

**Utah System of Higher Education  
New Academic Program Proposal  
Cover/Signature Page - Full Template**

**Institution Submitting Request:** University of Utah  
**Proposed Program Title:** Philosophy of Science  
**Sponsoring School, College, or Division:** Humanities  
**Sponsoring Academic Department(s) or Unit(s):** Philosophy  
**Classification of Instructional Program Code<sup>1</sup> :** 54.0104  
**Min/Max Credit Hours Required to Earn Degree:** 33 / variable  
**Proposed Beginning Term<sup>2</sup>:** Fall 2019  
**Institutional Board of Trustees' Approval Date:**

**Program Type (check all that apply):**

|                                          |                                                                   |
|------------------------------------------|-------------------------------------------------------------------|
| <input type="checkbox"/> (AAS)           | Associate of Applied Science Degree                               |
| <input type="checkbox"/> (AA)            | Associate of Arts Degree                                          |
| <input type="checkbox"/> (AS)            | Associate of Science Degree                                       |
| <input type="checkbox"/>                 | Specialized Associate Degree (specify award type <sup>3</sup> : ) |
| <input type="checkbox"/>                 | Other (specify award type <sup>3</sup> : )                        |
| <input checked="" type="checkbox"/> (BA) | Bachelor of Arts Degree                                           |
| <input checked="" type="checkbox"/> (BS) | Bachelor of Science Degree                                        |
| <input type="checkbox"/>                 | Professional Bachelor Degree (specify award type <sup>3</sup> : ) |
| <input type="checkbox"/>                 | Other (specify award type <sup>3</sup> : )                        |
| <input type="checkbox"/> (MA)            | Master of Arts Degree                                             |
| <input type="checkbox"/> (MS)            | Master of Science Degree                                          |
| <input type="checkbox"/>                 | Professional Master Degree (specify award type <sup>3</sup> : )   |
| <input type="checkbox"/>                 | Other (specify award type <sup>3</sup> : )                        |
| <input type="checkbox"/>                 | Doctoral Degree (specify award type <sup>3</sup> : )              |
| <input type="checkbox"/>                 | K-12 School Personnel Program                                     |
| <input type="checkbox"/>                 | Out of Service Area Delivery Program                              |

**Chief Academic Officer (or Designee) Signature:**

I, the Chief Academic Officer or Designee, certify that all required institutional approvals have been obtained prior to submitting this request to the Office of the Commissioner.

Please type your first and last name \_\_\_\_\_ Date: \_\_\_\_\_

☐ I understand that checking this box constitutes my legal signature.

<sup>1</sup> For CIP code classifications, please see <http://nces.ed.gov/ipeds/cipcode/Default.aspx?y=55>.

<sup>2</sup> "Proposed Beginning Term" refers to first term after Regent approval that students may declare this program.

<sup>3</sup> Please indicate award such as APE, BFA, MBA, MEd, EdD, JD

**Utah System of Higher Education  
Program Description - Full Template**

**Section I: The Request**

University of Utah requests approval to offer the following Baccalaureate degree(s): Philosophy of Science effective Fall 2019. This program was approved by the institutional Board of Trustees on .

**Section II: Program Proposal**

**Program Description**

*Present a complete, formal program description.*

The Department of Philosophy (PHIL) requests approval for a new undergraduate major in *Philosophy of Science*. We are requesting that this be approved with the option for students to complete this major as either a BA or BS degree.

Philosophy of science is a field that concerns the nature of science in general, and of individual branches of science. This includes identifying what distinguishes good science from bad; assessing and evaluating forms of scientific reasoning, and the conditions under which they are most reliable; exploring what makes scientific activity distinctive; how theories effectively explain the world, how they are confirmed or supported, and the relation between theory, evidence, and scientific practice; how scientists shift from one set of commitments to another; and the moral dilemmas and social implications of science, among other philosophical issues around science. Philosophers of science identify the core commitments of scientists and particular branches of science; participate in the conceptual debates in the sciences; act as science critics to help identify good from bad science; and consider how our best science bears on long-standing philosophical problems. The best philosophy of science is well-informed by the sciences, and often done alongside and in collaboration with scientists.

This major is designed to provide students with a technical grounding in a scientific discipline of their choosing; core knowledge in ethical, analytical, and logical reasoning; and highly developed verbal and writing skills. Specialized tracks provide options for students that include focused studies in ethical and social implications of science, logical and formal reasoning, etc. Our distinctive and uniquely trained students will be highly competitive for spots in elite graduate and professional programs, or positions in complex and technical industries.

Faculty in the Department of Philosophy have been instrumental in the construction of this proposal, and voted to approve this initiative 14-0 at the department's fall retreat. The major proposal has also been guided by discussions with the College of Humanities Dean and Associate Dean of Academic Affairs, using data provided by the Office of Undergraduate Studies. For affiliated programs, consultations have typically been through meetings with undergraduate directors, department chairs, and /or advisors. These are reflected in the letters of support.

## Consistency with Institutional Mission

*Explain how the program is consistent with the institution's Regents-approved mission, roles, and goals. Institutional mission and roles may be found at [higheredutah.org/policies/policyr312/](http://higheredutah.org/policies/policyr312/).*

The University of Utah mission statement is:

The University of Utah fosters student success by preparing students from diverse backgrounds for lives of impact as leaders and citizens. We generate and share new knowledge, discoveries, and innovations, and we engage local and global communities to promote education, health, and quality of life. These contributions, in addition to responsible stewardship of our intellectual, physical, and financial resources, ensure the long-term success and viability of the institution.

This is captured by the University of Utah's four campus priorities:

1. Develop and transfer new knowledge;
2. Promote student success to transform lives;
3. Engage communities to improve health and quality of life;
4. Ensure long-term viability of the University.

The Philosophy of Science major embodies these priorities. This proposal has its roots in research-informed teaching. The courses included here were introduced by passionate faculty eager to bring research into the classroom, be it on the nature of scientific reasoning, medical or environmental ethics, or what distinguishes good science from bad. This is what grew to be the viable major proposed here. The affiliated activities available to undergraduates encourage the virtuous circle of using the classroom experience to inspire teaching-informed research. This helps students (and their families!) see how they directly benefit from the unique and world-leading research done at the University of Utah, and provide them an opportunity to contribute to the development of new knowledge. That, and so much else, go to the long-term viability of our institution. Universities are both repositories and generators of knowledge; our viability depends on clearly defining the value of that role, and the University's unique position to deliver on it. The best way for our community to understand that is to be active participants in that mission.

The Philosophy of Science major has intentionally been developed with an eye on how it may constructively fit into the larger institutional setting. A concrete example is the way it was developed around the General Education model (in consultation with the Office of Undergraduate Studies and the Dean of the College of Humanities). This is intended to be strategic, innovative, and opportunistic, and to provide a model for how General Education 'pathways' can be coherently developed around themes.

