



**UNIVERSITY
OF ALBERTA**

2026-2027

MASTER OF ENGINEERING

CONSTRUCTION ENGINEERING

WELCOME TO THE M.ENG. PROGRAM

The University of Alberta's Master of Engineering (M.Eng.) course-based programs are valuable for engineers at any career stage wishing to enhance their technical, managerial, and leadership skills. Our students learn from some of the top academics in their fields and train in internationally renowned facilities. Students participate in practical Alberta-focused projects that prepare them to demonstrate their skills and knowledge to potential employers.

M.Eng. students have access to the University of Alberta's Engineering Employment Center resources (job postings, workshops, networking opportunities, career fairs) and benefit from a dedicated student coach, who provides communications support.

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

M.ENG. PROGRAM INFO

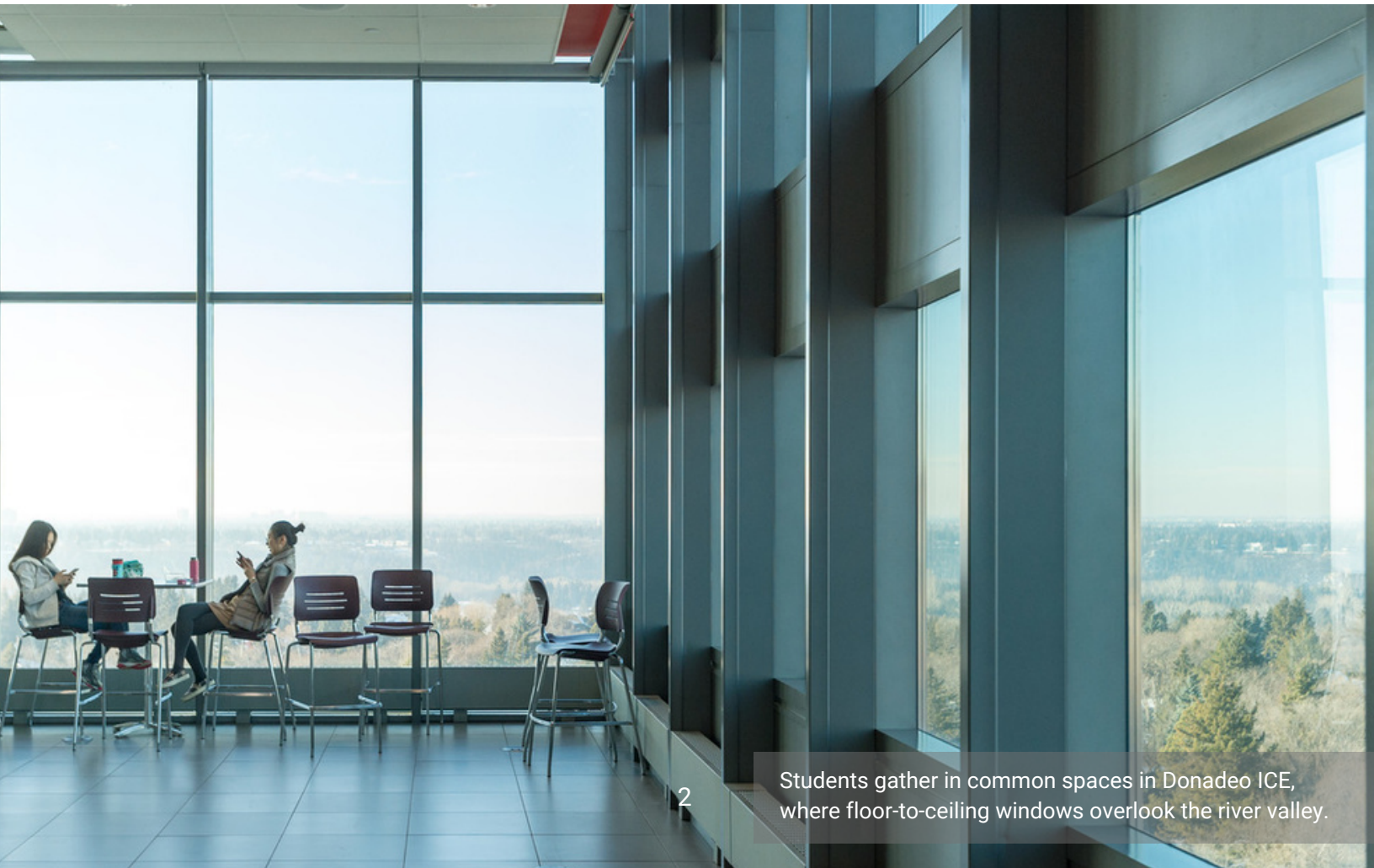
PROGRAM OBJECTIVES

The M.Eng. Program is designed to prepare students for engineering practice in modern Construction Engineering. It will also equip students with the required knowledge, skills, methods, tools, experience, and professional communication capability to contribute to Civil Engineering industry and society at large.

The program prepares the students for an entry career in the Construction Engineering industry.

LEARNING OUTCOMES

- Estimate the cost and duration for construction activities as well as apply the critical path method and production planning methodologies to a construction project
- Evaluate project performance, analyze project cash flow, and identify sources of uncertainty in construction projects





M.ENG. PROPOSED COURSE SEQUENCE

The length of the program is two years. Students can accelerate the program or prolong it after approval from the M.Eng. Academic Advisor (see program contacts on page 4).

All general electives must be approved by M.Eng. Academic Advisor. Please refer to the Graduate Handbook for full program policies. For more information about graduate courses offered, visit our Grad Program page at <https://civleng-uofa.ca/Grad%20program/>

FALL 2026	CIV E 602 Contract Admin ¹ CIV E 630 Construction Safety and Human Factors ¹ Engg 700 Technical Communication ³
WINTER 2027	CIV E 601 Project Management ¹ CIV E 608 Construction Engineering ¹ CIV E 605 OR CIV E 606 ²
