SOLAPUR UNIVERSITY, SOLAPUR

BACHELOR OF COMPUTER APPLICATIONS

(B.C.A. III Sem-V and VI)

CGPA Syllabus- June 2016

BCA Semester- V Subjects

Paper Name: Advanced Java- I

Paper Code: 501

TLM	Hrs	Credit	AM	Min	Max	AT	Min	Max	Evaluation System
Lecture	4	4	Theory		100	UA	28	70	Marks System
						CA	12	30	Marks System

Paper Name: Visual Programming

Paper Code: 502

TLM	Hrs	Credit	AM	Min	Max	AT	Min	Max	Evaluation System
Lecture	4	4	Theory		100	UA	28	70	Marks System
						CA	12	30	Marks System

Paper Name: Linux & Shell Programming

Paper Code: 503

TLM	Hrs	Credit	AM	Min	Max	AT	Min	Max	Evaluation System
Lecture	4	4	Theory		100	UA	28	70	Marks System
						CA	12	30	Marks System

Paper Name: Introduction to Data Mining & Warehousing

Paper Code: 504

TLM	Hrs	Credit	AM	Min	Max	AT	Min	Max	Evaluation System
Lecture	4	4	Theory		100	UA	28	70	Marks System
						CA	12	30	Marks System

Paper Name: Management Information System

Paper Code: 505

TLM	Hrs	Credit	AM	Min	Max	AT	Min	Max	Evaluation System
Lecture	4	4	Theory		100	UA	28	70	Marks System
						CA	12	30	Marks System

Paper Name: Lab Course - 5

Practical Paper-I based on Paper Code BCA503 50 marks
Mini Project work based on Paper Code BCA501, BCA502 50 marks

Paper Code: 506

TLM	Hrs	Credit	AM	Min	Max	AT	Min	Max	Evaluation System
Practical	4	4	Practical		100	UA	--	--	Marks System
						CA	40	100	Marks System

BCA Semester-VI Subjects

Paper Name: Advanced Java- II

Paper Code: 601

TLM	Hrs	Credit	AM	Min	Max	AT	Min	Max	Evaluation System
Lecture	4	4	Theory		100	UA	28	70	Marks System
						CA	12	30	Marks System

Paper Name: Software Project Management

Paper Code: 602

TLM	Hrs	Credit	AM	Min	Max	AT	Min	Max	Evaluation System
Lecture	4	4	Theory		100	UA	28	70	Marks System
						CA	12	30	Marks System

Paper Name: Cyber Laws and Security Control

Paper Code: 603

TLM	Hrs	Credit	AM	Min	Max	AT	Min	Max	Evaluation System
Lecture	4	4	Theory		100	UA	28	70	Marks System
						CA	12	30	Marks System

Paper Name: Web technology- III

Paper Code: 604

TLM	Hrs	Credit	AM	Min	Max	AT	Min	Max	Evaluation System
Lecture	4	4	Theory		100	UA	28	70	Marks System
						CA	12	30	Marks System

Paper Name: Lab Course- 6 based on Paper Code BCA604

Paper Code: 605

TLM	Hrs	Credit	AM	Min	Max	AT	Min	Max	Evaluation System
Practical	4	4	Practical		50	UA	--	--	Marks System
						CA	20	50	Marks System

Paper Name: Major Project Work

Paper code: 606

TLM	Hrs	Credit	AM	Min	Max	AT	Min	Max	Evaluation System
Practical	4	4	Practical		150	UA	32	80	Marks System
						CA	28	70	Marks System

Abbreviations: TLM – Teaching Learning Method; AM – Assessment Method; AT: Assessment Type; UA – University Assessment; CA – College Assessment; Hrs- Contact Hours per Week; Min – Minimum Marks; Max – Maximum Marks

A Student who failed in University Examination (Theory) & Passed in internal assessment of a same paper (subject) shall be given FC Grade Such student will have to appear for University Examination only.

A Student who fails in Internal Assessment and passed in University examination

(Theory) shall be given FR Grade. Such student will have to appear for both University

Examination as well as internal assessment.

Passing Criteria:

- **The candidate will be allowed to carry all students for next semester.**
- **However while going to fifth semester a candidate should clear all subject of first year.**

Credit System Structure for B.C.A- III Semester- V

Paper Code	Name Of Subject	Hrs / Week			Paper Marks	UA	CA	Credits	Total
		L	T	P					
501	Advanced Java- I	4	-	-	100	70	30	4	
502	Visual Programming	4	-	-	100	70	30	4	
503	Linux & Shell Programming	4	-	-	100	70	30	4	
504	Introduction to Data Mining & Warehousing	4	-	-	100	70	30	4	
505	Management Information System	4	-	-	100	70	30	4	
506	Lab Course -5 Practical Paper-I based on Paper Code BCA503 Mini Project work based on Paper Code BCA501, BCA502	-	-	4	100	-	50 50	4	
	Total	20	-	4	600			24	24 credits

