SYLLABUS

Applied Analytics & Predictive Modeling

95718 MGMT-4963-02 (4 Credits) / 95631 MGMT-6160-02 (3 Credits)
Spring 2020 Monday 3:00 PM – 5:50 PM
Room Location: SAGE 2715
Websites: https://predictivemodeling.github.io/ **, Piazza & Blackboard**
Prerequisites or Other Requirements: None.

Students may not receive credit for both the 4000 level and 6000 level versions of this course.

INSTRUCTOR

Instructor Name: Lydia Manikonda
Office Location: PITTS 1212
Tel. No.: 518-276-2768
Email Address: manikl@rpi.edu
Office Hours: Thursday 1 PM – 3 PM

Grader

TA Name(s): Shailesh Divey
TA Office Location: PITTS 2224
TA(s) Email Address: diveys@rpi.edu
TA Office Hours: Tuesday 3 PM – 5 PM

COURSE DESCRIPTION:

Business analytics enables organizations to leverage large volumes of data in order to make more informed decisions. It encompasses a range of approaches to integrating, organizing, and applying data in various settings. This course develops an understanding of concepts in business analytics and data manipulation. In particular, through hands-on experience with a range of techniques students will learn to work with large data sets, analyze trends and segmentations and develop models for prediction and forecasting. This course is part of the MS program in Business Analytics and builds on foundations learned in the Fall semester.

COURSE GOALS/OBJECTIVES

1) Learn how to approach a new analytics challenge and ask the right questions
2) Construct and work with large data sets
3) Understand a range of models and techniques for data manipulation and prediction
4) Learn to visualize and present data insights

COURSE REFERENCE MATERIALS

Data Mining for Business Analytics in Python,
by Galit Shmueli, Peter C Bruce, Peter Gedeck, Nitin R. Patel
ISBN-10: 1119549841

STUDENT LEARNING OUTCOMES

For MGMT6160 through this course you are expected to:

(1) Demonstrate an understanding of analytics-based problem solving and analytics thinking in the context of providing robust solutions for real world scenarios.
(2) Be able to extract, match, transform, and clean data from a variety of sources.
(3) Develop efficient predictions for business applications.
(4) Apply ethical frameworks to the creation of models.
(5) Translate research on state of the art deep learning to business applications.

For MGMT4963, through this course you are expected to:

(1) Demonstrate an understanding of analytics-based problem solving and analytics thinking in the context of providing robust solutions for real world scenarios.
(2) Be able to extract, match, transform, and clean data from a variety of sources.
(3) Develop efficient predictions for business applications.

COURSE ASSESSMENT MEASURES

Exam (40% total): in-class and individual test, covering the material studied up to this date.

Project (25%): a hands-on project will ensure you are able to apply what we have covered throughout the course. The project will be completed in groups of 3 students (with whom you are working on the assignments). More information will follow.

Assignments (30%): there will be three group assignments, shown in the schedule on the next page.

Active class participation (5%)

Missing an assignment or a test without prior approval from the instructor will result in a grade of zero (0). There will be no opportunities for extra credits or make-up assignments.

GRADING CRITERIA

All grading is out of 100%. The grading scale used for final course grades is: A (93-100); A- (86-92); B+ (82-85); B (78-81); B- (74-77); C+ (70-73); C (66-69); C- (60-65); F (below 60). There are no incomplete grades (I) in this class. Test grades and feedback will be given throughout the semester using the course management system (LMS).

MGMT6160 (3 Credits):

Component	Weight
Midterm exam	15%
Project	25%
Assignments	30%
Final Exam	25%
Class participation	5%

MGMT4963 (4 Credits):

Component	Weight
Midterm exam	15%
Project	25%
Assignments	35%
Final Exam	25%

Students in MGMT6160 level cannot receive “D/D+/D-” grades.

Students should check LMS for grades on assignments.

ATTENDANCE POLICY

PLEASE DO NOT BE LATE TO CLASS. A maximum of 2 unexcused absences are allowed. Further absences will result in a 10% reduction of final overall score that is considered towards the final letter grade.

Therefore, the imperative clearly stated: each participant attends class fully prepared, willing and able to offer constructive criticism, provide goal-oriented analytic and synthetic insights, and encourage investigative dialectic. You earn your grade on participation

through consistent, daily contribution. Merely "COMING TO CLASS" is not sufficient, but is necessary.

Simply put: Do not miss class hours or group meetings! Understandably, there are circumstances (e.g., job interviews, family matters, extracurricular activity, etc.) that may cause you to miss class; nevertheless, excessive absences will reduce your class participation grade. Notify the instructor and group IN ADVANCE of any planned absences (especially students who participate in extracurricular activities as representatives of RPI.)

ACADEMIC INTEGRITY

Student-teacher relationships are built on trust. For example, students must trust that teachers have made appropriate decisions about the structure and content of the courses they teach, and teachers must trust that the assignments that students turn in are their own. Acts that violate this trust undermine the educational process. The Rensselaer Handbook of Student Rights and Responsibilities defines various forms of Academic Dishonesty and you should make yourself familiar with these. Any violation of this policy will result in a penalty in accordance with Lally school guidelines. Depending on the severity of the violation, penalty will range from a grade of zero (0) on the specific grade component to failing the course. All violations will be reported to the Associate Dean for Academic Affairs. If you have any question concerning this policy before submitting an assignment, please ask for clarification.

ACADEMIC ACCOMMODATIONS

Rensselaer Polytechnic Institute strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on a disability, please let me know immediately so that we can discuss your options.

To establish reasonable accommodations, please register with The Office of Disability Services for Students (mailto:dss@rpi.edu; 518-276-8197; 4226 Academy Hall). After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion."

Tentative Class Schedule

Session	Date	Topic	Deadlines
1	01/13	Course Introduction; Introduction to Python	
Martin Luther King Jr Day	01/20	NO CLASS	
2	01/27	Data cleaning and preparation; In-class Case	
3	02/03	Structuring the dataset; Dimensionality Reduction (PCA); Case description-1	
4	02/10	Assignment-1 Presentations (three groups) Logistic regression	Assignment-1 Due
President's day	02/17	NO CLASS	
5	02/18	Model evaluations; Decision trees; Case description-2	
6	02/24	Project Introduction; Assignment-2 presentations; K-NN algorithm	Assignment-2 Due
7	03/02	1-slide project presentations; NLP Applications; Case description-3	
Spring Break	03/09	NO CLASS	
8	03/16	Assignment-3 Presentations; Association rules	Assignment-3 Due
9	03/23	Market Basket Analysis; 2-slide project presentations	Project Report-1 Due
10	03/30	Cluster Analysis; K-means	
11	04/06	Exam	In-Class Exam
12	04/13	Project presentations	
13	04/20	Project presentations	
14	04/27	Final Project Due	Project Final Report Due
Final Examinations	May 4, 2020 - May 8, 2020		Final Exam