Kadi Sarva Vishwavidyalaya, Gandhinagar
BCA Semester III
BCA 301: Indian Taxation System (Direct Tax)

Rationale:

Every person engaged with any type of economic activity requires adhering to Government Laws and Acts pertaining to Income Tax to make one's activity more authentic and profitable. This subject in particular involves almost every latest and updated Acts classified under direct tax. This does not only aim to create awareness about the subject importance but also clears views about its different implications on personal and professional finance.

Objectives:

The overall and specific objectives of this subject may be described as such:

1. To create awareness about the subject.
2. To relate this subject with day to day professional practices.
3. To show different ways to the students by which they can learn to render ethical practices and also help their activities to compete and survive successfully.

Suggested Activities / Practical (Any Two):

1. *Library Work:* The students shall be given particular topics on which they shall have to prepare notes by themselves by referring different literature available in the library.
2. *Assignments:* The students shall be given practical to solve by themselves and do more practice.

Teaching & Evaluating Scheme: Teaching Scheme would consist of classroom board based teaching as well as Group activity, Role play and Problem solving of relevant real time data.

The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations which consist of Term Work such as class test, quizzes, class participation, home assignments, presentation, Regular Attendance (i.e. Minimum 85%), Internal marks which consist of 15 (7.5 Term Work + 7.5 Sessional Exams) marks and External marks which consist of 35 for University examination.

Sub Code	Subject Title	Teaching Scheme		Exam Scheme				
		Cr	Hrs/ Week	Theory		Practical		Total Marks
				Internal	External	Internal	External	
BCA 301	Indian Taxation System (Direct Tax)	2	2	15	35	--	--	50

Unit – I

- **Introduction to Income Tax Act, 1961 (Act No. 43 of Year 1961): [25%]**
  - Concepts of Direct Tax and Indirect Tax
  - Definitions :- Assessee, Person, Assessment Year, Previous year, Income, Gross Total Income, Agricultural Income, Casual Income, Company, Dividend
  - Concepts of Tax Planning, Tax Avoidance and Tax Evasion

  (Total 5 Hrs.)
- **Determination of Residential Status and Incidence of Tax: [25%]**
  - Residential Status and Incidence of Tax

  (Total 5 Hrs.)

Unit – II

- **Different Heads of Income: [30%]**
  - Income under the Head Salary
  - Income under the Head House Property
  - Income under the Head Profits and Gains from Business or Profession
  - Income under the Head Capital Gains
  - Income under the Head Income under the Head Income from Other Sources

  (Total 10 Hrs.)
- **Deductions from Gross total income and Computation of Total Income: [20%]**
  - Deductions from Gross total income from u/s 80(c) to 80(u) *(Introduction only)*
  - Filing of tax return, Time limit for filing return
  - Tax deducted at source (TDS)
  - Permanent Account Number (PAN)
  - Advance Payment of Tax

  (Total 5 Hrs.)

References:

1. Student's Guide to Income Tax including Service Tax & VAT, Singhania and Singhania, Taxmann Publication.
2. Taxation, Prin. T.J. Rana et. al., Sudhir Prakashan.
3. Systematic Approach to Income Tax & CST, Ahuja and Gupta, Bharat Prakashan

Question Paper Pattern:

University Examination Duration: 1.5 Hours Total Marks: 35

Q-1 Unit I & II (11 Marks)
Objective/Short Questions
Q-2 Unit I (12 Marks)
Descriptive/ Long Questions
Q-3 Unit II (12 Marks)
Descriptive/ Long Questions

X ---------- X

Kadi Sarva Vishwavidyalaya, Gandhinagar
BCA Semester III
BCA302: Scientific Communication

Course Introduction: The course provides the knowledge of Scientific Communication. This course intends to teach basics and differences among various forms of modern communication that will help the students to use and learn the ways of Scientific Communication.

Objectives:

The student would be able

1) To obtain knowledge of Scientific Communication.
2) To understand basics and differences among various forms of modern communication
3) To grasp the basic concepts of research.

Teaching and Evaluation Scheme:

Sub. Code	Subject Title	Teaching Scheme		Exam Scheme				
		Cr.	Hrs. / Week	Theory		Practical		Total Marks
				Internal	External	Internal	External	
BCA 302	Scientific Communication	2	2	15	35	-	-	50

COURSE CONTENT

Unit 1 : Introduction to Scientific Communication [50%]

- Meaning, importance and need of scientific communication (technical jargons, words)
- Difference between General communication and scientific communication
- Ways of scientific communication

A. written communication

- scientific report
- journal/review article
- book

B. Oral & visual Communication

- lecture/ talk/workshop
- presentation(PowerPoint, poster)
- interview
- lecture/talk
- science documentary or movie

No. of Lectures: 10

Unit 2 Methods and Concepts related to Scientific Communication [50%]

- Meaning of white paper, research paper and article
- Meaning and importance of search engine
- Meaning and difference between seminar, conference, symposium and workshops
- Meaning of plagiarism and its importance in scientific communication

No. of Lectures: 10

Reference Books:

1. Study and Communication Skills for the Bio Sciences by Stuart Johnson & Jon Scott published by Oxford University Press

Question Paper Pattern:

University Examination Duration:1.5 Hours Total Marks:35

Que-1 Unit I&II (11 marks)
Objective /Short Questions
Que-2 Unit I (12 marks)
Descriptive/Long Questions
Que-3 Unit-II (12 marks)
Descriptive/Long Questions

x----------x

Kadi Sarva Vishwavidyalaya, Gandhinagar
BCA Semester III
BCA 303: Object Oriented Technology (C++)

Rationale: Understanding most useful concept of Object Oriented Programming using C++ & implementing practical skill for future use.

Learning Outcomes:

- Students will be able to understand all features of OOPS which will be useful for any other OOPS also.
- Students will be able to handle any number of classes with the creation of their objects in the proper order of invocation.
- Students will able to solve problem related to real life entities by using Inheritance.
- Students will able to handle functions by using function overloading and function overriding
- Students will be able to change the meaning of operator by using operator overloading.