FALL 2027	One elective course from Construction Engineering and Management group ² Two 500-, 600, or 700-level Engineering or Science course, as approved by MEng Academic Advisor ³
WINTER 2028	CIV E 900 Capstone project (Directed Research - Construction section)

1. Core courses; 2. Discipline-related elective; 3. General elective.

NOTE: CIV E 609 is not considered a discipline-related elective for Construction group.

STUDENT SUPPORT

GRADUATE PROGRAM ADVISORS

Trina Catral – 7-387 Donadeo ICE
Christina Ezekowitz – 7-381 Donadeo ICE
Arlene Figley – 7-389 Donadeo ICE

Email: cgradvis@ualberta.ca

ASSOCIATE DEAN GRADUATE STUDENTS CEE/MP

Dr. Zaher Hashisho – 7-241 Donadeo ICE
Email: ad.ceegrad@ualberta.ca

M.ENG. ACADEMIC ADVISOR

Dr. Lijun Deng – 6-261 Donadeo ICE
Email: civmeng@ualberta.ca

CONSTRUCTION GRADUATE COORDINATOR

Dr. Gaang Lee – 7-211 Donadeo ICE
Email: gaang@ualberta.ca

STUDENT COACHING SERVICES

The Department of Civil and Environmental Engineering and the School of Mining and Petroleum Engineering are committed to fostering the academic and professional success of its M.Eng. students throughout the duration of their program.

To support this goal, students are offered tailored coaching and development services designed to help them clarify academic and career goals, identify and overcome challenges, and build on their personal and professional strengths. Through one-on-one sessions, group workshops, and targeted resources, students are guided in navigating the complexities of graduate studies, enhancing their communication and leadership skills, and preparing for success in the Canadian and global engineering workforce.

These services aim to empower students to take ownership of their academic journey, grow with confidence, and transition effectively into professional roles upon graduation.



WELCOME HOME

Edmonton is Alberta's capital city and is one of the sunniest cities in Canada with an average of 2,300 hours of sunshine per year. The river valley that winds through the city has more than 160 kilometres of maintained pathways and 20 major parks.

HOUSING

You may choose from many housing options for students, both on campus and around Edmonton. [International Student Services](#) has online resources for finding a place to live, including temporary accommodations when you first arrive.



