Detailed Program

Bachelor of Computer Applications

(BCA)

Semester-II

(2025-2029)

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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 2026 along with examination pattern is as follows:

Course Scheme

Semester–II

S. No.	Course Code	Course Category	Course Name	L	T	P	Credits
1.	BCAC14150	DSC 4 (a)	Digital Electronics	3	0	0	3
2.	BCAC14151	DSC 4 (b)	Digital Electronics Lab	0	0	2	1
3.	BCAC14152	DSC 5 (a)	Data Structure using C	3	0	0	3
4.	BCAC14153	DSC 5 (b)	Data Structure using C Lab	0	0	2	1
5.	BCAC14154	DSC 6 (a)	Operating System	3	0	0	3
6.	BCAC14155	DSC 6 (b)	Operating System Lab	0	0	2	1
7.		GE 2	One from the Pool of GE – Group B	3	1	0	4
8.	AECE55001	AEC 2	Study of Ecosystem and Natural Resources (EVS 1)	2	0	0	2
9.	SEC077002	SEC 2	Ability and skill enhancement-II	2	0	0	2
10.		VAC – 2	One from the pool of VAC Group B	2	0	0	2
11.	WHNN99000		Workshops & Seminars/ Human Values Social Service/NCC/NSS	-	-	-	1
	Total			**18**	**1**	**6**	**23**

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

General Elective Courses (GE)

S. No.	Course Code	Course Category	Course Name	L	T	P	Credits
1.	GEC066007	(GE 2)	Principles of Management	4	0	0	4

Value Added Courses (VAC)

S. No.	Course Code	Course Category	Course Name	L	T	P	Credits
1.	VAC088003	(VAC 2)	Introduction to Computers and IT (VAC – 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 research and creative endeavours.
- To integrate partnerships that enhance knowledge in order to create a dynamic intellectual capital.
- To employ emerging technology to create an inclusive learning environment that is integrated with 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 beginning a professional career in industry.

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

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 and cyber 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 variety of diverse teams.

PO9: Ethics: Adhere to professional ethics, duties, and automotive technology norms by adopting ethical 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 technical and professional principles and apply those to one's own work, as a member of the team and leader, 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 for 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**	
BCAC14150 - Digital Electronics	**CO1**	Define different type of codes and number systems which are used in digital transmission and computer systems.
	CO2	Demonstrate the codes and number systems converting circuits and Compare different types of logic families which are the basic unit of different types of logic gates in the domain of economy, performance and efficiency.
	CO3	Apply different types of digital electronic circuit using various mapping and logical tools and know the techniques to prepare the most simplified circuit using various mapping and mathematical methods.
	CO4	Categorize different types of with and without memory element digital electronic circuits for particular operation, within the real time of economic, performance, efficiency, user friendly andenvironmental constraints.
	CO5	Justify the nomenclature and technology in the area of various memory devices used and apply the memory devices in different types of digital circuits for real world application.
BCAC14151- Digital Electronics Lab	**CO1**	Define the basics of gates.
	CO2	Contrast basic combinational circuits and verify the functionalities
	CO3	Apply the design procedures to design basic sequential circuits
	CO4	Examine about counters
	CO5	Explain about Shift registers
GEC066007- Principles of Management	**CO1**	Understand the Nature of Management
	CO2	Understand the Planning and Decision Making
	CO3	Apply the concept of management in Organizing.
	CO4	Apply Directing, Leadership, Co-ordination and Controlling
	CO5	Compile isolate issues and formulate best control methods
BCAC14154 - Operating System	**CO1**	Label about operating systems, functions of operating systems,system calls.
	CO2	Explain about process coordination and process scheduling algorithms

	CO3	Construct memory management, critical section and deadlock handling algorithms.
	CO4	Classify about file management
	CO5	Determine disk scheduling algorithms
BCAC14155 - Operating System Lab	**CO1**	Define the advantages of Unix OS
	CO2	Explain and debug, C programs created on UNIX platforms
	CO3	Develop and if necessary, install standard libraries
	CO4	Distinguish between different platforms
	CO5	Evaluate knowledge of file system and Android OS
BCAC14152 - Data Structure using C	**CO1**	What is able to walk through insert and delete for different data structures.
	CO2	Compare to calculate and measure efficiency of code
	CO3	Apply some interesting algorithms like Huffman, Quick Sort, and Shortest Path etc.
	CO4	Analyze to walkthrough algorithm.
	CO5	Build programming skills
BCAC14153– Data Structure using C Lab	**CO1**	Define how to design and analyze the time and space efficiency of the data structure
	CO2	Explain capable to identity the appropriate data structure for given problem
	CO3	Make use of practical knowledge on the applications of data structures
	CO4	Analyze programming skills
	CO5	Evaluate various Design Techniques of Algorithms and understand the real implementation of Sorting, Greedy Method and Dynamic Programming.
SEC077002 - Ability & Skill Enhancement – II	**CO1**	Select the correct phonetic symbols for improving language
	CO2	Operate reading and writing skills in English
	CO3	Prepare listening and speaking skills in English
	CO4	Focus in understanding the ethics, virtues and values
	CO5	Aware about etiquettes and personal branding
AECE55001 - Study of Ecosystem and	**CO1**	Understand theoretical & Practical aspect of environment studies. About various conservation strategies and problems with environment.

Natural Resources	**CO2**	Define the importance of Environmental education and ecosystem & acquire the knowledge about environmental pollution sources, effects and control measures of environmental pollution.
	CO3	Apply basic Environmental Concepts
	CO4	Analyze causes of Environment degradation & apply innovations in business- an environmental Perspective
	CO5	Explain different Environmental laws and policies.
VAC088003 – Introduction to Computers and IT	**CO1**	Identify and recall the fundamental concepts of computer systems, including hardware, software
	CO2	Explain the working principles of input, output, processing, and storage units in a computer system
	CO3	Demonstrate the ability to operate basic computer applications such as word processors
	CO4	Examine different types of networks and their architectures, and evaluate the significance of cyber security in IT systems
	CO5	Assess the impact of Information Technology on business, education, and society, considering ethical and environmental aspects.