Credit System Structure for B.C.A- III Semester -VI

Paper Code	Name Of Subject	Hrs/Week			Paper Marks	UA	CA	Credits	Total
		L	T	P					
601	Advanced Java- II	4	-	-	100	70	30	4	
602	Software Project Management	4	-	-	100	70	30	4	
603	Cyber Laws and Security Control	4	-	-	100	70	30	4	
604	Web technology-III	4	-	-	100	70	30	4	
605	Lab Course- 6 based on Paper Code BCA604	-	-	4	50	--	50	4	
606	Major Project Work	-	-	4	150	80	70	4	
Total		16	-	8	600			24	24 Credits
BCA-III									
Sem- V					600			24	24
Sem- VI					600			24	24
Total					1200			48	48 credits

Abbreviations: L: lectures, T: Tutorials, P: Practical; UA: University Assessment by End

Semester Examination; CA: College assessment by Internal Continuous Examination; UA(University Assessment): University Theory paper shall be of 70 marks for 3.00 hrs duration; CA(College Assessment): The internal examination for Theory and Practical course.

Internal Evaluation

The internal evaluation will be of 30 marks which will consists of following heads. The internal evaluation should be done accordingly and marks should be send to university.

Internal	Marks
Attendance	05 Marks
2 Class & 2 Home Assignments	10 Marks
Seminar/ Group Exercise	10 Marks
Mid Test	05 Marks
Total	**30 Marks**

8. Standard of Passing:

The student has to secure a minimum of 4.0 grade points (Grade C) in each paper. A student who secures less than 4.0 grade point (39% or less marks, Grade FC/FR) will bedeclared fail in that paper (subject) and shall be required to reappear for respective paper.

A student who failed in University Examination (Theory) & passed in internal assessment of a same paper (subject) shall be given FC Grade. Such student will have toappear for University Examination only.

A student who fails in Internal Assessment and passed in University examination (Theory) shall be given FR Grade. Such student will have to appear for both University examination as well as internal assessment.

Passing Criteria:

- The candidate will be allowed to carry all subjects for next semester.
- However while going to fifth semester a candidate should clear all subjects of first year.

SOLAPUR UNIVERSITY, SOLAPUR.

Revised Syllabus and Structure of the

Bachelor of Computer Applications (BCA)

1. Title :

The degree shall be titled as Bachelor of Computer Applications (BCA)

2. Objectives of the course:

This is a three years bachelor degree course in computer applications aimed at developing computer professional versatile in use of computers mostly in business world. The emphasis is to have generality of developing professionals as programmer, system analysts, database administrators, documentation officer etc.

3. Duration:

i) The course shall be a full time course.

ii) The duration of course shall be three years.

iii) The course shall be run on self-supporting basis.

4. Number of Students:

A batch shall consist of not more than 60 students.

5. Eligibility:

i) A candidate for being eligible for admission to the Degree Course in Computer. Candidate shall have passed XII std. Examination of the Maharashtra Board of Higher Secondary Education or its equivalent or any Diploma of not less than two years.

ii) A candidate has to appear for a common entrance test to be conducted by respective college for getting admission to this course.

1 Percentage at HSC – 100

2. Percentage at entrance – 100

200

The merit list will be prepared on the basis of percentage of HSC and percentage at entrance examination. Students will be admitted on the basis of Merit list.

6. Medium: The medium of instruction and examination will be only English.

a) Details of Internal examination

Attendance - 5 Marks

Assignment – 10 Marks (2 home and 2 Class assignments)

Mid-test - 5 Marks

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20 Marks

b) Marks of Lab course and mini project will be given by the concerned college. On the basis of evaluation by the internal teacher.

c) Original Report and Viva-Voce:

Project Report will be assessed by the internal teacher at the end of sixth semester out of 70 marks and there will be viva-voce examination of 80 marks. The panel of examiners will consist of one internal and one external appointed by university.

Standard of Passing:

A candidate must obtain minimum 40% marks for passing in each university examination paper, internal examination, Lab course, Mini and Major Project.

i) Class will be awarded on the basis of marks obtained by the candidate in all the six semester examination.

ii) Candidate who has secure 40% marks in each head of internal credit and semester examination shall be declared to have passed in the paper.

iii) A candidate who fails in any particular theory papers shall be allowed to reappear for that theory paper. However, his/her internal credit marks shall be carrying forwarded.

Award of Class:

Class should be awarded to the students of BCA on the basis of aggregate marks in the six semesters.

The award of class shall be as under:

Aggregate 70% and above	First class with distinction,
Aggregate 60% and above	First Class But less than 70%,
Aggregate 50% and above	Second Class But less than 60%
Aggregate 40% and above	Pass Class But less than 50%

BCA- III (SEMESTER-V)

Paper Code: BCA501

Advanced Java- I

Max. Marks: 100

External Assessment: 70

Internal Assessment: 30

Objectives:

1) To introduce JDBC and XML.
2) To introduce Applet application.
3) To introduce web application using Servlet.

