Water and Wastewater Treatment Operations

MACPHAIL SCHOOL OF ENERGY

Overview

The Water and Wastewater Treatment Operations program is designed to provide you with the essential knowledge and practical skills required for a successful career in the water and wastewater industry.

This program, crafted by industry professionals, blends in-class theory with hands-on training to prepare you for the Alberta Water and Wastewater Operators (AWWOA) and Alberta Boiler and Safety Association (ABSA) Fourth-Class Power Engineering certifications.

As a student, you will:

- learn the science behind water and wastewater treatment, including water chemistry, microbiology and the physical treatment processes necessary to meet stringent environmental safety and public health standards
- complete extensive laboratory and fieldwork, allowing you to gain practical experience in the operation of treatment facilities, maintaining equipment and performing critical water quality tests
- learn how to troubleshoot and understand the regulatory and environmental issues related to water and wastewater management
- learn to operate and maintain boilers, steam systems, turbines, pumps, valves, plant water treatment systems, instrumentation and other plant equipment related to the water and wastewater domain.

The program often includes interaction with industry professionals and potential employers, offering networking opportunities and insights into current industry practices.

Water treatment and power engineering certifications

Water and wastewater treatment operators work in municipal water treatment facilities, industrial water and wastewater operations, equipment manufacturing, steam generation, power generation, water recycling, environmental consultancy, and companies specializing in emerging water technologies.

As a graduate, you can pursue various roles such as junior water/wastewater operator, fourth-class power engineer in municipal or industrial settings, or sales representative in water treatment technologies once fully certified.

Through in-class related lab experience and recognized work experience, you'll be prepared to write industry-required ABSA certification exams for Fourth Class Power Engineering and AWWOA Small Systems plus Level 1 Water/Wastewater Treatment certification.

By the end of this one-year program, you'll be well-equipped to start your water and wastewater treatment career.

Traits, skills and aptitudes

Water and wastewater treatment operators tend to be objective, innovative, detail-oriented and methodical.

You need:

- a strong sense of workplace health and safety
- good hearing, eyesight and colour vision
- good health and stamina
- the ability to climb ladders, lift, bend and work in awkward positions
- manual dexterity
- mechanical interest and aptitude
- good math skills
- good speaking, reading and writing skills
- a careful and responsible approach to their work
- a strong work ethic.

You should enjoy using tools and instruments, studying test results and instrument readings, taking a systematic, step-by-step approach to collecting and analyzing samples, and providing reliable feedback to team members and leaders.

Professional designations and certifications

This program will prepare you to apply for the following certifications:

- Alberta Water and Wastewater Operators (AWWOA) Small Systems and Level 1
- Alberta Boiler and Safety Association (ABSA) Fourth Class Power Engineering level.

You must write the exams and complete the required plant-time hours to earn your certifications.

Credentials

After successfully completing this program, you'll receive a SAIT Water and Wastewater Treatment Operations certificate.

Practicum, Co-op and Work Integrated Learning

You'll participate in a four-month, 600-hour practicum during your final semester.

Your practicum will take place at a company or organization involved in water treatment, water distribution, wastewater collection and wastewater treatment systems.

Admission requirements

Applicants educated in Canada

Applicants must demonstrate English language proficiency and completion of the following courses or equivalents:

- at least 50% in English Language Arts 30-1 or English Language Arts 30-2, and
- at least 50% in Math 30-1 or 60% in Math 30-2, and
- at least 50% in Chemistry 30, and
- at least 50% in Biology 20.

SAIT accepts high school course equivalents for admission for applicants educated outside Alberta.

Applicants educated outside of Canada

All applicants who were educated outside of Canada must demonstrate English language proficiency and provide proof they meet the program admission requirements outlined above with an international document assessment. Find accepted educational documents and assessment options.

SAIT may also accept courses completed at certain international post-secondary institutions.

Costs

2025/26 tuition and fees

The following estimated costs are effective as of July 1, 2025.

The estimated total cost of tuition and fees is based on the suggested schedule of study. Following a modified schedule will impact the fees you pay per semester and may alter final costs.

Domestic Students

Year	Number of semesters	Tuition fees	Additional fees	Total per year
1	2.5*	$19,239	$1,905.75	$21,144.75

Year	Number of semesters	Tuition fees	Additional fees	Total per year
			Total cost:	**$21,144.75**

The estimated total cost of tuition and fees for domestic students is based on the recommended course load per year.

*.5 indicates a combination of full-time semester(s) and part-time semester(s) in the same academic year. In many cases, students are completing a practicum during their part-time semester. Part-time students are those taking less than nine (9) course credits in a semester. You are not eligible for the UPass during a part-time semester.

International Students

The program total is based on the estimated amount you will pay if you enter this program during the 2025/26 academic year. The program total amount listed on your letter of admission may appear higher. This amount is your maximum tuition guarantee for the program. SAIT will not exceed this maximum, regardless of changes in tuition and fees between academic years.

Year	Number of semesters	Tuition fees	Additional fees	Total per year
1	2.5*	$26,400	$1,905.75	$28,305.75
			Total cost:	**$28,305.75**

The estimated total cost of tuition and fees for international students is based on the recommended course load per year.

*.5 indicates a combination of full-time semester(s) and part-time semester(s) in the same academic year. In many cases, students are completing a practicum during their part-time semester. Part-time students are those taking less than nine (9) course credits in a semester. You are not eligible for the UPass during a part-time semester.

Books and Supplies

Books and supplies are approximately $1,000 - $1,500 per full-time year.

This is a bring-your-own-device program with a standard computer hardware and software requirement. See the specific requirements on our computers and laptops page.

Find your booklist on the SAIT Bookstore's website. The booklist will be available closer to the program start date. Can't find your program or course? The bookstore didn't receive a textbook list. Contact your program directly to determine if they're still refining course details or if you're in luck; no textbook purchase is required this term.

The courses below will require Power Engineering Fourth Class Textbook Set - Part A, Part B and Academic Supplements from PanGlobal.

- PWEN 251
- PWEN 262
- PWEN 273

PWEN 274 will require Power Engineering Fourth Class Textbook Set - Part B and Academic Supplements from PanGlobal.

You are **strongly encouraged** to have a driver's license by the end of your first semester.

Required personal protective equipment (PPE)

The industry-approved PPE you'll need will be discussed during your first few days of classes.

You'll need a lab coat and CSA-approved safety glasses (with UVEX and side shields) to enter the chemistry labs. **Hard hats are required to be worn in the lab**.