UT|D

Course Information

Course

Course Number: OPRE6398.501
Course Title: Prescriptive Analytics
Term: Fall 2016

Professor Contact Information

Professor: Alex Angelus
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About the Instructor

Visiting Professor in the ISOM area of the Jindal School of Management; Ph.D. in Operations Management, Graduate School of Business, Stanford University, 1997.

TA Contact Information

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Office Hours: TBD

Course Description

OPRE 6398 Prescriptive Analytics (3 semester hours)

The Prescriptive Analytics course is about learning to do things better. It is about mathematical models that improve decision making at all levels in the organization, from departmental manager to Director of Marketing to the CEO. Applications explored will be in finance, operations management, supply chain, economics, marketing and human resources. Topics will include optimization methods such as linear, nonlinear and integer programming, data mining tools such as discriminant analysis, cluster analysis and neural networks, and analytical approaches to dealing with uncertainty such as regressions, decision analysis and simulation. Students will make extensive use of Excel and several spreadsheet-based add-ins to solve real business problems, improve processes, and help make important business decisions. Prerequisite: OPRE 6301.

Course Objectives and Requirements

Student Learning Objectives

Students are expected to develop skills in problem formulation, identification of appropriate optimization techniques, computer implementations in Excel and/or manual calculations and written explanations, and interpretation of results. Further, students will become familiar with the problem-solving process, including, identification of the problem, identification of the proper information and optimization method to be used in the analysis of the problem, and explanation of the result. Students will also understand the usefulness of mathematical tools for business applications.

Required Textbook

SPREADSHEET MODELLING AND DECISION ANALYSIS: A Practical Introduction to Business Analytics, 7th Edition,

by Cliff. T Ragsdale

(ISBN 10 digit: 1-285-41868-9 / ISBN 13 digit: 978-1-285-41868-1)

This is the required edition of the text. All other editions are likely have different problems and/or chapter topics. "Abbreviated" and/or "International" editions will generally NOT have the same content, order of topics, or identically numbered example problems as the required edition of this textbook. By not getting the correct edition the student risks a low exam grade as exams may refer to textbook problems.

Required Software

This course uses a Windows-based laptop, eLearning, Internet Access, Microsoft Excel 2007 or higher (no trial versions), and Data Analysis (included with Excel). Our main software tool will be Analytic Solver Platform, which is an add-in to Excel.

Course Content and Grading

Content of the Course

The course will cover the following topics.

(1) Introduction to Modeling? (Chapter 1)
(2) Introduction to Optimization and Linear Programming (Chapter 2)
(3) Modeling and Solving LP Problems in a Spreadsheet (Chapter 3)
(4) Sensitivity Analysis for Linear Programs (Chapter 4)
(5) Network Modeling (Chapter 5)
(6) Integer Linear Programming (Chapter 6)
(7) Nonlinear Programming and Evolutionary Optimization (Chapter 8)
(8) Introduction to Simulation (Chapter 12)
(9) Data Mining (Chapter 10)

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Grading

Course grade for each student will be based on 11 homework assignments and 3 in-class exams. The weights of those grade components will be as follows.

- Homework: 20%
- Exam I: 25%
- Exam II: 25%
- Exam III: 30%

There will be weekly homework assignments that are due each week. Assignments are to be worked in teams of 3 students each. Collaboration with other teams is not allowed. Assignments are due at the beginning of each class. Turn in the paper copy of the assignment solution. Soft copies will not be accepted.

There will be three in-class exams in this course. Each exam will focus on certain chapters and topics. In particular, Exam I will cover Chapters 2, 3 and 4; Exam II will cover Chapters 5, 6, and 8; and Exam III will cover Chapters 10 and 12. Questions on later exams can, and will, depend on concepts/methods developed earlier in the course.

Exams 1 and 2 will consist of (approximately) 120 minutes of in-class, closed-book, problem solving. Exam 3 is a take-home exam. Your exam schedule and homework assignments are listed on pages 6 – 9 of this syllabus.

Cell Phones are not permitted on the desk at any time before, during, or after an exam.

No student solution manuals, or any other solution manuals, will be permitted. Personal Laptops must be in working order with all required software and data files installed. Any laptop difficulties must be resolved before the exam session.

There will NOT be a final exam during finals week.

Other Administrative Matters

Exams Will Not Be Returned

Students will be given the opportunity to review their Exam 1, Exam 2, and Exam 3 with the Teaching Assistant during the window of times posted after test scores are made available. After the deadline for each test review has passed, there will be no further discussion of grades/exams.

Make-up Exams

A make-up exam for the in-class part of Exam 1, Exam 2 or Exam 3 may be considered only for excused absences, which must be determined prior to the exam session. Excused absences may be given for verifiable medical or family emergencies. Written documentation must be provided for substantiation of the absence. Students who do not show up for an exam, and for whom prior arrangements have not been made will receive a score of zero. There is no guarantee that the level of difficulty of the make-up exam, or the exam format, will be comparable to that of the scheduled test. All make-up exams will taken at a time determined with the professor. Any make-up exam will be taken on campus with a proctor.

Lectures, Classroom Participation, and PowerPoint slides

PowerPoint slides are utilized to enhance the in-class lecture. The slides are not available for download. To encourage critical thinking, students are required to attend class and take notes. Being proactive in the classroom by asking questions is encouraged. Students will be expected to have read the required reading for each week before coming to class.

Attendance

Success in class is correlated to attending class and taking notes during the lecture. The professor's office hours, and those of the TA, will not be utilized to reiterate lecture material missed in class. Due to large class sizes, it may not be possible for a student to attend a different class section than the one in which officially enrolled. Priority is given to students enrolled in a certain section.

Cell Phones and Surfing the Internet during Class/Lecture

No use of cell phones, or texting within the classroom, at any time. If you must make a call during class or during class breaks, please step outside of the classroom. **Taking unauthorized pictures with your cell phone within the classroom at any time is an infringement upon privacy rights. Video or audio recording of the lectures is not allowed without the explicit permission of the instructor**. Surfing the Internet during lecture is distracting to all and interferes with learning. These distractions will be regarded as infringement upon the rights of others to learn within the classroom, and students are subject to referral to the appropriate Dean.

Logging Into eLearning Class Website

It is the student's responsibility to log into the eLearning class website on a regular basis in order to take online exams, and to read announcements or emails. Daily login is suggested.

Extra Credit/Late Work

No extra credit available. Late work is not accepted.

Homework Assignments

Homework assignments are due in hard copy at the beginning of the class when they are due. One assignment per team needs to be submitted. Make sure that team member names are written on the front page or the cover page. Late assignments will not be accepted.

Teamwork

Homework assignments in this course are intended to be done in teams of two to three students each. However, I will not be very tolerant of free-riding. If any two members of a team bring up complaint that the third member of the team is free-riding and ask that he/she be removed from their team, that student will indeed be removed their team, and will not be allowed to join another team. He/she will need to complete the remaining assignments on his/her own.