CIVE 4200 – Structural Analysis II
(Fall 2021) Course Outline

Instructor: Farrokh Fazileh, Ph.D., P.Eng.
Phone: 613-991-9958   Email: farrokh.fazileh@carleton.ca
Web: https://carleton.ca/cee/people/fazileh-farrokh/
Office Hours: Online & Via Email

Hours:  
Lectures: Wednesdays 18:05-20:55 EST (Location: Online)
PA sessions: Mondays (alternate) 14:35-17:25 EST (Location: Online)

Web: Brightspace: CIVE 4200A & CIVE 4200A1O
This course will be supported by the Brightspace Learning Management System. All correspondence with the Professor and Teaching Assistants should be carried out through the Brightspace e-mail system ONLY. A variety of resources (both text and online) will be made available through the Brightspace site. Students must activate their Brightspace account and will be fully responsible for reading and responding to all information distributed to students through the Brightspace Course Page. Information provided on this page will be considered to have been provided to all registered students within 24 hours of posting.

Recommended Text:

Evaluation:
Assignments 25%
Mid-term exam 25%  (15 November 2021 during PA)
Final exam 50%   (minimum 40% of final exam total marks is required to pass)

Topics:
1. Review of selected topics on basic structural analysis (CIVE 3203); Concept of force (flexibility) method and displacement (stiffness) method of structural analysis.
2. Flexibility method of analysis, flexibility influence coefficients, matrix flexibility equations.
4. Maxwell-Betti's law; Influence lines and the Muller-Bresla principal.
5. Analysis of 3D structures: space trusses and space frames.
6. Second order structural analysis; Concept of geometric stiffness; Buckling of frame structures.
7. Fundamental of Finite Element Method; Concept of displacement shape functions for 1D axial bar element, and 2D beam element.

8. Introduction to Structural Dynamics; Free vibration of single-degree-of-freedom system; Modal analysis of multi-degree-of-freedom system; Natural frequencies and mode shapes.

Note: You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Pregnancy obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: https://carleton.ca/equity/

Religious obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: https://carleton.ca/equity/

Academic Accommodations for Students with Disabilities: The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). Requests made within two weeks will be reviewed on a case-by-case basis. After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (if applicable).

You can visit the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at https://carleton.ca/equity/