

Combined Degree Program

BS in Environmental Engineering and MS in Environmental Engineering and Science DEPARTMENT OF ENVIRONMENTAL ENGINEERING AND EARTH SCIENCES

Environmental Engineering undergraduates at Clemson University may begin a Master of Science (MS) degree program while completing their Bachelor of Science (BS) degree and use a limited number of courses to satisfy the requirements of both their undergraduate and graduate degrees. The following specific requirements apply:

A. Undergraduate/graduate transition

1. Undergraduate students having a minimum overall GPR of 3.4 and a minimum of 90 credit hours may apply for acceptance by the Graduate School and to this joint program. If accepted, students must maintain an overall GPR of 3.4 in Environmental Engineering and a 3.0 average in the EE&S graduate courses to continue enrollment in this combined program.
2. Up to 9 semester hours of 6000- or 8000- level EES courses may be used to satisfy the requirements of the BS degree. The 9 credit hours earned at the undergraduate level will be combined with 21 hours earned at the Master's level, for a total of 30 hours needed for a Master's degree. If fewer than 9 hours are taken at the BS level, these must be made up at the graduate level in order to reach the 30 hours for a Master's degree. The 9 hours taken at the undergraduate level towards the MS degree fulfills the 9 hours of courses needed for the BS "Engineering or Science Requirement" category.
3. Students in the combined degree program are conditionally accepted to the graduate program until completion of the BS degree requirements.
4. Graduate assistantships cannot be accepted until full graduate status is attained and contingent on availability of funds in alignment with departmental policy. Non-thesis students are not eligible for graduate assistantships.

B. Graduate Program

1. Thesis and non-thesis options are available for the MS degree in EE&S. The EE&S program has six focus areas: process engineering, sustainable systems and environmental assessment, fate and transport, environmental health physics {ABET-accredited}, environmental radiochemistry, and environmental chemistry. See the EE&S program descriptions in the EEES Graduate Handbook for details.
 - a. For the thesis option, a student must complete 24 credit hours of course work plus at least 6 hours of thesis research. At least one additional semester may be needed to complete a thesis.
 - b. For the non-thesis option, a student must complete 27 credit hours of course work plus 3 hours of a special project (EES 8810). Non-thesis students are not eligible for research or teaching assistantship appointments, but are eligible for graduate internships.
 - c. All EE&S MS students are required to take three core courses: EES 8020 (Environmental Engineering Principles), EES 8430 (Environmental Chemistry), and EES 8510 (Biological

Principles of Environmental Engineering). One or more may be taken while the student is an undergraduate.

2. Complete information about the MS degree in EE&S may be found in the EEES Graduate Handbook:

http://www.clemson.edu/cecas/departments/eees/documents/EEES_graduate_handbook.pdf

Students interested in the combined BS/MS program should consult with their Environmental Engineering undergraduate advisor as early as possible. An application should be submitted by the end of the junior year, but can be made at any time as long as the program requirements are fulfilled. Application is made via the [GS6BS/MS](#) form available from the Graduate School web site.

C. Example Course Map

An example course map is provided on the next page so that students can see a path forward for obtaining the BS and MS degrees in five years. The three courses (3 hours each) that count towards both degrees are shown in italics during the senior year (one in the first semester, two in the second). This example is for students who select the process engineering focus area for the MS degree. Students who select other focus areas should consult with the EE&S Graduate Program Coordinator for advice on course selection. Regardless of the focus area selected, all graduate students in the EE&S MS degree program are required to take EES 8020, EES 8430, and EES 8510. Furthermore, all MS degree candidates are required to enroll in EES 8610 (Environmental Engineering and Science Seminar, 1 credit hour) each semester, but it does not count towards the 30 credit hours needed to fulfill the MS degree requirements.

EXAMPLE COURSE MAP FOR BS/MS IN ENVIRONMENTAL ENGINEERING

FRESHMAN YEAR

First Semester

- 1 ENGR 1050 Engineering Discipline and Skills I
- 1 ENGR 1060 Engineering Discipline and Skills II
- 4 CH 1010 General Chemistry (Lab)
- 4 MATH 1060 Calculus of One Variable I
- 3 ENGL 1030 Accelerated Composition
- 3 Humanities/Social Science Requirement¹

16

Second Semester

- 1 ENGR 1070 Programming & Problem Solving I
- 1 ENGR 1080 Programming & Problem Solving II
- 1 ENGR 1090 Program & Problem Solving Apps
- 4 CH 1020 General Chemistry (Lab)
- 4 MATH 1080 Calculus of One Variable II
- 3 PHYS 1220 Physics with Calculus I
- 3 HIST 1240 Environmental History Survey²

17

SOPHOMORE YEAR

First Semester

- 3 EES 2010 Environ Engineering Fund I
- 3 BIOL 1030 General Biology³
- 1 BIOL 1050 General Biology Lab
- 4 MATH 2060 Calculus of Several Variables
- 3 PHYS 2210 Physics with Calculus II
- 3 CE 2010 Statics

17

Second Semester

- 4 EES 2020 Environ Engineering Fund II
- 2 ENGR 2100 Engineering Graphics⁴ (Lab)
- 3 CH 2010 Organic Chemistry⁵
- 4 MATH 2080 Intro to Ordinary Differential Eqs
- 2 CE 2080 Dynamics

15

JUNIOR YEAR

First Semester

- 2 EES 3030 Water Treatment Systems
- 2 EES 3040 Wastewater Treatment Systems
- 1 EES 3050 Water & Wastewater Treatment Lab
- 4 MICRO 3050 General Microbiology (Lab)
- 3 MATH 3020 Statistics for Science and Engin
- 3 Humanities/Social Science Requirement¹

15

Second Semester

- 3 EES 4840 Municipal Solid Waste Mgmt
- 3 EES 4850 Hazardous Waste Management
- 3 ME 3100 Thermodynamics & Heat Transfer
- 4 CE 3410 Intro to Fluid Mechanics (Lab)
- 3 GEOL 1010 Physical Geology⁶
- 1 GEOL 1030 Physical Geology Lab

17

SENIOR YEAR

First Semester

- 3 EES 4300 Air Pollution Engineering
- 1 EES 4500 Env Engr Senior Seminar
- 3 EES 4800 Environmental Risk Assessment
- 3 EES 4860 Environmental Sustainability
- 2 Engineering Economics Requirement⁷
- 3 EES 8020 Environmental Engineering Principles

15

Second Semester

- 3 EES 4750 Env Eng Capstone Design (Lab)
- 3 EES 8030 Physicochemical Operations
- 3 EES 8040 Biochemical Operations
- 3 Humanities/Social Science Requirement¹
- 3 Humanities/Social Science Requirement¹

15

TOTAL HOURS = 127

FIFTH YEAR, to Complete the MS Degree

First Semester

- 3 EES 8430 Environmental Chemistry
- 3 EES 8510 Biological Principles Env Engr
- 3 EES 8060 Design of Env Engr Systems
- 3 Elective (6000 or 8000 level)
- 1 EES 8610 Graduate Seminar

13

Second Semester

- 3 EES 8050 Laboratory Water Wastewater
- 3 EES 8810 Special Project
- 3 Elective (6000 or 8000 level)
- 1 EES 8610 Graduate Seminar

10

¹⁻⁷ Footnotes are defined on the [page for the Environmental Engineering undergraduate curriculum](#).