



## Combined Bachelor's and Master's Degrees (BS/MS) program For the School of Biomedical Engineering, Science and Health Systems

This report establishes the policy for the combined bachelor's and master's (BS/MS) degrees program for the School of Biomedical Engineering, Science and Health Systems at Drexel University as approved by the faculty on Thursday, July 27, 2006 and updated September 7, 2015. The policy maintains two distinct pathways for undergraduates to obtain the combined bachelor's and master's (BS/MS) degrees from the school: 1) an Advanced Courses option and 2) a Research option. This policy acknowledges the diversity of avenues open to BS/MS degree holders in the biomedical engineering field, some of which benefit from research, some of which benefit from advanced course work.

### General University BS/MS (5-Year + Graduate Accelerated Program-Co-terminal Degree) Requirements:

Drexel University undergraduate students that desire to participate in the BS/MS program must apply directly to the participating academic unit of their choice. The general university BS/MS program eligibility requires the applicant to complete at least 90 credits and no more than 120 credits, and achieve a cumulative GPA of at least 3.0 (although some programs have higher standards). The applicant must complete a BS/MS application form (available through the Drexel University Graduate College) and obtain the required approval of departmental and university administrators. *Subsequently, the student must complete the specific requirements for the combined BS and MS degrees as stipulated by the participating academic unit.* Only 5-year, 3-COOP program students may participate in the BS/MS program. Students are required to complete the first two COOP assignments; the third and last COOP assignment is optional.

**Effective immediately**, this policy (v.7 effective 9-07-15) covers the entering class of September 7, 2015. Entering classes prior to September 7, 2015 are still covered by the previous policy (v.6 effective 7-27-06). The BS/MS program for the School of Biomedical Engineering, Science and Health Systems has two curricular paths with the conditions and requirements as stated below.

#### I. Advanced Courses option (Non-thesis MS degree) – All selected BS/MS program applicants will be automatically placed in the Advanced Courses option.

##### a. *Advanced Courses option admission requirements:*

- i. must be an undergraduate in biomedical engineering at Drexel University in a 5-year, 3-COOP program of study. *(The Advanced Courses option is only open to undergraduates in the School of Biomedical Engineering, Science and Health Systems)*
- ii. must plan to study for the Master's Degree in Biomedical Engineering.
- iii. have completed at least 90 credits and a recommended maximum of 120 credits (negotiable).
- iv. have a minimum cumulative GPA of at least 3.4.
- v. submission of the BS/MS program application form with appropriate signatures.

- vi. submission of a plan of study for both undergraduate and graduate courses approved by an academic advisor.
- vii. The completed BS/MS program application is provisionally approved by the School of Biomedical Engineering, Science and Health Systems and is forwarded for final approval by the Drexel University Graduate College.

**b. Advanced Courses option completion requirements:**

- i. complete at least 225 total credits that meet ABET standards encompassing a minimum of 180 undergraduate credits and a minimum of 45 graduate course credits which may not include research credits.
- ii. complete the senior design course sequence.
- iii. maintain a minimum cumulative GPA no lower than 3.2.
- iv. complete at least two COOP assignments; the third and last COOP assignment is optional.

**II. Research option (thesis-required MS degree) – Students accepted to the Biomedical Engineering BS/MS program may petition the School of Biomedical Engineering, Science and Health Systems for permission to participate in the Research option of the BS/MS program.**

**a. Research option admission requirements:**

- i. must be admitted to either the Biomedical Engineering BS/MS program or the BS/MS program in another engineering discipline at Drexel University (*only the Research option is open to students pursuing a BME master's degree combined with an undergraduate engineering degree that is not biomedical engineering*).
- ii. have a cumulative GPA of at least 3.4.
- iii. submission of the petition no later than April 1st of the junior year (*missing this deadline may result in limiting the student to the Advanced Courses option*).
- iv. The petition must include:
  - 1. a plan of study for both undergraduate and graduate courses approved by an academic advisor,
  - 2. a summary research plan incorporating an ABET-qualified design component for the master's degree approved by a research advisor and an academic advisor,
  - 3. a completed BS/MS research petition form.
- v. If the petition is not submitted or is not accepted, the BME student defaults to the Advanced Courses option.
- vi. The petition to participate in the Research option of the Biomedical Engineering BS/MS program will be given final approval by the School of Biomedical Engineering, Science and Health Systems.

