RASHTRASANT TUKDOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
SECOND YEAR BACHELOR OF ENGINEERING (B.TECH) DEGREE
COURSE - SEMESTER III (C.B.C.S)

BRANCH - COMPUTER SCIENCE AND ENGINEERING (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

Subject : MATHEMATICAL FOUNDATION FOR AIML
Subject Code: BTCSEAIML301T

Load (Th+Tu)	Credits (Th+Tu)	College Assessment Marks	University Evaluation	Total Marks
3+1	4	30	70	100

Course Objectives:

1	A primary objective is to provide a bridge for the student from lower-division mathematics courses to upper-division mathematics.
2	Obtain skills and logical perspectives in introductory (core) courses that prepare them for subsequent courses.
3	Develop proficiency with the techniques of mathematics and/or computer science, the ability to evaluate logical arguments, and the ability to apply mathematical methodologies to solving real world problems.

Course Outcomes:

CO 1	Apply graph theory models of data structures and state machines to solve problems of connectivity and constraint satisfaction.
CO 2	Gain an introduction into how mathematical models for engineering are designed, analyzed and implemented in industry and organizations.
CO 3	Reason mathematically about basic data types and structures (such as numbers, sets, graphs, and trees) used in computer algorithms and systems; distinguish rigorous definitions and conclusions from merely plausible ones.
CO 4	Analyze real world scenarios to recognize when Logic, sets, functions are appropriate, formulate problems about the scenarios, creatively model these scenarios (using technology, if appropriate) in order to solve the problems using multiple approaches.

CO 5	Apply knowledge of mathematics, physics and modern computing tools to scientific and engineering problems. Apply their knowledge in life-long learning.

SYLLABUS

UNIT - 1

Theory of Probability and Mathematical Expectation

Probability: Review of probability of an event, Conditional probability, Baye's rule, Review of discrete and continuous random variables, Joint probability function and Joint probability distribution of DRV, Marginal probability function and Conditional distribution of DRV. Mathematical Expectation (DRV): Mathematical expectation, Variance and Standard deviation, Moments, Moment generating function, Expectation, Variance and Covariance of Joint Distribution, Measures of central tendency: Mean, Median, Mode, Skewness and Kurtosis.

UNIT - 2

Special Probability Distributions :Introduction to discrete and continuous distributions, Geometric distribution, Binomial distribution, Poisson distribution, Normal distribution, Exponential distribution, Uniform distribution.

UNIT - 3

Sampling Theory and Estimation: Sampling Theory: Definition of population, sampling, static parameter, Types of sampling, Expected values of sample mean and variance, Standard error, Sampling distribution of mean and sampling distribution of variance. Estimation: Estimation of parameters, Point estimation, Interval estimation, Bayesian estimation.

UNIT - 4

Testing of Hypothesis: Hypothesis, Null hypothesis, Alternative hypothesis, Testing a hypothesis, Level of significance, Confidence limits, Test of significance of difference of means, t-test, F-test and Chi square test, One way and two way Analysis of Variance (ANOVA).

UNIT - 5

Multidimensional Analysis: Multiple Linear Regression Model: Least square estimation, R 2 and adjusted R2 coefficients, Problem of multi-colinearity, Regression equation of three variables, Lasso regression, Ridge regression. Factor Analysis: Centroid method, Principal component method. Cluster Analysis: Non-hierarchical clustering, Hierarchical clustering

Text Books/Reference Books:

(1) Advanced Engineering Mathematics (Wiley), Erwin Kreyzig.
(2) Higher Engineering Mathematics (Khanna Publishers), B. S. Grewal.
(3) Advanced Engineering Mathematics (S. Chand), H. K. Dass.
(4) Probability and Statistics (Schaum's Outline Series), Murray Spiegel, John Schiller, R. A. Srinivasan.
(5) Fundamentals of Statistics (Himalaya Publishing House), S. C. Gupta.

