



**UNIVERSITY
OF ALBERTA**

2026-2027



MASTER OF ENGINEERING

ENVIRONMENTAL ENGINEERING

Students Kia Barrow and Kyra Jubinville sampling on the North Saskatchewan River. Photo: Maricor Arlos

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

Our Environmental Engineering M.Eng. program is designed to equip students with the knowledge and skills to address complex environmental challenges and contribute to sustainable development. The program integrates principles from various disciplines, including engineering and natural sciences – chemistry, biology, and microbiology, to provide a holistic approach to environmental problem-solving. Students will gain expertise in water and wastewater treatment, air pollution control, soil remediation, solid waste management, environmental impact assessment, and sustainable engineering practices.

LEARNING OUTCOMES

- Develop a strong foundation in the core principles of environmental engineering, including the ability to analyze and design engineering systems for water and wastewater treatment, air quality management, soil remediation, and solid waste management
- Understand and follow national and international environmental regulations, standards, ethical principles and professional responsibilities, and industry trends regarding sustainable development and environmentally friendly practices in engineering design and decision-making
- Develop strong communication and teamwork skills via capstone projects collaborating with peers from diverse backgrounds to develop comprehensive and integrated engineering solutions to emerging environmental challenges
- Develop comprehensive skillsets for continuous learning and professional development to stay at the forefront of the ever-evolving environmental engineering industry





North Saskatchewan River where students go to learn more about contaminant fate and transport.
Photo: Maricor Arlos

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://civileng-uofa.ca/Grad%20program/>

FALL 2026	CIV E 620 Environmental Engineering Management ¹ CIV E 622 Physical/Chemical Water and Wastewater Treatment ¹ CIV E 624 Biological Waste Treatment Processes ¹
WINTER 2026	CIV E 628 Municipal Solid Waste Management ¹ CIV E 729 (B2 - Air Quality Modeling/Analysis) ² CIV E 623 ² OR CIV E 789 (B2) GIS ³
FALL 2027	Engg 700 Technical Communication ³ CIV E 525 ² OR CIV E 526 ² One elective: any 500-, 600- or 700-level Engineering or Science courses, within Environmental Engineering and Science or related field, as approved by the MEng Academic Advisor ³
WINTER 2028	CIV E 900 Capstone project (Directed Research)

1. Core courses; 2. Discipline-related elective; 3. Electives within EnvE and Science or related field

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. Yaman Boluk – 7-273 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 620 ENVIRONMENTAL ENGINEERING MEASUREMENTS I

COURSE OBJECTIVES

- Introduce the theory and procedures for determining the quality of natural water, potable water, municipal and industrial wastes.
- Introduce the fundamental parameters and concepts for environmental quality evaluation.
- Perform basic experimental analyses for evaluating key parameters in water analysis

LEARNING OUTCOMES

- Demonstrate knowledge of chemical principles and processes of various fundamental environmental phenomena and processes
- Apply basic chemical concepts to analyze chemical processes involved in different environmental problems
- Perform common environmental experiments relating to water and wastewater quality, and know at which tests are appropriate for given environmental problems
- Demonstrate the ability to write clear technical laboratorial reports

CIV E 622 PHYSICAL/CHEMICAL WATER AND WASTEWATER TREATMENT

COURSE OBJECTIVES

This course is an introduction to the theory and application of the concepts and fundamentals of physical and chemical treatment processes used in the practice of Environmental Engineering. Although the applications will be mainly in the drinking water and municipal wastewater treatment area, the concepts are applicable to many other areas of Environmental Engineering.

LEARNING OUTCOMES

- Fully understand and apply theory behind different physical/chemical methods used in water and wastewater treatment processes
- Define and describe approaches, unit operations, processes, and equipment used in water and wastewater treatment practice as well as concepts of process and facility design
- Develop reasonable working knowledge that can be used to design an efficient, cost-effective, multibarrier approach to water treatment
- Improve critical thinking and communication skills both in verbal and written format

