Swami Ramanand Teerth Marathwada University

Swami Ramanand Teerth Marathwada University, Nanded

B.E. Second Year U.G. Program in Computer Engineering

Effective From 2019-2020

SEMESTER IV

Teaching Scheme:

Category	Code	Course Title	Hours per Week				Marking Scheme				
			L	T	P	CR	PR	OR	TW	MSE	ESE
Professional Core Courses	**PCC-CS 402**	**Operating Systems**	4	1	2	5	50#	25@	25	30	70

Course Objectives:-

1. To Study the concept of Operating System and types of it.
2. Understand how to handle processes, threads and their communication.
3. To Study the mechanisms involved in memory management in contemporary OS.
4. To gain knowledge on distributed operating system concepts that includes architecture, mutual exclusion algorithms, deadlock detection algorithms and agreement protocols.
5. Student able to know the components and management aspects of concurrency management.
6. To study and understand the File management and Disk management.

Course Contents

Module 1: Introduction: (6 lectures)

Concept of Operating Systems, Generations of Operating systems, Types of Operating Systems, OS Services, System Calls, Structure of an OS - Layered, Monolithic, Microkernel Operating Systems, Concept of Virtual Machine. Case study on UNIX and WINDOWS Operating System.

Module 2: Processes: (4 lectures)

Definition, Process Relationship, Different states of a Process, Process State transitions, Process Control Block (PCB), Context switching. **Thread:** Definition, Various states, Benefits of threads, Types of threads, Concept of multithreads.

Module 3: Process Scheduling: (3 lectures)

Foundation and Scheduling objectives, Types of Schedulers, Scheduling criteria: CPU utilization, Throughput, Turnaround Time, Waiting Time, Response Time; Scheduling algorithms: Pre-emptive and Non pre-emptive, FCFS, SJF, RR; Multiprocessor scheduling: Real Time scheduling: RM and EDF.

Module 4: Inter-process Communication: (5 lectures)

Critical Section, Race Conditions, Mutual Exclusion, Hardware Solution, Strict Alternation, Peterson's Solution, The Producer/Consumer Problem, Semaphores, Event Counters, Monitors, Message Passing, Classical IPC Problems: Reader's & Writer Problem, Dinning Philosopher Problem etc.

Module 5: Deadlocks: (3 lectures)

Definition, Necessary and sufficient conditions for Deadlock, Deadlock Prevention, and Deadlock Avoidance: Banker's algorithm, Deadlock detection and Recovery.

Module 6: Memory Management: (4 lectures)

Basic concept, Logical and Physical address map, Memory allocation: Contiguous Memory allocation – Fixed and variable partition– Internal and External fragmentation and Compaction; Paging: Principle of operation – Page allocation – Hardware support for paging, Protection and sharing, Disadvantages of paging.

Module 7: Virtual Memory: (4 lectures)

Basics of Virtual Memory – Hardware and control structures – Locality of reference, Page fault, Working Set, Dirty page/Dirty bit – Demand paging, Page Replacement algorithms
Optimal, First in First Out (FIFO), Second Chance (SC), Not recently used (NRU) and Least Recently used (LRU).

Module 8: IO Hardware: (4 lectures)

I/O devices, Device controllers, Direct memory access Principles of I/O Software: Goals of Interrupt handlers, Device drivers, Device independent I/O software, Secondary-Storage Structure: Disk structure, Disk scheduling algorithms

Module 9: File Management: (4 lectures)

Concept of File, Access methods, File types, File operation, Directory structure, File System structure, Allocation methods (contiguous, linked, indexed), Free-space management (bit vector, linked list, grouping), directory implementation (linear list, hash table), efficiency and performance.

