

CSCI 494

Social and Ethical Issues in Computing (Capstone)

Spring 2020 Th 1:15–3:05pm MEY 184

<http://cs.wheaton.edu/~tvandrun/cs494>

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Office hours: MWF 3:30–4:30pm;
Tu 1:30–3:00pm;
Th 9:00–10:30am.

Contents

CATALOG DESCRIPTION. A study of the ways in which the computer and communications revolution is changing society. Develop an awareness of and sensitivity to the ethical issues that arise in computer science and related professions. Prerequisite: Senior standing in the major.

TEXTBOOK. CSCI 494 course packet available at the bookstore.

OBJECTIVES. The purpose of this course is to provide the setting and opportunity to observe the connections between computer science and other disciplines, reflect on how technology and computer science affect culture, and engage in ethical questions that arise in the computer science community. In terms of the Capstone Experience Learning Outcomes (CELO), the goal of this course is that students are able to

- Integrate the discipline of computer science with their Christ at the Core learning. (CELO 1)
- Articulate how their understanding of vocation (God’s general calling on all Christians, their calling as students, and their distinctive vocational callings) has developed while at Wheaton College. (CELO 2)
- Discuss how studying the Christian liberal arts themselves and computer science in that context has shaped their growth in knowledge, wisdom, and Christian character. (CELO 3)

OUTLINE. The readings in the course this semester are categorized under the following topics.

Computer science and personality. There is a stereotype of a people who are attracted to computer science. Is it valid? How has it affected computer science itself? Has this kept people who don’t seem to fit out of the field?

Computer science education. Computer science academia has been criticized for failing the students who do not fit the mold. How should computer science be taught? Should it be tailored to a small number who take to it naturally or made accessible to a wider audience? Should it be taught as math, as a science, as engineering, or as art?

Women and computer science. Women have been drastically underrepresented in computer science. Why is that, and how can this be fixed?

Ethnic minorities and computer science. Several (though not all) ethnic minorities are drastically underrepresented in computer science. Why is that, and how can this be fixed?

Programming and power. Programming ability gives one power. How does this affect the human psyche?

The ethics of hacker culture. The computer science community—and “hacker” culture in particular—has its own set of values and standards, seen, for example, in the Free Software movement. To what extent is this ethic compatible with biblical thinking?

Governance. What are the responsibilities of the civil government to regulate the use of technology? What are the ethics of the civil government's use of technology to monitor its citizens?

Business. What are the merits of technology companies' business models? What are the ethics of companies' uses of technology to monitor their customers?

Privacy and security. What limits should be put on the use of computing technology for the sake of individual privacy? What is the balance between privacy and security? How has computing technology changed how people think about their privacy?

Intellectual property. What is the nature of intellectual property? Does it exist inherently or only as defined by civil law? What ethical questions does the idea of intellectual property evoke?

Design. Design is a definitively human activity. How does human nature affect how design is done? How should love for one's neighbor affect how design is done?

Skepticism of technology. New technologies are often welcomed with enthusiasm for their potential to improve our lives, but there are also those voices that ask what we're losing. Are their objections valid? Do they warrant rejecting certain technologies, or can these liabilities be mitigated?

Defining the field of computer science. Computer science is a young field, and not everyone agrees on what it is. What are the defining characteristics? What could, or should, the field be?

For a schedule, see the course website.

The following are found in the course proposal for CSCI 494 as possible topics. They are "out of rotation" this semester, but students may consider them for term paper topics.

The production of software. Even though we pursue computer science as a scientific field, producing software is its primary activity. How does one's philosophical starting point shape this practice? Specifically, do biblical commitments make a difference?

Computer technology and the developing world. To what extent has the developing world be left out of the worldly bounty of computing technology? To what extent has the developing world benefited?

The joy of computer science. What makes programming fun? Why do many people in computer science find such satisfaction in it, and how has it enriched human culture? Could the enjoyment of the craft of computing be made more widely accessible?