Resource Required

- Lab Facility like Turbo C++, GCC etc. Editor: Notepad, Notepad++, Sublink, Bruckets etc.
- Projector

Sub Code	Subject Title	Teaching Scheme		Exam Scheme				
		Cr	Hrs/ Week	Theory		Practical		Total Marks
BCA 303	Object Oriented Technology (C++)	4	4	Internal	External	Internal	External	
				30	70	-	-	100

Unit 1: Introduction and Concept of OOP **[25%]**

- Comparison of Procedure Oriented programming (POP) & Object Oriented Programming(OOP)
- Basic Concepts Object Oriented Programming-Objects, Classes, Data Abstraction & Encapsulation, Inheritance, Polymorphism, Dynamic Binding & Message Passing
- Benefits and Applications of OOP Systems
- Structure of a C++ Program with Example
- Input Output Operators in C++
- Keywords, Data types (Basic,User-Defined,Derived), Variables-Reference, Control Structure

Text Book: Page No: 4 to 12, 19 to 29, 35 to 64

Unit 2: Functions, Classes and Objects [25%]

- Introduction: Function, Function Prototyping, Inline Function, Function Overloading
- Introduction: Class and Object
- Declaration of Class, Creating Class Members, Creating Object, Accessing Class Members
- Defining Member function, Nesting of Member Function
- Access Specifiers-Public, Private, Protected,
- Array of Object

Text Book: Page No: 77 to 87, 96 to 119,

Unit 3: Constructors- Destructors and Inheritance [25%]

- Constructors: Zero argument Constructor, Parameterized Constructor, Copy Constructor, Constructor Overloading (Multiple), Destructors.
- Introduction : Inheritance, Defining a Derived Class
- Different kinds of inheritance: Single, Multilevel, Multiple, Hierarchical, Hybrid inheritances.
- Virtual Base Class, Abstract Classes, Nesting Of Classes Constructors in Derived Class

Text Book: Page No: 144 to 162, 171 to 186,

Unit 4: Operator Overloading Virtual Functions and Exception Handling [25%]

- Introduction: Operator Overloading, Defining Operator Overloading,
- Overloading Unary Operators and Binary Operators.
- Rules for Overloading Operators.
- Introduction: The Need for Virtual Function, Virtual functions, Pure Virtual Functions.
- Introduction : Exception Handling
- Basics of Exception handling. try throws and catch mechanism.

Text Book: Page No: 201 to 240, 275 to 281, 380 to 386

Text Book: Object Oriented Programming with C++. By Balagurusamy, TMH publications.

Reference Books:

- The Complete Reference – Herbert Schildt. TMH publications.
- Object Oriented Programming with Turbo C++. By Robert Lafore.
- C++ and Object Oriented Programming Paradigm – Debashish Jana, PHI.
- Object Oriented Programming with C++. By Sourav Sahay, OXFORD.

Question Paper Scheme:

University Exam : **Duration 3 Hrs** **Total Marks : 70**

Q.1-	Unit-I & II (Objective/Short questions)	11 Marks
Q.2-	Unit-I (Descriptive / Long questions)	12 Marks
Q.3-	Unit-II (Descriptive / Long questions)	12 Marks
Q.4-	Unit-III & IV (Objective/Short questions)	11 Marks
Q.5-	Unit-III (Descriptive / Long questions)	12 Marks
Q.6-	Unit-IV (Descriptive / Long questions)	12 Marks

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QUESTION BANK

Unit 1: Introduction and Concept of OOP

1. Explain Procedure Oriented Programming
2. Explain Object-oriented Programming (OOP)
3. Characteristics Object-oriented Programming (OOP)
4. State Difference between POP and OOP.
5. List out Application of OOP
6. List out Benefits of Object Oriented Programming (OOP)
7. Explain Basic Concept of Object Oriented Programming (OOP)
8. What is C++?
9. Explain Structure of C++ Program.
10. Explain different Tokens available in C++

Unit 2: Functions, Classes and Objects

11. Explain Concept of Classes and Objects with example
12. Explain Function prototyping with example
13. Explain Function overloading with example
14. Explain Array of objects with example
15. Explain Access specifiers

Unit 3: Constructors- Destructors and Inheritance

16. Explain Constructor with suitable example
17. Explain Zero Argument Constructor with suitable example
18. Explain Parameterized Constructor with suitable example
19. Explain Copy Constructor with suitable example
20. Explain Destructor with suitable example
21. Explain Constructor overloading with suitable example

22. What is Inheritance? Explain all types of inheritances with suitable example.
23. Explain Single Inheritance with suitable example.
24. Explain Multiple Inheritance with suitable example.
25. Explain Hierarchical Inheritance with suitable example.
26. Explain Multi-level Inheritance with suitable example.
27. Explain Hybrid Inheritance with suitable example.
28. Explain Function Overriding with suitable example.

Unit 4: Operator Overloading Virtual Functions and Exception Handling

29. Explain Virtual function with suitable example
30. Explain the mechanism of virtual function
31. Explain pure virtual function with suitable example
32. Explain Virtual destructor with suitable example
33. Explain an operator overloading with suitable example
34. Write Steps for process of operator overloading
35. What is Unary – operator overloading?
36. What is Binary + operator overloading?
37. What are Logical errors and Syntactic errors?
38. What is Exception? Why we used Exception?
39. Explain Basics and mechanism of exception handling mechanism
40. Explain Try, catch, and throw three keywords in exception

X ---------- X

Kadi Sarva Vishwavidyalaya, Gandhinagar
BCA Semester III
BCA 304:Database Management System – II

Rationale: Database Management System-II enables students to develop understanding of the basic concepts of data in general and Relational Database System in particular. The students will learn Database concept, normalization, advanced database concepts such as transaction control, management and distributed database.

Prerequisite: Traditional Database System, Database, DBMS, Entities, Relationships, Attributes, Keys, Constraints, Data models, E-R Models

Learning Outcomes: The students will be able to understand:

- Basic concepts of database designing through normalization.
- Creation of database, tables, queries, advanced queries in oracle.
- Various methods available to control concurrency in transaction management.
- Components of DDBMS and its structure.
- Various aspects of Database Administrations

Resource Required:

- Lab Facility with Oracle Client Server Architecture.
- Projector

Sub Code	Subject Title	Teaching Scheme		Exam Scheme				
		Cr	Hrs/ Week	Theory		Practical		Total Marks
				Internal	External	Internal	External	
BCA 304	Database Management System- II	4	4	30	70	--	--	100

Course Content:

Unit 1: Normalization of Database Tables [25%]

Applications:

To normalize huge database into manageable data tables

Database tables and Normalization concept overview, Functional dependencies, Normalization and database design with example, higher level of normal forms up to 4NF, Concept of De-normalization

Text Book 1: Pg No: 147 to 182

Unit 2: Transaction Management and Concurrency Control [25%]

Applications:

To manage simultaneous transaction execution without concurrency

Transaction, Transaction Properties, Transaction Log, Concurrency Control, Problems of Concurrency, Locking Methods, Time Stamping Methods, Optimistic methods, Database Recovery

Text Book 1: Pg No: 396 to 418

Unit 3: Distributed Database Management System [25%]

Applications:

To share database and processing among various logically related sites.