Module 10: Disk Management: (3 lectures)

Disk structure, Disk scheduling - FCFS, SSTF, SCAN, C-SCAN, Disk reliability, Disk formatting, Boot-block, Bad blocks

List of Practical's: - (Any 12)

1. Study of Basic commands of Linux/UNIX.
2. Study of Advance commands and filters of Linux/UNIX.
3. Write a shell script to generate mark sheet of a student. Take 3 subjects, calculate and display total marks, percentage and Class obtained by the student.
4. Write a shell script to find factorial of given number n.
5. Write a shell script which will accept a number 'b' and display first n prime numbers as output.
6. Write a shell script which will generate first n Fibonacci numbers like: 1, 1, 2, 3, 5, 13, …

7. Write a menu driven shell script which will print the following menu and execute the given task.

8. Display calendar of current month.

9. Display today's date and time.

10. Display usernames those are currently logged in the system.

11. Display your name at given x, y position.

12. Display your terminal number.

13. Write a shell script to read n numbers as command arguments and sort them in descending order.

14. Write a shell script to display all executable files, directories and zero sized files from current directory.

15. Write a shell script to check entered string is palindrome or not.

16. Shell programming using filters (including grep, egrep, and fgrep)

17. Study of UNIX Shell and Environment Variables.

18. Write a shell script to validate the entered date. (Eg. Date format is: dd-mm-yyyy).

19. Write an awk program using function, which convert each word in a given text into capital.

20. Write a program for process creation using C. (Use of gcc compiler).

Course outcomes:

1. To learn the mechanisms of OS to handle processes and threads and their communication. (BT1 and BT2).

2. To learn the mechanisms involved in memory management in contemporary OS.(BT12and BT3).

3. To gain knowledge on distributed operating system concepts that includes architecture, mutual exclusion algorithms, deadlock detection algorithms and agreement protocols.(BT2 and BT4)

4. To know the components and management aspects of concurrency management.(BT1)

5. Study and understand the File management and Disk management.(BT2)

Text Books:

1. Operating System Concepts Essentials, 9th Edition by Avi Silberschatz, Peter Galvin, Greg Gagne, Wiley Asia Student Edition.

2. Operating Systems: Internals and Design Principles, 5th Edition, William Stallings, Prentice Hall of India.

Reference Books:

1. Operating System: A Design-oriented Approach, 1st Edition by Charles Crowley, Irwin Publishing.

2. Operating Systems: A Modern Perspective, 2nd Edition by Gary J. Nutt, Addison-Wesley.

3. Design of the UNIX Operating Systems, 8th Edition by Maurice Bach, Prentice-Hall ofIndia.

4. Understanding the Linux Kernel, 3rd Edition, Daniel P. Bovet, Marco Cesati, O'Reilly and

Swami Ramanand Teerth Marathwada University

Associates.

5. Fundamentals of Operating System , Mr. Suryawanshi Amol V.

Swami Ramanand Teerth Marathwada University, Nanded

B.E. Second Year U.G. Program in Computer Engineering

Effective From 2019-2020

SEMESTER IV

Teaching Scheme:

Category	Code	Course Title	Hours per Week				Marking Scheme				
			L	T	P	CR	PR	OR	TW	MSE	ESE
Professional Core Courses	**PCC-CS 403**	**Design & Analysis of Algorithms**	3	1	2	5	50#	25@	25	30	70

Course Objectives:

1. To study and Analyze the asymptotic performance of algorithms.
2. Student able to write rigorous correctness proofs for algorithms.
3. To demonstrate a familiarity with major algorithms and data structures.
4. To study and implement nonlinear data structures.
5. Student able to apply important algorithmic design paradigms and methods of analysis.
6. Synthesize efficient algorithms in common engineering design situations.

Course Contents

Module 1: (4 lectures)

Introduction: Characteristics of algorithm. Analysis of algorithm: Asymptotic analysis of complexity bounds – best, average and worst-case behavior; Performance measurements of Algorithm, Time and space trade-offs.

Module 2: Methods of Analysis of Algorithm (4 lectures)

Analysis of recursive algorithms through recurrence relations: Substitution method, Recursion tree method and Masters' theorem.

