Name of Course	B.Sc. Computer Science (Third Year)
Semester	V Semester
Name of Subject	Windows Programming
Subject code	BCS-501

Course Objectives:

1. To learn and understand basic concepts of Windows Programming.
2. To learn basic C# programming.
3. To understand and work on desktop application development using C#.Net.
4. To expose students to current applications C#.Net.

Course Outcome:

1. Review the fundamental concepts of Windows Programming in C#.Net
2. Evaluate the logic of different programming concepts.
3. Evaluate the techniques of application development in windows environment.
4. To develop database connectivity application.
5. To evaluate different techniques to develop windows applications.

UNIT I

Sr. No.	Introduction	Lectures Required
1	Introduction to .Net Technology & Framework	1
2	Net Architecture	1
3	Common Language Runtime(CLR)	2
4	Visual Studio and IDE Components	1
5	Intellisense	1
6	Project Types	1
7	Java vs C#	1

UNIT II

Sr. No.	Windows Applications and Windows Controls	Lectures Required
1	Important Classes Used in Windows Application	1
2	Creating and Customizing Windows Form	2
3	TextBox and Label Control	1
4	Button, CheckBox and RadioButton	1
5	ListBox and ComboBox control	1
6	Menus and Dialog Boxes	2

UNIT III

Sr. No.	Functions, Arrays and Strings	Lectures Required
1	C# Function	1
2	Parameter Passing - Call by Value & Call by Reference	2
3	Out Parameter	1
4	Array and ArrayList class	2
5	Jagged Array	1
6	String Class	1
7	StringBuffer class	1

UNIT IV

Sr. No.	Properties, Indexers, Delegates & Events	Lectures Required
1	Properties	1
2	Indexers	2
3	Delegates	1
4	Multicast Delegates	2
5	Custom Events	1

UNIT V

Sr. No.	Namespace, interface & Exception handling	Lectures Required
1	Creating & using Namespace(DLL library)	1
2	Creating & using interface	2
3	Exception Handling using Try and Catch Block	1
4	Using Finally Block	2
5	Custom Exception	1

UNIT VI

Sr. No.	Database Connectivity	Lectures Required
1	Introduction ADO.Net	1
2	Advantages of ADO.Net	2
3	Developing a Simple ADO.NET Based Application	1
4	Retrieving & Updating Data From Tables	2
5	Disconnected Data Access Through Dataset Objects	2

Sr. No.	Database Connectivity	Lectures Required
1	Introduction ADO.Net	1
2	Advantages of ADO.Net	1
3	Developing a Simple ADO.NET Based Application	1
4	Retrieving & Updating Data From Tables	2
5	Disconnected Data Access Through Dataset Objects	2

Reference books:-

1 Programming in C# E Balagurusamy Mc Graw Hill
2 Visual C#.Net C Muthu Mc Graw Hill

Name of Course	B.Sc. (Computer Science) Third Year
Semester	V Semester
Name of Subject	Python
Subject code	BCS-502

Course objective:

1. To understand why Python is a useful scripting language for developers.
2. To define the structure and components of a Python program.
3. To understand programming constructs in Python.
4. To acquire Object Oriented Skills in Python
5. To develop the ability to write database applications in Python

Course Outcome:

After successful completion of this course, learner will be able to-

1. Write programs using Python programming constructs.
2. Design and Develop applications using Python programming.
3. Design object oriented programs with Python classes.
4. Use exception handling in Python applications for error handling.
5. Design and Develop applications connecting with database.

UNIT-I

Sr. No.	Introduction	Lectures Required
1	Getting Started - Introducing python,	1
2	Features of python	1
3	Python Interpreter , Installing python on windows	2
4	Meeting the interpreter, Writing your first program.	2

UNIT-II

Sr. No.	Data types, variables, expressions, statements and Control Structures	Lectures Required
1	Employing variables, Obtaining user input, Correcting Errors.	2
2	Performing operations-Doing arithmetic,	1

3	Assignment statements Assigning values, Comparing Values, Assessing logic.	2
4	Examining Conditions, Setting precedence, casting data types.	2
5	Branching with if, Looping while true, Looping over items, Breaking out of loops.	2
6	Working with List, Tuple, Set, Dictionary.	2

