

Interfaculty Graduate Program Requirements for completing Master's of Engineering (non-thesis) Biological and Biomedical Engineering (BBME) Biomanufacturing Concentration

Requirements

The Master's of Engineering (non-thesis) in Biological and Biomedical Engineering (BBME) – Biomanufacturing Concentration requires the student to complete 45 credits delivered over 4 semesters as follows:

- 27 course credits, normally in Year 1 during Fall and Winter semesters
- 18 Internship course credits in the biomanufacturing sector, normally in Year 1 Summer and Year 2 Fall semester. The internship courses include:
 1. BBME 681 Internship 1 (9 credits)
 2. BBME 682 Internship 2 (9 credits)

Required Courses (total credits: 3)

All students are required to take the course BIEN 601 cGMP and Regulation in Biomanufacturing.

Complementary Courses (total credits: 24)

Minimum of 18 credits from the following three lists of core courses. At least 12 credits must be chosen from biomanufacturing core courses. At least 12 credits must be chosen from BBME core courses, of which at least 6 credits must be chosen from quantitative courses.

Biomanufacturing Core Courses:

BIEN 580 Synthetic Biology (3 credits)
BIEN 585 Metabolic Engineering (3 credits)
BIEN 590 Cell Culture Engineering (3 credits)
BIEN 602 Biomanufacturing of RNA biologics (3 credits)
BIEN 670 Downstream Processing (3 credits)
BIEN 675 Process Analytical Technologies and Data Sciences (3 credits)
BIEN 680 Bioprocessing of Vaccines (4 credits)
BIEN 685 Gene and Cell Therapy Viral Vectors Biomanufacturing (3 credits)
BMDE 505 Cell and Tissue Engineering (3 credits)
BMDE 507 Formulation and Delivery of Biotherapeutics (3 credits)
CHEE 512 Stem Cell Bioprocess Engineering (3 credits)
CHEE 651 Advanced Biochemical Engineering (4 credits)

BBME Core (Quantitative):

<https://www.mcgill.ca/bbme/students/courses/core#Quantitative>

BBME Core (Non-Quantitative):

<https://www.mcgill.ca/bbme/students/courses/core#Non-Quantitative>

The remaining 6 credits must come from core or non-core complementary courses chosen from <https://www.mcgill.ca/bbme/students/courses> or from other courses, at the 500 level or higher. The selection of other courses must have the prior written approval of the Graduate Program Director.

NOTES:

It is recommended to select in priority the core courses with a biomanufacturing content to build a strong knowledge-based background in Biomanufacturing prior to completing the mandatory internships in the biomanufacturing sector.

Students who have taken some BBME core courses during their undergraduate degree may replace them with non-core courses at the 500 level or higher, but the total number of credits required remains the same, and at least 6 credits of the core courses taken must be quantitative.

Time Requirement and Fees

- The Master's of Engineering (non-thesis) in Biological and Biomedical Engineering (BBME) – Biomanufacturing Concentration at McGill University requires a student to register each term, including the summer term.
- Non-Thesis Master's Program (Biomanufacturing Concentration) students are charged fees per credit: [Tuition increases 2022-23 | Student Accounts - McGill University](#).