7. CO PO Mapping

BCAC14150	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	-	3	2	2	3	3	1	3	2	2	3
CO2	1	2	-	2	-	2	2	3	1	-	-	-
CO3	3	3	3	2	3	-	1	-	2	2	-	-
CO4	3	-	2		1	2	3	3	-	-	-	-
CO5	-	3	3	3	-	-	3	-	3	3	-	3

BCAC14151	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	3	3	3	-	2	1	1	-	3	2	2
CO2	2	2	3	2	3		3	2	-	-	-	-
CO3	3	3	-	-	-	2	2	3	-	-	-	-
CO4	2	-	3	3	3	1	-		-	-	-	-
CO5	-	3	3	-	3	-	3	-	3	-	3	3

GEC066007	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	3	2	1	-	3	-	-	-	-
CO2	3	3	3	3	1	-	-	2	-	-	-	-
CO3	2		2	3	3	1	2	-	-	-	-	-
CO4	3	2	3	2	1	-	3	2	3	1	-	2
CO5	1	-	2	3	-	3	3	3	3	-	3	3

BCAC14154	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	3	2	1	-	3	-	3	2	2
CO2	3	3	3	3	1	-	-	2	2	3	1	2
CO3	2	-	-	-	3	1	2	2	-	-	-	-
CO4	3	2	3	2	1	-	-	-	3	-	-	-
CO5	3	3	-	3	-	3	-	-	3	-	-	-

BCAC14155	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	3	2	1	-	3		-	-	-
CO2	3	3	3	3	1	-		2	2	-	-	-
CO3	2		2	3	3	1	-	-		-	-	-
CO4	3	2	3	2	1	-	3	2	3	-	-	-
CO5	-	3	-	3	-	3	3	-	3	-	3	-

BCAC14152	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	3	2	1	-	3	-	-	-	-
CO2	3	3	3	3	1	-	-	2	-	-	-	-
CO3	2	-	2	-	3	1	2	2	-	-	-	-
CO4	3	2	3	2	1	-	3	2	3	1		2
CO5	-	3	-	3	-	3	-	-	3	-	3	3

BCAC14153	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	-	2	1	-	3	2		2	1
CO2	2	-	3	1	2	3	2		2	2	1	3
CO3	3	3	3		3	2	1	-	-	-	-	-
CO4	3	2	1	3	2	1		3	-	-	-	-
CO5	-	3	-	3	-	2	3	-	3	-	-	-

AECE55001	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	2	3	3	2	-	3	3	3	2	3	3
CO2	2	2	2	2	2	-	-	3	2	-	-	-
CO3	-	3	3	2		3	3	-	3	-	-	-
CO4	3	2		2	2		3	3	2	-	-	-
CO5	2	3	2	3	-	-	2	-	-		2	2

SEC077002	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	-	3	3	-	3		-	-	-
CO2	3	2	2	3	2	2	-	2	2	-	-	-
CO3	3	3	-	-	2		-	-	-	-	-	-
CO4	3	3	3	2	2	2	-	2	3	3	2	2
CO5	3	3	2	3	2	3	3	3	2	-	2	2

VAC088003	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	-	3	3	-	3		-	-	-
CO2	3	2	2	3	2	2	-	2	2	-	-	-
CO3	3	3	-	-	2		-	-	-	-	-	-
CO4	3	3	3	2	2	2	-	2	3	3	2	2
CO5	3	3	2	3	2	3	3	3	2	-	2	2

8. Curriculum

Course Name: Digital Electronics

Course Code: BCAC14150

Objectives

- To learn about the design principles of different digital electronic circuits
- To study the applications of above circuits
- To provide an overview of the various digital logic gates and circuits. Implementation and verification of various logic circuits.

Course Outline

Unit I: Number System

Decimal numbers, binary numbers, binary arithmetic, 1'sand2's complements, octal, Numbers, hexa decimal numbers, inter conversions of number systems, Digital codes: Binary coded decimal (BCD),Gray code, Excess-3code, Format of ASE II code. Detection and correction codes, detecting and correcting an error.

Unit II: Logic Gates Positive and negative logic, NOT gate, OR gate, AND gate, NAND gate, NOR gate, EX-OR and EX-NOR gates. Symbol, truth table, circuit diagram for basic gates using diodes and transistors, universal properties of NAND & NOR gates.

Unit III: Boolean Algebra

Boolean operations, logic expressions, rules and laws of Boolean algebra, De Morgan's theorems, simplification of Boolean expressions using Boolean algebra techniques. SOP and POS form of Boolean expressions for logic network, min-terms, max-terms, simplification of Boolean expressions using Karnaugh map techniques (up to 4 variables).

Unit IV: Counters

Design of asynchronous and synchronous, up-down and programmable counters, Mod Counters and Ripple Counters **Registers:** shift registers, Serial Registers and their applications.

Suggested Readings:

- Modern Digital Electronics- R. P. Jain, Tata McGraw Hill Pub. Company
- Digital Fundamentals-Thomas L. Floyd, Universal Publishing House
- Digital Electronics: An Introduction to Theory and Practice-William H. Gothmann, Prentice Hall of India
- Digital Principles and Applications ,A.P. Malvino, McGraw Hill International Editions.

Course Name: Digital Electronics Lab

Course Code: BCAC14151

Course Outline

List of Experiments (Not limiting to)

1. Study of Logic Gates: Truth-table verification of OR, AND, NOT, XOR, NAND and NOR gates; Realization of OR, AND, NOT and XOR functions using universal gates.
2. Half Adder / Full Adder: Realization using basic and XOR gates.
3. Half Subtractor / Full Subtractor: Realization using NAND gates.
4. 4-Bit Binary-to-Gray & Gray-to-Binary Code Converter: Realization using XOR gates.
5. 4-Bit and 8-Bit Comparator: Implementation using IC7485 magnitude comparator chips
6. Multiplexer: Truth-table verification and realization of Half adder and Full adder using IC74153 chip.
7. De multiplexer: Truth-table verification and realization of Half subtractor and Full Subtractor using IC74139 chip.
8. Flip Flops: Truth-table verification of JK Master Slave FF, T-type and D-type FF using IC7476 chip.
9. Asynchronous Counter: Realization of 4-bit up counter and Mod-N counter using IC7490 & IC7493 chip.
10. Synchronous Counter: Realization of 4-bit up/down counter and Mod-N counter using IC74192 & IC74193 chip.
11. Shift Register: Study of shift right, SIPO, SISO, PIPO, PISO & Shift left operations using IC7495 chip.
12. DAC Operation: Study of 8-bit DAC (IC 08/0800 chip), obtain staircase waveform using IC7493 chip.
13. ADC Operations: Study of 8-bit ADC.

