

Professor: Greg Watkins, Ph.D., PE

Contact: O’Connell 416 / 530.898.4388 / gkwatkins@csuchico.edu

Course Description: Computer modeling, simulation, and solution of engineering problems. Applications in mechanical, thermal, and fluid flow analysis. Emphasis on proper use of current commercial software and solution verification through traditional engineering analysis.

Student Learning Objectives: To understand the fundamental, underlying operations of mechanical design and analysis software and to learn proper techniques and practices of its application to real world engineering problems.

Prerequisites: MECH 200, MECH 308, MECH 338, MECH 340

Textbook: None

Class Meetings: Monday 2:00 – 4:50 PM in O’Connell 438

Course Materials: None. Recommend Dropbox, Google Drive, or similar account for cloud-based storage of class documents. Note: A lost, stolen, or corrupted flash drive is not an accepted excuse for missed work.

Grading: Modeling assignments 75%
Final project 25%

Grade Scheme:

A	A-	B+	B	B-	C+	C	C-	D+	D	F
>= 93.3	93.2 to 89.5	89.4 to 86.7	86.6 to 83.3	83.2 to 79.5	79.4 to 76.7	76.6 to 73.3	73.2 to 69.5	69.4 to 66.7	66.6 to 59.5	< 59.5

Blackboard Learn: This course will make use of the Blackboard Learn course management system. All lectures, handouts, assignments, solutions, grades, announcements, etc. will be available on the course Blackboard page.

Electronic Assignment Submission: Electronic submission will be handled via Blackboard Learn. Students are strongly encouraged to verify submissions made through Blackboard Learn. It is the student’s responsibility to ensure the correct file has been submitted for the assignment. **No accommodations are made for incorrect submissions.** I do not accept assignments via email.

Late Work: All modeling assignments will have a specific due date and time. The assignment will close on Blackboard Learn at the specified time and will no longer be available. **Late work is not accepted.**

- Attendance:** Prompt attendance is expected at all class meetings. This is a technical elective course, one that you have chosen to take presumably because you want to learn the material. Persistent absences or and/or tardiness will not be tolerated. Repercussions include reduced grades on assignments and/or locking of the classroom door at 2:00 PM.
- Email:** In the event I need to contact members of the class or make urgent announcements regarding tests, class cancellations, etc., it will be done via your WildcatMail email account. I do not plan to use this method of communication frequently, but I do expect that information sent this way will be received. University policy requires students to monitor their WildcatMail accounts. If you have another preferred email provider, you may set up automatic forwarding of your WildcatMail to that address. Details are available at www.csuchico.edu/its/.
- Office Hours:** My office hours are not determined until senior project group meetings for the current semester have been scheduled. Once set, they will be listed here and also posted on the schedule card outside my door. My current schedule can also be viewed on the department website.
- Academic Integrity:** By their nature, computer based assignments lend themselves to easy copying and sharing. Any sharing of electronic data constitutes a violation of the university's academic integrity policy and will not be tolerated. Violations will be referred to student judicial affairs and can result in penalties ranging from failure of the course to long term suspension from the university. See the *Academic Integrity* document for additional information.
- Americans with Disabilities Act:** If you need course adaptations or accommodations because of a disability or chronic illness, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Please also contact Accessibility Resource Center (ARC) as they are the designated department responsible for approving and coordinating reasonable accommodations and services for students with disabilities. ARC will help you understand your rights and responsibilities under the Americans with Disabilities Act and provide you further assistance with requesting and arranging accommodations. ARC is located at Student Services Center 170 and may be reached at 530-898-5959 or arcdept@csuchico.edu.

Tentative Course Schedule

Date	Topic
8/21	Introduction, Linear Static Finite Element Analysis
8/28	Design Optimization
9/4	No Class – Labor Day
9/11	Assembly Modeling
9/18	Extracting Loads from Motion Studies
9/25	Nonlinear Analysis
10/2	Buckling, Drop Test
10/9	Modal (Frequency) Analysis
10/16	Steady State Thermal Analysis
10/23	Transient Thermal Analysis
10/30	Computational Fluid Dynamics (CFD)
11/6	Thermal-Coupled and Transient CFD
11/13	Introduction to ANSYS
11/20	No Class – Thanksgiving Break
12/27	ANSYS Fluent CFD
12/4	ANSYS Fluid-Structure Interaction (FSI)
Friday 12/15 12:00 to 1:50	Final Exam Period Presentation of Final Projects