CS384: Perspectives on Computing

Calvin College

Spring 2018

Instructor: Prof. Derek Schuurman
e-mail: ds33@calvin.edu
phone: (616) 526-8562
office: NH 296


There will be various additional assigned readings throughout the course that will be posted on Moodle.

Schedule: Tuesday and Thursday, 10:30-11:45AM, in SB 201

Course Description:

This course addresses social, ethical, legal and professional issues that arise in computer science from a reformed, Christian perspective. Social issues concerning the computerization of society include privacy, security, the digital divide and changes in the way people receive information and relate with others. Ethical discussion starts with a survey of ethical theories and covers professional, ethical and legal issues in areas including intellectual property, privacy, liability and professional codes of conduct. In addition, some foundational issues are covered, including materialist vs. Christian view of what it means to be a person. Prerequisite: last year of a computing-related program. Meets the integrative studies requirement.

This is an Integrative Studies core course. It fulfills a requirement in the Computer Science, Information Systems programs, and Digital Communications.

Prerequisite: Last year of a computing-related program.

Motivating question:

“Does the ancient Christian faith still have anything to say to a fast-paced modern world shaped by such technology? Tertullian, a father of early Christian literature, once posed the question, “What does Athens have to do with Jerusalem?” When it comes to computer technology, we might well ask, ‘What does Silicon Valley have to do with Jerusalem?’ In a nutshell: what do bytes have to do with Christian beliefs?” (*Shaping a Digital World*, p. 11)

Learning Outcomes: Upon successful completion of this course, a successful student will be able to:

- Articulate how a reformed Christian perspective informs the use and design of computer technology
- explain how technology is not neutral, but value-laden
- critically engage different perspectives of technology including instrumentalism, technological determinism, and technicism
- discuss a variety of social, ethical, legal, theological and philosophical issues related to computer technology
- demonstrate familiarity with professional codes of ethics and design norms for computing
- express themselves clearly orally and succinctly in writing
Grading Scheme: The grading scheme will be as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance and participation</td>
<td>10%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>25%</td>
</tr>
<tr>
<td>Weekly Reading Responses and Discussion Starters</td>
<td>30%</td>
</tr>
<tr>
<td>Presentation</td>
<td>10%</td>
</tr>
<tr>
<td>Final report</td>
<td>25%</td>
</tr>
</tbody>
</table>

Attendance: Since this is a seminar-style course, you must be present to participate! Attendance in class is required and students are expected to be prepared and actively involved in the discussion. Arrival to class more than 10 minutes late will be considered an absence. Students are required to follow regular weekly readings in preparation for class and prepare reading responses.

Quizzes: We will be giving approximately five pop quizzes on the assigned readings and recent course content given at the beginning of the class period scattered throughout the semester. These will be based on the readings for that week. We will drop the lowest score.

Reading Responses: Students will be required to submit reading responses to the weekly readings, due each Tuesday at the start of class. The reading responses must not exceed one page of paper. The reading responses must include the following elements under clearly labeled headings:

1. Discussion starter: Pose a helpful question that could be shared in class for further discussion. These may be used to set the topic of class discussions.
2. Summary: a summary of main points of each of the readings
3. Personal Reflection: reflect briefly on something from the reading(s) that connects with a personal experience or issue that resonated with you or that connects to a current event in the news.

Reading responses will be marked out of three: one mark for each of the above elements. A full mark will be awarded for a satisfactory element, a half mark will be awarded for a less-than-satisfactory element, and a zero will be awarded for a missing or very poor element. A late reading response will loose one full mark. No reading responses later than one week will be accepted.

Final Report: In addition to the weekly required readings, each student must read one book chosen from a list of approved books (other books on technology issues may be considered with approval from the instructor). Students must each choose a distinct book. Each student must write a report and make a presentation to the class on the book they have chosen which will be evaluated by the professor. The report should provide a thoughtful perspective on the book and identify its philosophical stance also in relation to the norms as discussed in class. Each report will consist of roughly 4 pages (not more than 1200 words) which should include: an introduction to the author and subject, a summary of the book including main points and themes, a thoughtful response to the book including any related design norms, and a conclusion. Each of these sections should be clearly labeled with a heading. Note: Pages of submitted material should be word-processed printed pages using 12pt font(s), double-spaced, using Chicago style with proper footnotes.

Presentation: Each student will be responsible for a presentation on the book they have read for their final report. This will involve preparing a one page handout for the class which must include the following: an abstract of the book, a summary of the related design norms, and a personal response. Students will be evaluated by the professor as well as being evaluated by peers (although the grades will be assigned by the professor). Presentations may include appropriate slides, but handouts are required.
Laptop policy:

One of the concepts taught at the beginning of this course is that technology is not neutral – it embeds a bias and is value-laden. Consequently, technology in the classroom changes things. Recent studies have concluded that when it comes to note-taking, laptop note taking is less effective than longhand note taking for learning. In order to minimize distractions, the use of laptops and mobile devices will not be permitted during class presentations and discussions (exceptions will be made for students who require them strictly for note-taking in class). Furthermore, the use of cell phones is not permitted during class.