UNIT-III

Sr. No.	Strings and string operations, Modularization and Classes	Lectures Required
1	Manipulating strings, Formatting strings, Modifying stringsOperators (unary, arithmetic, etc.)	2
2	Accessing files, Reading and writing files, Updating file strings	2
3	Pickling data, Reading data from CSV/EXCEL file in python	1
4	Standard modules , Packages, Defining Classes	1
5	Defining functions ,Functions and arguments (signature)	1
6	Mathematical functions and constants (import math)	1

UNIT-IV

Sr. No.	Exceptions and data structures	Lectures Required
1	Data Structures (array, List, Dictionary)	1
2	Exception Raising ,Exception Handling ,Error processing.	2
3	Making statements - Writing lists, Manipulating lists, Restricting lists, associating list elements,	2

UNIT-V

Sr. No.	Object Oriented Design	Lectures Required
1	Programming types , Object Oriented Programming,	1
2	Inheritance and types of inheritance,	2
3	Polymorphism.	2

UNIT-VI

Sr. No.	Database Connectivity and Web	Lectures Required
1	Getting MySQL for python	1
2	Connecting with database	1
3	Passing Query to MySQL	1
4	Design and Implement any Database Application using Python	1
5	Introduction to web using flask.	1

Reference Books:

1. Learning Python Mark Lutz O'Reilly 5th edition
2. Starting Out with Python plus MyProgramming Lab Tony Gaddis Pearson eText --Access Card Package 3rd edition
3. MySQL for Python Albert Lukaszcwskc Packt publication 1st edition

Name of Course	B.Sc. Computer Science (Third Year)
Semester	VI Semester
Name of Subject	Data Science
Subject code	BCS-503

Course Objectives:

1. To learn and understand fundamental concepts of Data Science
2. To learn basic Data Science operations.
3. To understand and work on different algorithms for Data Science
4. To expose students to current applications and opportunities in Data Science emerging field.

Course Outcome:

1. Review the fundamental concepts of Data Science
2. Evaluate the techniques for better Data Science understanding.
3. Evaluate the techniques for perfect Data Analysis
4. To develop applications/algorithms in the field of Data Science
5. To evaluate different Data Science techniques & tools

UNIT I

Sr. No.	Introduction to Data Science	Lectures Required
1	Data Mining, classification, regression	1
2	Essential of algorithms and data structure	1
3	Data Visualization	2
4	Software Engineering trends and technique.	2

UNIT II

Sr. No.		Lectures Required
1	Data base & Data Warehousing	1
2	AI & ANN basic, Non-Scalable & Scalable data	2
3	Use of Statistics Methods & technique, Descriptive and Inferential statistics	2
4	Data Analysis, Hypothesis techniques	2

UNIT III

Sr. No.		Lectures Required
1	Introduction to data computational techniques conventional & modern	2
2	Artificial Intelligence, Machine learning big data, parallel Computing and algorithms	1
3	Managing Big Data and different techniques	2
4	Research Methodology basics and importance	2

UNIT IV

Sr. No.		Lectures Required
1	Basic introduction to Data Science	2
2	Various Applications of data Science	2
3	Importance of Data Science in Future	2
4	Data Analysis, techniques, Programming paradigm & algorithms, data structures	2

UNIT V

Sr. No.		Lectures Required
1	Data Mining V/S Data Science	1
2	Experimentation, Evaluation and Project Deployment Tools	2
3	Predictive Analytics and Segmentation using Clustering	2
4	Applied Mathematics and Informatics, Exploratory Data Analysis	1

UNIT VI

Sr. No.		Lectures Required
1	Optimization for Data Science, Data scientist roles and responsibilities,	1
2	Data acquisition and data science life cycle	2
3	Big Data Fundamentals and Hadoop Integration with R	1
4	Experimentation, Evaluation and Project Deployment Tools	2

Reference books:-

1. Foreman, Data Smart: Using Data Science to Transform Information into Insight, John Wiley
2. Fundamentals of mathematical statistics by Gupta and Kapoor
3. Database Design and Relational Theory: Normal Forms and All That Jazz by C.J. Date
4. Dunham, Data Mining: Introductory and Advanced Topics, Pearson

Name of Course	B.Sc. Computer Science (Third Year)
Semester	VI Semester
Name of Subject	Software Testing (Elective)
Subject code	BCS- 504A

Course Objectives:

i. To develop software testing skills and test plans execution skills.
ii. To understand software testing techniques and its application in Software development.
iii. To enhance skills of designing and testing software.
iv. To learn technical skills required for quality assurance of software.

