

PROGRAM GUIDE

Welding Engineering Technician

Faculty of Skilled Trades & Apprenticeship



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WELCOME STUDENTS

A Message from the Executive Dean and Associate Dean on behalf of the Faculty and Staff of the Faculty of Skilled Trades and Apprenticeship



It is a pleasure to welcome you to Durham College. We are committed to providing our students a high-quality programs to meet your educational needs. We wish you success as you embark on a journey towards a rewarding profession and we will do our best to support you in reaching your career goals. If you have any questions or need assistance, please ask us for help to access the many services available to support your success. Thank you for selecting Durham College.

Sincerely,
Rebecca K. Milburn, PhD
Principal of the Whitby campus and Executive Dean
Faculty of Skilled Trades & Apprenticeship



A Message from the Executive Vice President, Academic



I am so pleased to welcome you to Durham College (DC). It is an exciting time, whether you are a returning student, getting back into the swing of things, or this is your first year of college.

You have made a great choice with DC. We offer a comprehensive range of exceptional academic programs and student services. Our students develop the professional and durable skills required to realize meaningful careers and make a difference in the world.

DC continues to lead the way. We do this by supporting students, delivering excellence in teaching and learning, and providing opportunities for experiential learning and technology-enabled education. Our goal is to inspire students to create success for themselves and their communities through the best in innovative and transformative education.

As this new semester begins, it is also important to acknowledge that our world is changing at a rapid pace. By choosing to study at DC this year, you've demonstrated a willingness to adapt and grow, which will help you move forward with your studies and life. We are all learning and experiencing things in new ways, and I encourage you to keep up that momentum. Be sure to get to know your faculty members, program coordinator, student advisor, and associate dean. These individuals can provide you with valuable information and resources to support your studies and career planning. Make the most of the enriching and rewarding opportunities available to you.

We look forward to supporting your academic journey as we help to foster your success. We are confident that you will soon see why DC is one of Canada's top colleges.

Have a successful academic year!

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

Dr. Elaine Popp
Executive Vice President, Academic

Durham College (DC) Mission, Vision, and Values

Used to guide the overall direction of the college, the Strategic Plan outlines DC's mission, vision, and values and is based on our four pillars – our students, our people, our work, and our community. It is by working together, focusing on these guiding principles, that we are able to deliver quality teaching and learning opportunities that support the success of our students and faculty. Together we're leading the way. The college's strategic plan is available on the [college's website](#).

PROGRAM INFORMATION

Faculty of Skilled Trades & Apprenticeship Contact Information

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Important Dates

DC strives to keep you informed of important dates throughout the academic year. Please review the 2022-2023 important dates that include fee payment deadlines, web registration, add/drop and grade release dates, etc. You can find this information on the [college's website](#) and on [MyDC](#). Please review [MyDC](#) regularly for updates and reminders on important dates.

Program Description

This two-year program will provide students with exceptional welding skills sought by employers in the structural, pressure vessel and manufacturing industries. Students will learn from professors with vast welding experience to receive expert knowledge and practical skills that will foster their trade. This program will teach students to create and read blueprints; give them the skills of fitting metals and understanding their characteristics; equip them to work safely in the industry; and give them practical experience in weld shop and inspection methods. During the second year of this program students will manage a capstone project that will test the skills and knowledge they have learned, preparing them for a successful transition to the workplace.

This program provides an opportunity to introduce students to a field where employment opportunities are abundant, and also train them to meet the growing demands of the welding field. Students will learn traditional forms of welding such as gas metal arc welding (GMAW), flux cored arc welding (FCAW), shielded metal arc welding (SMAW), and gas tungsten arc welding (GTAW), as well as Plasma cutting and Air Arc gouging.

Graduates will be prepared to work in the manufacturing and construction sectors with the skills and knowledge to find entry level employment opportunities in a number of areas such as welding shops, manufacturers of metal products, piping and structural contractors, automotive and aircraft manufacturers, repair and maintenance services, building and construction industries, railroad and railcar industries and wind turbine manufacturers.

