CS384: Perspectives on Computing
Calvin University
Spring 2021

Instructor: Prof. Derek Schuurman


Schedule: Tuesday and Thursday 10:30-11:45am (section A), 12:00-1:15pm (section B) in HH-334

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 discussions include a survey of ethical theories and covers professional, ethical and legal issues in areas including intellectual property, privacy, liability and professional codes of conduct.

Prerequisite: Last year of a computing-related program.

A 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 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
- explain and apply various design norms for computing
- express themselves clearly orally and succinctly in writing

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 discussions. Arrival to class more than 5 minutes late will be considered an absence. Students are required to follow regular weekly readings in preparation for participating in class discussions.

Quizzes: There will be occasional pop quizzes on the weekly readings and recent course content given at the beginning of class. These will be scattered throughout the semester approximately every two weeks.

Leading a Class Discussion: Pairs of student will be required to lead one class discussion based on one of the weekly readings. This will be done in pairs at the start of a class on a date students must sign up for. Each pair of students will give a 1 minute summary of one weekly reading (each group must pick a unique reading), pose an interesting question which arises from the reading, and lead the class in a discussion lasting no more than 10 minutes, and close with a brief summary of how faith can inform the topic and their personal response. Grades will be out of a total of 5 points as follows: quality of the reading summary (1 point), quality and relevance of the question (1 point), engaging and leading the discussion (1 point), knowledge of subject matter (1 point), and how faith is brought to bear on the issue (1 point). Students will be responsible for ensuring they sign up for a class discussion in time.
**Reading Responses:** Students will be required to submit reading responses to each of the weekly readings on Moodle, normally due by Tuesday morning. The reading responses must not exceed 500 words and must include the following elements under clearly labeled headings for each:

1. **Question:** What question is uppermost in your mind arising from the readings?
2. **Summary:** a brief summary of main points for all of the week’s readings. The title of each reading should be clearly indicated in bold next to each summary
3. **Reflection:** reflect briefly on something from the reading(s) that connects with a personal experience or issue that resonated with you or with 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 receive a mark of zero. No late submissions will be accepted.

For the first week only, students will be required to post an introduction to themselves and reflect on whether they feel technology is neutral.

**Presentation:** 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 for their class section.* Each student will be responsible for a presentation on the book they have selected sometime during the last weeks of classes. This will involve preparing a one-page summary for the class which must include the following under appropriate headings: author **background**, **abstract** of the book, **summary** of the related design norms, and a personal **response**. This summary should be uploaded to files under Teams before your presentation with a filename in the form: student_name-book_title.pdf. Students will be evaluated by the professor and answer questions raised by peers. Presentations should include appropriate visual aids. The date for each student’s presentation will be posted on Moodle. Grading will be based on both content and delivery of the presentation.

**Final Report:** Each student must also write a report on the book they have selected. The report should provide a thoughtful perspective on the book and identify its main ideas and presuppositions about technology. The report should articulate a reformed Christian perspective on the topic and relate it to the norms as discussed in class. Each report should be written concisely with not more than 1200 words. The report should include each of the following sections headings:

- **Title page:** include book title, name, and your final word count
- **Introduction:** introduce the author and subject matter
- **Summary:** overview of the book, including its main points, themes, and presuppositions
- **Perspective:** a thoughtful perspective on the book, articulating a Reformed Christian perspective, identifying related design norms, and giving your own thoughts and opinions
- **Conclusion**

*Each of these sections should be clearly labeled in bold with left-justified headings.* Note that submitted material should be word-processed, single-sided printed pages using 12pt font, double-spaced, left-justified, and with 1-inch margins and submitted in Moodle a PDF file. Any footnotes which are included should be cited using Chicago style. Reports will be due on the same day as your presentation.

**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. In order 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).

**Grading Scheme:** Grading queries need to be raised within one week of the grades being posted and no work will be accepted after the last day of classes.
### Attendance and participation
- Attendance and participation: 10%
- Quizzes: 15%
- Weekly reading responses (on Moodle): 35%
- Leading a class discussion: 5%
- Presentation: 10%
- Final report: 25%