The payoff is that students will establish a strong disciplinary foundation from which they will be trained to creatively draw on a multitude of other disciplines that intersect their interests around a theme. This is interdisciplinary training—not merely providing content across disciplines—and encourages innovative, creative, and critical thinking. Philosophy of Science majors will not merely know how we do things, but want to know how we can do things better. This is just one way the Philosophy of Science major is designed to connect the institutional infrastructure at the University of Utah back to its campus priorities. Directly linking these helps students (and families, and legislators, and other stakeholders) see the concrete payoffs of embodying our mission and goals.

## Section III: Needs Assessment

### Program Rationale

*Describe the institutional procedures used to arrive at a decision to offer the program. Briefly indicate why such a program should be initiated. State how the institution and the USHE benefit by offering the proposed program.*

(It is worth framing this section by noting that the intention to propose this major was shared during the Department of Philosophy's Graduate Council Review in AY2017-18. Both external and internal review teams enthusiastically endorsed the

plan, and strongly recommended it in their reports. This recommendation has continued to be endorsed, from the Graduate Council Report to follow up meetings with senior administration and is included in the final memorandum of recommendations and commitments.)

There are several rationale that prompted the decision to offer this program. That includes (1) the interest in offering a major that excels at providing interdisciplinary training; (2) the opportunity to offer a distinctive major that allows our students to directly benefit from the unique and internationally recognized research on campus; (3) the interest in producing students with both a technical grounding in a scientific discipline, married with highly developed verbal and writing skills; and (4) seeing an opportunity to develop a major of interest for STEM students built around a General Education pathway.

President Ruth Watkins often and eloquently speaks of the value of interdisciplinary training. To paraphrase, the sorts of challenges we are training students to face demand creative solutions drawn from many disciplines. To see new and creative ways to lead in the 21st century, our students will need to learn how to view challenges from many different perspectives. What President Watkins understands well is that these are skills that can be taught, and that an effective way to do this is through an interdisciplinary approach.

Philosophy of Science, as a discipline, was borne of interdisciplinarity. Physicists, philosophers, biologists, mathematicians, sociologists, economists and others sought to identify the nature of science; this project continues to this day, and requires not just a disciplinary core but the capacity to reach across fields. Contemporary philosophy of science is the product of genuine collaboration across the sciences, humanities, and social sciences. President Watkins' call for interdisciplinary training resonates in the approach philosophers of science have committed to from its modern inception (though a case could be made that this discipline-spanning approach stretches back to the Ancient Greeks).

In addition to the disciplinary rationale for introducing this as a major is the practical fact that the University of Utah has an internationally recognized center of excellence in philosophy of science. We are viewed as a top-25 program in the field, and top-10 in philosophy of biology. This major permits Utahns to more directly benefit from this reputation, and highlights the way a flagship institution of higher learning brings the value of internationally recognized research into the classroom.

We are among a unique few institutions positioned to offer this as an undergraduate major. Of our PAC-12 peers, only Stanford and University of Washington offer anything comparable. Many PHIL students are already planning to focus on classes around the philosophy of science. This proposal offers those students a way to archive and document that accomplishment.

A third rationale for offering this major is a consideration of the sorts of skills that will best position our students for success, be it in applying to highly competitive graduate programs or for jobs in complex technical fields. Philosophy of Science majors will have a technical grounding in a scientific discipline, core knowledge in ethical, logical, and analytic reasoning, along with highly developed verbal and written skills. These are precisely the sorts of skills that are centrally important for the 21st century workplace, e.g., the technology industry is looking to hire employees with formal training in ethical reasoning.

Last, but not least, the model of General Education at the University of Utah presented an opportunity around which to build this major. Prompted by and along with Undergraduate Studies and the College of Humanities, the Department of Philosophy has recently been analyzing our curriculum through the lens of General Education courses. These data helped PHIL identify a ‘General Education pathway’ that could be offered to science majors. PHIL then asked what would happen if that model was flipped, that is, might there be a ‘Science pathway’ for PHIL majors?

This process helped the department see that with very few, if any, additional resources, a Philosophy of Science major could be constructed on the foundation of existing General Education designated courses. Science majors that added this as a second major would satisfy many of their General Education requirements along the way, and stand-alone Philosophy of Science majors would have a way of documenting a technical scientific training that might otherwise be obscured.

### **Labor Market Demand**

*Provide local, state, and/or national labor market data that speak to the need for this program. Occupational demand, wage, and number of annual openings information may be found at sources such as Utah DWS Occupation Information Data Viewer ([jobs.utah.gov/jsp/wi/utalmis/gotoOccinfo.do](http://jobs.utah.gov/jsp/wi/utalmis/gotoOccinfo.do)) and the Occupation Outlook Handbook ([www.bls.gov/oco](http://www.bls.gov/oco)).*

A question every philosophy major must be prepared to answer is, “Sounds cool, but what are you going to *do* with it?” The answer is that philosophy majors do just about everything, and do it well. Philosophy majors score at or near the top on the most popular graduate and professional school entrance exams, and, along with math majors, see the highest growth of income from early to mid-career, ending up alongside STEM disciplines. Philosophy majors not only get jobs, they get promotions.

Philosophy of Science majors will be even better positioned, adding a deeper technical component to their training. In answer to the question posed above, they might point to careers like patent agency. These are highly in demand, well-compensated positions with lots of professional growth opportunity (many go on to become patent lawyers, though it is a career path in its own right). Becoming a patent agent requires sitting for a registration exam with the United States Patent Office; only qualified applicants may sit for this exam. Philosophy of Science majors will typically meet these conditions, and will be well prepared to excel on the exam. It is obviously not the only path available to Philosophy of Science majors, but it provides a good example of the way their skill sets are valued in the 21st century market place.

More broadly, as the Utah labor market continues to shift towards international industries such as technology, finance, health care, and education, and as the State grows more diverse, companies that are able to navigate and manage these multidisciplinary perspectives will be at a major advantage.

A good example of this is the recent interest in the technology sector in hiring employees with both a grounding in technical skills along with formal training in ethics. This set of skills is precisely what philosophy of science majors will possess. In addition to training in a specific scientific discipline (demonstrating a capacity to master highly technical skill sets), all students must complete an applied ethics component; interested students may even complete a *Science, Society, and Ethics* track. It is the explicit and integrated training in these sets of skills that will distinguish our graduates on the job market, and that will position them to succeed.

