B.S./M.S. FIVE-YEAR PROGRAM IN BIOMEDICAL ENGINEERING

The Department of Biomedical Engineering offers a dual-degree program that culminates with students receiving both Bachelor of Science and Master of Science (BS/MS) in Biomedical Engineering concurrently. This program is available only to qualified students enrolled in the undergraduate program in Biomedical Engineering at the University of Miami. This program is intended to give qualified Biomedical Engineering students the opportunity to acquire both a baccalaureate degree (BSBE) and a Master of Science (MSBE) degree in five years rather than the 4 plus 2 years (approximately) that is traditionally expected. The two degrees are awarded simultaneously when the combined requirements have been met for both degrees.

Admission Requirements

The dual BS/MS program is available only to qualified undergraduate students enrolled in the Department of Biomedical Engineering, in any of the four Concentrations (Electrical, Mechanical, Biomaterials and Tissue, PreMed). Typically, students must have undergraduate student status and a cumulative G.P.A. of at least 3.0 at the time of application.

Undergraduate students must take the Graduate Record Examination (GRE) before the end of their classification as a senior and attain a combined score of more than 300 on the verbal and quantitative portions. Students must meet all other pertinent graduate school and College of Engineering requirements.

Qualified students must apply prior to the beginning of final exams in the second semester of their junior year. Students are strongly advised to apply to the BS/MS program as early as possible in their junior year to facilitate academic advising and course selection in the second semester of their junior year. Before submitting an application, interested students should discuss the program and the possibility of entering the program with an academic advisor.

The College of Engineering Office of Admission will carefully review academic credentials for admission into the program and will notify students of their acceptance into the program. All admitted students will have a special advising appointment with Dr. Narasimhan, Assistant Dean for Undergraduate Studies, to discuss academic issues specific to the BS/MS program.

Curriculum Guidelines

In the dual-degree BS/MS program in the Department of Biomedical Engineering, the first four years of the curriculum are altered as follows:

- The 3 credits of Senior Design Project (BME 402/BME 403) are eliminated.
- In Semester I of the senior year, one 3-credit Undergraduate Technical Elective is replaced with one 3-credit Graduate Technical Elective.
- In Semester II of the senior year, one 3-credit Undergraduate Technical Elective is replaced with BME 705 (MS Design Project I), or alternatively, one 3-credit Graduate Technical Elective.

Graduate Technical Electives taken in the senior year must be chosen from the BME graduate course offerings, with the approval of their academic advisor. The credits of Graduate Technical Electives completed in the fourth year are counted toward the 30 credits required for the MS degree.

Students admitted in the dual degree BS/MS program can take a maximum of six (6) graduate credits per semester in their senior year, for a maximum of twelve (12) graduate credits per year, without incurring additional costs if they are full-time undergraduate students during this period. Students should register for courses towards their graduate degree as "G" credits and not as "U" credits. These registrations must be completed prior to taking courses. Retroactive add/drops will not be processed.

To register for graduate credits during their senior year, students must be in senior status and must complete and submit the Graduate School's "Application for Undergraduates to Take Graduate Coursework (http://bulletin.miami.edu/graduate-academic-programs/engineering/biomedical-engineering/five-year-program-biomedical-engineering-bs-ms/undergrad_take_grad_course.pdf)" form. This form must accompany the Add/Drop and/or Course Request form to ensure that students are registered with the correct registration status.

In the Senior year, students must be registered for a minimum of 12 undergraduate credits each semester to maintain full-time status as an undergraduate student. After completing the senior year, students must register as graduate students.

BS/MS Design Project (BME 705/706)

General Description

In lieu of the 3-credit senior design project (BME 402/BME 403) students enrolled in the dual-degree BS/MS program register for 6 credits of Master Design Project (BME 705/BME 706). The 6 credits of BME 705/BME 706 satisfy the undergraduate senior design project requirements and the non-thesis Master’s project requirement. The BME705/706 project must therefore include a significant capstone design component.

Project Mentor

The BME 705/BME 706 design project is monitored by one project mentor and one project coordinator. Students are encouraged to select a mentor and project topic as early as possible, preferably during the first semester of their senior year. The project mentor is generally a primary faculty...
member of the Department of Biomedical Engineering. The role of the project mentor is to help the student identify a suitable project, to monitor the progress of the student, to provide guidance and training in the relevant topics, and to review the final report and presentation.

Students may complete their project under the supervision of a faculty member from another Department at the University of Miami, or from the local biomedical industry, under the following conditions:

- The student must receive the approval of the Department Chairman and Graduate Program Director
- The student must identify a co-mentor who must be a primary faculty member of the Department of Biomedical Engineering. The co-mentor must be familiar with the topic of the proposed project. The role of the co-mentor will be to monitor the student progress and ensure that the Master's project report and presentation satisfy all of the relevant requirements.

**Project Coordinator**

The project coordinator is a member of the primary faculty of the Department of Biomedical Engineering who is responsible for teaching the BME705/706 course. The role of the project coordinator is to help students identify a project and mentor; ensure that the projects satisfy the program objectives; provide general guidance and biomedical design and graduate scholarship training; and ensure that the students are making suitable progress towards the project goals.

**Project Report**

Students will receive a grade for their project only after submission and acceptance of a detailed written report. The report must satisfy the requirements of the Senior Design Project report, and additionally satisfy the requirements of the non-thesis MS project report (See section titled, "Non-thesis MS project" (http://bulletin.miami.edu/graduate-academic-programs/engineering/biomedical-engineering/biomedical-engineering-bs-ms)). The report must be reviewed and approved by the project mentor(s) and the project coordinator. Once the report is approved by the mentor(s), one printed copy and one electronic version in PDF format must be submitted to the Project Coordinator by the specified deadline. The final report must be approved and signed by the Project Mentor(s), Project Coordinator and Graduate Program Director or Department Chairman (Template signature page (http://bulletin.miami.edu/graduate-academic-programs/engineering/biomedical-engineering/five-year-program-biomedical-engineering-bs-ms/Signature_Page_Template.pdf)).

**Project Presentation**

Students must give an oral presentation of their project. The oral presentation is generally scheduled during the scheduled final examination time of BME 705 or BME 706 in the semester of graduation.

**Project Grade**

The final grade for the project is given by the Project Coordinator. The final grade is a combination of a grade submitted by the Project Mentor(s) assessing the overall performance of the student on the project, and a grade given by the Project Coordinator assessing the quality of the oral presentation and report.

**Graduation Requirements**

Students accepted into the dual degree program must maintain at least a 3.0 Cumulative GPA, and meet all other pertinent Graduate School requirements, including a minimum of 3.0 GPA in the credits applied toward the MS degree.

**Curriculum Requirements**

- B.S./M.S.: Biomaterials and Tissue Concentration (http://bulletin.miami.edu/undergraduate-academic-programs/engineering/biomedical-engineering/biomedical-engineering-bs-ms-biomaterials-tissue)
- B.S./M.S.: Electrical Concentration (http://bulletin.miami.edu/undergraduate-academic-programs/engineering/biomedical-engineering/biomedical-engineering-bs-ms-electrical)
- B.S./M.S.: Mechanical Concentration (http://bulletin.miami.edu/undergraduate-academic-programs/engineering/biomedical-engineering/biomedical-engineering-bs-ms-mechanical)
- B.S./M.S.: Premed Concentration (http://bulletin.miami.edu/undergraduate-academic-programs/engineering/biomedical-engineering/biomedical-engineering-bs-ms-premed)
- B.S./M.S.: Medical Physics