Computer science careers as professions. What is the nature of a profession, and to what extent do common computer science career paths (such as software development) fit this model? How has computer science and related technologies affected traditional professions?

Computers and the mind. The pioneers of computing machinery naturally used neurological metaphors (for example, computer "memory"). As computers became more familiar, the metaphor flipped and we began to describe our brains with the terms and concepts of computers. To what extent does this metaphor hold? Furthermore, has the use of computing technology affected our brains?

Computer science and faith. It is not obvious how being a Christian affects how one practices computer science, nor how computer science informs our faith. What are the explicit points of contact?

Computer science connections. Computer science interacts with many other fields. What are the common threads—especially with math, music, and art?

Course procedures

HOW WE DO THIS COURSE. This course is completely unlike any other I teach—we read papers and articles together and discuss them in class. Leading class discussion is not what I usually do, so bear with me.

The rhythm of this course is

- Each week we read an assigned set of papers. You send me a summary before class. We spend class time discussing the reading.
- During the semester you write five short essays, summarizing your reflections on the readings.
- During the semester you write a term paper in which you go deeper into one topic.

READINGS. The core of this course’s experience is in interacting with the readings. Accordingly, it is imperative that you are faithful at doing the assigned readings. The number of pages will vary a little, so look ahead on the schedule and get an early start when you see a big one coming. Don’t save it all for the night before—read throughout the week so that you can have some time to digest the ideas before class.

For each reading, send me a summary no later than 8:00 pm Wednesday, the night before class, by email. In this summary, identify one “good thing” (something you learned, something you agreed with, a good point the author made) and one “bad thing” (something you disagreed with, something the author overlooked or argued poorly) for **each** reading. This summary isn’t intended to create work for you. Its purpose is just to prove to me that you did the reading and to help me know ahead of time what the class’s reaction is.

ESSAYS. You are required to turn in five page-and-a-half-or-so essays throughout the semester. I’m not giving specific due dates for these (except that they all must be turned in by the last day of classes, Fri, May 1), but you should spread them out, both for your sake and for mine, so I’m not inundated with essays the last week of the semester. In each essay, give your response to ideas that have come up in the readings and in class discussion. The intent is that these essays will be your “final word” on some thread of discussion from class. I will post a few essay prompts after each class, but you won’t be limited to those.

You may turn these in whatever way you find most convenient: hard copy, electronic by email, or electronic through Schoology.

In one of these five essays you will articulate your understanding of vocation, following-up on your essay assignment from your First Year Seminar on C.S. Lewis’s “Learning in Wartime.” *This essay will be used to assess CELO 2.*

In another of these essays you will reflect on your personal growth while at Wheaton. *This essay will be used to assess CELO 3.*

TERM PAPER. You will write one big term paper (8–12 pages) on a topic of your choice drawn from the topics discussed in class (or that would fit in this class). In future semesters, students will demonstrate their understanding of the integration of Christian liberal arts learning with the technical understanding of the discipline of computer science in this term paper, and it will be used to assess CELO 1.

There are three models you could follow for this term paper:

Topical paper. Pick a topic and a question within that topic—especially a social or ethical question—and do some research. Find articles and other resources on the topic, synthesize what you’ve read, draw a conclusion, and defend that conclusion from the evidence. This model is particularly good for topics not covered in the readings (and there are many).

Book report. Pick a book, read it carefully, and interact with the details of the author’s argument. We’ll be reading excerpts from many books. If one particularly strikes your interest, then go read the rest of the book. Of course, you’d have to read ahead to know if you’re interested in a reading we’ll do later in the semester.

Close reading. Pick an article or paper (could be one we read for class, but not necessarily—I'll provide a list of unassigned but interesting papers) and dissect it exhaustively. The hard work of this is getting the sources the author cites and judging whether the author has used them fairly. My paper "A Christian Analysis of Gabriel's 'Mob Software' " is an example of this model. I use the pattern of *context* (what did the author's sources actually say?), *content* (what did the author say?), and *critique* (was the author right?).

