CS384: Perspectives on Computing

Calvin College
Spring 2019

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office: NH 296

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

Schedule: Tuesday and Thursday, 10:30-11:45AM, in HH-336

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.

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>
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<tbody>
<tr>
<td>Attendance and participation</td>
<td>10%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>30%</td>
</tr>
<tr>
<td>Weekly reading responses (on Moodle)</td>
<td>20%</td>
</tr>
<tr>
<td>Leading a class discussion</td>
<td>5%</td>
</tr>
<tr>
<td>Presentation</td>
<td>10%</td>
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<tr>
<td>Final report</td>
<td>25%</td>
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**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 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 approximately five pop quizzes on the assigned readings and recent course content given at the beginning of the class. These will be scattered throughout the semester approximately every two weeks. These will be based on the readings for that week.

**Leading a Class Discussion:** Each student will be required to lead one brief class discussion based on one of the weekly readings. This will be done in pairs near the start of a class on a date selected by the students. 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 short summary of how faith can inform the topic. 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 the quality of how faith is brought to bear to the question (1 point).

**Reading Responses:** Students will be required to submit reading responses to the weekly readings, normally due each Tuesday before the start of class on Moodle. The reading responses must not exceed 700 words and must include the following elements under clearly labeled headings for each:

1. **Question:** pose one helpful question that arises from the readings that could be shared in class for further discussion.

2. **Summary:** a summary of main points for all of the week’s readings. The title of each reading should be clearly indicated at the top of each summary.

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 receive a mark of zero.

**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. The date for each student’s the presentations will be posted on Moodle.

**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. The report should articulate a reformed Christian perspective on the topic and relate it 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 perspective and 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. 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. 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 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 below. Tentative readings for each week are shown, but the finalized list of readings will be posted on Moodle. It is the responsibility of each student to do the weekly readings before the first week of class to enable meaningful class discussions.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Readings</th>
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| Week 1 Jan. 29, 31 | Welcome Introduction  
- technological instrumentalism and determinism  
- technology bias and value-ladenness  
- technological mediation  
- media ecology; McLuhan’s 4 laws of media |  
• Psalm 8  
• *Shaping a Digital World*, preface and chapter 1  
• James Huggins, “The Assumptions of Computing”  
| Week 2 Feb. 5, 7 | Computer technology and the Biblical story  
Technology and the unfolding of creation  
- cultural mandate, imago Dei, sabbath, reductionism, creational laws and norms |  
• Genesis 1:28; Psalm 19  
• *Shaping a Digital World*, ch. 2  
• James Smith, “In the Beginning... was Technology”, *The Banner*, March 2016.  
| Week 3 Feb. 12, 14 | Computer technology and the fall  
Discerning structure and direction  
- how digital technology can (mis)shape us  
- technology and idolatry: technicism, informationism, scientism  
- anti-normative technology  
Is technology a result of the fall? Are computer bugs part of the fall? |  
• Romans 8:22-30  
• *Shaping a Digital World*, ch. 3  
• Matthew Dickerson, “Wendell Berry, C.S. Lewis, J.R.R. Tolkien and the Dangers of a Technological Mindset”  
• Neil Postman, “Five Things We Need to Know About Technological Change” |
| Week 4 Feb. 19, 21 | Redemption and Responsible Technology  
Normative principles for computer technology:  
- cultural appropriateness, transparency, social norms, stewardship, aesthetics, justice, ethics, faith and trust |  
• Col. 1:15-20; 2 Cor. 5:18-21  
• *Shaping a Digital World*, ch. 4  
• Al Wolters, “Structure and Direction”, from *Creation Regained* pp. 87-95. |
| Week 5 | Feb. 26, 28 | Technology and the Future:  
- Optimism and pessimism  
- Technology, creation, and the new heavens and earth  
Transhumanism and posthumanism  
The singularity |  
- Jacques Ellul’s “76 Reasonable Questions to Ask About Any Technology”  
- 2 Peter 3:10; Rev. 21:22-27; Isaiah 60  
- Shaping a Digital World, ch. 5  
- Richard Mouw, When the Kings Come Marching In, pp. 17-42.  
- Nick Bostrom, “Transhumanist Values”  
- Derek Schuurman, “Transhumanism and the Incarnation” |
| Week 6 | Mar, 5, 7 | Professional Ethics and Responsibilities  
Approaches to Ethics; ACM Code of Ethics  
Reliability and Safety issues  
Case studies:  
- the Therac-25 incident  
- VW emissions scandal  
- pedestrian killed by self-driving car |  
- Matthew 22:36-40  
- Shaping a Digital World, ch. 6  
- ACM Code of Ethics  
| Week 7 | Mar. 12, 14 | Technology habits and rituals  
Social networking  
Big Data and the societal impact of algorithms  
- Overview of Cathy O’Neil’s Weapons of Math Destruction  
Privacy and personal information |  
- Psalm 121  
| Mar. 18-22 | Spring Break | No readings assigned |
| Week 8 | Mar. 26, 28 | Artificial Intelligence (AI) and deep learning  
Robotics and robo-ethics  
Responsible automation |  
- Schuurman, “Artificial Intelligence: Discerning a Christian Response”  
| Week 9 | April 2, 4 | Intellectual Property Issues  
- copyrights  
- patents  
- trademarks  
- Open Source and the free-software philosophy  
Software piracy and computer crime |  
- Exodus 20:15  
- Eric S. Raymond, The Cathedral and the Bazaar  
- Richard Stallman, “What is Free Software?”  
| Weeks 10-13 | Student Presentations |  
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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, 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.