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SECOND YEAR BACHELOR OF ENGINEERING (B.TECH) DEGREE
COURSE - SEMESTER III (C.B.C.S)

BRANCH - COMPUTER SCIENCE AND ENGINEERING (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

Subject : OBJECT ORIENTED PROGRAMMING WITH PYTHON
Subject Code: BTCSEAIML302T

Load (Th+Tu)	Credits (Th+Tu)	College Assessment Marks	University Evaluation	Total Marks
3+1	4	30	70	100

Course Objectives:
Learn adequate knowledge to write, test, and debug simple Python programs
Understand programming skills using the fundamentals and basics of Python Language.

Course Outcomes:

CO1	Understand the basics constructs of python
CO2	Improve problem solving skills using strings, and functions
CO3	Understand the compound data using Python lists, class, methods.
CO4	Apply the concepts of inheritance, polymorphism and overriding.

SYLLABUS

UNIT - 1
OOP concept, Procedural vs OOP programming, OOP terminology and features(data encapsulation, inheritance, polymorphism and late binding), Tokens, Character set, Keywords, Data-types, Data Types declarations, Constants and variables, expressions, Standard Library and header files. Objects & Classes in python: Declaring & using classes, Constructors,

UNIT - 2
OOP terminology, Exploring object interface,Class anatomy: attributes and methods,Understanding class definitions, Create your first class,Using attributes in class definition Class anatomy: the init, constructor, Correct use of init__

UNIT - 3
Instance and class data, Class-level attributes, Changing class attributes, Alternative constructors, Class inheritance ,Understanding inheritance, Create a subclass Customizing functionality via inheritance, Method inheritance, Inheritance of class attributes, Customizing a Data Frame.

UNIT - 4

Operator overloading: comparison Overloading equality, Checking class equality, Comparison and inheritance,. String formatting review, String representation of objects, Exceptions, Catching exceptions, Custom exceptions, Handling exception hierarchies.

UNIT - 5

Designing for inheritance and polymorphism, Polymorphic methods Square and rectangle, Managing data access: private attributes, Attribute naming conventions Using internal attributes.

TEXT/ Reference BOOKS

1. Python 3 Object Oriented Programming Book by Dusty Phillips
2. Python Object-Oriented Programming: Build robust and maintainable object-oriented Python applications and libraries, 4th Edition
3. Python 3 Object-Oriented Programming - Third Edition: Build robust and maintainable software with object-oriented design patterns in Python 3.8, 3rd Edition
4. Python 3 Object-Oriented Programming - Second Edition: Building robust and maintainable software with object oriented design patterns in Python

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COURSE - SEMESTER III (C.B.C.S)

BRANCH - COMPUTER SCIENCE AND ENGINEERING (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

Subject : OBJECT ORIENTED PROGRAMMING WITH PYTHON LAB
Subject Code: BTCSEAIML302P

Load (Pr)	Credits (Pr)	College Assessment Marks	University Evaluation	Total Marks
2	1	25	25	50

Practical List:

1. Write Python programs for the following:
   a. Purposefully raise Indentation Error and Correct it.
   b. Compute distance between two points taking input from the user (Pythagorean Theorem).
   c. To takes numbers as command line arguments and print its sum.
2. Write Python programs for implementing the following:
   a. Checking whether the given number is even number or not.
   b. Finding the factorial of a number.
   c. Print the prime numbers below 100.
3. Write Python programs for implementing the following:
   a. Count the numbers of characters in the string and store them in a dictionary data structure
   b. Using split and joins methods in the string and trace a birthday with a dictionary data structure.
4. Write Python programs to for the following:
   a. Finding mean, median, mode for the given set of numbers in a list.
   b. Function dups to find all duplicates in the list.
5. Write Python programs for the following:
   a. Addition of two square matrices.
   b. Multiplication of two matrices.
6. Write Python programs to implement the following:
   a. Find the validity of a string of parentheses, '(', ')', '{', '}', '[' and ']. These brackets must be close in the correct order, for example "()" and "()[]{}" are valid but "[)", "({[)]" and "{{{" are invalid.
   b. Get all possible unique subsets from a set of distinct integers.
7. Write Python programs to do the following a. Create a Python class named Circle constructed by a radius and two methods which will compute the area and the perimeter of a circle. b. Create a Python class named Rectangle constructed by a length and width and a method which will compute the area of a rectangle.

