



SCHOOL OF SKILLED TRADES,  
APPRENTICESHIP & RENEWABLE  
TECHNOLOGY (START)  
2014-2015

HEATING, VENTILATION & AIR  
CONDITIONING

PROGRAM GUIDE



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*Please note the following important information:*

*Durham College strives to ensure the accuracy of the information in this publication. Please note that the academic curriculum is continually reviewed and revised to ensure program quality and relevancy. As such, the college reserves the right to modify or cancel any course, program, fee, procedure, timetable or campus location at any time. Please consult our website at <http://www.durhamcollege.ca> for the most current information.*

June 2014

## Welcome Students - A Message from the Dean

Welcome to Durham College's School of Skilled Trades, Apprenticeship, Renewable Technology and Centre for Food at Whitby. You have chosen wisely to attend Durham College, faculty and staff are committed to helping you successfully achieve your goals.

To do this, our faculty, who are dedicated professionals chosen from your field of study, have developed relevant programs of study and look forward to sharing their experience with you to help you achieve success in your program.

The course of study you have chosen will provide you with a mix of both theoretical and hands-on activities that are appropriate to your career field. Our classroom and shop facilities are well equipped and designed to support your learning experience. Your time at Durham College is an opportunity for concentrated study to prepare for your career. Please use your time here to your best advantage.

Durham College takes pride in our mission to provide a progressive and motivating learning environment to produce exceptional graduates who meet industry expectations. If at any time you require help please feel free to approach our faculty and staff for assistance. Your success matters to us!

Welcome

A handwritten signature in black ink, reading "Darrin Caron". The signature is written in a cursive style with a large, prominent initial 'D'.

Darrin Caron  
Dean, School of Skilled Trades, Apprenticeship & Renewable Technology

## **Welcome Students - A Message from the Vice President, Academic**

Congratulations on choosing Durham College and taking a very important step in preparing for your future. Durham College is known for high quality programs, leading edge technology, an award winning library and a student-centered approach to learning. Supporting our mission that the student experience comes first, Durham College is committed to providing students with quality learning experiences and support in finding fulfillment in education, employment and lifelong learning.

Our programs are continually shaped by market needs and delivered by exceptional teachers with real-world experience. The program you have chosen has been designed to help you develop the necessary skills and knowledge to support your success in your chosen career path. Our dedicated and professional staff and professors are committed to helping you achieve your educational goals and your career aspirations.

Durham College strives to be accountable to students and employers through the preparation of work-ready graduates who will continue to live our “success matters” focus in their professional work environment.

We are pleased you have chosen to study at Durham College and we look forward to supporting your learning journey – work hard, have fun, enjoy your college experience and campus life.

I wish you much success with your studies.

A handwritten signature in black ink that reads "Judy Robinson". The signature is written in a cursive, flowing style.

Judy Robinson,  
Vice President, Academic

# School of Skilled Trades, Apprenticeship & Renewable Technology

## Whitby Faculty & Staff

*Individuals may be contacted by dialing directly (905) 721-2000, followed by the appropriate extension.*

Administration	Title	Phone	E-mail Address
Darrin Caron	Dean/Principal	3302	darrin.caron@durhamcollege.ca
Pam Stoneham	Associate Dean	4232	pam.stoneham@durhamcollege.ca
Julie Hauber	Administrative Assistant	3344	julie.hauber@durhamcollege.ca
Sue Moore	Manager – Academic Operations	4040	sue.moore@durhamcollege.ca
Mary Pearce	Administrative Coordinator	4025	mary.pearce@durhamcollege.ca
Shelley Chard	Student Advisor	4087	shelley.chard@durhamcollege.ca

