Mechanical Engineering MECHENG 3M03A/B
Composite Laboratory
Faculty of Engineering – McMaster University – Undergraduate Studies
Fall/Winter 2025/26

Course Outline

Calendar/Course Description

The Composite Laboratory course is designed to give students an appreciation of experimental techniques used in mechanical engineering. The experiments demonstrate how useful engineering information can be extracted from a series of well-planned tests.

Pre-Requisites and Anti-Requisites

Prerequisite(s): Registration in any Mechanical Engineering program
Antirequisite(s): MECHENG 3M02

Instructor Office Hours and Contact Information

Dr. Chan Y Ching
JHE 103
chingcy@mcmaster.ca

Office Hours:
Tues and Thurs 12:30PM to 1:30PM

Teaching Assistant Office Hours and Contact Information

Laboratory TAs are assigned to each lab; grading TAs are also associated with the course. TA names and contact information are provided on Avenue.

TA Office Hours: During Laboratory sessions. Other times by appointment.

Course Website/Alternate Methods of Communication

The course and all content are hosted on Avenue to Learn (http://avenue.mcmaster.ca/) under MECHENG 3M03. Please contact the course coordinator immediately by email if you are registered for the course but do not have access to the course on Avenue.

All formal communication regarding course requirements, changes, assignment submissions, etc. will be announced in Avenue. It is assumed that any announcements on Avenue have been received by all students registered in the class.

Communication with Course Coordinator / TAs:
Please use email for any formal direct communication with the instructor or TAs. Please include the course code (i.e. MECHENG 3M03 or MECHENG 4P03) as the first component of the subject line. For example, an email to a grading TA regarding a question about the lab writeup lab might have the subject line *"MECHENG 3M03 – Question about lab writeup"*.

Course Intended Learning Outcomes

Upon successful completion of the course the students will be expected to have demonstrated the ability to:

1. Understand fundamental experimental techniques in mechanical engineering.
2. Perform and/or observe experiments to extract useful engineering information.
3. Understand basic machine shop operations with hands-on skills
4. Analyze experimental data and present it in usable form.
5. Reach sound conclusions from well analyzed data.
6. Write-up formal engineering reports.

Materials and Fees

Required Texts:

- Custom Lab Notes and Manuals, Pre-Lab and Lecture video content located within Avenue.

Other Materials:

- Safety Glasses are required for some labs (must have CSA Z94-3 certification).

Course Format and Expectations

Success in this course requires the completion of all labs, along with associated individual and group activities. For each lab, students must prepare, attend, and actively participate in the lab session, and submit both pre-lab and follow-up assignments.

Machining Labs (M1, M2, M3): These are conducted in the Undergraduate Project Laboratory (JHE 208). They typically occur over three consecutive weeks, followed by a take-home assignment in the subsequent week (though timing may vary due to scheduling constraints). A Prelab Presentation is not required, but students must complete the mandatory safety quizzes prior to attending the labs, as outlined in the course materials.

All Other Labs: Students will complete three additional lab experiments in the fall term, and five lab experiments in the winter term. Lab experiments will be conducted in small groups of four to five students on a two-week cycle.

Week 1: Individual and Group preparation of a Prelab Presentation.
Week 2: Delivery of the Prelab Presentation and Performance of the Lab Experiment, followed by a Lab Assignment based on the experimental data collected, provided by the Lab TA.

Each student is required to submit a Full Lab Report for one lab in each term.

Information on Laboratory Groups, the Lab Schedule, and Full Lab Report assignments will be available on the course Avenue shell for each term.

Lab Schedule and Completion: Labs are scheduled each term and must be completed within the designated timeframe (term). It is crucial that students adhere to their scheduled preparation and lab times, as rescheduling is only possible with an MSAF.

Evaluation Components:

Machining Labs (M1, M2, M3): Pre-Lab Quizzes (4 quizzes total).
All Other Labs: Group Prelab Presentations (8 labs total).
Lab Experiments: Attendance and participation in one 3-hour lab session every other week, for a total of 11 labs (3 Machining Labs, 8 Others).
Lab Assignments: One assignment per lab, due one week after the lab session (9 Lab Assignments total).
Full Lab Reports: One full lab report per term, due two weeks after the lab session (2 Full Lab Reports total).

Minimum Requirements to Pass this course:

1. Attend and complete all scheduled lab experiments (11 labs total).
2. Participate in all Prelab Presentations.
3. Complete all Lab Assignments.
4. Achieve a minimum of 50% on the Full Lab Reports.

