

FLEMING

Course Outline

Course Title:	Measurement and Tool Fundamentals		
Course Number:	MECH416	Approval Date:	2025/8/28
Course Hours:	45 hours	Academic Year:	2025
Academic School:	School of Trades & Technology		

Program Co-ordinator or Equivalent:	Susan Brown - Susan.Brown2@flemingcollege.ca
Dean (or Chair):	Allison MacGregor - Allison.MacGregor@flemingcollege.ca Lisa Fenn - Lisa.Fenn@flemingcollege.ca

Course Description

This course will introduce the student to basic introductory skills required to demonstrate a working knowledge of the types of tools, principles of operation, maintenance and safe workplace usage of measuring tools, fasteners and hand and power tools for the trades.

Prerequisites: None.

Corequisites: None.

Course Delivery Type

Face to face.

All course hours are delivered in person at the delivery location specified on the academic timetable.

Learning Outcomes

Upon successful completion of this course, students will be able to:

1. Understand and demonstrate the proper use and develop safe work habits when using the trainers.
2. Identify and demonstrate safe work practices when using all tools.
3. Identify, describe and demonstrate the proper use of various basic measuring devices including layout and drawing tools.
4. Identify the various types, describe and demonstrate the proper use of precision measuring devices including the micrometer and vernier caliper.

5. Identify the various types, describe and demonstrate the proper uses for threaded and non-threaded fasteners.
6. Identify the various types, describe and demonstrate the proper use of wrenches and torque wrenches.
7. Identify the components of a Pneumatic System, describe and demonstrate the proper techniques to assemble air lines with fittings.
8. Identify the various types, describe and demonstrate the proper use of screwdrivers.
9. Identify the various types, describe and demonstrate the proper use of pliers and locking devices.
10. Identify the various types, describe and demonstrate the proper use of mallets.
11. Identify the various types, describe and demonstrate the proper use of power tools.

This course will consist of a lecture and a lab component.

The lectures are in-class and the lab will be completed face-to-face in the Kube (Level 4) using the Amatrol Tool Trainers and other related activities.

Attendance and participation in both the lecture and labs will provide a positive learning experience for this course.

Safety meetings will be at the start of each lab to review safety guidelines for the tools being used that day.

Costs for learning resources can be found on the Campus Store website, using the links below, or by visiting the Campus Store location at your campus.

- Sutherland: <https://www.bkstr.com/sfleming-sutherlandstore/home>
- Frost: <https://www.bkstr.com/sfleming-froststore/home>

Assessment Summary

Assessment Task	Percentage
In-class activities	3%
Labs	55%
Assignments	22%
Tests	20%

Student Success: Policies and Procedures

Mutually, faculty and learners will support and adhere to college Academic Regulations, and Student Rights and Responsibilities. The following policies and guidelines have been developed to support the learning process.

Please click on the link for information about:

- [Academic Integrity \(2-201A\)](https://department.flemingcollege.ca/hr/attachment/7750/download)
(<https://department.flemingcollege.ca/hr/attachment/7750/download>)

- [Accessibility for Persons with Disabilities \(3-341\)](https://department.flemingcollege.ca/hr/attachment/5619/download)
(<https://department.flemingcollege.ca/hr/attachment/5619/download>)
- [Grading and Academic Standing \(2-201C\)](https://department.flemingcollege.ca/hr/attachment/7752/download)
(<https://department.flemingcollege.ca/hr/attachment/7752/download>)
- [Guidelines for Professional Practice: Students and Faculty](https://flemingcollege.ca/PDF/guidelines-for-professional-practice-students-faculty.pdf)
(<https://flemingcollege.ca/PDF/guidelines-for-professional-practice-students-faculty.pdf>)
- [Student Rights and Responsibilities \(5-506\)](https://department.flemingcollege.ca/hr/attachment/269/download)
(<https://department.flemingcollege.ca/hr/attachment/269/download>)

If you will need academic accommodations (for example if you have a learning disability, mental health condition such as anxiety or depression or if you had an IEP in high school), please contact the [Accessible Education Services \(AES\)](https://department.flemingcollege.ca/aes/) department (<https://department.flemingcollege.ca/aes/>) to meet with a counsellor.

Alternate accessible formats of learning resources and materials will be provided, on request.

Program Standards

The **Ministry of Colleges and Universities** oversees the development and the review of standards for programs of instruction. The **Ministry of Labour Training and Skills Development** oversees the development and the review of standards for programs of instruction for Apprenticeship training in the province of Ontario. Each college is required to ensure that its programs and program delivery are consistent with these standards, and must assist students to achieve these essential outcomes.

This course contributes to Program Standards as defined by the [Ministry of Colleges and Universities](#) (MCU). Program standards apply to all similar programs of instruction offered by colleges across the province. Each program standard for a postsecondary program includes the following elements:

- **Vocational standards** (the vocationally specific learning outcomes which apply to the program of instruction in question);
- **Essential employability skills** (the essential employability skills learning outcomes which apply to all programs of instruction); and
- **General education requirement** (the requirement for general education in postsecondary programs of instruction that contribute to the development of citizens who are conscious of the diversity, complexity and richness of the human experience; and, the society in which they live and work).

