COMBINED BACHELOR OF SCIENCE IN BIOLOGICAL SCIENCES/MASTER OF SCIENCE IN BIOENGINEERING (Revised 8/5/2014)

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Biological Sciences undergraduates at Clemson University may begin a Master of Science (MS) degree in Bioengineering while completing their Bachelor of Science (BS) degree by using a limited number of courses to satisfy both degrees. The following specific requirements apply:

1. To be eligible for this plan (to file GS6BS/MS form), students must have completed their bachelor’s curriculum through their junior year (minimum 90 credits) and have a minimum overall grade point ratio of 3.4. **Note:** The GRE requirement for admissions is eliminated for students with approved GS6BS/MS forms. [http://www.clemson.edu/graduate/files/pdfs/GS6BSMS.pdf](http://www.clemson.edu/graduate/files/pdfs/GS6BSMS.pdf)

2. Students should select the PHYS 1220, 1240 and PHYS 2210, 2230 options to fulfill the physics requirement for their BS degree.

3. Students will be required to take the following courses (a-d) as undergraduates:
   a. Calculus of Several Variables (MATH 2060, 4 credits) and Intro to Ordinary Differential Equations (MATH 2080, 4 credits)
   b. Statics (CE 2010, 3 credits)
   c. Introduction to Materials Science (MSE 2100, 3 credits) or Introductory Circuit (ECE 3070, 3 credits)
   d. An additional junior-level engineering course: e.g., Biomechanics (BIOE 3200), Biofluid Mechanics (BIOE 3210) Bioinstrumentation (BIOE 3700), Thermodynamics of Materials (MSE 3260), Transport Phenomena (MSE 3270), Mechanical Behavior of Materials (MSE 4220)

4. Up to 6 credit hours of 6000 level elective courses from BIOE, BIOL or BCHM may be used to satisfy both the BS and MS requirements. However, the core requirement courses for the BIOL BS degree (e.g., BIOL 4610/6610, Cell Biology) cannot be counted twice for both degrees. Biotechnology for Bioengineers (BIOE 6400) is recommended. For other courses, see advisor.

5. Students will most often enroll into the non-thesis MS program. Students may take the MS thesis option if they are able to arrange for a faculty member in either Biological Sciences or Bioengineering to be their thesis advisor for a defined research project. Those who intend to follow the thesis option may start their research as early as their senior year and continue under this during their senior year. Beginning in the summer after their senior year students will enroll in BIOE 8910 (6 credits total required) for thesis option or BIOE 8920 (6 credits total required) for a non-thesis option. The intended outcome for the thesis student is publishable experimental research. The intended 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.

6. As part of the graduate program students will be required to take Seminar in Bioengineering Research (BIOE 8000, 1 credit each semester – only 1 credit counted towards degree requirements), Research Principles (BIOE 6150, 1 credit), Biomaterials (BIOE 8010, 3 credits); Biomedical Basis for Engineered Replacement (BIOE 8460, 3 credits), and one of the following three courses: Structural Biomechanics (BIOE 8200, 3 credits), Transport Processes in Bioengineering (BIOE 8470, 4 credits), or Bioinstrumentation (BIOE 8700, 3 credits). During the summer following their senior year students will enroll in Statistical Methods I (STAT 8010/8011, 4 credits). These courses with an additional elective (6000- or 8000-level BIOE or BIOL, 2-3 credit) course will fully satisfy the total of 30 credits required for the thesis option. Non-thesis students will need to take additional 5-6 credit hours as necessary to meet the 33 credits required; course selection to satisfy these additional credit hours should be made in consultation with the student’s research advisor.

7. Students in a combined degree program are conditionally accepted to the graduate program until completion of the BS degree requirements. Students enrolled in the MS degree program should anticipate covering the full amount of tuition, fees, and living expenses for their MS degree. Under special circumstances, research assistantship support for MS thesis projects may be available from individual faculty members or teaching assistantship support from the Department of Biological Sciences.

Students interested in this combined BS/MS degree program should consult with Ms. Stephanie Evans as early as possible in their undergraduate curriculum. Application should be made by the end of their junior year (minimum 90 credits), but can be made at any time so long as the requirements for the program are met. The GS6BS/MS form is submitted to the Graduate School.