

Combined BS in Biosystems Engineering
(Applied Biotechnology Concentration)
and
MS in Bioengineering

Biosystems Engineering majors in the Applied Biotechnology Concentration at Clemson University may begin a Master of Science (MS) degree in Bioengineering while completing the Bachelor of Science degree. **The Biosystems Engineering undergraduate curriculum allows six (6) credits of mutually acceptable graduate courses [3 hours of engineering rubric and 3 hours of life science (BIOCH, GEN,MICRO, BIOSC)] to satisfy requirements of both degrees.** The following specific requirements apply:

A. Undergraduate/graduate transition

1. Undergraduate students having a minimum overall GPR of 3.4 and Junior status may apply for acceptance to the Graduate School and to this joint program. If accepted, participants must maintain this overall GPR and a “B” average on the six credits of graduate courses to continue enrollment in this combined program.
2. Graduate Record Examination (GRE) scores are required as part of the Graduate School application. Normally, minimum scores for admission to the graduate program are 500, 700 and 5.0 for the verbal, quantitative and analytical writing sections respectively.
3. Six hours may be chosen from the following courses to satisfy requirements of both degree programs (3 life sciences and 3 engineering):
 - a. Cell Biology (BIOSC 661), 3 credits or Systems Physiology (BIOSC 659), 3 credits.
 - b. Biotechnology for Bioengineers (BIOE 640), 3 credits; Advanced Bioprocess Engineering (BE 838), 3 credits.
4. Students will be required to take the following course as elective as undergraduates:
 - a. Intro. to Materials Science (C M E 210), 3 credits.
5. Students in a combined degree program are conditionally accepted to the graduate program until completion of the BS degree requirements.
6. Graduate assistantships cannot be accepted until full graduate status is attained and contingent on availability of funds in alignment with bioengineering departmental policy.

B. Graduate program

1. Students will be accepted into a thesis or non-thesis program. Most students will be non-thesis with thesis reserved for those who show special interest and ability for research. Beginning in the summer after their senior year, students will enroll in BIO E 891 for thesis option or BIO E 892 for a non-thesis option and must be full-time. The outcome for the thesis student is publishable experimental research. The outcome for the non-thesis student is a paper based on library or limited laboratory work or both. Both types of students will undergo an oral exam in which they defend their project work and are tested on relevant general knowledge of biology and bioengineering.
2. As part of the graduate program, students are required to take:
 - BIO E 801 Biomaterials (3 credits)

- BIO E 820 Structural Biomechanics (3 credits) or BIO E 847 Elements of Bioengineering (4 credits)
 - BIO E 800 Seminar in Bioengineering Research (1 credit per two semesters)
3. During the summer following their senior year, students will enroll in EXST 801 Statistical Methods (4 credits) and BIO E 882 Biomaterials Implantology (4 credits).
 4. The thesis option requires 30 credits while the non-thesis option requires 33 credits to be chosen in consultation with the graduate committee.
 5. Graduate courses (800 level) may be taken as an undergraduate, but should be selected in consultation with their academic advisors.
 6. Students in a combined degree program are conditionally accepted to the graduate program until completion of the BS degree requirements and with acceptable GRE scores.

Students interested in this combined degree program should consult with their undergraduate advisor as early as possible in their undergraduate curriculum. Application should be made by the end of their junior year, but can be made at any time so long as the requirements for the program are met. Application is through the regular Graduate School process.