# CIVE367: Structural Analysis

Fall 2016, MWF 9:00-9:50am, Wagar 232

**Instructor**: Dr. Gaofeng Jia

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**Office hours**: MW 2:00-3:00pm, F 10:00-11:00am, at A205H

**Textbook**:

"Fundamentals of Structural Analysis", K.M. Leet, C. Uang, A.M. Gilbert, 4$^{th}$ Edition

**Course objectives:**

After successfully completing this course, a student will be able to

- Apply loads to structural members
- Determine whether a structure is stable or not, statically determinate or indeterminate
- Solve for forces within structural members, and draw shear and moment curves
- Draw influence lines for reactions, shear, and moment in structures
- Use different methods to calculate the deflections and rotations of structures
- Use flexibility and stiffness methods to solve for forces in indeterminate structures
- Understand the concepts of general stiffness method and matrix structural analysis

**Outline of topics**:

- Design loads (Ch. 2)
- Statics of structures (Ch. 3)
  - Reactions
  - Stability and determinacy of structures
- Trusses (Ch. 4)
  - Method of joints
  - Method of sections
- Beams and Frames (Ch. 5)
  - Shear and moment curves
- Influence lines (Ch. 8)
  - Construction of influence lines
  - The Muller-Breslau principle
  - Use of influence lines
- Deflections of beams and frames (Ch. 9)
  - Double integration method
  - Moment-area method
  - Conjugate beam method

- Work-energy methods for computing deflections (Ch. 10)
  - Virtual work: trusses
  - Virtual work: beams and frames
- Flexibility method for analysis of indeterminate structures (Ch. 11)
- Slope-deflection method for analysis of indeterminate structures (Ch. 12)
- General stiffness method (Ch. 16)

**Homework**:

- Homework will be assigned regularly (approximately every week), and is due one week later, and must be submitted at the beginning of class on the day it is due
- Late homework will not be accepted
- You are encouraged to discuss the problems with other students; however, any work you turn in must be your own

**Course website**:

Canvas. Homework assignments and solutions, handouts, and supplemental readings will be posted on Canvas

**Grading**:

- Homework: 30%
- Quizzes: 10%
- Midterm I: 15%
- Midterm II: 15%
- Final exam: 30%

**Letter grading**:

A: 90-100; B: 80-89; C: 70-79; D: 60-69; F: <60  (with +/-)

**Academic Integrity**:

The course will adhere to the academic integrity Policy of Colorado State University General Catalog (Page 7) and the student Conduct Code.