

# HEATING, REFRIGERATION AND AIR CONDITIONING TECHNICIAN

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**Program:** HRAC

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

**Delivery:** Full-time

**Work Integrated Learning:** 1 Co-op Work Term

**Length:** 4 Semesters, plus 1 work term

**Duration:** 2 Years

**Effective:** Fall 2023

**Location:** Barrie

## Description

Students gain the required skills to install, service, and maintain the environmental systems for residential buildings, including working with a variety of gas appliances, as well as an introduction to refrigeration and air conditioning. Students examine energy efficient and environmentally friendly approaches; and read, utilize, and produce Heating, Refrigeration, and Air Conditioning (HRAC) drawings using industry standard software. Students gain the required skills to obtain the Technical Standards and Safety Authority (TSSA) Gas Technician 2 (G.2) exams in order to become a licensed gas technician.

## Career Opportunities

Graduates are primarily prepared for a career as a gas technician. However, employment may also be found in the areas of technical support and sales within the HRAC industry. Graduates are introduced to transferable practical skills, as well as industry relevant applied math and science, in order to facilitate the transition into a variety of other trades (such as sheet metal, air conditioning, refrigeration, plumbing, and pipe fitting). For those who want to work in these trades, an apprenticeship is required after graduation.

## Program Learning Outcomes

The graduate has reliably demonstrated the ability to:

1. relate effectively to heating, refrigeration, and air conditioning supervisors, coworkers, and customers;
2. work safely and in accordance with all applicable acts, regulations, legislation, and codes to ensure personal and public safety;
3. select and use a variety of heating, refrigeration, and air conditioning tools and equipment safely and properly;
4. solve math and applied science problems required to effectively install and maintain heating, refrigeration, and air conditioning systems, and associated components;
5. prepare and interpret electrical, mechanical, and piping drawings;
6. install, service, and troubleshoot heating, refrigeration, air conditioning systems, and associated components;
7. develop strategies for ongoing personal and professional development, which will lead to enhanced work performance and career opportunities, and keep pace with industry changes;
8. employ environmentally sustainable practices within the profession;

9. apply basic entrepreneurial strategies to identify and respond to new opportunities.

## 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/>)

## External Recognition

This program is accredited by the Canadian Association for Co-operative Education.

## Program Progression

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.

### Fall Intake

- **Sem 1:** Fall 2023
- **Sem 2:** Winter 2024
- **Sem 3:** Summer 2024
- **TSSA G2 Exam:** Summer 2024
- **Work Term 1:** Fall 2024
- **Sem 4:** Winter 2025

## 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 <https://www.georgiancollege.ca/admissions/credit-transfer/> (<http://www.georgiancollege.ca/admissions/credit-transfer/>)

## Admission Requirements

OSSD or equivalent, with

- Grade 12 English (C or U)
- Grade 12 Mathematics (C or 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/>)

## Additional Information

Gas Technician work in Ontario requires Gas Technician license (Ontario Certificate of Qualification), which is governed by Technical Standards and Safety Authority (TSSA). The college facilitates Gas Technician 3 (G.3) and Gas Technician 2 (G.2) Ontario Certificate of Qualification Examinations on campus at the end of the first and third semesters, respectively. The cost of each examination is not included in the tuition fee.

Students must have successfully completed the TSSA Gas Technician 3 (G.3) exam prior to going out on their co-op work term.

Gas Technician (GAST) program students wanting to transfer to the Heating, Refrigeration and Air Conditioning (HRAC) program are required to:

- meet graduation requirements of the Gas Technician (GAST) program
- meet the admission requirements of the Heating, Refrigeration and Air conditioning (HRAC) program including a 12C or U math course or equivalent
- complete and submit a request for program change form

Successful applicants will be exempted from the first 3 semesters of the Heating, Refrigeration and Air Conditioning (HRAC) program.

## Graduation Requirements

- 18 Program Courses
- 2 Communications Courses
- 3 General Education Courses
- 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

Semester 1		Hours
Program Courses		
ELEC 1010	Introduction to Electricity	70
GAST 1003	Introduction to Gas Appliances	70
GAST 1013	Professional Practices	28
GAST 1014	Piping and Tubing Systems	28
Communications Course		
Select 1 course from the communications list during registration.		42
General Education Course		
Select 1 course from the general education list during registration.		42
<b>Hours</b>		<b>280</b>
Semester 2		
Program Courses		
ELEC 1011	Basic Electricity and Controls	56
FITN 1002	Fitness and Wellness	42
GAST 1015	Gas Appliances	70
GAST 1017	Venting	28
GAST 1020	Buildings and Air Handling	28
Communications Course		
Select 1 course from the communications list during registration.		42
<b>Hours</b>		<b>266</b>
Semester 3		
Program Courses		
ELEC 1012	Electrical Troubleshooting Applications	28
GAST 1021	Piping, Forced Air and Space Heating	70
GAST 1022	Water Heaters and Hydronic Heating	70
HURM 1000	Human Resources Management Foundations	42
General Education Course		
Select 1 course from the general education list during registration.		42
<b>Hours</b>		<b>252</b>
Semester 4		
Program Courses		
DRFT 2003	Drafting Techniques	42
HRAC 2000	Refrigeration and Air Conditioning 1	70
MKTG 2033	Professional Edge	42
MATH 1007	Mathematics Techniques	42
SCIE 2001	Heating and Air Conditioning Science	56
General Education Course		
Select 1 course from the general education list during registration.		42
<b>Hours</b>		<b>294</b>
<b>Total Hours</b>		<b>1092</b>
Co-op Work Term		
COOP 1029	HRAC Work Term (occurs after Semester 3)	560
<b>Hours</b>		<b>560</b>
<b>Total Hours</b>		<b>560</b>

## 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.*