

ME 750C, Modeling of Engineering Systems, Spring, 2016

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Office Hours:	M/W 11-12:30 pm or by appointment
Classroom; Days/Time:	EB 122; M/W 9:30 – 10:45 pm
Prerequisites:	MATH 555, ME 325, or by instructor permission
Teaching Assistant:	N/A
TA Contact Info:	N/A

How to Use This Syllabus

This syllabus provides you with information specific to this course, and it also provides information about important university policies. This document should be viewed as a course overview; it is not a contract and is subject to change as the semester evolves.

Academic Honesty

Students are responsible for knowing and following the Student Code of Conduct http://webs.wichita.edu/inaudit/ch8_05.htm and the Student Academic Honesty policy http://webs.wichita.edu/inaudit/ch2_17.htm.

Cheating/plagiarism is considered as a crime in this class. The first time caught will result in the zero point on the assignment with a verbal warning, and the second time caught will result in “F” grade with a police report.

Course Description

This course provides the rigorous understandings of the engineering mathematics in order to model practical mechanical engineering systems related to fluid mechanics, heat transfer, solid mechanics and dynamics/control. This course primarily focuses on analytical approach, but introduces simple computational methods for modeling mechanical engineering systems using computer codes.

Definition of a Credit Hour

Success in this 3 credit hour course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally 3 hours per unit per week with 1 of the hours used for lecture) for instruction and preparation/studying or course related activities for a total of 135 hours.

Measurable Student Learning Outcomes

- To gain understandings of engineering mathematics including the power/Fourier series, linear algebraic equations, ordinary/partial differential equations
- To identify reasonable engineering mathematics to model mechanical engineering systems.
- To apply the above concepts to typical engineering systems, including mass, energy, and momentum transport, conversion, and storage systems
- To critically evaluate technical journal/conference articles in mechanical engineering systems.

Required Texts/Readings Textbook

Mathematical Methods in the Physical Sciences, 3th Ed., Wiley, by Mary L. Boas

Other Readings

Advanced Engineering Mathematics, 10th Ed., Wiley, by Erwin Kreyszig

Class Protocol

- The use of laptops is allowed during the lesson but only for work related to the course activities. Discussions related to the grade will take place ONLY in in-person meetings scheduled by appointment via e-mail or during office hours.
- Students are expected to behave courteously and professionally. Disciplinary infractions will be reported to the university authorities.

Grading Policy

The final letter grade will be given based on the student performance on assignments and exams. The details are given as follows;

For graduate student

Assignments and Exams	Contribution to Final Grade
Homework (10-12 assignments)	15%
Midterm Exam I	20%
Midterm Exam II	20%
Final Exam (Comprehensive)	20%
Final Project	25%

For undergraduate student

Assignments and Exams	Contribution to Final Grade
Homework (10-12 assignments)	15%
Midterm Exam I	20%
Midterm Exam II	20%
Final Exam (Comprehensive)	35%
Final Project	10%

The student performance will be scaled to 100% based on the grading policy (see the table above) and the letter grade will be given the percentage as shown below.

Percentage (100%)	Letter grade	Interpretation
100-93	A	<i>The A range denotes excellent performance.</i>
85-92	A-	
75-84	B+	
70-74	B	<i>The B range denotes good performance.</i>
65-69	B-	
60-64	C+	
55-59	C	<i>The C range denotes satisfactory performance.</i>
53-54	C-	
50-52	D+	
45-49	D	<i>The D range denotes unsatisfactory performance.</i>
40-45	D-	
< 40	F	<i>F denotes failing performance.</i>

Assignments and exams

- Students are strongly encouraged to read course content before the class.
- 10-12 homework sets will be given (weekly basis)
- Two midterm exams and one final (comprehensive) exam will be given.
- One final project will be given.

Undergraduate vs. Graduate Credit

Undergraduate students enrolled in 700 level courses will receive undergraduate credit (not graduate credit). Undergraduate credit earned in 700 level courses cannot later be counted toward a graduate degree.

Extra Credit

- NO extra credit work, i.e., late hw/exam, will be assigned/accepted.

Late Assignments

- NO late assignment, i.e., hw/project, will NOT be accepted.

Missed Assignments and Exams

- Make-up hw/quiz/project/exam will be administered **only upon the submission of the relevant documents**, explaining the reasons for the missing ones. The student **MUST** contact to instructor about this **24 hr prior to the assignment due date** to schedule the make-up assignment.
- One minimum hw can be dropped.