Module 3: (8 lectures)

Fundamental Algorithmic Strategies: Brute-Force, Greedy, Dynamic Programming, Branchand-Bound and Backtracking methodologies for the design of algorithms; Illustrations of these techniques for Problem-Solving, Bin Packing, Knap Sack TSP. Heuristics – characteristics and their application

domains.

Module 4: **(3 lectures)**

Tree Algorithms: Depth First Search (DFS) and Breadth First Search (BFS); Shortest path algorithms, Transitive closure, Minimum Spanning Tree, Topological sorting, Network Flow Algorithm.

Module 5: **(3 lectures)**

Graph : Traversal algorithms: Depth First Search (DFS) and Breadth First Search (BFS); Shortest path algorithms, Transitive closure, Minimum Spanning Tree, Topological sorting, Network Flow Algorithm.

Module 6: **(6 lectures)**

Numerical and Distributed algorithms: Linear programming, Matrix multiplication, Karatsuba's algorithm, Distributed models, Asynchronous consensus impossibility, Leader election in a ring, Leader election in graphs, Distributed MSTs.

Module 7: **(6 lectures)**

Tractable and Intractable Problems: Computability of Algorithms, Computability classes – P, NP, NP-complete and NP-hard. Cook's theorem, Standard NP-complete problems and Reduction techniques.

Module 8: **(6 lectures)**

Advanced Topics: Approximation algorithms, Randomized algorithms, Class of problems beyond NP – P SPACE.

List of Practical's:- (Any 12)

1. Write a program for Iterative and Recursive Binary Search.
2. Write a program for Merge Sort.
3. Write a program for Quick Sort.
4. Write a program for Strassen's Matrix Multiplication.
5. Write a program for optimal merge patterns.
6. Write a program for Huffman coding.
7. Write a program for minimum spanning trees using Kruskal's algorithm.
8. Write a program for minimum spanning trees using Prim's algorithm.
9. Write a program for single sources shortest path algorithm.
10. Write a program for Floye - Warshal algorithm.
11. Write a program for travelling salesman problem.
12. Write a program for Hamiltonian cycle problem.
13. Write a program linear Search.
14. Write a program for Sort a given set of elements using heap.
15. Write a program for Quick Sort.
16. Write a program for Matrix Multiplication.

17. Write a program Sort a given set of elements using selection sort.

18. Implement 0/1 knapsack using dynamic programming.

19. Write a program for minimum spanning trees using Kruskal's algorithm.

20. Print all the nodes reachable from a given starting node in a digraph using BFS method.

21. Write a program for recursive binary Search and determine the time required to search an element.

22. Sort a given set of elements using merge sort method and determine the time required to sort the elements. Repeat the experiment for different values of n.

23. For a given algorithms analyze worst-case running times of algorithms based on asymptotic analysis and justify the correctness of algorithms.

24. Describe the greedy paradigm and explain when an algorithmic design situation calls for it. For a given problem develop the greedy algorithms.

25. Describe the divide-and-conquer paradigm and explain when an algorithmic design situation calls for it. Synthesize divide-and-conquer algorithms. Derive and solve recurrence relation.

26. Describe the dynamic-programming paradigm and explain when an algorithmic design situation calls for it. For a given problems of dynamic-programming and

27. Develop the dynamic programming algorithms, and analyze it to determine its computational complexity.

28. For a given model engineering problem model it using graph and write the corresponding algorithm to solve the problems.

29. Explain the ways to analyze randomized algorithms (expected running time, probability of error).

30. Explain what an approximation algorithm is. Compute the approximation factor of an approximation algorithm (PTAS and FPTAS).