Evidence of industry interest in this unique training was on display in a recent meeting with Overstock.com. Excitement at the prospect of philosophy of science students was strong enough that a commitment was made to develop an internship program for philosophy of science majors. This is a recognition of the value of students with both a technical grounding in the sciences and the logical, ethical, and analytic reasoning skills of philosophy. As we educate other tech companies, along with those in the finance, health sciences, and other sectors of our expanding labor market, we expect similar excitement. Our students are going to be highly sought after!

A requirement of this proposal is to include how this major will help the University of Utah meet the Governor's '66% by 2020' goal. The Philosophy of Science major advances that goal by providing new pathways to graduation for students interested in STEM fields, either as a major or helping those students identify General Education courses to keep them on the path to completion. It will also help students that start as science majors but turn their interests elsewhere use their science classes towards a degree (as opposed to completely starting over on a new major). Finally, this major provides those SLCC transfer students that have completed their science pre-requisites with a reasonable path to completion of a BA or BS from the University of Utah.

### **Student Demand**

*Provide evidence of student interest and demand that supports potential program enrollment. Use Appendix D to project five years' enrollments and graduates. Note: If the proposed program is an expansion of an existing program, present several years enrollment trends by headcount and/or by student credit hours that justify expansion.*

For some context, as of Spring 2018, OBIA lists PHIL with 66 majors. Department records suggest that this only accounts for about 30-40% of PHIL majors. This is in line with historical data, as most of PHIL majors list it as their second or third major (OBIA only counts first majors).

For further context, PHIL is not requesting any additional resources for this major. The courses included in this proposal are, with a few exceptions, already regularly

being offered, and there is capacity to shift existing instructional resources to accommodate expected increase in student demand. Should demand exceed existing instructional resources, PHIL has the capacity to add coverage through a visiting scholar / post-doctoral program. This will provide enough coverage for the first few years of the roll out of this major, at which time instructional support can be re-evaluated.

As for anticipating student demand, it is instructive to look at similar programs offered at two other institutions: the University of Pittsburgh's Department of History and Philosophy of Science (Pitt HPS), and UC Davis' Cognitive Science major.

Pitt HPS is one of the oldest and most established programs in History and Philosophy of Science, has steadily maintained 40-50 majors, 80% of whom are double or triple majors. Most majors are looking to apply to graduate or professional programs, especially in the health sciences, though they see a substantial number of students applying to graduate research programs, law schools, and business schools.

UC Davis' Department of Philosophy offers another instructive example. In 2015 they began offering a new major in *Cognitive Science* (one of our proposed emphases). 90 students signed up as Cognitive Science majors that year, with (non-Cognitive Science) Philosophy majors remaining steady at around 110. By 2017 Cognitive Science had 300 majors, and Philosophy grew to 150. In 2017-18 numbers continued to grow, with Cognitive Science at around 400 majors, and Philosophy at 170.

### Similar Programs

*Are similar programs offered elsewhere in the USHE, the state, or Intermountain Region? If yes, identify the existing program(s) and cite justifications for why the Regents should approve another program of this type. How does the proposed program differ from or compliment similar program(s)?*

A major in Philosophy of Science will be unique among USHE institutions, and joining only Stanford University and the University of Washington in the PAC-12. Other North American departments of philosophy (or otherwise noted) that offer a comparable program:

- Boston University: *Philosophy & Physics* major (jointly offered between the departments of philosophy and physics);
- Case Western Reserve University: *History & Philosophy of Science* major (jointly offered between the departments of History and Philosophy);
- Michigan State University: *History, Philosophy, and Sociology of Science* major (Lyman Briggs College);
- Notre Dame University: *Philosophy, Science, and Mathematics* major;
- Stanford University: *History and Philosophy of Science* major (jointly offered between the departments of History and Philosophy);
- UC Davis: *Cognitive Science* major;
- University of British Columbia: *History and Philosophy of Science* major (Science and Technology Studies);

- University of Pennsylvania: *Philosophy and Science* major;
- University of Pittsburgh: *History and Philosophy of Science* major (Department of History and Philosophy of Science);
- University of Toronto: *History and Philosophy of Science and Technology* major (Institute for the History and Philosophy of Science and Technology);
- University of Washington: *History & Philosophy of Science* major

There may be a handful of other programs offering a similar major, and other programs do offer certificates, concentrations, tracks, or minors in the philosophy of science. Those programs are typically at R-1 research universities, often in AAU schools. That is, they are precisely the sort of programs the University of Utah views as peers.

### **Collaboration with and Impact on Other USHE Institutions**

*Indicate if the program will be delivered outside of designated service area; provide justification. Service areas are defined in [higheredutah.org/policies/policyr315/](http://higheredutah.org/policies/policyr315/). Assess the impact the new program will have on other USHE institutions. Describe any discussions with other institutions pertaining to this program. Include any collaborative efforts that may have been proposed.*

The University of Utah Department of Philosophy has been engaged in ongoing constructive discussions with Salt Lake Community College (SLCC) on increasing accessibility for SLCC transfer students, including the designation of a ‘SLCC specific transfer track’. These discussions have recently expanded to include how SLCC students might successfully transfer into a Philosophy of Science major. This major will be a welcome addition to the USHE system, and provide new points of entry for SLCC transfer students (see attached letter of support). Additionally, the affiliated activities are generally open to *any* USHE student, including creative summer courses / workshops.

### **External Review and Accreditation**

*Indicate whether external consultants or, for a career and technical education program, program advisory committee were involved in the development of the proposed program. List the members of the external consultants or advisory committee and briefly describe their activities. If the program will seek special professional accreditation, project anticipated costs and a date for accreditation review.*

No external consultants were involved in the development of this proposed program. Chairs and undergraduate directors of departments of philosophy with philosophy of science programs were contacted informally, but this proposal was primarily developed in-house. External reviews of this program will be included as part of reviews of the Department of Philosophy (which have typically always included at least one philosopher of science).

During the Department of Philosophy’s most recent graduate council review, the Philosophy of Science major proposal received enthusiastic support. Both teams of external and internal reviewers strongly recommended establishing this major, and this recommendation has carried through the most recent part of that review process.

## Section IV: Program Details

### **Graduation Standards and Number of Credits**

*Provide graduation standards. Provide justification if number of credit or clock hours exceeds credit limit for this program type described in R401-3.11, which can be found at [higheredutah.org/policies/R401](http://higheredutah.org/policies/R401).*

At least 33 credits are required to complete this major, meeting the following requirements:

### **Area Requirements**

Students must satisfy both a *Science* and *Philosophy* requirement. Except in cases of pre-approved special tracks (see below), each requirement will be met as follows:

### ***Science Requirement***

Satisfying the *Science* requirement means completing at least three (3) upper-division courses in a single scientific or social science discipline, subject to additional requirements or constraints depending on the specific discipline pursued. These may include, for example, that at least one course be at the 5000-level; that an additional lab course must be completed; that additional foundational science courses be completed, etc. These additional requirements have (or will be) determined in conjunction with departments housing specific disciplines. Should a student declare an interest in using a discipline without any specifications, the Philosophy of Science director will determine whether any additional conditions are needed at that time.

