**McMaster University**

**W Booth School of Engineering Practice and Technology**

**MASTER OF ENGINEERING in BIO MANUFACTURING ENGINEERING**

Graduate Student Course Selection

2023

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Student Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Program: **M.E.M.E.**

Student ID: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Supervisor: **Fei Geng**

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| **Course Name** | **Course Code** | **Units** | **Term** | **Add (A) or****Drop (D)?** |
| **MANDATORY COURSES** |
| Academic Research Integrity and Ethics | SGS 101 | 0 | W23 | A |
| Accessibility for Ontarians with Disabilities Act (AODA) | SGS 201 | 0 | W23 | A |
| W Booth SEPT Practitioner’s forum, Part I (only for full time students. “Add it” if you are one) | SEP 771 | 0 | W23 | A |
| W Booth SEPT Practitioner’s forum, part II (only for full time students. “Add it” if you are one) | SEP 771 | 0 | S23 | A |
| **PROJECT COURSESAdd these two courses if you are planning to take the Project Pathway to your degree. Each course is 3 units** |
| Project, Part I | MANUFACT 701 |  | W23 |  |
| Project, Part II | MANUFACT 701 |  | S23 |  |
| **PROFESSIONAL DEVELOPMENT COURSESTwo such courses are needed. Each course is 3 units** |
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| **CORE COURSES3-5 such courses if you are taking the Project Pathway. 3-5 such courses if not doing a Project. Each course is 3 units** |
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| **CROSS – DISCIPLINARY ELECTIVE COURSE1 course is required. Course is 3 units selected from approved cross-disciplinary elective list. CAREFUL, choose course from approved cross-disciplinary elective list!** |
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| **ELECTIVE COURSES0-1 such courses if you are taking the Project Pathway. 0-2 such courses if not doing a Project. CAREFUL, a few courses are not worth 3 units!** |
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| **“PLACEHOLDER” COURSE****Add the course below if you are not taking any other courses during a term (i.e. taking a break from studies)** |
| Research/Writing | SGS 711 | 0 |  |  |
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| **TOTAL UNITS****Sum up the total units you have added (do if you are taking the Project Pathway, the two project courses.) 30 units are required to graduate. You can take more, but that will increase your tuition.** |  |

**Term code guide:**

W23 = Winter 2023

S23 = Spring/Summer 2023

F23 = Fall 2023

Graduate students must register for courses online via Mosaic. **Students must consult with the Program Advisor regarding course selection**. It is the responsibility of the student to ensure that the courses meet the program requirements, and that their course selections are recorded correctly on mosaic. Any addition or deletion of courses should be approved by the Program Advisor. Once an agreement is reached with the Program Advisor, **students must upload this document to** [**this link**](https://macdrive.mcmaster.ca/u/d/eb9d1cc12bcd46668a42/) and department staff will gather the faculty member’s signature.

I approve these course selections

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Program Advisor Date

Master of Engineering Manufacturing Engineering

Students enrolling in the program can tailor their program of studies according to their career interests. Students can take maximum of 2 half courses (one term courses) at 600 level. Courses can be selected from W Booth SEPT, Chemical, Materials or Mechanical Engineering departments. Students wishing to take an elective course outside of the recommended electives need to obtain a permission from their program lead.

Students should note that not all courses are offered every year.

**Bio Manufacturing courses:**

There are 2 pathways towards the degree:

**8 courses (24 units) + project (6 units)**

* 2 Mandatory courses
* 2 professional development courses
* 3 to 5 core courses
* 0 to 1 technical elective courses
* 1 cross-disciplinary elective
* 2 project courses

Students pursuing this option, in addition to taking 8 courses specified above, must register for the project-courses:

* [MANUF 701 / Project, Part I](https://academiccalendars.romcmaster.ca/preview_program.php?catoid=42&poid=22560&returnto=8767#tt1886)
* [MANUF 701 / Project, Part II](https://academiccalendars.romcmaster.ca/preview_program.php?catoid=42&poid=22560&returnto=8767#tt8427)