Important Academic Dates

For spring semester of 2016, classes begin **01/19**, and end **05/05**. The last date to drop a class and receive a W (withdrawn) instead of F (failed) is **04/01**. There are no classes on **03/14** and **03/16**. The final exam is on **05/04**.

Disabilities

If you have a physical, psychiatric/emotional, or learning disability that may impact on your ability to carry out assigned course work, I encourage you to contact the Office of Disability Services (DS). The office is located in Grace Wilkie Annex, room 150, (316) 978-3309 (voice/tty) (316-854-3032 videophone). DS will review your concerns and determine, with you, what academic accommodations are necessary and appropriate for you. All information and documentation of your disability is confidential and will not be released by DS without your written permission.

Counseling & Testing

The WSU Counseling & Testing Center provides professional counseling services to students, faculty and staff; administers tests and offers test preparation workshops; and presents programs on topics promoting personal and professional growth. Services are low cost and confidential. They are located in room 320 of Grace Wilkie Hall, and their phone number is (316) 978-3440. The Counseling & Testing Center is open on all days that the University is officially open. If you have a mental health emergency during the times that the Counseling & Testing Center is not open, please call COMCARE Crisis Services at (316) 660-7500.

Diversity and Inclusive

Wichita State University is committed to being an inclusive campus that reflects the evolving diversity of society. To further this goal, WSU does not discriminate in its programs and activities on the basis of race, religion, color, national origin, gender, age, sexual orientation, gender identity, gender expression, marital status, political affiliation, status as a veteran, genetic information or disability. The following person has been designated to handle inquiries regarding nondiscrimination policies: Executive Director, Office of Equal Employment Opportunity, Wichita State University, 1845 Fairmount, Wichita KS 67260-0138; telephone (316) 978-3186.

Intellectual Property

Wichita State University students are subject to Board of Regents and University policies (see http://webs.wichita.edu/inaudit/ch9_10.htm) regarding intellectual property rights. Any questions regarding these rights and any disputes that arise under these policies will be resolved by the President of the University, or the President's designee, and such decision will constitute the final decision.

Shocker Alert System

Get the emergency information you need instantly and effortlessly! With the Shocker Alert System, we will contact you by email the moment there is an emergency or weather alert that affects the campus. Sign up at www.wichita.edu/alert.

Student Health Services

WSU's Student Health clinic is located in 209 Ahlberg Hall. Hours are 8:00am to 7:00pm (8:00 am to 5:00 pm on Fridays), though the clinic may be closed occasionally on Wednesdays from noon to 1:30pm. The telephone number is (316) 978-3620. In addition to outpatient and preventive care (including immunizations, a prescription service, and testing/counseling for sexually transmitted infections), Student Health can handle minor injuries. All services are confidential. For more information see www.wichita.edu/studenthealth.

The Heskett Center and Campus Recreation

Whether you are wanting to be active on campus, relieve the stress from classes or take care of your body, Wichita State Campus Recreation is the place for you. Campus Recreation, located inside the Heskett Center, contributes to the health, education, and development of Wichita State University students, faculty, staff, alumni, and community members by offering quality programs and services. With many programs and facilities which are free to all students and members, Campus Recreation offers its members limitless opportunities. For more information about our services see www.wichita.edu/heskett.

Video and Audio Recording

Video and audio recording of lectures and review sessions without the consent of the instructor is prohibited. Unless explicit permission is obtained from the instructor, recordings of lectures may not be modified and must not be transferred or transmitted to any other person, whether or not that individual is enrolled in the course.

Tentative Schedule (subject to changes)

Week	Date	Subject	Reading
1	1/20	Introductions and Series	Chap 1
2	1/25	Series and Complex Numbers	Chaps 1&2
3	2/1	Linear Equations I (definition, determinant, Linear Systems)	Chap 3
4	2/8	Linear Equations II	Chap 3
5	2/15	In-class Midterm Exam I	Chaps 1,2,3
6	2/22	Ordinary Differential Equations	Chap 8
7	2/29	Partial Differential Equation I	Chap 4
8	3/7	Partial Differential Equation II, Project Proposal Due	Chap 4
9	3/14	Spring Break (no class)	
10	3/21	In-class Midterm Exam II	Chaps 4 & 8
11	3/28	Vector Analysis I	Chap 6
12	4/4	Vector Analysis II	Chap 6
13	4/11	Fourier Series	Chap 7
14	4/18	Fourier/Laplace transform	Chap 7
15	4/25	Special Functions	Chap 11
16	5/2	In-class Final Exam	
	5/4	Final Presentation and Report	