The University of Texas at Tyler
Department of Mechanical Engineering

MENG 5399 – Independent Study
Spring 2019

Credits: 3 hours lecture, 0 hours lab per week

Instructor(s): Dr. M. A. Rafe Biswas, Assistant Professor of Mechanical Engineering

Course Details: Substitute course for Math 5311 – Advanced Engineering Mathematics
E-mail: mbiswas@uttyler.edu

Resource(s): Required Texts: Advanced Engineering Mathematics (10th Edition) by Erwin Kreyszig, John, Wiley & Sons, 2011 ISBN 0470458364 or ISBN 13: 978-0470458365
Additional material provided by instructor on Canvas.
MATLAB & Simulink and relevant literature through university library

Course Information

Catalog Description: Independent study in specific areas of Mechanical Engineering not covered by organized graduate courses. A maximum of six credit hours may be used for graduate credit on the MSME degree. One to three hours of course meeting per week.

Prerequisites: Consent of Instructor and Dept. Chair
(Ordinary Differential Equations and Linear Algebra)

Required, Elective, Selected: Required

Course Goals

By the end of this course students will:

1. State major theorems, facts, and definitions from the fields of Fourier analysis, partial differential equations, complex variables and optimization.
2. Utilize major theorems, facts, definitions, and methods to solve advanced applied problems in mathematics.
3. Model real-world problems and clearly present a solution in written or typed format.

Evaluation and grading activities

- Quiz: There will be 3 quizzes during the semester. Each open book and open notes quiz will be 2 hours and 2-4 questions to be taken within a fixed time period and cover selected topics. Each quiz is 10 points. Each late submission is automatic failing grade.

- Homework: 5 homework assignments will be applied according to the topics covered on Canvas and lectures. Questions involving knowledge covered will be answered if the student proves attempt to come up with the answer. Solution to homework will not be given. However, students can work on the right solution

by checking their work with the instructor. Each HW counts for 10 pts for completion. Each late submission is automatic 1 pt deduction.

- Project: students will work on a mathematical modeling of a topic approved by the instructor. The default project will be 2-D modeling of a thermal fluid energy system. Students are encouraged to discuss their work in groups, but each student needs to conduct their own work, and submit preliminary, progress and final reports individually. Each report is 100 points. Students are expected to produce at a minimum conference paper quality report, a template of which will be provided. Each late submission is automatic 10 pt deduction.

40% of Quiz + 10% of HW + 50% of Project Reports = Total out of 100%.

Scale:		
	A	90 – 100
	B	80 – 89
	C	70 – 79
	D	60 – 69
	F	< 60

Grade appeal: grades can be appealed by meeting the instructor during office hours, but no later than a week after the grade has been given.

Note: your final semester grade is based on the 10-point scale. No curving or scaling will be applied even if you receive borderline grade such as 79.99.

Student Behavior

- Academic dishonesty, in the form of cheating, fabrication, falsification, multiple submissions, plagiarism, and complicity, will not be tolerated. Regulations about academic dishonesty are contained in *A Student Guide to Conduct and Discipline at UT Tyler*, which may be obtained from the Office of Student Affairs.
- The Mechanical Engineering Student Handbook available electronically should be used to follow guidelines and will be used to assess Class Conduct & Participation grade.
- Student attitude: A positive attitude/behavior is expected from the students in all interactions.

University policies

Students Rights and Responsibilities

To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link:
http://www.uttyler.edu/ohr/hop/hopseries500.php

Grade Replacement/Forgiveness

If you are repeating this course for a grade replacement, you must file an intent to receive grade forgiveness with the registrar by the 12th day of class. Failure to do so will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates will receive grade forgiveness (grade replacement) for only three course repeats; graduates, for two course repeats during his/her career at UT Tyler.

State-Mandated Course Drop Policy
Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Schedule of Classes for the specific date).
Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Registrar's Office and must be accompanied by documentation of the extenuating circumstance. Please contact the Registrar's Office if you have any questions.

Disability Services
In accordance with federal law, a student requesting accommodation must provide documentation of his/her disability to the Disability Services counselor. If you have a disability, including a learning disability, for which you request an accommodation, please contact Ida MacDonald in the Disability Services office in UC 3150, or call (903) 566-7079.

Student Absence due to Religious Observance
Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences at least two weeks ahead of time.

Student Absence for University-Sponsored Events and Activities
If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

Social Security and FERPA Statement:
It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

Emergency Exits and Evacuation:
Everyone is required to exit the building when a fire alarm goes off. Follow your instructor's directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do not re-enter the building unless given permission by HCC Police, Fire department, or Fire Prevention Services.

NOTE: THE SYLLABUS IS SUBJECT TO CHANGE DURING THE COURSE OF SEMESTER AS DEEMED NECESSARY. MANDATORY WEEKLY MEETINGS WILL BE SCHEDULED FOR WEDNESDAYS AT 4:00 PM TO 4:55 PM TENTATIVELY. MOST CONTENT WILL BE AVAILABLE ON CANVAS.

Week of		Due on Canvas	Video/Reading Assignment
Jan	23		RA: Chaps. 1-2 & 21.1 VA: Lectures: 2.1-2.7
	30		RA: Chap. 6 VA: N/A
Feb	6	HW # 1	RA: Chaps. 7-8 VA: Lectures: Eigenvalues and Eigenvectors
	13	Review Quiz	RA: Chaps. 9-10 VA: Lectures: 1.1-1.4
	20	HW # 2	RA: Chap. 11 VA: Lectures: 3.1-3.8
	27		RA: Chaps. 12 & 21.4-21.7 VA: Lectures: 4.1, 4.5, 5.1, 5.2, 5.3, 6.1,-6.4
Mar	6	HW # 3	RA: Chaps. 13-14 VA: Lectures: 1-23
	13	Spring Break - No Class	
	20	Quiz#1	RA: Chap. 15-16 VA: Lectures: 24-37
	27	Prelim Report	RA: Chap. 18 VA:
Apr	3	HW # 4	RA: Chap. 19 VA: Lectures: 8-12, 22, 27
	10	Progress Report	RA: Chap. 21 VA: Lectures: 31-36
	17	Quiz#2	RA: Chap. 20 VA: Lectures: Feb 14-Feb 21, Mar 21-Mar 30, Apr 11, Apr 18-25
	24	HW # 5	RA: Chap. 22 VA: Lectures: 1-2, 5-7, 14-17
May	1	Final Report	RA: N/A VA: N/A