COURSE INFO

CIV E 623

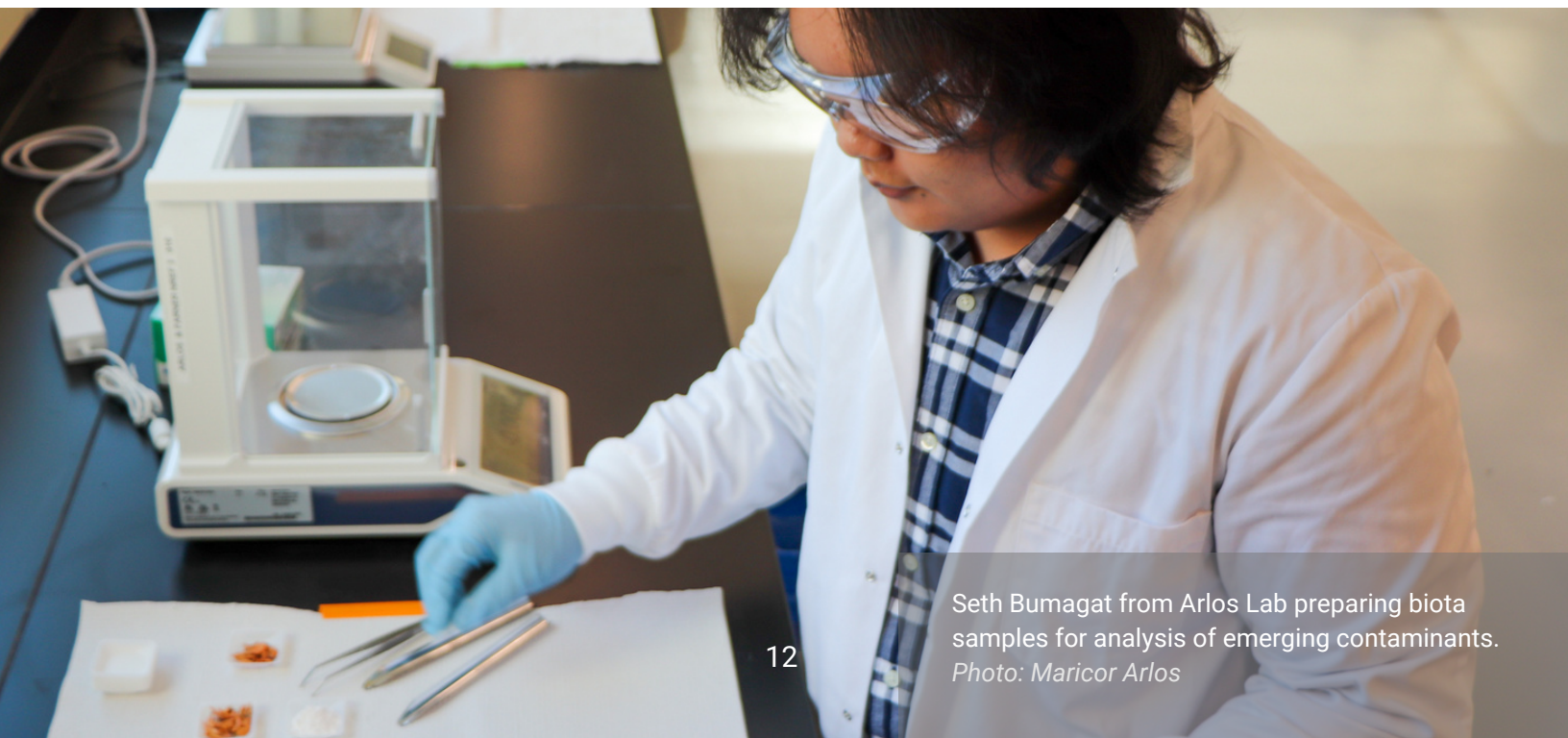
INDUSTRIAL WATER AND WASTEWATER MANAGEMENT

COURSE OBJECTIVES

Industrial water quantity and quality requirements. Characteristics of wastes, inplant controls, product recovery; effluent characteristics, chemical and toxic properties, pretreatment and treatment design theory and methodology, water reclamation and reuse regulations.