**b. Research option completion requirements:**

- i. complete at least 225 total credits encompassing a minimum of 180 undergraduate credits, and a minimum of 45 graduate credits. The 45 graduate credits may include either:
  - 1. a maximum of 6 research credits or,

2. a maximum of 6 credits applied to senior design.
  - ii. maintain a GPA no lower than 3.2.
  - iii. complete at least two COOP assignments; a third and last COOP assignment is optional.
  - iv. submit a written research thesis manuscript approved by a faculty examining committee incorporating an ABET-qualified design component. (*The faculty examining committee must maintain a three-member minimum including at least two School of Biomedical Engineering faculty with credentials as specified by Drexel University policy*)
  - v. complete a public oral defense of the thesis approved by a faculty examining committee.

**c. Alternative Research option completion requirements:**

- i. Research option students *may* complete the senior design course sequence concurrent to their MS thesis research, however, it is not a requirement. A maximum of 6 credits of the required 45 graduate credits for the Research option may be applied to the senior design course sequence in place of research credit. This condition of concurrently conducting senior design and the research thesis must be approved by the research advisor and the academic advisor.
- ii. As a contingency option provided for exigent circumstances only, Research option students *may* satisfy the master's degree requirement of the BS/MS program by achieving a publication in a qualified, refereed journal as the *first* author. This achievement precludes a faculty examining committee, a written thesis manuscript and a public defense of the research. The student must seek and receive formal approval of this option from their research advisor and the the School of Biomedical Engineering.

### III. Withdrawal from the BS/MS program

- a. BS/MS students may withdraw from the program at any time and continue their studies for a bachelor's degree insofar as they comply with the curriculum requirements for the bachelor's degree which includes the senior design component.
- b. Students must meet with an academic advisor to record the withdrawal process.
- c. **Disclaimer:** withdrawal from the BS/MS program after registering for and completing graduate level courses at the undergraduate cost *may* incur a financial penalty from the university administration. Drexel University and the School of Biomedical Engineering, Science and Health Systems are not responsible for financial damages resultant from this consequence of the student's decision.

### IV. BS/MS Program completion extended beyond the designated graduation date

- a. BS/MS students who do not finish the program by their designated graduation date must complete the program within 12 months of the original graduation date.
- b. They may complete their originally planned research thesis for the MS degree as approved by a faculty examining committee or,
- c. take the senior design course sequence and additional coursework to achieve 45 graduate credits (which may not include research course credits) for a non-thesis MS degree or,
- d. achieve a publication in a refereed journal as the *first* author for their MS degree. This achievement precludes a faculty examining committee, a written thesis manuscript and a public defense of the research. The publication must be formally approved by the research advisor and the academic advisor, or
- e. default to a bachelor's degree only if they have completed the requisite bachelor's degree curriculum including the senior design component, but have not completed the master's degree component.
- f. Extended BS/MS students who do not complete at least one of these options can not be awarded their bachelor's nor master's degree, and will have their academic status inactivated after the 12 month, post-graduation date deadline. Subsequently, they must follow the policy procedures for re-instatement.

**V. Transitional plan of action for current BS/MS students in the School of Biomedical Engineering, Science and Health Systems (*This plan of action only applies to the student body present at the time of this policy instatement*)**

- a. **Students entering prior to September 7, 2015** must follow the BS/MS program as stipulated by the prior BS/MS policy (v.6 effective 7-27-06).
- b. **Students entering after September 7, 2015** must comply with the new policy as written in this document, noting the following changes in particular:
  - i. Their cumulative GPA must be 3.4 or higher for admission to the program.
  - ii. Their cumulative GPA must be no lower than 3.2 to remain eligible for the program.
- c. **Students provisionally accepted to the BS/MS program through the university admissions process** must follow the new policy as written. They are expected to complete the application and planning process and will enter the Advanced Courses option (non-thesis) with the opportunity to petition for the Research option (thesis). Provisional BS/MS students **are not allowed** to drop their last required COOP assignment until they are officially admitted to the BS/MS program through the formal application process.