8. Write Python program to implement constructors.
9. Write Python program to implement inheritance.
10. Write Python program to implement Polymorphism
11. Write Python program to override Magic Methods.
12. Write Python program to create a simple calculator, where the user will enter a number in a text field, and either add it to or subtract it from a running total, which we will display. We will also allow the user to reset the total.

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SECOND YEAR BACHELOR OF ENGINEERING (B.TECH) DEGREE
COURSE - SEMESTER III (C.B.C.S)

BRANCH - COMPUTER SCIENCE AND ENGINEERING (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

Subject : OPERATING SYSTEM **Subject Code: BTCSEAIML303T**

Load (Th+Tu)	Credits (Th+Tu)	College Assessment Marks	University Evaluation	Total Marks
3	3	30	70	100

Prerequisite(S): NIL

Course Objectives:

1	To make the computer system convenient to use in an efficient manner.
2	To provide users a convenient interface to use the computer system.
3	Course description covers the classical internal algorithms and structures of operating system, including CPU scheduling, memory management, device management and deadlock.
4	To keep the track of who is using which resource, to provide efficient and fair sharing of resources among users and programs.

Course Outcomes:

CO1	Explain the basic concepts of Operating Systems.
CO2	Understand the process management policies and scheduling algorithms.
CO3	Design the various memory management techniques.
CO4	Analyze process synchronization techniques
CO5	Understand file system concepts.
CO6	Evaluate deadlock detection & prevention mechanism.

SYLLABUS

UNIT – 1

Introduction: Evolution of OS, Types of OS, Basic h/w support necessary for modern operating systems, services provided by OS, system programs and system calls, OS structure layered

monolithic and microkernel, Disk space management and space allocation strategies, disk arm scheduling algorithms.

UNIT - 2

Process Scheduling: Process concept, process control block, Types of scheduler, context switch, threads, multithreading model, goals of scheduling and different scheduling algorithms, Examples from Windows 2000 & LINUX.

UNIT - 3

Memory management: Contiguous allocation, Relocation, Paging, Segmentation, Segmentation with paging, demand paging , page faults and instruction restart, page replacement algorithms, Locality, Thrashing, Garbage Collection.

UNIT - 4

Process cooperation and synchronization: Concurrency conditions, Critical section problem, software and hardware solution, semaphores, Conditional critical regions and monitors, classical inter process communication problems.

UNIT - 5

File systems: File concept, Access methods, Directory System, Recovery, Log structure file system. Deadlocks & Protection: Deadlock definition, Prevention, Avoidance, Detection and recovery, Goals of Protection, access matrix, implementation, Security problem.

TEXTBOOKS

1. Operating System concepts – Silberchatz & Galvin, Addison Wesley, 8th Edn. (2010)
2. Modern Operating Systems – Tanenbaum, Pearson, 3rd edn (2008)
3. Operating Systems – A. Godbole: TMH Publications
4. Operating Systems – D M Dhambere, TMH Publications, 2nd edn

REFERENCE BOOKS

1. Operating Systems: Internals and Design Principles, William Stallings, PHI, 2000
2. Operating systems Concepts and design, Milan Milenkovic, TMGH.
3. Operating Systems: A Modern Perspective by Gary J. Nutt, Pearson, 3rd edn
4. Operating System, Balakrishna Prasad, SciTech Publication, 3rd edn

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SECOND YEAR BACHELOR OF ENGINEERING (B.TECH) DEGREE COURSE - SEMESTER III (C.B.C.S)
BRANCH - COMPUTER SCIENCE AND ENGINEERING (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

Subject : OPERATING SYSTEM LAB
Subject Code: BTCSEAIML303P

Load (Th+Tu)	Credits (Th+Tu)	College Assessment Marks	University Evaluation	Total Marks
2	1	25	25	50

Course Pre-requisite: Basic computer programming

Course Objectives:
1. To make students aware of the kernel and shell structure of the operating systems.
2. To make students aware of the purpose, structure and functions of operating systems
3. To equip students with understanding of the various scheduling algorithms in OS.
4. To make students aware of understanding of memory management in different OS.

