

DS-640 Predictive Analytics & Forecasting Modeling: Syllabus

Course: DS-640 Predictive Analytics & Forecasting Modeling
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Prerequisites

A familiarity with basic mathematical operations and functions. A familiarity with basic excel functions. A familiarity with Python Programming and basic Machine Learning concepts.

Course Outline

Analytics has been defined as the extensive use of data, statistical and quantitative analysis, explanatory and predictive models, and fact-based management to drive decisions and actions. Analytics is more than just analytical methodologies or techniques used in logical analysis. It is a process of transforming data into actions through analysis and insights in the context of organizational decision making and problem solving. Analytics includes a range of activities, including business intelligence, which is comprised of standard and ad hoc reports, queries, and alerts; and quantitative methods, including statistical analysis, forecasting/extrapolation, predictive modeling (such as data mining), optimization and simulation. The course will focus on various predictive analytics models and techniques. This course provides students with the fundamental concepts and tools needed to understand the emerging role of predictive analytics in organizations.

Learning Outcomes

Upon successful completion of this course, students will be able to:

- Assess and analyze data using the techniques and tools of analytics.
- Implement advanced predictive modeling techniques supporting the conceptual drive of the functions.
- Articulate the advantages of disadvantages of applying a specific technique to a predictive task.

Weekly Schedule

Week	Weekly Objectives/Topics
1	Introduction to Predictive Analytics
2	Regressions and Classification
3	K Nearest Neighbors
4	Support Vector Machines
5	Decision Trees & Random Forest

Week	Weekly Objectives/Topics
6	Midterm Exam
7	Principal Component Analysis
8	Naïve Bayes
9	Recommendation Systems
10	Natural Language Processing
11	Final Exam

Recommended Books

[Applied Predictive Modeling](#) is a book on the practice of modeling when accuracy is the primary goal.

Title: **Applied Predictive Modeling**
 Author(s): **Max Kuhn, Kjell Johnson**
 Release date: **2018**
 Publisher(s): **Springer**
 ISBN: **978-1461468486**

Assignments

Assignment	Weight
Assignments	20%
Attendance / Discussion	10%
Quizzes	10%
Project	20%
Mid Term and Final Exam	20% + 20%
Total 1	00%

Homework assignments are to be completed individually.

PLEASE NOTE: There will be a 24-hour grace period for each of these assignments, but with a 50% reduction in final grade if you turn in the assignment any time after the original due date. If an assignment is more than 24 hours late, the submitted material is not acceptable, and no grade will be assigned to that assignment.

Performance Evaluation Criteria

Grade	Performance	Numeric Grade	Grade Point
A	Outstanding	94 to 100	4.0

Grade	Performance	Numeric Grade	Grade Point
A-	Excellent	90 to 93	3.7
B+	Very Good	86 to 89	3.3
B	Good	83 to 85	3.0
B-	Above Average	79 to 82	2.7
C+	Average	75 to 78	2.3
C	Satisfactory	60 to 74	2.0
F	Failure of Course	59 or below	0.0

Special Accommodations

Students with special learning needs should work with the Academic Dean's office to develop appropriate accommodations.

Academic Honesty and Student Conduct

To accurately monitor your progress, the code, text, and figures in your submission need to be your original work. Familiarize yourself with the standards for academic honesty and student conduct which is available online.

I have read and fully understand all articles, conditions, and terms of this syllabus. Sign your name here:
