

**RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA,  
BHOPAL**

**New Scheme Based On AICTE Flexible Curricula**

**CSE-Artificial Intelligence and Machine Learning/ Artificial Intelligence and Machine Learning, VII-Semester**

**AL702 (C) Predictive Analytics**

**Course Objective:**

The students should be able to understand how to transform data and make it suitable for data driven predictive tasks. Understand how to compute basic statistics using real-world datasets of consumer activities, like product reviews.

Course outcomes: After completion of course, students would be able to:

1. Apply Python to create interactive data visualizations to make meaningful predictions and build simple demo systems.
2. Apply simple regressions and classifications on datasets using machine learning libraries.
3. Understand the usage of different python libraries.

contents:

**Unit I:** Introduction Data Product, Data Product Examples in Enterprise, Developing a Data Product Strategy.

**Unit II:** Reading Data in Python Reading CSV & JSON Files, Processing Structured Data in Python, Live-Coding: JSON, Extracting Simple Statistics from Datasets Data Processing in Python Data Filtering and Cleaning, Processing Text and Strings in Python, Processing Times and Dates in Python

**Unit III:** Python Libraries and Toolkits Matrix Processing and Numpy, Introduction to Data Visualization, Introduction to Matplotlib, urllib and BeautifulSoup

**Unit IV:** Gradient Descent Classification in Python, Introduction to Training and Testing, Gradient Descent in Python, Gradient Descent in TensorFlow

**Unit V:** Diagnostics for Data Meaningful Predictive modelling, Regression Diagnostic, Over- and Under-Fitting, Classification Diagnostics: Accuracy and Error, Classification Diagnostics: Precision and Recall. Codebase for Evaluation and Validation, Model Complexity and Regularization, Evaluating Classifiers for Ranking.

Text Books/Suggested References:

1. <https://www.coursera.org/learn/basic-data-processing-visualization-python>
2. <https://www.coursera.org/learn/design-thinking-predictive-analytics-data-products>
3. <https://www.coursera.org/learn/meaningful-predictive-modeling>
4. Applied Predictive Analytics: Principles and Techniques for the Professional Data Analyst, Dean Abbott, 2014, Wiley.
5. Data Science for Business: What You Need to Know about Data Mining and Data-Analytic Thinking, Tom Fawcett, O'Reilly, 1st edition, 2013.