

## Repository Entry Template Embedded EthiCS @ Harvard Teaching Lab

### Overview

**Course:** CS 290 PhD Grad Cohort Seminar

**Course Level:** Graduate (PhD)

**Course Description:** “CS290 is a discussion-based seminar designed for entering Computer Science Ph.D. students. The goals of the course are three-fold:

- to introduce students to research around the CS area,
- skills building, and
- cohort building.

We will lead sessions on skill building (e.g. paper reading, presentation), soft skill building (e.g. managing advising relationships, supporting your peers), and academic culture (e.g. mental health in academia, power dynamics in scientific communities), as well as research and professional oriented discussions with a broad mixture of CS faculty members. We will also “visit” and discuss one or two CS colloquia.

This is a full-year, 4-unit course, meeting once a week in each of the fall and the spring. Students must complete both terms of this course (parts A and B) within the same academic year to receive credit.

Please come prepared having done the readings / assignment listed on the schedule prior to class.”

Course website for S22: <https://yanivyacoby.github.io/harvard-cs290/schedule/>

Course on Canvas: <https://canvas.harvard.edu/courses/101943>

**Module Topic:** Value-Sensitive Design

**Module Author:** Trystan S. Goetze

**Semesters Taught:** Spring 2022

**Tags:** value-sensitive design [CS], stakeholder analysis [phil], nudging [both], social media [CS], ethical values [phil]

**Module Overview:** This module introduces graduate students to the paradigm of value-sensitive design through an in-depth exercise taken from Friedman and Hendry’s book, *Value Sensitive Design*. After a brief introduction to the importance of computer ethics and the responsibility of computing professionals, value-sensitive design is introduced, followed by a small group exercise based on a case of social media design. Students complete a value-sensitive design worksheet and make recommendations to the developers. The module then moves to a large group discussion.

We wanted to reuse some material from a previous module to aid in the development of this lesson. The CS instructors were particularly interested in the module on nudging by Meica Magnani for CS 236R in Fall 2020: <https://embeddedethics.seas.harvard.edu/cs-236r-2020-fall>

I modified the module to spend the majority of class time on the activity and discussion, with very

<p><b>Connection to Course Material:</b> The module provides students with hands-on practice using a value-sensitive design method, thereby introducing them to the notion that design processes should incorporate reflection on social and ethical issues from various perspectives. This will be an important professional skill as they go on in their research careers and beyond.</p>	<p>little time spent delivering content. Students were given a pre-reading to ensure they were familiar with the main concepts.</p> <p>There was limited material available in the module archive, so I had to reverse engineer and rebuild the actual activity. I used the value scenario analysis method described in the Nathan et al. reading as a guide to designing a worksheet that students completed on Google Slide decks shared in their small groups.</p> <p>CS 290 is unlike other courses in that it has no core technical content, and is intended as a professional development seminar. For this reason, we felt it would be best to introduce the students to an exercise and a way of thinking that can be adapted to a wide variety of CS research and development projects.</p>
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<b>Goals</b>	
<p><b>Module Goals:</b></p> <ol style="list-style-type: none"> <li>1. Students will be familiar with some of the motivation for incorporating ethical reflection into their professional practice as researchers or developers in the tech industry.</li> <li>2. Students will be familiar with value-sensitive design and some of its motivations.</li> <li>3. Students will gain hands-on experience engaging with a value-sensitive design method, specifically, value scenario analysis.</li> </ol>	<p>The primary goal of the module is to introduce students to value-sensitive design and practice applying the paradigm's ideas through a structured exercise.</p>
<p><b>Key Philosophical Questions:</b></p> <ol style="list-style-type: none"> <li>1. Whose responsibility is it to consider the ethical and social implications of computing and information technology?</li> <li>2. How can ethical considerations be integrated into different steps of the design process?</li> <li>3. Does nudging raise ethical concerns?</li> </ol>	<p>The first two philosophical questions are primary. In this module we're interested in getting CS PhD students in thinking differently about tech development. The focus is on their professional responsibilities and how to fulfill them.</p> <p>The question about nudging is secondary, and is addressed by</p>

engaging in the case study, instead of through direct instruction.

