CES 389C/EM 397 INTRODUCTION TO MATHEMATICAL MODELING IN SCIENCE AND ENGINEERING
Fall 2012, # 66695/ # 14035, TTh 12:30 - 14:00, RLM 6.126

Text: J. Tinsley Oden, *An Introduction to Mathematical Modeling*, John Wiley and Sons, Sep. 2011.

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Office hours: TBD

Week	Topic	Chapter
Aug 29 -Aug 31	Classical dynamics	
Sep 4 - Sep 7	Kinematics	1
Sep 10 -Sep 14	Mass and momentum, force and stress	2,3
Sep 17 -Sep 21	Conservation laws and thermodynamics	4,5,6
Sep 24 -Sep 28	Constitutive eqs. Examples of BVPs	7,8
Oct 1 -Oct 5	Electromagnetics	9
Oct 8 -Oct 12	Electromagnetics	9
Oct 15 -Oct 19	Introduction to Quantum Mechanics	10
Oct 22 -Oct 26	Dynamical variables and observables	11
Oct 29 -Nov 2	The hydrogen atom	12
Nov 5 -Nov 9	Spin and Pauli's Principle	13
Nov 12 -Nov 16	Atomic and molecular structure	14
Nov 19 -Nov 21	Ab Initio methods	15
Nov 26 -Nov 30	Introduction to Statistical Mechanics	16
Dec 3 -Dec 7	SM basis of classical thermodynamics	17

Discussion Session: ACES 6.304, Time TBD.

Homework: Homework assignments will be made in class. The problems assigned in the class will not be collected. Instead, we will begin each discussion session with a quizz for which one of the homework problems will be selected.

Exams: There will be two (closed book) exams held in ACES 4.304, during evening hours (5:00-8:00 p.m.) according to the following schedule:

- Exam1 (through Section 5) Mon.,Oct 22,

- Exam2 (through Section 22) Mon.,Dec 3,

Final Exam: Comprehensive, mandatory, closed book, on Monday, December 17, 2:00-5:00 pm, in ACES 4.304.

Instructor: Dr. Leszek Demkowicz, ACES 6.326, Office hours: Wed, Fri, 12:30-1:30 PM

Final Grade: Is based upon the final score.

Final score range	grade
85 - 100	A with recommendation letter
75 - 85	A
72 - 74	A-
68 - 71	B+
65 - 67	B
62 - 64	B-
58 - 61	C+
55 - 57	C
52 - 54	C-
48 - 51	D+
45 - 47	D
42 - 44	D-
00 - 41	F

The final score is a weighted average of the test score, three mid-term exams and the final exam, with the following weights:

Tests (homework)	- 20 %
Exams	- 25 % each
Final	- 30 %