ME 786/886 - Introduction to Finite Element Analysis
Fall 2022

Textbook: T.R. Chandrupatla, A.D. Belegundu
"Introduction to Finite Elements in Engineering"

Instructor: Prof. Igor Tsukrov, Kings W105, igor.tsukrov@unh.edu

Teaching assistant: Alex Knysh, Kings S212, Oleksandr.Knysh@unh.edu

Class hours: Tue. and Thu. 11:10 – 12:30 pm, Kings N101

Office hours: Alex Knysh: Mon. and Wed. 3 - 4:30pm, Kings S212
Prof. Tsukrov: Fri. 2 - 3pm and by appointment, Kings. W105 or Zoom
Note: the office hours times are preliminary, will be finalized within 2 weeks

Topics:
Review of matrix algebra
Direct stiffness method - linear spring elements
Basic equations of elasticity. Potential energy approach
One-dimensional problem - bar elements, trusses
FEM implementation - boundary conditions
Bending - beam elements, frames
Two-dimensional problems - CST elements
Two-dimensional quadrilateral isoparametric elements
FEM implementation - numerical procedures, symmetry
Scalar field problems
Heat transfer elements
Potential fluid flow, electric/magnetic fields
Overview of three-dimensional modeling
Pre- and post-processing in finite element analysis

Grading:

Homework*	25%
Midterm exam(s)	15%
Quiz/tutorial average**	10%
Project	15%
Final exam	35%

Homework: Due dates for all homework will be announced in class.
No credit will be given for late written homework.

myCourses : https://mycourses.unh.edu/

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* HW will be given approximately once a week, significant weight, schedule enough time!

** Quizzes will be given during lecture time; tutorials will be assigned to work independently. The lowest two quiz/tutorial grades will be dropped but you are not allowed to make up for missed quizzes or tutorials.

COVID Protocols:
Unfortunately, COVID is still a part of our community. It is your responsibility to pay attention to messaging from the University (RAVE and Canvas and Email) in the event that any COVID protocols change. You can always access current COVID protocols and requirements through the Health and Wellness Website: https://www.unh.edu/health/health-alert-covid-19.

We all value the health and safety of our Wildcat Community and respect everyone's unique health and risk tolerance. You are welcome to wear a mask in this classroom if you choose. It is your responsibility to obtain a mask before coming to class. If you required to be in isolation or quarantine, the Dean of Students will send a letter to all of your instructors. See extended absence policies below for temporary academic resources to support your continued learning in this course if you must miss significant class time.

A valid Wildcat Pass is required to be on campus and in this classroom. Your Wildcat Pass will be invalid if you are supposed to be in isolation or quarantine, or if you have not completed the arrival and baseline testing requirements.

Academic Honesty:
Ethical behavior is essential for the engineering professionals due to the nature of the work and is expected during your academic training as well. You are required to comply with all University policies regarding Academic Honesty. The policies are described in Section 9 of Student Rights, Rules, and Responsibilities Handbook (https://catalog.unh.edu/srrr/academic-policies/academic-honesty). Suspected violations of academic honesty are handled following Section 9.7, Procedures for Dealing with Academic Misconduct, and may result in failure of an assignment, a failing grade in the course, probation, suspension, or expulsion.

Collaborating on homework assignments (but not exams) is acceptable in this course to support peer-to-peer learning. HOWEVER, you should only discuss the problems conceptually and refrain for looking at the final version of a solution that a classmate will hand in for their assignment.