## Program Coordinators

Kevin Keays	Construction & Hoisting Techniques	3324	kevin.keays@durhamcollege.ca
Don Fishley	Construction Carpentry-Sustainable	4202	don.fishley@durhamcollege.ca
Dave Dewar	Electrical Techniques Electrical Technician-Instrumentation & Control	4199	dave.dewar@durhamcollege.ca
Dave Watkins	Gas Technician HVAC	4175	david.watkins@durhamcollege.ca
John Platnar	Mechanical Techniques-Plumbing	4197	john.platnar@durhamcollege.ca
Clair Cornish	Mechanical Technician-Mechanical Maintenance & Controls Trades Fundamentals	3328	clair.cornish@durhamcollege.ca
Ralph Ruffo	Motive Power Technician-Service & Management	4155	ralph.ruffo@durhamcollege.ca
David Beals	Power Engineering Technician	4167	david.beals@durhamcollege.ca
Mike McKenney	Renewable Energy Technician	4178	mike.mckenney@durhamcollege.ca
Gregg Peel	Welding Techniques	4200	gregg.peel@durhamcollege.ca

## Program Description

The core curriculum of this program is standardized and accredited by the Technical Standards and Safety Authority (TSSA), the industry's regulatory body. As a student in this program you will focus on:

- Fundamentals of heating, ventilation and air conditioning
- Hot water systems and refrigeration principles
- Industry standardized design practices for residential, commercial and industrial systems
- Piping practices
- Sheet metal fabrication

You will:

- Be exposed to the computer-aided design used to develop HVAC systems including working on a wide range of furnaces, cooling systems and appliances
- Develop skills in soldering, wiring and electric circuitry for HVAC and gas installation systems

As a graduate, you will be eligible to challenge TSSA for Gas Technician 3 and Oil Burner Technician 3 certification as the theoretical and practical skills required to obtain both entry level certifications will be covered. Durham College arranges for the Gas Technician 3 and Oil Burner 3 challenge exams to be facilitated at our Whitby campus for a cost of approximately \$125 each. Exams may not be rescheduled and are non-refundable. In the event that you miss an exam, you will be responsible for arranging your own testing schedule with TSSA.

Please note:

- Although the passing standard for Durham College is 50 per cent, the passing grade on the examination and practical skills demonstration for TSSA is 75 per cent. Failure to successfully complete the exam as noted above will result in a failing TSSA grade.
- Payment for the above exams must be made at the Office of the Registrar, Whitby campus by the deadline date provided to you in class. Receipts must be presented at time of examination and no exceptions will be allowed.
- Students should check with TSSA for details regarding certification.

## Program Learning Outcomes

### Heating, Refrigeration and Air Conditioning Techniques Program

*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 hand tools and operate test equipment for their intended purposes.
4. Solve routine heating, refrigeration, and air conditioning problems and perform calculations by applying the fundamentals of mathematics and physics.
5. Read, develop, and interpret various drawings and utilize the information to follow the proper sequence of operations for heating, refrigeration, air conditioning systems, and associated components.
6. Assist in the installation and start-up operations of heating, refrigeration, and air conditioning systems under the supervision of a certified technician.
7. Identify strategies for ongoing personal and professional development that will lead to enhanced work performance and career opportunities, and keep pace with industry changes.

*Note:* The vocational learning outcomes have been numbered as a point of reference; numbering does not imply prioritization, sequencing, nor weighting of significance.

