ENGR 3300 – 502 Course Syllabus

Course Information

ENGR 3300-502 Advanced Engineering Mathematics
Fall 2016
TTh 5:30 – 6:45 @ECSS 2.311

Instructor: Dr. Jung Lee

Office: ECSN 3.510
Office Hours: Tu/Th 10:00am–11:00am, 4:30 pm – 5:15 pm, or others by appointment
Email: jung.lee@utdallas.edu
Phone:972-883-4359

COURSE PREREQUISITES: CALCULUS II

Course Description

Survey of advanced mathematics topics needed in the study of engineering. Topics include review of complex numbers, multivariate calculus and analytic geometry. Study of polar, cylindrical, and spherical coordinates, vector differential calculus, vector integral calculus, and vector integral theorems. Examples are provided from electromagnetic, fluid mechanics, physics and geometry.

Student Learning Objectives/Outcomes

Students are expected to be able to:

- Solve problems in multivariable calculus;
- Compute surface integrals and line integrals;
- Understand gradient, divergence and curl;
- Use Green's, divergence, and Stokes' Theorem
- Work with complex numbers and variables

Required Textbooks and Materials

TEXTBOOK: MATHEMATICAL METHODS IN THE PHYSICAL SCIENCES, 3RD ED., WILEY, BY MARY L. BOAS 2006 (ISBN 978-0-471-19826-0)

Suggested Course Materials

Assignments & Academic Calendar

Topics:

1. Infinite Series, Power Series (Ch 1)
2. Complex Numbers (Ch 2)
3. Multiple Integration (Ch 5)
   Double and Triple integrals
   Change of variables (Polar, cylindrical and spherical coordinates)
4. Vector Analysis and calculus (Ch 6)
   Vector Fields * Line Integrals
   Green's theorem * Parametric Surfaces
   Surface Integral * Divergence theorem
   Stokes' theorem
5. Fourier Series and Transforms (Ch 7)
6. Function of Complex variables(Ch 14)

Important Dates:

Last day to drop a course w/o "W" 9/7 (W)
Last day to drop a course w "WP/WF" 10/27(Th)
Last day of classes: 12/7(W) **Final Exam:TBD**

Grading Policy

A: 90.00% or better B: 80.00% or better C: 70.00% or better

Grading

HW and Class Participation (20% - 10% each)
Quizzes (25%)
Test I (27.5%) Thursday 10/4(Tu)
Test II (27.5%) Thursday 11/29(Tu)
Final Exam (optional) - TBD

Course & Instructor Policies

* The dates for tests 1 & 2 can be changed at the discretion of the instructor.
* The final exam is comprehensive.
* HW will be assigned weekly. **HW** will be collected **Thursday** at the beginning of the class period. Write on one-side of paper only. Late HW will not be accepted
* **Quiz** will be given **every Tuesday**. Missed quizzes cannot be made up
* The optional final exam can replace the lowest exam grade. No Make-up exam will be given. The missed exam will be replaced by the Final exam.
* Participation grade –10 % (for each absence, 2% will be deducted, 1 absence is excused)
* Any extra points (if any) will be added to HW score.

Assignment

1. HW #1. Student Survey … 15 pts

Due: Aug. 8/30, Tuesday with the **title HW #1 ENGR 3300-502 Survey- Your Name.**

Bring it to the class (computer printed, write on one side only)

You will be asked to write about you in the following questions as you complete your survey.

- Name, address, telephone(cell) number, e-mail address, where you can be reached.
- What is your major?
- Where are you from?
- What college mathematics classes have you taken? From where?
  eg., Calculus I, II, III, DE, Linear Algebra, etc. from UTD, DCCC, etc.)
- From Calculus I and II, list the topics that you have learned.
  (eg.,differentiation, integration, vectors, series, complex numbers, etc.)
- What is your current GPA?
  (eg., below 2.0, 2.0 – 2.5. 2.6 - 3.0, 3.0- 3.5, 3.5 - 4.0, or an exact gpa)
- What concerns, if any, you have about this course?
- What is your study plan for this course?
- How many credit hours (or classes) are you taking this semester?
- If you work, where and how many hours per week?
- If you are on scholarship, what kind and how much does it cover for your study?
- What is your future plan?
- What else would you like me to know about you?

2. Portfolio (Optional) … 15 pts

Due The Final Exam Day

Portfolio is a collection of a student's best work for the course.

1) **Redo** the **two tests** and **all Quizzes**
2) With the summary indicate that
   i) The student's understanding of Mathematics (from the course)
   ii) The student's ability to learn mathematics, and
   iii) The student's ability to apply mathematics to the real-world;
3) Five solved problems from each Chapter
4) Commentary from the student concerning what you have learned from this work; and
5) Self evaluation

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.