Course Outcomes :

On completion of the course, the students will be able to
1. Explain memory management issues like external fragmentation, internal fragmentation.
2. Illustrate multithreading and its significance.
3. List various protection and security mechanisms of OS.
4. Analyze and solve the scheduling algorithms.
5. Analyze the deadlock situation and resolve it.
6. Compare various types of operating systems

Practical List :-
Minimum 10 experiments are to be performed covering the entire syllabus. At least two experiments should be beyond syllabi based on learning of syllabi (Apply)

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COURSE - SEMESTER III (C.B.C.S)
BRANCH - COMPUTER SCIENCE AND ENGINEERING (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

Subject : COMPUTER ARCHITECTURE AND DIGITAL SYSTEM
Subject Code: BTCSEAIML304T

Load (Th+Tu)	Credits (Th+Tu)	College Assessment Marks	University Evaluation	Total Marks
3+1	4	30	70	100

Prerequisite(S): Basics of computer H/w and S/w

Course Objectives:

1	Discuss the basic Concept of Digital System that are applicable in designing of Computer Architecture
2	Explain the concept of basic processing unit of computer such as ALU,CU,MU,I.O unitsand arithmetic operation used in computer
3	Explain various technologies used in memory system and motivate student to design memory modules
4	Discuss various types of Interrupts and interrupts handling mechanism

Course Outcomes:

CO1	Understand the basic concept digital system and apply for problem solving.
CO2	Describe the computer architecture and addressing modes
CO3	understood various instruction formats
CO4	Perform arithmetic operations
CO5	Design and evaluate various memory management system

SYLLABUS
UNIT – 1

Motivation for Digital System :Logic and Boolean Algebra, Logic Gates and Truth Tables, Demorgans Law, Minimization and Combinational Circuits using K-MAP, Multiplexers, Demultiplexers,Encoder and Decoder.

UNIT - 2

BASIC STRUCTURE OF COMPUTERS: Functional units, Von Neumann Architecture, Basic operational concepts, Bus structures Addressing modes, Subroutines: parameter passing, Instruction formats: Three- address Instructions, Two-address instructions, One- address instructions, Zero-address instructions.

UNIT - 3

BASIC PROCESSING UNIT: Bus architecture, Execution of a complete instruction, sequencing of control signals, Hardwired control, Micro-programmed Control, microinstruction format.

UNIT - 4

ARITHMETIC: Number representations and their operations, Addition and Subtraction with signed-magnitude, Design of Fast Adders, Array multiplier, Signed multiplication: Booth's Algorithm, Bit-pair recoding, Integer Division, Floating-point Arithmetic operations, guard bits and rounding.

UNIT - 5

THE MEMORY SYSTEM: Various technologies used in memory design, higher order memory design, Memory hierarchy, Main memory, Auxiliary memory, Cache memory, cache optimization techniques ,Memory interleaving, Virtual memory, Address Space and Memory Space, Associative memory, Page table, Page Replacement.

TEXTBOOKS

1. V.C.Hamacher,Z.G.Vranesic and S.G.Zaky, Computer Organisation, McGraw Hill,5thed,2002
2. Computer Organization, Design and Architecture (IV Ed), Sajjan G. Shiva, CRC Press
3. Computer Architecture & Organization III Ed- J.P.Hayes.

REFERENCE BOOKS

1. M Mano,"Computer System and Architecture", PHI, 1993. W. Stallings, "Computer Organization & Architecture", PHI, 2001

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COURSE - SEMESTER III (C.B.C.S)
BRANCH - COMPUTER SCIENCE AND ENGINEERING (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

Subject : Ethics In IT
Subject Code: BTCSEAIML305T

Load (Th+Tu)	Credits (Th+Tu)	College Assessment Marks	University Evaluation	Total Marks
3	3	30	70	100

Prerequisite(S): Ethical Sciences
Course Objectives:

1	To provide basic knowledge about engineering Ethics, Variety of moral issues and Moral dilemmas, Professional Ideals and Virtues
2	To have an idea about the Team work, Collective Bargaining, Confidentiality, Occupational Crime, Professional, Employee, Intellectual Property Rights..
3	To have an adequate knowledge about MNC's, Business, Environmental, Computer Ethics, Honesty, Moral Leadership, Code of Conduct.

