Annual Report on Program Student Learning Outcomes Assessment

Program: BA in Philosophy & Physics
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College/School Contact and Title: Susan Jackson, Associate Dean
Date: October 2013

1. List the learning outcomes for the program

Students graduating with a major in Philosophy & Physics are able to demonstrate:

1. Understanding of the fundamental questions in metaphysics (ontology and causality) and philosophy of science (theory assessment: validity domain and finalization; reduction and emergence; realism and instrumentalism).

2. Understanding of some fundamental concepts in foundational physics, such as locality, probability, irreversibility, scales, transformations, and dynamicity.

3. Familiarity with the basic questions in philosophy of physics and the approaches addressing them: nature of spacetime (absolute or relative, substantival or relational, static or dynamic) and the substantivalist, relationist, and constructivist approaches; nature of probability and irreversibility in statistical mechanics; nature of probability and entanglement in quantum physics, and the Copenhagen and the hidden variable approaches; locality, divergence and renormalizability in quantum field theory, and the reductionist and effective field theory approaches; symmetries (and various modes of their breakdown: explicit, quantum-anomalous, and spontaneous breakings) and renormalization group flows in various areas of foundational physics.

4. Familiarity with the core areas in current research in foundational physics where philosophical interventions are most visible and effective: the string approach and the loop approach to quantum gravity; models of cosmogony, models and mechanisms of cosmic evolution, and the validity status of fundamental physical laws (such as the second law of thermodynamics and probabilistic understanding of quantum events) in cosmology.

5. Some acquaintance with the basics of the newly emergent areas of research, such as quantum information and quantum computation, quantum phenomena as emergent from deeper levels of non-quantum behaviors.

6. Skills of critical thinking, analytical thinking, and written and oral communication, as expected for majors in Philosophy.

2. Where are these outcomes published? (All outcomes will be published on the University assessment website [url TBA]; if you publish your outcomes on your website, which is recommended, please provide the url)

1. University assessment website [url TBA].
2. Department of Philosophy website: http://www.bu.edu/philo/, linked to Physics

3. How do you determine whether learning outcomes have been achieved? To be completed by April 2014
    a. What evidence do/will you gather? (e.g., sample of final papers in a capstone course; portfolio; licensure exams; comprehensive exams for graduate students; capstone defense evaluation)
        i. What evidence do you currently have available to begin assessment, or what do your currently use? (Usually, grades are inadequate for gaining specific information on *program* outcomes.)
        ii. What tools might you like to implement and/or what materials would you like to gather in the future to improve program assessment?
    b. Who interprets the evidence? (e.g., annually by the curriculum committee; biannually by a jury of faculty)
4. Program Learning Outcomes Assessment can be useful for strategic planning and for a variety of program reviews. Please list the dates of the most recent program reviews and indicate other venues in which you've discussed program learning outcomes:
5. Have you made curricular changes as a result of the information gleaned? If so, what?
6. All programs must have assessed all outcomes and acted upon their assessments by May 2017. Please project a schedule, by year, for an annual cycle of assessment for your program.

Example of #1 and #3 above from new Middle East and North African Studies BA

Learning Objectives and Evaluation
Students graduating with a major in MENA Studies are expected to:

1. Demonstrate advanced knowledge of Middle Eastern history, politics, religions, arts, and regional and some local cultural issues.
2. Demonstrate proficiency (ACTFL intermediate-high) in reading, writing, speaking, and orally comprehending at least one MENA language, or basic proficiency (ACTFL intermediate-low) in two MENA languages.

3. Demonstrate cultural competence sufficient to function in the MENA region, either through coursework or (preferably) through study abroad in the region.

Evaluation: Students will begin keeping a MENA Studies portfolio while enrolled in CAS ME 101. Each student's portfolio will collect and reflect on important classwork in courses for the major as well as track language learning milestones (mock-OPI oral proficiency scores, study-abroad fellowships won, etc.). While primarily designed for the student's current learning and later use (e.g., for a graduate school or job application), the portfolios will also be saved. Analyzed in the aggregate, they will help the MENA Studies Program Faculty to evaluate and track students' fulfillment of the content objectives across the whole program, and to fine-tune the major as necessary.