Contents of Paper

Unit No.	Name of Topic	Details	Lectures/ Periods
1	**JDBC**	➢ Introducing JDBC: ➢ Describing Components of JDBC ➢ Features of JDBC ➢ JDBC Architecture: ➢ Types of Divers: ➢ Advantages and disadvantages of Drives ➢ Use of Drivers ➢ JDBC Statement and Methods: ➢ Statement ➢ PreparedStatement ➢ CallableStatement ➢ execute() ➢ executeQuery() ➢ executeUpdate() ➢ Working with Resultset interface ➢ Working with Resultset with metadata.	12
2	**Applet**	➢ Introducing Applet: ➢ What is Applet ➢ Types of Applet ➢ Use of Applet ➢ Applet life Cycle ➢ Skeleton Applet: ➢ Initialization ➢ Termination ➢ Applet HTML tag:	10
3	**XML**	➢ XML introduction ➢ XML use ➢ XML tree	8

		➢ XML Attributes ➢ XML Elements ➢ XML validation ➢ XML CSS ➢ XML Http request ➢ XML in HTML ➢ XML Application	
4	**Servlet**	➢ Introducing CGI ➢ Introducing Servlet ➢ Advantages of Servlet over CGI ➢ Features of Servlet ➢ Introducing Servlet API ➢ Javax.servlet package ➢ Javax.servlet.http package ➢ Introducing Servlet ➢ Advantages of Servlet over CGI ➢ Features of Servlet ➢ Servlet life Cycle ➢ Init() ➢ Service() ➢ Destroy() ➢ Working with GenericServlet and HttpServlet ➢ RequestDispatcher interface ➢ Include() and forward() ➢ Use of RequestDispatcher ➢ Session in Servlet ➢ Introducing session ➢ Session tracking mechanism ➢ Cookies ➢ Advantages & disadvantages ➢ use of cookies ➢ Hidden form filed ➢ Advantages & disadvantages ➢ use of Hidden form filed ➢ URL rewritten ➢ disadvantages ➢ use of URL rewritten ➢ HttpSession ➢ Advantages & disadvantages ➢ use of URL HttpSession	18

Reference Books:

1. "JDBC, Servlet and JSP Black Book"- Santosh Kumar K.
2. "Java EE Server programming"- Sharanam Shah and Vaishali Shah.
3. "Java Server Programming Black book"
4. "Learning XML"- Erik T. Roy

Paper Code: BCA502
Visual Programming

Max. Marks: 100

External Assessment: 70

Internal Assessment: 30

Objectives:

1) To introduce .Net framework.
2) To introduce C# as OOP language.
3) To understand Event driven programming in C#.
4) To understand working with windows forms.

Contents of Paper

Unit No.	Name of Topic	Details	Lectures/ Periods
1	**Introduction to Dot.Net Framework**	➢ History and Overview of Dot.Net framework ➢ Framework Components and Versions	2
2	**Language Basics**	➢ C# Language ➢ C# Language elements ➢ Data types -Reference Type and Value Type ➢ Boxing and Unboxing ➢ Enum and Constant ➢ Operators ➢ Control Statements ➢ Working with Arrays and Strings ➢ Parameter passing technique: Pass by value and by reference, out parameters, Variable length parameter	6
3	**Implementation of Object Oriented Concept using C#**	➢ Object oriented concepts ➢ Working with Indexer and Properties ➢ Constructor & Destructor ➢ Working with "static" Members ➢ Inheritance & Polymorphism - Types of Inheritance - Constructor in Inheritance - Interface Implementation - Operator and method Overloading and overriding - Static and Dynamic Binding and Virtual Methods - Abstract Class, sealed keyword	6

4	**Exception Handling**	➢ What is Exception ➢ Rules for Handling Exception ➢ Exception classes and its important properties ➢ Understanding & using try, catch keywords ➢ Throwing exceptions ➢ Importance of finally block ➢ Writing Custom Exception Classes	6
5	**Using I/O Class**	➢ Streams Class ➢ Text Stream and Binary Stream ➢ System.IO and Base classes of Stream ➢ Console I/O Streams ➢ Working with File System -File ,FileInfo, Directory ,DirectoryInfo classes	4
6	**Delegates & Events**	➢ Introduction of Delegation ➢ Types of delegate ➢ Anonymous Methods ➢ What is Events? ➢ Multicast Events ➢ Lambda Expression	4
7	**Collections and Generics**	➢ Importance of IList and IDictionary. ➢ Collection classes: ArrayList,Hashtable,stack,queue. ➢ Writing custom generic classes. ➢ Working with Generic Collection Classes.	4
8	**Working with Components / Assemblies**	➢ What is a DLL? How it is different from EXE? ➢ Types of DLL ➢ About Assemblies ➢ Types of Assemblies- Private Assemblies, Shared Assemblies ➢ How to build a ClassLibrary? ➢ Creating Assemblies	6
9	**Multithreading**	➢ Multithreading Fundamentals ➢ Thread Class ➢ Creating and Managing Threads ➢ Threads Priority ➢ Thread Synchronization ➢ Suspending, Resuming and Terminating threads	6
10	**WinForms**	➢ Introduction ➢ Controls: Common control Group, Data control Group, Dialog control Group, Container control Group ➢ Menus and Context Menus: Menu Strip, Toolbar Strip. ➢ SDI and MDI Applications	6

