

MSIM 720/820
FOUNDATIONS FOR CONTINUOUS AND REAL TIME
SIMULATION

Course Syllabus
Fall 2005

Instructor	Dr. John A. Sokolowski Office: VMASC Phone: 757-686-6215, Fax: 757-686-6214 Email: jsokolow@odu.edu						
Office Hours	Wednesday 3:00 – 5:00 PM or by appointment						
Text	<u>Modeling and Analysis of Dynamic Systems (Third Edition)</u> : Charles M. Close, Dean H. Frederick and Jonathan C. Newell (Required) <u>Principles of Mathematical Modeling (Second Edition)</u> : Clive L. Dym (Suggested)						
Software	Matlab/Simulink student edition or Scilab						
Class Time	Wednesday 7:10 – 9:50 PM Broadcast from Gornto Rm 217						
Course Interface	ODU Blackboard System http://blackboard.odu.edu All course materials and lecture notes will be posted on the course Blackboard site.						
Grading	Grades will be based on a mid term exam, a course project due at the end of the semester, and a final exam. Grade weighting will be as follows: <table style="margin-left: auto; margin-right: auto;"><tr><td>Mid term exam</td><td>30%</td></tr><tr><td>Course project</td><td>40%</td></tr><tr><td>Final exam</td><td>30%</td></tr></table>	Mid term exam	30%	Course project	40%	Final exam	30%
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Course project	40%						
Final exam	30%						

Course Description and Objectives

Modeling of continuous and real time systems is much different than the typical approach to modeling using discrete event simulations. This course will explore the techniques necessary to form conceptual models of mechanical, electrical, fluid, thermal, and hybrid systems, transitioning of these conceptual models to mathematical models, and implementing the mathematical descriptions in a simulation package. The course will also explore simulation issues associated with modeling dynamic systems. Continuous simulation techniques will be applied to explore real time simulation problems in a gaming environment.

Tentative Class Schedule

Date	Topic	Reading Assignment
8/31	Course Introduction, Translational Mechanical Systems	Close Ch 1, 2
9/7	Standard Model Forms & Block Diagrams	Close Ch 3, 4
9/14	Rotational Mechanical Systems	Close Ch 5
9/21	Electrical Systems	Close Ch 6
9/28	Developing Linear Models	Close Ch 9
10/5	Electromechanical Systems	Close Ch 10
10/12	Thermal and Hydraulic Systems	Close Ch 11, 12
10/19	Mid Term Exam	
10/26	Case Study: Modeling Free Vibration	Dym Ch 7
11/2	Case Study: Modeling Traffic Flow	Dym Ch 6
11/9	Real Time Simulation Considerations	None
11/16	Project Presentations	None
11/23	Thanksgiving Holiday	
11/30	I/ITSEC—No Class	None
12/7	Project Presentations	None
12/14	Final Exam	