

# POWER ENGINEERING TECHNOLOGY

**Program:** PETY

**Credential:** Ontario College Advanced Diploma, Co-op

**Delivery:** Full-time

**Work Integrated Learning:** 1 Co-op Work Term + 1 Field Placement

**Length:** 5 Semesters, plus 1 work term

**Duration:** 2 Years

**Effective:** Fall 2025

**Location:** Owen Sound

## Description

Power Engineers operate high-energy industrial processes found in power plants in Canada and across the world. Power Engineers ensure that steam production, electrical generation, refrigeration and gas compression is safe, reliable, and efficient.

As a power engineering student, you will learn in classrooms, labs, and using simulation. In the classroom you learn about power industry equipment design and the applied sciences that explain how machines work. You will get hands-on experience working in our on-site TSSA registered high-pressure steam power plant. You will operate a steam boiler, a refrigeration chiller, and a steam prime mover. You will also learn practical maintenance skills while working on pumps, compressors, valves and piping in our power systems lab. You will learn to operate and troubleshoot power plant processes in our power plant simulation lab. On your CO-OP you will work in industry and apply your academic knowledge.

Power Engineering Technology (Coop) is an approved TSSA Operating (Power) Engineer training program for 4<sup>th</sup> and 3<sup>rd</sup> Class certifications. Graduates can complete our program with a nationally recognized power engineering certification, coop work experience and the skills needed to be successful in the power industry.

## Career Opportunities

Graduates of this program may find rewarding careers as Power or Operating Engineers in a wide variety of industries.

Graduates may work as Operating Engineers at TSSA regulated facilities such as power generating plants, heating plants, industrial refrigeration and gas compression facilities. Food processing, manufacturing, and natural resource extraction and processing are areas in which students may find employment.

Power Engineers are also employed in industries such as nuclear power, clean energy, and chemical processing.

## Program Learning Outcomes

The graduate has reliably demonstrated the ability to:

1. work in accordance with occupational safety procedures to minimize risk and enhance personal and public safety;
2. evaluate and solve complex technical problems related to power engineering technology and plant systems by applying the principles of mathematics and science;

3. perform tasks related to power engineering and plant administration in accordance with relevant laws, policies, ethical principles, procedures and industry standards;
4. communicate information effectively and accurately by evaluating, translating and interpreting relevant drawings and other related documents;
5. apply principles of operation for process equipment and electrical systems including boilers, prime movers, refrigeration systems, and associated auxiliaries to ensure safety and efficiency;
6. implement strategies that mitigate the effects of power generation on the environment;
7. utilize instrument and control systems to support the safe and efficient operations of a power plant;
8. outline accepted standards and practices of metallurgy, welding and testing of metals for quality control inspections in power plant operations;
9. manage power plant operations, equipment and personnel in a simulated power plant environment;
10. relate effectively to co-workers, subordinates and supervisors in the work environment.

## Practical Experience

All co-operative education programs at Georgian contain mandatory work term experiences aligned with program learning outcomes. Co-op work terms are designed to integrate academic learning with work experience, supporting the development of industry specific competencies and employability skills.

Georgian College holds membership with, and endeavours to follow, the co-operative education guidelines set out by the Co-operative Education and Work Integrated Learning Canada (CEWIL) and Experiential and Work-Integrated Ontario (EWO) as supported by the Ministry of Colleges and Universities.

Co-op is facilitated as a supported, competitive job search process. Students are required to complete a Co-op and Career Preparation course scheduled prior to their first co-op work term. Students engage in an active co-op job search that includes applying to positions posted by Co-op Consultants, and personal networking. Co-op work terms are scheduled according to a formal sequence that alternates academic and co-op semesters as shown in the program progression below.

Programs may have additional requirements such as a valid driver's license, strong communication skills, industry specific certifications, and ability to travel. Under exceptional circumstances, a student may be unable to complete the program progression as shown below. Please refer to Georgian College Academic Regulations for details.

International co-op work terms are supported and encouraged, when aligned with program requirements.

Further information on co-op services can be found at [www.GeorgianCollege.ca/co-op](http://www.GeorgianCollege.ca/co-op) (<https://www.georgiancollege.ca/co-op/>)

## Program Progression

The following reflects the planned progression for full-time offerings of the program.

## Fall Intake

- **Sem 1:** Fall 2025
- **Sem 2:** Winter 2026
- **Work Term 1:** Summer 2026
- **Sem 3:** Fall 2026
- **Sem 4:** Winter 2027
- **Sem 5:** Summer 2027

## Articulation

A number of articulation agreements have been negotiated with universities and other institutions across Canada, North America and internationally. These agreements are assessed, revised and updated on a regular basis. Please contact the program co-ordinator for specific details if you are interested in pursuing such an option. Additional information can be found on our website at <http://www.georgiancollege.ca/admissions/credit-transfer/>

## Admission Requirements

- [Ontario Secondary School Diploma \(OSSD\) or equivalent, mature student status](#)
- Grade 12 English (C or U)
- Grade 12 Mathematics (C or U)
- And one of:
  - Grade 12 Physics (C or U)
  - Grade 12 Chemistry (C or U)
  - Grade 11 Chemistry (U)