		➢ Developing Custom, Composite and Extended Controls ➢ WPF ➢ Developing WPF application	
11	**Data Access using ADO.NET**	➢ Evolution of ADO.NET ➢ Connected and Disconnect Classes ➢ Establishing Connection with Database ➢ Executing simple Insert, Update and Delete Statements ➢ DataReader and DataAdapter ➢ What is Dataset? ➢ Advantages of DataSet ➢ Working with DataRelation ➢ Prepared Statements ➢ Stored Procedures ➢ Master Detail Form	6
12	**Windows Services**	➢ Purpose and Advantage ➢ Developing and Deploying ➢ Debugging Widows Service	4

Reference Books:

1. "Programming C#"- Jesse Liberty , O'Reilly Press.
2. "Professional C#"-Robinson et al, Wrox Press, 2002.
3. "The Complete Reference: C#"-Herbert Schildt, Tata McGraw Hill.
4. "The Complete Reference: Ado.Net"- Jerke, Tata McGraw Hill.
5."C# for programmer"-Deilte-Pearson
6."C# cookbook"-hilyard and teiler-Orelly

Paper Code: BCA503

Linux & Shell Programming

Max. Marks: 100

External Assessment: 70

Internal Assessment: 30

Objectives:

1) To introduce Linux OS and Shell programming
2) To check how to install Linux.
3) To study different editors

Contents of Paper

Unit No	Name of Topic	Details	Lectures/ Periods
1	**Introduction to Linux**	History, Distributions, Features, Linux Architecture, Kernel, Types of Shells, Difference between Windows and Linux Working environments -KDE, GNOME , Xface4 etc	**4**
2	**Installation of Linux**	Hardware requirement, Software requirements, Create partitions, Configuration of X system, Start-up configuration.	**3**
3	**Linux File System**	File System, Hierarchy of File system, Devices and Drives in Linux, Mounting devices File System parts- Boot Block, Super Block, Inode Block, Data Block	**4**
4	**Users, Groups and Permissions**	Create Users ,Create groups, Special groups, Assigning permissions to users and groups	**4**
5	**Commands, Utilities and File Management**	Managing file and directories: mkdir, cd and pwd, ls, cat, more, less. Nested directories, File and Directory Operations: find, cp, mv, rm, ln etc. Filters: head, tail , pr, cut, paste , sort, uniq, grep, egrep, fgrep. Text Editors- vi,vim	**5**

		File and Directory permissions- chmod, chown, chgrp. Printing the files - lpr, lpq, lprm etc. Archive and File compression, Windows integration tools.	
6	**Shell Programming and Process Management**	Shell Variables, Shell Scripts – Control and Loop structure, User defined commands, I/O and Redirection, Piping, Metacharacters Process Management : Shell process, Parent and children, Process status, System process, Multiple jobs in background and foreground, Changing process priority with nice. listing processes, ps, kill, Premature termination of process.	**6**
7	**Disk management and System Administration**	Boot Loaders-GRUB, LILO, Custom Loaders System administration – Common administrative tasks, Identifying administrative files, Configuration and log files, Chkconfig, Role of system administrator, Security Enhanced Linux. Configuration Apache and MySql, X Window, Communication.	**7**
8	**Linux Networking**	Networking services and Configuration files, starting services, Network tools-ping, finger, traceroute, who, host, rlogin, slogin, rcp, rsh, ssh. Protocols and Services- SMB, FTP, DHCP, LDAP, NFS and NIS.	**7**

Reference Books:

1) Operating Systems by William Stallings(PHI)

2) Operating System by Achyut Godbole (TMH)

3) Linux the complete refrence by Richard Mathews(TMH)

4) Red Hat Linux :The Complete Reference by Peterson (TMH)

5) Unix Systems V 4 Concepts & Applications by Sumitabha Das

6) Using Linux by Bill Ball

Paper Code: BCA504

Introduction to Data Mining & Warehousing

Max. Marks: 100

External Assessment: 70

Internal Assessment: 30

Objectives:

1) To introduce Data warehousing and its need.
2) To introduce Data mining and its need.
3) To learn the application and trends in data mining.

Contents of Paper

Unit No.	Name of Topic	Details	Lectures/ Periods
1	**DATA WAREHOUSING**	➢ What is data warehouse? ➢ Need of data warehouse. ➢ Data Warehouse Architecture ➢ Data warehousing Components ➢ Data Warehouse Implementation ➢ Mapping the Data Warehouse to a Multiprocessor Architecture ➢ From Data warehouse to Data Mining	8
2	**Trends in Data Warehousing**	➢ Continuous growth of data ➢ Significant trends ➢ Multiple data types ➢ Data visualization ➢ Parallel processing ➢ Query tools ➢ Browser tools ➢ Data fusion ➢ Multidimensional analysis ➢ Active data warehousing	8
3	**Online Analytical Processing (OLAP)**	➢ OLAP and OLTP ➢ Multidimensional Data model ➢ Data Cube technology ➢ Stars, Snowflakes, Fact constellation schema ➢ Multidimensional versus Multirelational OLAP ➢ OLAP Tools and operations	7

