

Course Syllabus

Basic information

Catalog information: Credits: 3; Stress-strain analysis and design of machine elements; finite element analysis.

Class time and location: MWF 8th period (3:00 – 3:50 PM), FLG 220

Class will be either in person or in zoom (recorded)

Instructor: Nam Ho Kim, MAE-A 210, Email: nkim@ufl.edu (<mailto:nkim@ufl.edu>)

Teaching Assistant: Chenyou Liang, liangc@ufl.edu (<mailto:liangc@ufl.edu>)
Joseph Prueger, jprueger@ufl.edu (<mailto:jprueger@ufl.edu>)

Office hours: Instructors: MWF 4th (10:40 – 11:30 AM)

TA: Chenyou Liang: TBD

Joseph Prueger: TBD

All office hour will be in zoom

Textbook: “Introduction to Finite Element Analysis and Design” by Nam-Ho Kim, Bhavani V. Sankar, and Ashok V. Kumar, 2nd Edition, Wiley (Please note that this course will be participating in the UF All Access program. Login at the following website and Opt-In to gain access to your required course materials –<https://www.bsd.ufl.edu/G1CO/IPay1f/start.aspx?TASK=INCLUDED> (<https://www.bsd.ufl.edu/G1CO/IPay1f/start.aspx?TASK=INCLUDED>) – This option will provide you with digital content that is the best value in the marketplace. Materials will be available approximately 1 week prior to the first day of class.)

Course description: Fundamentals of finite element analysis including, discrete system analysis, steady-state heat transfer analysis, static analysis of structures. Modeling, analysis, and design using FEA software

The objective of the course is to teach the fundamentals of the finite element method with emphasis on the underlying theory, assumption, and modeling issues as well as providing hands-on experience using finite element software to model, analyze, and design systems of mechanical and aerospace engineers.

Course content:

1. Uniaxial bar and Truss Finite Element
2. Finite Element Analysis of Beams and Frames
3. Finite elements for plane solids
4. Isoparametric Finite elements
5. Finite Elements for Heat Transfer Problems
6. Finite Element Analysis Procedures and Modeling

Course schedule: Posted on Canvas

Program Objectives and Outcomes: Program objectives supported by this course include educating students to

1. Comprehend quantitative and analytical methods
2. Understand and perform engineering analysis of machine systems
3. Apply mathematics, science, and engineering to design
4. Communicate ideas graphically and in writing
5. Recognize the need for, and engage in lifelong learning

Course Assignments

Homework: Homework will be assigned every week, but homework will not be collected. However, students are encouraged to solve homework problems and discuss with TAs during office hours. Homework solutions won't be posted, but only answers will be posted.

Projects: There will be 2 term projects, where commercial finite element software is used to solve practical engineering problems. Students are required to submit formal project reports on Canvas along with simulation model/results files.

Exams: There will be 3 exams. Exam schedule is shown in the course schedule. All exams equally contribute to the grade and there will be no final exam.

Quiz: There will be 11 quizzes almost every week. Quizzes are design such that students can closely follow course materials.

Grading: Quiz (25%), exams (45%), projects (30%)

Other course information

Communication: Any technical questions related to HWs, Projects, and Exams must be asked through the Discussion section on Canvas. **Individual emails won't be answered.** This can help other students who may have the same/similar question. Instructor and TAs will frequently monitor questions in the Discussion section and post answers. Also, those who posted important/interesting/valuable questions, and those who answer them may have extra credits at the end of the semester. The purpose is to help our learning process altogether.

All personal accommodation requests (e.g., taking an early exam, special accommodation for exams, etc) should be submitted to Prof. Nam-Ho Kim (nkim@ufl.edu (<mailto:nkim@ufl.edu>)) at least one week before the exam.

Grading Scale: The final grade will be calculated by the following table.

Table 1. Grading Table. %GE = Percent Grade Earned.

Percentage Range	Grade Point
$93.33 \leq \%GE \leq 105.00$ A	4.00
$90.00 \leq \%GE \leq 93.33$ A-	3.67
$86.67 \leq \%GE \leq 90.00$ B+	3.33
$83.33 \leq \%GE \leq 86.67$ B	3.00
$80.00 \leq \%GE \leq 83.33$ B-	2.67
$76.67 \leq \%GE \leq 80.00$ C+	2.33
$73.33 \leq \%GE \leq 76.67$ C	2.00
$70.00 \leq \%GE \leq 73.33$ C-	1.67
$66.67 \leq \%GE \leq 70.00$ D+	1.33
$63.33 \leq \%GE \leq 66.67$ D	1.00
$60.00 \leq \%GE \leq 63.33$ D-	0.67
$00.00 \leq \%GE \leq 60.00$ E	0.00

Grade Corrections: Corrections of grades should be submitted to the instructor within 5 business days of the grade posting in writing with a concise statement of why you believe there has been an error. Note that the instructor has the final determination in the grade assigned. If a grade change is determined, it may result in a lower or higher grade.

Academic honesty: All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a student at the University of Florida and to be honest in all work submitted and exams taken in this class and all others.

Accommodation for Students with Disabilities: Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation: Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu/evals> (<https://evaluations.ufl.edu/evals>). Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/> (<https://evaluations.ufl.edu/results/>).

Health and Wellness

- U Matter, We Care: If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.
- Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc> (<http://www.counseling.ufl.edu/cwc>), and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.
- Sexual Assault Recovery Services (SARS), Student Health Care Center, 392-1161.
- University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/> (<http://www.police.ufl.edu/>).

Software Use: All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy: There are federal laws protecting your privacy regarding grades earned in courses and on individual assignments. For more information, please see: <http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html> (<http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html>)

COVID-19

- You are expected to wear approved face coverings at all times during class and within buildings even if you are vaccinated.
- If you are sick, stay home and self-quarantine. Please visit the UF Health Screen, Test & Protect website about next steps, retake the questionnaire and schedule your test for no sooner than 24 hours after your symptoms began. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 (or email covid@shcc.ufl.edu (<mailto:covid@shcc.ufl.edu>)) to be evaluated for testing and to receive further instructions about returning to campus.
- If you are withheld from campus by the Department of Health through Screen, Test & Protect, you are not permitted to use any on campus facilities. Students attempting to attend campus activities when withheld from campus will be referred to the Dean of Students Office.
- UF Health Screen, Test & Protect offers guidance when you are sick, have been exposed to someone who has tested positive or have tested positive yourself. Visit the [UF Health Screen, Test & Protect website](https://click.info.gator360.ufl.edu/?qs=8f0d5e01a3f7385148f144e2089093522a358a8d85cb9db73c31675d3c5e5c0d27748d40c212f544822551342f1912ea5b4f2b890d5952e8) (<https://click.info.gator360.ufl.edu/?qs=8f0d5e01a3f7385148f144e2089093522a358a8d85cb9db73c31675d3c5e5c0d27748d40c212f544822551342f1912ea5b4f2b890d5952e8>) for more information.
- Please continue to follow healthy habits, including best practices like frequent hand washing. Following these practices is our responsibility as Gators.