Students are expected to satisfy any designated pre-requisites for these courses as part of completing their *Science* requirement. Students may petition to have the *Science* requirement met by completion of courses from multiple scientific or social science disciplines by providing a principled reason to count those as a coherent disciplinary study, subject to approval by the Philosophy of Science advisor and director. These may form the basis for pre-approved options through the *Science* requirement for future students.

If meeting the above *Science* requirements brings the total credits completed to 9, no further courses are needed to satisfy the *Science* requirement. Otherwise, any upper-division science course may be used to bring the total *Science* credits to 9.

### ***Philosophy Requirement***

The default *Philosophy* requirement will be satisfied by completing eight (8) upper-division courses that satisfy distribution requirements in Philosophy of Science; Logic & Formal Methods; Ethics; and History of Philosophy. Details of options for satisfying this requirement may be found in Appendix A.

Specialized options for satisfying the *Philosophy* requirement will be available to Philosophy of Science majors as informal tracks. These recognize and document specialized areas of study, and carry slightly different distribution or course

requirements from the default path (e.g., the *Science, Society, and Ethics* track requires PHIL 3310 *Science & Society* and an additional Ethics course).

If meeting the *Philosophy* distribution requirements brings the total credits completed to 24, no further courses are needed to satisfy the *Philosophy* requirement. Otherwise, additional courses selected from designated areas or electives will be needed to bring the total *Philosophy* credits to 24.

### ***Special Tracks***

Students may also satisfy both the *Science* and *Philosophy* requirements by taking a pre-approved interdisciplinary special track. These interdisciplinary sets of courses will satisfy both the *Science* and *Philosophy* requirements.

### **Grade Requirement**

The grade requirement has three parts. First, only coursework taken for a letter grade will contribute to the above requirements; CR/ NC coursework will not count. Second, no individual PHIL course receiving a grade lower than C- , and no individual science or social science course receiving a grade lower than C will count for any of the above requirements. Third, the overall grade-point average (GPA) for courses meeting the above requirements must be at least 2.00.

### **Admission Requirements**

*List admission requirements specific to the proposed program.*

No special admission requirements will be required of prospective majors, beyond any pre-requisites that other disciplines may require for their courses.

### **Curriculum and Degree Map**

*Use the tables in Appendix A to provide a list of courses and Appendix B to provide a program Degree Map, also referred to as a graduation plan.*

## **Section V: Institution, Faculty, and Staff Support**

### **Institutional Readiness**

*How do existing administrative structures support the proposed program? Identify new organizational structures that may be needed to deliver the program. Will the proposed program impact the delivery of undergraduate and/or lower-division education? If yes, how?*

This proposed major will be administered by the Department of Philosophy. There is strong support in the department and the College of Humanities for this proposal. All other anticipated administrative support can be accommodated by the department. No new organizational structure is required for the delivery of the proposed degree and there will be no negative impact on the delivery of undergraduate education.

All but three courses planned for this major are already regularly offered and listed in the PHIL course catalog. The remaining courses are “Research Ethics,” “Feminist

Philosophy of Science,” and “History of Women in Science.” The first two have been proposed as new PHIL courses through Kuali, to be available for Fall 2019. There are multiple PHIL faculty able to teach each of these courses. “Feminist Philosophy of Science” is being proposed to carry the CW and DV General Education designation.

When the course catalog code HPS (“History and Philosophy of Science”) becomes available, a third course will be proposed, “History of Women in Science” (along with a request for a DV General Education designation). This course code is not currently available, though it has been requested as an option in the course catalog (to be administered by the Philosophy of Science director and the chair of the Department of History).

### Faculty

*Describe faculty development activities that will support this program. Will existing faculty/instructions, including teaching/graduate assistants, be sufficient to instruct the program or will additional faculty be recruited? If needed, provide plans and resources to secure qualified faculty. Use Appendix C to provide detail on faculty profiles and new hires.*

The Department of Philosophy is a top twenty five program in the philosophy of science, and top ten in philosophy of biology. Existing faculty are already providing a curriculum that can support this major, along with a number of associated activities that offer extracurricular opportunities for undergraduates. Those include conferences and workshops (that integrate undergraduate education), undergraduate research opportunities (often with partner units on campus, e.g., the Health Sciences through the UCEER program), invited speakers, and informal reading and lab groups. PHIL faculty are uniquely situated to offer this distinctive program, even absent the addition of new faculty.

Core philosophy of science faculty include:

- Stephen Downes, Ph.D. Science & Technology Studies, *Virginia Polytechnic Institute* (Philosophy of Science; Philosophy of Biology; Philosophy of Mind / Cognitive Science);
- Melinda Fagan, Ph.D. History & Philosophy of Science, *Indiana University*; Ph.D. Biological Sciences, *Stanford University* (Philosophy of Science; Philosophy of Biology; History of Science; Philosophy of Social Science);
- Matt Haber, Ph.D. Philosophy, affiliate in Population Biology, *UC Davis* (Philosophy of Science; Philosophy of Biology; Bioethics)
- Anne Peterson, Ph.D. Philosophy *Notre Dame* (Aristotelian Biology; Ancient History of Biology; Philosophy of Biology; Ancient Philosophy)
- Carlos Santana, Ph.D. Philosophy, *University of Pennsylvania* (Philosophy of Science: Linguistics, Biology, Cognitive Science; Environmental Philosophy; Bioethics, Environmental Ethics; Logic)
- Jonah Schupbach, Ph.D. History & Philosophy of Science, *University of Pittsburgh* (Philosophy of Science; Formal Epistemology; Logic; Cognitive Science)
- Dustin Stokes, Ph.D. Philosophy, *University of British Columbia* (Philosophy of Mind / Cognitive Science; Philosophy of Science; Philosophy of Social Science)

- Jim Tabery, Ph.D. History & Philosophy of Science, *University of Pittsburgh* (Philosophy of Science; Philosophy of Biology; Bioethics; Medical Ethics; Research Ethics)
- Natalia Washington, Ph.D. Philosophy, *Purdue University* (Philosophy of Psychology; Philosophy of Psychiatry; Philosophy of Social Science; Research Ethics).

