

Form E-1-A for Boston College Core Curriculum

Department/Program: **EARTH AND ENVIRONMENTAL SCIENCES**

- 1) **Have formal learning outcomes for the department's Core courses been developed? What are they?** (What specific sets of skills and knowledge does the department expect students completing its Core courses to have acquired?)

EESC Core courses are designed to help students achieve the Learning Goals listed below. Although any given EESC Core course is unlikely to promote every goal on this list, our Core course faculty endeavor to promote as many of these goals as possible in each course.

1. Demonstrate an awareness of how scientific concepts and methods are employed in the study of planet Earth and its environment, and how this awareness is necessary for liberally educated people in the 21st century.
2. Demonstrate an awareness of the principles and strategies of natural science that are employed in the study of planet Earth and its environment.
3. Demonstrate an awareness of the critical role that the Earth and Environmental sciences play in contemporary society.
4. Demonstrate an awareness of the power of the scientific method in the study of planet Earth and in solving the Earth's environmental problems.
5. Demonstrate an awareness of the limitations of science in the study of planet Earth and in solving Earth's environmental problems.
6. Demonstrate an awareness of the application of mathematics and other sciences as they are used in the study of planet Earth and its environment.
7. Demonstrate how the Earth and Environmental sciences affect humans.
8. Demonstrate how humans are affecting the environment and habitability of our planet.

- 2) **Where are these learning outcomes published? Be specific.** (Where are the department's expected learning outcomes for its Core courses accessible: on the web, in the catalog, or in your department handouts?)

These goals are included in the description of the undergraduate curriculum on the Department of EESC website

(<https://www.bc.edu/bc-web/schools/mcas/departments/eesc/undergraduate/fulfilling-the-core-requirements.html>), in the BC catalog, and in handouts available in the Department's main office for students expressing interest in taking Core courses in Earth and Environmental Sciences.

- 3) **Other than GPA, what data/evidence is used to determine whether students have achieved the stated outcomes for the Core requirement?** (What evidence and analytical approaches do you use to assess which of the student learning outcomes have been achieved more or less well?)

The department faculty meets each spring, after classes are over, to discuss how the changes we implemented based on previous years' assessment activities have resulted in improved learning outcomes. We also discuss additional changes we would like to make based on what we have learned from the assessment process.

4) Who interprets the evidence? What is the process? (Who in the department is responsible for interpreting the data and making recommendations for curriculum or assignment changes if appropriate? When does this occur?)

The department full-time faculty meets annually to review all aspects of our program, and to make recommendations to the whole department for improvement. This process is led by the Director of Undergraduate Studies. The conclusions of those discussions are reviewed by all full-time faculty, and presented in department annual reports. This year we met on May 31, 2023 during an all-day faculty retreat.

Other faculty meetings are held throughout the year (approximately twice per month) in which we continuously work towards gathering and interpreting data for reviewing our core program and how well our curriculum is achieving our learning goals.

5) What were the assessment results and what changes have been made as a result of using this data/evidence? (What were the major assessment findings? Have there been any recent changes to your curriculum or program? How did the assessment data contribute to those changes?)

The following Core Pilot Courses have been added to our Core curriculum:

- Global Implications of Climate Change (Pisani-Gareau, EESC; and Gareau, Sociology), Fall 2015, 2017, 2019, 2022
- A Perfect Moral Storm: The Science and Ethics of Climate Change (Wong, EESC; and Storey, Philosophy), Spring 2017
- Building a Habitable Planet: The Origins and Evolution of the Earth: Geoscience Perspectives (Baxter, EESC; and DeLong-Bas, Theology), Spring 2017, 2019, 2021
- Living on Water (Kineke, EESC; and Leone, Fine Arts), Fall 2017, 2018, 2020
- Powering America (Ebel, EESC; and Valencius, History), Spring 2019, 2020, 2021, 2022; Fall 2022
- Making the Modern World (Krones, EESC; and Tonn, History), Fall 2020; Spring 2022
- Crisis and Storytelling in the Age of Climate Change (Palevsky, EESC; and Song, English), Fall 2021, 2023

During our May 2023 meeting, Professors Ebel and Pisani-Gareau reported on their experience teaching Powering America and Global Implications of Climate Change this year, both for the fifth time. Both professors have found these courses to continually improve and are now very strong. Pisani-Gareau suggested her course is a useful gateway into the Earth and Environmental Sciences and Environmental Studies majors for incoming students. POD leaders provide a great model of upper classmen teaching younger students during discussion sections, and the experience seems to work well for both. Ebel highlighted the considerable writing component in his course, with students writing up half a dozen short term papers throughout the semester, as well as a larger final project over several iterations after receiving faculty feedback. He said that the students do not enjoy this work, but that their writing improves substantially over the semester.

We also discussed the continued popularity of our core courses and the problems this presents. 963 out of 983 available seats were filled in our regular core courses for Fall 2022-Spring 2023. This does not include the 100-200 seats available each semester to first-year students in Complex Problems and Enduring Questions courses, which also are usually all filled. We clearly could offer more core classes to meet student interests. Another problem is that essentially all of the seats in

regular core classes are taken before the incoming freshman class registers over the summer; for this past year, the distribution of students taking these classes was 175 seniors, 491 juniors, 241 sophomores, and 53 freshmen. This means that these courses provide less opportunity for students to find and join our majors. We will keep seeking opportunities for our professors to teach high-quality core courses.

6) Date of the most recent program review. (Your latest comprehensive departmental self-study and external review.)

Spring 2010