4	**DATA MINING**	➢ Need of Data Mining ➢ Data mining- on what kind of data? ➢ Fundamentals of data mining ➢ Data Mining Functionalities ➢ Classification of Data Mining Systems ➢ Data Mining Task Primitives ➢ Integration of a Data Mining System with a Data Warehouse ➢ Major issues in Data Mining	7
5	**Data Pre-processing**	➢ Need for Pre-processing the Data ➢ Data Summarization ➢ Data Cleaning ➢ Data Integration and Transformation, ➢ Data Reduction ➢ Discretization and Concept Hierarchy Generation	6
6	**Frequent Pattern Mining and Association Rule Mining**	➢ Market basket Analysis ➢ Mining Frequent pattern ➢ APriory Algorithm ➢ Association Rule Mining ➢ Multidimensional Association Rule Mining	4
7	**Application and trends in Data Mining**	➢ Spatial Data Mining ➢ Text Data Mining ➢ Multimedia Data Mining ➢ Web Data Mining ➢ Application of data mining	4

Reference Books:

1. Data Mining – Concepts and Techniques - Jiawei Han &MichelineKamber, Morgan Kaufmann Publishers, Elsevier,2nd Edition, 2006.
2. Introduction to Data Mining – Pang-Ning Tan, Michael Steinbach and Vipin Kumar, Pearson education.
3. Data Mining Techniques – Arun K Pujari,2nd edition, Universities Press.
4. Data Warehousing Fundamentals – PaulrajPonnaiah Wiley student Edition
5. Data warehousing, data mining and OLAP-Alex Berson and Stephen J. Smith – Tata McGraw Hill

Paper Code: BCA505

Management Information System

Max. Marks: 100

External Assessment: 70

Internal Assessment: 30

Objectives:

1) To give the knowledge about the Information system in the organization
2) To create the awareness about the implementation of Information System in to Various functional areas of management.

Contents of Paper

Unit No.	Name of Topic	Details	Lectures/ Periods
1	**Organization**	➢ Organization ➢ features of organization ➢ the role of manager in organization ➢ managers and decision making ➢ types of decision ➢ Decision making life cycle/ Process of Decision Making	4
2	**Information System**	➢ Concept of Data and Information, ➢ Classification of Information ➢ Quality of Information ➢ Information needs & objectives ➢ Implications of Information in Business ➢ Introduction of System. ➢ Concept & characteristics of Information System, ➢ The role and importance of information systems, ➢ The place of information systems in the organization, ➢ Difference between computer literacy and information system literacy	4
3	**Major Enterprise Information Systems/Applications**	➢ Introduction of Enterprise Applications/ Information systems ➢ Most used Enterprise Applications ➢ Enterprise Resource Planning (ERP)- Introduction & Meaning, Need, Features, Scope, Advantages & Disadvantages ➢ Customer Relationship Management (CRM)- Introduction & Meaning, Need,	

		Scope, Advantages & Disadvantages ➢ Decision Support System (DSS)- Introduction & Meaning, Characteristics & Attributes of a DSS , Benefits of DSS Classification of DSS(Status Inquiry System, Data Analysis System, Information Analysis System , Accounting System ,Model Based System ➢ Knowledge Management Systems (KMS)- Introduction & Meaning of Knowledge, Various sources of Knowledge for Business, Definition & Purpose of KMS, Activities in Knowledge Management & Levels in Knowledge Management ➢ Executive Support System (ESS)- Introduction & Meaning, Intelligence Information with Examples, Features of Executive Information System & Advantages & Disadvantages of ESS ➢ Business Intelligence System (BIS) - Introduction & Meaning, Characteristics, Benefit & Approaches of BIS ➢ Supply Chain Management (SCM) - Introduction & Meaning , Objective & Scope of SCM, Features , Process of SCM & Advantages & Disadvantages ➢ Management information system (MIS)	7
4	**Management Information System**	➢ Management ➢ Information ➢ System ➢ Objectives &Characteristics of MIS ➢ Characteristics of Computerized MIS ➢ Nature & Scope of MIS ➢ Need of MIS ➢ MIS Development Process	4
5	**Information system security and control**	➢ Security of an Information System ➢ System vulnerability, ➢ creating a control environment ➢ Feedback Control ➢ Management Control through Reporting	4
6	**APPLICATIONS OF MIS**	➢ Application of MIS in Manufacturing ➢ Application of MIS in the Service Industry ➢ MIS Applications in Hotels ➢ MIS in Hospitals	3

Reference Books:

1. Management Information Systems- Kenneth C. Laudon and Jane P. Laudon
2. Management Information Systems – W.S.Jawadekar
3. Management Information Systems– C.S.V.Murthi
4. Management Information Systems – James A. O'Brien
5. Management of Information systems – Suresh K Bansandra
6.Management of Information systems – Robert Schulthesis & Mary Sumner

Paper Code: BCA506

LAB COURSE-5

Max. Marks: 100

Internal Assessment: 100

Practical Paper-I based on Paper Code BCA503

Mini Project work based on Paper Code BCA501, BCA502

Practical Paper-I based on Paper Code BCA503

LINUX and SHELL PROGRAMMING

1. Creating a Linux Partition, Creating boot disks for LINUX and Installing LINUX. Login and logout, shutting down the server. (This may be a demonstration experiment, the demo to be given by the teacher.)

