DURHAM COLLEGE
SUCCESS MATTERS

PROGRAM GUIDE

Mechanical Technician – Millwright

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.

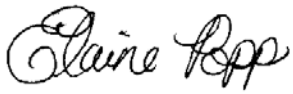
You have made a great choice with DC. We offer a comprehensive range of exceptional academic programs and student services. Our students develop the professional and durable skills required to realize meaningful careers and make a difference in the world.

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!



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

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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 program will prepare you to become a maintenance mechanic or technician by exposing you to several industries' manufacturing, production, and maintenance needs. You will develop skills in the theory and practice of machine fabrication and maintenance procedures, emphasizing the installation, service, repair, and overhaul of industrial machinery.

Successful completion of this program will enable you to:

- Work safely while performing maintenance functions in manufacturing or processing environments.
- Select, align and install a variety of mechanical power transmission components.
- Build pneumatic and hydraulic circuits following a schematic.
- Use precision measuring tools.
- Troubleshoot equipment and operate common machine tools (drills, mills, lathes, and grinders) to repair or remake machine components.
- Inspect and repair centrifugal pumps and valves.
- Plan and safely perform rigging and hoisting operations.
- Join metals using oxy-acetylene and electric arc welding techniques.
- Read and interpret mechanical, electrical, and fluid power prints and schematics.
- Use applied math to perform a variety of trade-related calculations.
- Design and interpret a conventional electrical relay ladder logic control diagram at a beginner's proficiency level.
- Design and interpret a programmable logic control diagram using offline programming techniques at a beginner's proficiency level.
- Explain the operation of AC/DC motor control systems.
- Wire up and test elementary circuits using the various devices described above.

Students wishing to challenge apprenticeship exemption exams are required to pay an examination fee.

Note: Extra certifications may take place outside regular class time, including evenings and 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 Mechanical Techniques – Millwright 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

SEPTEMBER INTAKE:

	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. Complete all work in compliance with current legislation, standards, regulations, and guidelines.
2. Apply quality control and quality assurance procedures to meet organizational standards and requirements.
3. Comply with current health and safety legislation and organizational practices and procedures.
4. Apply sustainability best practices in workplaces.
5. Use current and emerging technologies to support the implementation of mechanical and manufacturing projects.
6. Analyze and solve mechanical problems by applying mathematics and fundamentals of mechanics.
7. Interpret, prepare and modify mechanical drawings and other related technical documents.
8. Perform technical measurements accurately using appropriate instruments and equipment.
9. Manufacture, assemble, maintain and repair mechanical components according to required specifications.
10. Contribute to the planning, implementation, and evaluation of projects.
11. Manufacture, assemble, troubleshoot, maintain and repair mechanical components in

accordance with millwright guidelines and specifications.

12. Operate power transmission systems, pump systems, bearings and seals, and hydraulic and pneumatic equipment according to millwright and mechanical safety standards.
13. Set up and operate oxy-fuel, Shielded Metal Arc Welding (SMAW), and Gas Metal Arc Welding (GMAW) welding equipment to safely flame-cut, weld, braze and solder to specifications.

MTCU CODE: 55300

Note: The learning outcomes have been numbered as a point of reference; numbering does not imply prioritization, sequencing, or weighting of significance.

*See glossary

Emerging Technologies: Technologies that are not yet standard but are likely to be adopted soon. The expectation is that emerging technology will come into standard usage when the application of the technology matures.

Sustainability: Sustainability encompasses the ethical ideal that optimizes the long-term carrying capacity and vitality of three interdependent systems – environmental, social, and economical. In a manufacturing context, sustainability aims to improve quality of human life while protecting nature by engaging in non-polluting manufacturing processes, conserving energy and resources, protecting ecosystems, benefiting employees, consumers, and communities, and strengthening enterprises that foster economic growth and prosperity.

Program of Study – MTMW

Course Name	Mod	Code	Prerequisites	Corequisites	Lec Hrs	Lab Hrs	FP/Alt Hrs
MTMW-SEM1							
Mech Maint Print Reading 1		BLUE 1410			1	0	
Communication Foundations		COMM 1100			2	0	1
MATHEMATICS I		MATH 1424			2	0	
PNEUMATICS 1		PNEU 1401			2	0	
IMM PRACTICAL I		PRAC 2200			0	9	0
CONSTRUCTION SITE SAFETY		SAFE 1408			2	1	
IMM THEORY I		TRAD 2200			3	0	0
					12	**10**	**1**
MTMW-SEM2							
MECH MAINT PRINT READING 2		BLUE 2401	BLUE 1410		1	0	
MECH MAINT ELECTRICITY 1		ELEC 2411			2	0	
General Elective Credit		GNED 0000			3	0	
MECH MAINT HYDRAULICS 1		HYDR 2400			2	0	
MATHEMATICS 2		MATH 2401	MATH 1424		2	0	
MECHANICAL PRACTICAL I		PRAC 1200			0	9	
MECHANICAL THEORY I		TRAD 1200			3	0	0
MECHANICAL MAINTENANCE WELDING 1		WELD 1408			1	2	
					14	**11**	**0**