Course Outline: A tentative schedule for the course is shown on the next page along with assigned readings for each week (consult Moodle for the most recent list of readings with links). It is the responsibility of each student to do the readings each week to enable meaningful class discussions.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Planned Readings</th>
</tr>
</thead>
</table>
| 1    | Welcome  
What is technology?  
• technology as value-laden  
• defining technology  
• technological instrumentalism and determinism  
• McLuhan: the four laws of media  
|        |        | Psalm 8  
Shaping a Digital World, preface and chapter 1  
Neil Postman: “Five Things We Need to Know About Technological Change” |
| 2    | Computer technology and the Biblical story  
• technology and the unfolding of creation  
How digital technology changes things:  
Film: Out of Print  
|        |        | Genesis 1:28; Psalm 19  
Shaping a Digital World, chapter 2 |
| 3    | Computer technology and the fall  
How digital technology (mis)shapes us  
• Alone Together: How social networking shapes human connections  
• Is Google making us stupid?  
Video: Connected, but alone? (Sherry Turkle)  
|        |        | Romans 8:22-30  
Read: Shaping a Digital World, chapter 3  
Nicholas Carr, “Is Google Making Us Stupid?”  
| 4    | Norms for Computer Design  
• cultural norms: technology and worship, education, international development  
• communication and transparency: hospitable coding  
• social norms: social networking, social robots  
• economic norms: e-waste, stewardship, green computing  
• aesthetic norms: UX design, form/function  
• justice norms: digital divide, privacy, computer crime, intellectual property  
• caring norms  
• faith norms  
|        |        | Colossians 1:15-20; 2 Corinthians 5:18-21  
Shaping a Digital World, chapter 4  
| 5    | Technology and the Future  
• Technological optimism  
• Technological pessimism  
• A biblical vision: the new heavens and earth  
|        |        | 2 Peter 3:10; Revelation 21:22-27; Isaiah 60  
Shaping a Digital World, chapter 5.  
Derek Schuurman, “Transhumanism and the
<table>
<thead>
<tr>
<th>Page</th>
<th>Topic</th>
<th>Reading/Case Studies</th>
</tr>
</thead>
</table>
| 6    | Social networking | Psalm 121  
Listen: NPR Interview with Cathy O’Neil |
|      | Big Data, Privacy and Personal Information |  
- Data collection, “Big Data” and data mining, surveillance, biometrics  
- Cryptography, steganography  
- Freedom of Speech, content filtering |
| 7    | Robotics and Robo-ethics | Shaping a Digital World, pp. 99-100, 102-105  
Sherry Turkle, “Why these friendly robots can’t be good friends to our kids”, Washington Post, December 2017.  
|      | Responsible Automation |  
- autonomous lethal robots  
- child care robots, elder care robots, robot companions  
- automation and job loss |
| 8    | Intellectual Property Issues | Exodus 20:15  
Shaping a Digital World, pp. 94-98  
Eric Raymond, The Cathedral and the Bazaar  
Richard Stallman, “What is Free Software?”  
Karl-Dieter Crisman, Open Source Software and Christian Thought |
|      | Copyrights, patents, trademarks,  
Digital Millennium Copyright Act (DMCA)  
Open Source, the free-software philosophy |  
Film: Revolution OS  
Computer Crime  
- Software piracy  
- Computer viruses, worms, online scams |
| 9    | Artificial Intelligence (AI) | Psalm 139:14  
Shaping a Digital World, pp. 48-52.  
Derek Schuurman, “Artificial Intelligence: Discerning a Christian Response” |
|      | Weak vs. Strong AI, “Turing Test,” the “singularity” |  
Film: The Singularity is Near |
| 10   | Professional Ethics and Responsibilities | Matthew 22:36-40  
Shaping a Digital World, chapter 6  
|      | Reliability and Safety issues  
Case studies:  
- the Therac-25 incident  
Read: ACM Code of Ethics |
| 11-13| Student Presentations |  |
Academic Honesty
Students are expected to display honesty and responsibility in completing assignments. Students are responsible for understanding the information on plagiarism contained in the Student Conduct Code (Article IV. B). For more information, see following statement on plagiarism:
https://www.calvin.edu/academic/engl/writing/plagiarism

Communication outside of Class Times:
Important announcements will be sent via Calvin email, so students should check their Calvin email on a regular basis. Generally, the instructor will be happy to help you whenever he is in his office (my class schedule can be viewed in Moodle). The professor welcomes emails sent to his Calvin email account, which is the preferred way of communication outside the classroom. Tutors are available by contacting the Center for Student Success.

Accommodations:
Calvin College will make reasonable accommodations for persons with documented disabilities. Students should notify a disability coordinator in the Center for Student Success (located in Spoelhof College Center 360) in order to arrange accommodations. Then, come and talk to me within the first two weeks of class so we can put your accommodations in place.

List of Approved Books for Book Report
Borgmann, Albert, 2003, Power Failure: Christianity in the Culture of Technology, Brazos Press.
Dyer, John, From the Garden to the City: the redeeming and corrupting power of technology, Kregel Publications, 2011.
Grant, George, Technology and Justice, Anansi, 1986.
Hipps, Shane, Flickering Pixels: how technology shapes your faith, Zondervan, 2009.
Kallenberg, Brad, God and Gadgets: Following Jesus in a Technological Age, Cascade Books 2011.


Lanier, Jaron, You are Not a Gadget: a manifesto, Alfred A. Knopf, 2010.


Turkle, Sherry, Alone Together: Why We Expect More from Technology and Less from Each Other, Basic Books, 2011.