June 28<sup>th</sup> 2008 (Date Updated)  
MTCU CODE: 45500

**HEATING, VENTILATION & AIR CONDITIONING TECHNIQUES**

COURSE NAME	MOD	CODE	PREREQUISITE	COREQUISITES	LECT	LAB	ALT.	FIELD
					HR	HR	DEL.	PLMT
							HR	.HRS
<b>SEMESTER 1</b>								
HVAC CONSTRUCTIONS BLUEPRINT		BLUE 1412			2	0	0	
COMMUNICATIONS		COMM 2400			2	0	0	
HVAC GAS TECHNICIAN 3 PRACTICAL		GT3P 1401			0	4	0	
HVAC GAS TECHNICIAN 3A THEORY		GT3T 1400			6	0	0	
HVAC HEAT SYSTEMS		HEAT 1402			2	0	0	
MATHEMATICS 1		MATH 1424			2	0	0	
HVAC SHEET METAL FABRICATION 1		SMF 1401			0	3	0	
					<b>14</b>	<b>7</b>	<b>0</b>	
<b>SEMESTER 2</b>								
HVAC COOLING SYSTEMS		CS 2400			2	0	0	
HVAC GAS TECH 3 PRACTICAL		GT3P 2400	GT3P 1401		0	4	0	
HVAC GAS TECH 3B THEORY		GT3T 2400	GT3T 1400		4	0	0	
HVAC OIL BURNER TECHNICIAN 3 PRACTICAL		OB3P 2400			0	2	0	
HVAC OIL BURNER TECHNICIAN 3 THEORY		OB3T 2400			4	0	0	
HVAC SHEET METAL FABRICATION 2		SMF 2401	SMF 1401		0	3	0	
HVAC VENTING PRACTICES		VENT 2401			2	0	0	
					<b>12</b>	<b>9</b>	<b>0</b>	

**NOTES:**

**ELE - ELECTIVE** - Students may take one or many subjects, depending on the requirements of their program. **ELET** - represents a typical subject load and IS included in the total hours per week, to reflect the total hours per week required.

**OPT1/OPT2/OPT3 - OPTIONS** - Students choose subjects. **OPT1** subjects are included in total hours per week.

**G - GENERAL EDUCATION** - Subjects marked at the left margin with **G** are "General Education" subjects.



## **Program Specific Academic Policies**

**STUDENT CONDUCT:** Students are expected to conduct themselves in a professional manner while on campus and off campus. Students are expected to comply with the program's professional conduct, appearance, and safety expectations found in this Program Guide and to understand and comply with off-site policies and procedures. It is everyone's responsibility to have respect for their peers.

**CELL PHONES/PAGERS:** Electronic communication devices will be turned off and not used in the classroom unless part of the objectives or learning activities of a course or lesson. Students who disrupt a class to the detriment of the other members of the class will be asked to leave.

**MISSED TESTS:** The opportunity to write a missed test is discretionary and may be granted based on meeting the following criteria: notifying the professor prior to the scheduled test time; submitting appropriate documentation (e.g. note from doctor, dentist etc) to validate the absence to the subject professor, and meeting with the professor.

**PEER INTERACTION AND FEEDBACK:** Students are expected to participate with their peers in active learning activities and demonstrations. These demonstrations provide students with opportunities for written/verbal feedback from their peers, instructor, and others on the application of learned course material.

**ATTENDANCE:** Students are expected to attend all lecture and practical sessions for this course. Failure to do so could result in serious gaps in knowledge that may result in safety breaches in the shop environment. If the professor feels that a student is not being "safe" in the shop, the professor will remove the student from the environment.

Students must wear PPE in the shop environment and follow safety guidelines. Failure to do so will result in the student being asked to leave and negate their opportunity to complete projects/assessments.

## Academic Advising - Student Advisors

Each school provides a student advisor(s) to help you reach your full academic potential. These representatives can assist you with: accessing other college services; developing academic plans to promote success in the event of failed subjects or a low GPA; finding equivalent credits; identifying career goals and making sound academic decisions; making decisions regarding full- and part-time studies; reviewing graduation requirements; selecting electives and options; setting up academic plans; or transferring to another program. To view contact information for your Student Advisor, please visit:

<http://www.durhamcollege.ca/student-experience/helping-you-succeed/academic-support-resources/academic-advising>

## Academic Integrity

Academic integrity refers to the pursuit of scholarly activity in an open, honest and responsible manner. Acts that undermine academic integrity, such as plagiarism, cheating and misrepresentation of work, contradict Durham College's core values.

To ensure the highest academic standards, students are accountable for the work they produce, and student work must be the product of his or her efforts. Durham College has purchased a license with Turnitin.com, an online service to detect unoriginal work and citation errors. The Academic Integrity Policy and Procedure documents (<http://www.durhamcollege.ca/academicpolicies>) provide a comprehensive explanation of Durham College's expectations regarding academic integrity.

