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Fall 2013

Infrastructure Systems Analysis - George Mason University

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CEIE 605 -- Infrastructure Systems Analysis

Syllabus

Course Objectives To introduce the concepts of systems analysis and systems engineering within the domain of civil and infrastructure engineering
To introduce/review a variety of tools and methods used in the analysis of infrastructure systems
To prepare students for continued study in civil, environmental and infrastructure engineering

Class Time Wednesday, 7:20 – 10:00 pm
Innovation Hall, room 209

Text *Civil and Environmental Systems Engineering* by ReVelle, Whitlach and Wright, 2nd Edition, Prentice Hall, 2003.
Various handouts to be made during the semester.

Email All email will be sent to addresses in the GMU domain exclusively. It is students' responsibility to monitor email to Mason email accounts.

Homework Homework assignments are generally available on Blackboard by Thursday morning, and are due the following Wednesday in class. Be sure to review the complete set of rules governing homework.

Software Word processor and spreadsheet software are essential for this class. It is possible to do all the work for this class with these two packages. Specialty simulation and optimization software may be useful also; for example, free downloadable versions of optimization products LINGO, and What's Best are available from Lindo Systems (www.lindo.com). No endorsement of these products is implied by their listing here.

Exams The format and content of the midterm and final exams is to be determined later in the semester. In any case, all work on the exams will be done by you individually. No joint work or assistance will be allowed. All questions are to be directed to the instructor. More details on the content and format of the exams will be announced later.

See the schedule below for tentative timing.

Grades Grades for the course are determined by student performance on homework assignments, and the midterm and final exams. The relative importance of each is:

Percentage of Course Grade

Homework	35%
Midterm	30%
Final	35%

Honor Code The [George Mason University Honor Code](#) is in effect for this course. Please consult the University catalog for a complete statement of the Honor Code, and see the instructor if you need further clarification.

Writing The [Writing Center](#) at George Mason University can be an invaluable resource to students. The Center offers many services to help you improve your writing. Please use the Center to ensure that

your submissions are well written. Good writing is expected for all assignments; grades will be reduced for poor writing.

University Services

There are numerous services provided by the university to support students. The Dean of Students Office (<http://deanofstudents.gmu.edu/>) is the central location for these services and DOS staff can address any question that you may have. Here is a short list of services that may be useful to you:

Office of Disability Services: <http://ods.gmu.edu/>
 Student Health Services: <http://shs.gmu.edu/>
 Counseling and Psychological Services: <http://caps.gmu.edu/>
 Career Services: <http://careers.gmu.edu/>
 Learning Services: <http://caps.gmu.edu/learningservices/>

Schedule (Tentative)

This is a **tentative** schedule of classes:

Class Meeting	Date	Topic	Reading
1	Aug 28	Introduction/Overview of the course	Chapters 1 and 2
2	Sep 4	Linear Optimization	Chapters 3 and 4
3	Sep 11	Nonlinear and Discrete Optimization	Chapters 7 and 13
4	Sep 18	Evolutionary Computation	
5	Sep 25	Probability	Handout
6	Oct 2	Statistics	Handout
7	Oct 9	Regression	Handout and Chapter 10
8	Oct 16	Regression Midterm Exam distributed	Handout and Chapter 10
9	Oct 23	Simulation, Queuing Theory Midterm Exam due	Handout and Chapter 10
10	Oct 30	Decision Theory	Chapter 9
11	Nov 6	Utility Theory	Chapters 9 and 5
12	Nov 13	Engineering Economics	Chapter 14
13	Nov 20	Life Cycle Costing, Benefit/Cost Analysis	Chapter 15
	Nov 27	Thanksgiving Break	
14	Dec 4	Depreciation, Taxes, Inflation	Chapter 16
15	Dec 11	Final Exam (7:30 – 10:15 pm)	

Instructor [Mark H. Houck](mailto:Mark.H.Houck)

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Office Hours Monday, Wednesday, 1:00 – 2:30 pm