Philosophy faculty working in affiliated and supporting areas (as indicated):

- Peggy Battin, Ph.D. Philosophy, *UC Irvine* (Medical Ethics; Bioethics; Research Ethics)
- Leslie Francis, Ph.D. Philosophy, *University of Michigan*; J.D., *University of Utah* (Medical Ethics; Bioethics; Research Ethics; Environmental Ethics; Legal Ethics)
- Pat Hanna, Ph.D. Philosophy, *University of Cincinnati* (Philosophy of Language and Linguistics)
- Lex Newman, Ph.D. Philosophy, *UC Irvine* (History of Philosophy; Logic)

In addition to our research faculty, the department also has a set of graduate students eager to teach relevant courses, as well as career line lecturers able to provide important curricular coverage.

### **Staff**

*Describe the staff development activities that will support this program. Will existing staff such as administrative, secretarial/ clerical, laboratory aides, advisors, be sufficient to support the program or will additional staff need to be hired? Provide plans and resources to secure qualified staff, as needed.*

Current Department of Philosophy staff will provide administrative coverage, counseling, advising, and support for the Philosophy of Science major. Existing staff will be (and have been) sufficient to support this major.

### **Student Advisement**

*Describe how students in the proposed program will be advised.*

The Department of Philosophy employs an embedded advisor who will also advise Philosophy of Science students. On the existing advising model, majors are required to regularly meet with the departmental advisor. The department advisor has been included in the construction of this proposal and is prepared to begin advising immediately. Additionally, the department advisor plans to begin rotating through the College of Science advising center.

### **Library and Information Resources**

*Describe library resources required to offer the proposed program if any. List new library resources to be acquired.*

Extensive holdings for the Philosophy of Science major are already found in the J. Willard Marriott Library. No additional university or state funds will be needed for library acquisitions beyond what is already allocated in support of the Department of Philosophy.

## **Projected Enrollment and Finance**

*Use Appendix D to provide projected enrollment and information on related operating expenses and funding sources.*

## **Section VI: Program Evaluation**

### **Program Assessment**

*Identify program goals. Describe the system of assessment to be used to evaluate and develop the program.*

The Philosophy of Science major program goals include:

- Philosophy of Science majors will acquire a breadth of knowledge about the nature of science, scientific reasoning, and the moral and social implications of science and scientific practice, and be able to apply that knowledge in the context of specific sciences or social sciences.
- Philosophy of Science majors will be conversant in a scientific or social science discipline;
- Philosophy of Science majors will be trained in logical, ethical, and analytic reasoning, and be able to express that reasoning with clarity;
- Philosophy of Science majors will be a nexus of interdisciplinary training of undergraduates on the University of Utah campus; and
- The Philosophy of Science program will provide a set of General Education courses to enhance and complement an undergraduate major in the sciences.

To ensure these outcomes, Philosophy of Science faculty consider aggregate data on student assessment in the classroom and other related activities (e.g., successful undergraduate research collaborations). In addition to the department level learning outcome assessment tools (see *Student Standards of Performance* below), other assessment tools will include:

- The performance of Philosophy of Science majors in their science and social science courses;
- The percentage of Philosophy of Science majors that double major with a science or social science, and how many of them successfully graduate with two degrees;
- Survey and other evaluation tools, administered in capstone courses; and
- Review of the program as part of the seven-year Department of Philosophy Graduate Council Reviews.

### **Student Standards of Performance**

*List the standards, competencies, and marketable skills students will have achieved at the time of graduation. How and why were these standards and competencies chosen? Include formative and summative assessment measures to be used to determine student learning outcomes.*

Students completing the Philosophy of Science major will acquire a core knowledge in ethical, analytical, and logical reasoning, and highly developed verbal and writing skills. These are the same skill sets acquired by Philosophy majors. The Department of Philosophy has been working with the Office of Undergraduate Studies to develop a

set of department level learning assessment tools for these skills, and will use them for the Philosophy of Science major as well.

The Department of Philosophy has identified three sets of learning objectives, each with two categories of outcomes that may be assessed. Those are:

1. Philosophical Writing and Analysis

- Outcome A: Philosophical Arguments (Writing)
- Outcome B: Philosophical Arguments (Analysis)

2. Quantitative Reasoning

- Outcome C: Quantitative Reasoning (Abstract/Formal Tools)
- Outcome D: Quantitative Reasoning (Apply Formal Tools to Reasoning)

3. Discussion & Presentation of Arguments

- Outcome E: Varieties of Argument Presentation
- Outcome F: Delivery and Content of Arguments

Outcomes A & B will be assessed in Philosophy of Science capstone classes; Outcomes C & D in PHIL 3200 *Deductive Logic*. The department is developing tools for assessing outcomes E & F, with the plan to assess majors in our capstone courses.

In addition to the skills shared with regular Philosophy majors, the Philosophy of Science major will also have a technical grounding in a scientific or social science discipline, and be trained in interdisciplinary reasoning. Acquisition of the technical proficiency in a science or social science will be assessed by aggregating grades earned by Philosophy of Science majors in science courses, and measuring the number of successful double majors. Philosophy of Science faculty will work with the Office of Undergraduate Studies to develop assessment tools for the acquisition of interdisciplinary skills, but will include the following additional learning objective and outcomes:

4. Interdisciplinary Reasoning

- Outcome G: Integration of Knowledge and Skills
- Outcome H: Creative, Critical, and Collaborative Interdisciplinary Reasoning

5. Technical Proficiency in a Science or Social Science

- Aggregate grades earned by Philosophy of Science majors in science / social science courses;
- Measuring number of successful dual degree majors.

## Appendix A: Program Curriculum

List all courses, including new courses, to be offered in the proposed program by prefix, number, title, and credit hours (or credit equivalences). Indicate new courses with an X in the appropriate columns. The total number of credit hours should reflect the number of credits required to be awarded the degree.

For variable credits, please enter the minimum value in the table for credit hours. To explain variable credit in detail as well as any additional information, use the narrative box at the end of this appendix.