Course Outcomes:

i. Ability to learn various methods of software development.
ii. Ability to apply various software testing techniques.
iii. Ability to evaluate cost of software testing.
iv. Ability to implement different software testing according to types of software.

UNIT I

Sr. No.	Quality concepts	Lectures Required
1	Concept of Quality	1
2	Software Quality	1
3	McCall's Quality Factors	1
4	ISO 9126 Quality Factors	1
5	Targeted Quality Factors	1
6	Cost of Quality , Quality and Security	1
8	Quality Control , Quality Assurance	1

UNIT II

Sr. No.	Software Quality Assurance	Lectures Required
1	Software Quality Assurance	1
2	Software Reviews and its type	2
3	Formal Technical Reviews	1

4	Software Reliability	1
5	Software Quality Assurance Plan	1

UNIT III

Sr. No.	SOFTWARE TESTING STRATEGIES	Lectures Required
1	A Strategic Approach to Software Testing	1
2	Unit Testing	1
3	Integration Testing	1
4	Validation Testing	1
5	System Testing	1
6	The Art Of Debugging	1

UNIT IV

Sr. No.	TESTING APPLICATION	Lectures Required
1	Software Testing Fundamentals	1
2	Internal and External Views of Testing	2
3	White-Box Testing	2
4	Basic Path Testing	1
5	Control Structural Testing	1
6	Black Box Testing	1

UNIT V

Sr. No.	WEBAPPS FOR TESTING	Lectures Required
1	Testing Concepts for WebApps	1
2	An Overview-The Testing Process	1
3	Content Testing	1
4	User interface Testing	1
5	Navigation Testing	1
6	Security Testing	1

UNIT VI

Sr.	PRODUCT METRICS	Lectures

No.		Required
1	A frame work for product metrics	1
2	Metrics for the requirements mode	2
3	Metrics for design mode	1
4	Metrics for source code	2
5	Metrics for testing	1

Reference books:-

1. Software Engineering –A Practitioner's approach, Sixth Edition, Roger S. Pressman, McGraw-Hill Higher Education; (1 August 2007),ISBN-10: 0077227808
2. Software Engineering –A Practitioner's approach, Fifth Edition, Roger S. Pressman, McGraw-Hill Higher Education; (1 August 2005)
3. Software Testing Concepts and Tools NageswaraRoo Dreamtech Publication

Name of Course	B.Sc. Computer Science (Third Year)
Semester	V Semester
Name of Subject	Basics of Linux (Elective)
Subject code	BCS-504 B

Course 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

Course Outcomes:

- 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 basic commands.

UNIT I

Sr. No.	Introduction to Linux	Lectures Required
1	Operating system,What is Linux, Advantages of Linux, Disadvantages of Linux,Distributions of Linux	2
2	Functions of Operating system ,History and development of of Linux, Features of Linux	2
3	Installation steps of Linux	2
4	Difference between Linux and Windows, Difference between Linux and Unix	2

UNIT II

Sr. No.	Handling Linux Environment	Lectures Required
1	Basic Commands, Linux standard directories,Hardware requirement for linux	2
2	Commands for files and directories,File processing commands,Mathematical Commands	2
3	Login,Logout and Remote Login,different GPU (cal,date,wc,who)	1
4	Basic filters –head,tail,sort,grep,different options and expressions for grep	2

UNIT III

Sr. No.	Linux boot process	Lectures Required
1	Boot Loaders (LILO and GRUB),System Initiazation	2
2	inittab	1
3	rc.sysinit,rc	1
4	Printing files: Print Spool directory,sending files to Printer	1