Distributed Database Management System, Advantages of DDBMS, Disadvantages of DDBMS, Distributed database Vs Distributed processing, DDBMS components.

Text Book 1: Pg No: 455 to 46

Unit 4: Database Administration [25%]

Database administration functions, Roles of DBA, Managerial Role, Technical Role, Database administration tools, Data Dictionary, CASE Tools, Developing Data Administrator Strategy

Text Book 1: Pg No: 590 to 616

Text Book

1. Database Systems Design, Implementation, and Management. 7th Edition and Further Author: Peter Rob, Carlos Coronel And Publication: Cengage Learning

Reference Books

1. Introduction to Database Management System, Publication: Tata McGraw-Hill, Author : ISRD Group
2. An Introduction to Database Systems, Publication: Pearson Author : C. J. Date, A. Kannan & S. Swamynathan

Question Paper Scheme:

University Exam: Duration 3 Hrs Total Marks : 70

Q.1-	Unit-I & II (Objective/Short questions)	11 Marks
Q.2-	Unit-I (Descriptive / Long questions)	12 Marks
Q.3-	Unit-II (Descriptive / Long questions)	12 Marks
Q.4-	Unit-III & IV (Objective/Short questions)	11 Marks
Q.5-	Unit-III (Descriptive / Long questions)	12 Marks
Q.6-	Unit-IV (Descriptive / Long questions)	12 Marks

Question Bank

1. What is normalization?
2. Explain all normal forms of normalization.
3. Is it right that the highest level of normal form is always desirable?
4. What is a partial dependency? With which normal form is it associated?
5. Discuss transitive dependency.
6. Describe Data Definition Commands with examples.
7. Describe Data Manipulation Commands with example.
8. Explain different operators used in Oracle.
9. Explain Data types.
10. What is constraint?
11. What are table level and column level constraints?
12. Explain not null, unique, and default constraint.
13. How to insert data in the table, discuss all different methods.
14. Discuss Aggregate functions.
15. What is E-R Diagram? What is the use of that?
16. What is transaction? Explain with example.
17. What is concurrency control?
18. Explain three main problems of concurrency.
19. Explain Transaction log?
20. Explain Time stamping method.
21. Explain locking levels and locking methods.
22. What is database backup and recovery?
23. Explain DDBMS with its components.
24. Discuss advantages and disadvantages of DDBMS.
25. Explain Database Administration tools.

Kadi Sarva Vishwavidyalaya, Gandhinagar
BCA Semester III
BCA 305: Software Project Management

Rationale: The Course provide the detail concept of managing and different techniques for developing a Software Project and even covers how to solve typical software project planning, controlling and reporting features of Software Project Management Tools like Microsoft Project, henceforth one can work within tight schedules, manage resources across the organization and deliver results on time and within budget during the development of a Software Project.

Learning Outcomes: The Student Will be able to:

- Gain brief knowledge of Software Project Management
- Select an excellent appropriate project approach.
- Build a project plan, enter tasks and develop calendars.
- Evaluate the Project using different methods.
- Learn Software Project Management strategies.

Resource Required

- Projector

Sub Code	Subject Title	Teaching Scheme		Exam Scheme				
		Cr	Hrs/ Week	Theory		Practical		Total Marks
				Internal	External	Internal	External	
BCA 305	Software Project Management	4	4	30	70	-	-	100

Unit 1: Introduction to Software Project Management [25%]

Project and characteristic of project, Software Project Management, Activities of software project management, Plans, Methods, Methodologies, Stake holders, Objective and sub objective, Project success and failure, Project: Build or buy, Choosing Methodologies and technologies

Text Book1: Page No 1 to 70

Unit 2: Effort estimation and Activity Planning [25%]

Project Development Models, Waterfall Model, Spiral Model, Software prototyping model, Constructive Cost Model (COCOMO), Software Effort estimation : over and under estimation, Overview and objective of activity planning, Project schedules and activities, Work Breakdown Structure (WBS), forward pass and backward pass, network diagram and identifying the critical path using PERT (Overview of PERT)

Text Book1: Page No 75 to 145

Unit 3: Management, : Resource Allocation and Monitoring [25%]

Risk and categories and risk assessment, risk planning, Applying PERT technique, The nature of resources, Scheduling of Resources, Cost schedules and scheduling sequence, Cost monitoring.

Text Book1: Page No 155 to 215

Unit 4: Contracts and Documentation **[25%]**

Introduction to contracts, Types of contracts, Stages in contract placement, Contract Management, Organizational Behaviour, Recruiting People, Working in Group and Team, Leadership and Decision Making

Text Book1: Page No 233 to 268

Text Book: Software Project Management by Bob Hughes & Mike Cotterell, Rajib Mall: Tata Mc. Hill. (5thEdition)

Reference Books

1) Software Project Management: a real world guide to success : By Joel Henry
2) Software Project Management : By Pankaj Jalote
3) Basis of Software Project Management by NIIT

Question Paper Scheme:

University Exam : **Duration 3 Hrs** **Total Marks : 70**

Q.1-	Unit-I & II (Objective/Short questions)	11 Marks
Q.2-	Unit-I (Descriptive / Long questions)	12 Marks
Q.3-	Unit-II (Descriptive / Long questions)	12 Marks
Q.4-	Unit-III & IV (Objective/Short questions)	11 Marks
Q.5-	Unit-III (Descriptive / Long questions)	12 Marks
Q.6-	Unit-IV (Descriptive / Long questions)	12 Marks

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Question Bank

Unit-1

1. Define Project. Write various characteristics of Project.
2. Differentiate between Software Projects and other types of Projects.
3. What are the various activities of Software Project Management? Explain.
4. Write Short Note on the following :
   a. Plan, Method and Methodologies in Software Project Management
   b. Stakeholders in Software Project Management
   c. Objectives and sub objectives of any software Project.
   d. Project Success and failure.
   e. Project : Build or Buy
   f. Choosing the methodologies and technologies in a Software Project.