Course Outcomes:

1. Analyze the asymptotic performance of algorithms.(BT3)

2. Write rigorous correctness proofs for algorithms. (BT4 and BT5)

3. Demonstrate a familiarity with major algorithms and data structures.(BT2)

4. Analyze and implement nonlinear data structures (BT1 and BT2).

5. Apply important algorithmic design paradigms and methods of analysis.(BT3)

6. Synthesize efficient algorithms in common engineering design situations.(BT5)

Text Books:

1. Introduction to Algorithms, 4TH Edition, Thomas H Cormen, Charles E Lieserson, Ronald L Rivest and Clifford Stein, MIT Press/McGraw-Hill.

2. Fundamentals of Algorithms – E. Horowitz et al.

Reference Books:

1. Algorithm Design, 1ST Edition, Jon Kleinberg and ÉvaTardos, Pearson.

2. Algorithm Design: Foundations, Analysis, and Internet Examples, Second Edition, Michael T Goodrich and Roberto Tamassia, Wiley.

3. Algorithms -- A Creative Approach, 3RD Edition, UdiManber, Addison-Wesley, Reading, MA.

4. Algorithm Analysis and Design -Maske P.S.

Text Books:

1. "Computer Architecture and Organization", 3rd Edition by John P. Hayes, WCB/McGraw-Hill

2. "Computer Organization and Architecture: Designing for Performance", 10th Edition by William Stallings, Pearson Education.

Swami Ramanand Teerth Marathwada University, Nanded

B.E. Second Year U.G. Program in Computer Engineering

Effective From 2019-2020

SEMESTER IV

Teaching Scheme:

Category	Code	Course Title	Hours per Week				Marking Scheme				
			L	**T**	**P**	**CR**	**PR**	**OR**	**TW**	**MSE**	**ESE**
Humanities and Social Sciences including Management Courses (Non-Credit)	**HSMC 404**	**Management 1 (Organizational Behavior/ Finance & Accounting)**	3	0	0	0	0	0	0	15	35

Course Object:

1. To understand various aspects of engineering economics.
2. To evaluate systematically the caste and benefit associated with different projects.
3. To understand different   methods of depreciation and taxes.
4. To understand different   methods of cost analysis

Course Contents:

Module 1:   **(6 lectures)**

Introduction: Meaning and nature of management; Management systems and processes; Tasks and responsibilities of a professional manager; Managerial skills. Decision Making: Organizational context of decisions; Decision making models; Problem solving and decision making techniques and processes, Management by objectives.

Module 2:   **(6 lectures)**

Organization Structure and Processes: Organizational climate, culture and managerial ethos; Organizational structure and design; Centralization and decentralization; Delegation and inter- department coordination; Managerial communication; Planning process; Controlling.

Module 3:   **(4 lectures)**

Behavioral Dynamics: Individual determinants of organization behavior: perceptions, learning, personality, attitudes and values, motivation; Job anxiety and stress. Interactive Aspects of Organizational

Behaviour: Analyzing inter-personal relations; Group dynamics; Management of organizational conflicts; Management of change; Leadership styles and influence process.

Module 3: **(4 lectures)**

Leadership: Concept; Leadership styles; Theories -trait theory, behavioral theory, Fielder's contingency theory; Harsey and Blanchard's situational theory; Managerial grid; Likert's four systems of leadership, contemporary issues in leadership Group Dynamics and Team Development: Group dynamics -definition and importance, types of groups, group formation, group development, group composition, group performance factors; Principle-centred approach to team development.

Module 4: **(10 lectures)**

Nature of Accounting Information: Accounting Concepts and Conventions, Accounting Standards, **Understanding/Preparation of Financial Statements:** Trial Balance, Profit and Loss account, Balance Sheet, Financial Reporting in India. Financial Statement Analysis - Comparative Statements, Common Size Statement, Trend percentage analysis, Accounting Ratio Analysis, Fund Flow analysis, Cash Flow analysis.

