Course Syllabus: Data Science Capstone - Predictive Analytics Project

Description of Course:

This course focuses on applying data science techniques to a real-world predictive analytics project. Students will work in teams to develop a predictive model using a large dataset, applying concepts such as data cleaning, feature engineering, model selection, and evaluation.

Instructor and Contact Information:

Dr. Jane Doe

Email: janedoe@university.edu

Office Hours: Mondays 2-4 PM (Online)

Course Format and Teaching Methods:

The course is entirely online and consists of weekly readings, discussion forums, and project work. The primary method of teaching will be through hands-on project development, supported by lectures and tutorials.

Course Goals & Objectives:

- Goal: To develop practical skills in predictive analytics through a comprehensive project.
- Objectives:
  - Understand the process of data preprocessing and cleaning.
  - Apply different predictive models and select the most appropriate one.
  - Evaluate model performance using various metrics.

Expected Learning Outcomes:

By the end of this course, students will be able to:

- Clean and preprocess large datasets.
- Build and evaluate predictive models.

- Present and defend their predictive analytics project.

Assignment Schedule:

- Week 1: Course Introduction & Project Proposal Submission
- Week 2: Data Collection and Initial Cleaning
- Week 3: Exploratory Data Analysis
- Week 4: Feature Engineering and Model Selection
- Week 5: Model Training and Evaluation
- Week 6: Final Model Tuning and Validation
- Week 7: Project Presentation and Report Submission

Grading Policy:

- Project Proposal: 10%
- Data Cleaning & Preprocessing: 20%
- Model Development: 30%
- Final Report & Presentation: 40%

Required Readings/Resources:

- Introduction to Data Science by Laura Igual and Santi Seguí
- Python for Data Analysis by Wes McKinney
- Online resources: Kaggle, UCI Machine Learning Repository

Additional Resources for Students:

- University Data Science Lab (online access)
- Python and R programming forums

Final Project Submission:

- Due Date: Final presentations are due on Week 7. Teams will submit a detailed report along with their final model code.