

Course Syllabus

Course Information - Fall 2016

MECH 6392.501
Adv. Math. Mech. Engr.

Room: CB3 1.312
Time: T/Tr 7-8:15pm

Professor Contact Information

Prof. Wonjae Choi
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Office Hours:
Wed 9.00-10.30am at ECSN 3.214, or by
appointment (please use email to set this
up)

TA: Jianping Lin (jxl135930@utdallas.edu)

Course Pre-requisites, Co-requisites, and/or Other Restrictions

There are no official pre-requisites, but it is expected that a student has a reasonable mastery of undergraduate-level engineering mathematics.

Course Description

MECH 6392 Advanced Mathematics for Mechanical Engineers I (3 semester hours)

In this course, which is the first part of a 1-year long Advanced Mathematics course, we will study a wide range of mathematical methods to solve engineering problems. The topics of this course (part I) includes: concept of differential equation, ordinary differential equations, analytical and numerical methods to solve ODEs, linear algebra to deal with systems of equations, Eigenvalue problems, and introduction to partial differential equations. Many of these topics overlap with undergraduate Mathematics courses, but we will dig deeper into each topic.

Student Learning Objectives/Outcomes

Mathematical proficiency is a foundation for a mechanical engineer, regardless of his/her specific major. This course promises that, assuming you will fulfill your responsibility (e.g., attend most classes, be attentive, read the assigned materials and complete homework on time), you should be able to achieve the following goals by the end of the semester:

- You will be able to understand how major concepts and techniques in the fields of differential equations and linear algebra were developed, and how they are relevant to real world problems.
- You will also develop your skills to apply noted concepts and techniques to solve various engineering problems.

Required Textbooks and Materials

1. Primary: Reading assignments and other homework will come from this book.
Advanced Engineering Mathematics, 2nd edition, M. D. Greenberg, Prentice Hall, New Jersey, ISBN-13: 978-0133214314
2. Secondary: My lecture note, which will be posted on eLearning

Assignments & Academic Calendar

(There will be a problemset almost every week; Numbers in parentheses are the chapters in Greenberg's book)

Week 1: Intro to DE (1)

Week 2: 1st order ODE (2)

Week 3~4: 2nd order ODE (3)
Week 5: Numerical methods (6)
Week 6: Review on W1 ~ W5 Midterm #1
Week 7: Phase plane, nonlinear DE (7)
Week 8: Gauss' elimination (8)
Week 9: Vector space (9)

Week 10: Matrix and linear equations (10)
Week 11: Review on W7 ~ W10, Midterm #2
Week 12~13: Eigenvalue problems (11)
Week 13~15: PDE (13)
Week 16 Final (cumulative)

Grading Policy

Midterm 1	20%	Final (Cumulative)	40%
Midterm 2	20%	Homework*	20%

** Homework handed in late will not be accepted unless the student has informed the instructor in advance by at least two full days.*

** Plagiarism may be punished by failure of the assignment, exam, or the entire course.*

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

“As a Comet, I pledge honesty, integrity, and service in all that I do.”

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.