### Course Outline:
A tentative schedule for the course is shown below. Tentative readings for each week are shown, but the final list of readings will be posted weekly on Moodle. It is the responsibility of each student to do the weekly readings before the first class of the week to enable meaningful discussions.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Readings</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>Welcome and Introduction</td>
<td>• Psalm 8</td>
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<tr>
<td>Feb. 2,4</td>
<td>• technological instrumentalism and determinism</td>
<td>• <em>Shaping a Digital World</em>, preface and ch. 1</td>
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<td>• technology <em>bias</em> and <em>value-ladenness</em></td>
<td>• James Huggins, “The Assumptions of Computing”</td>
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<td>• 4 laws of media (Marshall McLuhan)</td>
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<td>Week 2</td>
<td>Computer technology and the Biblical story</td>
<td>• Genesis 1:28; Psalm 19</td>
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<td>Feb. 9,11</td>
<td>Technology and the unfolding of creation</td>
<td>• <em>Shaping a Digital World</em>, ch. 2</td>
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<td>• cultural mandate, imago Dei, sabbath, reductionism, creational laws and norms</td>
<td>• Al Wolters, <em>Creation Regained</em>, pp. 24-27,41-48.</td>
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<td></td>
<td>• tech and idolatry: technicism, informationism, dataism, scientism</td>
<td>• James Smith, “In the Beginning... was Technology”, <em>The Banner</em>, March 2016.</td>
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<td>• anti-normative technology</td>
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<td>• the “technological mindset”</td>
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<td>Week 3</td>
<td>Computer technology and the fall</td>
<td>• Romans 8:22-30</td>
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<td>Feb. 16,18</td>
<td>• Is tech a result of the fall?</td>
<td>• <em>Shaping a Digital World</em>, ch. 3</td>
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<td>• Are bugs a result of the fall?</td>
<td>• Noah Kulwin, “The Internet Apologizes”, <em>Intelligencer</em>, April 2018.</td>
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<td>• Discerning <em>structure</em> and <em>direction</em></td>
<td>• Matthew Dickerson, “Wendell Berry, C.S. Lewis, J.R.R. Tolkien and the Dangers of a Technological Mindset”</td>
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<td>• how digital technology (mis)shapes us</td>
<td>• Neil Postman, “Five Things We Need to Know About Technological Change”</td>
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<td>Week 4</td>
<td>Redemption and Responsible Technology</td>
<td>• Col. 1:15-20; 2 Cor. 5:18-21</td>
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<td>Feb. 23,25</td>
<td>Structure and direction</td>
<td>• <em>Shaping a Digital World</em>, ch. 4</td>
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<td>Normative design principles: cultural appropriateness, transparency, social norms, stewardship, aesthetics, justice, ethics, faith and trust</td>
<td>• Al Wolters, “Structure and Direction”, from <em>Creation Regained</em> pp. 87-95.</td>
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<td>The singularity</td>
<td>• Jacques Ellul’s “76 Reasonable Questions to Ask About Any Technology”</td>
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<td>Week 5</td>
<td>Technology and the Future:</td>
<td>• 2 Peter 3:10; Rev. 21:22-27; Isaiah 60</td>
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<td>Mar. 2</td>
<td>• optimism and pessimism</td>
<td>• <em>Shaping a Digital World</em>, ch. 5</td>
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<td>• Technology in science fiction and popular culture</td>
<td>• Richard Mouw, <em>When the Kings Come Marching In</em>, pp. 17-42.</td>
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<td>Technology, creation, and the new heavens and earth</td>
<td>• Nick Bostrom, “Transhumanist Values”</td>
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<td>Transhumanism and posthumanism</td>
<td>• Andy Crouch, “The Bionic Man and the Body of Christ”, <em>Christianity Today</em></td>
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<td>Week</td>
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<td>Topic</td>
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| Week 6 | Mar. 9,11 | The Christian Concept of Vocation, Professional Ethics and Responsibilities | • Matthew 22:36-40  
• Lee Hardy, *The Fabric of This World*, pp. 93-118.  
• ACM Code of Ethics  
• “Engineers, Ethics, and the VW Scandal”, *IEEE Spectrum*.  
• “How the Boeing 737 Max Disaster Looks to a Software Developer”, *IEEE Spectrum*.  

Approaches to Ethics:  
• virtue ethics, deontology, consequentialism  
The ACM Code of Ethics  
Robo-ethics  
Reliability and Safety issues  
Case studies:  
• the Therac-25 incident  
• VW emissions scandal  
• Boeing 737 Max 8 |
| Week 7 | Mar. 16,18 | Technology habits and rituals, Social networking issues, Virtual reality, Big Data and the societal impact of algorithms, Impacts on justice and democracy, Overview of Cathy O’Neil’s *Weapons of Math Destruction* | • Psalm 121  
• Cathy O’Neil, “The era of blind faith in big data must end”, TED talk  
• “Many Tech Experts Say Digital Disruption Will Hurt Democracy”, Pew Research  

Privacy and personal information |
| Week 8 | Mar. 25 | Artificial Intelligence (AI) and deep learning, Responsible automation | • Psalm 139:13-18  
• Schuurman, “Artificial Intelligence: Discerning a Christian Response”  
• *AI: An Evangelical Statement of Principles*  
• Mark Harris, “Inside the First Church of Artificial Intelligence”, *Wired*, Nov. 2017.  

Computer crime and Hacktivism |
| Week 9 | Mar. 30, April 1 | Intellectual Property Issues | • Exodus 20:15  
• Intellectual Property Law: A Brief Introduction  
• “The patent system is broken” Electronic Frontier Foundation  
• “What is Free software?”, Free Software Foundation  
• Eric S. Raymond, *The Cathedral and the Bazaar*, (selected sections)  

Copyrights, patents, trademarks  
Open Source and free-software philosophy and licenses  
Computer crime and Hacktivism |
| Week 10 | April 6,8 | Technology and the church, Technology and Education, Technology and International Development | • Jeremiah 29:5-7  
• *Shaping a Digital World*, ch. 6  
• Technology and the church, *God and Nature*  
• Online Communion Can Still Be Sacramental, *Christianity Today*  
• Introducing Open Source and the Raspberry Pi to Schools in Developing Nations, *PSCF*  

Concluding thoughts |
• Letter to a Young Engineer, *Christian Courier*
• Letter to a Young IT worker, *Christian Courier*

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<th>Weeks 11-14</th>
<th>Student Presentations</th>
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<tr>
<td>May 6</td>
<td>Final day of class – summary and reflections</td>
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**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, refer to the [Calvin plagiarism policy](#).

**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 and welcomes you to contact me using Teams, which is my preferred way of communication outside the classroom.

**Accommodations:**
Calvin University will make reasonable accommodations for persons with documented disabilities. Students should notify a disability coordinator in the [Center for Student Success](#) 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**
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.


