BME MS Guidelines and Requirements
2/13/2013

The Department of Biomedical Engineering (BME) at Michigan Technological University offers a Master of Science (MS) program under three options (thesis, report, and coursework-only) for students who already hold a bachelor’s degree. An accelerated MS program (coursework-only) is also being offered to qualified MTU BME undergraduate juniors to expedite their MS study.

In addition to the BME guidelines, students also need to follow the university graduate requirements. For more information on forms and deadlines, visit the official graduate school MS programs website at: http://www.mtu.edu/gradschool/administration/academics/forms-deadlines/masters/.

Admission Requirements:

1. Only students with a cumulative GPA of 3.0 or above are eligible to enter the BME MS program.
2. All students who have a BS in an engineering discipline are eligible to apply. However, those students lacking undergraduate courses in the life sciences may be required to complete additional courses in the life sciences to correct for this deficiency. The academic/research advisor and graduate director will approve a plan for satisfying the deficiency.
3. Exceptional students with non-engineering BS degrees are also eligible to apply. However, these students may be required to complete additional courses in engineering and/or mathematics to correct for this deficiency. The academic/research advisor and graduate director will approve a plan for satisfying the deficiency.
4. General GRE exam results are required as part of the admissions process for students without an MTU bachelor’s degree.
5. The standard Graduate School admissions process applies.

Program Requirements:

- The MS degree requires 30 credits of approved course work.
- Students who are accepted into the program will be placed under probation if their cumulative graduate GPA for courses counted toward the degree falls below a 3.0. Students who are under 2 consecutive probation semesters will not be allowed to continue in the program.
- A cumulative GPA for courses counted toward the degree of 3.0 is required for graduation.
- Each student must have an academic/research advisor who is a member of the BME faculty. The Advisor’s primary responsibility will be supervising the student’s academic and professional growth, as well as working with the student to develop an academic plan for enrolling in the appropriate courses for the student and program.
- Students are allowed to take courses outside of BME as determined by the student and his/her advisory committee and dependent on the student’s area of emphasis.
- Students will need at least 12 credit hours (in addition to the 2, 1-credit seminar requirement) from the BME department.
- The academic plan developed by the student and academic advisor will need written approval from the faculty advisor and the departmental graduate coordinator.
- Throughout their degree program, students will be required to attend the Graduate Seminar. During the first year of study, students must enroll in BE5990 each semester. After the first year, attendance will still be mandatory, but the students will not receive credit.
- All Graduate School residency and credit requirements must be met.
Requirements for Students with Non-Engineering Degrees

In addition to students with BS or MS in engineering degrees, BME department also accepts qualified students from non-engineering programs. To ensure success of these students in the program, students with non-engineering degrees will need to demonstrate proficiencies in mathematics and engineering knowledge. Deficiencies in engineering topics will be determined by the thesis/academic advisor (if applicable) and the graduate program director. The requirement to fulfill these deficiencies can be accomplished with the following options.

Option 1: Courses: Students need to take specific courses to fulfill the engineering requirement. The exact courses will depend on the student’s deficiencies. The number of credits and courses will be determined by the student’s advisor (and the thesis/dissertation committee, if applicable), and approved by the graduate program director. These extra credits can be counted towards the credit requirement for the degree up to 9 credit hours if the courses are 3000 levels or higher.

Option 2: Independent Projects: If student does not have the proper engineering background in a certain area, he/she can enroll in an independent study/project advised by a faculty with the appropriate expertise, and approved by the graduate program director. The independent project can be counted towards the credit requirement for the degree.

Typical Program of Study:
Students can be enrolled in the MS program under three options: Thesis option, Report option, and Coursework-only option. Students need to indicate their option by completing the MS Option Selection form before the end of the first semester in the program. Students are allowed to change their plans while enrolled in the program.

Thesis Option
Under this plan, the student is required to produce a research thesis with the supervision of an advisor. The minimum requirements are as follows:

- A minimum of 30 approved credits
- 20 credit minimum of relevant course work
  - 12 credit minimum 5000-6000 level courses
  - 9 credit maximum 4000 level courses
  - 2 credits of seminar course
  - 3 credit minimum 4000 or higher level courses outside the department
- 6 to 10 research credits

Report Option
Under this plan, the student is required to produce a report describing the results of an independent study project. At least 24 of the 30 credits must be earned in coursework other than the project.

- A minimum of 30 approved credits
- 24 credit minimum of course work
  - 12 credit minimum 5000-6000 level courses
  - 12 credit maximum 4000 level courses
  - 2 credits of seminar course
  - 3 credit minimum 4000 or higher level courses outside the department
- 2 to 6 Research credits BE5000

Coursework-only Option
This plan requires the minimum of 30 credits be earned through course work. Research credits taken by students in other plans may not be counted as coursework credits.

- A minimum of 30 approved credits are required
Course work must satisfy the following:
  - 18 credit minimum 5000-6000 classes
  - 9 credit maximum 4000 classes
  - 2 credits of seminar course
  - 3 credit minimum 4000 or higher level courses outside the department

Up to 6 credits taken as Independent Study may be for research-related activities

Accelerated MS Program
BME also offers an accelerated MS program for junior level MTU BME undergraduate students to enroll into the MS program. The students are allowed to count up to 6 credits of 4000 level or higher courses taken as an undergraduate towards both their BS and MS degrees. Only students who intend to complete both BS and MS degrees at MTU are eligible to enroll in the accelerated program. Students already enrolled in a graduate program may not retroactively enroll in the accelerated MS program.

- The Accelerated MS program is a coursework-only plan
- The number of credits required for the accelerated MS degree is 30 credits.
- Up to 6 credits taken as Independent Study may be for research-related activities.
- Students will be permitted to apply up to six (6) credits of 4000 level or higher courses taken as an undergraduate towards both their bachelor’s and master’s degrees. Upon entrance into the program, students must indicate which undergraduate-level courses will be applied to both their BS and MS degrees. No undergraduate research credits may be applied to the MS degree.

The thesis/report defense is opened to the public. The student will give a presentation to the audience. The general audience will first question the student on the proposal. Upon dismissal of the general audience, the thesis committee members will continue question the student. The committee will evaluate the student’s ability to present and defend the thesis. If the student does not pass the defense, he/she can retake the defense the second time. Failure in the second defense will result in the dismissal of the student from the thesis/report MS program. The student will have the option to complete the MS degree with the Coursework option.