

IME 3120 – Systems Decision Making Course Syllabus –Spring, 2011

Professor & Course Coordinator:	Dr. David M. Lyth, C.O.E., Professor E-222 Parkview Campus Phone: 269.276.3368 e-mail: david.lyth@wmich.edu	Class Meeting Time and Location: Monday 6:30-9:20PM D-210 Office Hours: M 3-4 PM T 3:00-4:00PM, R 3-4PM
Catalog Data	Investigating decision-making opportunities while incorporating mathematical models and environmental factors such as time, uncertainty, constraints, and multiple goals. Specific emphasis is placed on analyzing problems using a systems approach. Topics include systems analysis, operations research methodologies, dynamic systems and the application of a variety of computer tools to aid in the decision making process.	
Textbook:	<i>The Art of Modeling with Spreadsheets Excel 2007 Update</i> , Stephen G. Powell and Kenneth Baker, Wiley, 2009	
Prerequisite Courses	STAT2600 Elementary Statistics or IME2610 Engineering Statistics	

Course Objectives	Performance Criteria ¹	ABET/TAC Outcomes ²
1. Define a system under consideration		(a)
2. Be able to create a graphical representation of a system		(a, g)
3. Apply mathematical modeling tools to solve a problem.	A3-LP Case Applies systems tools (LP, MSM) to model and solve problems	(a*,f)
4. Be able to represent and solve problems posed by dynamic systems	G3 – Written Case Analysis Presents info in writing that is well organized, addresses objectives, and meets standards of grammar and language roles	(f, g*)
5. Develop descriptive models of systems (waiting lines and simulation)	B3-Monte Carlo Case Uses appropriate science and mathematical tools for decision making (OR, statistics, materials)	(b*, f)

¹**Performance Criteria:** IME performance criteria may be found at <http://www.wmich.edu/ime>

²**ABET/TAC Outcomes:** Outcomes may be found at <http://www.abet.org/>

*Tracked to course notebook.

Academic honesty:

You are responsible for making yourself aware of and understanding the policies and procedures in the Undergraduate and Graduate Catalogues (<http://catalog.wmich.edu/>) that pertain to Academic Integrity. These policies include definitions of cheating, fabrication, falsification and forgery, multiple submission, plagiarism, complicity and computer misuse. If there is reason to believe you have been involved in academic dishonesty, evidence will be collected by the instructor and forwarded to the Office of Student Conduct. You will be given the opportunity to review the charge(s). If you believe you are not responsible, you will have the opportunity for a hearing. You should consult with me if you are uncertain about an issue of academic honesty prior to the submission of an assignment or test. Students violating the Academic Honesty Policy can expect penalties ranging from failure of that assignment to failure of the class.

Grading Policy:

GRADE	RANGE	GRADE	RANGE	ACTIVITY & WEIGHT	
A	92.5-100	C	72.5-77.5	Quizzes	30%
BA	87.5-92.5	DC	67.5-72.5	Class Participation	10%
B	82.5-87.5	D	62.5-67.5	Outside assignments	30%
CB	77.5-82.5	Fail	below 62.5	Final Exam	30%

Topics and Schedule:

Date	Topic	Chapter	TAC Accreditation Assignments
January 10	Introduction Modeling	1,2	
January 17	MLK Day, no class		
January 24	EXCEL	3,4	G3-Written Case Analysis
January 31	QUIZ & Spreadsheet Engineering	5	
February 7	Analysis Using Spreadsheet	6	
February 14	Data Analysis and Regression Analysis	7, 8	
February 21	QUIZ & Regression Analysis		
February 28	SPRING BREAK	8	
March 7	Forecasting and Nonlinear optimization	9,10	
March 14	Linear Optimization	11	A3-LP Case
March 21	Optimization of Networks, Integer Optimization	12,13	
March 28	QUIZ & Transportation Model	12	
April 4	Decision Trees	15	
April 11	Monte Carlo Simulation	16	B3-Monte Carlo Case
April 18	Optimization in Simulation	17	
April 25	Comprehensive Final Exam 7:15 - 9:15 p.m.		

Note: Assignments are not limited to those identified in this table, the three cases are related to ABET accreditation

General comments:

Throughout this class, you will have some outside assignments; they will be due at the beginning of the class period, not the end. A late assignment will receive a reduction of 10%, 20%, 30% and 40% for each consecutive day. Assignments are expected to be typed (or the computer equivalent of that), 12 cpi, double spaced and one inch margins and spelling and grammar do count. When the electronic submission of work is required, the following conditions apply:

1. Your email communication must be dated and timed no less than 30 minutes before the start of class.
2. The Subject of the email must take the form Subject: IME3120 Assignment Due [insert date].
3. Sending an email with a virus will result in a grade of 0 for that assignment.
4. Set up the material so that it can be printed out in a logical fashion.

Quizzes will be problems or short answer. I'll give you partial credit if I can figure out what you are doing. Students failing all quizzes will not pass the class.

This class will be conducted on an interactive basis, that is, during our discussion of concepts and techniques your participation is expected. Homework problems from the text will not usually be collected and graded, you should do as many problems as you feel are necessary to master a technique.

An excused absence will be given if the reason is beyond the student's ability to plan for or control a particular circumstance. Notification must be as soon as possible and should be made before the next class meeting.

Conduct your self professionally when using computing devices in class. Limit them to the material being presented, stay out of the social networking, sports, etc. sites. I will send you copies of the day's overheads before the start of class.

Cell phones and texting should be for an emergency only. Conduct yourself professionally. If you NEED to take a call, step outside.