Note: Extra certifications may take place outside of regular class time including evenings and on weekends.

Co-Operative Education (Co-Op)

The best way to succeed in your field is to immerse yourself in it! Co-op is an excellent way to build your professional network, explore career paths and apply in-class teachings to real work situations. Co-op is a model of education that integrates academic learning with workplace learning in fields relevant to our students' academic and personal goals.

Students in the Welding Engineering Technician Diploma program will be invited to apply to the co-op option during their first academic semester. Entrance to the co-op option is limited and the processes for securing a work term are competitive. Students enrolled in the co-op option are required to complete a four-month, paid work term between the second and third semesters of their program.

Supports are available through the Experiential Learning office to assist students with securing their work terms. In addition, the Experiential Learning office is in contact with co-op students and their employers during the work terms to help with any questions. Upon completing the work term, co-op

students return to campus to complete their final two academic semesters of the program before graduating.

PROGRAM SEQUENCE

	Fall (September to December)	Winter (January to April)	Summer (May to August)
Year 1	Academic semester 1	Academic semester 2	Co-op work term
Year 2	Academic semester 3	Academic semester 4	

Program Learning Outcomes

1. Perform safe work practices in the welding trade in accordance with the Occupational Health and Safety Act (OHSA) and Regulations for Industrial Establishments.
2. Prepare and interpret drawings that would typically be used in a manufacturing and/or fabricating environment.
3. Perform trade related mathematical calculations including volume, area, estimation, geometry, ratio, measurement, weights, loads, and centering of various lifts.
4. Complete projects using the main cutting, gouging and welding processes of the fabrication industry.
5. Perform all positions in shielded metal arc welding, gas metal arc welding, flux core arc welding, gas tungsten arc welding utilizing mild steel and structural shapes with various consumables.
6. Perform open root welding on plate and pipe in all positions using the shielded metal arc welding (SMAW) process.
7. Describe and identify the common weld defects and faults using destructive and non-destructive examination and testing methods.
8. Identify and troubleshoot mechanical problems; recommend solutions for repairing and maintaining equipment to industry standard.
9. Identify the applicable code(s) or standards to be used in conjunction with each specific fabrication activity.
10. Identify and use distortion control and correction techniques as they apply to expansion and contraction forces.
11. Use appropriate lifting devices and equipment in accordance with proper (safe) techniques.

Program of Study

Welding Engineering Technician (WETN)

Course Name	Mod	Code	Prerequisites	Corequisites	Weekly Breakdown		
					Lec Hrs	Lab Hrs	FP/Alt Hrs
WETN-SEM1							
Communication Foundations		COMM 1100			2	0	1
FITTINGS I		FIT 1300			0	3	
MATHEMATICS I		MATH 1424			2	0	
RIGGING I		RIG 1300			2	1	
CONSTRUCTION SITE SAFETY		SAFE 1408			2	1	
WIRE WELDING CONCEPTS - GMAW		WELD 1300			2	0	1
WIRE WELDING PROC - GMAW		WIRE 1301			0	8	
					10	13	2
WETN-SEM2							
FITTING 2		FIT 2300	FIT 1300, WIRE 1301		0	3	
METALS I		METL 2301			2	0	
RIGGING 2		RIG 2300			1	1	
SHIELDED METAL ARC WELDING CONCEPTS - SMAW		WELD 3300		WELD 3303	2	0	
SHIELDED METAL ARC WELDING PROCESSES - SMAW		WELD 3303		WELD 3300	0	10	
ENGINEERING BLUEPRINTS I		WTAB 1401			2	0	
General Elective Credit	OPT1	GNED 0000			3	0	
					10	14	
WETN-SEM3							
FITTING 3		FIT 3300	FIT 2300, WELD 3303		0	3	
WELD SHOP PRACTICES		SHOP 1301			1	1	
WIRE WELDING CONCEPTS - FCAW		WELD 2300	WELD 1300	WIRE 2301	2	0	1
WIRE WELDING PROCESSES - FCAW		WIRE 2301	SAFE 1408, WIRE 1301	WELD 2300	0	8	
ENGINEERING BLUEPRINTS II		WTAB 2401	WTAB 1401		0	2	
General Elective Credit	OPT1	GNED 0000			3	0	
					6	14	1
WETN-SEM4							
CAPSTONE - WELDING		CAPS 4300	SPEC 0000		0	2	
FITTING 4		FIT 4300	FIT 3300, WIRE 2301		0	3	
INSPECTION METHODS		INSP 1301			3	0	
METALS 2		METL 4301	METL 2301		2	0	
WELDING ELECTIVE		WELD 2103			0	2	
PRECISION WELDING CONCEPTS - GTAW		WELD 4300		WELD 4303	2	0	
PRECISION WELDING PROCESSES - GTAW		WELD 4303		WELD 4300	0	8	
General Elective Credit	OPT1	GNED 0000			3	0	
					10	15	

