**Vision and Mission**

## Vision of Computer Department

To be the center for excellence for training the world-class engineers to work with multidisciplinary domain based on the state-of-the-art of technology enabled academic system blended with industrial and business practices.

## Mission of Computer Department

To educate and train undergraduate students in Computer Engineering by instilling excellence to fulfill professional and social requirements in business and industry on the platform of scientifically designed academic processes.

## Program Educational Objectives

1. To inculcate computational and programming skills in the field of Computer Engineering..
2. To prepare the graduates to fulfill professional requirements in industry.
3. To develop the graduates to solve problems related to the society

**Program Outcomes**

|  |  |
| --- | --- |
| PO1 | Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. |
| PO2 | Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences. |
| PO3 | Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations. |
| PO4 | Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions. |
| PO5 | Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations. |
| PO6 | The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. |
| PO7 | Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. |
| PO8 | Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice. |
| PO9 | Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. |
| PO10 | Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. |
| PO11 | Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. |
| PO12 | Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. |

**Program Specific Outcomes**

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| --- | --- |
| PSO1 | To apply mathematical and Computer Engineering fundamentals. |
| PSO2 | To apply standard practices and strategies for software development and project management |
| PSO3 | To adapt programming languages, modern computer tools and technologies and soft skills for career enrichment. |

**Course Outcomes:**

|  |  |
| --- | --- |
| CO1 | Apply preprocessing techniques on datasets |
| CO2 | Implement and evaluate linear regression and random forest regression models |
| CO3 | Apply and evaluate classification and clustering techniques. |
| CO4 | Analyze performance of an algorithm |
| CO5 | Implement an algorithm that follows one of the following algorithm design strategies: divide and conquer, greedy, dynamic programming, backtracking, branch and bound. |
| CO6 | Interpret the basic concepts in Blockchain technology and its applications |

**CO and Assignment mapping**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Course outcomes** | **After successful Completion of the course, student will be able to** | **Bloom’s**  **Taxonomy**  **Level** | **Experiments**  **Mapped** | **Target**  **Set** |
| CO1 | Apply preprocessing techniques on datasets | Apply(3) | 7 |  |
| CO2 | Implement and evaluate linear regression and random forest regression models. | Apply(5) | 10 |  |
| CO3 | Apply and evaluate classification and clustering techniques | Apply(3) | 8,9 |  |
| CO4 | Analyze performance of an algorithm | Analyze(4) | 1 |  |
| CO5 | Implement an algorithm that follows one of the following algorithm design strategies: divide and conquer, greedy, dynamic programming, backtracking, branch and bound. | Implement(5) | 2,3,4,5 |  |
| CO6 | Interpret the basic concepts in Blockchain technology and its applications | Interpret(2) | 12,13,14,15,16 |  |

**Rubrics for termwork**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sr. No. | Criteria | Good | Average | Below Average | Marks (10) |
| 1 | Timely completion, punctuality | Submitted within deadline (2) | Late submission (1) | Late submission (1) | 2 |
| 2 | Performance, involvement, efficiency | Followed proper steps accurately with indentation and neat formatting, sufficient use of language features, Logical thinking, Overall understanding  (5-6) | Followed steps partially, but with less indentation / formatting, , Logical  thinking, Overall understanding  (3-4) | Not followed proper steps, no indentation and formatting, no comments, Logical thinking, Overall understanding  (1-2) | 6 |
| 3 | Documentation, neatness | Proper documentation and neatness followed (2) | Documentation not proper or neatness not observed (1) | Documentation not proper or neatness not observed (1) | 2 |



