Detailed Program

Bachelor of Computer Applications

(BCA)

Semester-IV

(2025-2029)

DOC202506200011

RNB GLOBAL UNIVERSITY
Educating stars for tomorrow

RNB GLOBAL UNIVERSITY

RNB Global City, Ganganagar Road,
Bikaner, Rajasthan 334601

OVERVIEW

RNB Global University follows Semester System along with Choice Based Credit System as per latest guidelines of University Grants Commission (UGC). Accordingly, each academic year is divided into two semesters, **Odd (July-December) and Even (January-June).**Also, the university follows a system of continuous evaluation along with regular updating in course curricula and teaching pedagogy.

The curriculum for BCA Program for (January-June) Even Semester, 2027 along with examination pattern is as follows:

Course Scheme

Semester –IV

S. No	Course Code	Course Category	Course Name	L	T	P	Credits
1.	BCAC14250	DSC10	Java Programming Language	3	0	0	3
2.	BCAC14251	DSC10	Java Programming Language Lab	0	0	2	1
3.	BCAC14252	DSC11	Computer Networks	3	0	0	3
4.	BCAC14253	DSC11	Computer Networks Lab	0	0	2	1
5.	BCAC14254	DSC12	Computer Graphics	3	0	0	3
6.	BCAC14255	DSC12	Computer Graphics Lab	0	0	2	1
7.	BCAC14256	DSC 13	Cyber Security	3	1	0	4
8.		DSE 2(a)	One from the Pool of DSE Courses	3	0	0	3
9.		DSE 2(b)	One from the Pool of DSE Courses	0	0	2	1
10.	AECE5502	AEC-4	Biodiversity and Environment Conversation (EVS 2))	2	0	0	2
11	IAPC99299	IAPC -2	Internship/Apprenticeship / Project/ **Community outreach**	2	0	0	2
12		VAC-4	One from the pool of VAC Group B	2	0	0	2
13.	WHNN99000		Workshops & Seminars/ Human Values & Social Service/NCC/NSS	-	-	-	1
		Total		**21**	**1**	**8**	**27**

DSC – Discipline specific Course
DSE – Discipline Specific Elective
SEC – Skill Enhancement Course
VAC – Value addition course
GE – General Elective

Discipline Specific Course

Discipline Specific Electives (DSE)						
S.No	**Course Code**	**Course Name**	**L**	**T**	**P**	**Credits**
1.	BCAE14002	Web Technology (DSE – 2(a))	3	0	0	3
2.	BCAE14003	Web Technology lab (DSE -2(b))	0	0	2	1

Value Addition Courses (VAC)

Value Addition Courses (VAC)						
Course Code		**Group B Odd Semester**	**L**	**T**	**P**	**Credits**
1.	VAC088026	Principle of Accounting – 2	2	0	0	2

EVALUATION SCHEME- THEORY

The evaluation of the theory paper of BCA would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessments as follows:

Internal Assessment

The distribution of Internal Assessment Marks is as follows:

Type	Details	Marks
Mid Term	One Mid-term Sessional	25
Quiz	Quiz based on MCQs	5
Marks obtained in various Tests, Assignments, Presentations, Tutorials etc.	Average of Marks obtained	15
Academic Performance including Attendance	Eligibility >75% Attendance	5
TOTAL		**50**

External Assessment

Type	Marks
Theory	50

EVALUATION SCHEME -PRACTICAL

The evaluation of the practical paper of BCA would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessment is as follows:

Internal Assessment

Type	Details	Marks
Marks obtained in various manuals, practical file, participation, any model prepared, output of practical	Average of marks obtained	45
Academic Performance including Attendance	Eligibility >75% Attendance	5
TOTAL	**50**	

External Assessment

Type	Marks
Practical	50

EVALUATION SCHEME- WORKSHOPS & SEMINARS AND HUMAN VALUES & SOCIAL SERVICE/NCC/NSS

1. The evaluation of Workshops & Seminar and Human Values & Social Service/NCC/NSS will be completed from Semester I – Semester VI. It will be evaluated internally by the various Forums & Schools Concerned. The credit for this will be given at the end of each Semester.

2. The students have to join club/clubs/Forums with the active participation in different activities of club. The students would be continuously assessed from Semester-I to Semester-IV and credits and marks would be given after the end of each Semester

1. Vision

To create an environment where a holistic education is given in order to ignite an inquisitive mind, inculcate the qualities of excellence, perceive the intricacies of research, seek out obstacles, overcome them, and carve out a niche for oneself.

2. Mission

- Enabling students to maximize their potential and use their professional standards through ethics and education to raise their level of competence and become change agents.
- Fostering a scholarly culture that fosters the phenomenon of giving back to society via researchand creative endeavors.
- To integrate partnerships that enhance knowledge in order to create a dynamic intellectualcapital.
- To employ emerging technology to create an inclusive learning environment that is integratedwith an improved educational process.
- To create a teaching-learning atmosphere that fosters resilience, sensitivity, and critical thinking,ultimately leading to the development of a strong personality.

3. Programme Educational Objectives (PEOs)

PEO1: To facilitate in development of basic fundamentals of Computer Applications that fit as a perfect foundation towards a beginning a professional career in industry.

PEO2: To develop programming skills of students by using fundamental knowledge of computerscience

PEO3: To apply new designs and solutions to complex real life problems using technologies.

PEO4: To play a creative role during professional life through turning problems to opportunities.

4. Program Outcomes (POs)

PO1: Technical understanding: Solve complicated problems using mathematics, physics, technical foundations, and a specialization in technology.

PO2: Problem analysis: Identify, formulate, analyze research materials, and analyze complex engineering problems using foundational principles of mathematics, natural sciences, and sciences to reach justifiable conclusions.

PO3: Application of modern technologies: Create, select, and apply appropriate approaches, tools, and advanced engineering and IT tools, such as predictions and modelling, to technically challenging processes while taking into account the constraints.

PO4: Expert Principles and Cyber Systems: The ability to use and provide expert principles andcyber systems in a global monetary environment.

PO5: Ultimate Education: Determine the demand for and expand the capacity to work as a Computing certified in permanent education.

PO6: The expert and society: Apply reasoning informed by contextual information to evaluate societal, health, safety, legal, and cultural issues, as well as the obligations that come with them, in the context of professional engineering activity.

PO7: Environmental and sustainable development: Display knowledge of the need for sustainable development by identifying the implications of professional technological solutions in society and the environment contexts.

PO8: Personality and Cooperative Learning: Ability to work as a member or manager in a varietyof diverse teams.

PO9: Ethics: Adhere to professional ethics, duties, and automotive technology norms by adoptingethical ideas.

PO10: Communication: Interact well with the technical community and society at large on associated technical activities, such as being able to understand and write effective reports and design documentation, give and receive clear directions.

