

PHIL 3350: Robot Ethics
(a.k.a. Philosophy, Ethics and Public Affairs)
Course Outline: Fall 2013

Prof: Jason Millar
Department of Philosophy – Carleton University

Logistics

Class Times: 6:05 – 8:55pm, Wednesdays (Sept. 05 – Dec. 09 2013)

Instructor's Office: 329B Patterson Hall

Instructor's Office hours: By Appointment

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Course Description

The robots are coming! Or rather, the robots are here! Nearly 33% of all US warplanes are semi-autonomous drones¹; in 2011 the US had as many as 2,000 ground robots deployed in Afghanistan alone² and all major militaries are building their own robotic technologies; according to the International Federation of Robotics in 2010 the world robot population was 8.6 million³, and their projected sales figures for all domestic service and entertainment robots is 15 million units between 2012-2015⁴. Worldwide, research in artificial intelligence (AI) and robotics has acquired a new sense of promise and urgency over the past decade and a half. That is due in part to recent synergies between mathematics, neuroscience, computer science, electronics, and psychology, and also to recent field “successes” with military robots, autonomous online agents, swarm robots and service bots. Consider Watson, IBM's artificial Jeopardy! contestant. Watson recently beat two of Jeopardy!'s most winning human players in a match they referred to as “Man vs. Machine”. IBM is currently deploying “Dr.” Watson in major health care centers in the US in order to perform complex system analyses and to aid in diagnosing cancers. Indeed, robots are beginning to assume humanlike roles in society: establishing personal relationships with humans in order to assist in tasks; teaching students; patrolling warzones; and caring for the elderly. The pace of innovation suggests that future generations of robots will be quite unlike their “simple-minded” ancestors. Robots are increasingly autonomous by design and, according to many scientists and philosophers, they will surpass human intelligence within the next half-century. Eventually it might be extremely difficult to distinguish robots from humans.

Robots are challenging many of our philosophical and ethical notions while suggesting the need for new public policy. Recent revelations regarding the United States' military drone program has prompted widespread international discussions on “robot ethics” as a means of anticipating the ethical challenges associated with pursuing various robot technologies and deploying them in, and across, societies. A recent international Campaign to Stop Killer Robots was launched with wide press coverage following the release of a UN report on lethal autonomous robots.⁵ Recently, academic institutions worldwide have held major workshops (e.g. robots.law.miami.edu) and are publishing more and more on the field of the social implications of robotics. It is an exciting time to study the social implications of robotics!

What is a robot? What is technology? How should we think about technology? What role does design ethics play in the making of robots and of society? Can robots have moral agency? What would that agency look like? What are the current directions in robot ethics, and robot design, and are they adequate/justifiable? What kinds of relationships ought we to encourage between robots and humans, or robots and robots? What norms, if any, ought to be considered with respect to governing the design of, and interaction with, robots? What might we owe robots in the future?

¹ <http://singularityhub.com/2012/02/09/the-era-of-robotic-warfare-has-arrived-30-of-all-us-military-aircraft-are-drones/>

² <http://www.wired.com/dangerroom/2011/02/1-in-50-troops-robots/>

³ <http://spectrum.ieee.org/automaton/robotics/industrial-robots/041410-world-robot-population>

⁴ <http://www.ifr.org/service-robots/statistics/>

⁵ <http://www.stopkillerrobots.org/2013/04/un-report-on-lethal-autonomous-robotics/>

Course Objectives

The goal of this course is to investigate the above questions through an examination of classic and contemporary texts in ethics, philosophy of mind, science and technology studies, public policy, and a newly emerging area called “robot ethics”. Students will be challenged to consider how philosophical concepts including identity, consciousness, moral agency, personhood, artificial intelligence, and rationality apply to robot ethics. As this course focuses on ethics and policy issues, an emphasis will be placed on examining and developing normative claims for use in policy contexts from the course literature. By engaging public policy documents students will also have an opportunity to examine and critique the application of philosophical concepts in the context of interdisciplinary technology debates.

Course Learning Outcomes

In order to succeed in this course, students must be able to:

1. *Explain some of the key issues in robot ethics.*
2. *Critique course readings using clear argumentation.*
3. *Justify particular ethical positions using clear argumentation.*
4. *Compare course readings with reference to key issues in robot ethics.*
5. *Compare policy options in order to formulate policy recommendations.*
6. *Analyze the social implications of particular technologies using one of the methods introduced in the course.*

Pedagogy

This course does not require any previous training in technology, robotics, or philosophy. The course will consist of a combination of interactive lectures and regular in-class activities and discussions. In addition to the readings a variety of sources will be engaged throughout the course including sci-fi literature, movies, print media and television for framing discussions. Students will be encouraged to draw on all sources to participate in regular in-class discussions and are expected to have completed all readings prior to class.