Module 5: **(10 lectures)**

Management Accounting: Costing- Utility of costing elements, Cost Sheet Problems, Inflation Accounting, Human Resource Accounting, Depreciation Methods and Accounting. Budgeting- Budgets and Budgetary control, Principles and Methods, Preparation/Types of Budgets, Flexible Budget, Cash Budget, Master Budget, Zero Based Budgeting, Problems. Cost-Volume Profit Analysis and Cost Control- Marginal costing, Cost-Volume Profit Analysis, Break Even Analysis, Applications and Limitations, Problems, Standard Costing.

Course Outcomes:

1. This course is to acquaint the students with the basic nature of management, its process, tasks and responsibilities of a professional manager as well as organizational behavioral dynamics governing an organization.
2. The basic purpose of this course is to develop an insight of postulates, principles and techniques of accounting and utilization of financial and managerial accounting
3. information for planning, decision-making and control.

Text Books:

1. Paul Hersey, Kenneth H.Blanchard, Management of Organisational behavior, 8th ed., Pearson Edu.

2. M Y Khan and P K Jain, "Management Accounting" -Second Edition Tata. McGraw Hill Publishing Co. Ltd., New Delhi.

3. S N Maheswari, "Financial Management", Sixth edition, Tata McGraw Hill Publishing Co. Ltd., New Delhi.

Reference Books:

1. Koontz, H. and Wehrich, H., Management-A Global Perspective, 12. TMH.

2. Pareek, U., Organizational Processes, Oxford and IBH, New Delhi.

3. Robbins, S. P., Management, 8th ed., New Jersey, Englewood Cliffs, Prentice Hall Inc.

4. Robbins, S. P., Organizational Behavior, 9th ed., Prentice Hall of India.

5. Robbins S.P, Seema Sanghi, Organizational Behavior, 11th Ed, Pearson Education.

6. Stoner, et. al., Management, 6th ed., Prentice Hall of India.

7. Tayal, G. L., Management, Sultan Chand and Sons, New Delhi.

8. Rajesh Kothari; Abhishek Godha, Management accounting, Concepts & Applications; Macmillan.

9. N Dhameja and K.S Sastry, "Finance and Accounting for Managerial competitiveness", Wheeler Publishing, Allahabad.

10. Agarwal, J.D., "Accounting for Financial Analysis, IIF Publication, Delhi.Horngren, "Cost Accounting: A Managerial Emphasis", 11th ed, Prentice Hall.

Swami Ramanand Teerth Marathwada University

Swami Ramanand Teerth Marathwada University, Nanded

B.E. Second Year U.G. Program in Computer Engineering

Effective From 2019-2020

SEMESTER IV

Teaching Scheme:

Category	Code	Course Title	Hours per Week				Marking Scheme				
			L	T	P	CR	PR	OR	TW	MSE	ESE
Basic Science Courses	**BSC 405**	**Mathematics-III (Differential Calculus)**	3	0	0	3	0	0	0	30	70

Course Objectives:

1. To study the basic principles of Laplace Transform, Fourier transforms z, wavelet transforms, and their applications in engineering problems.
2. To introduce the solution methodologies for ODE & PDE with applications in engineering.
3. To provide an overview of probability and statistics to engineers

Contents:

Module1: Fourier series (8 Lectures)

Orthogonal and orthonormal functions, Construction of orthonormal set, Dirichlet conditions. Fourier series of periodic function, Fourier series of even and odd functions, Half range sine and cosine series, Parseval's identities, Complex form of Fourier

Module2: Transform Calculus -1 (8 Lectures)

Polynomials – Orthogonal Polynomials – Lagrange's, Chebyshev Polynomials; Trigonometric Polynomials; Laplace Transform, Properties of Laplace Transform, Laplace transform of periodic functions. Finding inverse Laplace transform by different methods, convolution theorem. Evaluation of integrals by Laplace transform, solving ODEs and PDEs by Laplace Transform method.

Module 3: Transform Calculus-2 (6 Lectures)

Fourier transforms, Z-transform and Wavelet transforms: properties, methods, inverses and their applications.

