

MAP 5117-0001
Mathematical Modeling, Fall 2017

INSTRUCTOR: Dr. Robert Muise
OFFICE: MAP 429
OFFICE HOURS: MW 5:00 – 6:00, (Other hours by appointment)
F 4:00 – 5:00
E-MAIL: Robert.Muise@ucf.edu
CLASS LOCATION: MSB110
CLASS TIMES: MW 6:00 – 7:20
TEXTBOOK: MATLAB Software Package.

COURSE DESCRIPTION: Mathematical Modeling: Introduction to modeling in industrial and scientific applications.

PREREQUISITES: STA 4321, MAP 4303, graduate standing or senior standing, or C.I.

MATERIAL COVERED:

We will cover 5 applied mathematics topics of industrial interest. Leading experts will give an overview presentation. We will then discuss canonical problem sets which will need to be modeled and solved as an assigned homework project (the modeling problems will be solved in matlab programming environment)

EXAMS:

There will be a cumulative final exam which will cover the basics of the expert overview presentations.

GRADING POLICY:

There will be an assigned project for each applied mathematics topical area. The projects will address the core tool sets required to solve problems related to the current topical area and students will be required to present the details and results of their solution.

Each project and the final exam will be equally weighted.

GRADING SCALE:

Average	Grade
90-100%	A
80-89%	B
70-79%	C
60-69%	D
0-59%	F

- Instructor reserves the right to make changes to the syllabus as needs suggest.

IMPORTANT DATES:

Holiday (Labor Day) – Sept. 4, 2017, (Veteran’s Day) – Nov. 10, 2017

Withdrawal Deadline – Oct. 30, 2017

Thanksgiving – Nov. 23-25, 2017

Last Day of Class – Dec. 2, 2017

Finals Period – Dec. 4-9, 2017; Final Exam – Wednesday, Dec. 6, 2017, 4:00 – 6:50.

Estimated Course Layout:

This is an estimated schedule for covering the material. It is meant as a guideline.

Date		Section Topics	
8-21	M	Introduction	Course objectives, etc...
8-23	W	Some fundamentals of matlab	
8-28	M	Aerospace Systems Algorithm Functional Architectures	
8-30	W	Aerospace Systems Algorithm Functional Architectures	
9-06	W	Computational Linear Algebra	
9-11	M	Computational Linear Algebra	
9-13	W	Navigation/Guidance/Control	Speaker
9-18	M		Assignment
9-20	W		Presentations
9-25	M	Statistics and Estimation	
9-27	W	Object Tracking/ State Estimation	Speaker
10-02	M		Project assignment
10-04	W	Project work session	
10-09	M		Presentations
10-11	W	Managing data in matlab 1	
10-16	M	Managing data in matlab 2	
10-18	W	Automatic Target Detection/Classification	Speaker
10-23	M		Assignment
10-25	W	Project work session	
10-30	M		presentations
11-1	W	Classic Unsteady Aerodynamics	Speaker
11-6	M		Assignment
11-8	W	Project work session	
11-13	M		Presentations
11-15	W	Inverse problems and Sensing	
11-20	M	Sparse Models	Speaker
11-22	W		Project assignment
11-27	M		Presentations
11-29	W	Review	
12-06	W	Final Exam	4:00 – 6:50