

MCA-36 Machine Learning Lab.

General Course Information

Course Code: MCA-36 Course Credits: 2 Type: Professional Core Lab. Course Contact Hours: 2 hours/week Mode: Lab practice and assignments	Course Assessment Methods (internal: 30; external:70) The internal and external assessment is based on the level of participation in lab. sessions and the timely submission of lab experiments/assignments, the quality of solutions designed for the assignments, the performance in VIVA-VOCE, the quality of lab. file and ethical practices followed. The internal examination is conducted by the course coordinator. The external examination is conducted by external examiner (appointed by the Controller of Examination) in association with the internal examiner appointed by the Chairperson of the Department.
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Pre-requisites: Programming in Java, Python, R and Octave/MATLAB.

About the Course:

In this lab. course, students learn to solve optimization, supervised and unsupervised learning problems using machine learning tools. Students will use machine learning tools available in WEKA, R, Python and Octave etc. The lab experiments involve downloading datasets and applying machine learning techniques on these datasets. The course has a special focus on interpreting and visualizing results of machine learning algorithms.

Course Outcomes: By the end of the course students will be able to:

- CO1. **Implement** machine learning algorithms using modern machine learning tools.
- CO2. **Analyse** the trends in datasets using descriptive statistics.
- CO3. **Apply** descriptive and predictive modelling.
- CO4. **Compare and contrast** machine learning algorithms for a given problem. (describe datasets using descriptive statistics.
- CO5. **Create** lab records of assignment by incorporating problem definitions, design of solutions, results and interpretations.
- CO6. **Demonstrate** use of ethical practices, self-learning and team spirit.

List of experiments/assignments

1. Install WEKA/R/Python/Octave and learn to use these software packages.
2. Two assignments related to classification algorithms and interpreting the results of these algorithms.
3. Two assignments related to clustering algorithms and interpreting the results of these algorithms.
4. Three assignments on designing neural networks for solving learning problems.
5. Two assignments on ranking or selecting relevant features.
6. Two assignments on linear regression and logistic regression.
7. One assignment to be done in groups.

Note:

The actual experiments/assignments will be designed by the course coordinator. One assignment should be designed to be done in groups of two or three students. The assignments must meet the objective of the course and the levels of the given course outcomes. The list of assignments and schedule of submission will be prepared by the course coordinator at the beginning of the semester.