PO11: Finance and project management: Demonstrate knowledge and understanding of technicaland professional principles and apply those to one's own work, as a member of the team andleader, to manage projects and in multidisciplinary domains.

PO12: Life-long learning: With socio-technological advancements, students will be able to

engage in independent and life-long learning.

5. Program Specific Outcomes (PSOs)

PSO1: Prepare for a potentially lucrative and employable profession of computer applications.

PSO2: Continue your education in Computer Science/Applications.

PSO3: Work **f**or yourself in the Indian and worldwide software markets.

PSO4: Comply with all applicable industrial standards.

6. Course Outcomes		
Course Codes & Course Names	**After completion of these courses' students should be able to**	
BCAC14250 - Java Programming Language	**CO1:**	Define the features of Java Programming Language with Syntax and structure of Java Programs and how to use various operatorsin Java.
	CO2:	Explain how to implement the Object-oriented features by writing Java programs.
	CO3:	Solve Arrays, Strings, Vectors, Packages etc. in Java and implementing the Exception handling Mechanism in Java.
	CO4:	Analyse different concepts to create and use Threads and Packages in Java.
	CO5:	Determine the different concepts of applets and adding them to a HTML File.
BCAC14251 - Java Programming Language Lab	**CO1:**	How to write programs for solving real world problems using java collection frame work.
	CO2:	Demonstrate programs using abstract classes.
	CO3:	Develop multithreaded programs.
	CO4:	Examine GUI programs using swing controls in Java
	CO5:	Create Java programs to implement error handling techniques using exception handling
BCAC14252 - Computer Networks	**CO1:**	How communication works in computer networks and to understand the basic terminology of computer networks
	CO2:	Explain the role of protocols in networking and to analyze the services and features of the various layers in the protocol stack
	CO3:	Develop design issues in Network Security and to understand security threats, security services and mechanisms to counter.
	CO4:	Classify basic devices like repeaters, bridges, gateways andquality of service
	CO5:	Interpret the network security, common threats, firewalls, and cryptography
BCAC14253 - Computer Networks Lab	**CO1:**	Name the structure and organization of computer networks; including the division into network layers, role of each layer, and relationships between the layers.
	CO2:	Explain the basic concepts of application layer protocol design; including client/server models, peer to peer models, and network naming.
	CO3:	Identify understanding of transport layer concepts and protocol design; including connection oriented and connection-less models, techniques to provide reliable data delivery and algorithms for congestion control and flow

		control.
	CO4:	Examine the network security, common threats, firewalls, and cryptography
	CO5:	Create algorithms for congestion control and flow control
BCAC14254 - Computer Graphics	**CO1:**	Show comprehensive introduction about computer graphics system
	CO2:	Interpret algorithms to generate the basic primitives
	CO3:	Identify 2d transformations
	CO4:	Compare with techniques of clipping, three-dimensional graphics and three-dimensional transformations
	CO5:	Familiar with animations
BCAC14255 - Computer Graphics Lab	**CO1:**	Define Geometric primitives using OpenGL
	CO2:	Explain scan line polygon filling using OpenGL
	CO3:	Identify basic transformations on objects using OpenGL
	CO4:	Classify clipping algorithm on lines using OpenGL
	CO5:	Design algorithm
BCAE14002 - Web Technology	**CO1:**	Define, analyze and create web pages using HTML, DHTML and Cascading Styles Sheets
	CO2:	Illustrate, analyze and build dynamic web pages using JavaScript and VB Script (client side programming).
	CO3:	Identify, analyze and build interactive web applications
	CO4:	Discover, analyze and build web applications using PHP
	CO5:	Assess, analyze and create XML documents and XML Schema
BCAE14003 - Web Technology Lab	**CO1:**	Select, understand, and analyze any suitable real time web application
	CO2:	Interpret java and server-side scripting languages to develop web applications
	CO3:	Develop and deploy real time web applications in web servers and in the cloud
	CO4:	Analyze this knowledge to .Net platforms
	CO5:	Determine real life examples
BCAC14256 - Cyber Security	**CO1:**	Define and evaluate the cyber security needs of an organization
	CO2:	Extend and analyze software vulnerabilities and security solutions to reduce the risk of exploitation
	CO3:	Identify the performance of cyber security systems
	CO4:	Analyze cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics software/tools

	CO5:	Determine troubleshoot cyber security systems
VAC088026 - Principle of Accounting – 2	**CO1:**	Define the basic concepts of accounting and financial statements
	CO2:	Remember the execution of the accounting process- Recording Classifying and Summarizing
	CO3:	Apply the principles and concepts of accounting in preparing the financial statements
	CO4:	Apply the use of accounting software
	CO5:	Determine software in preparation of Financial Statements
AECE55002 - Biodiversity & Environmental Conservation (EVS-II)	**CO1:**	Understand theoretical & Practical aspects of environment studies.
	CO2:	Acquire knowledge about environmental pollution sources, effects, and control measures of environmental pollution.
	CO3:	Analyzing causes of environmental degradation
	CO4:	Apply innovations in business- an environmental Perspective
	CO5:	Explain different Environmental laws and policies

7.CO PO Mapping

BCAC14250	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1	-	3	-	2	-	2	-	-	3
CO2	3	-	2	3	-	2	-	3	3	-	3	-
CO3	2	1	2	2	2	-	-	1	3	-	-	3
CO4	2	3	1	-	3	-	2	2	1	-	2	-
CO5	-	4	2	-	3	-	2	-	3	-	-	-

BCAC14251	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	-	3	-	-	-	-	2	1	3
CO2	2	-	2	3	-	2	-	-	-	-	-	-
CO3	2	2	2	2	3	-	3	1	-	3	-	-
CO4	3	3	1	-	3	-	-	-	-	1	-	-
CO5	-	3	-	3	-	2	-	2		3	2	-

BCAC14252	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	-	3	-	3	-	2	-	-	-
CO2	2	-	2	3	-	2	2	3	-	-	-	-
CO3	2	2	2	2	3	3	-	-	-	-	-	-
CO4	3	3	1	-	-	-	2	-	-	1	-	3
CO5		3		3	3	3	3		3		3	

BCAC14253	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	-	2	-	3	-	2	-	-	-
CO2	2	-	2	3	2	2	2	3	-	-	-	-
CO3	2	2	-	2	2	-	-	1	3	3	3	3
CO4	3	3	1	-	-	-	2	-	-	1	-	3
CO5		3	3	3		3		3		3	-	-

BCAC14254	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	3	-	2	-	3	-	2	2	-	-
CO2	2	-	2	3	2	2	2	3	-	-	-	-
CO3	2	2	2	-	2	-	3	1	3	3	3	3
CO4	1	3	1	-	-	-	2	-	-	1	-	-
CO5	2		2		3	3	2	3		2	3	-