| Course Number                                                                                   | NEW Course | Course Title                                                         | Credit Hours |
|-------------------------------------------------------------------------------------------------|------------|----------------------------------------------------------------------|--------------|
| General Education Courses (list specific courses if recommended for this program on Degree Map) |            |                                                                      |              |
| <b>General Education Credit Hour Sub-Total</b>                                                  |            |                                                                      |              |
| Required Courses                                                                                |            |                                                                      |              |
|                                                                                                 |            | Philosophy of Science: Core (2 required, including PHIL 3350)        | 6            |
| PHIL 3350                                                                                       |            | History & Philosophy of Science (CW) (required)                      |              |
|                                                                                                 |            | Plus one of the following:                                           |              |
| PHIL 3310                                                                                       |            | Science & Society (HF)                                               |              |
| PHIL 3370                                                                                       |            | Philosophy of Biology (CW)                                           |              |
| PHIL 3375                                                                                       |            | Philosophy of Social Science                                         |              |
| PHIL 3440                                                                                       |            | Cognitive Science (HF)                                               |              |
| PHIL 3XXX                                                                                       | ×          | Feminist Philosophy of Science (CW,DV)                               |              |
| PHIL 4380                                                                                       |            | Philosophy of Physics                                                |              |
|                                                                                                 |            |                                                                      |              |
|                                                                                                 |            | Philosophy of Science: Capstone (1 required)                         | 3            |
| PHIL 5350                                                                                       |            | Topics in Philosophy of Science                                      |              |
| PHIL 5370                                                                                       |            | Topics in Philosophy of Biology                                      |              |
| PHIL 5375                                                                                       |            | Topics in Philosophy of Social Science                               |              |
| PHIL 5192                                                                                       |            | Philosophy of _____ (by permission only)                             |              |
|                                                                                                 |            |                                                                      |              |
|                                                                                                 |            | Logic & Formal Methods (2 required; one inductive and one deductive) | 6            |
| PHIL 3200                                                                                       |            | Deductive Logic (QB,QI)                                              |              |
| PHIL 3210                                                                                       |            | Inductive Logic (QB,QI)                                              |              |
| PHIL5200                                                                                        |            | Advanced Deductive Logic (QB,QI)                                     |              |
| PHIL 5210                                                                                       |            | Advanced Inductive Logic                                             |              |
| PHIL 5220                                                                                       |            | Rational Choice Theory                                               |              |
|                                                                                                 |            |                                                                      |              |
|                                                                                                 |            | Ethics (1 required)                                                  | 3            |
| PHIL 3520                                                                                       |            | Bioethics (HF)                                                       |              |
| PHIL 3530                                                                                       |            | Environmental Ethics (HF)                                            |              |
| PHIL 3XXX                                                                                       | ×          | Research Ethics                                                      |              |
| PHIL 4540                                                                                       |            | Engineering Ethics                                                   |              |
| PHIL 5520                                                                                       |            | Advanced Bioethics                                                   |              |
| PHIL 5530                                                                                       |            | Environmental Philosophy                                             |              |
|                                                                                                 |            |                                                                      |              |
|                                                                                                 |            | History of Philosophy (1 required)                                   | 3            |
|                                                                                                 |            | Any course in PHIL's Area III satisfies this requirement             |              |

| Course Number                                | NEW Course | Course Title                                                                 | Credit Hours |
|----------------------------------------------|------------|------------------------------------------------------------------------------|--------------|
|                                              |            |                                                                              |              |
|                                              |            | Science Track                                                                | 9            |
|                                              |            | 3 upper-division courses in a single scientific or social science discipline |              |
|                                              |            |                                                                              |              |
| <b>Required Course Credit Hour Sub-Total</b> |            |                                                                              | <b>30</b>    |
| <b>Elective Courses</b>                      |            |                                                                              |              |
|                                              |            | 1 Elective course is required.                                               | 3            |
|                                              |            | Any course listed above may count as an elective, or from the following:     |              |
| PHIL 5360                                    |            | History of Science                                                           |              |
| ANTH 4134                                    |            | Language, Thought, and Culture: Anthropology of the Human Mind (BF)          |              |
| ANTH 4183                                    |            | Sex & Gender (DV)                                                            |              |
| ANTH 4245                                    |            | Human Migration and Social Change (IR,SUSL)                                  |              |
| ANTH 4481                                    |            | Evolutionary Psychology                                                      |              |
| COMM 3115                                    |            | Communicating Science, Health, Environment                                   |              |
| COMM 4360                                    |            | Consuming the Earth                                                          |              |
| COMM 5360                                    |            | Environmental Communication                                                  |              |
| COMM 5365                                    |            | Communicating Climate Change                                                 |              |
| ENGL 3080                                    |            | Studies in Environmental Literature (HF)                                     |              |
| ENGL 5760                                    |            | Studies in Victorian Literature (pre-approved based on course content)       |              |
| HIST 4075                                    |            | Introduction to History of Science                                           |              |
| HIST 4080                                    |            | Medicine in Western Society (IR,HF)                                          |              |
| HIST 4270                                    |            | Empire and Exploration (with pre-approval and permission only)               |              |
| LING 3300                                    |            | Computers and Language                                                       |              |
| LING 4160                                    |            | Language and Cognition (HF)                                                  |              |
| LING 4170                                    |            | Biolinguistics                                                               |              |
| WRTG 3014                                    |            | Writing in the Sciences (CW)                                                 |              |
| WRTG 3705                                    |            | Rhetoric, Science, and Technology Studies (BF,HF)                            |              |
|                                              |            |                                                                              |              |
| <b>Elective Credit Hour Sub-Total</b>        |            |                                                                              | <b>3</b>     |
| <b>Core Curriculum Credit Hour Sub-Total</b> |            |                                                                              | <b>33</b>    |

### Program Curriculum Narrative

*Describe any variable credits. You may also include additional curriculum information.*

## Degree Map

Degree maps pertain to undergraduate programs ONLY. Provide a degree map for proposed program. Degree Maps were approved by the State Board of Regents on July 17, 2014 as a degree completion measure. Degree maps or graduation plans are a suggested semester-by-semester class schedule that includes prefix, number, title, and semester hours. For more details see <http://higheredutah.org/pdf/agendas/201407/TAB%20A%202014-7-18.pdf> (Item #3).

Please cut-and-paste the degree map or manually enter the degree map in the table below.