Course Name: Principles of Management

Course Code: GEC066007

Objectives

- This course aims to empower students with knowledge and capacities to understand and analyze general Management, from a corporate and consumer perspective. Lectures are a mix of theory and practical exercises to improve memorization, to increase students' involvement and work capacities and to make lectures more dynamic. The concepts will be discussed through case study discussions and presentations on practical aspects.
- To get the knowledge about the important management concepts & their application.
- To have an insight of various functional departments in an organization.

Course Outline

Unit I: Management
Meaning & concept, Management principles (Fayol& Taylor), Management process (in brief), Managerial levels, Roles & skills of a manager, Management Theories (Classical, Neo classical, Behavioral, Systems & Contingency).

Unit II: Planning
Meaning, Purpose & process, Decision making: Concept & process, Organizing: Process, Departmentation, Authority & Responsibility relationships, Decentralization. Staffing: Nature & Importance.

Unit III: Staffing
Concept, nature & importance of staffing. Directing: Motivation: concept & theories (Maslow's, Herzberg Two factor, McGregor's theory X & Y), Leadership: Concepts & styles. Controlling: Nature, Importance, significance & Process of control.

Unit IV: Managing People

Meaning, Need of understanding human behavior in organization, Models of OB, Major concepts in OB (elementary)- Personality, Learning, Perception & Attitude Building.

Suggested Readings:

1. Dr. C.B Gupta "Management concepts & practices" S.Chand & Sons, 2009.
2. Stoner, Freeman & Gilbert, "Management" 6th Edition, Pearson International.

Course Name: Operating System

Course Code: BCAC14154

Objectives

- Operating System Also Known as the Resource Manager Means Operating System will Manages all the Resources those are Attached to the System means all the Resource like Memory and Processor and all the Input output Devices those are Attached to the System are Known as the Resources of the Computer System and the Operating system will Manage all the Resources of the System. The Operating System will identify at which Time the CPU will perform which Operation and in which Time the Memory is used by which Programs. And which Input Device will respond to which Request of the user means When the Input and Output Devices are used by the which Programs. So this will manage all the Resources those are attached to the Computer System.
- To Understand the services provided by an operating system.

1. To acquire the fundamental knowledge of the operating system architecture and its components
2. To know the various operations performed by the operating system.

Course Outline

Unit I

Introduction to operating system, its need and operating system services; operating system classification – single user, multi user, simple batch processing, Multiprogramming, Multitasking, parallel Systems, Distributed system, Real time system **Process Management**: Process concept, Process scheduling, threads, overview of Inter process communication, CPU scheduling: Basic concepts, Scheduling Criteria, Scheduling algorithms.

Unit II: Memory management

Logical versus Physical address space, Swapping, Partition, Paging and segmentation**.** Virtual memory**:** Demand paging, Page replacement algorithms, Allocation algorithms, Thrashing**.**

Unit III: File Management

File concept, access methods, and Directory structure – single level, two lever, tree structures, acrylic graph and general graph directory, file protection. Allocation methods: Contiguous, linked and index allocation, free space management.

Unit IV: Device Management

Disk Structure, Disk Scheduling, FCFS Scheduling, SSTF Scheduling, SCAN Scheduling, C-SCAN Scheduling, Disk Scheduling algorithm, **Dead Lock:** Deadlock characteristic, Prevention, Avoidance, Detection and Recovery, Critical Section, Synchronization, Hardware,

Semaphore, Combined Approach to dead lock Handling.

Suggested Readings:

1. Operating System Concepts by Peterson, J.L. & Silberschatz, A. Addison Wesley, New Delhi.
2. Operating System Principles by Brinch, Hansen, PHI, New Delhi.
3. Operating System by Tanenbaum, A.S., PHI, New Delhi.
4. Operating System by Stalling Willams, PHI, Delhi.

Course Name: Operating System Lab

Course Code: BCAC14155

Objectives

This lab introduces basic commands in LINUX and helps students in familiarizing the concepts of operating system through various commands related to operating system activities.

Course Outline

1. Linux and Unix operating Systems program
2. Write a program to report behaviour of Linux kernel including kernel version, CPU type and model. (CPU information)
3. Write a program to report behaviour of Linux kernel including information on configured memory, amount of free and used memory. (memory information)

Course Name: Data Structure Using C

Course Code: BCAC14152

Objectives

- 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.

- Understand the use and working of the various data structures.
- Learn to be able to build own algorithms and pseudo codes for the various applications of the basic data structures.

Course Outline

Unit I : Introduction to Data Structures

Basic Terminology, Elementary Data Organizations, Classification of data structures and its operations. **Arrays:** Representation of single and multidimensional arrays (up to three dimensions); sparse arrays - lower and upper triangular matrices and Tri-diagonal matrices; addition and subtraction of two sparse arrays. (Multidimensional and, sparse arrays, to be given elementary treatment). **Stacks and Queues:** Introduction and primitive operations on stack; Stack application: Polish Notations; Evaluation of postfix expression; Conversion from infix to postfix; Introduction and primitive operations on queues; D-queues and priority queues.

Unit II: Lists

Introduction to linked lists; Sequential and linked lists, operations such as traversal, insertion, deletion, searching, Two way lists and Use of headers

Trees: Introduction and terminology; Traversal of binary trees; Recursive algorithms for tree operations such as traversal, insertion and deletion;

Unit III

Introduction to and creation of AVL trees and m-way search trees - (elementary treatment to be given); Multilevel indexing and B-Trees: Introduction; Indexing with binary search trees; Multilevel indexing, a better approach to tree indexes; Example for creating a B-tree.