Further details on these elements will be provided in the Orientation Lecture and Instructional Documents, accessible via Avenue.

Course Schedule

Date/Week	Topic	Readings
Sept 2 – 5	Orientation Video posted, instructor available to answer questions.	See Avenue
Sept 8 – Apr 7	Lab Experiments – during scheduled lab time, every other week (see Schedule in Avenue)	Complete Pre-Lab requirements, see Avenue
Dec 5 – Jan 4	No regularly scheduled labs	n/a

Assessment

Component	Due Date	Weight
4x Pre-Lab Quizzes	Before each machining lab	10%
10x Pre-Lab Presentation and Post-Lab Assignment	Presentations: Delivered at beginning of Lab Session, submitted on day of Lab (by midnight). Assignments: 1 week following labs, midnight.	60%
2x Full Lab Reports	2 weeks following labs, midnight	30%
Total		100%

Accreditation Learning Outcomes

The Learning Outcomes defined in this section are measured for Accreditation purposes only and will not be directly taken into consideration in determining a student's grade in the course.

Graduate Attributes	Learning Outcomes where Attribute is Measured
Knowledge base for Engineering (Indicator 3,4)	1,2,3,4
Problem Analysis (Indicator 1,2,3)	2,3,4
Investigation (Indicator 1,2,3)	2,3,4
Communication Skills (Indicator 1,2,3)	5

For more information on Accreditation, please visit: https://www.engineerscanada.ca

Equity, Diversity, and Inclusion

Every registered student belongs in this course. Diversity of backgrounds and experiences is expected and welcome. You can expect your Instructor to be respectful of this diversity in all aspects of the course, and the same is expected of you.

The Department of Mechanical Engineering is committed to creating an environment in which students of all genders, cultures, ethnicities, races, sexual orientations, abilities, and socioeconomic backgrounds have equal access to education and are welcomed and treated fairly. If you have any concerns regarding inclusion in our Department, in particular if you or one of your peers is experiencing harassment or discrimination, you are encouraged to contact the Chair, Associate Undergraduate Chair, Academic Advisor or to contact the Equity and Inclusion Office.

Physical and Mental Health

For a list of McMaster University's resources, please refer to the Student Wellness Centre.
Talkspot is a non-crisis mental health resource specifically for students in the Faculty of Engineering.

Academic Integrity

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity. **It is your responsibility to understand what constitutes academic dishonesty.**

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university. For information on the various types of academic dishonesty please refer to the *Academic Integrity Policy*, located at https://secretariat.mcmaster.ca/university-policies-procedures- guidelines/

The following illustrates only three forms of academic dishonesty:

1. plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
2. improper collaboration in group work.
3. copying or using unauthorized aids in tests and examinations.

Authenticity / Plagiarism Detection

Some courses may use a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work. For courses using such software, students will be expected to submit their work electronically either directly to Turnitin.com or via an online learning platform (e.g. A2L, etc.) using plagiarism detection (a service supported by Turnitin.com) so it can be checked for academic dishonesty.

Students who do not wish their work to be submitted through the plagiarism detection software must inform the Instructor before the assignment is due. No penalty will be assigned to a student who does not submit work to the plagiarism detection software. **All submitted work is subject to normal verification that standards of academic integrity have been upheld** (e.g., on-line search, other software, etc.). For more details about McMaster's use of Turnitin.com please go to www.mcmaster.ca/academicintegrity.

Courses with an On-Line Element

McMaster is committed to an inclusive and respectful community. These principles and expectations extend to online activities including electronic chat groups, video calls and other learning platforms.

Some courses may use on-line elements (e.g. e-mail, Avenue to Learn (A2L), LearnLink, web pages, capa, Moodle, ThinkingCap, etc.). Students should be aware that, when they access the electronic components of a course using these elements, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in a course that uses on-line elements will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure, please discuss this with the course instructor.

Conduct Expectations

As a McMaster student, you have the right to experience, and the responsibility to demonstrate, respectful and dignified interactions within all of our living, learning and working communities. These expectations are described in the *Code of Student Rights & Responsibilities* (the "Code"). All students share the responsibility of maintaining a positive environment for the academic and personal growth of all McMaster community members, **whether in person or online**.

It is essential that students be mindful of their interactions online, as the Code remains in effect in virtual learning environments. The Code applies to any interactions that adversely affect, disrupt, or interfere with reasonable participation in University activities. Student disruptions or behaviours that interfere with university functions on online platforms (e.g. use of Avenue 2 Learn, WebEx or Zoom for delivery), will be taken very seriously and will be investigated. Outcomes may include restriction or removal of the involved students' access to these platforms.

