

ENMA 603: Operations Research

Spring 2012 – Wednesday 7:10pm – 9:50pm
Gornito 218

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Office Hours:	Monday and Thursday, 4 to 6 PM, or preferably by appointment.
Instructor Web Site:	http://www.odu.edu/~grabadi/
Class Web Site:	http://blackboard.odu.edu/ See the Blackboard section in this syllabus
Adobe Connect Web Site:	http://connect.odu.edu/enma603-spring2012/ Enter as a guest and type your name.

COURSE OBJECTIVES

The objective of this course is to introduce the students to the area of Operations Research and present the most common problems and solution approaches. The course starts with problem definition and analysis, then framing the problem to model it mathematically and using the computer. The students will also learn how to implement computer models and solve them to find optimal or near-optimal solutions. Problems addressed include linear and nonlinear optimization problems in various areas of application. The course will cover both modeling methods and solution methods for difficult optimization problems.

TEXTBOOK AND CLASS MATERIAL:

- **Textbook:** *Introduction to Management Science*, 10th edition, By Bernard W. Taylor, Prentice Hall. The 8th and 9th editions will be acceptable as well.
- Class notes will be posted on Blackboard. I will do my best to post the notes and any material needed one day before class; however in some cases, they could be posted on the same day. I will always send an email and post an announcement once the material is ready to download. Please print them out or download them and bring them to class as I will *not* hand (or mail) out hard copies.
- The class involves a lot of math, equations, graphs, etc. and it will be difficult to type up notes for everything we do in class. Therefore, in addition to the posted notes I will be writing while lecturing and it is recommended that you take notes.
- Additional text, papers, notes etc. may be used throughout the semester and will be made available on the class web site.
- Some topics may be covered asynchronously using videos. Video files will be made available ahead of time to give you enough time to review them.

SOFTWARE AND COMPUTER SKILLS

- The knowledge of MS-Excel is assumed and MS-Excel *Solver* will be used extensively. Therefore, make sure you have access to a recent version of Excel with *Solver* (preferably MS-Excel 2010).

- A free and robust Linear Solver that works with MS-Excel is freely available at <http://opensolver.org/> and I recommend for everyone to download and install it. Instructions on downloading, installing and using *OpenSolver* are available on the same web site. Keep in mind that this solver handles linear problems only.
- An alternative to MS-Excel *Solver* is to use the free Solver that comes with *OpenOffice*, which is an open source software similar to MS-Office (Word, Excel, PowerPoint and Access) with similar functionality. *OpenOffice* is available at <http://www.openoffice.org/>. Other software packages may be used and information regarding such packages will be furnished during the semester.

HOMEWORK:

- Homework will be assigned throughout the semester.
- Homework will not be graded; it is for you to get practice and understand the topics.
- Some homework problems will be solved in class as exercises.
- It is important to do the assigned problems to gain better understanding of the topics covered. Also the exams' *level of difficulty* will be similar to the assigned problems. That does *not* mean that the exams will be the same or very similar to the homework problems.
- I will post the answer key to the homework assignments after the due date.

EXAMINATIONS:

- There will be three exams. All exams will be take-home exams.
- All three exams will be non-cumulative. That is, the chapters on the first exam will not be included on the second exam, and those on the second will not be included on the final.
- I will *not* give any additional assignments for grade improvement. Therefore, do your best to do well on the exams and make sure you do your homework

GRADES

Exam 1	33%
Exam 2	33%
Exam 3	33%

GRADING SCALE:

90-93	A-	94-100	A		
80-83	B-	84-86	B	87-89	B+
70-73	C-	74-76	C	77-79	C+
< 70	F				

ACADEMIC INTEGRITY

The Old Dominion honor system is in effect for all student work submitted during the course. In effect, this stipulates that lying, cheating or plagiarism are violations of the honor system and will be subject to disciplinary action. Violation of the honor code will not be tolerated. The punishment ranges from getting "F" in the course to being expelled.

CLASS ATTENDANCE

Class attendance is "expected". If for some reason a student should miss a class, it is the *student's responsibility* to:

1. Inform themselves of any administrative announcements (e.g. schedule changes) discussed during a session.
2. “Make-up” any of the course material covered in the session. This is of particular importance as there will be work presented in the sessions that may not be covered adequately in the textbook.

It is not necessary to inform me of an absence should a situation arise where attendance is not possible. Please note however, that *I reserve the right not to provide extensive information about what transpired in a class.*

EMAIL

I will be communicating with all students using both Blackboard announcements and ODU email addresses. So, you need to activate your ODU email login and password. If you have not activated your student e-mail account, go to <http://occs.odu.edu/accounts/studemail/>. If you send me an email from an address other than your ODU email account, I will reply to it. However, whenever I initiate an email message, I will use your ODU email address.

USING BLACKBOARD:

1. Access the system at: <http://blackboard.odu.edu/>
2. It is a requirement of all Blackboard courses that you have an Old Dominion University Student MIDAS account to access Blackboard. If you do not have a Midas account, you can request one at <https://midas.odu.edu>. Be prepared to complete the security profile in the event you lose or forget your password in the future. *It may take several hours for the information about a new account or password to become active in Blackboard, Therefore, please allow up to 24 hours before reporting any login problems to Customer Service.*
3. To upload your exam, a link becomes active after the exam is posted.
4. If you never used Blackboard before, visit and read the student help page which could be found at:

<http://www.odu.edu> > Current Students > Blackboard > Student Help

SPRING 2012 ACADEMIC CALENDAR

<http://www.odu.edu/ao/registrar/calendars/academic/spring.shtml>

- Spring classes begin, January 7 (our first class is on January 11)
- SPRING TUITION DEADLINE JANUARY 9, 2012
- DEADLINE TO DROP/ADD CLASSES, January 17
- Spring Holiday, March 5-10
- Withdrawal Deadline, March 27
- Spring classes end, April 24
- Exams period is April 26 to May 3
- Spring Commencement, May 5

TENTATIVE CLASS SCHEDULE

Week	Topic	Date
1	Introduction to Operations Research	1/11/2012
2	Model Formulation and Graphical Solutions	1/18/2012
3	Linear Programming – Computer Solutions	1/25/2012
4	Linear Programming –Sensitivity Analysis	2/1/2012
5	Linear Programming – Modeling Examples (Take Home Exam 1 is Posted)	2/8/2012
6	Integer Programming (Exam 1 is Due)	2/15/2012
7	Integer Programs –Modeling Examples	2/22/2012
8	Transportation, Transshipment and Assignment Problems	2/29/2012
9	Spring Break – No Class	3/7/2012
10	Network Flow Models (Take Home Exam 2 is Posted)	3/14/2012
11	Network Flow Models (Cont'd) (Take Home Exam 2 is Due)	3/21/2012
12	Non-Linear Programming	3/28/2012
13	Scheduling Theory and Applications	4/4/2012
14	Scheduling Models and Methods	4/11/2012
15	Material Review and Class wrap-up	4/18/2012
16	Final Exam Due – No Class	5/2/2012

Syllabus is tentative and subject to change by the instructor.