

# University of Michigan-Dearborn Syllabus



## Course DS570, Management Science, 3 Credits

Prof. Edward Williams

Office Location: 131B Fairlane Center South

Phone Number: 313-583-6553

E-Mail: [williame@umich.edu](mailto:williame@umich.edu)

Office Hours: 4:30pm – 5:30pm Mondays and Thursdays, and by appointment

Course Meeting Times and Format(s): 6:00pm – 8:45pm Mondays, 191 FCS

### Course Description:

This course develops basic competence in introductory management science and operations research. Topics include: problem formulation and model development in optimization, linear programming (LP), duality theory, economic interpretation, and sensitivity analysis, introduction to integer programming (IP), special linear programs, network modeling, and introduction to non-linear programming (NLP). Selected software packages are used in laboratory exercises and in an optimization project. No credit toward degree for Dual MBA/MSE-I&SE students.

### Program Goals:

This course contributes toward both the MBA and MSBA. Pertinent links are:

MBA: <http://umdearborn.edu/cob/mba-goals-and-objectives/>

MSBA: <http://umdearborn.edu/cob/ms-ba-goals-and-objectives/>

### Course Objectives:

1. Learn techniques of, and develop basic competence in, techniques of operations research as applied to management science and practical management problems.
2. Become comfortable with computer software capable of computationally attacking properly formulated problems.
3. Formulate and solve problems which will be drawn from a variety of applications such as marketing, staffing, facility location, investment, production planning, production scheduling, resource allocation, etc.

### Required Materials and/or Technology:

Ragsdale, Cliff T. 2014. *Spreadsheet Modeling & Decision Analysis*, 7<sup>th</sup> edition.  
Mason, Ohio: South-Western Cengage Learning.

## Recommended References:

1. *Student Solutions Manual* to the above text.
2. Balakrishnan, Nagraj, Barry Render, and Ralph M. Stair, Jr. 2013. *Managerial Decision Modeling with Spreadsheets*, 3<sup>rd</sup> edition. Upper Saddle River, New Jersey: Pearson Education, Incorporated.
3. Bernard W. Taylor III. 2015. *Introduction to Management Science*, 12<sup>th</sup> edition. Upper Saddle River, New Jersey: Pearson Education, Incorporated.

For availability of these and other materials at the campus bookstore, see their [web site](#).

## Assignment and Grading Distribution:

First examination 19 October 2015 (in-class part; see below)	35%
Second examination 14 December 2015 (in-class part; see below)	35%
Case Study (team) Presentations 30 November 2015	15%
Homework team assignments throughout	10%
Class participation throughout	5%

## Grading Scale:

94%- 100%	A	80%- 83%	B-	67%-69%	D+
90%- 93%	A-	77%-79%	C+	64%-66%	D
87%- 89%	B+	74%-76%	C	60%-63%	D
84%- 86%	B	70%-73%	C-		

## Grade Grievance:

A student may grieve a final course grade or a grade on an examination, project, thesis or any other graded material required for graduation. This grievance process is intended to provide the student the protection against evaluations which are prejudicial, arbitrary, or capricious.

Examples of grading problems which can be grieved are:

- a. Clerical error
- b. Prejudicial evaluation
- c. Inconsistent or inequitably applied standards of evaluation

There is a presumption that the grades assigned are correct and therefore the student has the burden of proof in the grievance process (i.e. s/he must establish clerical error; capricious or prejudicial evaluation; or inconsistent or inequitably applied standards of evaluation). To start this process, the student should contact the Department Chair or Program Director before the end of the fifth week of classes in the first full term following the term in which the disputed grade was issued.

## Case Study Specifications:

The Case Study requires team collaboration to identify and report upon a business situation (likely where one of the team members works, or where a friend or relative works....) amenable to analysis and optimization of the type taught in this course which, if and when actually undertaken, would improve the business's bottom line. It does *not* entail actually undertaking

such an analysis – I am well aware that the data collection by itself would likely require more than a semester, and the data and results would very likely be confidential. There are two deliverables to this assignment: (1) a PowerPoint® file to be uploaded in due course (2) an oral presentation thereof to the class and to me. Hence, each class member will obtain ideas for applying the course material from the presentations of other class members – one of the learning objectives I desire for the class. Hence this assignment is deliberately “open-ended.”