EXCEPTIONAL PUBLIC SCHOOLS

Our Kindergarten through grade 12 public school system is one of the best in Canada. Alberta's students rank No. 2 in the world for reading and science and in the top 12 for math.



UNIVERSAL HEALTH CARE

[Alberta Health Services](#) provides health care to all Albertans in hospitals, at the doctor's office, and on the Internet. 811 is a telephone service providing free 24/7 nurse advice and general health information for Albertans.

COMMUNITY

More 150 neighbourhood community leagues provide plenty of opportunities to participate in social and recreational activities and get to know your neighbours.

Plus farmers' markets offer small agricultural producers the opportunity to sell fresh produce, including meat and vegetables that are grown in the Edmonton area. The city supports community gardens for those who want to grow their own food but need the space to do it.



TRANSPORTATION BUS, BIKE, TRAIN

Public transit buses and Light Rail Transit (LRT) connect the city along with well-maintained bike lanes and paths.

Maps, schedules and fare info at: edmonton.ca/edmonton-transit-system-ets

WORKING IN CANADA

INTERNATIONAL STUDENT SERVICES

International Student & Visitor Services (ISVS) provides programs, services and events for U of A international students. Their team of licensed immigration consultants and student advisors supports international students with adjusting to living in Edmonton, immigration and additional support to help international students succeed at the U of A.

You can book time with their team of licensed immigration consultants, who can assist you with study permits and extensions, immigration, and working in Canada. Drop-in appointments are available Monday, Tuesday, and Friday (9 am -12 pm & 1–3 pm) by visiting the International Services Centre (142 Telus Centre) or book an appointment online at: ualberta.ca/international/about-uai/contact-us/international-services-centre

POST GRADUATION WORK PERMIT

The Post-Graduation Work Permit Program (PGWPP) allows students who have graduated from eligible Canadian designated learning institutions (DLIs) to obtain an open work permit to gain valuable Canadian work experience. Our program also provides academic credentials that are recognized by Alberta licensing organization (APEGA) for students with an undergraduate program in a foreign engineering program.

To work in Canada after you graduate, you must apply for a work permit under the Post-Graduation Work Permit Program (PGWPP). Check the University's ISVS and the Government of Canada websites for more information about the post-graduation work permit program.

Our program's learning outcomes are in line with Engineers Canada competencies and professional development hours count towards yearly professional requirements.

UNIVERSITY OF ALBERTA RANKINGS

	WORLD	CANADA
ACADEMIC RANKING OF WORLD UNIVERSITIES	101-150	5
QUACQUARELLI SYMONDS	96	4
TIMES HIGHER EDUCATION	116	5



LET'S TALK

SAVE THE DATE:

OUR ANNUAL INDUSTRY MIXER HAS BEEN SCHEDULED FOR FEBRUARY 2ND, 2027.

INDUSTRY NETWORKING MIXER

Academic knowledge is only part of the equation when preparing students for the workforce. Therefore, we commit to helping our students develop communication skills and professional networks.

Since February 2023, the Department of Civil and Environmental Engineering and the School of Mining and Petroleum Engineering at the University of Alberta have hosted an annual networking mixer to support the professional development of Master of Engineering (MEng) students. This initiative is part of a broader program designed to enhance students' communication skills and prepare them for successful careers in engineering.

The three-hour event features guest speakers, professional networking opportunities, and a catered reception. This year, the event will be held in the heart of downtown Edmonton, at the Art Gallery of Alberta.

Distinguished University of Alberta engineering alumni deliver keynote presentations, sharing insights from their professional journeys. Their talks often emphasize practical advice on career growth, lifelong learning, and the value of hands-on experience. A common and compelling theme across all events has been the critical role of effective communication in engineering practice.

To help students maximize the value of this experience, a preparatory networking skills workshop is conducted in advance. This training session covers key topics such as professional attire, networking etiquette, initiating and sustaining conversations, making strong introductions, and post-event follow-up strategies.