Collectively, these elements outline the essential skills and knowledge that a student must reliably demonstrate in order to graduate from the program. For further information on the standards for your program, follow the MCU link (www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/).

Detail Plan

Term: 2025 Fall

Program Co-ordinator or Equivalent: Susan Brown - Susan.Brown2@flemingcollege.ca

Dean (or Chair): Allison MacGregor - Allison.MacGregor@flemingcollege.ca
Lisa Fenn - Lisa.Fenn@flemingcollege.ca

Learning Plan

Wks/Hrs Units	Topics, Resources, Learning, Activities	Learning Outcomes	Assessment
Module 1			
Class 1	Course Introduction-Course Outline and Snapshot Introduction to Amatrol Trainers	1	
Class 2	Basic Measuring and Marking Tools-Imperial and Metric Measuring Techniques and Applications	2, 3	Assignment #1 Lab Activity and Skills
Class 3	Measuring Tools-Precision Micrometers Measuring Techniques and Applications	2, 4	Assignment #2 Lab Activity and Skills
Class 4	Measuring Tools-Precision Vernier Caliper Measuring Techniques and Applications	2, 4	Assignment #3 Lab Activity and Skills
Class 5	Threaded Fasteners Applications and Practice	1,2, 3, 4, 5	Assignment #4 Lab-Skills and Problems
Class 6	Wrenches Applications and Practice	1,2, 6	Assignment #5 Lab-Skills and Problems
Module 2			
Class 7	Review Test #1	1, 2, 3, 4, 5	Test #1
Module 3			
Class 8	Pneumatic System Components Applications and Practice	1, 2, 6, 7	Assignment #6 Lab-Skills and Problems
Class 9	Screwdrivers Applications and Practice	1, 2, 8	Assignment #7 Lab-Skills and Problems
Class 10	Pliers and Locking Devices Applications and Practice	1, 2, 9	Assignment #8 Lab-Skills and Problems
Class 11	Mallets and Non-Threaded Fasteners Applications and Practice	1, 2, 5, 10	Assignment #9 Lab-Skills and Problems
Class 12	Torque Wrenches Applications and Practice	1, 2, 6	Assignment #10 Lab-Skills and Problems

Wks/Hrs Units	Topics, Resources, Learning, Activities	Learning Outcomes	Assessment
Class 13	Power Tools Applications and Practice	1, 2, 11	Assignment #11 Lab-Skills and Problems
Module 4			
Class 14	Review Test #2	1, 2, 7, 8, 9, 10, 11	Test #2

Assessment Requirements

Assessment Task	Date/Weeks	Course Learning Outcome	Percentage
Test #1 - Questions based on Module 1	Class 7	1,2, 3, 4, 5	11.5%
Test #2 - Questions based on Module 3	Class 14	1, 2, 7, 8, 9, 10, 11	11.5%
11 Lab Assessments - Skills and Problems using Amatrol Trainers and activities @ 5% each	Classes 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	55%
11 Online Assignments @ 2% each	Classes 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13	2, 3, 4, 5, 6, 7, 8, 9, 10, 11	22%

Your progress will be assessed with the use of all Homework, Assignments, Lab Skills and Problems and Tests assigned during the semester. Attendance, participation, completion of all non-graded and graded documents are critical for your success in MECH 416.

Lockdown Browser may be used for assignments, quizzes and tests during the semester.

Due to the number of holidays in the semester the Learning Plan will be adjusted to provide the best possible learning environment and students will be made fully aware of any adjustments prior to the start and/or during the semester.

Course starts February 19 (Week 1) and ends June 10 (Week 15). See Learning Plan snapshot for semester layout.

TBD, one more class cancellation will occur during the semester and the content will be delivered in one additional time slot mutually agreed upon between the College and School Board.

Dual Credit students are expected to use D2L on a regular basis to access any information, including lecture and lab information, online assignments, and news items.

Respondus Monitor Statement

This course will use Respondus Monitor as a remote proctoring tool to support the administration of electronic examinations and assessments. Fleming College has an institutional license to use Respondus Monitor, a cloud-based service and software that captures video, audio, and other data during student assessment sessions for use

in monitoring students. This data is accessible to, and may be used by, authorized individuals at the college to administer student assessments and manage the academic integrity of such assessments. The Student Terms of Use for Respondus Monitor must be agreed to by users (e.g. students) prior to each use of the Respondus Monitor, available at: <https://web.respondus.com/tou-monitor-student/>

By accessing and using Respondus Monitor, you agree to the collection, use, disclosure and retention of your personal information (including personal images) by Respondus Inc. in accordance with its Privacy Policy, available at: <https://web.respondus.com/privacy-policy/>

If you have questions about the collection of your personal information, please contact the Privacy and Policy Officer at freedomofinformation@flemingcollege.ca, or visit Fleming College's [Privacy Statement](https://flemingcollege.ca/privacy-statement) (<https://flemingcollege.ca/privacy-statement>) for more information.