UNIT IV

Sr. No.	VI Editors	Lectures Required
1	Editors,use of VI,features of Vi	2
2	VI basics,Different modes and working with VI	1
3	Command mode-Curser movements(k,j,h,I),delete(character,line,word),Screen up,down use of repeat factor,Joining lines(J)	1
4	Input Mode-switching with (I,o,r,s,a,I,O,R,S) Ex mode-saving(w,x,q),writing selecting lines to another	2

UNIT V

Sr. No.	Sharing Files with Other users	Lectures Required
1	Maintaining User accounts,changing password,creating group Accounts,Granting access to files,Changing file ownership	2
2	Protecting files,making a file readonly,	1
3	Free command and top utility	2

4	working with processes: types of process,ps Command,Creating process,killing process	2

UNIT VI

Sr. No.	Managing Disk space	Lectures Required
1	Df,du commands,creating Additional free disk space,Locating unused files,Setting system clock	2
2	Communication utility:who,who am I,finger,mesg,write,wall,talk	1
3	Creating a message of the day,X windows System	2
4	Graphical user interface: KDE and GNOME Desktop Envionment	2

Reference book:-

1) LINUX complete reference by Richard Peterson
2) RedHalt Linux 718 by billball,David Pitts
3) Unix concept and applications by Sumitabha Das
4) Fedora 7 Unleashed by Andrew Hudson and Paul Hudson (SAMS publication)

Name of Course	B.Sc. Computer Science (Third Year)
Semester	VI Semester
Name of Subject	System Analysis and Design(SAD)—Open elective
Subject code	BCS-505 B

Course Objective :-

1. System analysis helps in discovering means to design systems.
2. System analysis helps in discovering sub-system may have apparently conflicting objectives.
3. It helps in achieving inter compatibility and unity of purpose of sub-systems.
4. It offers a means to create understanding of the complex structures
5. It helps to understand writing system proposals, system development scheduling, and cost-benefits analysis etc. also dealing with quality assurance

Course Outcome :-

1. To learn basic things of systems, System development Life cycle, and System Analyst.
2. To determine specific needs of system.
3. Discuss approaches and tasks of system. Planning for developing system
4. Evaluate tools and techniques.
5. Use appropriate methods and techniques to design software.
6. Implementation of Developed System, Evaluation and Testing of system.

UNIT I

Sr. No.	Introduction	Lectures Required
1	System Definition, Characteristics.	2
2	Elements and Types of system, Need of System Analysis and design.	2
3	Role and Qualities of System Analyst	2
4	System Development Life Cycle.	1

UNIT II

Sr. No.	Feasibility Study	Lectures Required
1	Project Initiation, Feasibility study	2
2	Ascertaining HW/SW needs, Criteria for HW/SW selection	2
3	Make v/s Buy Decision	2
4	Cost Benefit Analysis.	1

UNIT III

Sr. No.	Decision Modules & Scheduling	Lectures Required
1	Structured Analysis tools- DFD, Data Dictionary	2
2	Decision Tree, Decision Table, Structured English, Activity planning control	2
3	Activity Diagrams, Case modeling, UML, Class Diagram. System Proposal	2
4	Project Scheduling, Information Gathering Tools- Interviews, Questionnaire, JAD, Prototyping.	2

UNIT IV

Sr. No.	Tools for System Analysis	Lectures Required
1	Data Flow Diagram (DFD), Logical and Physical DFDs	2
2	Developing DFD; System Flowcharts and Structured charts	2
3	Structured English, Decision trees and Decision tables.	2

UNIT V

Sr. No.	Design & Implementation	Lectures Required
1	System Design, Input/output Design, From Design	2
2	From Design, Database Design, File organization, System Implementation Plan	2
3	Activity Network for Conversion, Combating Resistance to Change, System Testing,	2
4	Test Plan AND test data, Types of System Test, Quality Assurance, Documentation.	2

UNIT VI

Sr. No.	System Security and Audit	Lectures Required
1	System Security, Security Threats	2
2	Risk Analysis, Control measures	2
3	System Audit, Disaster Recovery Planning	2

Reference Books :-

- 1. System Analysis and Design- Kendall and Kendall, Pearson Education, Inc., Prentice Hall.

