

To: Undergraduate Students Returning to Programs in Materials Science & Engineering 2023-2024  
Date: June 2, 2023  
Ref: **IMPORTANT NOTES FOR RETURNING STUDENTS**

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Please read this document in its entirety. This memorandum contains important information and advice relating to courses and planning for Materials Engineering students for the 2023-2024 academic year. You are advised to file this document for ready reference throughout the coming year. A copy will also be placed on the MSE website, under the "Resources, Undergraduate" heading. **Always follow your ACADEMIC ADVISEMENT REPORT in Mosaic to ensure that you can obtain the necessary credits to graduate.** Instructions on how to view your personal advisement report can be found [HERE](#). For clarification on your advisement report you are encouraged to consult with your academic advisor, Ms. Darlene Hayward ([dhaywar@mcmaster.ca](mailto:dhaywar@mcmaster.ca)).

To view the complete 2023-24 undergraduate calendar, click here: [Undergraduate Calendar 2023-2024](#)

## Enrolment

MyTimetable/Class Search will be available to students on Wednesday, June 14, 2023, and Enrolment Appointments will begin Monday, June 19, 2023. Specific appointment dates will be posted in the Mosaic Student Centre on Friday, June 9, 2023; preliminary dates can be found [HERE](#). It is strongly recommended that you enrol as soon as your assigned enrolment date opens, to ensure you can enrol in the sections that best fit your timetable! Note that you can continue to update, add, and change your courses for the fall semester until the add/drop date (Wednesday, September 13, 2023). For the winter semester, the add/drop date is Tuesday, January 16, 2024. Although we do our best to create a conflict-free schedule, there are a number of factors which could result in you having conflicts in your personal schedule. Using "My Timetable" is greatly encouraged, as it will help you to determine the best combination of course sections to avoid conflicts. If you have an unavoidable conflict in your timetable, you will need to follow the steps on the [MSE Course Conflict Form](#). Please note that choosing avoidable conflicts due to preference will not be approved.

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## PART ONE: STUDENTS ENTERING LEVELS 2, 3, 4 or 5 MATERIALS ENGINEERING

The Department of Materials Science and Engineering offers a suite of common core courses with five specialized areas of study which can be realized through your choices in Levels III and IV elective courses. Students may complete the required elective units as listed in the calendar in Levels III and IV by choosing elective courses according to the following specializations: Biomaterials, Data Analytics and Computational Materials, Materials for Manufacturing and Infrastructure, Materials Generalist, and Smart Materials and Devices.

Below is a summary of the planned Materials Engineering technical electives for the upcoming academic year. Please note that technical electives tend to be taught on a rotating basis and a given technical elective may not be taught every academic year. This allows the department to offer a wider range of technical electives but makes it **essential that you plan carefully** to make sure you can take all your first-choice electives.

Students may also take electives in other departments within the Faculty of Engineering assuming that all the pre-requisites are met and have been approved by the Department.

### Four electives deserve special mention:

#### 1. ENGINEER 3CX3 A/B - Experiential Learning in Complementary Studies

This course provides students with the opportunity to earn course credit for valuable experiential learning which occurs while heavily involved in extracurricular clubs and groups (counts for a Complementary Studies Course).

#### 2. ENGINEER 4EX3 A/B - Experiential Engineering Design

This course provides students with the opportunity to earn course credit for experiential learning conducted within the atmosphere of technically oriented McMaster Engineering teams (counts for a Technical Elective). This course requires an application form.

For more information on both courses, please visit: <https://www.eng.mcmaster.ca/connect/experiential-learning/#tab-content-courses>

#### 3. MATLS 3C03: Applied Thermodynamics

This course tends to be overlooked. It is a great technical elective. This is where you finally put all your thermodynamic knowledge into action. This is a great course for anyone planning to go into the steel, automotive, failure analysis or corrosion industries.

#### 4. MATLS 4K06 A/B – Senior Research Project

The senior thesis course is a two-term course which will span both the fall and winter semesters. The goal of the course is to provide students the opportunity to take a research-based course as a technical elective. Assessments in MATLS 4K06 A/B will take the form of a research proposal and presentation in late September, oral and written progress reports over the course of both semesters (two in the fall semester and one in the winter semester) and a final project presentation and report at the end of the winter semester.

**Students wishing to pursue an accelerated masters must take MATLS 4K06 A/B.**

Materials 2023-24 Offered Technical Electives	T1 = Fall 2023   T2 = Winter 2024		BIOMATERIALS	DATA ANALYTICS & COMP MATLS	MATERIALS GENERALIST	MATLS FOR MANUFACTURING & INFRASTRUCTURE	SMART MATERIALS & DEVICES
	T1	T2					
MATLS 3C03 Applied Thermodynamics	T1				X	X	
MATLS 3MF3 Materials Fabrication	T2					X	
MATLS 3Q03 Materials for Electronic Applications	T2			X	X		X
MATLS 4B03 Biomaterials and Tissue Engineering	T2	X			X		
MATLS 4FF3 Synthesis, Applications and Environmental Impact of Nanomaterials	T2				X		X
MATLS 4G03 Characterization of Nanomaterials	T1	X			X	X	X
MATLS 4K06 A/B Senior Research Project	Both				X		
MATLS 4ML3 Applications of Machine Learning to Materials and Chemical Engineering	T1			X			
MATLS 4NN3 Computational Modelling in Materials Engineering at the Nano-scale	T1			X			X
MATLS 4P03 Properties of Polymeric Materials	T2	X			X	X	X
MATLS 4T03 Properties and Processing of Composites	T1				X	X	
MATLS 4Y03 Advanced Biomaterials: Applications and Device Design	T2	X					

*“Building strategically on our diverse strengths in materials, we will be recognized as a destination of choice, where students, scholars, alumni and employers partner in a journey of learning, discovery and innovation”.*

## PART TWO: UPCOMING FALL SEMESTER

Students should note that at this time the Fall semester is planned to be completely in-person with no online components. Some instructors may choose to record lectures or tutorials, but this choice is completely up to the instructor. It is expected that students will participate fully in all course components, including laboratories, unless extraordinary accommodations are granted by the University.