## Aegrotat

Aegrotat refers to a 'compassionate pass' in a course in which, due to **emergency circumstances** related to health and wellness, a student was unable to complete all of the evaluation requirements. Emergency circumstances that may warrant the designation of an Aegrotat include, but are not limited to: injury, illness and/or bereavement. Documentation supporting the request for an Aegrotat designation may be required.

The awarding of an Aegrotat credit is noted in a student's transcript as AEG and is therefore not included in the calculation of a student's grade point average. A student shall receive Aegrotat standing only once in a five year period.

Further information about Aegrotat standing can be found in the Aegrotat Policy and Procedure documents, please visit the following link:

<http://www.durhamcollege.ca/academicpolicies>

## **Centre for Students with Disabilities**

The Centre for Students with Disabilities (CSD) at Durham College provides services to students with disabilities to ensure that equal access is available to all aspects of the academic environment. These services are designed in accordance with the Ontario Human Rights Code and the Accessibility for Ontarians with Disabilities Act. Our services are confidential. Please visit the following link to view valuable information regarding the CSD:

<http://durhamcollege.ca/student-experience/helping-you-succeed/centre-for-students-with-disabilities>

## **Continuing Education Course Book**

If you are unable to access a day-time course (timetable conflicts, wish to repeat a course, etc.) or want to get a head start on your next semester, discuss your options with your Student Advisor. To view comprehensive information regarding Continuing Education offerings, please visit the following link:

<http://www.durhamcollege.ca/academic-schools/school-of-continuing-education>

## **Course Outlines**

For each course, a Course Outline that describes course learning outcomes, course content, learning activities, evaluation methods, timelines and support resources is available online. Please note that students are expected to download copies of their course outlines from MyCampus prior to the first class in each course. Instructions for downloading are located on MyCampus at:

<http://www.durhamcollege.ca/mycampus>

Please visit the following link to view the Course Outlines Policy and Procedure documents: <http://www.durhamcollege.ca/academicpolicies>

## **Credit Transfer Information**

Durham College is dedicated to helping you build upon your previous education. If you have studied previously at Durham College or another recognized post-secondary institution, you may be eligible to receive credit for the courses you have successfully completed. Please view the following link for credit transfer information: [www.durhamcollege.ca/credittransfer](http://www.durhamcollege.ca/credittransfer)

## **Durham College Mission, Vision and Values**

Our mission, vision, values were created to help ensure the success of our students, staff and faculty. Please view our guiding principles at the following link: <http://www.durhamcollege.ca/about-us/corporate-links/governance/mission-vision-and-values>

## **Essential Employability Skills**

Essential Employability Skills (EES) are skills that, regardless of a student's program or discipline, are critical for success in the workplace, in day-to-day living, and for lifelong learning. Please view the following link for further information:

<http://www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/essential.html>

## **General Education**

The Ministry of Colleges and Universities requires all Ontario college students enrolled in a 2-year Ontario College Diploma or a 3-year Ontario College Advanced Diploma program to successfully complete three or more General Education (GNED) courses prior to graduation. For more information about GNED course selection, a full listing of GNED electives (with course descriptions), and how to receive GNED credits for prior post-secondary studies, please visit the General Education website at:

<http://www.durhamcollege.ca/academic-schools/school-of-interdisciplinary-studies-employment-services/general-education>

## **Important Dates**

Durham College strives to keep you informed of all important dates throughout the academic year. Please review the 2014-2015 important dates that includes fee payments, web registration, add/drop, exam dates etc. You can find this information online, in the Durham College handbook and on MyCampus. Please review MyCampus for important updates and reminders on important dates.

## **Learning Management System Usage (LMS)**

Professors are expected to use LMS or DC Connect to support student learning. As per the Learning Management System Usage procedure, faculty will post and reveal all marks to their students on an ongoing basis. To view the LMS Usage Policy and Procedure, please visit the following link:

<http://www.durhamcollege.ca/about-us/corporate-links/governance/policies>

## **Library**

The Library is here to help you succeed! Stop by for help to research a topic, complete an assignment, or when you just need a quiet place to study. You may visit the library virtually at <http://www.durhamcollege.ca/library> or to view information regarding locations, hours, and more, please visit the following link:

<http://www.durhamcollege.ca/student-experience/learning-spaces/library/about-the-library>

## Missed Final Examinations

A final examination is a discretely designed assessment administered in Week 15 of a 14 week semester. Students who, as a result of **non-emergency circumstances**, miss one or more final examinations during a single examination period may be eligible to apply to defer/reschedule the writing of these assessments.

