

# PHYS 485: PROFESSIONAL ETHICS FOR PHYSICISTS

## COURSE SYLLABUS

**Instructor:** Joshua Barnes

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**Office hours:** Watanabe 402, Tuesday 16:30 – 17:30

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### Class Details

**Semester:** Fall 2018

**Room:** PSB 211

**Meeting Time:** Friday 15:30 – 16:20

**Dates:** August 24 – November 30, 2018

**CRN:** 89744

**Final:** Wed., Dec. 12, 16:30 – 18:30

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### Course goals

The primary goals of this course are for you to be able to:

- (1) Identify ethical aspects of professional situations.
- (2) Use a decision-making process for appropriate and efficient resolution of ethical challenges.
- (3) Develop a set of study, work, and professional norms that avoid ethical problems.

### Materials

*Class website*, hosted at Google Classroom, for announcements, handouts, and links to resources.

### Provisional Course Calendar

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|-----|-------|---|
| 1.  | 8/24  | CANCELED DUE TO HURRICANE   |
| 2.  | 8/31  | Meaning of “Professional Ethics.” Approaches to ethics. Topic preview.      |
| 3.  | 9/07  | Framework for ethical decisions. Presentation topics. Guidelines & Rubrics. |
| 4.  | 9/14  | Group presentations [15 min]; group $\simeq$ 3 to 4 people.                 |
| 5.  | 9/21  | Class discussion & instructor feedback on presentations.                    |
| 6.  | 9/28  | Individual presentations [10 min] & class discussion.                       |
| 7.  | 10/05 | Individual presentations [10 min] & class discussion.                       |
| 8.  | 10/12 | NO CLASS, or guest lecturer.  |
| 9.  | 10/19 | Instructor feedback on presentations. Review of approaches & framework.     |
| 10. | 10/26 | Group presentations [15 min]; group $\simeq$ 3 to 4 people.                 |
| 11. | 11/02 | Class discussion & instructor feedback on presentations.                    |
| 12. | 11/09 | Individual presentations [10 min] & class discussion.                       |
| 13. | 11/16 | Individual presentations [10 min] & class discussion.                       |
| 14. | 11/23 | Non-instructional day.  |
| 15. | 11/30 | Instructor feedback on presentations.                                       |
| 16. | final | Final presentations [15 min].   |

## Course Description

**Overview.** The aim of this course is to develop a clear understanding of ethical standards in scientific research, collaborations, and communications.

**Ethical Issues (E) Focus.** This course has a Contemporary Ethical Issues (E) Focus designation. Contemporary ethical issues are fully integrated into the main course material and will constitute at least 30% of the content. At least 8 hours of class time will be spent discussing ethical issues. Through the use of lectures, discussions and assignments, students will develop basic competency in recognizing and analyzing ethical issues; responsibly deliberating on ethical issues; and making ethically determined judgments.

**Oral Communications (O) Focus.** This course has an Oral Communications (O) Focus designation. Each student will conduct or participate in a minimum of three oral communication assignments or a comparable amount of oral communication activity during the class. 100% of the final grade will be a function of the student's oral communication activities. Each student will receive explicit training in oral communication concerns relevant to the assignment.

**Active Learning.** This course is taught in an active learning style that is based on short lectures infused with questions and discussions that are carried out within small groups or with the class as a whole. This active learning environment (also known as inquiry-based learning or peer-centered learning) has been proven in numerous studies in both physics and astronomy to lead to a much greater understanding of the concepts than even the most engaging traditional lecture. The four-word summary of this approach is this: **you learn by doing.**

## Learning Goals

The following outlines the “big picture” concepts that you should understand by the end of this course. Some of these are specific to the astronomical professions, some are broader understandings of the practice of science and how we discover how the universe works, and others are more broadly applicable in daily life.

