

Department of Bioengineering B.S./M.S. Program Handbook

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1. Program Description

The Department of Bioengineering B.S./M.S. program is designed to take advantage of extra coursework and research completed as an undergraduate to accelerate completion of the M.S. degree. A standard M.S. in Bioengineering typically requires 2 or more years of study beyond the B.S. degree; the B.S./M.S. program is intended to shorten that time. Students in the program may begin research during the junior year and devote the summers thereafter to additional research and study. Research completed as an undergraduate can usually be applied toward partial fulfillment of the senior project requirements.

To participate in the B.S./M.S. program, students must apply for admission through the Department of Bioengineering by January 15 of the junior year (see Section 3 below). Recommendation for admission by the Department allows students to begin their M.S. studies as undergraduates. The B.S. and M.S. degrees are conferred simultaneously following completion of the program.

2. Prior to Application to the B.S./M.S. Program

2.1. Regular and Early Admission to Major Status

Applicants for admission to the B.S./M.S. program must have major status in BME at the University of Utah, and must have taken the GREs. Note that this requirement means the applicants must take the GREs before January 15th of their junior year.

2.2. Early Admission to Major Status Only - B.S./M.S. Candidates

Exceptional students who are granted early admission to major status and are interested in applying to the B.S./M.S. program may designate themselves as B.S./M.S. candidates after consulting with the undergraduate advisors and the B.S./M.S. program advisor. Early admission candidates must follow the same application deadline and procedure as described in Section 3.

2.3. International Students

International students on visas are not eligible to participate in the combined B.S./M.S. programs, per SEVIS regulations according to U.S. Immigration and Customs Enforcement <http://www.ice.gov/sevis>.

3. Application to the B.S./M.S. Program

3.1. Application Deadline

Applicants must apply by January 15 of the junior year to the Department of Bioengineering Graduate Committee for acceptance into the B.S./M.S. program.

3.2. Application Procedure

Applications should be made online using the "Apply Yourself" application system per department regulations: www.bioen.utah.edu/education/graduate/graduate_admissions/graduate_admissions.php. Supporting material (including transcripts and GRE scores) should be sent to the Department of Bioengineering Graduate Committee. A separate application for Graduate School Admission is not required at this time, but will be done later (see Section 4.4). All admission requirements for the standard M.S. program remain in place, and the applicant must indicate clearly at the beginning of the personal statement that the application is for the B.S./M.S. Program.

3.3. Admission Criteria

The application is processed and decisions are made by the Bioengineering Graduate Committee. Entrance criteria for the B.S./M.S. program are consistent with criteria for the traditional M.S. program. Letters of support from current or future research advisors are recommended but not strictly necessary.

4. B.S./M.S. Program Requirements

The Bioengineering B.S./M.S. program meets the requirements of College of Engineering, the Graduate School and the University of Utah. Departmental requirements are noted below (Sections 4.1-4.5), followed by a model timeline for the combined program (Section 5).

4.1. B.S. and M.S. Requirements

Students must complete a minimum of 152 semester credit hours total of qualified studies. A minimum of 128 credit hours must meet the B.S. requirements of the department. Of those 128 credit hours, at least 122 must be taken as an undergraduate; 122 being the minimum required for a B.S. in the College of Engineering. A minimum of 30 semester credit hours must meet the M.S. requirements of the department. Of those 30 credit hours, at least 24 must be taken as a formal M.S. student. Thus, up to 6 credit hours (i.e., hours 123-130) at the 5000+ level may taken as either a B.S. or M.S. student.

B.S. Component

All requirements for the standard B.S. degree in BME remain in place. A detailed description of requirements for the B.S. degree in BME can be found in the Department of Bioengineering Undergraduate Handbook (<http://www.bioen.utah.edu/education/undergraduate>) that was in effect at the time of admission to major status. A hard copy of the student's approved B.S. track course plan – the "blue sheet" previously approved by the Major Advisor – must be submitted to the Bioengineering graduate program secretary for placement in the student's file within one semester of admission to the combined program. Accompanying this sheet must be a hard copy of the required B.S. coursework that specifically applies to the student (this can be found in the Undergraduate Handbook in effect for the year the student was admitted to major status). Any approved changes in the track course plan must be submitted to the Bioengineering graduate program secretary as well.