To be eligible, students must have no less than a cumulative 1.5 GPA, apply for consideration using the appropriate forms and pay a fee. This privilege can only be used by a student once in a five-year period. External accreditation requirements, the availability of appropriate examination facilities and other constraints necessitate that not all courses will be eligible.

For more details, students should speak with their Student Advisor or review the Missed Final Examination Policy and Procedure documents at the following link: <http://www.durhamcollege.ca/academicpolicies>

## Pathways to Degrees

Continue your post-secondary journey and leverage your Durham College education to earn additional credentials. To learn how you can further your education, visit [www.durhamcollege.ca/pathways](http://www.durhamcollege.ca/pathways) or check out the Durham College Transfer Guide at [www.durhamcollege.ca/transferguide](http://www.durhamcollege.ca/transferguide). Additional information regarding transferring between institutions in Ontario can be found at [www.ontransfer.ca](http://www.ontransfer.ca).

## Prior Learning Assessment and Recognition (PLAR)

Prior Learning Assessment and Recognition (PLAR) is the process you can use to gain college credit(s) for learning and skills acquired through previous experiences. This may include workplace training, life experiences, self-directed study, community work, travel, hobbies and military service. By using the PLAR process, you may be able to complete a college certificate or diploma program in less time. Please view the following link for PLAR information:

<http://www.durhamcollege.ca/wp-content/uploads/plar.pdf>

## **Requirements for Promotion**

### Evaluation and Promotion:

Academic courses are evaluated using a variety of methods such as tests, essays, labs, written or verbal assignments, in-process activities, group work and/or final examinations. The evaluation criteria for each course are noted in its course outline. Students are advised to familiarize themselves with these criteria early in the semester. Please refer to the Grading and Promotion Policy and Procedures documents (<http://www.durhamcollege.ca/academicpolicies>) for a complete overview of grading and promotion practices.

### Academic Probation:

Students who are not progressing satisfactorily according to criteria published in their respective program guides may be placed on academic probation, at the discretion of the school Dean or designate. Such students may be allowed to continue their studies on a Letter of Permission (an academic student contract) which will specify conditions which must be met to continue in their programs. Students who do not meet the conditions of their academic probation may be required to withdraw from full-time studies.

## **Scholarships, Bursaries and Awards**

The Financial Aid and Awards office provides students with options to help fund their educational costs. To view valuable information, please visit the Financial Aid and Awards [Web Site](#).

## **Student Academic Learning Services (SALS)**

The Student Academic Learning Services Centre helps Durham College students to achieve their academic goals. Academic supports include: peer tutoring, learning skills services, writing skills services, English language services, and subject specific supports for math, science, and business. Please visit the following link to view valuable information regarding SALS including how to register for 24/7 online access to SALS academic resources:

<http://durhamcollege.ca/student-experience/helping-you-succeed/student-academic-learning-services-sals>

## **Student Communications**

Durham College is committed to communicating important information to you. Please view the following link to reference a comprehensive chart indicating specific vehicles. For example, social media, DC website, DC Mail, MyCampus, DC Connect, and more:

[http://www.durhamcollege.ca/wp-content/uploads/DCCares\\_StudentMatrix\\_v5.pdf](http://www.durhamcollege.ca/wp-content/uploads/DCCares_StudentMatrix_v5.pdf)

## **Student Rights and Responsibilities**

A policy and procedure is in place which articulates the rights and responsibilities of students at Durham College, and provides a framework for addressing non-academic misconduct by students. To view the Student Rights and Responsibilities Policy and procedure, please visit the following link:

<http://www.durhamcollege.ca/academicpolicies>