

Glassboro State College Senate Curriculum Committee

Approval Form

Proposal Title: Philosophy of Science

Sponsor(s) Howard R. Cell Dept.: Philosophy/Religion Ext. 6048

Check one: Course Specialization Concentration Minor Achievement Certificate
 Certification Program Major Program Minor Change (please name deletion or credit/title/catalog change)

Undergraduate Graduate 3.0 Credit Hours

<p>Step 1 (Department)</p> <p><input checked="" type="checkbox"/> Approved <u>1 September 1988</u> Date</p> <p><input type="checkbox"/> Not Approved</p> <p><u>Howard R. Cell</u> Dept. CC Chairperson</p> <p><input checked="" type="checkbox"/> Reviewed <u>1 September 1988</u> Date</p> <p><u>Howard R. Cell</u> Dept. Chairperson</p>	<p>Step 2 (Receipt)</p> <p><input type="checkbox"/> SCC# <u>88-89-06</u></p> <p>Proposal Received <u>11/7/88</u> Date</p> <p><u>Brenda A. Bolay</u> SCC Chairperson</p>	<p>Step 3 (School CC)</p> <p>Reviewed <u>1/30/89</u></p> <p><input checked="" type="checkbox"/> Approved <input type="checkbox"/> Not Approved</p> <p>Comments:</p> <p><u>Ronald J. Gochos</u> School Curr. Comm. Chairperson</p>
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Step 4 (Academic Dean)

Recommend
 Not Recommend
 Conditionally Recommend (see comments)

Reviewed 2-6-89
Date

Comments:
... in general ...

Merna ...
Signature, Dean of School

Step 5 (SCC)

Open Hearing 3/16/89 Approved by Senate Curriculum Committee 3/16/89
Date Date

Returned to sponsor(s) for the following reasons:
Cat. desc. approve } OK 3/27/89

Step 6 (Senate)

Presented to Senate 3/17/89 Approved Not Approved
Date

Notification to Vice-President for Academic Affairs 3/28/89 Brenda A. Bolay
Date Signature, SCC Chairperson

Step 7 (Executive V.P./Provost)

Received 3/20/09
Date

Approved Yes No

If no, reasons are as follows:

Student credit hours 3.0

Faculty load hours 3.0

Equalized credit hours 3.0

Official copy and approval sheet filed 2/1/07
Date

Adrian Tinsley
Signature, Executive Vice-President/Provost

Registrar

Approved course description received N/A
Date

Hegis Taxonomy and Course Number assigned 1509-368 Rec# KLC

Signature, Registrar

Date

Notification forwarded:

- Senate Curriculum Committee Chairperson
- Department Chairperson(s)
- Academic Dean
- Registrar
- Sponsor(s)

PROPOSAL FOR THE COURSE "PHILOSOPHY OF SCIENCE"

I. Details

- A. Course Title: Philosophy of Science
- B. Sponsors
Howard R. Cell, Chair, Philosophy/Religion
Philosophy/Religion Department
- C. Credit Hours: 3
- D. Course Level: Undergraduate (Sophomore or above)
- E. Curricular Effect: This course is intended to be a general education elective and also a requirement for those enrolled in the Philosophy Minor whose majors are in the Physical Science, Life Science, Geography/Anthropology, Mathematics/Computer Science, Psychology or Sociology departments.
- F. Prerequisites: None. (However, at least one laboratory science and one social science course are recommended.)
- G. Implementation:
 - 1. Time of implementation: Fall semester 1989.
 - 2. Scale of implementation: At least one section of this course will be offered each year, depending upon student demand.
- H. Adequacy:
 - 1. Staffing: the Philosophy/Religion department has been authorized to undertake a search during the 1988-89 academic year for a person qualified to teach a basic, undergraduate course in the philosophy of science, as well as courses in logic. That person will be responsible for teaching the proposed Philosophy of Science course.
 - 2. Library facilities and holdings: The Philosophy/Religion department is currently emphasizing the acquisition of additional books and journals in the philosophy of science to supplement the library's present collection in this field. With these additions, that collection should be adequate for students enrolled in an undergraduate Philosophy of Science course.
 - 3. Space needs: One classroom with blackboards and with seating for thirty students will be needed for either one or two semesters each year, depending on student demand for this course.

II. Rationale

The Philosophy/Religion department has developed, and plans to implement in the 1989-1990 academic year, a Minor in Philosophy. This program will constitute a direct, positive and timely response to the goals of Glassboro State College, as articulated in its most recent Mission Statement: that is, a Philosophy Minor will provide an especially appropriate means of 'blending liberal education with career preparation,' since it will enable students to complement their academic majors with a sequence of courses in philosophy.

An essential ingredient in the proposed Philosophy Minor is a course in the Philosophy of Science, which will be required for those students with major programs in the natural and social sciences and in mathematics/computer science, and who have elected to enroll in the Philosophy Minor. Indeed, this particular student cohort will comprise the initial target group for the Philosophy Minor, given the strong interest in such a program expressed by faculty in the affected departments. For this reason, the Philosophy/Religion department submitted its proposal for the Philosophy Minor with the addition of a course in the Philosophy of Science as an integral component.

But the fact that science, and its applications, play a major, even indispensable role in the modern world suggests that a course which examines the theoretical foundations of science should be a no less indispensable element in the college curriculum. And indeed, it is a staple in most philosophy departments throughout this country and elsewhere. Quite apart from the particular link between our proposed Philosophy of Science course and our Philosophy Minor, then, this course should - and we trust will - be available as a general education elective.