M.S. Component

The M.S. degree in Bioengineering requires a minimum of 30 credit hours at the 5000+ level, and may be either a Thesis Option or Course Option M.S. For a description of the differences between thesis course options, see the department requirements: <http://www.bioen.utah.edu/education/graduate/ms.php>. Students in the B.S./M.S. program must declare whether they intended a Thesis Option or Course Option M.S., before matriculating into the M.S. program. The following denotes changes from the standard M.S. requirements, specifically applicable to B.S./M.S. Students:

1) Required in the M.S. Program of Study (8 credit hours)

Physiology Fundamentals (6 credits total). Note: 3 credit hours must be one semester of Systems Physiology for Engineers (BIOEN 6000 or 6010), and the other 3 hours must be an advanced elective, 6000+ biosciences courses to substitute Cellular Physiology (BIOEN 6050). Advanced biosciences courses can be found at <http://www.bioscience.utah.edu/curriculum>.

Biomedical literature survey (2 credits total). A two course sequence, 6060/6061, Scientific Presentations I/II. Substitutions must be approved by the M.S. supervisory committee.

2) Electives (13 credit hours)

Advanced elective courses used to qualify for the M.S. component of the combined program must be approved by the M.S. research supervisory committee and be listed on the M.S. program of study (see Sections 4.2 and 4.3 below). At least 8 credit hours must be advanced elective, 6000+ engineering courses. The M.S. advisor should help the student develop the program of study. Examples of elective courses focused on acceptable bioengineering areas (i.e., Bioinstrumentation, Biomaterials, Biomechanics, Computational Bioengineering and Neural Interfaces) are listed here: <http://www.bioen.utah.edu/education/graduate/tracks.php>.

3) M.S. Specialty. Either: a. *Thesis Option*, or b. *Course Option*.

a) Thesis Option. Thesis Research (9 credit hours) and Defense of the M.S. Thesis.

An M.S. student must complete at least 9 credit hours of thesis research (BIOEN 6970) and defend his or her work in a public forum. Copies of the thesis must be given to the advisor, each member of the supervisory committee and to the Bioengineering executive secretary at least two weeks prior to the defense. The thesis presentation is followed by a closed session in which the thesis committee examines the candidate. The committee can pass the candidate, pass the candidate contingent upon the candidate's successfully responding to issues raised at the defense, or fail the candidate. M.S. candidates are given two opportunities to pass the defense. An original of the Report of the Final Oral Examination and Thesis for the Master's Degree (http://www.bioen.utah.edu/forms/MS_final_exam.pdf) signed by the M.S. research supervisory committee must be submitted to the Graduate Records Office, with copies to the Bioengineering graduate program secretary for the student file.

A Handbook for Theses and Dissertations containing information on Graduate School policies and procedures a thesis is available: <http://gradschool.utah.edu/thesis/handbook.pdf>. A student wishing to graduate in a specific semester must meet the deadlines listed in the Thesis Calendar and Masters Program Calendar, at <http://gradschool.utah.edu/thesis/>.

b) Course Option. Track Specialization (9 credit hours) and M.S. Exam.

The course-option M.S. requires completion of at least 9 credit hours of advanced courses within a Bioengineering track specialization in lieu of a thesis. To demonstrate depth of knowledge within the field, the course-option M.S. also requires students to pass either 1) an oral exam administered by the M.S. supervisory committee or 2) the written portion of the Ph.D. qualifying examination in the track.

4.2. M.S. Research Supervisory Committee

Filing the Request for Supervisory Committee Form

Within one semester of admission, the student must form an M.S. supervisory committee and submit a Request for Supervisory Committee Form (<http://www.bioen.utah.edu/forms/supervisory.pdf>) to the Bioengineering graduate program secretary. The research supervisory committee must consist of at least three University of Utah faculty members. The chair of the committee must have a faculty appointment in the Department of Bioengineering and at least one of the committee members must be a tenure track member of the Bioengineering faculty. The advisor and committee must be approved by the Director of Graduate Studies (or Chairman) of the Department of Bioengineering.