Together, the mixer and its preparatory workshop form a vital component of our commitment to supporting graduate students as they develop into well-rounded, professionally prepared engineers in Canada.

BENEFITS OF NETWORKING

Career opportunities Networking allows students to connect with potential employers, learn about job opportunities, and gain insights into the engineering profession.

Industry insights By connecting with professionals in their field, students can stay up-to-date with industry news and developments, helping them make informed career decisions.

Mentorship Networking provides students with the opportunity to connect with experienced professionals who can offer guidance and support as they navigate their career path.

Collaboration Working with others can help graduate students develop new skills, gain experience, and expand their engineering knowledge.

Personal development Networking helps students develop essential skills such as communication, teamwork, and interpersonal competence. By attending events, meeting new people, and building relationships, students develop confidence and expand their professional network.



Grad students Aisha Elgarhy, Veronica Wambura, and Syeda Narmeen Zehra at the networking mixer.

Photo: Heather Egger

APEGA PROFESSIONAL DEVELOPMENT SERIES

In collaboration with the Association of Professional Engineers and Geoscientists of Alberta (APEGA) and the U of A Career Centre, our department offers a series of sessions to equip students with the professional tools, knowledge, and confidence they need to thrive after graduation and successfully transition into professional roles. We also provide students with access to job fairs, networking events, and other professional development opportunities to help them build relationships and make valuable industry connections.

A range of workshops are offered (in-person and online) which cover topics including:

- APEGA's Work Readiness Program
- Post-program Insights from a Graduate
- Upgrading your Resume
- Rapid Resume Review
- How to Have a Great Interview
- Mock Interviews
- Intercultural Competency
- Personal Branding
- Leveraging LinkedIn
- Mixer Preparation and Networking skills
- APEGA Requirements for Registration
- Breaking Down Job Postings
- Flourishing in the Workplace

A minimum attendance of 8 distinct sessions (over the duration of the program) is a graduation requirement for MEng students in CEE+MP. Some students may be eligible for an exemption. MEng Students will be automatically enrolled.

PD CREDIT: Students who attend a session AND complete the corresponding mini quiz will receive 1 hr of PD credit (per session). QUIZ + PD Credit component is **OPTIONAL**. The mini quizzes are not part of the graduation requirement.

About the Career Centre

The Career Centre is the source for career and employment information and expertise at the University of Alberta. We strive to empower the talented people of the U of A in developing the skills, knowledge, experiences, and connections they need to confidently manage their careers.

About APEGA

Created on April 10, 1920, the Association of Professional Engineers and Geoscientists of Alberta (APEGA) regulates the practices of engineering and geoscience in Alberta on behalf of the Government of Alberta through the Engineering and Geoscience Professions Act. They are the largest regulator of self-regulated professionals in Western Canada. Their main regulatory function is licensing individuals and companies that want to practise engineering and geoscience in Alberta. Applicants and companies that meet APEGA's standards for ethical, professional, and technical competency earn the right to practise and use reserved titles and designations.

CREATIVITY THROUGH COLLABORATION

M.ENG. DESIGN CAPSTONE

The Capstone course encourages teamwork and problem-solving skills, equipping students for success as they transition from academia to industry.

Our Capstone design-build course offers MEng in Structural and Construction Engineering a unique, hands-on learning experience under the guidance of experienced industry professionals. Through this course, students form interdisciplinary teams and engage with real-world challenges that reflect the complexity and dynamics of professional engineering projects.

Throughout the term, students assume roles similar to those of contractors and consultants, navigating technical, logistical, and collaborative aspects of project delivery. The weekly three-hour sessions combine lectures on essential topics—including design thinking, quality and risk management, sustainability, and professional communication—with dedicated time for team collaboration. Emphasis is placed on developing the ability to communicate technical concepts to non-technical audiences, a skill critical to success in the workplace.

For example, in Winter 2024, the final project involved preparing comprehensive proposals for installing a solar array over the iconic Butterdome. This was not a hypothetical assignment—the request for proposals (RFP) was developed in consultation with the University of Alberta's Project Management Office, presenting a genuine opportunity for students to influence potential implementation on campus. Student feedback underscores the course's real-world relevance and educational value:

"The guest speakers were especially beneficial. They shared real-world experiences and showcased their projects, which helped us apply these processes to our own projects."