Nashik District Maratha VidyaPrasarakSamaj’s

**KARMAVEER ADV. BABURAO GANPATRAO THAKARE**

## COLLEGE OF ENGINEERING, NASHIK

Udoji Maratha Boarding Campus, Near Pumping station, Gangapur Road

DEPARTMENT OF COMPUTER ENGINEERING

**SUBJECT: LABORATORY PRACTICE III (410246)**

INDEX

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Group A (Design and Analysis of Algorithms)**  Any 5 assignments and 1 mini project are mandatory | | | | | | | | | |
| **Sr. No.** | **TITLE** | **PAGENO.** | | **DATE** | **R1** | **R2** | **R3** | **TOTAL** | **SIGN** |
| 1 | Write a program non-recursive and recursive program to calculate Fibonacci numbers and analyze their time and space complexity. |  | |  |  |  |  |  |  |
| 2 | Write a program to implement Huffman Encoding using a greedy strategy. |  | |  |  |  |  |  |  |
| 3 | Write a program to solve a fractional Knapsack problem using a greedy method |  | |  |  |  |  |  |  |
| 4 | Write a program to solve a 0-1 Knapsack problem using dynamic programming or branch and bound strategy. |  | |  |  |  |  |  |  |
| 5 | Design n-Queens matrix having first Queen placed. Use backtracking to place remaining Queens to generate the final n-queen‘s matrix. |  | |  |  |  |  |  |  |
| 6 | Mini Project |  | |  |  |  |  |  |  |
| **Group B (Machine Learning)**  Any 5 assignments and 1 Mini project are mandatory | | | | | | | | | |
| 7 | Predict the price of the Uber ride from a given pickup point to the agreed drop-off location.Perform following tasks:  1. Pre-process the dataset.  2. Identify outliers.  3. Check the correlation.  4. Implement linear regression and random forest  regression models.  5. Evaluate the models and compare their respective scores like R2, RMSE, etc. |  | |  |  |  |  |  |  |
| 8 | Classify the email using the binary  classification method. Email Spam detection has two states: a) Normal State – Not Spam, b) Abnormal State – Spam. |  | |  |  |  |  |  |  |
| 9 | Implement Gradient Descent Algorithm to find the local minima of a function.  For example, find the local minima of thefunction y=(x+3)² starting from the point x=2. |  | |  |  |  |  |  |  |
| 10 | Implement K-Nearest Neighbors Algorithm on diabetes.csv dataset. |  | |  |  |  |  |  |  |
| 11 | Implement K-Means clustering/ hierarchical clustering on sales\_data\_sample.csv dataset. Determine the number of clusters using the elbow method. |  | |  |  |  |  |  |  |
| 12 | Mini Project |  | |  |  |  |  |  |  |
| **Group C (Blockchain Technology)**  Any 5 assignments and 1 Mini project are mandatory | | | | | | | | | |
| 13 | Installation of MetaMask and study spending Ether per transaction. |  |  | |  |  |  |  |  |
| 14 | Create your own wallet using Metamask for crypto transactions. |  |  | |  |  |  |  |  |
| 15 | Write a smart contract on a test network, for Bank account of a customer for following operations:  • Deposit money  • Withdraw Money  • Show balance |  |  | |  |  |  |  |  |
| 16 | Write a program in solidity to create Student data. Use the following constructs:  • Structures  • Arrays  • Fallback  • Deploy this as smart contract on Ethereum and Observe the transaction fee and Gas values |  |  | |  |  |  |  |  |
| 17 | Write a survey report on types of Blockchains and its real time use cases |  |  | |  |  |  |  |  |
| 18 | Mini Project |  |  | |  |  |  |  |  |
|  | **Rubrics:**  R1Timelycompletion, punctuality  R2 -Performance, innovation, efficiency  R3- Documentation, neatness | **Average Marks** | | | | | |  |  |



This is to certify that Mr/Ms.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Roll No.:\_\_\_\_\_\_\_\_, students of BE Computer Engineering, has completed the above said experiments/Term work for semester-I of the academic year 2024-25.

###### EXAMINATION NO:

###### PRN NO:

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**R. P. Chandwadkar Dr. B. S. Tarle**

**Subject Incharge Head of Computer Dept.**