Students are allowed to, and indeed strongly encouraged to, work in teams of 3 or 4 on homework problems, as well as on the Case Study. As soon as students notify me of team rosters, I will define them in Canvas for convenience in uploading homework and the Case Study. All homework problems must include a summary of findings as well as any computer printout that may be pertinent. The summary report must bear signatures of students on the team producing it; all students on that team will receive the same grade for that homework. Your (electronic) signature on the homework is your assurance to me that you have participated in obtaining and understand the solution as presented therein -- it is vital that *each* student on a team participate actively in the solving of *each* exercise.

Both examinations will comprise two parts. The closed-book, closed-notes, computer-off portion of each examination will entail writing short paragraph answers to questions testing your understanding of fundamental concepts. These questions will *not* require you to formulate problems, undertake computations, or memorize formulas (that’s what computers are for!). The open-book, open-notes, computer-on portion of each examination will be done on a “take-home test” basis; you will solve problems like the homework problems (individually, not in your teams) and upload your results to Canvas.

**Tentative Course Outline:**

<b>Date</b>	<b>Activity and Content</b>
Week 1 – 9/14	Chapter 1
Week 2 – 9/21	Chapter 2
Week 3 – 9/28	Chapter 3
Week 4 – 10/5	Chapter 4
Week 5 – 10/12	Chapter 4
Week 6 – 10/19	<b>Test #1 In-class closed-book portion</b>
Week 7 – 10/26	Chapter 5
Week 8 – 11/2	Chapter 6
Week 9 – 11/9	Chapter 8
Week 10 – 11/16	Chapter 8
Week 11 – 11/23	Chapter 7
Week 12 – 11/30	Case Study Team Presentations
Week 13 – 12/7	Review
Week 14 – 12/14	<b>Test #2 In-class closed-book portion</b>

**University Attendance Policy:**

A student is expected to attend every class and laboratory for which he or she has registered. Each instructor may make known to the student his or her policy with respect to absences in the course. It is the student's responsibility to be aware of this policy. The instructor makes the final decision to excuse or not to excuse an absence. An instructor is entitled to give a failing grade (E) for excessive absences or an Unofficial Drop (UE) for a student who stops attending class at some point during the semester.

**Academic Integrity Policy:**

The University of Michigan-Dearborn values academic honesty and integrity. Each student has a responsibility to understand, accept, and comply with the University's standards of academic conduct as set forth by the Code of Academic Conduct (<http://umdearborn.edu/697817/>), as well as policies established by each college. Cheating, collusion, misconduct, fabrication, and plagiarism are considered serious offenses and violations can result in penalties up to and including expulsion from the University.

**Disability Statement:**

The University will make reasonable accommodations for persons with documented disabilities. Students need to register with Disability Resource Services (DRS) every semester they are enrolled. DRS is located in Counseling & Support Services, 2157 UC ([http://www.umd.umich.edu/cs\\_disability/](http://www.umd.umich.edu/cs_disability/)). To be assured of having services when they are needed, students should register no later than the end of the add/drop deadline of each term. If you have a disability that necessitates an accommodation or adjustment to the academic requirements stated in this syllabus, you must register with DRS as described above and notify your professor.

**Safety:** All students are strongly encouraged to register in the campus Emergency Alert System, for communications during an emergency. The following link includes information on registering as well as safety and emergency procedures information: <http://umemergencyalert.umd.umich.edu/> Finally, all students are also encouraged to program 911 and UM-Dearborn's Public Safety phone number (313) 593-5333 into personal cell phones. In case of emergency, first dial 911 and then if the situation allows call UM-Dearborn Public Safety.