- Understand sources of ethical standards and their application in the sciences
- Be able to use frameworks for ethical reasoning
- Practice reasoning in the following broad classes of professional situations:
  - Scientific policy (eg. human experimentation, resource allocation)
  - Research practices (eg. data selection, confirmation bias)
  - Interpersonal conduct (eg. collaboration, power dynamics, refereeing)

**Institutional Learning Objectives.** The course outcomes are aligned with the University of Hawaii's Institutional Learning Objectives for Undergraduate Students (<http://manoa.hawaii.edu/ovcaa/ilo/>). This course:

- gives an understanding of professional practices in science (objective 1b),
- provides continuous practice with critical and creative ethical thinking: solving challenging and complex problems, applying questioning and reasoning, generating and exploring new questions, and information literacy (objective 2a),
- applies research practices to ethical thinking: conceptualizing problems and asking research questions, analyzing data relevant to ethical situations, engaging in self-directed inquiry, and using library and information systems (objective 2b),
- provides training in effective oral communication and integrates in-class collaborative work (objective 2c),
- provides practice in ethical thinking through the analysis of historical situations and hypothetical future experiences (objective 3a),

- provides practice in considering the viewpoints of others (objective 3b),
- provides practice in the consideration of the use of, impact on, and management of natural resources as part of a broader ethical framework (objective 3c), and
- provides practice in the examination of the interaction between the scientific community and other communities (objective 3d)

### Evaluation

#### Traditional ABCDF scale (90%, 80%, 70%, 60%, less than 60%)

In-class discussions and critiques — 25%

Group Presentations – 20%

Individual Presentations — 35%

Individual Final presentation — 20%

**Oral Presentations.** You will give two group and two individual presentations during the semester, and a third individual presentation during finals week. Presentations will focus on description of a historical incident or hypothetical situation, discussion of the ethical aspects, and recommendations for handling similar situations in the future. Typically, two 15-minute presentations will be given per class, with time for questions and discussion.

**In-class discussions and critiques.** The active learning environment requires class participation in group or pair discussions. During most class meetings one or more students will present an overview and analysis of a situation (see Oral Presentations, above). You will provide a brief written critique of the presentations as part of your own training in effective oral communication skills. We will also carry out a full class discussion of the situations presented, and you will be graded on the content and quality of your contributions to the discussion.

**Common courtesy guidelines:** These guidelines are self-explanatory and are for the benefit of the entire class:

- Show up on time; if you're sick, let the instructor know before class.
- Turn off **ALL** cell phones, laptops, tablets, etc<sup>1</sup>.
- Be kind and respectful of your classmates and instructors.

**Class pair and group activity guidelines:** During pair-based or group activities in class, you are expected to follow six guidelines. These guidelines are similar to expectations of behavior in meetings and team projects in the workplace.

- **Read:** Come to class prepared to discuss the reading and homework material.
- **Risk:** Be open with your opinions and your questions. Listen to and encourage everyone's ideas so that they can take risks too.
- **Relax:** Don't take criticism of your own ideas personally. Change your mind when evidence shows that you should.
- **Respect:** Act toward your peers as you would have them act towards you. Be civil, be charitable.
- **Reason:** Play the skeptic, but be critical of reasoning, ideas, and data, not of people. Consider the extreme cases to try to understand the underlying principles.
- **Restate:** Try to paraphrase another's explanation if it is unclear to you. Try to put them together in a way that makes sense. Focus on coming to the best possible answer as a group.

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<sup>1</sup>Electronic devices are detrimental to active learning and are not allowed in this active learning class; see Sana, Faria, Tina Weston, and Nicholas J. Cepeda. "Laptop multitasking hinders classroom learning for both users and nearby peers." *Computers & Education* 62 (2013): 24-31.

### Academic Honesty

This should be a given for any course on ethical practices! Nonetheless, it bears repeating that putting ideas or descriptions into **your own words** helps you to identify which areas you don't understand and helps you learn how to communicate scientifically with your peers. Furthermore, the University of Hawaii has very strict plagiarism rules and presentation materials will be checked for plagiarism. Plagiarism can result in you being removed from this course, suspension or expulsion from UH Mānoa.

### Tips for doing well

- **Attend the class!** Lectures have many in-class questions, collaborative discussions and tutorials. Answers are to be developed in class, not found in the lecture notes or readings. Your success in this class depends on and is enhanced by your active participation in class.
- **Come prepared.** Bring a writing implement and paper or a notebook for taking notes.
- **Get help early.** If you are confused by aspects of the coursework or you feel that you are falling behind, come and see us immediately. No matter what is causing the difficulty, we are willing to work with you to help you succeed.
- **Don't Procrastinate.** Start preparing presentations early. If you leave them to the last minute, you won't be able to take the time needed to deeply understand the material, nor get help should you need it. Presentations **must** be given on scheduled dates unless you have a doctor's note.