Unit IV : Sorting Techniques

Insertion sort, selection sort and merge sort. Searching Techniques: linear search, binary search and hashing. (Complexities NOT to be discussed for sorting and searching)

Suggested Readings:

1. Ashok N. Kamthane, "Introduction to Data Structures in C", Pearson Edu.
2. Y. Langsam, Tananbaum, et. al., "Data Structures using C and C++", PHI, 1999.
3. Schaum's outline series, "Data Structure", TMH, 2002
4. YashwantKanetkar, "Data Structures Through C",BPB Publications, 2008
5. A.K. Sharma, " Data Structure Using C", Pearson
6. P. S. Deshpande and O.G. Kakde, "C & Data Structure", Wiley Dreamtech, 1st Edition,2003.
7. Richard F. Gilberg & Behrouz A. Forouzan, " Data Structures – A Pseudocode

Course Name: Data Structure using C Lab

Course Code: BCAC14153

Objectives

The course is designed to provide a practical exposure on data structure and its applications.

Course Outline

1. Revision of programs of Data Structures from pervious semester: Insertion Sort, Bubble Sort, Selection Sort, Linear Search, Binary Search
2. Write a Program to Implement a Linked List
3. Write a Program to Implement a Doubly Linked List
4. Write a Program to Implement a Stack Dynamically
5. Write a Program to Implement a Queue dynamically
6. Write a Program to Implement a Circular Linked List
7. Write a Program to Implement Binary Search Tree
8. Write a Program to Implement Inorder
9. Write a Program to implement Postorder
10. Write a Program to implement Pretorder
11. Write a Program to implement Heapsort
12. Write a program to implement Breadth First search
13. Write a program to implement Depth First search
14. Write a Program to implement Dijkstra's Algorithm
15. Write a Program to Implement Bubble Sort using Recursion
16. Write a Program to Implement Insertion Sort using Recursion
17. Write a Program to Implement Selection Sort using Recursion
18. Write a Program to Implement Linear Search using Recursion

Course Name: Study of Ecosystem & Natural Resources

Course Code: AECE55001

Objectives:

- To gain knowledge about environment and its conservation along with sustainable development.
- To define and use correctly the common terms of environmental science.
- To explain what makes up the environment, how it functions, and how humans are part of it.
- To apply the concepts and principles of environmental science to propose solutions to specific environmental problems.
- To analysis environmental writings and predictions and their impact on subsequent developments in human relationship with the environment.
- To evaluate the adequacy of conclusions about environmental phenomena.

Course Outline:

Unit I: Introduction to environmental studies

Multidisciplinary nature of environmental studies; Scope and importance; Need for public awareness.

Ecosystems: What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem: food chains, food webs and ecological succession. Case studies of the following ecosystems: a) Forest ecosystem b) Grassland ecosystem c) Desert ecosystem d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Unit II: Natural Resources

Renewable and Non-renewable Resources, Land resources and land use change; Land degradation, soil erosion and desertification. Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations. Water: Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international &inter-state).Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies.

Suggested Readings:

1. Bharucha, E. 2003, Textbook for Environmental Studies, University Grants Commission,NewDelhiandBharatiVidyapeethInstituteofEnvironmentalEducation and Research, Pune. 361.
2. Carson,Rachel.1962.SilentSpring(Boston:HoughtonMifflin,1962),MarinerBooks, 2002
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4. Gadgil, M. & Ramachandra, G.1993. Thisfissured land: anecological history of India. Univ of California Press.
5. Gleeson, B. and Low, N. (eds.) 1999. Global Ethics and Environment, London, Routledge.
6. Grumbine, R.Edward, and Pandit, M.K. Threats from India's Himalaya dams. Science339.6115(2013):36-37.
7. Heywood V.H. & Watson, R.T. 1995. Global Biodiversity Assessment. Cambridge University Press.
8. McCully,P.1996.Silencedrivers:theecologyandpoliticsoflargedams.ZedBooks.
9. McNeill, John R. 2000. Something New Under the Sun: An Environmental History of the Twentieth Century.
10. Odum, E.P., Odum, H.T. & Andrews, J. 1971. Fundamentals of Ecology. Philadelphia: Saunders. 214
11. Pepper, I.L., Gerba, C.P.& Brusseau, M.L. 2011. Environmental and Pollution Science. Academic press, 2011.
12. Rao MN and Datta AK, 1987. Waste Water Treatment. Oxford and IBH Publishing Co. Pvt. Ltd.
13. Raven,P.H.,Hassenzahl,D.M.&Berg,L.R.2012.Environment.8thedition.JohnWiley & Sons.
14. Ricklefs,R.E.,&Miller,G.L.2000.Ecology.W.H.Freeman,NewYork.
15. Robbins,P.2012.Politicalecology:Acriticalintroduction.JohnWiley&Sons.
16. Rosencranz, A., Divan, S. & Noble, M.L.. Environmental law and policy in India. 2001. Tripathi 1992.
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18. Singh,J.S.,Singh,S.P.andGupta,S.R.2006.Ecology,EnvironmentandResource Ecology, Environment and Resource Conservation. Anamaya Publishers.
19. Sodhi, N.S., Gibson, L. & Raven, P.HG. (eds). 2013. Conservation biology: voices from the Tropics. John Wiley & Sons.
20. VanLeeuwen,C.J.,&Vermeire,T.G.2007.Riskassessmentofchemicals.
21. World Commission on Environment and Development. 1987. Our Common Future. Oxford: Oxford University Press.

Course Name: Ability and Skill Enhancement II

Course Code: SEC077002

Objectives

- To improve the communication skills of the students with respect to pronunciation. The classes are interactive, and activity based.
- ASE continuously looks for ways to develop the skills, abilities, and competencies to enhance the confidence in students. Through effective skill enhancement, students become more capable, competent, and confident in their performance, it's the better platform to reach the goals.

Course Outline - Final Assessment – Debate/Group Discussion

Unit I- Phonetics Phonetic symbols and the International Phonetic Alphabets (IPA), The Description and Classification of Vowels (Monophthongs & Diphthong) Consonants, Phonetic Transcription & Phonology, Syllable, Stress & Intonations, Reading aloud, recording audio clips.