Unit-2

5. What do you mean by Project Development Models? Explain in detail the below Project Development Models :
   a. Waterfall Model
   b. Spiral Model
   c. Software Prototyping
   d. COCOMO Model
6. Write Short Note on the following :
7. Software Estimation.
8. Over and under Estimation.
9. What are the Software Effort Estimation Techniques? Explain.
10. What is Effort Estimation in Software Project Management? Explain various stages of estimation in Software Project.
11. Explain Work Breakdown Structure in detail.
12. How time dimension can be added in a Software Project? Explain various methods as below :
    a. Forward Pass
    b. Backward Pass
    c. Identifying the Critical Path.
13. Write Short Note on the following :
    a. Objectives of Activity Planning.
    b. Project Schedules
    c. Project and Activities

Unit-3

14. What is the framework to deal with Risk? Explain different steps for dealing with Risk as below :
    a. Risk Identification
    b. Risk Assessment
    c. Risk Planning
    d. Risk Management
15. Write Short Note on Risk and Risk Categories
16. What do you mean by Resource Allocation? Explain the Nature of Resources in detail.
17. What is Resource Scheduling? Explain the below scheduling in brief :
    a. Cost Scheduling.
    b. Sequence Scheduling.
    c. Cost Monitoring

Unit-4

18. What is Contract Management in Software Project Management? Explain various types of contracts in detail.
19. Explain the process of working in Group and Team in detail.
20. Explain Software Testing V process Model in detail.
21. Write Short Note on the following :
    a. Recruiting People.
    b. Leadership and Decision Making.
    c. Stress Management.

Kadi Sarva Vishwavidyalaya, Gandhinagar
BCA Semester III
BCA 306: Object Oriented Technology (C++) (P)

Sub. Code	Subject Title	Teaching Scheme		Exam Scheme				
		Cr.	Hrs. / Week	Theory		Practical		Total Marks
				Internal	External	Internal	External	
BCA 306	Object Oriented Technology (C++) (P)	2	4	-	-	15	35	50

PRACTICAL LIST

SIMPLE C++ PROGRAMS

1. Write a C++ program to display "I LIKE C++ PROGRAMMING" output string.
2. Write a C++ program to display. Hello: output string
3. Write a C++ program to display Hello and your name.
4. Write a C++ program to calculating with integer constants.
5. Write a C++ program for working with integer variables.
6. Write a C++ program using assignment operator.
7. Write a C++ program to find the area and circumference of the circle. (Area=PI*r*r and circumference=2*PI*r)
8. Write a C++ program to compute the circumference and volume of a sphere. (volume=4/3*PI*r*r and circumference=4*PI*r*r)
9. Write a C++ program to assign value to a variable.
10. Write a C++ program to finding the size of a data type.
11. Write a C++ program to define and use of global variables.
12. Write a C++ program using the scope resolution operator.
13. Write a C++ program to state working of endl.
14. Write a C++ program for reference variable.
15. Write a C++ program for cin to read
16. Write a C++ program to read int value from keyboard
17. Write a C++ program printing a line of text with multiple statements.

CONTROL STATEMENTS: If, for, switch case, while and do while statements

18. Write a C++ program of example of the if statements.
19. Write a C++ program of example of the if else statements.
20. Write a C++ program to check whether the candidate's age is greater than 17 or not. If yes, display message "Eligible for Voting" otherwise "Not Eligible for Voting"

21. Write a C++ program to find the average of six subjects and display the results as follows.

AVERAGE	RESULT
<35	FAIL
>34 & <50	THIRD DIVISION
>49 & <60	SECOND DIVISION
>60 & <75	FIRST DIVISION
>75 &<100	DISTINCTION

22. Write a C++ program to check if a number is greater than 15.
23. Write a C++ program to test if a given number is even or odd.
24. Write a C++ program to verify is a number is divisible by 3 & 5 or not.
25. Write a C++ program using to find the greatest number between two nos.
26. Write a C++ program using to find the greatest number between three nos.
27. Write a C++ program which will generate following series: 1, 4, 9.....N^2.
28. Write a C++ program which will print the number in reverse order.
29. Write a C++ program to determine whether the year is a leap year or not. any integer input through the keyboard(Hint: use the % (modulo) operator)
30. A library charges a fine for every book returned late. For first 5 days the fine is 50 paise, for 6-10 days fine is one rupee and above 10 days fine is 5 rupees. If you return the book after 30 days your membership will be cancelled. Write a C++ program to accept the number of days the member is late to return the book and display the fine or appropriate message.
31. In a company, worker efficiency is determined on the basis of the time required for a worker to complete a particular job. If the time taken by the worker is between 2-3 hours, then the worker is said to be “highly efficient”. If the time required by the worker is between 3-4 hours, then the worker is ordered to “improve efficiency”. if the time taken is between 4-5 hours, the worker is given “training to improve his efficiency”., and if the time taken by the worker is more than 5 hours, then the worker has to “leave the company” .if the time taken by the worker is input through the keyboard, find the efficiency of the worker
32. Write a C++ program to show use of switch with char case.
33. Write a C++ program to provide multiple functions such as 1.Addition 2. Subtraction 3. Multiplication 4. Division 5.Remainder calculation 6. Larger out of two using switch statement.
34. Write a C++ program to print the color according to the code.
35. Write a C++ program to print month name according to number.
36. 37, 38: Write a C++ program to display the series of numbers as given below

1	5	12345
12	54	1234
123	543	123
1234	5432	12
12345	54321	1

39. Write a C++ program to print the N tables.
40. Write a C++ program to find the sum of the given series 1n + 2n +3n+ ……Nn
41. Write a C++ program to find the number of 500,100,50,20,10,5,2,1
42. Write a C program which will display the factorial of the given number.

ARRAY:

43. Write a C++ program for array initialization
44. Write a C++ program to define array and use it.
45. Write a C++ program to define two dimensional array and use it
46. Write a C++ program to read the matrix of order up to 3*3 and transpose its elements
47. Write a C++ program to find the smallest number among N numbers
48. Write a C++ program to find the biggest number among N numbers
49. Write a C++ program to sort(in ascending order) an array list having N elements using bubble sort
50. Write a C++ program to search a number entered using binary search

Class and Object:

51. Write a C++ Program to define your first class.
52. Write a C++ Program to Implement Class Rectangle
53. Write a C++ Program to create an object from a class and call its function.
54. Write a C++ Program to explain concept of one class with one object by taking student data.
55. Write a C++ Program to explain concept of one class with two objects by taking student data.
56. Write a C++ Program to show the relationship of class and object to display roll no, grade and fees paid by student.
57. Write a C++ Program to find area of rectangle.
58. Write a C++ Program to perform Arithmetic operations on class.
59. Write a C++ Program by using member functions outside the body of class to find area of rectangle.
60. Write a C++ Program to find average percentage of marks.
61. Write a C++ Program to check weather number is prime or not by using class
62. Write a C++ Program show the concept of array of objects.