Program of Study – (Co-Op)

Welding Eng Technician Co-op (WETC)

Course Name	Mod	Code	Prerequisites	Corequisites	Weekly Breakdown		
					Lec Hrs	Lab Hrs	FP/Alt Hrs
WETC-SEM1							
Communication Foundations		COMM 1100			2	0	1
FITTINGS I		FIT 1300			0	3	
MATHEMATICS I		MATH 1424			2	0	
RIGGING I		RIG 1300			2	1	
CONSTRUCTION SITE SAFETY		SAFE 1408			2	1	
WIRE WELDING CONCEPTS - GMAW		WELD 1300			2	0	1
WIRE WELDING PROC - GMAW		WIRE 1301			0	8	
					10	13	2
WETC-SEM2							
CO-OP AND CAREER PREPARATION		COOP 1000			2	0	1
FITTING 2		FIT 2300	FIT 1300, WIRE 1301		0	3	
METALS I		METL 2301			2	0	
RIGGING 2		RIG 2300			1	1	
SHIELDED METAL ARC WELDING CONCEPTS - SMAW		WELD 3300		WELD 3303	2	0	
SHIELDED METAL ARC WELDING PROCESSES - SMAW		WELD 3303		WELD 3300	0	10	
ENGINEERING BLUEPRINTS I		WTAB 1401			2	0	
Co-op Work Term 1	COOP	WETC 1000	SPEC 0000		0	0	420
					9	14	421
WETC-SEM3							
FITTING 3		FIT 3300	FIT 2300, WELD 3303		0	3	
WELD SHOP PRACTICES		SHOP 1301			1	1	
WIRE WELDING CONCEPTS - FCAW		WELD 2300	WELD 1300	WIRE 2301	2	0	1
WIRE WELDING PROCESSES - FCAW		WIRE 2301	SAFE 1408, WIRE 1301	WELD 2300	0	8	
ENGINEERING BLUEPRINTS II		WTAB 2401	WTAB 1401		0	2	
General Elective Credit	OPT1	GNED 0000			3	0	
General Elective Credit	OPT1	GNED 0000			3	0	
					9	14	1
WETC-SEM4							
CAPSTONE - WELDING		CAPS 4300	SPEC 0000		0	2	
FITTING 4		FIT 4300	FIT 3300, WIRE 2301		0	3	
INSPECTION METHODS		INSP 1301			3	0	
METALS 2		METL 4301	METL 2301		2	0	
WELDING ELECTIVE		WELD 2103			0	2	
PRECISION WELDING CONCEPTS - GTAW		WELD 4300		WELD 4303	2	0	
PRECISION WELDING PROCESSES - GTAW		WELD 4303		WELD 4300	0	8	
General Elective Credit	OPT1	GNED 0000			3	0	
					10	15	

Academic Policies

Durham College is guided by policies and procedures designed to protect its students' and employees' rights and responsibilities and meet institutional requirements, consistent with the Board of Governors' policy framework, legislative requirements, and Ministry of Training, Colleges and Universities directives. They are reflective of the college's mission, vision, and values and are positioned to support accountability and equality in a respectful post-secondary environment.