If students choose to opt out of using Respondus Monitor, they must inform their faculty member prior to the scheduled assessment, of their refusal and meet with the faculty to discuss their options.

Exemption Contact

Susan Brown

Program Coordinator - Trades Fundamentals

Subject Coordinator - Health and Safety

Professor- Health and Safety/Carpentry

School of Trades and Technology

705-749-5530 X1232

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Prior Learning and Assessment and Recognition (PLAR)

PLAR uses tools to help learners reflect on, identify, articulate, and demonstrate past learning which has been acquired through study, work and other life experiences and which is not recognized through formal transfer of credit mechanisms. PLAR options include authentic assessment activities designed by faculty that may include challenge exams, portfolio presentations, interviews, and written assignments. Learners may also be encouraged and supported to design an individual documentation package that would meet the learning requirements of the course. Any student who wishes to have any prior learning acquired through life and work experience assessed, so as to translate it into a college credit, may initiate the process by applying through the Registrar's office. For more information please click on the following link: <http://flemingcollege.ca/admissions/prior-learning-assessment-and-recognition>

Course Specific Policies and Procedures

It is the responsibility of the student to retain this course outline for future reference. Course outlines may be required to support applications for advanced standing and credit transfer to other educational institutions, portfolio development, PLAR and accreditation with professional associations.

Synchronous sessions may be recorded. As a result, your image, voice, name, personal views and opinions, and course work may be collected under legal authority of section 2 of the Ontario Colleges of Applied Arts and Technology Act, 2002. This information will be used for the purpose of supporting student learning. Any questions about this collection can be directed to the Privacy and Policy Officer at freedomofinformation@flamingcollege.ca or by mail to 599 Brealey Drive, Peterborough, ON K9J 7B1.

1. DUE DATES - Only those students who contact the professor missing a class activity (including homework, assignment submission, lab assignment, quiz and tests) WITH A VALID DOCUMENTED REASON (and is submitted within an appropriate time frame to your professor) may be given the opportunity to make up the marks allocated for that week. Documentation verifying the reason for absences may be requested at the discretion of the professor and reviewed by the professor, coordinator and/or chair.

All Assignments, and Tests must be completed and/or submitted on their stated due date and time. Refer to additional assessment comments.

2. STUDENT LATENESS - Students who are late for class are a disruption to their classmates and have a negative impact on the learning environment. Your instructor will share his/her late policies early in the semester. For reasons relating to classroom management late students may be refused entry.

Lateness in general is unacceptable and will be dealt with on an individual basis.

3. STUDENT ATTENDANCE - Students are expected to attend all classes each week (Students will be expected to follow all instructions for attending classes whether in class or online). Students are expected to purchase and bring resources and materials to each class as required (Your instructor will explain which weeks you will be needing these supplies). Students are solely responsible for catching up on course work when absent. This includes collecting of course materials (handouts, assignments, etc.) and catching up on missed classroom work.(Lecture material including any handouts will be posted each week on the D2L course page) Individual instructors will provide more specific expectations for attendance early in the semester.

4. REVISIONS TO THE LEARNING PLAN(SEQUENCE) - May be necessary due to Cancelled Classes(Holidays, Fleming Orientation) or for other reasons and will be reviewed by the instructor for that section. The instructor will relay the necessary changes to the class. Students are required to complete independent study for any cancelled classes that may occur during the semester including weekly readings, homework, assignments, and tests.

The instructor will post any changes in delivery and curriculum that will be necessary to provide a positive learning environment.

5. FINAL GRADES - Final grades in this course are assigned based on the level of academic achievement which corresponds to the assessment components as cited in this course outline. Faculty members will not offer additional evaluation activities beyond those cited in this course outline.(No Credit Recovery) Use of cell phones are not recommended in the lectures and seminars. Please turn off cell phones to avoid classroom distractions.

6. ACADEMIC INTEGRITY - This principle of academic honesty requires that all work submitted for evaluation and course credit be the original, unassisted work of the student. Cheating or plagiarism including borrowing, copying, purchasing or collaborating on work, except for group projects arranged and approved by the faculty member, or otherwise submitting work that is not the student's own violates this principle and will not be tolerated. Students have a responsibility to support academic integrity. Breaches of academic integrity, such as cheating and plagiarism, will normally result in a grade of zero for the assessment component involved and additional sanctions. Submission of work that are fully or partially identical is considered a breach of academic integrity. The consequences of such actions are outlined in the Academic Integrity Policy 2-201A (<https://department.flemingcollege.ca/policies-procedures/academic-affairs/Regulations>.) In addition, all breaches of academic integrity will be reported to the registrar.