— Goldy Thevaruparambil Raju

"The collaboration in this course provided a rich learning environment and equipped me with valuable skills in working with construction engineers. It was truly enlightening to witness how our diverse perspectives complemented each other, leading to more comprehensive project outcomes."

— Belal Abdelbaky Elshal, Structural Engineering

This course exemplifies our commitment to providing MEng students with applied, interdisciplinary learning experiences that prepare them for the challenges and expectations of the engineering profession.



M.Eng. Capstone Class Winter 2024

ADVANTAGES OF CAPSTONE DESIGN COURSE AND WORKING AS A TEAM

- **Diverse Perspectives:** Teams consist of individuals with different backgrounds, skills, and experiences, fostering creativity and innovation through unique viewpoints in problem-solving. Additionally, the course is designed with a well-defined timeline, ensuring everyone stays on track while contributing to the collective goals.
- **Division of Tasks:** Tasks are divided among team members based on their strengths and expertise, increasing efficiency and productivity. With clearly defined expectations and problem formulations, individuals can focus on their areas of strength, leading to better outcomes and effective time management.
- **Support and Collaboration:** Team members provide mutual support, share knowledge, and collaborate, leading to better decision-making and problem-solving as ideas are discussed collectively. The structured timeline and clear milestones further enhance collaboration, ensuring the team progresses cohesively toward the final goal.
- **Learning Opportunities:** Teamwork offers a chance to learn from others through acquiring new skills or understanding different approaches. A clear problem formulation helps guide this learning process, allowing individuals to focus on tackling well-defined challenges efficiently and effectively.
- **Personal Growth:** Working in a team enhances interpersonal skills such as communication, collaboration, and conflict resolution, which are valuable both personally and professionally. Additionally, a well-structured course timeline helps individuals practice and improve time management and goal-setting skills, further contributing to their professional development.

COURSE INFO

CIV E 601 ANALYTICAL METHODS FOR PROJECT MANAGEMENT

COURSE OBJECTIVES

This course provides updated knowledge and analytical methods to extend basic concepts and techniques in project management while keeping the analytical flavor typical of an engineering course.

LEARNING OUTCOMES

- To distinguish balanced vs. unbalanced pricing in project tendering through bid factor analysis
- To follow industry best practices in performing project breakdown and preparing project network models
- To apply path-float based critical path method to simplify project scheduling and time cost trade-off analysis
- To critically apply Earned Value management in project cost control
- To apply a non-computer approach to resource scheduling by updating project network models
- To interpret complex precedence relationships on project network models by applying formalized transform schemes
- To perform risk analysis and simulation analysis for contingency estimating in bidding and path float based project scheduling
- To critically apply linear scheduling and repetitive scheduling methods
- To gain teambuilding and project management experiences through conducting a group-based Term Project



COURSE INFO

CIV E 602 CONTRACT ADMINISTRATION

COURSE OBJECTIVES

This course provides the students with a comprehensive knowledge and interactive discussion regarding the major practices of construction project procurement. This objective is achieved by covering the following 3 topics:

- Project delivery methods (PDMs), procurement methods and construction contracts
- Contract formation and administration
- Construction claims and alternative dispute resolution (ADR)

LEARNING OUTCOMES

- Select the optimum: project delivery method, procurement method and contracting strategy
- Perform efficient contract formation and administration tasks and responsibilities during both the planning and execution stages of any project
- Minimize and manage conflicts, disputes and construction claims in projects
- Utilization of alternative dispute resolution techniques in construction projects to avoid litigation
- Achieve timely and effective construction project closeout

CIV E 603 CONSTRUCTION INFORMATICS

COURSE OBJECTIVES

This course introduces various aspects of information management and computer applications within the construction domain to familiarize students with the use and capabilities of these applications for research and industrial purposes.