Course Outcomes:

CO1	describe the concept of Ethics, ethical behavior , explain in details the working of IT Users and IT Professionals with ethics of IT Industry
CO2	define internet and computer crimes, list types exploits and perpetrators & summarize employees how to prevent, detect & respond to the threat
CO3	explain privacy with recent history of privacy protection and freedom of expression also list their key issues
CO4	identify the intellectual properties of IT professional with the concept of standards to develop, maintain software , analyze key intellectual property issues
CO5	analyze the impact of information technology on the quality of life.

SYLLABUS

UNIT - 1

An overview of Ethics: Ethics in business world, Ethics in IT, Ethics for IT professionals and IT users, IT professionals, Ethical behavior, IT professional malpractices, IT users.

UNIT - 2

Computer and Internet Crime: IT security incidents: Increasing Complexity Increases Vulnerability, Higher Computer user Expectations, Expanding and changing systems. Introduces new risks, Increased Reliance on Commercial Software with known Vulnerabilities, Types of Exploits, Perpetrators, Reducing Vulnerabilities, Risk Assessment, Establishing a Security Policy, Educating Employees, contractors and part-time Workers, Prevention, Detection, Response.

UNIT - 3

Privacy: The right of Privacy, Recent History of Privacy Protection, Key Privacy and Anonymity issues, Governmental Electronic Surveillance, Data Encryption, Identity Theft, Consumer Profiling, Treating Consumer Data Responsibility, Workplace Monitoring, Advanced surveillance Technology, Defamation, Freedom of Expression: Key issues, Controlling Access to Information on the Internet, Anonymity, National, Security Letters, Defamation and Hate Speech.

UNIT - 4

Intellectual Property: Copyrights, Patents, Trade Secret Laws, Key Intellectual Property Issues, Plagiarism, Reverse Engineering, Open Source Code, Competitive Intelligence, Cyber squatting, Software Development, Strategies to Engineer Quality Software, The Importance of Software Quality, Software Development Process, Capability Maturity Model Integration for Software, Key Issues in Software Development, Development of Safety-Critical Systems, Quality Management Standards.

UNIT - 5

The Impact of Information Technology on the Quality of Life: The impact of IT on the standard of Living and productivity, the Digital Divide, The impact of IT on Health care costs, Electronic Health Records, Use of Mobile and Wireless Technology, Telemedicine. Medical Information Wet Sites for lay people.

TEXTBOOKS

1. George Reynolds, "Ethics in information Technology" Cengage Learning
2. Deborah G.Johnson,"Computer Ethics",3/e Pearson Education
3. Sara Baase, "A Gift of Fire: Social, Legal and Ethical Issues, for Computing and the Internet," PHI Publications
4. Richard A.Spinello, "Case study in Information Technology Ethics", second Edition PHI Publications.

REFERENCE BOOKS

1. Duncan Lanford "Internet Ethics".
2. D. Micah Hester and Paul J. Ford "Computer and Ethics in the Cyber age".

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SECOND YEAR BACHELOR OF ENGINEERING (B.TECH) DEGREE
COURSE - SEMESTER III (C.B.C.S)

BRANCH - COMPUTER SCIENCE AND ENGINEERING (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

Subject : Universal Human Values
Subject Code: BTCSEAIML306T

Load (Th+Tu)	Credits (Th+Tu)	College Assessment Marks	University Evaluation	Total Marks
2	2	15	35	50

Prerequisite(S): NIL
Course Objectives:

1	Development of a holistic perspective based on self-exploration, about themselves (human being), family ,society and nature/existence.
2	Understanding (or developing clarity) of the harmony in the human being, family, society and nature/existence.
3	Strengthening of self-reflection.
4	Development of commitment and courage to act.

Course Outcomes:

CO1	To become more aware of themselves, and their surroundings (family ,society, nature)
CO2	To become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
CO3	They would have better critical ability.
CO4	To become sensitive to their commitment towards what they have understood (human values, human relationship and human society).

SYLLABUS
UNIT - 1

Value education, definition, need for value education. The content and the process of value education, basic guidelines for value education, self-exploration as a means of value education, happiness and prosperity as part of value education.