  **10 courses (30 units)**

* 2 Mandatory courses
* 2 professional development courses
* 3 to 5 core courses
* 0 to 2 technical elective courses
* 1 cross-disciplinary elective

All full-time students must register for the seminar series courses (attendance is mandatory), which are:

[SEP 771 SEP 771 / W Booth School of Engineering Practice and Technology Practitioner’s Forum Part I](https://academiccalendars.romcmaster.ca/preview_program.php?catoid=42&poid=22560&returnto=8767#tt370)

[SEP 771 SEP 771 / W Booth School of Engineering Practice and Technology Practitioner’s Forum Part II](https://academiccalendars.romcmaster.ca/preview_program.php?catoid=42&poid=22560&returnto=8767#tt9151)

(seminar series, full-time students only)

SEP 771 is a seminar series presented by guest speakers, invited by the School, of relevance to all M.Eng. programs at the School. All full-time students are required to take these courses. Course grades are either ‘pass’ or ‘fail’. In order to pass the course, the student must attend a minimum of 80% of the seminars.

 **Required courses for BIOMANUFACTURING STREAM (6 units):**

* [SEP 744 / Biomanufacturing](https://academiccalendars.romcmaster.ca/preview_program.php?catoid=46&poid=23952&returnto=9233)
* [SEP 767 / Multivariate Statistical Methods for Big Data Analysis and Process Improvement](https://academiccalendars.romcmaster.ca/preview_program.php?catoid=46&poid=23952&returnto=9233)

**Professional Development courses in M.Eng. of Manufacturing Engineering, are listed below:**

* [SEP 6TC3 / Technical Communications](https://academiccalendars.romcmaster.ca/preview_program.php?catoid=42&poid=22560&returnto=8767)
* [SEP 725 / Practical Project Management for Today’s Business Environment](https://academiccalendars.romcmaster.ca/preview_program.php?catoid=42&poid=22560&returnto=8767)
* [SEP 773 / Leadership for Innovation](https://academiccalendars.romcmaster.ca/preview_program.php?catoid=42&poid=22560&returnto=8767)
* [SEP 760 / Design Thinking](https://academiccalendars.romcmaster.ca/preview_program.php?catoid=42&poid=22560&returnto=8767)
* SEP 741/ Project Management for High Tech Projects

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#### Core Courses

The following are core courses:

* [SEP 764 /](https://academiccalendars.romcmaster.ca/preview_program.php?catoid=42&poid=22560&returnto=8767) Current Good Manufacturying Practice Upstream Operations
* [SEP 745 /](https://academiccalendars.romcmaster.ca/preview_program.php?catoid=42&poid=22560&returnto=8767) Fermentation of Recombinant Microorganisms
* [SEP 743 /](https://academiccalendars.romcmaster.ca/preview_program.php?catoid=42&poid=22560&returnto=8767) Animal Cell Culture Engineering
* [SEP 765 /](https://academiccalendars.romcmaster.ca/preview_program.php?catoid=42&poid=22560&returnto=8767) Current Good Manufacturing Practice Downstream Operations

#### Technical Elective Courses

Recommended technical elective courses are:

* SEP 749/ Biomedical Engineering
* [SEP 766 /](https://academiccalendars.romcmaster.ca/preview_program.php?catoid=42&poid=22560&returnto=8767) Membrane-Based Bioseperation
* [BIOMED 799 /](https://academiccalendars.romcmaster.ca/preview_program.php?catoid=42&poid=22560&returnto=8767) Independent Study in Biomedical Engineering
* SEP6BI3 / Bioinformatics
* SEP6BS3 / Biotechnology Regulations

#### Cross-Disciplinary Elective Courses

* SEP709 / Emerging Issues, Technology and Public Policy
* SEP710 / International Governance and Environmental Sustainability
* SEP6X03 / Livable Cities, The Built and Natural Environment
* SEP793 / Entrepreneurial Opportunity Identification
* SEP 770 / Total Sustainability Management

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