BCAC14255	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	3	-	3	-	3	-	3	2	-	-
CO2	2	-	2	3	2	2	2	3	-	-	-	-
CO3	2	2	2	2	2	-	-	1	-	-	3	3
CO4	1	3	1	-	-	-	2	2	2	1	-	3
CO5		3	3	3	3	-	3		3	-	-	

BCAE14002	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	-	3	-	3	-	3	-	-	-
CO2	3	-	3	3	2	2	2	3	-	-	-	-
CO3	2	2	2	2	2	-	-	1	3	-	-	-
CO4	-	3	2	-	-	-	2	-	-	3	-	3
CO5	-	3	3	3	-	-	3	3	-	-	-	-

BCAE14003	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	1	-	3	-	3	-	3	3	-	-
CO2	3	-	3	3	3	2	2	3	-	-	-	-
CO3	2	2	2	2	-	-	-	-	-	3	-	-
CO4	-	3	2	-	-	-	2	3	2	3	-	-
CO5		3	3	3	-	3	-	3		3	3	3

BCAC14256	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	1	-	3	-	3	-	3	3	-	-
CO2	3	-	3	3	3	2	2	3	-	-	-	-
CO3	2	2	2	2	-	-	-	1	3	-	-	-
CO4	-	3	-	-	-	-	2	-	-	-	-	3
CO5		3	3	3	-	3	-	3	-	3	3	3

VAC088026	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	1		-	3	3		3	3	3
CO2	3	2	2	1	1	-	-	-	3	3	-	-
CO3	3	2	3	-	-	3	-	-	-	-	2	3
CO4	2	3	-	-	2	-	3	1	2	-	-	2
CO5	2	-	-	2	-	3	-	2	-	2	3	-

AECE55002	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	1	-	3	-	3	-	3	3	-	-
CO2	3	-	3	3	3	2	-	3	-	-	2	3
CO3	2	2	2	2	3	-	-	1	-	-	-	-
CO4	-	-	2	-	-	-	2	3	2	3	-	3
CO5		3	3	3		3		3		3	3	-

IAPC99299	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		2	3	3	2	3	3	3	3	2	-	2
CO2	2	2	2	2	2	2		3	2	-	-	-
CO3		3	-	2	-	3	-	-	-	-	-	-
CO4	3	2	-	2	2	2	-	-	-	2	3	2
CO5	2	3	2	3	2	3	-	-	2	-	2	3

8.Curriculum

Course Name: Java Programming Language

Course Code: BCAC14250

Objective:

- Understand fundamentals of programming such as variables, conditional and iterative execution, methods, etc.
- Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
- Be aware of the important topics and principles of software development.
- Have the ability to write a computer program to solve specified problems
- Be able to use the Java SDK environment to create, debug and run simple Java programs.

Course Outline

Unit I: Introduction

Object oriented programming, characteristics of object orientated languages, classes, Java Programming: Introduction, Data types, access specifiers, operators, control statements, arrays. Classes: Fundamentals, objects, methods, constructors. Inheritance: Super class, sub class, this and super operator, method overriding, use of final, packages, abstract class, interface. Polymorphism: Method overloading, constructor overloading.

Unit II: Exception Handling

Exception Class, built in checked and unchecked exceptions, user defined exceptions, use of try, catch, throw, throws, finally. Multi-threaded programming: Overview, comparison with multiprocessing, Thread class and runnable interface, life cycle, creation of single and multiple threads, thread priorities, overview of Synchronization. Java Library: String handling (only main functions), String Buffer class. Elementary concepts of Input/output :byte and character streams, System. in and System. out, print and println, reading from a file and writing in a file.

Unit III: Software Development using Java

Applets: Introduction, Life cycle, creation and implementation, AWT controls: Button, Label, Text Field, Text Area, Choice lists, list, scrollbars, check boxes, Layout managers, Elementary concepts of Event Handling: Delegation Event Model, Event classes and listeners, Adapter classes, Inner classes. **Swings:** Introduction and comparison with AWT controls.

Unit IV: Networking Basics
Socket (datagram and TCP/IP based client and server socket), factory methods, Inet Address JDBC: JDBC Architecture, JDBC Drivers, Connecting to the Database Introduction to Java Servlets: Life cycle, Interfaces and classes in javax. servlet package (only description) Creating a simple servlet.

Suggested Readings:

1. Patrick Naughton and Herbert Schildt, "Java-2 The Complete Reference", TMH.
2. Y. Daniel Liang, "Introduction to Java Programming, Comprehensive Version, 7/e"Pearson.
3. Krishnamoorthy R, PrabhuS ,"Internet and Java Programming", New Age Intl.
4. David Flanagan, Jim Farley, William Crawford and Kris Magnusson, "Java Enterprise in a Nutshell", O'Reilly.

Course Name: Java Programming Language Lab

Course Code: BCAC14251

Objective

To provide an overview of the various concept of OOP concept that can be used to develop desktop application.

To provide an overview of the various concept of OOP concept that can be used to develop desktop application.

Course Outline

1. Write a program to display "Hello World" in 'JAVA' language.
2. Implementation of input and output statements
3. Implementation of control statements.
4. Implementation of functions.
5. Implementation of single dimension, two dimension and three-dimension array
6. Write a JAVA program that uses a recursive function for solving Towers of Hanoi problem.
7. Write a JAVA program to implement the matrix ADT using a class. The operations supported by this ADT are:
    a) Reading a matrix.
    b) Addition of matrices.
    c) Printing a matrix.
    d) Subtraction of matrices.
    e) Multiplication of matrices.
8. Write a JAVA program that overloads the + operator and relational operators

(suitable)to perform the following operations:
a) Concatenation of two strings.

9. b) Comparison of two strings.
10. Write JAVA programs that illustrate how the following forms of inheritance are supported:
    a) Single inheritance
    b) Multiple inheritance
    c) Multi inheritance
    d) Hierarchical inheritance
11. Write a JAVA program that illustrates the order of execution of constructors and destructors when new class is derived from more than one base class

Course Name: Computer Networks

Course Code: BCAC14252

- To provide the knowledge of fundamental concepts of data structures using the c programming language so that students should get to know that how we are managing various kinds of data in the computer system and how it is accessed in a proper way.

Course Outline

Unit I: Introduction
Motivation, OSI model, Signals and media, Bits over signals, Synchronous communication, Modulation and modems, Bandwidth, Throughput, and noise, Time division and Frequency division multiplexing, Standards.

Unit II : Packet Transmission
Multiplexing, Frames, Error correction techniques, LAN/WAN topologies, Shared media and media access, Bus topology, CSMA/CD, Wireless and CSMA/CA, Ethernet addressing and Wiring, hubs.

Unit III: Other LAN technologies
Ring topology, Token passing rings, FDDI, Star topologies, Asynchronous transfer mode, IEEE 802.3, 802.5.
Routing Algorithms: Distance-Vector, Link-State, Shortest path computation, Dijkstra's algorithm, WAN technologies including frame relay, X.25, and ATM.