2. Basic LINUX commands I: Logging on to LINUX, Creating a user account. File System: ls command with flags, pwd, cd, ls, cat, mkdir, rmdir, chmod

Basic LINUX commands II: General Purpose Utilities: more, file, wc, od, cmp, comm, diff, lp, banner, cal, date, who, tty, sty.

3. Basic LINUX commands III:

Simple Filters: pr, head, tail, cut, paste, sort, uniq, nl, and kill, commands. Line editing with ex command, Logging out.

4. To study vi editor: Create a file, Enter the text, Edit Text, Moving around, Save the file. Customizing ex/vi, exrc file and Exinit, options to vi, splitting a file using split command. (Study all important commands and key combinations)

5. **Shell programming**
1. Use the Commands - ls with options, pwd, cd, cat, mkdir, rmdir, chmod, cp, rm, mv, more, file, wc, od,cmp, comm, diff, lp, banner, cal, date, who, tty, sty, pr, head, tail, cut, paste,sort, uniq, nl & kill commands.

2. Use the commands - grep,egrep,fgrep,sed,tr, join
3. Write Shell scripts as Menu driven program
4. First 10 odd numbers
5. First 10 Even numbers
6. First 10 Fibonacci Numbers
7. Write Shell scripts to Checking Prime No.
8. Write Shell scripts for File Handling
9. Write Shell scripts to Display Armstrong numbers from 1 to 1000.
10. Write Shell scripts to Display perfect numbers upto range.
11. Write Shell scripts to change mode of file.
12. Write Shell scripts to check mode of entered file name.

Mini Project work based on Paper Code BCA501, BCA502

Mini Project work

Instructions:

- Team size for mini project not exceed than two students.

BCA- III (SEMESTER-VI)

Paper Code: BCA601

Advanced Java- II

Max. Marks: 100

External Assessment: 70

Internal Assessment: 30

Objectives:

1) To give the knowledge about web application using JSP, hibernate, spring.
2) To WAP (Wireless Application Protocol) application using Java.

Contents of Paper

Unit No.	Name of Topic	Details	Lectures/ Periods
1	**JSP**	➢ Introduction to JSP ➢ Advantages of JSP over Servlet ➢ JSP architecture ➢ JSP life cycle ➢ Implicit objects in JSP- request, response, out, page, pageContext, application, session, config, exception ➢ JSP tag elements- Declarative, Declaration, scriplet, expression, action. ➢ Java Bean- Advantages & Disadvantages, useBean tag- setProperty and getProperty ➢ Bean In Jsp ➢ JSTL core tag: General purpose tag, conditional tag, networking tag ➢ JSTL SQL tags ➢ JSTL formatting tags ➢ JSTL xml tags ➢ Custom tag: empty tag, body content tag, iteration tag, simple tag ➢ Introducing internationalization & Java: local class, ResourseBundle class, web application	18
2	**Hibernate**	➢ Introduction Hibernate(HB) ➢ Architecture of HB ➢ Application of HB: HB with annotation, HB web application ➢ Inheritance mapping: Table per Hierarchy	12

		(TPH), TPH using annotation, Table Per Concrete (TPC), TPC using annotation, Table Per Subclass (TPS), TPS using annotation. ➢ Collection mapping: Mapping list, one to many by list, one to many by bag, one to many by set, one to many by map.	
3	**Spring**	➢ Introduction to spring ➢ Spring modules. ➢ Spring application ➢ Dependency injection: constructor Injection (CI), CI dependant object, CI with collection, CI with map, CI inheriting bean ➢ Spring JDBC: JDBC template, PreparedStatement, ResultsetExactor, RowMapper, NamedParameter, Simple JDBC template. ➢ Spring with Hibernate	12
4	**WAP**	➢ Introduction to WAP ➢ WAP key features ➢ WAP model & architecture ➢ WAP environment and core services. ➢ WAP application with Servlet ➢ WAP application with JSP	10

Reference Books:

1. "JDBC, Servlet and JSP Black Book"- Santosh Kumar K.
2. "Java EE Server programming"- Sharanam Shah and Vaishali Shah.
3. "Java Server Programming Black book"
4. "Hibernate"- Sharanam Shah & Vaishali Shah
5. "Spring Persistence with Hibernate"- Paul Tepper Fisher, Brian D Murphy.

Paper Code: BCA602
Software Project Management

Max. Marks: 100
External Assessment: 70
Internal Assessment: 30

Objectives:

1) To get knowledge of how to handle project development activities
2) To study various project cost, time estimation models.
3) To study how to make quality software products.