4.3. M.S. Program of Study

Filing the Application for Admission to Candidacy for the Master's Degree Form

Within one semester of admission to the combined program, the student must submit an M.S. program of study, including the intention to pursue a Thesis Option or Course Option M.S., to the Bioengineering graduate program secretary. An Application for Admission to Candidacy for the Master's Degree Form can be found at http://www.bioen.utah.edu/forms/MS_prog_study.pdf. This form must first be signed by the M.S. research supervisory committee and then by the Director of Graduate Studies (or Chairman) of the Department of Bioengineering. [Note: The Department will submit to the Graduate Records Office this completed and signed M.S. Candidacy form showing all courses taken, or to be taken, for the M.S. component of the combined program. The Department also attaches a copy of the B.S. course work plan showing what courses are being used to qualify for the B.S. component of the combined program.]

4.4. Progression to Graduate Status:

Filing the University of Utah Application to Graduate Admission Form

A student may request transfer to formal graduate student status after completion of 122 semester credit hours of qualified studies. The student follows regular University of Utah Graduate School application procedures: <https://app.applyyourself.com/?id=utahgrad>.

Students who are working on extramurally funded research projects may be eligible for the University of Utah's Graduate Tuition Benefit Program (TBP) for 5000 and above level courses, once they obtain graduate status. TBP guidelines are posted at <http://www.utah.edu/gradschool>. Note that while students are enrolled with graduate status, all rules of the Graduate School apply (graduate tuition structure, tuition benefit program, health insurance program, etc.). When deciding on change of status from undergraduate to graduate, students should read the TBP guidelines and weigh benefits (e.g., tuition benefit and health insurance) vs. negatives (e.g., no scholarships, higher tuition).

4.5. Graduation from the B.S./M.S. Program

The B.S. and M.S. degrees are conferred simultaneously following completion of the program. No student will be awarded a separate M.S. degree without satisfying all requirements for the B.S. degree.

5. Timeline and Exit Strategy for the B.S./M.S. Program

Action Timeline

1. Online Application to the B.S./M.S. Program by January 15 of the junior year. Subsequent steps in this timeline are contingent upon admission to the B.S./M.S. Program.*
2. Within one semester after admission:
 - a. Finalize a B.S. coursework plan, and submit a copy of the blue sheet plus B.S. course work requirements from UG Handbook in effect at time of admission to major status.
 - b. Establish an M.S. Research Supervisory Committee and submit the Request for Supervisory Committee Form.
 - c. Develop an M.S. Program of Study and submit an Application for Admission to Candidacy for the Master's Degree Form.
3. Sometime after completion of 122 credit hours, submit graduate admission application to the University of Utah Graduate School to attain formal graduate student status.**
4. Within 24 months of admission to graduate school, either a) or b) :
 - a. Thesis Option
 1. Complete an additional 21 course credit hours and 9 research credit hours.
 2. Submit M.S. thesis to Research Supervisory Committee at least 2 weeks prior to defense.
 3. Public M.S. thesis defense and an oral examination before Research Supervisory Committee.
 4. Submit the Report of the Final Oral Examination and Thesis for the Master's Degree.
 - b. Course Option
 1. Complete an additional 30 course credit hours.
 2. Pass an oral exam from the M.S. Supervisory Committee, or the relevant track of the Ph.D. qualifying exam.
5. Graduation – receive B.S. and M.S. degrees simultaneously***

* *Prior to transferring to graduate status, students must register as undergraduates; all rules of the Undergraduate Program apply (e.g., tuition structure, scholarship eligibility, etc.).*

** *While students are enrolled with graduate status, all rules of the Graduate School apply.*

*** *Students must complete a minimum of 152 credit hours total of qualified studies.*

Alternate Exits from the B.S./M.S. Program

Students wishing to exit the combined program can apply qualified coursework toward the traditional B.S. and M.S. degree requirements without penalty. In addition, admitted students who decide to receive the B.S. degree prior to completion of the B.S./M.S. program requirements must exit the combined program, but are given the option to enroll in the traditional M.S. program and are allowed to transfer eligible work not needed to meet the standard B.S. requirements to the standard M.S. requirements.