Your work on the paper will be structured into a proposal (due Fri, Feb 21), an outline (due Fri, March 27), a draft (due Friday, Apr 17), and a final version (due Fri, May 1). Moreover, the final exam block is set aside for students to give verbal summaries of their paper. See the course website for details about this assignment not listed in the syllabus.

FINAL EXAM. Our final exam block is Tuesday, May 5, 10:30-12:30. This course does not have a final exam, but attendance is mandatory. As noted above, the block is set aside for students to summarize their term papers.

INFORMATION LITERACY WORKSHOP. Students must successfully complete the Capstone Information Literacy Tutorial as a requirement of this course. The tutorial will prepare you for research upon graduation. You will be enrolled in a separate Schoology course where the tutorial is located (look for the LIB Capstone IL Tutorial course in your list of courses on Schoology). Understanding will be assessed within the modules on a pass/fail basis. The tutorial should be taken by Sat, Feb 29. If you have any issues with the tutorial, please contact Cathy Troupos at Buswell Library at cathy.troupos@wheaton.edu. (Students who take two capstone courses do not need to do this tutorial twice.)

GRADING. In order to pass the course (that is, to receive a D grade or better), a student must (a) have at least 50% credit for readings and essays, (b) complete the information literacy workshop, (c) complete a term paper, and (d) attend the final exam block.

For students who have met the minimum requirements, their semester scores are calculated as the weighted average of the following scores, each listed as a percentage:

<i>instrument</i>	<i>weight</i>
Reading summaries and participation	20
Essays	40
Term paper	40

Policies etc

ACADEMIC INTEGRITY. All your assignments are to be original work. Any occurrence of plagiarism will be handled according to the college's policy.

ATTENDANCE. Students are expected to attend all class periods. It is courtesy to inform the instructor when a class must be missed.

GENDER-INCLUSIVE LANGUAGE. The college requires the following statement to be included on all syllabi: *For academic discourse, spoken and written, the faculty expects students to use gender inclusive language for human beings.*

CONFIDENTIALITY AND MANDATORY REPORTING. I'm committed to help maintain a safe learning environment on campus. As a faculty member I am required to share with College authorities any information about sexual misconduct that may have occurred on Wheaton College's campus. Confidential resources available to students include Confidential Advisors, the Counseling Center, Student Health Services, and the Chaplain's Office. More information on these resources and the college's policies is available at www.wheaton.edu/sexualassaultresponse.

SPECIAL NEEDS. *Institutional statement:* Wheaton College is committed to providing reasonable accommodations for students with disabilities. Any student with a documented disability needing academic adjustments is requested to contact the Academic and Disability Services Office as early in the semester as possible. Please call 630.752.5941 or send an e-mail to jennifer.nicodem@wheaton.edu for further information.

My own statement: If you have a documented need for accommodations, I will have received a letter on your behalf from the Disability Services Office. But *please talk to me* about what accommodations are most useful to you. In particular, if you desire accommodations for test-taking, talk to me a reasonable amount time in advance (say, at least two class periods) so arrangements can be made.

OFFICE HOURS. I try to keep a balance: Stop by anytime, but prefer my scheduled office hours. Any time my door is closed, it means I'm doing something uninteruptible, such as making an important phone call. Do not bother knocking; instead, come back in a few minutes or send me an email.

DRESS AND DEPORTMENT. Please dress in a way that shows you take class seriously—more like a job than a slumber party. (If you need to wear athletic clothes because of activities before or after class, that's ok, but try to make yourself as professional-looking as possible.) If you must eat during class (for schedule or health reasons), please let the instructor know ahead of time; we will talk about how to minimize the distraction.

ELECTRONIC DEVICES. My intent is for class to be an electronic-device-free zone. Please keep all laptops, tablets, phones, etc, silenced and put away. If you absolutely need to check your phone for something, please discreetly step out in to the hall. **NO TEXTING IN CLASS.**

All this, the Lord willing.