2. System Analysis and Design- E. M. Awad, Galgotia Publications Pvt. Ltd

3. Modern System Analysis and Design - Jeffrey A. Hoffer, Prentice-Hall, Inc.

4. System Analysis & design -Perry Edwards, Mc Graw Hill

Name of Course	**B.Sc. CS Third Year**
Semester	**VI**
Name of Subject	**Mobile Application Development**
Subject Code	**BCS-601**

Course 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

Course Outcome:

- 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.

UNIT I

I	**FUNDAMENTALS MOBILE PROGRAMMING**		**Lectures Required**
	1.1	Introduction to Mobile Programming	1
	1.2	Android: An Open Platform for Mobile Development	1
	1.3	Overview of the Operating Systems used on different mobile devices	1
	1.4	Android Operating System, Its Features and Versions	1
	1.5	Android Development Tools	1
	1.6	Introducing the Development Framework	1
	1.7	Installing Android Studio	2

UNIT II

II	ANDROID ARCHITECTURE		Lectures Required
	2.1	Android Stack	1
	2.2	Android applications structure	2
	2.3	Creating a project	1
	2.4	Configuring the Android Manifest File	1
	2.5	Understanding Activities	1
	2.6	Understanding the Components or layouts of a Screen	2

UNIT III

III	ACTIVITIES, FRAGMENTS, AND INTENTS		Lectures Required
	3.1	Understanding Activities	1
	3.2	Intents	2
	3.3	Linking Activities Using Intents	1
	3.4	Activity life cycle	1
	3.5	Fragments	1

UNIT IV

IV	BUILDING USER INTERFACES		Lectures Required
	4.1	Text controls	1
	4.2	Button controls	2
	4.3	Toggle buttons	1
	4.4	ImageButton, RadioButton, and RadioGroup Views, ProgressBar View , AutoCompleteTextView View	1
	4.5	TimePicker View, DatePicker View	1
	4.6	AnalogClock and DigitalClock Views	1
	4.7	WebView	1
	4.8	Toast notifications	1

UNIT V

V	MENUS, SMS &LOCATION-BASED SERVICES		Lectures Required
	5.1	Localization	1

	5.5	Creating the Helper Methods, Options menu and Context menu	1
	5.3	Dialogs- Alert dialog	1
	5.4	SMS Messaging	1
	5.5	Using a Content Provider	1
	5.6	Lists view	1
	5.7	Displaying Maps , Getting Location Data	2
	5.8	Monitoring a Location using GPS	1

UNIT VI

VI	**WORKING WITH INTERNET, DATABASES AND PUBLISHING APPS**		**Lectures Required**
	6.1	Shared preferences	1
	6.2	Downloading and Parsing Internet Resources, Using the Download Manager.	1
	6.3	Files access	2
	6.4	Introducing Android Databases, Introducing SQLite, Content Values and Cursors, Working with SQLite Databases.	3
	6.5	Preparing for publishing	1
	6.6	Publishing to the Android Market	2

Reference Books:-

1 Professional Android 4 Application Development, Edition 3 Reto Meier Wrox Publication

2 Beginning Android 4 Application Development, Edition illustrated Wei-Meng Lee, John Wiley & Sons WroxPublication

3 Sams Teach Yourself Android Application Development in 24 Hours, Edition illustrated Darcey& Shane Conder Sams Publishing

Name of Course	B.Sc. Computer Science (Third Year)
Semester	VI Semester
Name of Subject	Fundamentals of Image Processing
Subject code	BCS-602

Course Objectives:

1 To learn and understand fundamental concepts of digital image processing.
2 To learn basic image processing operations.
3 To understand and work on different image analysis algorithms
4 To expose students to current applications of digital image processing system.

Course Outcome:

1 Review the fundamental concepts of digital image processing system.
2 Evaluate the techniques for image enhancement.
3 Evaluate the techniques for Image restoration.
4 To develop color based image processing applications.
5 To evaluate different filtering method.