Unit IV: Internet working
Motivation, Concept, Goals, IP addressing, Address binding with ARP, IP Datagram, Encapsulation IP fragmentation and reassembly, ICMP, TCP, UDP concept and datagrams, **Network Services:** Electronic mail, File transfer, Remote login-introduction to protocol specification, Validation and testing.

Suggested Readings:

1. Forouzan, B.A., Data communication and Networking, McGraw Hill (2006) 4th ed.
2. Tanenbaum, A.S., Computer Networks, Prentice Hall (2003) 4th ed.
3. Comer, D.E., Internetworking with TCP/IP Vol. 1 Principles, Portals and Architecture, Prentice Hall of India (2005) 5th ed.
4. Stallings, W., Computer Networking with Internet Protocols and Tech., Prentice Hall of India (2007).

Course Name: Computer Networks Lab

Course Code: BCAC14253

Objectives

To provide the knowledge of Network tools, Network Devices, different types of cables and how we can make connection between systems.

Course Outline

List of Experiments

1. Study of different Network cables and practically implement the cross-wired cable and straight through wire using clamping tool.
2. Study Network tools and basic devices.
3. Study of Network IP addressing.
4. To study about different physical equipment's used for networking.
5. To study different internetworking devices in a computer network.
6. Aim: To study the working of Basic Networking Commands.
7. To assign IP address to the PC connected to the internet.
8. To connect the computers in Local Area Network.

Course Name: Computer Graphics

Course Code: BCAC14254

Objective

- Identify and explain the core concepts of computer graphics.
- Apply graphics programming techniques to design and create computer graphics scenes.
- Create effective OpenGL programs to solve graphics programming issues, including 3D transformation, objects modeling, colour modeling, lighting, textures, and ray tracing.

Course Outline

Unit I: Introduction
The Advantages of Interactive Graphics, Representative Uses of Computer Graphics, Classification of Application Development of Hardware and software for computer Graphics, Conceptual Framework for Interactive Graphics, Overview, Scan: Converting Lines, Scan Converting Circles, Scan Converting Ellipses.

Unit II: Hardcopy
Technologies, Display Technologies, Raster-Scan Display System, Video Controller, Random-Scan Display processor, Input Devices for Operator Interaction, Image Scanners, Working exposure on graphics tools like Dream Weaver, 3D Effects etc, Clipping Southland- Cohen Algorithm, Cyrus-Beck Algorithm, Midpoint Subdivision Algorithm.

Unit III: Geometrical Transformation
2D Transformation, Homogeneous Coordinates and Matrix Representation of 2D Transformations, composition of 2D Transformations, the Window-to-Viewport Transformations, Introduction to 3D Transformations Matrix.

Unit IV
Introductory Concepts: Multimedia Definition, CD-ROM and the multimedia highway, Computer Animation (Design, types of animation, using different functions), Uses of Multimedia, Introduction to making multimedia – The stage of Project, hardware & software requirements to make good multimedia skills and Training opportunities in Multimedia Motivation for Multimedia usage.

Suggested Readings:

1. Foley, Van Dam, Feiner, Hughes, Computer Graphics Principles& practice,2000.
2. D.J. Gibbs & D.C. Tsichritzs: Multimedia programming Object Environment& Frame work , 2000

3. Ralf Skinmeiz and Klana Naharstedt, Multimedia: computing, Communication andApplications, Pearson, 2001
4. D.Harn& Baker. Computer Graphics Prentice Hall of India,1986

CourseName: Computer Graphics Lab

Course Code: BCAC14255

Objectives

In this course we discuss about graphic function and program based on line, circle, ellipse, line clipping, moving car,2D or 3D Animation, kite. These all the programs are developed with or without using graphics functions. And to develop these program we use DOS-BOX platform and use C or C++ programming language to create these program

Course Outline

1. Students are required to understand the graphics library available in Compiler and other graphical software
2. Preliminary study of Open GL, Open CV
3. To make small program of graphics using C, JAVA

Course Name: Cyber Security

Course Code: BCAC14256

Objective

- Ensure the security of data and systems by safeguarding sensitive information, maintaining data accuracy, and ensuring reliable access to authorized users.
- Identify, assess, and mitigate risks from cyber threats, vulnerabilities, and attacks to minimize damage and ensure resilience in the face of cyber incidents**.**

Course Outline

Unit-I

Information security: overview, information security importance, information security components. Threats to information system- external and internal thread, security threat and vulnerability- overview, malware, type of malware: virus, worms, trojans, rootkits, robots, adware's, spywares, ransom wares, zombies etc., desktop security

Unit-II

Application security- database security, e- mail security, internet security, principles of security- confidentiality, integrity, availability, introduction to cryptography- symmetric key cryptography, asymmetric key cryptography, message authentication, applications of cryptography. Security technology- firewall, type of firewall, firewall benefits, VPN, antivirus software

Unit-III

Cyberspace- cloud computing &security, social network sites security, attack prevention passwords, protection against attacks in social media, securing wireless networks, security threats.

Unit-IV

Cybercrime-concept of cybercrime, type of cybercrime, phishing, cyber crime prevention, case study, security threats to e- commerce- electronic payment system, Digital Signature– digital signature process.

Unit-V

ISO- international organization for standardization, world intellectual property organization, cyber law- cyber law in India, IT act 2000, intellectual property rights- definition, intellectual property, categories of intellectual property, rights protected under intellectual property, copyright, patent and trademark, design- design law in India

Suggested Readings :

- Allan Friedman and P. W. Singer, Cyber Security and Cyber war: What Everyone Needs to Know by Published Oxford University
- Don Franke, Cyber Security Basics: Protect Your Organization by Applying the Fundamentals by Publisher CreateSpace Independent Publishing Platform, 2016
- Mayank Bhushan, Fundamental of Cyber Security

Course Name: Web Technology

Course Code: BCAE14002

Objectives

To help the students getting started with web programming using HTML, PHP and MySQL

Course Outline

Unit I

History of the Internet and World Wide Web, Search Engines, News-group, E-mail and its Protocols, Web Portal, Browsers and their versions, Its functions, URLs, web sites, Domain names, Portals. Static Web Development: HTML - Introduction to HTML, HTML Document structure tags, HTML comments, Text formatting, inserting special characters,
anchor tag, adding images and Sound, lists types of lists, tables, frames and floating frames, Developing Forms, Image maps.

Unit II

Introduction to Java Script: Data Types, Control Statements, operators, Built in and User Defined Functions, Objects in Java Script, Handling Events. CASEading Style Sheet: Types of Style Sheets – Internal, inline and External style sheets, creating styles, link tag.

Unit III

DHTML: Introduction to DHTML, Java Script& DHTML, Document Object Model, Filters, and Transitions, DHTML Events, Dynamically change style to HTML Documents.