Contents of Paper

Unit No.	Name of Topic	Details	Lectures/ Periods
1	**Introduction to Software Project Management**	➢ What is Project, Software Project versus other types of Project ➢ Contract management and technical project management Activities covered by Software Project Management, plans, methods, and mythologies, Software projects category, Setting objectives, Stakeholders, Requirement specification, Management Control.	5
2	**Overview of Project Planning**	➢ Introduction to stepwise Project Planning ➢ Steps: 1. Select Project, Identify scope and objectives 2. Identify project infrastructure 3. Identify project products and activities 4. Estimate efforts for each activity 5. Identify activity risks 6. Allocate resources 7. Review plan 8. Execute plan and lower levels of planning	6
3	**Project evaluation**	➢ Strategic assessment, Technical assessment, Cost-benefit analysis, Cash flow Forecasting, Cost-benefit evaluation techniques, Risk Evaluation	3
4	**Project Approach Selection**	➢ Choosing technologies, Choice of process models among waterfall, Vprocess, Spiral, RAD etc. Software prototyping, Incremental delivery, Dynamic systems development method, Extreme programming, Managing iterative processes. Selecting most appropriate	4

		process model.	
5	**Software effort estimation**	➢ Introduction, Problems of over and under estimates, Software estimating Techniques, Expert judgment, Estimation by analogy, Albrencht function point Analysis, Function points Mark II, Object points, A procedural codeoriented Approach, COCOMO model	4
6	**Activity Planning**	➢ The objectives of activity planning, Project schedules, Projects and activities Sequencing and scheduling activities, Network planning models, Adding the time Dimension, The forward pass and backward pass, Identifying the critical path, Shortening project duration, Identifying critical activities, Activity- on-arrow networks.	5
7	**Risk management**	➢ The nature of Risk, Types of risk, Managing risk, Hazard Identification, Risk planning and control	2
8	**Resource Allocation**	➢ The nature resources, Identifying resource requirement, Scheduling resources, Creating critical path, Counting the paths, Publishing the resource schedule, Cost reschedule, The scheduling sequence	2
9	**Monitoring and control**	➢ Creating framework, Colleting data and visualizing progress, Cost monitoring and earned value, Prioritizing monitoring, Getting project back to target, Change control	3
10	**Managing contracts**	➢ Types of contract, Stages in contract placement, Terms of contracts, Contract management	2
11	**Human Resource management**	➢ Understanding behavior, Organizational behavior, Selecting right persons for job Instructions in best methods, Motivation, The Oldham-Hackman job haracteristics model, Working in groups, Building a team, Decision making, leadership. ➢ Organizational Structure, Stress, health and safety.	4
12	**Software quality**	➢ Need of software quality, Importance of software quality, defining software quality, ISO, CMM, Software quality measures, Product versus process quality management, External standards, Enhancing software quality, Quality plans	4

Reference Books:

1. Software Project management By BOB HUGHES and MIKE COTTERELL
2. Software Project management By EDWIN BENNATAN
3. Management of Information Technology By PRAVIN MULAY
4. Management Information Systems – James A. O'Brien

Paper Code: BCA603

Cyber Laws and Security Control

Max. Marks: 100

External Assessment: 70

Internal Assessment: 30

Objectives:

1) To get knowledge of various cyber laws.
2) To study various security controls.

Contents of Paper

Unit No.	Name of Topic	Details	Lectures/ Periods
1	**Introduction**	➢ Information Society, information ➢ Legal Practices, Theft of ➢ Information, Data Protection, ➢ Information technology copy right	6
2	**Introduction to E-Commerce**	➢ Introduction to E-Commerce ➢ Internet application service ➢ Ecommerce ➢ application, ECommerce ➢ and Indian Economy	6
3	**UNCITRAL Model law**	➢ objectives, scope, structure, application	4
4	**Information TechnologyAct- 2000**	➢ key elements certification and ➢ monitoring prevention of crimes, ➢ security of data	6
5	**Digital signatures**	➢ Digital signature, Electronic ➢ records, regulation of certifying ➢ authorities, digital signature ➢ certificates, duties of subscribers.	8
6	**Cyber law**	➢ contract aspect, security aspects, ➢ intellectual property aspects, ➢ Intellectual Property aspect, criminal aspect.	12
7	**Introduction to security**	➢ Need for security and control, ➢ risks to information system data ➢ and resources, definition of ➢ information security, types of ➢ security, physical security, threats ➢ to security, physical access, logical ➢ security, authentication and	8

		➢ authorization	
8	**Data Security**	➢ Threat to security, back-up and ➢ recovery strategies, data ➢ encryption,	5
9	**Telecommunication security and network management control**	➢ Authentication protocols, internet ➢ extranet security, hardware and ➢ software security, security audit	6

Reference Books:

1. EDP Auditing by Ron Weber
2. PC and LAN security by Stephan Codd
3. Enterprise Security – protecting information assets by Michael E. Kabey
4. Computer security by Dummies
5. Internet security by Derek Atkins et al
6. System Audit - Revati Shrira
7. Information technology law concepts, and enhancements by S. K. Saxen

Paper Code: BCA604

Web Technology-III

Max. Marks: 100

External Assessment: 70

Internal Assessment: 30

Objectives:

1) To introduce server side web controls, Master pages, Validation controls etc.
2) To develop server side web application using Asp.Net

