

# PHILOSOPHY AND ENGINEERING

## WHY I SHOULD MAJOR IN PHILOSOPHY

### PHILOSOPHY DEVELOPS ENGINEERING SKILLS

People who are interested in pursuing careers in engineering may find philosophy classes truly rewarding, and there are good reasons why. There are many overlapping skills. Philosophy helps develop them in broader contexts:

- identifying problems, weaknesses, and strengths (of situations, arguments, or positions)
- thinking clearly and with organization
- discerning and evaluating evidence
- creative thinking; the ability to imagine alternative scenarios
- logic, induction, deduction
- inference to the best explanation
- articulating thoughts concisely, precisely and without ambiguity

### PHILOSOPHICAL QUESTIONS OF INTEREST TO ENGINEERS

What is technology and how does it relate to science?

How can we develop and use technology in a morally responsible manner?

Is it morally permissible to genetically modify foods?

How should we balance the interests of technological innovation and preservation of the environment?

Who owns the rights to property? How should we understand intellectual property?

Is there a way to validate/justify the scientific method?

Are beliefs based on empirical observation the only kind of beliefs that can be known/justified?

If determinism were true, would that undermine free will and moral responsibility?

What is the nature of consciousness? Can there be artificial intelligence?

Can evolution account for design?

### VALUE OF PHILOSOPHICAL METHODS IN TECHNICAL FIELDS

Philosophy as an academic discipline simply tries to focus this methodology on very tough questions and problems: "What is the right thing to do?", "How does science give us knowledge?", "How does language work when it takes the form of a proof?", "Do we have free will?", "What is the relationship between the mind and the body?" In fact, in its attempts to solve these problems, it is not at all unlike engineering in its methods. What is unique about philosophy is its excitement about addressing problems for which there is very little in the way of empirical data, and for which it is not clear that an experiment could be devised to obtain empirical data.

Thus philosophy is very much at home in an environment that focuses on science and engineering. Philosophers are often interested in scientific discoveries and technological solutions. Scientists and engineers trained in philosophy can think more deeply about the conceptual foundations of their methods and the ethical implications of their activities.

## WHY I SHOULD MAJOR IN PHILOSOPHY

Questions?

E-mail

Prof. Annemarie Butler  
butlera@iastate.edu

201 Introduction to Philosophy  
206 Introduction to Logic and Scientific Reasoning  
207 Introduction to Symbolic Logic  
230 Moral Theory and Practice  
235 Ethical Issues in A Diverse Society  
310 Ancient Philosophy  
314 17th Century Philosophy  
315 18th Century Philosophy  
316 19th Century Continental  
317 20th and 21st Century Continental Philosophy  
318 20th and 21st Century Anglo-American Philosophy  
330 Ethical Theory  
331 Moral Problems in Medicine  
332 Philosophy of Law  
334 Environmental Ethics  
335 Social and Political Philosophy  
336 Bioethics and Biotechnology  
338 Feminist Philosophy  
340 Aesthetics  
343 Philosophy of Technology  
350 Philosophy of Religion  
364 Metaphysics: God, Minds, and Matter  
366 Truth, Belief and Reason  
380 Philosophy of Science  
430 Value Theory  
450 Persons and Causes (Free Will)  
460 Epistemology and Metaphysics  
465 Brains, Minds, and Computers  
483 Philosophy of Biology  
485 Philosophy of Physics  
490 Independent Study  
496/596 Ecology and Society  
535 Contemporary Political Philosophy

## WHAT CAN I EXPECT FROM A PHILOSOPHY COURSE?

Philosophy courses tend to focus on fundamental questions about life, reality, and knowledge. In a philosophy course, students will read thought-provoking works. Students develop skills to interpret controversial points of view charitably, identify unstated assumptions, and distinguish relevant information from unimportant rhetorical flourishes. They are able to assess positions and their alternatives and identify underlying points of agreement and disagreement. Although there may be no single “right” answer, it is not true that any answer is just as good as another. Students are expected to provide reasons that make a clear case for accepting their point of view. Philosophy courses tend to be highly discussion-oriented and writing-intensive, improving clarity of presentation and argumentative rigor. Especially in courses numbered 300 and higher, enrollment is limited to facilitate discussion and provide students opportunities to engage with their peers and the professor. More than most other majors, philosophy encourages students to examine and develop their own points of view, rather than uncritically accept the current state of research. These skills of charitable interpretation and independence of critical thought enable philosophy majors to excel in a variety of career paths and lifelong activities.

### PHILOSOPHY COURSES OF INTEREST TO STUDENTS IN ENGINEERING:

201 (Introduction to Philosophy) \* 206 (Introduction to Logic and Scientific reasoning) \* 207 (Introduction to Symbolic Logic) \* 230 (Moral Theory and Practice) \* 332 (Philosophy of Law) \* 330 (Ethical Theory) \* 334 (Environmental Ethics) \* 336 (Bioethics and Biotechnology) \* 343 (Philosophy of Technology) \* 364 (God, Minds, and Matter) \* 366 (Truth, Belief, and Reason) \* 314 (17th Century Philosophy) \* 315 (18th Century Philosophy) \* 318 (20th and 21st Century Anglo-American Philosophy) \* 380 (Philosophy of Science) \* 450 (Persons and Causes, Free Will) \* 460 (Epistemology and Metaphysics) \* 465 (Brains, Minds, and Computers) \* 483 (Philosophy of Biology) \* 485 (Philosophy of Physics) \* 496 (Ecology and Society)

## DEGREE REQUIREMENTS

### MAJOR IN PHILOSOPHY

A major in philosophy requires 33 credits in philosophy (eleven courses). At least fifteen of these credits shall come from the core curriculum, and at least six credits shall come from courses numbered 400 or above. The core curriculum requires:

One from: 330 (Ethical Theory), 335 (Social and Political Philosophy), or 535 (Contemporary Political Philosophy);

310 (Ancient Philosophy);

Either 314 (17th Century Philosophy) or 315 (18th Century Philosophy);

One from: 364 (God, Minds, and Matter), 366 (Truth, Belief, and Reason), or 380 (Philosophy of Science); and

207 (Introduction to Symbolic Logic)

### ADDING PHILOSOPHY AS A SECOND MAJOR

Combining a philosophy major with other majors is a great way to gain knowledge of philosophy and a deeper understanding of the conceptual foundations of the other major. The requirements for philosophy as a second major are the same as the requirements for the major. Philosophy may be designated as the primary or secondary major.

### MINOR IN PHILOSOPHY

A minor in philosophy is an excellent complement to any major. The minor in philosophy requires fifteen credits (five courses) in philosophy. At least nine of these credits shall come from courses numbered 300 or above.