Constructor and Destructor

63. Write a C++ Program of show the concept of constructor
64. Write a C++ Program to assign values to illustrate the parameterized constructor.
65. Write a C++ Program to initialize variables and conduct calculation in constructor.
66. Write a C++ Program of concept of copy constructor
67. Write a C++ Program of concept of multiple constructor(constructor overloading)
68. Write a C++ Program of concept of destructor

Inheritance

69. Write a C++ Program for base class and derived class.
70. Write a C++ Program to initialize variables from base class using initialization.
71. Write a C++ Program to show concept of single inheritance
72. Write a C++ Program to show concept of multilevel inheritance
73. Write a C++ Program to show concept of multiple inheritance
74. Write a C++ Program to show concept of hierarchical inheritance
75. Write a C++ Program of Hybrid Inheritance
76. Write a C++ Program of function overriding.

Operator Overloading

77. Write a C++ Program to show concept of binary operator overloading
78. Write a C++ Program to increment time variable with ++ operator.
79. Write a C++ Program to illustrate the concept of operator overloading using the + operator with same function name.
80. Write a C++ Program to overload operator ==
81. Write a C++ Program to show concept of unary operator overloading
82. Write a C++ Program of operator overloading the string

Virtual Function and Dynamic Polymorphism

83. Write a C++ Program to show concept of virtual function
84. Write a C++ Program to show a virtual destructor
85. Write a C++ Program of show the pure virtual function
86. Write a C++ Program for friend function
87. Write a C++ Program show the concept of function overloading.

Exception Handing

88. Write a C++ Program for simple exception handling example.
89. Write a C++ Program for throw an exception.
90. Write a C++ Program using multiple catch statements

Evaluation Scheme:

Practical	Viva	Journal	Total
21	7	7	35

X ---------- X

Kadi Sarva Vishwavidhyalaya, Gandhinagar
BCA Semester III
BCA307: Database Management System – II (P)

Rationale

The course is intended to make students familiar with the features of Database Tools .It focuses on both basic and advanced features.

Learning outcome

- To gain the knowledge of various DBMS software Tools
- To develop skills for effective use of DBMS Software
- To understand how to use the Database in Day-to-Day Life

Resource Required

- Lab Facility with Oracle 9i
- Projector

Teaching Scheme & Exam Scheme:

Sub. Code	Subject Title	Teaching Scheme		Exam Scheme				
		Cr.	Hrs. / Week	Theory		Practical		Total
				Internal	External	Internal	External	
BCA 307	Database Management System –II (P)	2	4	-	-	15	35	50

Unit 1: Introduction to SQL

Applications: Database and tables will manage the data in a structured way, and queries will allow you to retrieve required information from the pool of data.

Introduction to Oracle:

Understanding of Data types:

DDL Commands: Create, View, Alter, Drop, Rename.

DML Commands: Insert, Select, Update, Delete.

TCL Commands: Commit, Save point, Rollback

Constraints (Table/Column): Primary Key, Foreign Key, Unique, Not Null, Check, Default.

Unit 2: Handling Queries

Applications: To search data according to given criteria to fulfil user's need.

Select Query Options: using Where, Group by, Having, Order by, Dual.

Operators: Comparison, Logical, Special

Functions: Aggregate, Date, Numeric, String.

Advance SQL Queries: Join Query, Sub Queries.

Evaluation Scheme:

Practical	Viva	Journal	Total
21	7	7	35

Kadi Sarva Vishwavidyalaya, Gandhinagar
BCA Semester III
BCA 308: Computer Oriented Statistical Methods

Rationale: Computer Oriented Statistical methods provides the understanding of various concepts of statistical methods like Measures of Central Tendency and Dispersion (Mean, Median, Mode, Variance, Standard Deviation) in calculations, Correlation, Regression which are useful in different comparisons and analysis for more than two sets of data.

Prerequisites:

- Fundamental knowledge of arithmetic operations
- Basic information of collection of Sample Data

Learning Outcomes:

- Concept cause & consequences of Measures of Central Tendency and Dispersion in the application of statistical computing. They will be able to know which measure is to be used when? Normaly this concept is used in various comparisons.
- Students will come to know about different facts of the whole set of data (Population) from the sample set of data (Samples).
- Statistical techniques for solving various problems.
- Applications of statistical measures in real life domain.

Teaching & Evaluating Scheme: Teaching Scheme would consist of classroom board based teaching as well as Group activity, Role play and Problem solving of relevant real time data. The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance.

Sub Code	Subject Title	Teaching Scheme		Exam Scheme				
		Cr	Hrs/ Week	Theory		Practical		Total Marks
				Internal	External	Internal	External	
BCA 308	Computer Oriented Statistical Methods	2	2	15	35	-	-	50

Course content:

Unit 1: Measures of Central Tendency and Dispersion [50%]

Collection of Statistical Data and Analysis, Different Types of Data (Simple, Discrete, Continuous), Measures of Central Tendency for all types of Data (Mean, Median, Mode), Measures of Dispersion for all types of Data (Range, Variance, Standard Deviation, Coefficient of Variance)

Coverage of topics in Books:

Text book: Chapter – 4 – Page No. 205 – 278

Application:

Measure of central tendency and dispersion gives a concise description of the performance of the set of data as a whole (to reduce data in a single value) and it enables us to compare two or more set of data in terms of typical performance. It also useful in Analytical study of Data (Small Sample, Large scale Factors, Big Data etc.). Frequently use in Business Statistics and Decision Making. It is Statistical constants which enable us to figure out in a single effort the significance of the whole.

Unit-2 Correlation and Regression [50%]

Correlation, Correlation Types, Coefficient of Correlation, Scatter Diagram Method, Karl Pearson's Method, Spear Man's Rank Method, Regression, Difference between Correlation and Regression, Regression lines.

Coverage of topics in Books:

Text book: Chapter – 8 – Page No. 377 – 422
Text book: Chapter – 9 – Page No. 423 – 463

Application:

Correlation measures the strength (qualitatively) and direction of the linear relationship between two or more variables. It is used in deriving precisely the degree and direction of relationship between variables and in reducing the range of uncertainty in the matter of prediction. Correlation of pseudorandom binary codes is what makes GPS work, radar systems, and CDMA (code division multiple access) systems. Regression analysis is widely used for prediction and forecasting, where its use has substantial overlap with the field of machine learning. Regression analysis is also used to understand which among the independent variables are related to the dependent variable, and to explore the forms of these relationships. Also useful to forecast future opportunities and risks in business.

