

An Introduction to Software Engineering Ethics

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NOTES FOR INSTRUCTORS

Module Purpose: This stand-alone ‘plug-and-play’ ethics module can be used in part or in whole and is appropriate for coverage in one to three class sessions. All necessary materials, including reading, homework, case studies, and classroom exercises, are provided herein. Use of the module does not require that the instructor or students have any special training in ethical theory, applied ethics or philosophy. This should be seen only as a short introduction to thinking about ethics in the context of software engineering practice, and not as a complete course in software engineering ethics.

Module Properties/Design: This module emphasizes learning about software engineering ethics as an applied professional practice. To that end, the module is structured as a series of readings, case studies, questions and discussion prompts that provoke the *practice* of ethical reflection, questioning and decision-making. As a consequence of the module’s design, the theoretical foundations of ethics are presented only briefly in Part Five, and only insofar as they help to define the range of ethical perspectives that can be useful to employ in professional life. As with other parts of the module, Part Five is optional and can be assigned or omitted depending on course needs. Students or instructors interested in a deeper course of study of the existing literature in software engineering ethics/computer ethics, or in the area of philosophical ethics more generally, will find helpful suggestions for further reading in Appendix C’s bibliography (now revised and expanded).

Implementing the Module:

Phase 1: Reading/Homework Assignment The core of the module is an eight-part reading. This reading can be assigned in whole or in part, depending on your preference. However, due to the case studies and substantial amount of homework writing embedded in each reading section, we strongly recommend that the full reading be assigned over at least 3 class sessions. Instructors wishing to have fewer sessions on the module should assign only selected parts of the reading, as suggested below.

Suggested Uses (for One, Two, or Three Class Periods):

3 CLASS DAYS (1-1.5 hour classes)

DAY 1: Intro & Parts 1-3 (reading/homework) + Classroom Exercise 1

DAY 2: Parts 4-7 (reading/homework) + Classroom Exercise 2

DAY 3: Part 8 & Appendices (reading/homework) + Classroom Exercise 3

2 CLASS DAYS (1-1.5 hour classes)

DAY 1: Intro & Parts 1-3 (reading/homework) + Classroom Exercise 1

DAY 2: Parts 6-8 & Appendices (reading/homework) + Classroom Exercise 3

1 CLASS DAY (3 hour weekly class)

Intro & Parts 1-3, 6-8 & Appendices (reading/homework) + Classroom Exercises 1-3

The homework material is embedded within each part of the reading, in the form of open question fields for the students to complete. There are 28 question fields in total. Because the student learning outcomes that motivate the design of this module cannot be met through merely passive reading, it is *highly* recommended that students be required to complete the question fields as homework, for credit. While it does not make pedagogical sense to grade the answers, given that many of the questions have no 'right' or 'wrong' answers as such, you may wish to credit them on a 'check,' 'check plus' or 'check minus' basis to reward complete and thoughtful responses, as opposed to rote or perfunctory ones.

Some students may feel awkward or uncomfortable with expressing their own moral intuitions and judgments as required by the question fields. You may wish to explain to students, in advance of assigning the homework, that you will not be judging the specific content of their answers or their personal character – only the amount of effort and thought they put into their answers.

Phase 2: Classroom Discussion Exercises After the students have done the reading and submitted their homework answers for credit, they will have the conceptual tools to work through the classroom discussion exercises. These are intended for use in small groups, and involve analysis of case studies presenting ethical dilemmas for software engineers. For example, you might break students up into groups of 3 or 4, give them the first discussion prompt, and ask them to take several minutes to quietly read the case. Then ask each group to spend at least 20 minutes working through the prompt together, with one person volunteering to take notes on the group's conclusions. One or two exercises can be covered in a one-hour class period. You may wish to leave 15-20 minutes at the end of the class to bring all the students together for a single large group discussion, in which each group note-taker reports on their findings and in which you ask follow-up questions, invite comments/questions from other students, and draw the students' attention to any noteworthy points of consensus or dispute.

Further resources to pair with this module can be found in Appendix C and on the Markkula Center for Applied Ethics website:

<http://www.scu.edu/ethics/practicing/focusareas/technology/internet/>

Additional case studies: <http://www.scu.edu/ethics/practicing/focusareas/cases.cfm>

Phase 3: Follow-Up Ideally, your students will acquire from Phase 1 and 2 some conceptual tools for ethical analysis and a degree of practical comfort with ethical reflection that will allow them to more easily shift into patterns of ethical thinking and reflection in professional engineering contexts. We have included an informal anonymous student survey inviting feedback on whether, and to what extent,

participants found the course module conducive to that goal. The survey may be given in class after completion of the module. Please send copies of the completed surveys to the attention of Santa Clara University’s Markkula Center for Applied Ethics at ethics@scu.edu. This feedback will be used to improve future iterations of the course module, and is therefore of great value to our students.

Thank you for your support of this project. Should you have any questions or comments, please feel free to contact the Markkula Center for Applied Ethics at ethics@scu.edu.

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