UNIT I

Sr. No.	Introduction	Lectures Required
1	Introduction to Digital image processing	1
2	Applications of image processing	1
3	Fundamental steps in digital image processing	2
4	Elements of visual perception, Brightness, Discrimination and adaptation	2

UNIT II

Sr. No.	Introduction to Digital Image Representation	Lectures Required
1	Components of an image processing system	1
2	Representing digital images, co-ordinate convention system,	2

	Matrix representation,	
3	Reading, displaying and writing of images	2
4	Data class, Image types, sampling and quantization	2

UNIT III

Sr. No.	Color Image Processing	Lectures Required
1	Color fundamentals, Basics of full color image processing,	2
2	Color models and color spaces,	1
3	RGB color model, HSV color model, CMY color model,	2
4	Pseudo color image processing, Color image representation, MATLAB functions for color model conversions.	2

UNIT IV

Sr. No.	Intensity Transformation and spatial filtering techniques	Lectures Required
1	Background, basic intensity transformation function using imadust()	2
2	Histogram processing and function plotting, histogram equalization, histogram type	2
3	Fundamentals of filtering, neighbourhood,	2
4	Linear spatial filtering, Non linear spatial filtering, fspecial() and imfilter().	2

UNIT V

Sr. No.	Image Restoration	Lectures Required
1	A model of image degradation and restoration process	1
2	Noise models	2
3	Geometric transformation function, image registration.	2
4	Restoration techniques.	1

UNIT VI

Sr. No.	Introduction to MATLAB	Lectures Required
1	Advantages and disadvantages of MATLAB	1
2	Using MATLAB scratch pad, MATLAB environment	2
3	Variables and arrays, scalar and array operation,	1
4	MATLAB operator, Multidimensional array, Introduction to M function programming.	2

Reference books:-

1. Digital Image Processing using MATLAB R.C. Gonzalez, R.E.Woods and S.L.Eddins Second Edition, Pearson Education.
2. Fundamentals of Image Processing A.K. Jain PHI publication.
3. MATLAB Programming for Engineers Stephen J. Chapman Third Edition, Thomson Learning.

Name of Course	B.Sc. Computer Science (Third Year)
Semester	VI Semester
Name of Subject	Software Process Management (Elective)
Subject code	BCS-604 A

Course Objectives:

1.To develop software engineering skills and Project plans.

2.To understand system concepts and its application in Software development.

Course Outcomes:

1. Learn various methods of software development.
2. Apply various software testing techniques.

UNIT I

Sr. No.	Introduction to Software Engineering	Lectures Required
1	The Evolving Role of Software	1
2	Software Characteristics	1
3	Categories of Computer Software	1
4	The Software Myths	2

UNIT II

Sr. No.	Software Engineering	Lectures Required
1	SoftwarevEngineering	1
2	S/W Engineering – A layered Technology	1
3	What is software process	1
4	Umbrella activities	2
5	Process pattern	1

UNIT III

Sr. No.	Process Models	Lectures Required
1	A generic process Model	2
2	Waterfall Model	1

3	Incremental Process Model	1
4	Evolutionary Process Model	1
5	Prototype Model	1
6	Spiral Model	1

UNIT IV

Sr. No.	Software Process	Lectures Required
1	The capability Maturity Model Integration(CMMI)	1
2	Personal and Team Process Model	1
3	Personal Software Process	1
4	Team Software Process	1
5	Process Technology	1
6	Product and process	1
7	Software process assessment	1

UNIT V

Sr. No.	Agile Development	Lectures Required
1	What is Agility?	1
2	What is an agile process?	1
3	Agility Principles	1
4	Extreme programming	2
5	The XP process	1
6	Scrum	1

UNIT VI

Sr. No.	Project Management	Lectures Required
1	The management Spectrum	2
2	The process	1
3	Melding the Product and the Process	2
4	Process Decomposition	2
5	The project	1

Reference book:-

1. Software Engineering –A Practitioner's approach, Sixth Edition, Roger S. Pressman, McGraw-Hill Higher Education; (1 August 2007),ISBN-10: 0077227808
2. Software Engineering –A Practitioner's approach, Fifth Edition, Roger S. Pressman, McGraw-Hill Higher Education; (1 August 2005)
3. Software Engineering 7th / 8th Edition, IAN Sommerville Pearson Edition

Name of Course	B.Sc. Computer Science (Third Year)
Semester	VI Semester
Name of Subject	Linux Administration (Elective)
Subject code	BCS-604 B

Course 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

Course Outcomes:

- 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.