Contents of Paper

Unit No.	Name of Topic	Details	Lectures/ Periods
1	**Introduction of Asp.Net**	➢ Evaluation of Asp.Net ➢ Fundamentals of ASP.NET ➢ Understanding architecture ASP.NET ➢ Compilation Technique of ASP.Net ➢ Application Location ➢ Web Page and Web Site life cycle ➢ ASP.Net Page Structure ➢ Page Directives ➢ Self-page and Cross page posting ➢ Postback and ViewState concepts ➢ Application Folders	8
2	**Web Server Control**	➢ Creating ASP.NET Pages – Web Forms ➢ Working with web controls – Standard control group, Rich Controls. ➢ Different type of List controls ➢ FileUpload, AdRotator, MultiView, Calendar ➢ Create Web User Control	4
3	**Validation controls**	➢ Introduction of validation ➢ Types of validation ➢ Validation Controls ➢ Validation Groups	2
4	**Master Pages**	➢ Need of Master Pages ➢ Basics of master pages ➢ Creating Master and Content pages ➢ Programmatically assign master pages ➢ Nested Master pages ➢ Event ordering of master pages ➢ Basic Themes and Skins ➢ Creating and Using Themes ➢ Defining multiple skins	6

		➢ Programmatically working with themes	
5	**Site Navigation**	➢ Site Navigation technique ➢ SiteMapPath, TreeView and Menu Control ➢ Nesting sitemap file	2
6	**Personalization**	➢ Personalization model ➢ Creating personalization properties ➢ Anonymous Personalization ➢ Programmatically access personalization ➢ Introduction to Web part ➢ Web part control group	3
7	**State Management**	➢ Introduction of state management technique ➢ Types of State Management technique ➢ Client side and server side State Management	3
8	**Membership and Role Management**	➢ Authentication and authorization ➢ Types of authentication – Form, Windows and Passport authentication ➢ Login control group ➢ Using web site administrator tool ➢ Membership and role provider	2
9	**AJAX**	➢ What is AJAX and need for AJAX ➢ Client side and server side AJAX ➢ Implementing AJAX with JavaScript ➢ Using ASP.NET Ajax Control toolkit ➢ AJAX's Server side controls. ➢ Using ASP.NET AJAX – UpdatePanel, UpdateProgress etc. ➢ Clientside Template Rendering - DataView control	6
10	**Web Services**	➢ What is Web Service? ➢ Understanding SOAP, WSDL, Proxy etc. ➢ Creating Web services ➢ How to consume web services ➢ XML Serialization ➢ To build an WebService application and client	4
11	**Deployment**	➢ Managing Web Server (IIS) ➢ IIS Express ➢ Deploy ASP.NET Web Application ➢ Copy and Publish Website ➢ ASP.NET Web Hosting ➢ Web.config, Machine.config	3
12	**Advanced technologies in**	➢ Introduction to Silverlight ➢ Tools to creating Silverlight	6

	ASP.NET	➢ Silverlight Architecture ➢ Silverlight User interface ➢ Silverlight form controls ➢ Transformation and Animation ➢ Introduction and working with WCF ➢ WCF Essentials ➢ Developing WCF Service Application and Client	

Reference Books:

1. "Unlished Asp.Net "- Walther , SAMS Pearson.
2. "Professional ASP.Net"-Evjen, Sivkumar, Wrox Press.
3. "The Complete Reference: Asp.Net"-MacDonald, Tata McGraw Hill.
4. "The Complete Reference: Ajex"- Powell, Tata McGraw Hill.
5."Pro Asp.Net in C#"-MacDonald, Szpuszta-APress
6."Asp.Net Step by step"- George Shephera-Microsoft Press
7. "Professional Ajex"-Zakas, NxPeak, fawcett, Wrox Press.

Paper Code: BCA605

LAB COURSE-6

Lab course-6 based on Paper Code BCA604

Max. Marks: 50

Internal Assessment: 50

1. Design web page for student admission which uses Label, TextBox, RadioButton, CheckBox, ListClass, ButtonClass, Calendar, Image, FileUpload etc. controls.
2. Design scientific calculator.
3. Design web page which demonstrate command name property.
4. Design web page which demonstrate which code is execute at first either server side or client side.
5. Design web page for Self Page Posting and Cross Page Posting.
6. Design web page which demonstrate App_code using class library. Class library contains methods which checks odd, even, prime, Armstrong, Palindrome, Strong and Magic number.
7. Design web page which demonstrate App_GlobalResources and App_LocalResources.
8. Design web page which demonstrate page lifecycle and website lifecycle.
9. Design simple application which displays selected checkboxes and radio button.
10. Design a web page for image mapping using static and dynamic method.
11. Demonstrate all methods of insertion of item in list class.
12. Design web page which displays all system fonts, system colors, font size in List Class. Display text message according to the selected font, size and color.
13. Display Current Year calendar. This calendar shows all holidays in Red color with information.
14. Display selected date in at least 10 different formats.
15. Designs XML file which shows College-Stream-Department-Staff-name-quali-exp-subject.
16. Display at least 10 different advertisements.
17. Design a web page for Wizard and MultiView control.
18. Design a web page which displays 10 textbox controls by using control array method.
19. Design web page which uses all validation controls with validation group property.
20. Design Nested master pages using themes.

Paper Code: BCA606

Major Project Work

Max. Marks: 150

Internal Assessment: 70

External Assessment: 80

Major Project work

Instructions:

- Team size for major project not exceed than two students.