Text Book:

1. Scientific and Statistical Computing:
   Auther(s): Ketan Gajjar, Parag Shah
   Publication: Nirav Prakashan

References:

1. Scientific and Statistical Computing:
   Auther(s): Heena Timani
   Publication: Books India
2. Statistical Methods:
   Auther(s): S. P. Gupta
   Publication: S.Chand
3. Statistics for Business and Economics:
   Auther(s): J. S. Chandan
   Publication: Vikas publishing House Pvt. Ltd.
4. Computer Oriented Numerical and Statistical Techniques:
   Auther(s): R.Singh, I.Singh
   Publication: Khanna book Publishing Co. (Pvt.) Ltd.

Instructional Strategies:

- Bridge course to sharpen the existing knowledge.
- Classroom teaching with variants to make statistics easy to learn.
- Integrate topics and concepts.
- Independent Practice to develop the art of self learning.
- Demonstration using technology tools.
- Provide examples to transfer learning.
- Problem solving of relevant real time data.

Question Paper Pattern:

University Examination Duration: 1.5 Hours Total Marks: 35

Q-1 Unit I & II (11 Marks)
Objective/Short Questions
Q-2 Unit I (12 Marks)
Descriptive/ Long Questions
Q-3 Unit II (12 Marks)
Descriptive/ Long Questions

x----------x

Question Bank

1. What is population, sample, data in statistics?
2. Explain classification of data in statistics.
3. Explain statistical data frequency distribution.
4. List measures of central tendency. Explain any two.
5. List mathematical averages.
6. List positional averages.
7. List measures of dispersion. Explain any two.
8. Define Terms: Mean, Median, Mode, Range, Variance, Standard Deviation, Coefficient of Variance
9. Examples based on (Mean, Median, Mode, Range, Variance, Standard Deviation, Coefficient of Variance) for given set of data.
10. What is correlation? List it types. Explain any two.
11. What is correlation co-efficient? List its characteristics in brief.
12. List methods to find out correlation co-efficient. Explain any one with formula.
13. Explain Scatter diagram in detail.
14. Explain Karl Pearson’s method to find correlation co-efficient.
15. Explain Spear man’s method to find correlation co-efficient.
16. What is regression? List it types.
17. Explain lines of regression. Write formula of both regression lines.
18. What is regression co-efficient? List its characteristics in brief.
19. Difference between correlation and regression.
20. Define Terms: Correlation, Regression
21. Examples based on (Correlation and Regression) for given set of data.

Kadi Sarva Vishwavidhyalaya, Gandhinagar
BCA Semester III
BCA 309: Specialization (Robotics)
Basics of Digital Electronics

Rationale:

This is to enable students to have an understanding of designing a computer to achieve high performance considering the basic concepts processor speed, memory speed, memory capacity and interconnection data rates. The processor components such as Control unit, registers, ALU and instruction and execution unit and the study of control unit which provides control signals for operation and coordination of all processor components.

Learning Outcomes: The student will be able to understand:

1. Basic components of Circuit
2. Implementation technique of Circuit Making
3. Project Based Learning

Teaching & Evaluating Scheme:

Sub Code	Subject Title	Teaching Scheme		Exam Scheme				
BCA 309	Basics of Digital Electronics	Cr	Hrs/ Week	Theory		Practical		Total Marks
		2	4	Internal	External	Internal	External	
				--	--	15	35	50

Course Content:

Unit 1: Principles of Computer peripherals [25%]

Basic building blocks of a computer system, The CPU, the Arithmetic & Logical Unit. The binary numbers as a language which computer understands. The Input & Output devices as means of communication with a computer system. The mother Board, Hard Disk drives, display systems.

AV Aids: Projector, Simulator **No. of hours: 05**

Unit 2 : Introduction to Processor and electrical components [25%]

Block diagram architecture of motherboard. CMOS setup and their features, configuring extended, expanded memory, cache memory, EDO RAM etc. Electronics components for understanding the working of a Computer & Peripherals such as Keyboard. Mouse etc. from hardware point of view. Voltage, Current; Concepts of Microprocessor and Microcontroller, Processor categories.

AV Aids: Projector, Simulator **No. of hours: 05**

Unit 3: Passive Components and Installation [25%]

Passive components: Resistance, Inductance, Capacitance; Jumped element model; Series, Parallel combinations, Ohm's Law, Kirchoff's law, The minimum hardware requirements for the installation, the steps involved in installation. Booting process of Windows 2003 /XP / Linux the plug and play feature of Windows 2003 / XP – the automatic detection of new hardware at booting time, the boot sector , Architecture of Windows 2003 / XP, the Recycle bins, DLL files.

AV Aids: Projector, Simulator N**o. of hours: 05**

Unit 4: Project Building [25%]

Phase I: Building a Project Plan from Scratch
- 1.1 Project Definition
- 1.2 Planning activities
- 1.3 Designating with software

Phase II: Assembling and programming in virtual Environment
- 2.1 selection of the hardware components
- 2.2 Establishing the connections between the components
- 2.3 Developing the logic in C Lang
- 2.4 Burning the code into the processor

Phase III: Developing the kit
- 3.1 Optimizing the components
- 3.2 Assemble the hardware components, on PCB
- 3.3 Develop the final circuit

AV Aids: Breadboard, Components, Projector, and Simulator **No. of hours: 05**

Reference Books: Text book:

- Computer Architecture and organization by B Govindrajalu (TMH)

Reference book:

- Advanced microprocessor and interfacing by Badri Ram
- Certification: Basics of Digital Electronics
- Competency: Basic Level

LIST OF PRACTICALS

Practical 1: Alternating Current effecting two resistors

HARDWARE COMPONENTS:

1. Alternator
2. Battery
3. Lamp
4. Resistor

Step 1: On the circuit board, first select a component, this component is added to the library.