Unit II – Vocabulary Building Idioms and Phrases, Words Often Confused, One word Substitution, Word Formation: Prefix & Suffix.

Unit III - Ethics & Etiquettes What are ethics, what are values, difference between ethics and morals, Business ethics, workplace ethics, what are virtues for e.g. civic virtues, etc. Human ethics and values- 5 core human values are: right conduct, living in peace, speaking the truth, loving and care, and helping others.

Etiquette awareness, Importance of First Impression, Personal Appearance & Professional presence, Personal Branding, Dressing Etiquette, Dining Etiquette.

Unit IV – Reading & Writing Skills Reading Comprehension, News Reading, Picture Description, Paragraph Writing, News Writing.

Unit V - Listening & Speaking Skills Public Speaking, Debate, Inspirational Movie Screening, Skit Performance.

Course Name: Introduction to Computers and IT

Course Code: VAC088003

Unit I – Fundamentals of Computers

Definition and characteristics of computers, History and generations of computers, Types of computers (micro, mini, mainframe, supercomputers), Basic components: hardware vs. software, Input, output, storage devices

Unit II – Basics of Information Technology

Concept of data, information, and processing, Computer software: system software, application software, utility programs, Operating system basics, Networking concepts: LAN, WAN, Internet, Intranet, Cloud computing basics

Unit III – Practical Applications and IT Trends

Introduction to office productivity tools (word processing, spreadsheets, presentations), Email and online collaboration tools, Cybersecurity fundamentals and safe internet practices, IT in everyday life (banking, e-governance, education), Emerging technologies (AI, IoT, Big Data) – overview

9. Lesson plans

BCAC14150– Digital Electronics

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Introduction of Digital Electronics, Application of Digital Electronics, Advantages of digital electronics, Number System, Decimal Number	C-1	Lecture
Unit-I	Number System, Decimal Number System	C-2	Lecture
Unit-I	Binary Number System and its conversion	C-3	Lecture
Unit-I	Hexadecimal Number System and its Conversion	C-4	Lecture
Unit-I	Octal Number System and its Conversion	C-5	Lecture
Unit-I	Home Assignment		Home Assignments
Unit-I	Presentation	C-6	Presentation
Unit-I	1's Compliment and 2's Compliment, Addition,Binary Addition	C-7	Lecture
Unit-I	Signed Number, Floating Point number	C-8	Lecture
Unit-I	Clarification Class	C-9	Clarification Class
Unit-I	Home Assignment		Home Assignments
Unit-I	Digital Codes	C-10	Lecture
Unit-I	BCD Codes, Gray Codes	C-11	Lecture
Unit-I	Excess 3 Codes, Format For ASCII Codes	C-12	Lecture
Unit-I	Detection and correction codes, detecting andcorrecting an error	C-13	Lecture
Unit-II	Positive and Negative Logic, Introduction of logic gates, AND Gate, OR gate and NOT Gate	C-14	Lecture
Unit-II	Home Assignment		Home Assignments
Unit-II	Activity	C-15	Activity
Unit-II	NAND Gate, NOR Gate, EX-OR gate, EX-NOR gate	C-16	Lecture
Unit-II	Universal Properties of NAND and NOR gates and itsrealization	C-17	Lecture
Unit-II	Webinar 1	C-18	Lecture
Unit-II	Symbol of Gate, Truth Table of gates, Circuitdiagram of gates using diode	C-19	Lecture
Unit-II	Circuit diagram of gates using transistor	C-20	Activity
Unit-II	Circuit diagram of gates using transistor	C-21	Lecture
Unit-II	Circuit diagram of gates using transistor	C-22	Lecture
Unit-II	Clarification Class	C-23	Clarification Class
Unit-III	Introduction of boolean algebra, boolean operators,logic expressions	C-24	Lecture
Unit-III	Rules and law of boolean algebra	C-25	Lecture
Unit-III	Presentation	C-26	Presentation

Unit-III	Clarification Class	C-35	Clarification Class
Unit-III	Standard Forms of Boolean Expression	C-36	Lecture
Unit-III	Introduction of Karnaugh Map	C-37	Lecture
Unit-III	Karnaugh Map - Grouping	C-38	Lecture
Unit-III	Karnaugh Map - Examples	C-39	Lecture
Unit-III	Home Assignment		Home Assignments
Unit-IV	Introduction of Register, Types of Register, Universal Shift Register and Its working	C-40	Lecture
Unit-IV	Half Adder and Subtractor & Flip Flops, Design of asynchronous counter	C-41	Lecture
Unit-IV	Programmable Counter, Mode Counter and Ripple Counter	C-42	Lecture
Unit-IV	Register, Shift Registers, Serial Registers and Their application, Up Counter, Down Counter	C-43	Lecture
Unit-IV	Presentation	C-44	Presentation
Unit-IV	Clarification Class	C-45	Clarification Class

BCAC14151– Digital Electronics Lab

S.No	Particulars	Class No.	Pedagogy of Class
1	To get familiar with following instruments CRO, Multimeter, Function Generator and Power Supply, Breadboard, Gates	P-1,2	Practical
2	Study of Logic Gates, Truth-Table Verification OR,AND and NOT Gate	P-3,4	Practical
3	Study of XOR, NAND and NOR Gates and verificationof truth-table	P-5,6	Practical
4	Half Adder using basic gates, Half Adder Using XORGate	P-7,8	Practical
5	Presentation	P-9,10	Presentation
6	Realization of Basic Gates using NAND and NOR	P-11,12	Clarification Class
7	Full adder using XOR gates	P-13,14	Practical
8	Half subtractor using basic gates	P-15,16	Practical
9	Half subtractor using NAND gates	P-17,18	Practical
10	Quiz	P-19,20	Quiz
11	4-bit binary to Grey Converters	P-21,22	Practical
12	Grey to binary Converters	P-23,24	Practical
13	Classroom Assignment	P-25,26	Practical
14	1-Bit Comparator, 2 - Bit Comparator	P-27,28	Practical
15	Activity	P-29,30	Activity