For more information, please review [Durham College's policies and procedures](#).

Academic Integrity

Academic integrity in teaching, learning, and research is fundamental to our mission and an expectation of the DC community. Acts that undermine academic integrity contradict our core values, erode educational inquiry, and diminish the quality of our scholarship and reputation.

To ensure the highest academic standards, students are accountable for the work they produce, and student work must be the product of their efforts. The [Academic Integrity Policy and Procedure](#) provides a comprehensive explanation of DC's expectations regarding academic integrity.

Academic Grading and Progression

Please refer to the ACAD 112 – [Academic Grading Policy and Procedure](#) documents for a complete overview of grading practices and ACAD 127 – [Academic Progression Policy and Procedure](#) to clearly understand the requirements necessary for a student to progress through an academic program.

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:** Electronic communication devices will be turned off and not used in the classroom unless part of a course or lesson's objectives or learning activities. 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., a note from a 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 lectures 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.
- ❖ **PERSONAL PROTECTIVE EQUIPMENT:** 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. Additional shop environment expectations and requirements will be outlined in a shop safety agreement that will be signed and kept on record. Failure to abide by the shop safety agreement will mean students will be asked to leave and negate their opportunity to complete projects/assessments.

Student Supports

Durham College offers students a variety of services to help them achieve academic success. From accessibility accommodations, financial aid, health services, and wellness coaching to student life, recreation, and career development, our knowledgeable staff provides holistic supports to help students reach their greatest potential.

Please visit the [Student Services](#) page for more information on each of the student service areas.

Academic Advising – Student Advisors

Student advisors are committed to student success and are available to help guide you through your college experience.

They can help you to:

- Identify career goals and make sound academic decisions;
- Develop academic plans to promote success in the event of failed courses or low-grade point average (GPA);
- Make decisions regarding full-time/part-time studies;
- Review graduation requirements;
- Set-up academic plans;
- Find equivalent credits.
- Transfer to another program or pathways to further education; and
- Access other college services to support student success.

To view contact information for your student advisor, visit the [student advisor's website](#)

Student Academic Learning Services (SALS)

SALS helps DC students to achieve their academic goals through free services and resources, including subject-specific support (math, accounting, biology, chemistry, physics, and statistics), academic reading and writing, learning strategies, and assistance with English language proficiency. Students also have access to peer tutoring, online resources through the [MyDC](#) landing page (under "[Learning Resources](#)"), and SALS ONLINE academic resources, videos, and quizzes in DC Connect.

Please email SALS at sals@durhamcollege.ca, or visit the [SALS website](#) for information on accessing resources and services, scheduling an appointment, registering for workshops, or sign-up to request or be a peer tutor.

Access and Support Centre

The Access and Support Centre (ASC) provides services to students who are temporarily at-risk or identified with an exceptionality, to ensure equal access to all aspects of the academic environment. The ASC provides accommodations to meet student's individual needs through assistive technology and coaching.

Working in collaboration with faculty and other service areas, the ASC team provides opportunities for academic success for all students.

For more information on services available, please visit the [ASC website](#).

Coaching

DC is pleased to offer International Coaching Federation certified wellness coaches to partner with students and facilitate growth, action, and movement towards the goals and outcomes they want to achieve. Coaching is not counseling, therapy, or academic advising. Coaching is student-focused and provides a safe, non-judgmental space to explore and work through what is getting in the way of being their best possible self. The more students put into coaching, the more they get out of it.

Wellness coaches support students by encouraging self-awareness, growth, change, and success. Focusing on student development and helping students achieve their full potential, wellness coaching involves identifying goals, strengths, barriers, motivations, expectations, and underlying beliefs. Coaches actively listen, ask thought-provoking questions that encourage self-reflection and work with students to take actions to move forward.

For more information, please visit the [Wellness Coaching website](#).