## PART THREE: MATERIALS ENGINEERING CO-OP PROGRAM

Materials Engineering students are very successful at finding placements in the Co-op Program. The Co-op experience can be rewarding and of positive benefit to their undergraduate studies and comprehension of curricular topics. Employers have also expressed a preference for hiring students with this co-op experience. Details of the program are available on the Engineering Co-op and Career Services website at: <https://www.eng.mcmaster.ca/co-op-career/co-op-program>. As well as completing the academic requirements as specified in this Calendar, students in a Co-op program must complete ENGINEER 1EE0. In addition to completing ENGINEER 1EE0, students must complete a total of 12 months (3 terms) of work experience, which will be documented in three terms of ENGINEER 2EC0 for each 4-month work term.

For those students interested in pursuing industrial employment, keep in mind that it is useful to discuss careers with MSE faculty members when you have the opportunity. Many faculty members have considerable experience of materials-related industries and can provide useful guidance and perspectives.

## PART FOUR: THINKING ABOUT GRADUATE SCHOOL?

### Graduate Studies

Undergraduate students enrolled in MSE can apply in the first or second term of their penultimate year for the Accelerated Master of Applied Science (M.A.Sc.) program. This is a thesis-based research program whereby a M.A.Sc. can be completed in three or four terms (12-16 months) of full-time study after successfully obtaining their B.Eng. degree. Requirements for the Accelerated M.A.Sc. program are listed below.

## Accelerated M.A.Sc. Requirements

- Complete at least one term (four months) of research with a supervisor from the department prior to the completion undergraduate degree, and successfully complete MATLS 4K06 A/B. Or, complete up to 8 months of research with a supervisor prior to admission into Graduate Studies.
- Successful completion of one 600 level 3-unit course in the final undergraduate year for graduate credit (also counts towards the undergraduate degree course requirements)
- Sessional average of 9.0 at the time of application

## About MSE Graduate Studies

Building strategically on our diverse expertise in materials, in collaboration with local and global partners, the Department of Materials Science and Engineering is internationally recognized as a destination of choice, where students, scholars, alumni and employers partner in a journey of learning, discovery and innovation.

MSE McMaster is engaged in leading edge Materials Science and Engineering research, and has concentrated research centres that collaborate with international industrial sponsors, including:

- [Canadian Centre for Electron Microscopy \(CCEM\)](#)
- [Centre for Automotive Materials and Corrosion \(CAMC\)](#)
- [McMaster Steel Research Centre \(SRC\)](#)

Faculty members lead research grants from government and industry across a variety of topics and sub-disciplines, providing an excellent environment for productive graduate research, including research projects with international collaborations.

Our research areas span a wide range of topics including:

- Biomaterials Development for Orthopaedics, Dentistry and Tissue Engineering
- Computational Materials Science, Materials Modelling
- Low-dimensional Materials for Electronic and Photonic Applications
- Materials Processing and Recycling
- Materials Durability and Corrosion
- Materials for Energy-Efficient Transportation and Vehicle Safety
- Additive Manufacturing (3D Printing)
- Materials for Energy Conversion and Storage
- Nano-Technology and Nano-Scale Materials Science

## Funding & Scholarships

Accelerated M.A.Sc students receive an annual salary, and there are many scholarships available.

## Contact for Grad School Inquiries

If Graduate Studies appeals to you, it is a good idea to reach out to faculty whose research interests align with yours. Additionally, please feel free to contact the Graduate Associate Chair, **Dr. Kathryn Grandfield** ([kgrandfield@mcmaster.ca](mailto:kgrandfield@mcmaster.ca)), or the Graduate Administrative Assistant, **Alisha Digba** ([digbaa1@mcmaster.ca](mailto:digbaa1@mcmaster.ca)) for additional information.

**Note:** Students must identify a supervisor they wish to work with, and the supervisor must agree to fund the summer research work as well as the time spent in graduate school (12-16 months).

## PART FIVE: FINAL THOUGHTS

We sincerely hope you will find next year challenging and interesting. It should provide you with the opportunity for a more personalized approach to your studies, a chance to evaluate your own motivation, and to develop your skills and interests. MSE is a relatively small department, and you should feel that there is time for you to discuss topics with the faculty and research staff. They can provide you not only with knowledge related to your courses, but guidance with careers and a broader view of materials science and engineering. We hope you have a very happy, enjoyable, and rewarding summer and look forward to seeing you in September.

If you have any general questions or concerns, please do not hesitate to reach out to the Undergraduate Associate Chair, **Dr. Joe McDermid** ([mcdermi@mcmaster.ca](mailto:mcdermi@mcmaster.ca)), or the Undergraduate Administrative Assistant, **Laura Miller** ([lmiller@mcmaster.ca](mailto:lmiller@mcmaster.ca)).