GEC066007– Principles of Management

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Syllabus, Pedagogy and Reference Books Will beDiscussed., Management: concept, Management: Art/ Science/profession; Mgmt Vs. Adm	C-1	Lecture
Unit-I	Evolution of Management: early contributions,Taylor and Scientific Management,	C-2	Lecture
Unit-I	Fayol's Administrative Management, Bureaucracy,	C-3	Lecture
Unit-I	Modern System of Management	C-4	Lecture
Unit-I	Process of Management, Levels of Management	C-5	Lecture
Unit-I	Ethics and CSR, Roles of Manager	C-6	Lecture
Unit-I	Clarification Class	C-7	Clarification Class
Unit-I	Classroom Presentation	C -8	Presentation
Unit-I	Home Assignment		HomeAssignment
Unit-II	Introduction to functions of Management, Planning: nature, scope, objectives andsignificance	C-9,10	Lecture
Unit-II	Planning Premises	C-11	Lecture
Unit-II	Decision Making	C-12	Lecture
Unit-II	Management by Objective (MBO- Peter Drucker),Decision Making	C-13	Lecture
Unit-II	Organizing: concept, ,	C-14	Lecture
	Organization Theories	C-15	Lecture
Unit-II	Delegation of Authority, Authority & Responsibility,	C-16	Lecture
	Principle of One Boss, Organizational Design.	C-17	Lecture
Unit-II	Departmentation	C-18	Lecture
Unit-II	Clarification Class	C-19	Clarification Class
Unit-II	Classroom Presentation	C-20	Presentation
Unit-II	Home Assignment		HomeAssignment
Unit-III	Staffing: concept, System Approach,	C-21	Lecture
Unit-III	HRP and Job Analysis	C-22	Role Play
Unit-III	Recruitment & Selection,	C-23	Lecture
Unit-III	Selection	C-24	Presentation
Unit-III	Training & Development	C-25	Presentation
Unit-III	Directing: concept, Direction and Supervision.Principle and need of Unity of Direction	C-26	Lecture

Unit-III	Motivation: concept; Motivation and Performance;	C-27	Lecture
Unit-III	Leadership: concept and functions, process andmodels of Leadership Development.	C-28	Lecture
Unit-III	Controlling: concept; methods: Pre-control,Concurrent Control, Post-control;	C-29	Lecture
Unit-III	Integrated Control System, The Quality Concept:factors affecting Quality, developing Quality Control System, Total Quality Control.	C-30	Lecture
Unit-III	Clarification Class	C-31	Clarification Class
Unit-III	Classroom Presentation	C -32	Presentation
Unit-III	CRA	C- 33	Assignment
Unit-III	Home Assignment		HomeAssignment
Unit-III	Quiz	C -34	Quiz
Unit-IV	Managing People - Meaning,	C -35	Lecture
	Need of understanding human behavior in organization	C- 36	Lecture
Unit-IV	Models of OB, Major concepts in OB (elementary)-	C -37	Lecture
	Personality, Learning,	C- 38	Lecture
Unit-IV	Perception & Attitude Building.	C -39	Lecture
	Presentation	C-40,41	
Unit-IV	Clarification Class	C-42,43	Clarification Class
Unit-IV	Home Assignment		Home Assignment
	Guest Lecture	C-44	Guest Lecture
	Seminar	C-45	Seminar

BCAC14154– Operating System

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Introduction to operating system	C-1	Lecture
Unit-I	need and operating system services	C-2	Lecture
Unit-I	operating system classification	C-3	Lecture
Unit-I	batch processing, Multiprogramming,Multitasking, parallel Systems,	C-4	Lecture
Unit-I	Distributed system, Real time system, SystemCall	C-5	Lecture
Unit-I	Process concept, Process scheduling,	C-6	Lecture
Unit-I	threads, overview of Inter processcommunication,	C-7	Lecture
Unit-I	CPU scheduling	C-8	Lecture
Unit-I	CPU scheduling	C-9	
	Clarification Class	C-10	Clarification Class
	Presentation	C-11	Presentation
	Home Assignment		Home Assignment
Unit-II	Memory management	C-12	Lecture
Unit-II	Logical versus Physical address space	C-13	Lecture
Unit-II	Swapping, Partition, Paging and segmentation	C-14	Lecture
Unit-II	Virtual memory: Demand paging	C-15	Lecture
Unit-II	Virtual memory: Demand paging	C-16	Lecture
Unit-II	Page replacement algorithms, Allocationalgorithms	C-17	Lecture
Unit-II	Thrashing	C-18,19	Lecture
Unit-III	File Management	C-20,21	Lecture
Unit-III	File concept, access methods, and Directorystructure	C-22	Lecture
Unit-III	single level, two lever, tree structures	C-23	Lecture
Unit-III	Webinar	C-24	Webinar
Unit-III	Home Assignment		Home Assignment
Unit-III	acrylic graph and general graph directory	C-25	Lecture
Unit-III	acrylic graph and general graph directory	C-26	Lecture
Unit-III	file protection	C-27	Lecture
Unit-III	free space management	C-28	Lecture
	Webinar	C-29	Webinar
Unit-IV	Device Management: Semaphore	C-30	Lecture
	Seminar	C-31	Seminar
Unit-IV	Disk Structure, Disk Scheduling	C-32	Lecture
Unit-IV	FCFS Scheduling, SSTF Scheduling,	C-33	Lecture
Unit-IV	SCAN Scheduling, C-SCAN Scheduling	C-34	Lecture
	Clarification Class	C-35	Clarification Class

	Presentation	C-36	Presentation
	Home Assignment	C-37	Home Assignment
Unit-IV	Disk Scheduling algorithm, Dead Lock	C-38	Lecture
Unit-IV	Deadlock characteristic, Prevention, Avoidance,Detection and Recovery, Critical Section	C-39	Lecture
Unit-IV	Synchronization, Hardware, Semaphore, Combined Approach to dead lock Handling	C-40	Lecture
Unit-IV	Synchronization, Hardware, Semaphore, Combined Approach to dead lock Handling	C-41	Lecture
	Guest Lecture	C-42	Guest Lecture
	Clarification Class	C-43	Clarification Class
	Presentation	C-44	Presentation
	Quiz	C-45	Quiz

