



CIV E 608 Construction Methods (Winter 2026 – January 6 to April 7)

Class time: Tuesday 5:00–7:50 PM

Location: NRE 2-080

Instructor:

Mohamed Al-Hussein, PhD, PENG
malhussein@ualberta.ca

Course Description:

Principles of building, heavy and bridge construction; earthwork equipment selection; wood and formwork design, stability during construction; configuration and capacity of cranes; economics of equipment selection, movement of material on construction sites, safety, and constructability issues. Students work in teams on a term project paper.

TA Information:

Deyaaldeen Alnakdali
alnakdal@ualberta.ca

Mohammad Elahi
mhelahi@ualberta.ca

Office hours: Tuesday from 3:30 PM to 4:30 PM. Office hours will be provided through live sessions on Canvas.

Lecture Information:

1. The lectures will be presented in the Natural Resource Engineering Facility Building (**NREF**) 2-080 on Thursdays from 5:00 PM to 7:50 PM (Edmonton time zone - GMT-7).
2. All questions related to the lecture or any other questions can be submitted/asked on the General Discussion Forum on Canvas, during the lecture, or during office hours.

Project Information:

1. Students will work in teams (3 or 4 students per team) for the term project. Students are asked to form their teams using the Group Sign-up Feature set on Canvas. Students who do not join teams will be assigned to a team by the Instructor Team. The team members share a *team score*.
2. Instructions on the project Deliverables will be posted on Canvas following the dates detailed in the table below.
3. Project deliverables are to be submitted through Canvas.



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Project Deliverables	Date and Time Due
Project Proposal	27-Jan-2026 @ (7:50 PM)
Project Presentation and Submission	07-Apr-2026 @ (7:50 PM)

Course Objectives & General Content:

This course will include discussions on construction engineering practice concepts from the course instructor. The lecture will teach students concepts that are common in major construction projects, including earthmoving, formwork, falsework, cranes, and building design.

For the term paper, students will work in groups on three deliverables step by step. The project is intended to give students an opportunity to communicate their ideas effectively and finish a conference or journal paper together. The paper will be evaluated based on the deliverables, and presentations to peers at the end of the term.



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Marking Scheme:

Activity	Due/Scheduled	Weight
Assignments	As defined in the assignment cover page and on Canvas	10%
Final paper	See in the above “Project information” section	50% Paper Deliverables = 30% Presentation =20%
Midterm	February 3 th	15%
Final Exam	March 31 th	25%

Term Work:

All term work solutions will be posted on Canvas no later than the last day of classes. All term work will be returned to students by the final day of classes, with the exception of the project Final Presentation, which will be returned by the day of the final examination period. It is the responsibility of students to download all their term work from Canvas prior to the end of the term. Any not downloaded term work, shall be retained and then deleted six months after the deadline for reappraisal and grade appeals. Final examinations will be kept for one year as required by university guidelines and the Government of Alberta’s Freedom of Information and Protection of Privacy Act.

Text and References (Mandatory):

Peurifoy R. L. and Ledbetter W. B. 2006, “Construction Planning Equipment and Methods”, Eighth Edition, McGraw-Hill, Inc. N. Y. (ISBN 9780073401126); however, any onwards edition is also acceptable.

Website:

Canvas.

University Policies:

Policy about course outlines can be found in Course Requirements, Evaluation Procedures and Grading of the University Calendar.



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The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour (online at www.governance.ualberta.ca) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

Audio or video recording, digital or otherwise, of lectures, labs, seminars or any other teaching environment by students requires prior written consent of the instructor or as a part of an approved accommodation plan. Student or instructor content, digital or otherwise, created and/or used within the context of the course is to be used solely for personal study, and is not to be used or distributed for any other purpose without prior written consent from the content author(s).

Learning Outcomes:

By the end of this course, students should be able to:

1. Select cranes for lifting operations by understanding and applying the statics associated with the lifting components.
2. Design formwork and falsework systems based on the relevant code and standard.
3. Select the types of earthmoving equipment and estimate the number of equipment pieces for a job based on the property of earthwork materials and the specifications of heavy machines.
4. Measure and analyze equipment productivity for earthmoving operations.



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Schedule:

Date	Topic	Deliverables
6-Jan	Introduction and Course Overview and Equipment Economics	
13-Jan	Design for Equipment Power Requirements	
20-Jan	Soil and Compaction	Lecture Assignment 1 (7:50 PM)
27-Jan	Design for Earthmoving Equipment: Excavation (Shovels) and (Hoe)	Project Proposal Submission (7:50 PM)
3-Feb	Midterm	
10-Feb	Design for Earthmoving Equipment: Excavation (Loaders) and (Trucks)	
17-Feb	Reading Week	Deliverable 2: Project proposal (Feb-19)
24-Feb	Design for Earthmoving Equipment: Hauling Equipment (Scrapers) and (Dozers)	
3-Mar	Design for Lifting Equipment (Mobile Cranes 1)	Lecture Assignment 2 (7:50 PM)
10-Mar	Design for Lifting Equipment (Mobile Cranes 2)	
17-Mar	*Formwork Design for Concrete	
24-Mar	Design for Crane support	Lecture Assignment 3 (7:50 PM)
31-Mar	Final exam	
7-Apr	Project Design Submission and Presentation	Final project submission (7:50 PM)

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