Module 4: Basic Probability (8 Lectures)

Probability spaces, conditional probability, independence; Discrete random variables, Independent random variables, the multinomial distribution, Poisson approximation to the binomial distribution, infinite sequences of Bernoulli trials, sums of independent random variables; Expectation of Discrete Random Variables,

Moments, Variance of a sum, Correlation coefficient, Chebyshev's Inequality. Continuous random variables and their properties, distribution functions and densities, normal, exponential and gamma densities.

Module 5: Bivariate Distributions and Basic Statistics (6   Lectures)

Bivariate distributions and their properties, distribution of sums and quotients, conditional densities, Bayes' rule. Measures of Central tendency: Moments, skewness and Kurtosis - Probability distributions: Binomial, Poisson and Normal - evaluation of statistical parameters for these three distributions, Correlation and regression – Rank correlation.

Module6: Applied Statistics and Sampling (6 Lectures)

Curve fitting by the method of least squares- fitting of straight lines, second degree parabolas and more general curves. Test of significance: Large sample test for single proportion, difference of proportions, Tests for single mean, t-distribution for dependent and independent samples, difference of means, and difference of standard deviations. Test for ratio of variances - Chi-square test for goodness of fit and independence of attributes, Contingency table and Yate's correction, Analysis of Variance(F-Test): One way classification, Two-way classification (short-cut method)

Course Outcomes:

Upon completion of this course, students will be able

1.   Apply the concept of Linear & Non-Linear Programming Problem to the engineering problems.
2.   Demonstrate the ability of using Transforms (Laplace, Fourier, Z, and Wavelet) in solving the Ordinary Differential Equations and Partial Differential Equations.
3.   Solve the Ordinary and Partial Differential Equations using Transformation.
4.   Identify the applicability of statistics and distribution of data.
5.   Apply the concept of probability distribution to engineering problems.
6.   Illustrate basic theory of correlations and regression and sampling theory.

Textbooks/References:

1.   Erwin Kreyszig, Advanced Engineering Mathematics, 10th Edition, John Wiley & Sons, 2015.
2.   N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2017.
3.   B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 44th Edition, 2017.
4.   Veerarajan T., Engineering Mathematics, Tata McGraw-Hill, New Delhi.
5.   Dr. J Ravichandran , Probability and Statistics for Engineering, Wiley-India.
6.   Hira & Gupta, Operation Research, S Chand.
7.   P. G. Hoel, S. C. Port and C. J. Stone, "Introduction to Probability Theory", Universal Book Stall, 2003.
8.   S. Ross, "A First Course in Probability", Pearson Education India, 2002.
9.   W. Feller, "An Introduction to Probability Theory and its Applications", Vol. 1, Wiley, 1968.
10.   Dr. M. Mazhar-ul-haque, Engineering Mathematics for Computer Engineering, 2019.

Swami Ramanand Teerth Marathwada University, Nanded

B.E. Second Year U.G. Program in Computer Engineering

Effective From 2019-2020

SEMESTER IV

Teaching Scheme:

Category	Code	Course Title	Hours per Week				Marking Scheme				
			L	T	P	CR	PR	OR	TW	MSE	ESE
Mandatory Courses(Non-Credit)	**MC 406**	**Environmental Sciences**	2	0	0	0	0	0	0	15	35

Course Objective:

1. To make aware of the importance of Environment
2. To understand about natural resources and their contribution on human life
3. To understand about eco system, biodiversity, pollution, and social issues related to environment.

Course Contents:

Unit 1: The Multidisciplinary nature of environmental studies

Definition, scope and importance, Need for public awareness.

Unit 2: Natural Resources

Renewable and nonrenewable resources:

Natural resources and associated problems

Forest resources: Use and over-exploitation, deforestation, case studies, Timber extraction, mining, dams and their effects on forests and tribal people.

Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dam's benefits and problems.

Mineral Resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.

Food Resources: World food problems, changes caused by agriculture and over grazing, effects of modern agriculture, fertilizers- pesticides problems, water logging, salinity, case studies.