BCAC14155– Operating System Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Basic Commands in unix	P-1,2	Practical
2	VI editor	P-3,4	Practical
3	Shell Programming	P-5,6	Practical
4	File Permission	P-7,8	Practical
5	Clarification Class	P-9,10	Clarification Class
6	Factorial of any number, Binary arithmetic	P-11,12	Practical
7	Write a program to check whether a givenstring is palindrome or not.	P-13,14	Practical
8	Bitwise operators, Size of data Types, Switch Statement	P-15,16	Practical
9	Area of Circle	P-17,18	Practical
10	Clarification Class	P-19,20	Tutorial
11	Nested If-else, Do while	P-21,22	Practical
12	For Loop, other scrpitng Programs	P-23,24	Practical
13	Nano and emacs editor in linux	P-25,26	Practical
14	C-Programming in C	P-27,28	Practical
15	Clarification Class	P-29,30	Tutorial

BCAC14152– Data Structure using C

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Introduction to Data Structures	C-1	Lecture
Unit-I	Basic Terminology, Elementary DataOrganization	C-1	Lecture
Unit-I	Classification of data structures and itsoperations	C-2	Lecture
Unit-I	Representation of single and multi-dimensional array	C-3	Lecture
Unit-I	Sparse Arrays (Lower and Upper triangularmatrices), Addition and Subtraction of two sparse arrays	C-4	Lecture
Unit-I	Stack and its operations	C-5	Lecture
Unit-I	Polish notaions & reverse polish notations,Evaluation of postfix expression	C-6	Lecture
Unit-I	Conversion from infix to postfix	C-7	Lecture
Unit-I	Queue and its operations	C-8	Lecture
Unit-I	Queue and its operations	C-9	Lecture
Unit-I	D-Queue	C-10	Lecture
Unit-I	Class room assignment	C-11	Class room assignment
Unit-I	Priority queues	C-12	Lecture
Unit-I	Clarification Class	C-13	Clarification Class
	Home Assignment		Home Assignments
Unit-II	Lists & Trees, Introduction to linked lists, Linked listoperations-Insertion	C-14	Lecture
Unit-II	Linked list operations-Deletion	C-15	Lecture
Unit-II	Linked list operations- Traversal, Searching	C-16	Lecture
Unit-II	Two way linked list and use of headers	C-17	Lecture
Unit-II	Trees- Introduction and terminology	C-18	Lecture
Unit-II	Traversal of binary trees	C-19	Lecture
Unit-II	Traversal of binary trees	C-20	Lecture
Unit-II	Tree Insertion using recursion	C-21	Lecture
Unit-II	Tree Deletion using recursion	C-22	Lecture
	Clarification Class	C-23	Clarification Class
	Presentation	C-24	Presentation
Unit-III	AVL Trees & Multi Way Search Trees	C-25	Lecture
Unit-III	AVL Trees- Introduction	C-26	Lecture
Unit-III	AVL Trees- Introduction	C-27	Lecture
Unit-III	Presentation	C-28	Presentation
Unit-III	Presentation	C-29	Presentation

Unit-III	M-way search trees, Multilevel Indexing	C-30	Lecture
Unit-III	B-Trees- Introduction	C-31	Lecture
Unit-III	Indexing with binary search trees	C-32	Lecture
Unit-III	Creating a B-Tree	C-33	Lecture
	Clarification Class	C-34	Clarification Class
	Home Assignment		Home Assignments
Unit-IV	Sorting Technique	C-35	Lecture
Unit-IV	Insertion Sort, Selection Sort	C-36	Lecture
Unit-IV	Merge Sort	C-37	Lecture
Unit-IV	Linear Search	C-38	Lecture
Unit-IV	Binary Search	C-39	
Unit-IV	Hashing	C-40	Lecture
Unit-IV	Hashing	C-41	Lecture
Unit-IV	Quiz	C-42	Quiz
Unit-IV	Clarification Class	C-43	Clarification Class
	Class Room Assignment	C-44	Class Room Assignment
	Home Assignment		Home Assignments
	Clarification Class	C-45	Clarification Class

BCAC14153– Data Structure using C Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Linear Search or Binary Search	P-1,2	Practical
2	Insertion Sort	P-3,4	Practical
3	Linked List	P-5,6	Practical
4	Circular Linked List	P-7,8	Practical
5	Doubly Linked List	P-9,10	Practical
6	Stack	P-11,12	Practical
7	Queue	P-13,14	Practical
8	Binary Search Tree	P-15,16	Practical
9	Pre order, Post order, In order Traversal	P-17,18	Practical
10	Clarification Class	P-19,20	Clarification Class
11	Breadth First Search, Depth First Search	P-21,22	Practical
12	Merge Sort	P-23,24	Practical
13	Bubble Sort Using Recursion, Insertion Sort UsingRecursion	P-25,26	Practical
14	Selection Sort Using Recursion, Heap Sort	P-27,28	Practical
15	Linear Search Using Recursion, Binary Search UsingRecursion	P-29,30	Practical

AECE55001– Study of Ecosystem and Natural Resources

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Introduction to Environment	C-1	Lecture
Unit-I	Multidisciplinary nature of environment studies.Scope and importance	C-2	Lecture
Unit-I	Applications and need for public awareness	C-3	Lecture
Unit-I	Ecosystem: Introduction	C-4	Lecture
Unit-I	Structure of ecosystem	C-5	Lecture
Unit-I	Functioning of ecosystem	C-6	Lecture
Unit-I	Energy flow in an ecosystem	C-7	Lecture
Unit-I	Home Assignment 1		
Unit-I	Food chain and Food web	C-8	Lecture
Unit-I	Ecological Pyramid	C-9	Lecture
Unit-I	Ecological succession	C-10	Lecture
Unit-I	Class Assignment 1	C-11	Class Room Assignment
Unit-I	Forest and Grassland ecosystem	C-12	Lecture
Unit-I	Aquatic ecosystem and Desert ecosystem	C-13	Lecture
Unit-II	Natural Resources, Introduction and Renewableresources	C-14	Lecture
Unit-II	Nonrenewable resources	C-15	Lecture
Unit-II	Clarification of Doubts	C-16	Clarification Class
Unit-II	Class Assignment 2	C-17	Class Room Assignment
Unit-II	Land resources and Land use	C-18	Lecture
Unit-II	Land degradation and Soil erosion, Desertification	C-19	Lecture
Unit-II	Deforestation: Causes and Impacts	C-20	Lecture
Unit-II	Deforestation: Causes and Impacts cont..	C-21	Lecture
Unit-II	Home Assignment 2		Home Assignments
Unit-II	Water: Use and overexploitation	C-22	Lecture
Unit-II	Floods, Droughts, conflicts over water	C-23	Lecture
Unit-II	Energy resources: Renewable Energy	C-24	Lecture
Unit-II	Non renewable energy resources, alternate energysources	C-25	Lecture
Unit-II	Case Studies	C-26	Lecture
Unit-II	Quiz	C-27	Quiz
Unit-III	Biodiversity and Conservation: Levels of biodiversity - genetic, species and ecosystem	C-28	Lecture
Unit-III	Biogeographic zones of India,	C-29	Lecture
Unit-III	Biodiversity patterns	C-30	Lecture

