

**Annotated Form E-1-A for Boston College Perspectives II, III, and IV (version of June 18, 2015)**

**Program: PERSPECTIVES IV: NEW SCIENTIFIC VISIONS**

**1) Have formal learning outcomes been developed? What are they? (What specific sets of skills and knowledge does the department expect its majors to have acquired before they graduate?)**

In Perspectives IV the students encounter the great mathematical and scientific texts of Western Culture. The students see how positions concerning whether the universe is ultimately intelligible or positions regarding teleological questions have important consequences for theological issues in such areas as the transcendence of God, creation, redemption and the manner in which grace can be said to perfect nature.

This course is a 'guided tour' that leads the student beyond the familiar land of ordinary Newtonian experience, and into the strange and mysterious territory of contemporary thinking in science and mathematics.

In addition, Perspectives IV attempts to place the students within the overall conflict between science and religion. The course covers not only Galileo's mathematics and cosmological positions, but also recent debates over Galileo's conflict with the Church.

Perspectives IV also covers contemporary scientific, philosophical, and theological debates over the true meaning of evolution.

**THE STUDENTS WILL BE ABLE TO:**

- a. Demonstrate the ability to understand and identify the problems that ancient Greek mathematicians explored in science and mathematics, that are well beyond the understanding of even highly educated people today.
- b. Demonstrate the capacity to identify the conceptual revolution that lay behind the seventeenth-century break-through to modern science and the nearly mystical enthusiasm of the time for the explanatory power of mathematical demonstration.
- c. Demonstrate an understanding of how science has interpreted the human being as a mere, though complex, machine.
- d. Demonstrate an understanding of the problems that the calculus was invented to solve.

- e. Demonstrate a knowledge of the shifts from mechanistic explanation to the more recent view of explanation in terms of functions and relations, and from determinism to randomness and probability.
- f. The student will demonstrate an understanding of the universe as examined in relation to the modern concept of energy, the unimaginable and paradoxical results of modern mathematics, quantum theory's continuity with previous developments in the science of heat and energy, and the 'state of the art' in contemporary evolutionary biology.
- g. Demonstrate an understanding of how previous achievements in math and science set the conditions for possible future developments.
- h. Lastly, all of these goals stand in relationship to the fundamental question about whether the universe is completely intelligible, and if so that how do we talk about the existence of an intelligible ground (God)?

**2) Where are these learning outcomes published? Be specific. (Where are the department's learning expectations accessible to potential majors: on the web or in the catalog or in your department's major handouts?)**

Learning outcomes will be made available on the update department web site, and in the course description.

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

At this point measurements need to be developed that are analogous to Perspectives on Western Culture. This will start this coming year. There will be both qualitative and quantitative instruments.

**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?)**

As with Perspectives on Western Culture, the Director of the Perspectives Program will appoint a panel across departments who have background and experience in data analysis to review the findings of the quantitative surveys. This faculty panel will present its findings to the Perspectives faculty in a dedicated session of the program's annual May Workshop. Additionally, the Director will appoint a committee of faculty

representatives to read and summarize the randomly selected sample of final essays. The panel will evaluate these reflections as they relate to learning outcomes and will report these findings to the Perspectives faculty at the annual May workshop.

**5) What changes have been made as a result of using the data/evidence? (Have there been any recent changes to your curriculum or program? Why were they made?)**

As we are in the stage of planning and implementation we will need to have the data before we have a clearer picture of what is working and what might need to be changed.

**6) What evidence do you have that the changes have resulted in improved learning outcomes?**

No data at this point to answer this.

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

The last program review took place in 2009-2010.