Other courses may, and no doubt should, raise questions about the theoretical underpinnings of (not to mention the theoretical problems in) modern science; but if so, these are tangential considerations. Our proposed Philosophy of Science course, on the contrary, will be directly and centrally concerned with just such questions.

III. Essence of the Course:

- A. Course Objectives: in essence, the philosophy of science consists of an investigation, at once critical and systematic, of the methodological and conceptual issues which attend the theoretical foundations of science, as well as a consideration of the connections, and in some

cases the contrasts, between this and other forms of human inquiry, knowledge and experience. Consequently, a student who successfully completes a course in the philosophy of science should have minimally acquired the following:

1. An understanding of the concepts which are central to scientific practice: for instance, explanation, theory construction, confirmation and falsification, laws of nature, ideal typical constructs.
2. Some familiarity with the problems and controversies which attend these concepts and their use in the various sciences.
3. A more precise understanding of the general nature of scientific method, but also of significant differences in the methodologies of the various natural and social sciences.
4. The ability to discriminate between science and non-science, though with a keener appreciation of the problems of demarcation, and of establishing a definition of science which is neither vague nor ambiguous.
5. An appreciation of the controversy as to whether there are limits to the scope of scientific explanation: for example, those limits entailed by the apparent recalcitrance of social phenomena to scientific investigation.
6. Enhanced knowledge of the history of science, and of theories (eg., that of Thomas S. Kuhn) which purport to explain that history.

As this list may suggest, a concerted effort will be made to introduce students to conceptual and methodological issues in the social sciences as well as in the natural sciences. In addition, students will be exposed to various feminist critiques of science, which have surfaced quite recently.

B. Topical Outline/Content: Though the following list should not be construed as exhausting the topics which might be included as the content for a course in the philosophy of science, it is indicative of the possible nature and scope of such topics in the light of the course objectives previously stipulated.

1. On the nature of mathematics and its relation to science:

- a. The problem of reduction (of mathematics to logic)
 - b. Mathematical propositions as analytic/synthetic
 - c. Mathematics as a science/as the language of science
 - d. The problem of demarcation (between mathematics/science)
2. Issues in the natural sciences:
- a. The nature of scientific explanation and its criteria, relevance & testability.
 - b. Hypothesis formulation and testing. Theory/-model construction and the confirmation/falsification of theories. The paradoxes of confirmation.
 - c. The problem of induction. The role of inductive and hypothetico-deductive reasoning in science.
 - d. The status of laws of nature. Their role in scientific explanation.
3. Issues in the Social Sciences:
- a. The nature of scientific explanation. Inductive-statistical/teleological explanations. Explanation and prediction.
 - b. The construction of social theory: theories, models, ideal-typical constructs, classificational schemata and typologies.
 - c. The objectivity of social science, and the apparent recalcitrance of social phenomena to scientific investigation.
 - d. Functionalism and other problems of teleological inquiry.
4. Other Concerns:
- a. Distinguishing science and non-science: the problem of demarcation.
 - b. Scientific/non-scientific explanation.
 - c. The limits of scientific inquiry.
 - d. Science and human freedom|: the issue of determinism.
 - e. Science and human values: ethical issues in scientific research
 - f. Feminist criticisms of science (eg, implications for science of an androcentric epistemology; androcentric bias in the results of biology and the social sciences).

- g. Kuhnian/non-Kuhnian interpretations of the history of science.
 - h. Western/non western approaches to science and the philosophy of science.
- C. Evaluation and Grading Procedure: Student performance will be assessed in various ways: written examinations, papers, homework assignments, oral reports, class participation, individual or group projects, and possibly other devices as well. The particular mix of such devices for evaluating student performance will be at the discretion of the instructors.
- D. Course Evaluation: This course will be reevaluated by the Philosophy/Religion department at least every other year (beginning with the first year of its implementation). The review will take into account student evaluations of the course, reactions to the course from the various departments affected (Mathematics/Computer Science, and the different social and natural sciences) and the views of the instructor responsible for teaching the course. The purpose of this review will be to ensure that the Philosophy of Science course continues to meet the objectives of the Philosophy Minor and of general education, the goals of the college as well as the objectives stipulated for the course itself.

IV. Results of Consultations.

- A. N/A
- B. Those consulted:

Fran Masat, Mathematics/Computer Science
Wade Currier, Geography/Anthropology
John Frisone, Psychology
John Meyers, Sociology
Richard Meagher, Life Sciences
Lee Dinsmore, Physical Sciences

The consensus of these consultants was clearly and highly favorable. All encouraged the Philosophy/Religion department to implement the proposed Philosophy of Science course.

- C. Letters: Attached are letters from two of those to whom the proposal was submitted: Fran Masat and John Myers.

CATALOG DESCRIPTION:

1509.307 Philosophy of Science

Students will explore the central issues and controversies involved in the theoretical foundations of modern science. Topics in the natural sciences, in the social sciences and in the relation of mathematics to science will be considered. At least one previous laboratory science and one social science are recommended, though not required, for students enrolling in this course.



GLASSBORO STATE COLLEGE

Life Sciences Department

Glassboro, New Jersey 08028-1768 (609) 863-6181

February 9, 1989

Mr. Howard R. Cell, Chair
Philosophy and Religion Department
Laurel Hall

Dear Howard:

This is to inform you that I have reviewed your course proposal, "Philosophy of Science". I believe this course is worthwhile and will be of benefit to the college.

I support you and your colleagues in this endeavor.

Sincerely,

Richard J. Meagher, Ph.D.
Chairperson
Life Sciences Department

RJM/ehd