Academic Accommodation of Students with Disabilities

Students with disabilities who require academic accommodation must contact Student Accessibility Services (SAS) at 905-525-9140 ext. 28652 or sas@mcmaster.ca to make arrangements with a Program Coordinator. For further information, consult McMaster University's *Academic Accommodation of Students with Disabilities* policy.

Course Policy on Missed Work, Extensions, and Late Penalties

1. It is the students' responsibility to regularly check the course webpage (ex. Avenue to Learn) for updates and announcements related to this course.
2. No student who has not completed the Pre-Lab Quiz and achieved a perfect mark will be permitted to perform the machining labs. Note: Mark from the first attempt is used in grade calculation; unlimited Quiz attempts are permitted until a perfect mark is achieved.
3. All lab Assignment submissions are due at midnight, one week following the date of the lab. Full Lab Reports are due at midnight, two weeks following the date of the lab.
4. An automatic 3-day "grace period" or extension will be granted if the student requests it from the TA responsible for grading their submission.
5. Submissions after the due date or grace period will be subject to a 20% mark reduction per day.
6. MISSED LABS: All students must attend and complete all the scheduled labs to pass the course. If a student misses a lab or a portion of it due to late arrival, re-scheduling may be possible with the TA. It should be noted that there are very limited make-up opportunities, and the new time may conflict with other courses, so every effort should be made to attend labs as scheduled. Changes to lab schedule and due dates are strongly discouraged. Re-scheduling requests must be made formally, by email to the Lab TA (cc'd to the course coordinator), who will assist in scheduling the make-up time at the next available time slot, and informing the course coordinator of the changes. Abuse of this policy will be investigated. If the

re-scheduling is MSAF-related, please follow the procedure in the next section to submit your MSAF. ALL MISSED LABS MUST BE MADE UP; all five labs must be completed before the end of each semester. Rescheduling more than one lab may put you at risk of not being able to meet this requirement.

Submission of Request for Relief for Missed Academic Work

In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar "Requests for Relief for Missed Academic Term Work".

1. **Relief for missed academic work worth less than 25% of the final grade resulting from medical or personal situations lasting up to three calendar days:**
   - Use the McMaster Student Absence Form (MSAF) on-line self-reporting tool. No further documentation is required.
   - Students may submit requests for relief using the MSAF once per term.
   - An automated email will be sent to the course instructor, who will determine the appropriate relief. Students must immediately follow up with their instructors. Failure to do so may negate the opportunity for relief.
   - The MSAF cannot be used to meet a religious obligation or to celebrate an important religious holiday.
   - The MSAF cannot be used for academic work that has already been completed attempted.
   - An MSAF applies only to work that is due within the period for which the MSAF applies, i.e. the 3-day period that is specified in the MSAF; however, all work due in that period can be covered by one MSAF.
   - The MSAF cannot be used to apply for relief for any final examination or its equivalent. See *Petitions for Special Consideration* above.

2. **For medical or personal situations lasting more than three calendar days, and/or for missed academic work worth 25% or more of the final grade, and/or for any request for relief in a term where the MSAF has been used previously in that term:**
   - Students must report to their Faculty Office to discuss their situation and will be required to provide appropriate **supporting documentation**.
   - If warranted, the Faculty Office will approve the absence, and the instructor will determine appropriate relief.

Academic Accommodation for Religious, Indigenous or Spiritual Observances (RISO)

Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the RISO policy. Students should submit their request to their Faculty Office ***normally within 10 working days*** of the beginning of term in which they anticipate a need for accommodation or to the Registrar's Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.

Copyright and Recording

Students are advised that lectures, demonstrations, performances, and any other course material provided by an instructor include copyright protected works. The Copyright Act and copyright law protect every original literary, dramatic, musical and artistic work, **including lectures** by University instructors

The recording of lectures, tutorials, or other methods of instruction may occur during a course. Recording may be done by either the instructor for the purpose of authorized distribution, or by a student for the purpose of personal study. Students should be aware that their voice and/or image may be recorded by others during the class. Please speak with the instructor if this is a concern for you.

Extreme Circumstances

The University reserves the right to change the dates and deadlines for any or all courses in extreme circumstances (e.g., severe weather, labour disruptions, etc.). Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, A2L and/or McMaster email.