Mature students, non-secondary school applicants (19 years or older), and home school applicants may also be considered for admission. Eligibility may be met by applicants who have taken equivalent courses, upgrading, completed their GED, and equivalency testing. For complete details refer to: [www.georgiancollege.ca/admissions/academic-regulations/](http://www.georgiancollege.ca/admissions/academic-regulations/) (<https://www.georgiancollege.ca/admissions/academic-regulations/>)

Applicants who have taken courses from a recognized and accredited post-secondary institution and/or have relevant life/learning experience may also be considered for admission; refer to the Credit for Prior Learning website for details: [www.georgiancollege.ca/admissions/credit-transfer/](http://www.georgiancollege.ca/admissions/credit-transfer/) (<https://www.georgiancollege.ca/admissions/credit-transfer/>)

## Graduation Requirements

- 33 Program Courses
- 2 Communications Courses
- 3 General Education Courses
- 1 Field Placement
- 1 Co-op Work Term

## Graduation Eligibility

To graduate from this program, the passing weighted average for promotion through each semester, from year to year, and to graduate is 60%. Additionally, a student must attain a minimum of 50% or a letter grade of P (Pass) or S (Satisfactory) in each course in each semester unless otherwise stated on the course outline.

## Program Tracking

The following reflects the planned course sequence for full-time offerings of the Fall intake of the program. Where more than one intake is offered contact the program co-ordinator for the program tracking.

Semester 1		Hours
Program Courses		
CHEM 1010	Chemistry and the Environment	42
ELEC 1009	Electricity and Controls	70
PENG 1007	Introduction to Power Engineering	28
PENG 1008	Power Engineering Sciences	56
PENG 1013	Power Plant Communications	28
PENG 1014	Power Plant Simulation 1	14
PENG 1019	Power Plant Essentials	70
WETC 1010	Welding Techniques	42
<b>Hours</b>		<b>350</b>
Semester 2		
Program Courses		
PENG 1006	Power Plant Operations	84
PENG 1011	Prime Movers and Engines	42
PENG 1016	Power Engineering Skills Lab 1	42
PENG 1017	Power Engineering Skills Lab 2	28
PENG 1018	Power Plant Simulation 2	14
HRAC 1001	Refrigeration and Air Conditioning	70
Communications Course		
Select 1 course from the communications list during registration.		42
General Education		42
Select 1 course from the General Education list during registration		
<b>Hours</b>		<b>364</b>
Semester 3		
Program Courses		
CHEM 2011	Power Engineering Chemistry	42
ELEC 2029	Process Controls and Instrumentation	70
PENG 2010	Thermodynamics	42
PENG 2012	Power Plant Simulation 3	14
PENG 2022	Power Engineering Math and Mechanics	42
PENG 2023	Power Plant Piping	84
Communications		
COMM 2020	Technical Communication	42
<b>Hours</b>		<b>336</b>
Semester 4		
Program Courses		
CHEM 2012	Applied Chemistry for Power Engineers	28
ELEC 2027	Power Engineering Electricity	42
PENG 2015	Project Management and Plant Administration	42
PENG 2024	Advanced Power Plant Operations	98
PENG 2025	Power Engineering Pumps and Compressors	56
PENG 2026	Clean Energy	28
PENG 2027	Power Plant Troubleshooting	14
General Education Courses		
Select 1 course from the general education list during registration.		42
<b>Hours</b>		<b>350</b>
Semester 5		
Program Courses		
PENG 2018	Advanced Refrigeration and Air Conditioning	50
PENG 2019	Advanced Prime Movers and Engines	50
PENG 2021	Power Plant Simulation 4	20
PENG 2028	Power Engineering Machine Shop Skills	30
PENG 2029	Nuclear Power in Canada	30
PENG 2030	Power Engineering Advanced Thermodynamics	20

## Field Placement

PENG 3008	Power Engineering Work Integrated Learning	160
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## General Education

Select 1 general education course from standard list (online - 14 weeks)	42
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<b>Hours</b>	<b>402</b>
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<b>Total Hours</b>	<b>1802</b>
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<b>Co-op Work Term</b>	<b>Hours</b>
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COOP 1030	Power Engineering Work Term (occurs after Semester 2)	560
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<b>Hours</b>	<b>560</b>
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<b>Total Hours</b>	<b>560</b>
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## Graduation Window

Students unable to adhere to the program duration of two years (as stated above) may take a maximum of four years to complete their credential. After this time, students must be re-admitted into the program, and follow the curriculum in place at the time of re-admission.

**Disclaimer:** *The information in this document is correct at the time of publication. Academic content of programs and courses is revised on an ongoing basis to ensure relevance to changing educational objectives and employment market needs.*

*Program outlines may be subject to change in response to emerging situations, in order to facilitate student achievement of the learning outcomes required for graduation. Components such as courses, progression, coop work terms, placements, internships and other requirements may be delivered differently than published.*