Unit IV

Introduction to WYSIWYG Design tools, Introduction to Dreamweaver, Website Creation and

maintenance, Web Hosting and Publishing Concepts, XML: Introduction to XML-Mark up languages, Features of Mark up languages, XML Naming rules, Building block of XML Document, Difference between HTML & XML Components of XML, XML Parser, DTD's Using XML with HTML and CSS.

Suggested Readings:

1. The complete reference HTML, by Thomas A powell, TMH publication.
2. Mastering HTML 4.0 by Deborah S. Ray and Erich J. Ray. BPB Publication.
3. Internet and World Wide Web Deitel HM, Deitel ,Goldberg , Third Edition
4. HTML Black Book , Stephen Holzner, Wiley Dreamtech.
5. Rajkamal, "Web Technology", Tata McGraw-Hill, 2001.
6. Jeffrey C. Jackson, "Web Technologies : A Computer Science Perspective", Pearson.

Course Name: Web Technology Lab

Course Code: BCAE14003

Objectives

To help the students getting started with web programming using HTML, PHP and MySQL-

Course Outline

1. Students are to develop individual web pages, which should includes, picture, audio, running text
2. Students are also supposed to work and learn about various CMS available, hands on practice in front page/Web Publishing of MS Office

Course Name: Principal of Accounting -2

Course Code: VAC088026

Unit I

Preparation of Trading Account, Profit & Loss Account & Balance Sheet- Without adjustments and with adjustments.

Unit II

Meaning of Inventory, Objectives of Inventory Valuation, Inventory Systems, Methods of Valuation of Inventories-FIFO, LIFO and Weighted Average Method, Concept of Deprecation, Causes of Depreciation, Meaning of Depreciation Accounting, Method of Recording Depreciation, Methods of Providing Depreciation.

Unit-III

Accounting in Computerized Environment: Introduction to Accounting Software Package - Tally Prime An overview of Computerized Accounting systems - Salient Features and significance, Generating Accounting Reports.

Suggested Readings:

1. Maheshwari, S.N. and Maheshwari, S. K., (2009) An Introduction to Accountancy Eighth Edition, Vikas Publishing House.
2. Tulsian, P.C., (2009) Financial Accountancy, 2nd edition, Pearson Education.
3. Gupta R. L., & Gupta V.K., "Principles & Practice of Accounting", Sultan Chand &Sons, 1999.
4. Monga J R, "Introduction to Financial Accounting", Mayur Paperbacks, 2010.
5. Raja Sekaran/Lalitha, "Financial Accounting", Pearsons .

9. Lesson Plan

BCAC14250 – Java Programming Language

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Brief History of Java, Object oriented programming, characteristics of object orientated programming	C-1	Lecture
Unit-I	JDK Environment Variables, classes, Java Programming: classes, object, etc.	C-2	Lecture
Unit-I	JVM, Java Programming: Introduction, Data types,access specifiers,	C-3	Lecture
Unit-I	Fundamental Data types, operators, control statements, arrays.	C-4	Lecture
Unit-I	operators, control statements, arrays.	C-5	Lecture
Unit-I	Classes: Fundamentals, objects, methods.	C-6	Lecture
Unit-I	constructors.	C-7	Lecture
Unit-I	Inheritance: Super class, sub class, this and superoperator, method	C-8	Lecture
Unit-I	this and super operator, method overriding,	C-9	Lecture
Unit-I	use of final, packages, abstract class, interface.	C-10	Lecture
Unit-I	Polymorphism: Method	C-11	Lecture
Unit-I	overloading, constructor overloading.	C-12	Lecture
Unit-I	Home Assignment		Assignments
	Clarification Class	C-13	Clarification Class
Unit-II	Exception Handling	C-14	Lecture
Unit-II	Exception Handling	C-15	Lecture
Unit-II	Multi-threaded programming	C-16	Lecture
Unit-II	Multi-threaded programming	C-17	Lecture
Unit-II	Classroom Assignment	C-18	Classroom Assignment
Unit-II	Presentation	C-19	Presentation
Unit-II	Java Library	C-20	Lecture
Unit-II	Java Library	C-21	Lecture
Unit-II	Guest lecture 1	C-22	Lecture
Unit-II	Home Assignment		Lecture
	Clarification Class	C-23	Clarification Class
Unit-III	Applets	C-24	Lecture
Unit-III	Applets	C-25	Lecture
Unit-III	AWT controls:	C-26	Lecture
Unit-III	AWT controls:	C-27	Lecture
Unit-III	Event Handling	C-28	Lecture
Unit-III	Event Handling	C-29	Lecture
Unit-III	Swings	C-30	Lecture
Unit-III	Swings	C-31	Lecture
Unit-III	Home Assignment		Home Assignment
	Clarification Class	C-32	Clarification Class

Unit-IV	Class room Assignment	C-33	Class room Assignment
Unit-IV	Networking Basics:	C-34	Lecture
Unit-IV	Guest lecture	C-35	Lecture
Unit-IV	JDBC	C-36	Lecture
Unit-IV	JDBC	C-37	Lecture
Unit-IV	Webinar	C-38	Webinar
Unit-IV	Introduction to Java Servlets	C-39	Lecture
Unit-IV	Introduction to Java Servlets	C-40	Lecture
	Home Assignment		Home Assignment
	Clarification Class	C-41	Clarification Class
	Presentation	C-42	Presentation
	Quiz	C-43	Quiz
	Webinar	C-44	Webinar
	Seminar	C-45	Seminar

BCAC14250 – Java Programming Language Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1.	Write a program to display "Hello World" in 'JAVA' language.	P-1,2	Practical
2.	Implementation of input and output statements	P-3,4	Practical
3.	Implementation of control statements.	P-5,6	Practical
4.	Implementation of functions.	P-7,8	Practical
5.	Implementation of single dimension, two dimension and three-dimension array	P-9,10	Practical
6.	Write a JAVA program that uses a recursive function for solving Towers of Hanoi problem.	P-11,12	Practical
7.	Write a JAVA program to implement the matrix ADT using a class. The operations supported by this ADT are: a) Reading a matrix.	P-13,14	Practical
8.	b) Addition of matrices, c) Printing a matrix., d) Subtraction of matrices	P-15	Practical