Energy Resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies

Land Resources: Land as a resource, land degradation, man induces land slides, soil erosion, and desertification.

Role of individual in conservation of natural resources.

Unit 3: Eco System

Concept of an eco-system Structure and function of an eco-system. Energy flow in the eco systems.

Food chains, food webs and ecological pyramids.

UNIT 4: Biodiversity and it's Conservation

Introduction-Definition: genetics, species and ecosystem diversity.

Biogeographically classification of India.

Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values

Biodiversity at global, national and local level.

India as a mega diversity nation.

UNIT 5: Environmental Pollution

Definition Causes, effects and control measures of:

Air pollution

Water pollution

Soil pollution

Marine pollution

Noise pollution

Thermal pollution

Nuclear hazards

Solid waste Management: Causes, effects and control measures of urban and industrial wastes

Role of an individual in prevention of pollution Pollution case studies

Disaster management: Floods, earth quake, cyclone and land slides

Unit 6: Social issues and the Environment

Form unsustainable to sustainable development

Urban problems related to energy

Water conservation, rain water harvesting, water shed management

Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies.

Environment protection Act

Air (prevention and control of pollution) Act

Water (prevention and control of pollution) Act

Wildlife protection act

Forest conservation ac
Unit 7: Human population and the environment

Environment and human heal

Role of information technology in environment and human health.

Unit 8: Field work

Visit to a local area to document environment Assets River / forest / grassland / hill/mountain. Visit to a local polluted site-urban/rural/industrial/agricultural. Study of common plants, insects, birds. Study of simple ecosystems-pond, river, hills lopes, etc (field work equal to 5 lecture works)

Outcomes:

1. Students will understand the basics of environmental science.
2. Students will learn about causes of different pollution and their remedies.
3. The students will learn about social issues that are connected to environment
4. Students learning can be applicable for protection of environment

Recommended Books:

1. Textbook of Environmental studies, Erach Bharucha, UGC
2. Fundamental concepts in Environmental Studies, D D Mishra, S Chand & Co Ltd

Swami Ramanand Teerth Marathwada University, Nanded

B.E. Second Year U.G. Program in Computer Engineering

Effective From 2019-2020

SEMESTER IV

Teaching Scheme:

Category	Code	Course Title	Hours per Week				Marking Scheme				
			L	T	P	CR	PR	OR	TW	MSE	ESE
Humanities and Social Sciences including Management Courses	HSMC 407	Interpersonal Skills and Personality development	0	0	2	1	0	0	50	0	0

Course Objective (s):

1. To improve the cognitive skills, perception level, and comprehension ability of the learners.
2. To make them skilled, competent to devise their career graph, work on it efficiently and simultaneously gauge their performances accordingly.
3. To enhance essential communication skills- LSRW and make them communicate effectively through both verbal and non-verbal channels.
4. To foster a team spirit, collaborative skills and interpersonal management proficiency by putting learners in different situations of teamwork.
5. To encourage learners to participate dynamically in group discussions and trace out leadership skills required for the all-round development of the learners.

Course Contents:

Module 1: Improving Perception and Career Planning   **(05 Hours)**

A] Improving Perception:

Perception meaning and importance, Factors influencing perception, Improving perception, Perception and organization, Self-image and esteem, Attitude formation, Aggressive, submission and assertive behaviors, Lateral thinking, Exercise: Test your perception.

B] Career Planning:

Career planning – meaning and scope, Benefits of career planning, Guidelines for choosing a career, Tips for successful career planning, Setting up a career goal, Exercise: Test your career interests.

Module 2:   Art of Listening and Speaking **(06 Hours)**

A] Art of Listening:

Listening meaning and scope, Types of effective listening, Benefits of active listening, - Types of listening – Factors affecting effective listening, Poor listening habits – Tips for effective listening. Exercise- Test your listening skills.