Materials	
<p><b>Key Philosophical Concepts:</b></p> <ul style="list-style-type: none"> <li>● Value-sensitive design</li> <li>● Stakeholders</li> <li>● Nudging</li> </ul>	<p>The module instructor does little direct instruction, relying on the academic maturity of the students to do the pre-reading to familiarize themselves with the main concepts. Value-sensitive design is briefly described by the instructor to provide some context for the module and to suggest how it can be used more broadly to incorporate ethical reflection into research and development.</p>
<p><b>Assigned Readings:</b></p> <ul style="list-style-type: none"> <li>● Nathan et al., ‘Envisioning systemic effects on persons and society throughout interactive system design’, <a href="https://dl.acm.org/doi/10.1145/1394445.1394446">https://dl.acm.org/doi/10.1145/1394445.1394446</a></li> <li>● Fusaro &amp; Sperling-Magro, ‘Much anew about “nudging”’, <a href="https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/much-anew-about-nudging">https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/much-anew-about-nudging</a></li> </ul>	<p>Nathan et al. introduces some of the motivation for value-sensitive design, and the specific method used in this module: value scenario analysis. It also includes some guidance and examples. Students were asked to pay particular attention to §§5–7, where the method is discussed.</p> <p>Fusaro &amp; Sperling-Magro is an interview with Thaler and Sunstein, who popularized the concept of nudging in design. This reading is secondary, intended to provide some background on the concept of nudging and its applications, so that the module doesn’t need any time spent on direct instruction on this concept. Students were asked to pay particular attention to this video clip, which describes what a nudge is:  <a href="https://www.mckinsey.com/Videos/video?vid=6265333924001&amp;plyrid=HkOJqCPWdb&amp;aid=ED969673-0183-4C11-8EAC-E2C8DD7AA1B5">https://www.mckinsey.com/Videos/video?vid=6265333924001&amp;plyrid=HkOJqCPWdb&amp;aid=ED969673-0183-4C11-8EAC-E2C8DD7AA1B5</a></p>

Implementation	
<p><b>Class Agenda:</b></p> <ol style="list-style-type: none"> <li>1. Introduction:             <ol style="list-style-type: none"> <li>a. What is Embedded EthiCS?</li> <li>b. Agenda for today</li> </ol> </li> </ol>	<p>Introduction takes 15 minutes</p> <p>Small group activity takes 20 minutes</p>

	<ol style="list-style-type: none"> <li>c. Whose responsibility is it to do computer ethics?</li> <li>d. What is value-sensitive design?</li> </ol> <ol style="list-style-type: none"> <li>2. Small Group Activity: Value scenario analysis of a social media nudge</li> <li>3. Large Group Discussion of the activity</li> <li>4. Wrap-up and homework assignment</li> </ol>	<p>Large group discussion takes 35 minutes</p> <p>Wrap-up takes 5 minutes</p>
<p><b>Sample Class Activity:</b></p>	<p>Students are presented with a case study on social media design. The basic idea is that they are working in a team to produce a social media platform that is designed to nudge users away from making toxic posts. After reading the case study, students complete a value scenario analysis worksheet in small groups. The worksheet has them consider direct and indirect stakeholders, their values, and impacts on them, both short and long term as well as how those impacts change as the technology becomes more pervasive. Finally, they are asked to make some recommendations about the design. The module then moves to a large group discussion, filling in the worksheet with their answers and discussing their recommendations.</p>	<p>This exercise creates a structure for engaging in value scenario analysis. The case study was chosen because these kinds of design interventions are actually being implemented on social media, and similar design choices crop up across different specializations in CS. The latter element helps the case be engaging to the diverse range of specialists taking this seminar.</p>
<p><b>Module Assignment:</b></p>	<p>There was a pre-reading quiz, with three short questions: one on nudging, two on value-sensitive design.</p> <p>After class, students were asked to complete the following short reflection assignment:</p> <p>Write a paragraph (4–6 sentences) reflecting on your experience today engaging with value-sensitive design. Consider the following questions as a starting point: Did the activities prompt you to think about ethical issues in computer science that you hadn't considered before? If yes, what were they? How did the activity help? If no, why do you think the activity didn't help? How could the activity be changed to better suit the kinds of projects you're interested in (if it can't, say why)?</p>	<p>The pre-reading quiz is mainly to motivate students to complete the pre-reading, as it provides much of the background material needed to engage in the exercise. This kind of pre-session work is typical of CS 290.</p> <p>The reflection assignment is unusual for CS 290 but is very brief.</p>
<p><b>Lessons Learned:</b></p>	<p>Students were highly engaged, both in the small group activity and the large group discussion. Students kept the discussion going well past what I had initially planned, meaning that a second activity that I had envisioned was unnecessary.</p> <ol style="list-style-type: none"> <li>1. PhD students in CS are able to carry the discussion themselves. We don't need much prompting to come up with ethical and social implications of technology.</li> </ol>	<p>The second activity was planned as a way to help students move from the case study we considered to applying value-sensitive design to projects of interest to them. In order to cut down on after class work and to keep the discussion more focused and less rushed, I chose to drop the second activity.</p>

2. PhD students can be counted on to do the reading, unlike undergraduates.
3. The hands-on activity was a good use of class time, better than lecturing about the topics would have been.
4. Students engaged in a bit of back-and-forth discussion with one another in the large group discussion, which happened organically as they explored different ethical implications of the design choices discussed.
5. In the teaching lab, there was a concern that the activity wouldn't take the whole class time, hence I prepared a second activity that iterated on the first. The second activity wasn't necessary because there was enough to discuss just on the first scenario.