

FORDHAM UNIVERSITY  
Fordham College at Lincoln Center  
*Department of Computer & Information Science*

**SYLLABUS**

<b>Semester:</b>	Spring, 2019
<b>Course Number:</b>	CISC 4660 L01
<b>Course Title:</b>	Minds, Machines, & Society
<b>Instructor:</b>	Dr. Robert K. Moniot Office LL 821-A, Phone (212) 636-6334 Office hours: TF 10:00–11:00 AM Other office hours by appointment. (I am in my office most days 9–5; call my secretary at x6300 to make an appointment) E-mail: <a href="mailto:moniot@fordham.edu">moniot@fordham.edu</a> URL: <a href="http://www.dsm.fordham.edu/~moniot">http://www.dsm.fordham.edu/~moniot</a>
<b>Class Hours:</b>	TF 11:30-12:45 PM, Room LL 604
<b>Required Texts:</b>	None: there will be required readings of selected articles and book chapters.

**Course Outline:** Computers and information technology play increasingly important roles in modern society. Computers are not only indispensable as office tools in business and as entertainment and creativity centers in the home, but are also embedded in many everyday appliances and machines, including cars, cell phones, microwave ovens, copiers, etc. The Internet connects individuals across the world and has enabled whole new industries such as e-commerce, social networking, and blogging. Through the use of artificial intelligence, computers are becoming capable of performing tasks that were once the exclusive domain of thinking beings, such as interpreting speech, recognizing faces, and creating original art or music.

This course will begin with an examination of the current status of the science of computing, the development of artificial intelligence, and new applications of information technology. We will then explore possible directions that this technology may take in the future, and what impact these developments may have on society. We will examine the depictions of technology by the media and the technology industry, and compare these with the present reality and realistic future possibilities. An important element of our discussion will be the questions of what it means to be intelligent, and whether human-like artificial intelligence is likely, feasible, or even possible.

The course will be conducted in a seminar mode, oriented primarily around class discussion. In the second half of the semester, each student is expected to give a short (20-minute) presentation on the topic of her or his final paper.

It will not be necessary for the student to have any specialized training in computer or information science. Most of the issues can be understood without any detailed knowledge of the workings of the underlying technology. In any case, the analysis of these issues from an ethical and social perspective is not dependent

on their technological basis.

This course fulfills the core requirement of an EP4/Values Seminar. It is not applicable toward the major or minor in Computer Science or Information Science. It is applicable to the majors in American Studies, Communications, Communication & Culture, and New Media and Digital Design.

**Course Objectives:** At the end of this course, students will:

- Be aware of the impact of information technology on society.
- Be aware of trends in the integration of computers and information technology into everyday life, and the potential benefits as well as dangers these trends pose.
- Understand in essence the principles on which artificial intelligence is based, and its capabilities as well as its limitations.
- Be able to research a relevant topic and write a cogent paper analyzing the topic and the ethical or social issues it raises.
- Be able to give an effective presentation on a relevant topic and the ethical and social issues it raises.

**Protocol:** Attendance is mandatory, and is graded, mainly on the extent to which students contribute to the discussion. Attendance grades are posted on the Blackboard grade book and updated within a day or two of each class meeting. The attendance grade is on a scale of 5 points, with 3 points for mere presence. Points are added depending on the amount of participation, up to a maximum score of 5. Points can also be subtracted for lateness or for anything else that interferes with the conduct of the class. Students may request in advance to be excused from class for a valid reason. Excused absences appear in the Blackboard grade book as an “x” and are not counted in the attendance grade.

Grade will be based on class participation (15%), an in-class presentation (15%), a midterm paper (5–7 pages, 20%), four 2–3 page essays (10%), a final exam (15%), and a final research paper (10–12 pages, 25%). Late papers will be accepted, but with a penalty that increases with time. To pass the course each student must complete each of these components adequately. In particular, since attendance and participation are key elements of this class, each student must attend at least 2/3 of the class meetings, whether absences are excused or unexcused. Be aware that because of the difficulty of coding the grading correctly in Blackboard, the total score shown on the Blackboard gradebook is only the attendance score; other grade components are not included. At the end of the semester I will calculate your grade based on all the above grade components, including any lateness penalties.

The essays will be based on material discussed in class and on the assigned readings. They do not need to be based on other sources, though if any are used they must be properly cited. The midterm and final papers will go through a cycle of draft and revision. They must be based on research using primary and secondary sources, and written in proper scholarly style, with references for all sources consulted. See the *MLA Handbook for Writers of Research Papers* or

similar work for guidelines on proper citation style. Academic integrity is very important to the mission of the university. Plagiarism or failure to properly cite sources will result in an F on the paper and may result in an F for the course.

The student presentations will be 20–25 minutes long, with a few minutes afterward for a discussion led by the presenter. I request a preview consisting of an outline and a copy of the slides **one week before the presentation**, so that I can provide feedback and guidance for improving the presentation. After each presentation, the other students will fill out evaluations including written critiques, to provide feedback about the effectiveness of the presentation.

The final exam will ask you to analyze the main social and/or ethical issues raised by some of the topics presented by the other students. I will be less interested in your demonstrating factual knowledge of the details of the topic, and more in the analytical depth of your discussion.

Please turn off all cell phones, beepers, etc. during class. Laptops and tape recorders are not permitted unless as an accommodation approved by the Office of Disability Services.

