- Able to use store procedure

1. Relational Database Systems
2. Planning the Installation and Installing SQL Server
3. SQL Server Management Studio
4. SQL Components
5. Data Definition Language
6. Queries
7. Modification of a Table's Contents
8. Stored Procedures and User-Defined Functions
9. System Catalog
10. Indices
11. Views
12. Security System of Database Engine
13. Concurrency Control
14. Triggers

Name of Course	B.C.A. Third Year
Semester	VI Semester
Name of Subject	Macromedia Flash
Subject Code	S6.SEC.1 (SEC II)

Prerequisites:

- Basic knowledge of operating system.

Course Objectives:

- To understand creating graphics in flash.
- To understand basics of animation.
- To understand basics of Action Script.
- To understand Events

Course Outcomes:

- Detailed understanding creating graphics and animations.
- Knowledge of writing Action Scripts.
- Knowledge of Creating animation movies
- Knowledge of Working with sounds and Videos

Salient Features:

- Able to design graphics and animations.
- Able to write Action Scripts for interactive animations.

1. Getting Started
    a. Introduction and Features of Macromedia Flash
    b. Creating Graphics in Flash
    c. Flash Animation
    d. Symbols, instance, and the Library
    e. Working with Sound and Video
2. ActionScript
    a. Introduction to ActionScript
    b. String, Numbers and Variables
    c. Arrays
    d. Statements and Expressions
    e. Functions
    f. The Movie Clip Object
    g. Events

Practical's List:

1. Creating Graphic in Flash
2. Creating Simple Animation
3. Working with Symbols and instances

4. Creating and Using Library
5. Creating animation with simple ActionScript
6. Working with String, Numbers and Variables
7. Working With Arrays
8. Creating animation using functions
9. Creating Simple Movies
10. Using Events in Flash Animations
11. Use 3 Key frames to create a color change effect
12. Use an Input Text and a Dynamic Text field to create a simple interaction
13. Use the above file and add a button to create a simple interaction
14. Use drawing tools and 4 key frames to create a simple animation.
15. Draw a rectangle and then use Motion Tween and Rotation to create an effect
16. Use a moving background and change the publish setting to create an

Class	B.C.A. Third Year
Semester	VI Semester
Name of Subject	Android Programming
Subject Code	S6.SEC.1 (SEC III)

Silent Features:
Android is a powerful Operating System supporting a large number of applications in Smart Phones. Android programming course teaches students how to develop applications for the Android operating system. This course is designed for students who are familiar to programming, and want to learn how to develop Android apps. They will learn how to create an Android project along with Android architecture and the key principles underlying its design.

Objectives:

- This course shall build a platform for students to start their own enterprise
- For Making Student Job Ready
- To gain an understanding of the processes that are involved in an Android developed application
- To become familiar with Android development tools and user interface.
- To understand Activity and Intends
- To understand SQLite Database.
- To Understand Web view control
- Ability to build Many simple apps that you can share with your friends

Utility of the course:

- Awareness of existing demanding trends in IT industry in order to get placement & research
- Understand the Android OS architecture.
- Install and use appropriate tools for Android development, including IDE, device emulator, and profiling tools.
- Understand the Android application architecture, including the roles of the task stack, activities, & services.
- Build user interfaces with fragments, views, form widgets, text input, lists, tables, and more.

Prerequisite:
Basic of Operating System covered in Semester I, Basic of Java Programming covered in Semester IV and Basic of Java Server Pages Covered in Semester V

UNIT I: Introduction
Installing Eclipse, Installing Android Development Tools for Eclipse, Installing Android Studio

UNIT II: Android Architecture
Android applications structure, creating a project, working with the AndroidManifest.xml, Activities

UNIT III: UI Architecture
Application context, Intents, Activity life cycle

UNIT IV: User Interface Widgets
Text controls, Button controls, Toggle buttons, Images, **Notification and Toast**

UNIT V: Menus, Dialogs and Animation
Options menu, Context menu, Dialogs, Animation

UNIT VI: Working with data storage and Publishing Apps
Shared preferences, Files access, SQLite database, publishing Apps

References:

1. Professional Android 4 Application Development, Edition 3, Reto Meier, Wrox John Wiley & Sons, 2012, ISBN 1118237226, 9781118237229.
2. Beginning Android 4 Application Development, Edition illustrated, Wei-Meng Lee, John Wiley & Sons, 2012, ISBN 1118240677, 9781118240670.
3. Sams Teach Yourself Android Application Development in 24 Hours, Edition illustrated, Lauren Darcey & Shane Conder, Sams Publishing, 2012, ISBN 0672335697, 9780672335693
4. https://developer.android.com/
5. https://www.tutorialspoint.com/android/
6. https://developer.android.com/guide/

Practical List:

1. Installing Eclipse and Android Studio
2. Study of Android Application structure.
3. Sample Apps for Working with AndroidManifest.xml
4. Sample Apps for Working with Activities.
5. Sample Apps for Working with Application Context
6. Apps for Demonstration of Intends
7. Apps for Demonstration of Activity Life Cycle.
8. Apps for demonstration of Buttons and Textbox.
9. Designing simple Calculator Apps
10. Sample Apps for Working with Images.
11. Sample Apps for Working with Notification and Toast.
12. Sample Apps for Demonstration of Context menu and Dialogs
13. Sample Apps for Working with SQLite Database.
14. Sample Apps for Demonstration of File Access.
15. Sample Apps for Demonstration of Shared preferences and Preferences activity

Name of Course	BCA Third Year
Semester	VI Semester
Name of Subject	Linux Administration
Subject code	S6.Lab.1

Silent Features:

Linux is a powerful, free and open source code Operating System available in market.it can be used for both purposes like desktop and server use.so from smartphones to cars, supercomputers and home appliances, the Linux operating system is everywhere. So by learning this subject student will capable, not only to learn the basic functions and task of operating system but also they can develop and release their own software on internet without any cost.

Objectives:

- This course shall build a platform for students to start their own enterprise
- For Making Student Job Ready
- To become familiar with open source software and user interface.
- To securely handle OS without any viruses and malwares.
- For easily use free software available on internet.
- To understand the basic operating system command.
- To understand the basic concept of Linux operating system administration

Utility of the course:

- Awareness of existing demanding trends in IT industry in order to get placement & research in open source market.
- Understand the Linux OS architecture.
- Install and use different types of distributions available in market.
- Understand the different Linux administration commands.
-

Prerequisite:

- Basics of Operating System covered in Semester I.

PRACTICAL List:

1) Introduction to Red Hat Linux.
2) Red Hat installation.
3) Simple commands in Linux
   (files and directory related commands-cat,cp,sort,touch,vi,mkdir,cd,rm ,rmdir, etc…)
4) Administrative commands in Linux
   (Commands requires root (#) prompt)
5) Communication Commands.(write,wall talk,mesg,prelogin,mesg,motd)
6) Backup and compression commands
7) Networking commands
8) Printing commands
9) DHCP configuration in Linux.
10) Working with shell scripting
11) Any 5 programs on shell scripting.

Name of Course	B.C.A. Third Year
Semester	VI Semester
Name of Subject	Software Testing
Subject Code	S6.Lab.2

Prerequisites:

- Adequate knowledge of programming languages.
- Adequate knowledge of Software engineering concepts.

Course Objectives:

- To develop software engineering skills and testing plans.
- To understand system concepts and its application in Software development.
- To enhance skills of designing and testing software.
- To learn technical skills to assure production of quality software.

Course Outcomes:

- Ability to learn various methods of software development.
- Ability to apply various software testing techniques

Salient Features:

- Improve your skills & build Confidence
- Ability to understand the problem and write test cases for software testing
- Lifelong learning and readily adapt to new software testing environments.

1. To study what is software testing.
2. To study Verification method.
3. To study validation method
4. To study Defect management process.
5. To study defect life cycle.
6. To study introduction to winrunner.
7. To study synchronization in Winrunner.
8. To study checkpoints in Winrunner.
9. To Study batch File mode in Winrunner .

Or

1. To study introduction to QTP.
2. To study synchronization in QTP.
3. To study checkpoints in QTP.
4. To Study working with regular Expression.
5. To study test director.

Name of Course	B.C.A. Third Year
Semester	VI Semester
Name of Subject	Seminar
Subject Code	S6.Lab 3

- Students have to prepare and present seminar on recent technologies with the help of guide.
- Students have to submit the seminar reports.