

You have to implement one ML project during the semester which include following criteria.

Objective :

Create Complete ML project using Flask/ Fast API of given problem statement with neat and clean UI. The project includes a clean UI for data input and prediction visualization.

Project should Include following:

Objective	Title	Description	Week No.
1	Problem Definition and Dataset Exploration	Problem statement, dataset summary, and initial observations.	1
2	Data Cleaning and Pre-processing	Handle missing values Identify and handle outliers. Encode categorical variables Normalize/scale numerical features. EDA	2
3	Model Creation	Find out appropriate algorithm for training for your dataset. Implement selected Algorithm without use of Library.	3,4
4	Model Evaluation	Test the model on the test dataset and compute metrics. Check for overfitting or underfitting.	5
5	Advanced Model Training	Experiment with advanced models cross-validation to ensure model stability. Compare models based on validation metrics. Hyperparameter Tuning	6
6	Visualization of metrics and graph	Display all types of graph associated with performance metrics	7
7	Flask Project Setup	Learn How to setup project on Flask Create simple flask application which use form .	8
8	Create Front end	Create front end of your project. Generally for user to input data	9
9	Create backend	Setup backend to handle user request	10
10	Deployment	Final Project Deployment to available free hosting site.	11

Library for development:

You can used numpy, pandas, matplotlib, plotly, sklearn, seaborn

Evaluation of Objective:

Evaluation of project will be done **in regular lab**. For every one objective have **one marks** for end semester evaluation.

Use any one dataset from following list:

- 1) Cardiovascular Disease Dataset (Healthcare) -
<https://www.kaggle.com/datasets/sulianova/cardiovascular-disease-dataset>
- 2) Bank Marketing Campaign (Marketing) -
<https://archive.ics.uci.edu/dataset/222/bank+marketing>
- 3) Insurance fraud data –
<https://support.minitab.com/en-us/datasets/getting-started-guide-data-sets/insurance-fraud-data/>
- 4) Loan Default Prediction (Banking)
<https://www.kaggle.com/datasets/nikhil1e9/loan-default>
- 5) Stock market Price prediction
Use any free API to get data.