

EASTERN ILLINOIS UNIVERISTY
LUMPKIN COLLEGE OF BUSINESS & APPLIED SCIENCES
SCHOOL OF BUSINESS
MBA 5500: QUANTITATIVE MODELING
SYLLABUS FOR SUMMER 2007

- PROFESSOR: Dr. John R. Willems
- OFFICE: Lumpkin Hall 4014
- TELEPHONE: 581-6916 (my office)
581-3028 (MBA office)
- E-MAIL: MBA5500JRW in WebCT
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- WWW: WebCT will be used throughout this course!
Backup: <http://www.ux1.eiu.edu/~jrwilliams/>
- OFFICE HOURS: T, R: 6:00 – 7:00 p.m. and by appointment.
- CATALOG DESCRIPTION: A study of practical statistics and operations research topics using spreadsheet models. Statistical concepts include confidence intervals, hypothesis testing, chi-square tests, t-tests, ANOVA's, correlation analysis, and regression analysis. Operations research topics will integrate finance, marketing and operation management models using spreadsheets.
- PREREQUISITES: Admission to the MBA degree program, and all Phase I courses
- REQUIRED TEXT: *Practical Management Science*, 3rd Edition, Wayne L. Winston, S. Christian Albright, Duxbury Press, 2007.

Data Analysis in Plain English with Microsoft Excel, Harvey J. Brightman, Thompson South-Western, 1999.
- SUPPLEMENTARY READINGS: Additional materials may be distributed in class or placed on reserve at Booth Library.
- CLASS MEETINGS: T, R: 7:00 - 9:30 p.m. in LMPH 2011.
- TEACHING METHOD: The class will be taught as a combination of lectures, discussion, presentations, writing and problem solving.
- OBJECTIVES: Upon completion of this course, MBA students will be able to:
1. To provide the students with a solid foundation in the statistical tools used most frequently in business including confidence intervals, hypothesis testing, chi-squared tests, t-tests, ANOVA's, correlation analysis, and regression analysis.
 2. To introduce the theory and application of operations research/management science in an organizational setting.

3. To expose students to a broad base of quantitative techniques.
4. To develop the spreadsheet modeling skills that are needed for solving problems in all business disciplines. In particular, examples from finance, marketing and operations management will be covered.
5. To solve linear and nonlinear programming problems using the Excel Solver Add-In
6. To solve multiple objective decision making problems using the Excel Solver Add-In
7. To integrate concepts from finance, marketing, operations management and information systems.

GRADING INFORMATION:

Item	Total Value	Percent of Total Points
Examinations		
Exam One	100	27.78%
Exam Two	100	27.78%
Final Examination	100	27.78%
Total for Examinations	300	83.33%
Homework and Projects		
Homework (7 at 3 points)	21	5.83%
Article Review	10	2.78%
Case Project	29	8.06%
Total for Homework and Projects	60	16.67%
Total Points	360	
Grading Scale		
A	324 – 360.00	90.0 - 100.0%
B	288 – 323.99	80.0 - 89.99%
C	252 – 287.99	70.0 - 79.99%
D	216 – 251.99	60.0 - 69.99%
F	215.99 and below	below 60.0%

EXAMINATIONS: There will be three exams. The first 100 point exam will be over the material from the statistics unit of the course. The first half of the operation research unit will be covered on the second exam worth 100 points, while the final exam worth 100 points will be over all the material from the second half of the operations research unit. These exams may be take-home or in-class depending on the students' effort throughout the semester. Two old copies of each of the three exams along with Excel solutions will be available on my web site.

HOMEWORK: Students are required to work in teams of 2 on homework assignments. All members of the team will receive the same grade on the assignment. Templates for homework problems will be available through the Course Materials page in WebCT. As a backup method the templates will be available from me in class or through WebCT e-mail.

CASE PROJECTS: Students are required to work in teams of 4 on a case project at the end of a covered chapter from the management science textbook. The project will build upon the skills covered in that chapter. All of these cases will require the use of Excel spreadsheet models.

ARTICLE REVIEWS: Students are required to find an article from an academic OR/MS journal on one of the topics covered in class. They are required to write a review of this article which must be between 5 and 7 pages double spaced.

BUSINESS PERSPECTIVES AND SKILLS:

1. Upon completion of a program in the School of Business, students should understand the perspectives that form the context of business. To help students develop that understanding, this course includes coverage of the following issues:
 - a. Technological issues: The use several software packages will be integrated throughout the course. Coverage of these topics is shown on the tentative class schedule.
2. Integrated throughout the business courses are assignments and activities designed to help students develop and strengthen certain skills required in all areas of business. This course includes the following activities:
 - a. Oral communication skills: All students are expected to participate regularly in class discussions.
 - b. Written communication skills: The case projects and article review are assignments that require written solutions.
 - c. Decision making skills: This course focuses on analytical skills and problem solving including: selecting and using models to aid in decision making.
 - d. Research skills: Research at Booth Library (or a University of Illinois Library) and/or the Internet will be required for the article review.