UNIT - 2

Harmony of self with body, coexistence of self and body, understanding the needs of self and the needs of body, understanding the activities in the self and the activities in the body.

UNIT - 3

Values in relationship, the five dimensions of human endeavour, the holistic perception of harmony in existence.

UNIT - 4

Basics for ethical human conduct, defects in ethical human conduct, human rights violations and social disparities, value based life.

TEXTBOOKS

1. Human Values and Professional Ethics by R R Gaur, R Sangal, G P Bagaria ,ExcelBooks, NewDelhi, 2010.
2.

REFERENCE BOOKS

1. Jeevan Vidya: Ek Parichaya, A Nagaraj, Jeevan Vidya Prakashan, Amarkantak,1999.
2. Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004.
3. Indian Ethos and Modern Management: Amalgam of the best of the ideas from the East and the West, B.L. Bajpai, New Royal Book Bo., Lucknow, 2004
4. Human society in ethics and politics, Bertrand Russel, Routledge Publications, 2009

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SECOND YEAR BACHELOR OF ENGINEERING (B.TECH) DEGREE
COURSE - SEMESTER III (C.B.C.S)

BRANCH - COMPUTER SCIENCE AND ENGINEERING (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

Subject: ENVIRONMENT SCIENCE
Subject Code: BTCSEAIML307T

Load (Th+Tu)	Credits (Th+Tu)	College Assessment Marks	University Evaluation	Total Marks
2	Audit			Grades

Prerequisite(S): NIL

Course Objectives:

1	Identify different types of air pollutions as well as explain their causes, detrimental effects on environment and effective control measures.
2	Recognize various sources of water pollutants and interpret their causes and design its effective control measure.
3	Illustrate various types of pollutants and waste management.
4	Analyze various social issues related to environment and challenges in implementation of environmental laws.

Course Outcomes:

1. Student will be able to learn the natural sources available.
2. Students will also learn about ecosystem, biodiversity, pollution.
3. Student will also learn the effect on environment on social aspects and Human population.
4. The student on completion of course will understood the Ecosystem
5. Environmental issues related with social and human population.
6. Biodiversity and its conversion

SYLLABUS

UNIT - 1

Air pollution and its control techniques:Contaminant behavior in the environment, Air pollution due to SOx, NOx, photochemical smog. Indoor air pollution Natural pathways for degradation: Carbon cycle, Sulphur cycle, Nitrogen cycle, Oxygen cycle. Factors responsible for altering the composition of atmosphere (deforestation, burning of fossil fuels, industrial and vehicular emissions, CFCs). Techniques to control Air pollution, ambient air quality and continuous air quality monitoring. Control measures at source, Kyoto Protocol, Carbon Credits.

UNIT – 2

Water pollution and its control techniques:

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Major sources of water pollution: Eutrophication, acid mine drains, pesticides and fertilizers, dyeing and tanning, marine pollution, micro plastics Techniques to control water pollution: Conventional waste water treatment-types of sewage, sewerage system, alternative systems, primary, secondary and tertiary processes including aerobic and anaerobic techniques, safe disposal and its utility. Treatment schemes for waste water from dairy, textile, power plants, pharmaceutical industries, and agro based industries such as rice mills.

UNIT - 3

Other Environmental Pollution& Waste Management: Soil plution: Soil around us, Soil water characteristics, soil pollanien. Cases, effects & control: noise pollution, nuclear & radiation hazards, marine pollution (Oil spills & Ocean Acidification) Solid waste management: Composting, vermiculture, landfills, hazardous waste treatment, bioremediation technologies, conventional techniques (land farming, constructed wetlands), and phytoremediation. Degradation of xenobiotics in environment: Petroleum hydrocarbons, pesticides, heavy metals Introduction, types of e-wastes, environmental impact, e-waste recycling, e-waste management Rules.

UNIT - 4

Concept of Sustainable development Water conservation, rain water harvesting, watershed management Resettlement and rehabilitation of people; its problems and concerns. Environmental Laws (brief idea only) Environment Protection Act, Air (Prevention and Control of Pollution) Act, Water (Prevention and control of Pollution) Act, Wildlife Protection Act, Forest Conservation Act Issues involved in enforcement of environmental legislation. Diffirent government initiatives (brief idea only)- National ambient air quality standard 2109, Schh Bharat Abhiyan, National afforestation program and Act-2016, Nitional River comeration plan and National Ganga River basin authority, Formation of National Gen Tribunal Activity.