| First Year Fall                               | Cr. Hr. | First Year Spring                            | Cr. Hr. |
|-----------------------------------------------|---------|----------------------------------------------|---------|
| MATH 1170 or 1210 - Calculus 1                | 4       | MATH 1180 or 1220 - Calculus 2               | 4       |
| CHEM 1208 - Intro Periodic Table (rec)        | 1       | CHEM 1220 - General Chemistry                | 4       |
| CHEM 1210 - General Chemistry 1 (SF)          | 4       | CHEM 1225 - General Chemistry Lab            | 1       |
| CHEM 1215 - Gen Chemistry 1 Lab               | 1       | BIOL 1210 - Principles of Bio (rec) (SF)     | 3       |
| WRTG 2010 - WR2                               | 3       | PHIL 3520 - Bioethics (HF)                   | 3       |
| <b>Total</b>                                  | 13      | <b>Total</b>                                 | 15      |
| Second Year Fall                              | Cr. Hr. | Second Year Spring                           | Cr. Hr. |
| CHEM 2310 - Organic Chem 1                    | 4       | BIOL 2010 - Evol & Diversity (spring only)   | 3       |
| BIOL Elective                                 | 3       | BIOL 2020 - Principles of Cell Biology       | 3       |
| Science Elective                              | 3       | Science Elective                             | 3       |
| PHIL 3200 - Deductive Logic (QB,QI)           | 3       | AI Course                                    | 3       |
| PHIL 3350 - Hist & Phil of Science (CW)       | 3       | PHIL 3210 - Inductive Logic (QB,QI)          | 3       |
| <b>Total</b>                                  | 16      | <b>Total</b>                                 | 15      |
| Third Year Fall                               | Cr. Hr. | Third Year Spring                            | Cr. Hr. |
| BIOL 2030 - Principles of Genetics            | 3       | BIOL 3410 - Ecology & Evol (spring only)     | 3       |
| BIOL Elective                                 | 3       | BIOL 3510 - Biochemistry 1                   | 3       |
| IE (BF,FF)                                    | 3       | PHYS 2X20 - Physics II                       | 4       |
| IE (BF,FF)                                    | 3       | PHIL 3380 - Feminist Phil of Science (CW,DV) | 3       |
| HIST 4080 - History of Med in W. Society (IR) | 3       | IE (BF,FF)                                   | 3       |
| <b>Total</b>                                  | 15      | <b>Total</b>                                 | 16      |
| Fourth Year Fall                              | Cr. Hr. | Fourth Year Spring                           | Cr. Hr. |
| BIOL 3000 Elective                            | 3       | BIOL 3000 Elective                           | 3       |
| BIOL 3000 Elective                            | 3       | BIOL 5000 Elective                           | 3       |
| BIOL 5000 Elective                            | 3       | PHIL 4120 - Early Modern Philosophy (HF)     | 3       |
| PHIL 5370 - Topics in Phil Bio (Capstone)     | 3       | Upper Division Elective                      | 3       |
| IE (BF,FF)                                    | 3       | Elective                                     | 3       |
| <b>Total</b>                                  | 15      | <b>Total</b>                                 | 15      |

## Appendix C: Current and New Faculty / Staff Information

### Part I. Department Faculty / Staff

*Identify # of department faculty / staff (headcount) for the year preceding implementation of proposed program.*

|                                       | # Tenured | # Tenure -Track | # Non -Tenure Track |  |
|---------------------------------------|-----------|-----------------|---------------------|--|
| Faculty: Full Time with Doctorate     | 14        | 4               | 5                   |  |
| Faculty: Part Time with Doctorate     | 0         | 0               | 0                   |  |
| Faculty: Full Time with Masters       | 0         | 0               | 0                   |  |
| Faculty: Part Time with Masters       | 0         | 0               | 0                   |  |
| Faculty: Full Time with Baccalaureate | 0         | 0               | 0                   |  |
| Faculty: Part Time with Baccalaureate | 0         | 0               | 0                   |  |
| Teaching / Graduate Assistants        |           |                 | 21                  |  |
| Staff: Full Time                      | 0         | 0               | 2                   |  |
| Staff: Part Time                      | 0         | 0               | 0                   |  |

### Part II. Proposed Program Faculty Profiles

*List current faculty within the institution -- with academic qualifications -- to be used in support of the proposed program(s).*

|                   | First Name | Last Name | Tenure (T) /<br>Tenure Track<br>(TT) / Other | Degree | Institution where Credential was Earned | Est. % of time faculty<br>member will dedicate<br>to proposed program. | If "Other,"<br>describe |
|-------------------|------------|-----------|----------------------------------------------|--------|-----------------------------------------|------------------------------------------------------------------------|-------------------------|
| Full Time Faculty |            |           |                                              |        |                                         |                                                                        |                         |
|                   |            |           |                                              |        |                                         |                                                                        |                         |
|                   |            |           |                                              |        |                                         |                                                                        |                         |
|                   |            |           |                                              |        |                                         |                                                                        |                         |
|                   |            |           |                                              |        |                                         |                                                                        |                         |
| Part Time Faculty |            |           |                                              |        |                                         |                                                                        |                         |
|                   |            |           |                                              |        |                                         |                                                                        |                         |
|                   |            |           |                                              |        |                                         |                                                                        |                         |
|                   |            |           |                                              |        |                                         |                                                                        |                         |
|                   |            |           |                                              |        |                                         |                                                                        |                         |

### Part III: New Faculty / Staff Projections for Proposed Program

*Indicate the number of faculty / staff to be hired in the first three years of the program, if applicable. Include additional cost for these faculty / staff members in Appendix D.*

|                                       | # Tenured | # Tenure -Track | # Non -Tenure Track | Academic or Industry Credentials Needed | Est. % of time to<br>be dedicated to<br>proposed program. |
|---------------------------------------|-----------|-----------------|---------------------|-----------------------------------------|-----------------------------------------------------------|
| Faculty: Full Time with Doctorate     | 0         | 0               | 0                   |                                         |                                                           |
| Faculty: Part Time with Doctorate     | 0         | 0               | 0                   |                                         |                                                           |
| Faculty: Full Time with Masters       | 0         | 0               | 0                   |                                         |                                                           |
| Faculty: Part Time with Masters       | 0         | 0               | 0                   |                                         |                                                           |
| Faculty: Full Time with Baccalaureate | 0         | 0               | 0                   |                                         |                                                           |
| Faculty: Part Time with Baccalaureate | 0         | 0               | 0                   |                                         |                                                           |
| Teaching / Graduate Assistants        |           |                 | 0                   |                                         |                                                           |
| Staff: Full Time                      | 0         | 0               | 0                   |                                         |                                                           |
| Staff: Part Time                      | 0         | 0               | 0                   |                                         |                                                           |

## Appendix D: Projected Program Participation and Finance

### Part I.

*Project the number of students who will be attracted to the proposed program as well as increased expenses, if any. Include new faculty & staff as described in Appendix C.*