Course Name	Mod	Code	Prerequisites	Corequisites	Lec Hrs	Lab Hrs	FP/Alt Hrs
MTMW-SEM3							
MECHANICAL MAINTENANCE COMPUTERS		COMP 2343			2	0	
Mech Maint Electricity 2		ELEC 3410	ELEC 2411		3	0	
General Elective Credit		GNED 0000			3	0	
MECH MAINT HYDRAULICS 2		HYDR 3400	HYDR 2400		3	0	
MECHANICAL PRACTICAL II		PRAC 3200	PRAC 1200		0	8	0
IMM THEORY II		TRAD 3200			3	0	0
MECHANICAL MAINTENANCE WELDING 2		WELD 4400	WELD 1408		1	2	
					15	**10**	**0**
MTMW-SEM4							
MECH MAINT CAD		CAD 4400			2	0	
MECH MAINT FLUID PWR-ADV CONTROLS		FLUI 4401	HYDR 3400		3	0	
General Elective Credit		GNED 0000			3	0	
MECH MAINT PLC		PLC 4400			3	0	
PNEUMATICS 2		PNEU 4400	PNEU 1401		3	0	
IMM PRACTICAL II		PRAC 4403	PRAC 2200		0	8	0
IMM THEORY III		TRAD 4200	TRAD 3200		3	0	
					17	**8**	**0**

Program of Study – MTMC (Co-Op)

Mech Tech - Millwright Co-op (MTMC)

Course Name	Mod	Code	Prerequisites	Corequisites	Weekly Breakdown Lec Hrs	Lab Hrs	FP/Alt Hrs
MTMC-SEM1							
Mech Maint Print Reading 1		BLUE 1410			1	0	
Communication Foundations		COMM 1100			2	0	1
MATHEMATICS I		MATH 1424			2	0	
PNEUMATICS 1		PNEU 1401			2	0	
IMM PRACTICAL I		PRAC 2200			0	9	0
CONSTRUCTION SITE SAFETY		SAFE 1408			2	1	
IMM THEORY I		TRAD 2200			3	0	0
					12	**10**	**1**
MTMC-SEM2							
MECH MAINT PRINT READING 2		BLUE 2401	BLUE 1410		1	0	
CO-OP AND CAREER PREPARATION		COOP 1000			2	0	1
MECH MAINT ELECTRICITY 1		ELEC 2411			2	0	
MECH MAINT HYDRAULICS 1		HYDR 2400			2	0	
MATHEMATICS 2		MATH 2401	MATH 1424		2	0	
MECHANICAL PRACTICAL I		PRAC 1200			0	9	
MECHANICAL THEORY I		TRAD 1200			3	0	0
MECHANICAL MAINTENANCE WELDING 1		WELD 1408			1	2	
Co-op Work Term 1	COOP	MTMC 1000			0	0	420
					13	**11**	**421**

Mech Tech - Millwright Co-op (MTMC)

Course Name	Mod	Code	Prerequisites	Corequisites	Weekly Breakdown Lec Hrs	Lab Hrs	FP/Alt Hrs
MTMC-SEM3							
MECHANICAL MAINTENANCE COMPUTERS		COMP 2343			2	0	
Mech Maint Electricity 2		ELEC 3410	ELEC 2411		3	0	
General Elective Credit		GNED 0000			3	0	
General Elective Credit		GNED 0000			3	0	
MECH MAINT HYDRAULICS 2		HYDR 3400	HYDR 2400		3	0	
MECHANICAL PRACTICAL II		PRAC 3200	PRAC 1200		0	8	0
IMM THEORY II		TRAD 3200			3	0	0
MECHANICAL MAINTENANCE WELDING 2		WELD 4400	WELD 1408		1	2	
					18	**10**	**0**
MTMC-SEM4							
MECH MAINT CAD		CAD 4400			2	0	
MECH MAINT FLUID PWR-ADV CONTROLS		FLUI 4401	HYDR 3400		3	0	
General Elective Credit		GNED 0000			3	0	
MECH MAINT PLC		PLC 4400			3	0	
PNEUMATICS 2		PNEU 4400	PNEU 1401		3	0	
IMM PRACTICAL II		PRAC 4403	PRAC 2200		0	8	0
IMM THEORY III		TRAD 4200	TRAD 3200		3	0	
					17	**8**	**0**

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.