LEARNING OUTCOMES

- Understand the Alberta industrial set-up, the contribution of each sectors to economy and environmental legislation guiding the operation of these industries as regards wastewater discharge and managements
- Familiarize with the wastewater management strategies and practices in industries
- Understand pretreatment processes applied in industrial wastewater treatment and management
- Understand the fundamental principles and applications of physical water treatment processes including membrane separation and sedimentation
- Understand the fundamental principles and applications chemical and advanced water treatment processes
- Understand the fundamental principles and applications physico-chemical (adsorption and ion exchange) water treatment processes
- Familiarize with sources, contaminants and management/treatment of wastewater in different industrial sector profiles



Seth Bumagat from Arlos Lab preparing biota samples for analysis of emerging contaminants.
Photo: Maricor Arlos

COURSE INFO

CIV E 624 BIOLOGICAL WASTE TREATMENT PROCESSES

COURSE OBJECTIVES

The objective of this course is to study the theoretical and applied aspects of biological waste treatment processes in environmental engineering, as well as fundamental knowledge of environmental microbiology that is necessary to understand the biological processes. In order to teach important design calculations, biofilm processes and activated sludge processes, as they are utilized in biological wastewater treatment, will be used as examples to explain load-based design approach and kinetics-based design approach, respectively. A term project will require students to explore on the role of research in advancement of the knowledge and design practice of biological waste treatment processes.

LEARNING OUTCOMES

- Explain how biological processes work in the treatment of wastewater.
- Perform kinetics-based design calculations for activated sludge process.
- Perform load-based design calculations for biofilm processes.

COURSE INFO

CIV E 628 MUNICIPAL SOLID WASTE MANAGEMENT

COURSE OBJECTIVES

Principles of municipal waste management to protect public health, municipal waste streams, waste stream analysis and prediction. Refuse collection, storage and hauling methods, and facilities. Engineering design and operation of solid waste processing, treatment and disposal methods: resource recovery, recycling programs, incineration, composting, landfilling, and novel techniques. Solid waste legislation and policies. Environment impacts, impact management and facility siting of waste facilities.

LEARNING OUTCOMES

By the end of this course students will be able to:

- Define and explain advanced fundamental and engineering concepts of waste management and treatment concerning composition, properties, treatment or transformation processes
- Prepare preliminary engineering design calculations related to waste treatment facilities
- Identify relevant legislation and regulations, future trends in waste management industry, and resource recovery options from various waste streams
- Make an oral presentation related to waste management and treatment practices, and critically analyze in a written report

CIV E 657 AIR POLLUTION CONTROL

COURSE OBJECTIVES

The goal for this class is for students to develop a solid understanding of the fundamental and applications of air pollution control processes.

LEARNING OUTCOMES

- Apply first principles of engineering and science relevant to air pollutant emission and control
- Develop treatment options to control gaseous and particulate air pollutants and meet applicable regulations
- Predict and evaluate the performance of air pollution control devices

COURSE INFO

CIV E 729C ENVIRONMENTAL FATE PROCESSES

COURSE OBJECTIVES

The course's primary objective is for students to understand the processes that govern a compound's fate in the environment. In particular, students will learn the important physical, chemical, and biological processes that influence a compound's movement between air, water, and soil.

LEARNING OUTCOMES

- Demonstrate a comprehensive understanding of the physical, chemical, and biological processes that govern the fate of compounds in various environmental media, including air, water, and soil.
- Analyze and predict how different environmental processes influence the movement and distribution of compounds across air, water, and soil interfaces.

CIV E 729D AIR QUALITY MODELING

COURSE OBJECTIVES

This course provides a comprehensive introduction to air pollution modeling techniques, covering basic concepts and advanced technologies. Students will explore various models used to predict the dispersion of pollutants, assess their impact on air quality, and understand the dynamics of atmospheric pollutants. Furthermore, the course integrates machine learning to enhance traditional modeling approaches, offering insights into cutting-edge research and future directions in air pollution management. Through a blend of theoretical knowledge and hands-on exercises, participants will gain the modeling skills in order to address comprehensive environmental challenges and contribute to the development of sustainable solutions.

LEARNING OUTCOMES

By the end of this course students will have:

- A comprehensive understanding of air quality fundamentals and modeling approaches. This includes knowledge of key air pollutants, criteria for air quality assessment, and the emission, transport, removal, and life cycle of atmospheric pollutants
- Proficiency in identifying various air quality models for application and evaluation purposes
- Practical skills in employing Python to develop personalized models for simulating transport processes
- The capability to apply established air quality models for addressing real-world problems
- The skills to create predictive models for atmospheric pollutants using machine learning techniques to analyze sources and components using Python

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 DIRECTED RESEARCH PROJECT **ENVIRONMENTAL**

The Department of Civil and Environmental Engineering offers the Capstone project course to M.Eng. students in the Environmental Engineering stream.

Students will complete directed research projects as part of this course 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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