TEXTBOOKS

1. Benny Joseph. Environmental Studies, Mc Graw Hill Education (India) Private Limited
2. B. K. Sharma, Environmental Chemistry, Goel Publishing House, Meerut
3. P Aarne Vesilind. J. Jeffrey Peirce and Ruth F. Weiner, Environmental Pollution and Control, Butterworth-Heinemann
4. D. D. Mishra, S. S. Dara A Textbook of Environmental Chemistry and Pollution Control, S Chand & Company Lad
5. Shree Nath Singh, Microbial Degradation of Xenobiotics. Springer-Verlag Berlin

REFERENCE BOOKS

1. Field Trip & Report Writing 2. Case-study & Report Writing

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COURSE - SEMESTER III (C.B.C.S)
BRANCH - COMPUTER SCIENCE AND ENGINEERING (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

Subject : PROFESSIONAL SKILL LAB- I
Subject Code: BTCSEAIML308P

Load (P)	Credits (P)	College Assessment Marks	University Evaluation	Total Marks
2	1	25	25	50

Aim: To introduce and practice the implementation of various web technology tools.
Prerequisite(s): Computer Programming Language knowledge

Course Objectives:

1	To be able to program design with functions using PHP.
2	To understand data and information processing techniques.
3	To understand to Design a program to solve the problems.
4	To be able to access database using PHP programming.
5	To be able to design web applications using PHP programming.

Course Outcomes:

At the end of this course Student are able to:

CO1	Describe the Basic syntax variable, constant, operator expression and data type in PHP.
CO2	Design HTML Form with PHP
CO3	Interpret different Decision Making, loop statements, Functions, string, array in PHP.
CO4	Experiment with File and directories.
CO5	Generate Images and database connectivity.

Programming Language/Tools to be used HTML, CSS, PHP

Prctical List:

This is a sample list of Experiments; minimum 12 experiments are to be performed. At least two experiments should be beyond syllabi based on learning of syllabi (Apply) –Mini Project Compulsory.

1. Introduction to HTML Installation of PHP and Web server.
2. Write a HTML code to display your family information.

3. Write a HTML code to display your college with hyperlink
4. Introduction to CSS
5. Create a CSS style sheet and use it to display your name.
6. Write a program to create menu using HTML and CSS
7. Create a PHP page using functions for comparing three integers and print the largest number.
8. WAP in PHP to check whether the given number is prime or not.
9. Write a PHP function to calculate the factorial of a number.
10. Create a PHP page which accepts string from user. After submission that page displays the reverse of provided string.
11. Write a PHP function that checks if a string is all lower case.
12. Write a PHP script that checks whether a passed string is palindrome or not? (A palindrome is word, phrase, or sequence that reads the same backward as forward, e.g., madam or nurses run)
13. Write a PHP script that removes the whitespaces from a string. Sample string : "The quick brown fox" Expected Output : "The quick brown fox"
14. Write a program to sort an array.
15. WAP to print first n even numbers.
16. Write a PHP script that finds out the sum of first n odd numbers.
17. Create a script to construct the following pattern, using nested for loop.

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*
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***
****
*****
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18. Write a PHP program to print Fibonacci series using recursion.
19. Create a simple 'birthday countdown' script, the script will count the number of days between current day and birth day.
20. Using switch case and dropdown list display a "Hello" message depending on the language selected in drop down list.
21. Write a PHP script to replace the first 'the' of the following string with 'That'. Sample : 'the quick brown fox jumps over the lazy dog.' Expected Result : That quick brown fox jumps over the lazy dog
22. Write a simple PHP program to check that emails are valid.
23. Create a login page having user name and password. On clicking submit, a welcome message should be displayed if the user is already registered
24. Write a code in Java to display student information from database.
25. Write a code in .net to display student information from database.
26. Develop any Mini Project like " Dynamic College WEB site".