My goal is to create a highly interactive learning environment. Formal lectures will be discouraged in place of discussions and in-class peer teaching/learning activities such as discussions, debates, and very short presentations. The course has been designed to provide you opportunities to ask questions to the prof and the authors whom you will be studying, as well as to engage the readings critically on a regular basis, in order to get the most out of the course.

Student Evaluation

- 1) **Attendance (1% x 10 = 10% overall course grade):** Attendance will be taken at the end of class.
- 2) **(Very, very) Short Weekly Reading Response (2% x 10 = 20% overall course grade):** Students will be required to submit 10 short writing responses throughout the semester.
- 3) **Policy Brief (35% of overall course grade):** Students will be required to submit one written policy brief. Details will be distributed in class.
- 4) **Author Engagement (35% of overall course grade):** Students will select a reading and prepare detailed interview questions for the author, as well as an accompanying analysis underscoring the philosophical and ethical relevance of the chosen questions. Details will be distributed in class.

All assignments must include a standard cover sheet (see the attached document titled “Department of Philosophy and Carleton University Policies”). Assignments must be **double spaced, using a standard 10-12 pt. font (Times New Roman, Arial, Calibri or Cambria)**. Assignments that exceed the maximum word count will be subject to a grade reduction of 5%.

Students must use proper, consistent citations in all written assignments. The preferred styles are APA or Chicago, and all citations must include: Author; Date; Title; Journal Title (if applicable); Journal Volume and Number (if applicable); City and Publisher (for books); Page(s) (for ALL quotes).

Assignments must be handed in **no later than 6:05pm on the day they are due**, or they will be considered late. There will be no exceptions to this deadline. Please refer to the "Department of Philosophy and Carleton University Policies" document for guidelines regarding "Deferrals for Term Work", "Plagiarism", and "Academic Accommodation". The university guidelines will be strictly enforced in this course.

Late assignments will be penalized 5% per day.

Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean. This means that grades submitted by the instructor may be subject to revision. No grades are final until they have been approved by the Dean.

Contacting me, your prof...

The best way to get in touch with me is by email (jlmillar@connect.carleton.ca). I will be available for in-person meetings by appointment, but will not hold regular office hours. I can also make myself available by Skype or FaceTime if it is more convenient for you.

I will make every effort to respond to email queries or emails on the same day that they are sent (if sent during regular business hours) or by noon the next day. **Please include the following text in the subject line of ALL emails you send me: "PHIL 3350"**. If you do not include "PHIL 3350" in the subject line there is a good chance that my computer will think your email is spam, and will filter it.

I'm here as a resource to you, and to help make this class, and your time at Carleton, as positive a learning experience as possible. In addition to discussing course related topics you can schedule time to chat about other topics in philosophy or other academic interests/concerns, ask questions about grad school, etc..

Help with cuLearn

This course uses cuLearn, Carleton's online learning management system. To access your courses on cuLearn go to <http://carleton.ca/culearn>.

For help and support, go to <http://carleton.ca/culearn/students>. Any unresolved questions can be directed to Computing and Communication Services (CCS) by phone at 613-520-3700 or via email at ccs_service_desk@carleton.ca.

Course Readings

Required readings for the course will be drawn primarily from *Robot Ethics*, which is available from the campus bookstore. There are also required electronic resources available either through the Carleton Library, or online via the provided links.

Required Texts:

- Leiber, J. (1985). *Can Animals and Machines Be Persons? – A Dialogue*. (Hackett Publishing Company). (Available at Campus bookstore)
- Online articles specified in the reading list.

Weekly Reading Schedule:

Week 1 (Sept. 11): Setting the Scene: An Intro to Robot Ethics

1. Class Introduction: Course Syllabus and Reading List
2. Kurzweil, R. *The Age of Spiritual Machines: When Machines Exceed Human Intelligence – Chapter One*. Online at <http://www.nytimes.com/books/first/k/kurzweil-machines.html>
3. Čapek, K. "R.U.R. (Rossum's Universal Robots)." Online at: <http://etext.library.adelaide.edu.au/c/capek/karel/rur/complete.html>.