Unit-III	global biodiversity hotspots	C-31	Lecture
Unit-III	India as mega biodiversity nation,	C-32	Lecture
Unit-III	Endangered andendemic species of India	C-33	Lecture
Unit-III	Threats to biodiversity	C-34	Lecture
Unit-III	Conservation of biodiversity	C-35	Lecture
	Home Assignment 3	C-36	Home Assignment 3
	Clarification Class	C-37	Clarification Class
	Guest Lecture	C-38	Guest Lecture
Unit-IV	Environmental pollution: types, causes, effects and control	C-39	Lecture
Unit-IV	Air pollution	C-40	Lecture
Unit-IV	Water pollution	C-41	Lecture
Unit-IV	Soil pollution	C-42	Lecture
Unit-IV	Noise Pollution	C-43	Lecture
	Class Assignment	C-44	
Unit-V	Nuclear hazards and human health risk	C-45	Lecture
Unit-V	Solid waste management	C-46	Lecture
Unit-V	Environmental policies and Practices: Sustainable development	C-47	Lecture
Unit-V	Climate change, global warming, ozone layer depletion, rain impacts on human and agriculture	C-48	Lecture
Unit-V	Environment laws	C-49	Lecture
Unit-V	Clarification class	C-50	Clarification Class
Unit-V	Home Assignment		Home Assignment
Unit-V	Human communities and Environment	C-51	Lecture
Unit-V	Human population growth: Impacts on Environment and human health & Welfare	C-52	Lecture
Unit-V	Resettlement and Rehabilitation,	C-53	Lecture
Unit-V	Seminar	C-54	Seminar
Unit-V	Class Assignment	C-55	Class Assignment
Unit-V	Disaster management	C-56	Lecture
Unit-V	Environmental movements	C-57	Lecture
Unit-V	Environmental ethics, Environmental communication and public awareness	C-58	Lecture
	Webinar	C-59	Webinar
	Clarification class	C-60	Clarification Class

SEC077002– Ability & Skill Enhancement Module – II

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Phonetic symbols and the International PhoneticAlphabets (IPA)	C-1	Lecture
Unit-I	The Description and Classification of Vowels(Monophthongs & Diphthong)	C-2	Lecture
Unit-I	Consonants	C-3	Lecture
Unit-I	Phonetic Transcription & Phonology	C-4	Lecture
Unit-I	Syllable	C-5	Lecture
Unit-I	Stress & Intonations	C-6	Lecture
	Reading aloud, recording audio clips	C-7	Class Assignment
Unit-II	Idioms and Phrases	C-8	Lecture
Unit-II	Words Often Confused	C-9	Lecture
Unit-II	One-word Substitution	C-10	Lecture
Unit-II	Word Formation: Prefix & Suffix	C-11	Lecture
	Home Assignment		Home Assignment
Unit-III	What are ethics, what are values, difference between ethics and morals	C-12	Lecture
Unit-III	Business ethics, workplace ethics,	C-13	Lecture
Unit-III	what are virtues for e.g. civic virtues, etc. Human ethics and values- 5 core human values are: right conduct, living in peace, speaking the truth,	C-14	Lecture
Unit-III	lovingand care, and helping others, Etiquette awareness	C-15	Lecture
Unit-III	Importance of First Impression, Personal Appearance & Professional presence, personal Branding	C-16	Lecture
Unit-III	Dressing Etiquette	C-17	Lecture
Unit-III	Dining Etiquette	C-18	Lecture
Unit-III	Presentation	C-19	Presentation
Unit-III	Clarification Class	C-20	Clarification Class
Unit-IV	Reading Comprehension	C-21	Activity
Unit-IV	News Reading	C-22	Activity
Unit-IV	Picture Description	C-23	Activity
Unit-IV	Paragraph Writing	C-24	Lecture
Unit-IV	Paragraph Writing, News Writing	C-25	Activity
Unit-IV	Clarification Class	C-26	Clarification Class
Unit-V	Public Speaking/Debate	C-27	Lecture
Unit-V	Inspirational Movie Screening	C-28	Lecture
Unit-V	Skit Performance	C-29	Class Assignment
Unit-V	Clarification Class	C-30	Clarification Class

VAC088003– Introduction to Computers and IT

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Overview of computers: definition, characteristics, history	C-1	Lecture
Unit-I	Generations & types of computers	C-2	Lecture
Unit-I	Hardware: input, output, storage devices	C-3	Lecture
Unit-I	Software basics: system vs. application	C-4	Lecture
Unit-I	Clarification Class	C-5	Clarification Class
Unit-II	Data, information, processing concepts	C-6	Lecture
Unit-II	Software categories & utility programs	C-8	Lecture
Unit-II	Operating systems overview	C-9	Lecture
Unit-II	Networking concepts (LAN, WAN, Internet)	C-10	Lecture
Unit-II	Cloud computing basics	C-11	Lecture
	Home Assignment		Home Assignment
Unit-III	Office tools – word processing	C-12	Lecture
Unit-III	Office tools – spreadsheets & presentations	C-13	Lecture
Unit-III	Email & online collaboration tools	C-14	Lecture
Unit-III	Cybersecurity fundamentals, IT trends & course wrap-up	C-15	Lecture

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

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