If you are a student with a documented disability and require academic accommodations, please register with the Office of Disability Services for Students (ODS) in order to request academic accommodations for your courses. Please contact the main ODS number at 718-817-0655 to arrange services. Accommodations are not retroactive, so you need to register with ODS prior to receiving your accommodations. Please see me after class or during office hours if you have questions or would like to submit your academic accommodation letter to me if you have previously registered for accommodations.

### **Schedule of Topics, Readings and Assignments:**

**T Jan 15:** What is a computer? **Readings:** Turing.

**F Jan 18:** cont'd.

**T Jan 22:** Turing test. **Readings:** Searle. **Essay 1** assigned: *impressions of computers*.

**F Jan 25:** Popular images of computers. **Readings:** Weizenbaum, Turkle.

**T Jan 29:** cont'd. **Essay 1 due.**

**T Feb 1:** Visions of the future. **Readings:** Weiser, Gelernter. **Proposal for midterm paper due.**

**F Feb 5:** cont'd. **Essay 2** assigned: *visions of the future*.

**T Feb 8:** cont'd.

**T Feb 12:** Nanotechnology. **Readings:** Feynman, Joy, Drexler. **Essay 2 due.**

**F Feb 15:** cont'd. **First draft of midterm paper due.**

**F Feb 22\*:** Cyborgs, transhumanism. **Readings:** Kurzweil, Franchi & Guezeldere. **Essay 3** assigned: *spiritual machines*.

**T Feb 26:** cont'd. **Proposal for presentation and final research paper due.**

**F Mar 1:** Symbolic AI. **Readings:** Newell & Simon, Dreyfus & Dreyfus. **Essay 3 due.**

**T Mar 5:** cont'd. **Readings:** Kroeker. **Midterm research paper due.**

**F Mar 8:** Computational AI. **Readings:** Brooks, Kasparov. **Essay 4 assigned:** *future of AI.*

**T Mar 12:** cont'd.

**F Mar 15:** cont'd.

*Mar 18–22 Spring break. No classes. Essay 4 due.*

**T Mar 26:** Student presentations 1 & 2.

**F Mar 29:** Student presentations 3 & 4.

**T Apr 2:** Student presentations 5 & 6.

**F Apr 5:** Student presentations 7 & 8.

**T Apr 9:** Student presentations 9 & 10.

**F Apr 12:** Student presentations 11 & 12. **First draft of final research paper due.**

**T Apr 16:** Student presentations 13 & 14.

**T Apr 23:** Student presentations 15 & 16.

*Apr 13–17 Easter recess*

**F Apr 26:** Student presentations 17 & 18.

**T Apr 30:** Student presentation 19. Catch-up, discussion.

**F May 3:** (first reading day) **Final research paper due.**

**T May 14:** Final exam, 1:30 PM (tentative date)

(Note that this schedule may need to be adjusted slightly as the course progresses. Any changes will be announced in class and posted on the Blackboard web site.)

**\*Note:** Tuesday, Feb. 19 follows a Monday class schedule. We do not meet that day.

## **Bibliography**

All of the following readings will be available on the Blackboard class web site.

Brooks, Rodney A., Intelligence Without Representation. *Artificial Intelligence Journal* vol. 47 (1991), pp. 139159.

- Drexler, K. Eric, *Engines of Creation: The Coming Era of Nanotechnology*, Anchor Books (1986). Chapter 1.
- Dreyfus, Hubert L. & Stuart E. Dreyfus, Making a mind versus modeling the brain: artificial intelligence back at a branch point. *Daedalus* vol. 117, no. 1 (Winter 1988), pp. 15–43.
- Feynman, Richard P., Plenty of room at the bottom. Talk given at American Physical Society meeting at Caltech (1959).
- Franchi, Stefano and Gueven Guezeldere, eds. *Mechanical Bodies, Computational Minds*, MIT Press, Cambridge, MA (2005). Sections 10–11 of the chapter "Machinations of the Mind."
- Gelernter, David H., *Mirror Worlds*, Oxford University Press (1991). Chapter 2.
- Joy, Bill, Why the future doesn't need us. *Wired* (April 2000).
- Kasparov, Garry. Chess, a *Drosophila* of reasoning. *Science* 362:6419 (December 7, 2018), p. 1087.
- Kroeker, Kirk L., Weighing Watson. *Communications of the ACM* vol. 54, no. 7 (July 2011), pp. 13–15.
- Kurzweil, Ray, *The Age of Spiritual Machines*, Penguin, New York (1999). Excerpts from chapters 5–6, and all of chapter 9.
- Newell, Allen & Herbert A. Simon, Computer Science as Empirical Inquiry: Symbols and Search. *Communications of the ACM* vol. 19, no. 3 (March 1976), pp. 113–126.
- Searle, John R., Minds, brains and programs. *Behavioral and Brain Sciences* vol. 3, pp. 417-424 (1980).
- Turing, Alan, Computing machinery and intelligence. *Mind* vol. 59, pp. 433–460 (1950).
- Turkle, Sherry, *The Second Self: Computers and the Human Spirit*, Simon and Schuster, New York (1985). Chapter 1.
- Weiser, Mark, The Computer for the 21st Century. *Scientific American*, vol. 265, no. 3 (September, 1991), pp. 94–104.
- Weizenbaum, Joseph, *Computer Power and Human Reason*, W.H. Freeman, New York (1975). Chapter 6 and end-notes.