

**Department of Ocean and Mechanical Engineering
Florida Atlantic University
Course Syllabus**

1. Course title/number, number of credit hours	
EGM 4350 Finite Element Analysis for Engineering Design	3 credit hours
2. Course prerequisites, corequisites, and where the course fits in the program of study	
Prerequisites: EGN 3331 (Strength of Materials) with a grade C or above	
3. Course logistics	
<p><i>Term:</i> Fall 2020 This is a classroom lecture course with 7 projects <i>Class location and time:</i> W-F 2:00 pm – 3:20 pm, SO 200</p> <p>The course has design content</p>	
4. Instructor contact information	
<i>Instructor's name</i> <i>Office address</i> <i>Office Hours</i> <i>Contact telephone number</i> <i>Email address</i>	Dr. Chi-Tay Tsai Engineering West (Bdg 36), Room 105 561-297-2824 tsaict@fau.edu
5. TA contact information	
<i>TA's name</i> <i>Office address</i> <i>Office Hours</i> <i>Contact telephone number</i> <i>Email address</i>	
6. Course description	
Fundamental concepts of finite element methods. Using the finite element software ANSYS to perform the stress, vibration and heat transfer analyses of various engineering design problems.	
7. Course objectives/student learning outcomes/program outcomes	
<i>Course objectives</i>	This course is designed to introduce brief concepts of finite element methods and their applications to analyze and optimize various engineering design problems.
8. Course evaluation method	
Projects (7) 85% Exercises (7) 15%	
9. Course grading scale	
A (94%-100%), A- (90%-93%), B+ (87%-89%), B (83%-86%), B- (80%-82%), C+ (75%-79%), C (70%-74%), C- (67%-69%), D+ (64%-66%), D (61%-63%), D- (56%-60%), F (below 55%)	

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10. Policy on makeup tests, late work, and incompletes
<p><i>Late projects</i> are accepted only if there is solid evidence of a medical or otherwise serious emergency that prevented the student of turning in the project.</p> <p><i>Late exercise</i> is not acceptable.</p> <p><i>Incomplete grades</i> are against the policy of the department. Unless there is solid evidence of medical or otherwise serious emergency situation incomplete grades will not be given.</p>
11. Special course requirements
12. Classroom etiquette policy
University policy requires that in order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular phones and laptops, are to be disabled in class sessions.
13. Attendance policy statement
Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed <i>without any reduction in the student's final course grade as a direct result of such absence.</i>
14. Disability policy statement
In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at www.fau.edu/sas/ .
15. Counseling and Psychological Services Center
Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to http://www.fau.edu/counseling/
16. Code of Academic Integrity policy statement
Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of

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mutual trust and place high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. See University Regulation 4.001 at www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf
17. Required texts/reading
Finite Element Analysis: Theory and Application with ANSYS. Saeed Moaveni, Prentice-Hall, Inc., Four Edition, 2015. ISBN: 978-0-13-384080-3
18. Supplementary/recommended readings
19. Course topical outline, including dates for exams/quizzes, papers, completion of reading

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Course Topics:

1. Introduction.
2. Trusses.
3. One-dimensional Elements.
4. Analysis of One-dimensional Problems.
5. Two-dimensional Elements.
6. More ANSYS.
7. Analysis of Two-dimensional Heat Transfer Problems.
8. Analysis of Two-dimensional Solid Mechanics Problems.
9. Analysis of Fluid Mechanics Problems.
10. Three-dimensional Element.
11. Vibration Problems.

Canvas: Class notes, practice exercises and problems, project assignments and other administrative information will be posted on *Canvas*. Make sure you can access the information related to this class as early as possible.

Exercises: Exercise is part of the instruction assignment to ensure students' learning during the lecture. Students need to follow the exercise taught by the instructor and turn in the exercise immediately after the exercise is finished.

Projects: Projects which are focused on using ANSYS to solve (1) one dimensional problems such as trusses, beams frames, axial loaded problems, and heat transfer problems (2) 2 dimensional stress analysis and heat transfer problems, (3) 3 dimensional stress analysis and heat transfer problems, and (4) Vibration problems. Students need to solve the problem and write a project report. Every project is considered as an individual work. Do not submit any work that is not yours. It is encouraged to exchange ideas between students, but do not copy any portions of another student's work.