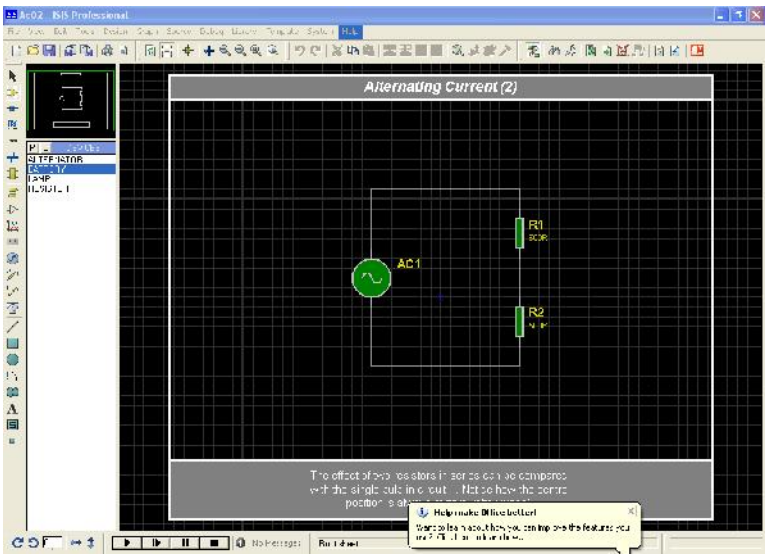
Step 2: Right click on the black screen , the first option will be place a component , select a component and the will be placed on the board

Step 3: After all components are placed, the required connections have to be done from one component to other component,

Step 4: For execution, go to debug menu, there is a option RUN , click and the simulation starts showing you the output of the process

This effect of two resistors can be compared to a single bulb.

OUTPUT:



Practical 2: Working with a CAPACITOR

HARDWARE CONNECTIONS:

Select from the pickup list where the required elements are selected.

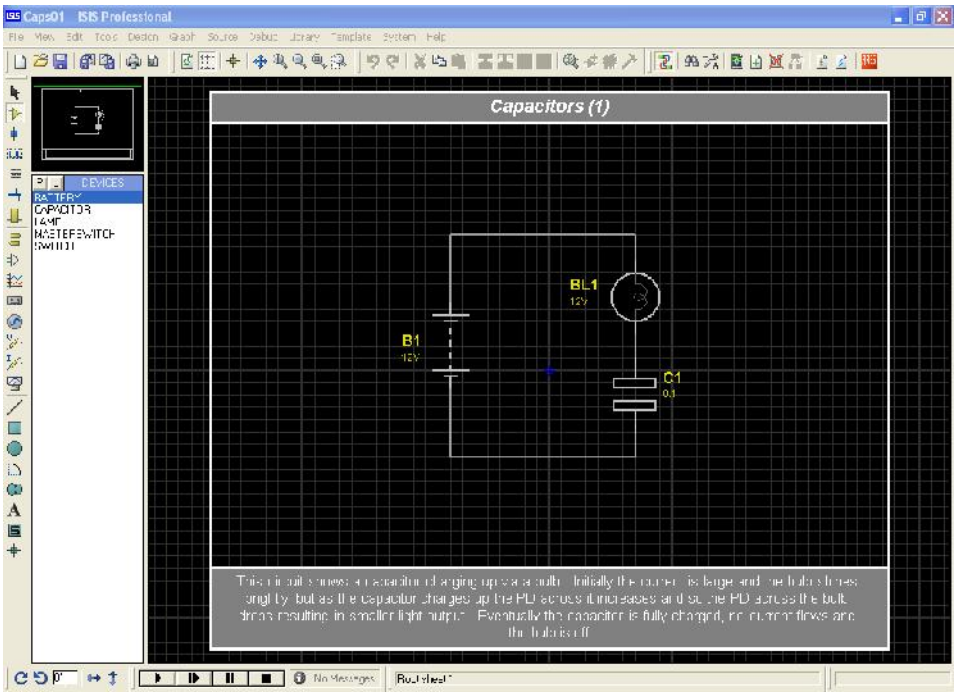
1. Battery
2. Capacitor
3. Lamp
4. Master switch
5. switch

Step 1: On the circuit board, first select a component, this component is added to the library.

Step 2: Right click on the black screen , the first option will be place a component , select a component and the will be placed on the board

Step 3: After all components are placed, the required connections have to be done from one component to other component,

Step 4: For execution, go to debug menu, there is a option RUN , click and the simulation starts showing you the output of the process



Practical 3: Studying a parallel CAPACITOR

Hardware Components:

Select from the pickup list where the required elements are selected.

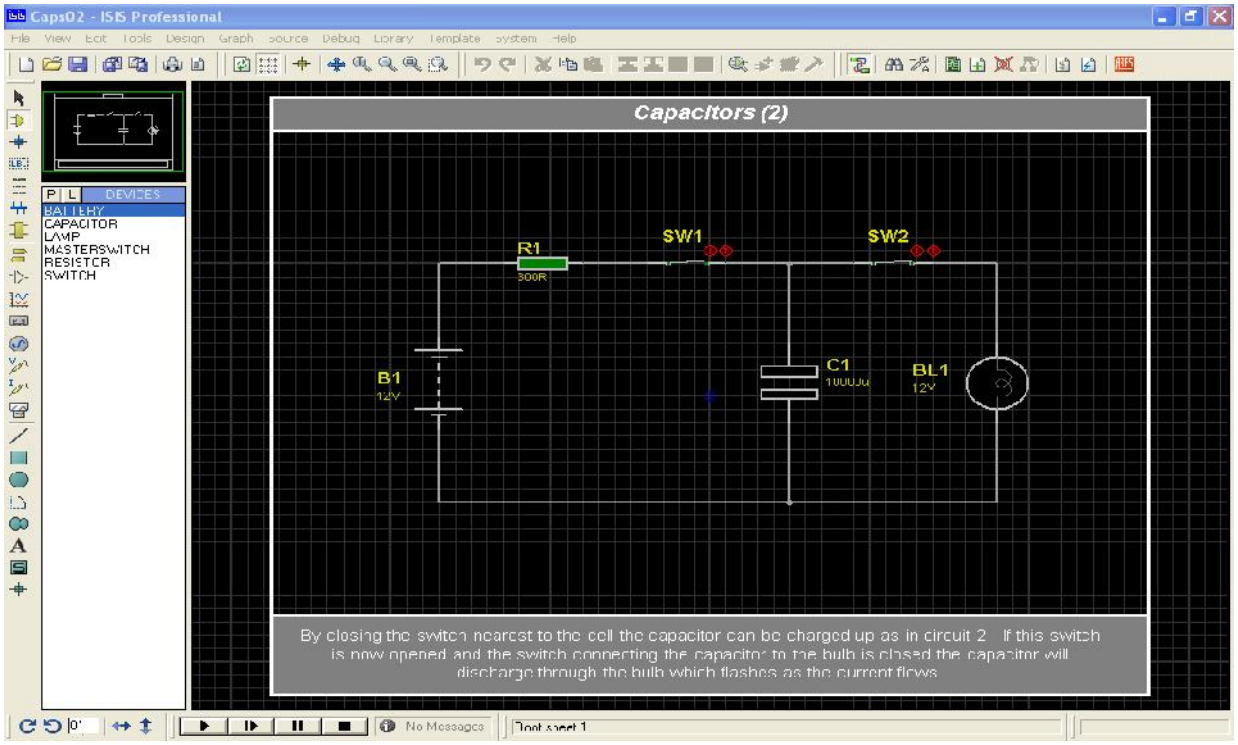
1. Battery
2. Capacitor
3. Lamp
4. Master switch
5. switch

Step 1: On the circuit board, first select a component, this component is added to the library.