BCAC14252 – Computer Networks

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Introduction, Type of Network, Transmission Mode	C-1	Lecture
Unit-I	Topologies	C-2	Lecture
Unit-I	OSI Model	C-3	Lecture
Unit-I	OSI Model	C-4	Lecture
Unit-I	OSI Model	C-5	Lecture
Unit-I	TCP/IP Model	C-6	Lecture
Unit-I	TCP/IP Model	C-7	Lecture
Unit-I	TCP/IP Model	C-8	Lecture
Unit-I	Bits Over Signals, Synchronous Communication	C-9	Lecture
Unit-I	Modulation	C-10	Lecture
Unit-I	Home Assignment		Home Assignment
Unit-I	Throughput and Noise	C-11	Lecture
Unit-I	Multiplexing-Time and Frequency	C-12	Lecture
	Clarification Class	C-13	Clarification Class
	Class Room Assignment	C-14	Class Room Assignment
Unit-II	Packet Transmission, Frames and Multiplexing	C-15	Lecture
Unit-II	Error Correction techniques	C-16	Lecture
Unit-II	LAN/WAN Topologies	C-17	Lecture
Unit-II	Home Assignment		Home Assignment
Unit-II	Shared Media and Media Access	C-18	Lecture
Unit-II	Bus Topology	C-19	Lecture
Unit-II	CSMA/CD	C-20	Lecture
Unit-II	Wireless and CSMA/CA	C-21	Lecture
Unit-II	Guest Lecture	C-22	Guest Lecture
Unit-II	Ethernet addressing	C-23	Lecture
Unit-II	Wiring hubs	C-24	Lecture
	Clarification Class	C-25	Clarification Class
	Presentation	C-26	Presentation
	Webinar	C-27	Webinar
Unit-III	Other Lan Technologies		Lecture
Unit-III	Ring Topology	C-28	Lecture
Unit-III	Home Assignment		Home Assignment
Unit-III	Token Pass Ring	C-29	Lecture
Unit-III	Shortest path computation	C-30	Lecture
Unit-III	Dijkstra's Algorithm,WAN technologies	C-31	Lecture
Unit-III	Star Topology, Asynchronous transfer mode	C-32	Lecture
Unit-III	IEEE 802.3, 802.5, Distance-Vector, Link-State	C-33	Lecture
	Clarification Class	C-34	Clarification Class
	Webinar	C-35	Webinar

	Class Room Assignment	C-36	Class Assignment
	Presentation	C-37	Presentation
Unit-IV	Internet Working	C-38	Lecture
Unit-IV	Concept, Goals, Ip addressing, Addressing Binding with ARP, Validation and testing	C-39	Lecture
Unit-IV	Guest Lecture		Guest Lecture
Unit-IV	Class Room Assignment	C-40	Class Assignment
Unit-IV	IP Datagram, Electronic mail, Remote login, IP fragmentation, ICMP, TCP and UDP	C-41	Lecture
Unit-IV	Quiz	C-42	Activity
Unit-IV	Clarification Class	C-43	Clarification Class
	Presentation	C-44	Presentation
	Class Room Assignment	C-45	Class Assignment

BCAC14253 – Computer Networks Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1.	Study of Different Cables& Use of Crimping Tool	P-1,2	Practical
2.	Study of Network Tools	P-3,4	Practical
3.	Study of Network Devices	P-5,6	Practical
4.	Study of Network IP Addressing	P-7,8	Practical
5.	Study of Network IP Addressing	P-9,10	Practical
6.	Study of Network IP Addressing	P-11,12	Practical
7.	Study about different physical equipment's used fornetworking.	P-13,14	Practical
8.	Study different internetworking devices in a computer network	P-15,16	Practical
9.	Study the working of Basic Networking Commands	P-17,18	Practical
10.	To assign IP address to the PC connected to the internet	P-19,20	Practical
11.	To connect the computers in Local Area Network	P-21,22	Practical
12.	Workshop	P-23,24	Workshop
13.	Clarification Class	P-25,26	Clarification Class
14.	Activity	P-27,28	Activity
15.	Clarification Class	P-29,30	Clarification Class

BCAC14254 – Computer Graphics

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Introduction of Computer graphics, Concept	C-1	Lecture
Unit-I	The Advantages of Interactive Graphics, Representative Uses of Computer Graphics,	C-2	Lecture
Unit-I	The Advantages of Interactive Graphics, Representative Uses of Computer Graphics,	C-3	Lecture
Unit-I	Classification of Application Development of Hardwarefor computer Graphics	C-4	Lecture
Unit-I	software for computer Graphics, Conceptual Framework for Interactive Graph	C-5	Lecture
Unit-I	software for computer Graphics, Conceptual Framework for Interactive Graph	C-6	Lecture
Unit-I	software for computer Graphics, Conceptual Framework for Interactive Graph	C-7	Lecture
Unit-I	Overview, Scan: Converting Lines, Algorithms	C-8	Lecture
Unit-I	Scan: Converting Lines, Algorithms	C-9	Lecture
Unit-I	Scan Converting Circles, Algorithm	C-10	Lecture
Unit-I	Scan Converting Ellipses Algorithm	C-11	Lecture
Unit-I	Home Assignment		Take Home Assignments
	Clarification Class	C-12	Clarification Class
Unit-II	Technologies, Display Technologies, Raster-ScanDisplay System,	C-13	Lecture
Unit-II	Technologies, Display Technologies, Raster-Scan Display System,	C-14	Lecture
Unit-II	Webinar	C-15	Webinar
Unit-II	Video Controller, Random-Scan Display processor,	C-16	Lecture
Unit-II	Video Controller, Random-Scan Display processor,	C-17	Lecture
Unit-II	Guest lecture	C-18	Lecture
Unit-II	Input Devices for Operator Interaction, Image Scanners	C-19	Lecture
Unit-II	Working exposure on graphics tools like DreamWeaver, 3D Effects etc	C-20	Lecture
Unit-II	Clipping Southland- Cohen Algorithm,	C-21	Lecture
Unit-II	Cyrus-Beck Algorithm, Midpoint Subdivision Algorithm	C-22	Lecture
Unit-II	Midpoint Subdivision Algorithm	C-23	Lecture
Unit-II	Presentation	C-24	Presentation

Unit-II	Home Assignment		Home Assignment
	Clarification Class	C-25	Clarification Class
Unit-III	2D Transformation	C-26	Lecture
Unit-III	Homogeneous Coordinates and Matrix Representation of 2D Transformations	C-27	Lecture
Unit-III	composition of 2D Transformations	C-28	Lecture
Unit-III	the Window-to-Viewport Transformations	C-29	Lecture
Unit-III	Introduction to 3D Transformations Matrix	C-30	Lecture
Unit-III	3D Transformations Matrix	C-31	Lecture
Unit-III	Home Assignment		Home Assignment
Unit-III	Clarification Class	C-32	Clarification Class
Unit-IV	Introductory Concepts: Multimedia Definition	C-33	Lecture
Unit-IV	CD-ROM and the multimedia highway	C-34	Lecture
Unit-IV	Computer Animation (Design, types of animation, using different functions)	C-35	Lecture
Unit-IV	Computer Animation (Design, types of animation, using different functions)	C-36	Lecture
Unit-IV	Uses of Multimedia, Introduction to making multimedia	C-37	Lecture
Unit-IV	Guest lecture	C-38	Lecture
Unit-IV	Uses of Multimedia, Introduction to making multimedia	C-39	Lecture
Unit-IV	Home Assignment	C-40	Home Assignment
Unit-IV	Clarification Class	C-41	Clarification Class
Unit-IV	Presentation	C-42	Presentation
	Classroom Assignment	C-43	Classroom Assignment
	Webinar	C-44	Webinar
	Quiz	C-45	Quiz