Week 2 (Sept. 18): An Overview of Some Problems in Robot Ethics

4. Lin, P., Abney, K., Bekey, G. (2011). "Robot Ethics: Mapping the Issue for a Mechanized World." *Artificial Intelligence* 175(5-6):942-949.
5. Calo, R. (2010). "Robots and Privacy." In P. Lin, G. Bekey, and K. Abney (Eds.). *Robot Ethics: The Ethical and Social Implications of Robotics*. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1599189
6. Petersen, S. "Designing People to Serve." In P. Lin, G. Bekey, and K. Abney (Eds.). *Robot Ethics: The Ethical and Social Implications of Robotics*. Available at: <http://stevepetersen.net/professional/petersen-designing-people.pdf>

Week 3 (Sept. 25): The Imitation Game I

7. Turing, A.M. (1950). "Computing Machinery and Intelligence." *Mind* 59:433-460. Available at: <http://loebner.net/Prizef/TuringArticle.html>
8. Searle, J.R.. (1980). "Minds, Brains, and Programs." In John Haugeland (Ed.) *Mind Design II: Philosophy, Psychology, Artificial Intelligence*. (Cambridge, Mass.: MIT Press, 1997). 183 – 204. Online at <http://cogprints.org/7150/1/10.1.1.83.5248.pdf>

Week 4 (Oct. 2): The Imitation Game II

9. Proudfoot, D. (2011). "Anthropomorphism and AI: Turing's Much Misunderstood Imitation Game." *Artificial Intelligence* 175(5-6). 950-957.
10. Sparrow, R. (2011). "Can Machines be People? Reflections on the Turing Triage Test." Available at: <http://profiles.arts.monash.edu.au/rob-sparrow/files/2012/10/can-machines-be-people.pdf>

Week 5 (Oct. 9): Personhood I

11. Leiber, J. (1985). *Can Animals and Machines Be Persons? – A Dialogue*. (Hackett Publishing Company). (Read: Intro; Setting; The First Morning; The Afternoon)

Week 6 (Oct. 16): Personhood II

12. Leiber, J. (1985). *Can Animals and Machines Be Persons? – A Dialogue*. (Hackett Publishing Company). (Read: The Following Morning)

Week 7 (Oct. 23): Evaluating Technology I

13. Latour, B. (1992). "Where Are the Missing Masses? The sociology of a few mundane artifacts." In Wiebe E. Bijker and John Law (eds.). *Shaping Technology/Building Society: Studies in Sociotechnical Change*. (Cambridge, Mass.: MIT Press)

Week 8 (Oct. 30): Fall Break – No Class

Week 9 (Nov. 6): Evaluating Technology II

14. Verbeek, P.P. (2006). "Materializing Morality: Design Ethics and Technological Mediation." *Science, Technology & Human Values* 31. 361-380.
15. Batya Friedman, Peter Kahn, and Alan Borning, (2005). "Value Sensitive Design and Information Systems." In *Human-Computer Interaction in Management Information Systems: Foundations*, P. Zhang & D. Galletta (eds.).

Week 10 (Nov. 13): Movie Night

16. TBD by class vote: "Blade Runner" (1982) vs. "The Stepford Wives" (1975 version) vs. "Robot & Frank" (2012) vs. "Westworld" (1975).
17. Movie review (for in-class exercise). Assigned based on movie selection.

Week 11 (Nov. 20): Sex and Robots

18. Robertson, J. (2010). "Gendering Humanoid Robots: Robo-sexism in Japan." *Body & Society* 16(2):1-36.
19. Yeoman, I., Mars, M.. (2012). "Robots, Men and Sex Tourism." *Futures* 44(4):365-371.
20. Levy, D. (2007). "Robot Prostitutes as Alternatives to Human Sex Workers."
Available at:
<http://www.roboethics.org/icra2007/contributions/LEVY%20Robot%20Prostitutes%20as%20Alternatives%20to%20Human%20Sex%20Workers.pdf>

Week 12 (Nov. 27): Military Robots I

21. CBC. (2011). *Remote Control War*. Doc Zone Documentary.
22. UN. (2013). *Report on Lethal Autonomous Robots*. Available at:
http://www.ohchr.org/Documents/HRBodies/HRCouncil/RegularSession/Session23/A-HRC-23-47_en.pdf
23. Human Rights Watch. (2012). *Losing Humanity: The Case Against Killer Robots*. Available at: http://www.hrw.org/sites/default/files/reports/arms1112_ForUpload.pdf

Week 13 (Dec. 4): Military Robots II

24. **Policy Brief (due at beginning of class).**
25. Kerr, I., Szilágyi, K. (2013). *Evitavle Conflicts, Inevitable Technologies? The Science and Fiction of Robotic Warfare and IHL. (forthcoming)*
26. Asaro, P. (2009). "Modeling the Moral User: Designing Ethical Interfaces for Tele-Operation." *IEEE Technology & Society* 28(1): 20-24. Available at:
<http://www.peterasaro.org/writing/Asaro%20Modeling%20Moral%20User.pdf>