| Three Year Projection: Program Participation and Department Budget                                                                                                                                                                       |                                             |                                            |                                            |                                            |        |        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|--------------------------------------------|--------------------------------------------|--------------------------------------------|--------|--------|
|                                                                                                                                                                                                                                          | Year Preceding Implementation               | New Program                                |                                            |                                            |        |        |
|                                                                                                                                                                                                                                          |                                             | Year 1                                     | Year 2                                     | Year 3                                     | Year 4 | Year 5 |
| <b>Student Data</b>                                                                                                                                                                                                                      |                                             |                                            |                                            |                                            |        |        |
| # of Majors in Department                                                                                                                                                                                                                | 66                                          | 70                                         | 70                                         | 70                                         | 70     | 70     |
| # of Majors in Proposed Program(s)                                                                                                                                                                                                       | ////                                        | 50                                         | 50                                         | 50                                         | 50     | 50     |
| # of Graduates from Department                                                                                                                                                                                                           | 12                                          | 15                                         | 15                                         | 15                                         | 15     | 15     |
| # Graduates in New Program(s)                                                                                                                                                                                                            | ////                                        | 15                                         | 15                                         | 15                                         | 15     | 15     |
| <b>Department Financial Data</b>                                                                                                                                                                                                         |                                             |                                            |                                            |                                            |        |        |
|                                                                                                                                                                                                                                          | Department Budget                           |                                            |                                            |                                            |        |        |
|                                                                                                                                                                                                                                          |                                             | Year 1                                     | Year 2                                     | Year 3                                     |        |        |
|                                                                                                                                                                                                                                          | Year Preceding Implementation (Base Budget) | Addition to Base Budget for New Program(s) | Addition to Base Budget for New Program(s) | Addition to Base Budget for New Program(s) |        |        |
| <i>Project additional expenses associated with offering new program(s). Account for New Faculty as stated in Appendix C, "Faculty Projections."</i>                                                                                      |                                             |                                            |                                            |                                            |        |        |
| <b>EXPENSES – nature of additional costs required for proposed program(s)</b>                                                                                                                                                            |                                             |                                            |                                            |                                            |        |        |
| <i>List salary benefits for additional faculty/staff each year the positions will be filled. For example, if hiring faculty in year 2, include expense in years 2 and 3. List one-time operating expenses only in the year expended.</i> |                                             |                                            |                                            |                                            |        |        |
| Personnel (Faculty & Staff Salary & Benefits)                                                                                                                                                                                            | \$0                                         | \$0                                        | \$0                                        | \$0                                        | \$0    |        |
| Operating Expenses (equipment, travel, resources)                                                                                                                                                                                        | \$0                                         | \$0                                        | \$0                                        | \$0                                        | \$0    |        |
| Other:                                                                                                                                                                                                                                   | \$0                                         | \$0                                        | \$0                                        | \$0                                        | \$0    |        |
| <b>TOTAL PROGRAM EXPENSES</b>                                                                                                                                                                                                            | ////                                        | \$0                                        | \$0                                        | \$0                                        | \$0    |        |
| <b>TOTAL EXPENSES</b>                                                                                                                                                                                                                    | \$0                                         | \$0                                        | \$0                                        | \$0                                        | \$0    |        |
| <b>FUNDING – source of funding to cover additional costs generated by proposed program(s)</b>                                                                                                                                            |                                             |                                            |                                            |                                            |        |        |
| <i>Describe internal reallocation using Narrative 1 on the following page. Describe new sources of funding using Narrative 2.</i>                                                                                                        |                                             |                                            |                                            |                                            |        |        |
| Internal Reallocation                                                                                                                                                                                                                    |                                             |                                            |                                            |                                            |        |        |
| Appropriation                                                                                                                                                                                                                            |                                             |                                            |                                            |                                            |        |        |
| Special Legislative Appropriation                                                                                                                                                                                                        |                                             |                                            |                                            |                                            |        |        |
| Grants and Contracts                                                                                                                                                                                                                     |                                             |                                            |                                            |                                            |        |        |
| Special Fees                                                                                                                                                                                                                             |                                             |                                            |                                            |                                            |        |        |
| Tuition                                                                                                                                                                                                                                  |                                             |                                            |                                            |                                            |        |        |
| Differential Tuition (requires Regents approval)                                                                                                                                                                                         |                                             |                                            |                                            |                                            |        |        |
| <b>PROPOSED PROGRAM FUNDING</b>                                                                                                                                                                                                          | ////                                        | \$0                                        | \$0                                        | \$0                                        | \$0    |        |
| <b>TOTAL DEPARTMENT FUNDING</b>                                                                                                                                                                                                          | \$0                                         | \$0                                        | \$0                                        | \$0                                        | \$0    |        |
| <b>Difference</b>                                                                                                                                                                                                                        |                                             |                                            |                                            |                                            |        |        |
| Funding - Expense                                                                                                                                                                                                                        | \$0                                         | \$0                                        | \$0                                        | \$0                                        | \$0    |        |

## Part II: Expense explanation

### Expense Narrative

*Describe expenses associated with the proposed program.*

Only minimal additional expenses are expected for this program. The Department of Philosophy is already offering most of the courses on a regular basis, and has capacity to absorb the expected enrollment increase. Administrative and advising needs will be carried by existing staff. The primary expense will be in the initial roll out of the major. Promoting and advertising the major will incur some expenses, though much of that will be provided by the marketing staff in the College of Humanities.

## Part III: Describe funding sources

### Revenue Narrative 1

*Describe what internal reallocations, if applicable, are available and any impact to existing programs or services.*

There are three ways that resources may need to be reallocated to accommodate additional demands introduced by the Philosophy of Science major. Those are administrative, advising, and instructional resources.

The administrative needs of the Philosophy of Science major largely overlap with existing work in the Department of Philosophy, or are just a slight extension of that work. There is very little duplication or additional administrative work. It will be easily absorbed by existing staff.

Advising needs will increase in the Department of Philosophy. The current advisor has been closely involved in the construction of the major, and is prepared to absorb these new duties. This may also include rotating through the Science 'advising hive', both to educate other advisors and provide a resource for science majors interested in adding the Philosophy of Science major. The additional work load will come out of the administrative duties currently carried out by the department advisor. These duties will be absorbed by a student work-study in the department office. The Department of Philosophy is piloting this model this year, as the advisor reallocates her time to assisting with the development and promotion of the Philosophy of Science major.

Though the courses in the proposal are already regularly offered, it is possible that the increase in demand and interest will put some pressure on the Department of Philosophy's curricular offerings. This is easily monitored, and will be addressed in three ways. First, career line lecturers may see a slight shift in their teaching assignments, to either offer courses in direct support of this proposal, or to free up research faculty to offer those courses. Second, graduate student teaching assignments may shift to provide more courses in support of this proposal. Finally, a newly funded Visiting Professor/Postdoctoral Position may be dedicated to bringing short-term faculty to campus to offer courses in support of this program. The latter will most likely be 5000-level courses that are cross-listed as graduate courses.

### Revenue Narrative 2

*Describe new funding sources and plans to acquire the funds.*

No new funding is required for this proposal. That said, formally identifying a distinct Philosophy of Science unit in the Department of Philosophy may provide a competitive advantage in external grant applications. Many federal and institutional granting agencies encourage interdisciplinary projects, and this major will provide a clear means of including training components to those grant applications.

A slight increase in funding may also result from an increase in majors in the department. Though most Philosophy of Science majors will likely be second (or even third) majors, and thus not credited to the department by OBIA, the streamlined nature of the Philosophy of Science major should lead to an increase in graduates from the program. The latter are counted by OBIA, regardless of other degrees earned, and will be credited in the budget model.