Step 2: Right click on the black screen , the first option will be place a component , select a component and the will be placed on the board

Step 3: After all components are placed, the required connections have to be done from one component to other component,

Step 4: For execution, go to debug menu, there is a option RUN , click and the simulation starts showing you the output of the process



Practical 4: Experimenting with a single bulb and two switches

Hardware Components:

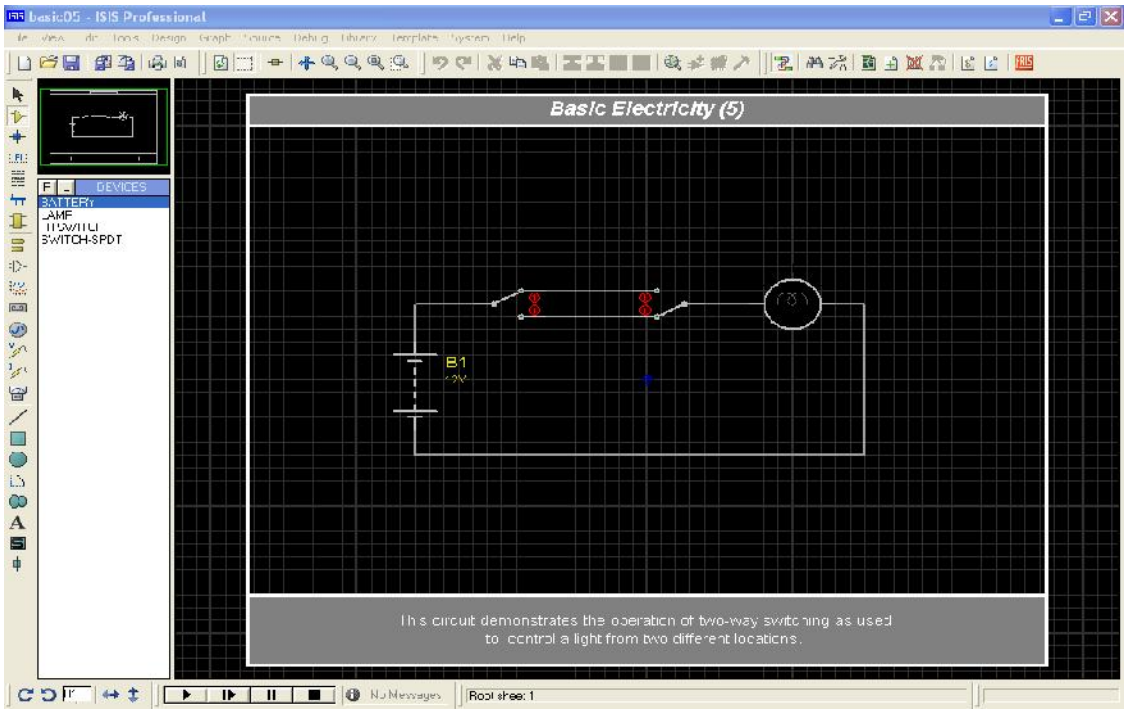
1. Battery
2. Lamp
3. RTswitch
4. Switch spot

Step 1: On the circuit board, first select a component, this component is added to the library.

Step 2: Right click on the black screen , the first option will be place a component , select a component and the will be placed on the board

Step 3: After all components are placed, the required connections have to be done from one component to other component,

Step 4: For execution, go to debug menu, there is a option RUN , click and the simulation starts showing you the output of the process



Kadi Sarva Vishwavidhyalaya, Gandhinagar
BCA Semester III
BCA 309: Specialization (E-Commerce)
E – COMMERCE TECHNOLOGY - 1

Rationale:
To provides information about computerized E-Business, its rules, E-Commerce models, basic infrastructure for online transaction.

Learning outcomes:
- Able to know fundamentals of structure for electronic business system.
- Will allow you to know different models of E - Commerce.
- Provide Knowledge of basic requirements for network of online business.

Teaching & Evaluating Scheme: Teaching Scheme would consist of classroom board based teaching as well as Group activity, Role play and Problem solving of relevant real time data.

The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations which consist of Term Work such as class test, quizzes, class participation, home assignments, presentation, Regular Attendance (i.e. Minimum 85%), Internal marks which consist of 15 (7.5 Term Work + 7.5 Sessional Exams) marks and External marks which consist of 35 for University examination.

Sub Code	Subject Title	Teaching Scheme		Exam Scheme				
		Cr	Hrs/ Week	Theory		Practical		Total
BCA 309	E-Commerce Technology – 1			Internal	External	Internal	External	Marks
		2	4	--	--	15	35	50

Unit – I **[50%]**

- **An Introduction to E-Commerce**: What is E-Commerce (Introduction And Definition), Transformation from Traditional Commerce to E-commerce, Goals of E-Commerce, Functions of E-Commerce, Scope of E-Commerce, Advantages and Disadvantages of E-Commerce, E-Commerce Applications
- **The Internet and WWW**: Internet, Domain Names (.edu, .com, .mil, .gov, .net etc.) , Types of Network, Internet Service Provider, World Wide Web

Applications: Online Trading, Online Banking, Online Booking, Online Payment

Unit – II **[50%]**

- **Models of E-Commerce:** E-Commerce and E-Business: B2C, B2B, C2G etc… (Government(G), Business(B), Customer(C) . . .)
- **Network Infrastructure for E-Commerce**: Website, Multimedia Objects, Equipments for Network Access, Different Internet types provided by ISP, Gateway Interface

Reference Books:

1. Web Commerce Technology Hand Book by Deniel Minilo, Emma minoli
2. E–Commence: A managerial Perspectives, By. P.T. Joseph, Tata McGraw Hill

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