LEARNING OUTCOMES

- To develop small computer programs for research problems in Python
- To design and develop relational databases for research or small business applications
- To apply basic data mining techniques to research or construction operations data
- To evaluate and assess the quality of data mining outcomes

COURSE INFO

CIV E 606

DESIGN AND ANALYSIS OF CONSTRUCTION OPERATIONS

COURSE OBJECTIVES

Overview of production management in construction. Techniques for modelling construction operations, design of efficient processes, measurement and improvement of productivity. Computer simulation techniques for modeling and analysis.

LEARNING OUTCOMES

- Design simulation models to abstract and represent construction processes
- Use discrete event and continuous simulation concepts for modeling construction processes
- Implement and run experiments on models using the Symphony simulation environment
- Test, validate, and evaluate developed models using different techniques including statistical methods

CIV E 607

PRODUCTIVITY MODELING AND ANALYSIS

COURSE OBJECTIVES

This course sets particular focus on how to define, model, and analyze productivity in construction and how to tackle challenges in workface planning aimed at productivity improvement.

LEARNING OUTCOMES

- To identify human and environmental factors relevant to labor productivity in construction
- To apply time-based and motion-based productivity assessment techniques commonly acceptable and practically feasible in construction
- To apply multiple linear regressions in productivity modeling and analysis in construction.
- To apply advanced network diagramming technique for resource use planning and workflow simulation at the workface level
- To gain knowledge and insight in codes on occupational health and safety in construction
- To place lean concept into productivity perspective in construction
- To identify opportunities and limitations of automation in productivity improvement



CIV E 608

CONSTRUCTION ENGINEERING

COURSE OBJECTIVES

This course introduces the student to the methods and tools needed for estimating, planning and directing operations in building construction and heavy civil projects. The course focuses on equipment and methods, productivity, and safety management.

LEARNING OUTCOMES

- Model operations and methods involved in building construction and heavy civil construction
- Apply construction methods to various project settings to assess the factors affecting the selection of equipment, determine ownership and operating costs, estimate earthwork quantities, calculate equipment and fleet production, apply equipment and quality control in construction operations, and employ information resources pertinent to equipment management
- Formulate a deeper understanding of the underlying problems in construction and compare between different underlying theories in construction management
- Understand and apply the basics of safety management in various project settings

COURSE INFO

CIV E 610 SUSTAINABLE CONSTRUCTION

COURSE OBJECTIVES

The main objective of this course is to present the basic pillars of sustainability, the concepts of multidimensional thinking and rational decision-making in order to enable the students to make the most sustainable decisions in the construction industry.

LEARNING OUTCOMES

- Understand the three pillars of sustainability: Economic, Environmental & Social and the United Nations (UN) 17 Sustainable Development Goals (SDG)
- Comprehend the basic techniques utilized to transfer data to useful knowledge, which can be used for timely decision-making
- Use Multiple Criteria Decision Making (MCDM) methods to develop Knowledge-Based Decision Support Systems (KBDSS)
- Utilize KBDSS to obtain the most sustainable: engineering designs, project procurement practices, construction methods and building materials

CIV E 611 LEAN CONSTRUCTION

COURSE OBJECTIVES

In this course, Students will learn about the Toyota production system, the last planner system, value stream mapping, integrated project delivery, location-based management, target value design, process improvement, and many other lean concepts. Students will also learn fundamental project management concepts and techniques to define, plan, and execute construction projects. The focus will be on actions that can be taken to meet and sometimes exceed expectations for project time, cost, and quality. The importance of communication and risk management throughout all project stages will be emphasized. Students will be trained on academic paper writing and communication. Students will also be exposed to software applications that aid project management. Students will be challenged as individuals and as members of a team to deliver a paper-based project.

LEARNING OUTCOMES

- Define and explain the management principles of Lean Construction
- Map construction processes and identify wasteful activities
- Measure value in construction process flows
- Propose improvement measures for construction processes
- Explain the basics of Integrated Project Delivery
- Perform advanced location-based management planning assessments
- Demonstrate the understanding of the Last Planner's System for production planning and control

COURSE INFO

CIV E 709 ROBOTIC IN CONSTRUCTION

COURSE OBJECTIVES

This course syllabus is intended to suit grad students' skills set requirement in the area of robotics in construction systems design, on-site and off-site construction activities simulation and optimization, application-based and user-centric selection of robotic technologies, feasibility and constructability review, robot motion planning and programming, trajectory planning and clash detection in construction settings.

