MEE 323 – Computer Aided Engineering II
Syllabus* - Spring 2018

Instructor:	Raghavendra Murthy (raghavendra.murthy@asu.edu) Office: Engineering Research Center (ERC) 481
Teaching Aide:	Sandy Polus (spolus@asu.edu)
Grader:	Nikita Deshpande (nvdeshp1@asu.edu)
IT Support:	ETS Classroom Support (ETSClassroomSupport@asu.edu) If immediate assistance is required, please call (480) 965-2336 Please email/call only for system and/or account issues.
Class Meeting:	Class #21207 – F. 7:30 AM to 9:10 AM, GWC 481 CAD Lab Class #21208 – F. 9:30 AM to 11:10 AM, GWC 481 CAD Lab Class #21209 – F. 12:00 Noon to 1:40 PM, GWC 481 CAD Lab
Office Hours: (Held in GWC 481 CAD Lab)	W. 1:30 PM – 3:00 PM Th. 5:00 PM – 7:00 PM Please email instructor/TA for appointment to meet outside of office hours.

Textbook and References:

- **Textbook** – Lee, Huei-Huang, *Finite Element Simulations with ANSYS Workbench 16*, SDC Publications, 2015, ISBN: 978-1-58503-983-8.
- **Reference** – Prantil, V.C., Papadopoulos, C., Gessler, P.D., *Lying by Approximation: The Truth about Finite Element Analysis*, Morgan & Claypool, 2013.

Course Website:

Course material including the syllabus, homework assignments, homework solutions, grades, and announcements will be posted on the course website via Blackboard. All course materials are copyright of ASU. Students are permitted to use these materials for personal study and research purposes only and may not sell notes taken or any other material distributed during the course.

Course Objectives:

The objective of this course is to introduce students to finite element analysis used for linear static analysis of structures. The focus will be on understanding the underlying physical principles and the application of these to a broad class of structural problems. The methods and procedures will be exemplified with the use of the commercial finite element software ANSYS.
As a result of completing this course, students should be able to:

- Plan and conduct finite element analyses for linear static structural problems.
- Perform geometry creation & simplification, element type & boundary condition selection, and apply finite element solutions to a broad class of structural problems using the commercial finite element software ANSYS.
- Validate the developed finite element models and verify the results of the analyses.

Course Requirements:

Attendance:
Students are expected to attend all lectures and lab sessions. Students are responsible for all material covered in their absences and are responsible for the academic consequences of their absences.

Disability Resources:
Students who require accommodation for a disability, including additional time or resources for taking exams, must be registered with the Disability Resource Center (DRC) and must submit appropriate documentation to the instructor from the DRC. Please inform the instructor at the first convenient opportunity at the beginning of the semester.

Assignments:
Homework assignments will be assigned weekly and will be due the following **Friday at 7:00PM**. Homework solutions will be posted onto the course website shortly after the due date. Homework should be neat, legible, professional, and well organized.

If a student wishes to dispute a homework/exam grade, they must inform the instructor in writing no more than **one week** (7 calendar days) after the assignment/exam was returned.

Assignments and exams may be made up for university excused absences such as those related to religious observances/practices of official university-recognized religious holidays, university sanctioned events/activities, medical illnesses justified with a doctor's note, or a personal emergency that is appropriately justified. In these cases, the student must notify the instructor at least **two weeks** in advance so that suitable arrangements can be made. Make-up exams will **NOT** be given for the final exam except under extenuating circumstances at the instructor's discretion.

Academic Integrity:
ASU expects and requires all its students to act with honesty and integrity, and respect the rights of others in carrying out all academic assignments and exams. Each student in this class is expected to abide by the ASU *Academic Integrity Policy* (https://provost.asu.edu/academicintegrity) and *Student Code of Conduct*.

Discussions are encouraged for assignments. However, individual assignments must be your own work. Copying will not be tolerated. Teamwork must be the original work of the team and each team member is expected to have contributed to the team's work. Cheating on assignments will result in a **ZERO** for that assignment and further consequences according to the school policy. Turning in a copy of another student's work under another name, copying from internet sources, allowing others to copy your work, copying resources from previous semesters, using too much help from tutors/Chegg etc., or using textbook solution manuals constitutes cheating and will result in a **ZERO** for that assignment and further consequences according to the school policy.

Collaboration/cheating during exams is **NOT** allowed and will result in a **ZERO** for that exam. The use of graphing calculators, cell phones, smart watches, or any electronic device capable of communicating or storing information during quizzes/exams constitutes cheating and will result in a **ZERO** for that quiz/exam and further consequences according to the school policy.

Classroom Behavior:
Classes, labs, and exams should be times focused on learning in a calm and quiet environment. Disturbances (including cell phone ringing) will not be accepted and students will be asked to either cease or leave the class/recitation. The use of recording devices is allowed but note, however, that course content is copyrighted material by the University, and students may not sell notes or recorded content taken during conduct of the course.

Cell phones must be in silent mode during class. If you must speak on your cell phone for any reason during class, please leave the room for the conversation without disrupting the lecture.

Policy Against Threatening Behavior:
All incidents and allegations of violent or threatening conduct by an ASU student (whether on- or off-campus) will be reported to the ASU Police Department and the Office of the Dean of Students.

Course Grading:

The MEE grading policy for required courses states that course instructors may utilize any scheme for assessing students and assigning grades subject to:

- the restrictions of the Academic Policies and Procedures Manual, and
- a grade of C or better can only be given to students demonstrating mastery of all the course core outcomes.

The following table provides details of how student performance will be assessed in this course. **Failure to complete at least 75% of the homework assignments may result in an E for this course.**

Item	Percentage of Grade
Homework Assignments	25
Midterm Exam	25
Final Exam	25
Team Project (2-3 students per team)	25
Total	**100**

Final letter course grades will be based on the total points/percentage earned during the semester. Grading bins for A, B, C, D, and E will be decided at the end of the semester. A general guideline is shown below.

A+ ≥ 98

A, **A–** for scores in the range [90, 98)

B+, B, **B–** for scores in the range [80, 90)

C+, C for scores in the range [70, 80)

D for scores in the range [60, 70)

E < 60

ANSYS Student Product:

It is recommended that students take advantage of and install ANSYS Student (**NOT** ANSYS AIM) on their personal computers. Please install ANSYS Student **Version 18.1** for compatibility with the lab computers.

ANSYS Student is a free introductory software package offered by ANSYS for students interested in learning the fundamentals of simulation. The renewable twelve-month product license is free and can be downloaded at http://www.ansys.com/student. The website also has instructions for installation (please follow the installation instructions **to the letter**) and self-guided support and educational materials.

The ANSYS Student license is limited to a maximum problem size of **32,000 nodes/elements**. The software is supported on **MS Windows 7, 8, and 10, 64-bit** machines.

Course Topics:

- Sketching and Solid Modeling
- 2-D Simulations
- Stress Concentration, Convergence, and Singularity
- 3-D Simulations
- Line and Surface Models
- Meshing
- Buckling and Stress Stiffening
- Modal Analysis
- Thermal Analysis
- Nonlinear Simulations
- Transient Dynamics
- Explicit Dynamics

Tentative Schedule*:

Dates	Schedule
02/23 or 03/02	**Midterm Exam**
03/04 – 03/11	Spring Break – No Class
03/16	Final Project Topics Made Available
04/20	Final Projects Due
04/30 – 05/04	**Final Exam (exact date decided by the department)**

** The information contained in this syllabus is subject to change at any time. In such an event, notice along with a revised syllabus will be provided to students via Blackboard.*