UNIT I

Sr. No.	System Administration	Lectures Required
1	Managing User Accounts, Managing Groups.	2
2	Managing Users, Managing Permissions	2
3	Managing Passwords	1
4	Granting System Administrator Privileges to Regular Users , Disk Quotas	2

UNIT II

Sr. No.	Automating Tasks	Lectures Required

1	Running Services at Bootup:- Beginning the Boot Loading Process, Booting into the Default Run level,	2
2	Understanding init Scripts and the Final Stage of Initialization, Controlling Services at Boot with Administrative Tools	2
3	Starting and Stopping Services Manually	1
4	Scheduling Tasks	2

UNIT III

Sr. No.	System-Monitoring Tools	Lectures Required
1	Console-Based Monitoring, Using the kill Command to Control Processes	2
2	Using Priority Scheduling and Control.,	1
3	Graphical Process and System Management Tools	1
4	KDE Process- and System-Monitoring Tools	1

UNIT IV

Sr. No.	Backing Up	Lectures Required
1	Choosing a Backup Strategy ,	2
2	Choosing Backup Hardware and Media	1
3	Using Backup Software	1
4	Copying Files.	1

UNIT V

Sr. No.	Networking and TC/IP	Lectures Required
1	Using Network Configuration Tools	2
2	Advanced Wireless Networking	1
3	Dynamic Host Configuration Protocol . .	2
4	Setting Up a Telnet Server, Setting Up an SSH Server	2

UNIT VI

Sr.	Server & Printer Management	Lectures

No.		Required
1	Installing the Apache Server, Starting and Stopping Apache	2
2	Using the Network File System	1
3	Putting Samba to Work:- Configuring Samba with system-config-samba, Configuring Samba with SWAT,	2
4	Configuring and Managing Print Services, Creating Network Printers ,Creating and Configuring Local Printers ,	2

Reference book:-

5) Fedora 7 Unleashed by Andrew Hudson and Paul Hudson (SAMS publication)

Name of Course	B.Sc. Computer Science (Third Year)
Semester	VI Semester
Name of Subject	Networking Essentials
Subject code	BCS-605 B (Open elective)

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.

UNIT-I

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

UNIT-II

Sr. No.	LAN Hardware		Lectures Required
2)	2.1	Network Interface card	1
	2.2	Ethernet Technology 10 Base 2 & 10Base 5, 10 Base T	2
	2.3	Network Device Router & Switch	1
	2.4	Repeaters	2
	2.5	Wireless LAN	1

UNIT-III

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

UNIT-IV

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

UNIT-V

Sr. No.	Introduction to Network Security		Lectures Required
5)	5.1	Network Security Overview and Policies .	2
	5.2	Network Security Devices	1
	5.3	Protecting Networks with Firewalls, Using Intrusion Detection and Prevention Systems	2
	5.3	Protecting a Network from Malware- Viruse, Worms	2
	5.5	Spyware and Spam, Malware Protection	2

UNIT-VI

Sr. No.	Wide Area Networking and Cloud Computing		Lectures Required
6)	6.1	Wide Area Network Fundamentals-WAN Devices	1
	6.2	WAN Connection methods- Circuit-Switched WANs	1
	6.3	Leased Lines, Packet-Switched WANs	2
	6.4	WANs over the Internet	2
	6.5	Cloud Computing	1

References Books :

1. Computer Networks Andrew S. Tanenbaum Prentice Hall
2. Guide to Networking Essentials (Seventh Edition) Greg Tomsho Cengage Learning
3. CCNA ICND2 (Third Edition) Wendell Odom Cisco Press
4. Data and Computer Communications Stallings Pearson Education