This course covers the basic knowledge of controlling robots, including kinematics, trajectory generation, and offline programming. It also includes a series of hands-on practical workshops simulated in a construction environment. Students will have the opportunity to program an industrial robot arm to complete various construction activities in a scaled testing environment. A final project will be assigned where students are expected to simulate a construction process using the learned knowledge and skills.

LEARNING OUTCOMES

- Application based and user-centric selection of robotic technologies
- Construction activities simulation and optimization
- Feasibility and constructability review
- Robot motion planning and programming
- Trajectory planning and clash detection
- Plan, simulate, and execute construction operations and challenges

CIV E 630 CONSTRUCTION SAFETY AND HUMAN FACTORS

COURSE OBJECTIVES

This course aims to empower students to understand current construction safety management practices, including their underlying mechanisms and limitations, and to advance these practices by applying advanced psychological, physiological, and socio-cognitive theories, as well as cutting-edge sensing and data analytics techniques.

LEARNING OUTCOMES

- Understand construction safety management practices, including their underlying rationales and limitations
- Provide interventions to improve worker safety in specific construction site situations by applying relevant psychological, physiological, or socio-cognitive theories
- Design applications of data analytics with sensors, such as cameras, location tracking systems, and biosensors, to enhance worker safety in specific construction site situations

COURSE INFO

ENGG 700 TECHNICAL AND PROFESSIONAL COMMUNICATION

COURSE OBJECTIVES

Engineers spend much of their professional lives communicating—working with colleagues, leading teams, negotiating ideas, presenting recommendations, engaging stakeholders, and producing technical documents that inform important decisions. This course develops the communication competencies required for professional engineering practice. Students will explore interpersonal, team, and organizational communication alongside written, visual, and oral communication in engineering contexts. Topics include communication strategies for collaboration and leadership, giving and receiving feedback, conflict management, communicating with diverse audiences, presentations, visual communication, professional identity, ethical and inclusive communication, and the effective use of AI to support engineering communication.

LEARNING OUTCOMES

- Analyze and adapt communication strategies to suit different audiences, occasions, and purposes across interpersonal, organizational, and professional contexts.
- Explain and demonstrate concepts such as impression management, disclosure, perception, listening, conflict resolution, and relational maintenance in diverse interpersonal scenarios.
- Apply communication strategies for professionalism, ethical awareness, boundary setting, and workplace messaging, including email, instant messaging, social media, and internal communications.
- Develop and present engaging, audience-centered speeches using appropriate delivery methods, anxiety management techniques, and verbal and nonverbal strategies.
- Compose resumes and related documents (e.g., cover letters, thank you notes) that reflect audience needs, professional tone, and job-specific language and achievements.
- Write technical and business communication documents (e.g., reports, proposals, instructions) using appropriate formats, tone, style, and structure, while integrating feedback and revision practices.
- Design documents and presentations that combine clear prose with meaningful, ethically constructed visuals to effectively convey data and technical content.
- Demonstrate understanding of rhetorical situation, genre conventions, and audience expectations to shape message content, organization, and tone.
- Participate in group and team projects using appropriate interpersonal and organizational communication strategies, including leadership, feedback, and consensus-building techniques.
- Assess your own communication strengths and challenges, recognize the role of identity and culture in communication, and implement strategies for ongoing personal and professional growth.

COURSE INFO

CIV E 900

CAPSTONE COURSE OR DIRECTED RESEARCH PROJECT CONSTRUCTION

The Department of Civil and Environmental Engineering offers the Capstone project course and a Directed research project to M.Eng. students in the Construction Engineering and Management stream.

Students will complete either a capstone course or directed research projects using the knowledge they have gained throughout their undergraduate and graduate programs.

Please see the M.Eng. Academic Advisor for information about the directed research project.

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