Department of Philosophy and Carleton University Policies (2013-14)

Assignments:

Unless specifically told otherwise by their instructors, students:

- must not use a plastic or cardboard cover or paper clips
- must staple the paper (there is a stapler on the essay box)
- must include the following in the lower right corner of the cover sheet:
 - student name
 - student number
 - course number and section
 - instructor's name
- The Philosophy Department does not accept assignments by FAX. You may send them by courier, if necessary.
- No assignments will be accepted after the last day for handing in term work – see dates in next column.
- Assignments handed in through the essay box (just inside the glass doors, Paterson Hall, Floor 3A) must be dropped into the box by **4:15** on a regular business day in order to be date-stamped with that day's date. Assignments handed in after 4:15 or on a non-business day will be stamped as having been handed in on the next business day.
- Students are required to keep copies of their assignments. If your paper is lost at any point, you will be considered not to have submitted it if you cannot produce a copy immediately on request.

Deferrals for Term Work:

If you miss a final examination and/or fail to submit a final assignment by the due date because of circumstances beyond your control, you may apply for a deferral of examination/assignment. For deferred examinations, you must apply within 5 working days after the scheduled date of your exam. To apply for deferral of a final assignment, you must apply within 5 working days of the last scheduled day of classes. Visit the Registrar's Office for more information.

Plagiarism:

It is the responsibility of each student to understand the meaning of 'plagiarism' as defined in the Undergraduate or Graduate Calendars, and to avoid both committing plagiarism and aiding or abetting plagiarism by other students. (Undergraduate Calendar Academic Regulations, section 14.3, or <http://www4.carleton.ca/calendars//ugrad/current/regulations/acadregsuniv14.html#14.3>)

Academic Accommodation:

You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Pregnancy obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: <http://www2.carleton.ca/equity/>

Religious obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: <http://www2.carleton.ca/equity/>

Academic Accommodations for Students with Disabilities: The **Paul Menton Centre** for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your **Letter of Accommodation** at the beginning of the term, and no

later than two weeks before the first in-class scheduled test or exam requiring accommodation (*if applicable*). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (*if applicable*) at <http://www2.carleton.ca/pmc/new-and-current-students/dates-and-deadlines/>

You can visit the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at <http://www2.carleton.ca/equity/>

Important Dates:

Sept. 5	Classes start (after Orientation events).
Sept. 18	Last day for registration and course changes in Fall and Fall/Winter courses.
Sept. 30	Last day for entire fee adjustment when withdrawing from Fall term or two-term courses.
Oct. 11	University Day – no undergraduate classes.
Oct. 14	Thanksgiving Day – university closed.
Oct. 28 – Nov. 1	Fall Break – no classes.
Nov. 25	Last day for tests or examinations in courses below 4000-level before the Final Examination period.
Dec. 9	Last day of classes, Fall term. Last day for handing in term work and the last day that can be specified by a course instructor as a due date for Fall term courses.
Dec. 9	Last day to withdraw from Fall term courses (academic purposes only).
Dec. 10	No classes or examinations take place. Review classes may be held, but no new material may be introduced.
Dec. 11-22	Final examinations for Fall courses, mid-terms for Fall/Winter courses.
Dec. 22	Take-home exams are due.
Jan. 6	Winter term classes begin.
Jan. 17	Last day for registration and course changes in Winter term classes.
Jan. 31	Last day for entire fee adjustment when withdrawing from winter courses or winter portion of two-term courses.
Feb. 17-21	Winter Break, classes suspended.
Mar. 25	Last day for tests or examinations in courses below 4000-level before the Final Examination period.
Apr. 8	Last day of Fall/Winter and Winter term classes. Last day for handing in term work and the last day that can be specified by a course instructor as a due date for term work for Fall/Winter and Winter term courses.
Apr. 8	Last day to withdraw from Fall/Winter and Winter term courses (academic purposes only).
Apr. 9-10	No classes or examinations take place. Review classes may be held, but no new material may be introduced.
Apr. 11-26	Final Examinations. Exams will not be held Apr. 18-20.
Apr. 18	Good Friday – university closed.
Apr. 26	Take-home exams are due.

Addresses:

Department of Philosophy:	3A35 Paterson Hall www.carleton.ca/philosophy 520-2110
Registrar's Office:	300 Tory www.carleton.ca/registrar 520-3500
Student Academic Success Centre:	302 Tory www.carleton.ca/sasc 520-7850
Writing Tutorial Service:	4 th Floor, Library http://www1.carleton.ca/sasc/writing-tutorial-service/ 520-6632
MacOdrum Library	http://www.library.carleton.ca/ 520-2735