B] Art of Speaking:

Effective Speaking - Introduction, What makes effective speaking? The art of public speaking, Importance of public speaking, Overcoming public fear, Verbal communication, Voice modulations, Conversation tips, Exercise: Test your speaking skills.

Module 3: Art of Reading and Writing **(06 Hours)**

A] Art of Reading:

Effective reading – Introduction, Reading as an art, Reading as a cognitive process, Benefits of effective reading. Types of reading, Barriers in reading, Role of an effective reader, The SQ3R techniques of reading, Exercise- Test your reading skills. Exercise: Test your reading skills.

B] Art of Writing:

Effective writing- Introduction, The art of writing and drafting, Cretive writing, Writing tips, Drawbacks in written communication, The writing discipline, Making the subject matter significant, Use of punctuations, Staying relevant, Exercise: Test your art of writing, Drafting E-mails. Exercise: Test your writing skills.

Module 4:   Team Building and Teamwork: **(08 Hours)**

A] Team Building and Teamwork:

Introduction - Meaning, Essential skills for teamwork, A model of team building Characteristics of effective team, Role of a effective team leader - Role of team members Advantages of inter-group collaboration, Factors shaping inter-group collaboration. Exercise: Test your teamwork skills.

B] Group Discussion:

What is group discussion, Importance of group discussion, Types of group discussion, Essential skills for group discussion, Useful tips for group discussion, Manners and etiquettes in group discussion, Non-verbal clues in group discussion, Dos and donts of group discussion, Preparation for group discussion, Effective group discussion. Exercise- Test your group discussion skills.

List of Practical / Assignments:

1. Assessment of self-perception, attitude, self-identity, self-esteem and values by using worksheets, modals and charts and correcting attitude of the learner.

2. Testing of perception level and ability of the learner by using a chart or worksheet.

3. Devise a career goal, graph for the career of the learner and assess his / her performance accordingly.

4. Arrange a classroom/ language lab activity for effective listening and improving listening habits of the learners.

5. Arrange a classroom/ language lab activity for effective speaking and improve speaking habits of the learners.

6. Arrange a classroom/ language lab activity for reading and improve reading habits of the learners.

7. Arrange a class / language lab activity for reading and improve writing habits of the learners.

8. Arrange listening activities for group discussions in the language labs and make the learners listen.

9. Arrange listening sessions of effective speeches by eminient speakers and make the learners listen and incorporate their effective public speaking skills.

10. Arrange team building activities, projects, classroom activities for building up team spirit amongst the learners.

11. Arrange group discussions on current topics relating to social, educational, economical, national issues in the world.

Note: This is the suggestive list of assignments / practical to be conducted in the classroom / language lab. However, the subject teacher is free to set, design new assignment / practicals in relevance with (Any eight assignments to be conducted and submitted to the subject teacher to form the record of the subject).

Outcome (s): Learner(s) will be able to…

1. Cultivate an ability to identify self-identity, attitude and motivate them to express effectively in small and larger groups of people.

2. Participate, collaborate, manage and communicate effectively, influentially by enhancing L-listening, S-speaking, R-reading and W-writing skills amongst the learners.

3. Emerge as an outstanding personality and learn to express, convey their own ideas, principles, concepts, philosophy through elegant expressions and manners by participating in group discussion and team projects.

Reference Books:

1. Barun K. Mitra, "Personality Development and Soft Skills" IIT Kharagpur, Oxford University Press. 2011. Print.

2. Dr. K. Alex. "Soft Skills – Know Yourself and Know Your World by– S. Chand and Publications, New Delhi. Print.

3. Hundiwala, S. "GD- A Complete Kit for Group Discussion" English, Paperback Edition, Arihant Publicaiton ISBN: 9789311121017. 2016. Print.

4. Meenakshi Raman and Sangeeta Sharma, "Technical Communication Principles and Practice," Third Edition. OXFORD University Press, New Delhi, 2015. Print.

5. Personality development and soft skills –by Barun K Mishra – Oxford University Press.- 2011. Print.