BCAC14255 – Computer Graphics Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1.	Introduction of graphics library of C	P-1,2	Practical
2.	Project in c	P-3,4	Practical
3.	Students are required to understand the graphics library available in Compiler and other graphical software	P-5,6	Practical
4.	Students are required to understand the graphics library available in Compiler and other graphical software	P-7,8	Practical
5.	Students are required to understand the graphics library available in Compiler and other graphical software	P-9,10	Practical
6.	Students are required to understand the graphics library available in Compiler and other graphical software	P-11,12	Practical
7.	Preliminary study of Open GL, Open CV	P-13,14	Practical
8.	Preliminary study of Open GL, Open CV	P-15,16	Practical
9.	Preliminary study of Open GL, Open CV	P-17,18	Practical
10.	Preliminary study of Open GL, Open CV	P-19,20	Practical
11.	To make small program of graphics using C, JAVA	P-21,22	Practical
12.	To make small program of graphics using C, JAVA	P-23,24	Practical
13.	Presentation	P-25,26	Presentation
14.	Clarification Class	P-27,28	Clarification Class
15.	Quiz	P-29,30	Quiz

BCAE14002 – Web Technology

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	What is Web Technology, Area of HTML, Why we study HTML, JS and CSS	C-1	Lecture
Unit-I	History on Internet and World wide Web	C-2	Lecture
Unit-I	Search Engines, ISP, Domain Name,	C-3	Lecture
Unit-I	URL, E-mail and All technology related to E-Mail	C-4	Lecture
Unit-I	What is Difference Between Static and Dynamic Web page	C-5	Lecture
Unit-I	Introduction of HTML, Tags Related to Text Formatting Tools	C-6	Lecture
Unit-I	anchor tags, adding images and sounds, Lists in HTML	C-7	Lecture
Unit-I	Frames in HTML	C-8	Lecture
Unit-I	Tables in HTML	C-9	Lecture
Unit-I	Forms in HTML-1,2	C-10	Lecture
Unit-I	global and Local Tags	C-11	Lecture
Unit-I	ID and Class Attributes in html, Mao tag in HTML	C-12	Lecture
	Clarification Class	C-13	Clarification Class
	Class Room Assignment	C-14	Class Room Assignment
	Home Assignment		Home Assignments
Unit-II	Introduction to Java Script, Data Types and Controls	C-15	Lecture
Unit-II	Types of Operators, Functions, Types of Functions,Objects in Java Scrip	C-16	Lecture
Unit-II	Handling Events	C-17	Lecture
Unit-II	Introduction of CSS, Internal and External CSS	C-18	Lecture
Unit-II	Introduction of JS, Uses of CSS	C-19	Lecture
Unit-II	Designing of WebPage-1 Uses of HTML and CSS	C-20	Lecture
Unit-II	CSS Colours, CSS Borders, CSS Margins	C-21	Lecture
	Class Room Assignment-	C-22	Lecture
	Guest Lecture	C-23	Guest lecture
Unit-II	CSS Outline, CSS text, CSS Tables, CSS Tips	C-24	Lecture
	Clarification Class	C-25	Clarification Class
	Presentation	C-26	Presentation
Unit-III	DHTML	C-27	Lecture
Unit-III	What is DHTML, What is Role in HTML	C-28	Lecture
Unit-III	Java Script and DHTML, Document Object model	C-29	Lecture
Unit-III	Filter and Transitions	C-30	Lecture
Unit-III	DHTML Events-I	C-31	Lecture
Unit-III	DHTML Events-II	C-32	Lecture
Unit-III	Dynamic Changes in HTML Document-1	C-33	Lecture

Unit-III	Dynamic Changes in HTML Document-2	C-34	Lecture
Unit-III	Clarification Class	C-35	Clarification Class
	Home Assignment		Home Assignment
	Presentation	C-36	Lecture
Unit-IV	Website Creation	C-37	Lecture
Unit-IV	Introduction of tools like dream viewer, Code Editor	C-38	Lecture
Unit-IV	Web Hosting, Publishing, Introduction of XML	C-39	Lecture
Unit-IV	XML Features, ML Naming rules, Difference between HTML and XML	C-40	Lecture
Unit-IV	Class Room Assignment-3	C-41	Lecture
Unit-IV	XML Parser DTD using XML, XML with CSS	C-42	Lecture
Unit-IV	Quiz	C-43	Lecture
	Clarification Class	C-44	Lecture
	Presentation	C-45	Lecture
	Home Assignment		Lecture

BCAE14003 – Web Technology Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1.	Introduction of HTML, Browser, Online and Offlineeditor	P-1,2	Practical
2.	Basic tags, text formatting tags	P-3,4	Practical
3.	List and Type Definition Tags, Image and Anchortags	P-5,6	Practical
4.	Use of tables in HTML	P-7,8	Practical
5.	Use of Frames in HTML	P-9,10	Practical
6.	Introduction of JavaScript, Variables and TypeCasting in HTML	P-11,12	Practical
7.	Form in HTML	P-13,14	Practical
8.	Use of DHTML and Use in HTML	P-15,16	Practical
9.	Introduction of CSS, Tags related CSS	P-17,18	Practical
10.	Use of XML and How use in WEB Designing	P-19,20	Practical
11.	XML Syntax and Use in HTML Coding	P-21,22	Practical
12.	Clarification Class	P-23,24	Clarification Class
13.	Clarification Class	P-25,26	Clarification Class
14.	Revision	P-27,28	Clarification Class
15.	Revision	P-29,30	Clarification Class

AECE55002- Biodiversity & Environmental Conservation (EVS-II)

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Introduction to Biodiversity and Conservation	C-1	Lecture
Unit-I	Levels of biological diversity: genetic, species and ecosystem diversity	C-2	Lecture
Unit-I	Bio-geographic zones of India;	C-3	Lecture
Unit-I	Biodiversity patterns and global biodiversity hot spots India as a mega biodiversity nation	C-4	Lecture
Unit-I	Endangered and endemic species of India	C-5	Lecture
Unit-I	Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions;	C-6	Lecture
Unit-I	Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity	C-7	Lecture
Unit-I	Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value	C-8	Lecture
Unit-I	Clarification Class I	C-9	Clarification Class
Unit-II	Environmental Pollution: Introduction	C-10	Lecture
Unit-II	Environmental Pollution: types, causes, effects, and controls; Air, water, soil, and noise pollution	C-11	Lecture
Unit-II	Presentation I	C-12	Presentation
Unit-II	Classroom Assignment I	C-13	Classroom Assignment
Unit-II	Nuclear hazards and human health risks,	C-14	Lecture
Unit-II	Solid waste management: Control measures of urban and industrial waste	C-15	Lecture
Unit-II	Pollution case studies	C-16	Lecture
Unit-II	Environmental Policies & Practices: Sustainability and sustainable development	C-17	Lecture
Unit-II	Climate change, global warming, ozone layer depletion, acid rain, and impacts on human communities and agriculture	C-18	Case Studies
Unit-II	Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act;	C-19	Lecture
Unit-II	Clarification Class II	C-20	Lecture
Unit-III	Human Communities and the Environment-Introduction	C-21	Lecture
Unit-III	Human population growth: Impacts on	C-22	Clarification Class