CLASS POLICIES:

1. *Students with Disabilities:* Appropriate academic support is available for students with documented disabilities. Please notify the professor and contact the Office of Disability services (581-6583) for further information.
2. *Other Services:*

Career Services	581-2412
Learning Assistance Center	581-6696
Counseling Center	581-3413
3. *Emergency Preparedness Plan:* Instructions about what to do in the event of an emergency are posted in all classrooms on campus. Students are responsible for acquainting themselves as to the specific instructions so that they will be prepared in the event of an emergency.
4. *Academic Integrity:* All students are expected to comply with University rules and regulations on academic integrity and honesty. These rules and regulations are summarized in the Student Conduct Code in "A Student Guide to Academic Integrity," which is posted in the classroom and on page 51 of the Undergraduate Catalog. Violations of these rules and regulations will result in zero points on the assignment in question. Additional disciplinary sanctions may be imposed.

5. *Attendance:* In accordance with University policy, students are expected to attend class unless prevented by illness, an official University activity, or an emergency. Students who miss class due to an excused absence will be allowed to make up missed work or submit assignments without penalty. An absence from class will be considered an "excused absence" under the following circumstances:
 - a. Absence due to illness. An absence due to illness is an excused ONLY IF the student notifies the professor of the absence in advance (i.e., **prior to** the missed class) *and* provides documentation of the illness upon return to class.
 - b. Absence due to an official University activity. Absence due to an official University activity is an excused absence only if the student notifies the professor of the absence in advance (i.e., **prior to** the missed class) *and* provides written documentation of the University activity from an appropriate University representative prior to the absence.
 - c. Absence due to emergency. Evaluation of whether an absence due to an emergency is an excused absence will be made by the professor on a case by case basis. At a minimum, the student should notify the professor of the absence as soon as possible and should provide documentation of the emergency.
6. All students are expected to take exams at the time scheduled. Make-up exams will be more difficult.
7. There will be handouts given throughout the semester. The **ONLY** way a student can receive a handout from the instructor is to be in attendance on the day on which the handout is distributed. If attendance is impossible, another student may request an extra copy for the student who is absent.
8. Failure to complete the requirements for the class is not an adequate reason for an incomplete grade.

SPECIAL DATES

Independence Day Observance	Wednesday, July 4, 2007
Last day for withdrawal from course with an automatic grade of W:	Friday July 20, 2007
Final Exam	Thursday August 2, 2007

TENTATIVE CLASS SCHEDULE[&]

Coverage of business perspectives are noted as follows:

☼ Technological issues

[&] Dates for all assignments and exams are tentative and may be changed by the professor. All changes will be announced in class; students are responsible for any changes announced in class.

Week/Class	Topic	Sections
Week 1/Class 1 (6/12)	Hypothesis Testing on One Population Parameter ☼	Chapter 6 of Data Analysis
Week 1/Class 2 (6/14)	Describing Multivariate Data ☼	Chapter 7 of Data Analysis
Week 2/Class 3 (6/19)	Hypothesis Testing on Two Population Parameter ☼	Chapter 8 of Data Analysis
Week 2/Class 4 (6/21)	Regression Analysis and Chi-Square Test of Independence ☼	Chapter 9 of Data Analysis

Week/Class	Topic	Sections
Week 3/Class 5 (6/26)	Design of Experiments (1-Way and 2-Way ANOVAS)	Chapter 12 of Data Analysis
Week 3/Class 6 (6/28)	Design of Experiments (1-Way and 2-Way ANOVAS) Exam 1	Chapter 12 of Data Analysis
Week 4/Class 7 (7/3)	Introduction to Modeling ☼ Introductory Spreadsheet Modeling ☼	Sections 1.1 - 1.8 Sections 2.1 - 2.2, 2.4 - 2.6
Week 4/Class 8 (7/5)	Introduction to LP ☼	Sections 3.1- 3.5
Week 5/Class 9 (7/10)	Introduction to LP (continued) ☼	Sections 3.6 - 3.10
Week 5/Class 10 (7/12)	Advertising Models and Workforce Scheduling Models ☼ Aggregate Planning Models, Blending Models and Production Process Models ☼	Sections 4.1 - 4.3 Sections 4.4 - 4.6
Week 6/Class 11 (7/17)	Financial Models and DEA ☼ Exam 2	Sections 4.7 - 4.8
Week 6/Class 12 (7/19)	Transportation Models and Assignment Models ☼ MCMF Models and Shortest Path Models☼	Sections 5.2 - 5.3 Sections 5.4 - 5.5
Week 7/Class 13 (7/24)	Capital Budgeting Models☼ Fixed-Cost, Set-Covering and Location-Assignment Models ☼	Section 6.3 Sections 6.4 and 6.5
Week 7/Class 14 (7/26)	Introduction and Basic Ideas of Nonlinear Optimization ☼ Advertising Response and Selection Models ☼ Rating Sports Teams ☼	Sections 7.1 - 7.2 Section 7.4 Section 7.6
Week 8/Class 15 (7/31)	Portfolio Optimization Models and Estimating the Beta ☼	Section 7.7 - 7.8
Week 8/Class 16 (8/2)	Final Examination Thursday August 2, 2007 7:00 - 9:00 p.m.	