	environment, human health and welfare		
Unit-III	Resettlement and rehabilitation of project-affected persons	C-23	Lecture
Unit-III	Classroom Assignment II	C-24	Lecture
Unit-III	Presentation II	C-25	Presentation
Unit-III	Quiz	C-26	Classroom Assignment
Unit-III	Case studies (e.g., CNG vehicles in Delhi).	Case Studies	Quiz
Unit-III	Fieldwork; Visit an area to document environmental assets: river/ forest/ flora/fauna, etc.	C-27	Lecture
Unit-III	Visit to a local polluted site-Urban/Rural/Industrial/Agricultural. Study of common plants, insects, birds, and basic principles of identification	C-28	Lecture
Unit-III	Study of simple ecosystems-pond, river, Delhi Ridge, etc.	C-29	Lecture
Unit-III	Clarification Class III	C-30	Lecture

BCAC14256- Cyber Security

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Information security: overview, information security importance	C-1	Lecture
Unit-I	Information security components	C-2	Lecture
Unit-I	Threats to information system- external and internal thread	C-3	Lecture
Unit-I	Security threat and vulnerability- overview, malware,	C-4	Lecture
Unit-I	Type of malware, virus, worms	C-6	Lecture
Unit-I	Trojans, rootkits, robots,	C-7	Lecture
Unit-I	Adware's	C-8	Lecture
Unit-I	Spywares, ransom wares, zombies etc., desktop security	C-9	Lecture
	Clarification class	C-10	Clarification Class
Unit-II	Application security- database security, e- mail security	C-11	Lecture
Unit-II	Internet security, principles of security- confidentiality, integrity,	C-12	Lecture
Unit-II	Availability, introduction to cryptography- symmetric keycryptography	C-13	Lecture
Unit-II	Asymmetric key cryptography, message authentication	C-14	Lecture
Unit-II	Home Assignment		Home Assignments
Unit-II	Class room Assignment	C-15	Class room Assignment
Unit-II	applications of cryptography, Security technology- firewall	C-16	Lecture
Unit-II	type of firewall, firewall benefits	C-17	Lecture
Unit-II	VPN, antivirussoftware	C-18	Lecture
Unit-II	Quiz	C-19	Quiz
Unit-II	Introduction of JS, Uses of CSS	C-20	Lecture
Unit-II	Designing of WebPage-1 Uses of HTML and CSS	C-21	Lecture
Unit-II	CSS Colours, CSS Borders, CSS Margins	C-22	Lecture
	Clarification Class	C-23	Clarification Class
	Guest Lecture	C-24	Guest lecture
Unit-III	Cyberspace	C-25	Lecture
Unit-III	cloud computing &security	C-26	Clarification Class
Unit-III	social network sites security, attack prevention passwords	C-27	Presentation
Unit-III	protection against attacks in social media	C-28	Lecture
Unit-III	securing wireless networks	C-29	Lecture
Unit-III	security threats	C-30	Lecture

	Clarification Class	C-31	Clarification Class
Unit-IV	Cybercrime-concept of cybercrime, type of cybercrime	C-32	Lecture
Unit-IV	phishing, cyber crime	C-33	Lecture
Unit-IV	prevention, case study,	C-34	Lecture
Unit-IV	security threats to e- commerce- electronic payment system	C-35	Lecture
	Classroom Assignment	C-36	Classroom Assignment
	Quiz		Quiz
Unit-IV	Digital Signature– digital signature process.	C-37	Lecture
	Clarification Class	C-38	Clarification Class
Unit-V	ISO- international organization for standardization	C-39	Lecture
Unit-V	world intellectual property organization, cyber law- cyber law in India	C-40	Lecture
Unit-V	IT act 2000, intellectual property rights- definition	C-41	Class Room Assignment
Unit-V	Intellectual property, categories of intellectual property	C-42	Lecture
Unit-V	Rights protected under intellectual property, copyright	C-43	Lecture
Unit-V	Patent and trademark, design- design law in India	C-44	Lecture
	Clarification Class	C-45	Clarification Class
	Home Assignment		Home Assignment

VAC088026- Principals of Accounting -2

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Preparation of Trading Account	C-1	Lecture
Unit-I	Profit & Loss Account	C-2	Lecture
Unit-I	Profit & Loss Account	C-3	Lecture
Unit-I	Profit & Loss Account & Balance Sheet	C-4	Activity
Unit-I	Class Assignment	C-5	Class Assignment
Unit-I	Profit & Loss Account & Balance Sheet	C-6	Lecture
Unit-I	Without adjustments and	C-7	Lecture
Unit-I	Without adjustments	C-8	Lecture
Unit-I	Class Assignment	C-9	Class Assignment
Unit-I	Without adjustments and with adjustments.	C-10	Lecture
	Clarification Class	C-11	Clarification Class
Unit-II	Meaning of Inventory, Objectives of Inventory Valuation	C-12	Lecture
Unit-II	Inventory Systems	C-13	Lecture
Unit-II	Methods of Valuation of Inventories-FIFO	C-14	Lecture
Unit-II	LIFO and Weighted Average Method	C-15	Lecture
Unit-II	Concept of Deprecation	C-16	Class Assignment
Unit-II	Causes of Depreciation	C-17	Presentation
Unit-II	Meaning of Depreciation Accounting	C-18	Lecture
Unit-II	Method of Recording Depreciation	C-19	Lecture
Unit-II	Class room Assignment	C-20	Class room Assignment
	Home Assignment		Home Assignment
	Clarification Class	C-21	Clarification Class
Unit-III	Accounting in Computerized Environment	C-22	Lecture
Unit-III	Introduction to Accounting	C-23	Lecture
Unit-III	Home Assignment		Home Assignment
Unit-III	Software Package - Tally Prime	C-24	Lecture
Unit-III	An overview of Computerized Accounting systems	C-25	Lecture
Unit-III	Salient Features	C-26	Lecture
Unit-III	Salient Features and significance	C-27	Lecture
Unit-III	Generating Accounting Reports.	C-28	Lecture
Unit-III	Class room Assignment	C-29	Class room Assignment
	Clarification Class	C-30	Clarification Class

Note: The review of Syllabus happens on periodic basis for the benefit of the students. Incase there are changes in curriculum due to review, students would be intimated in writing.

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