COG415H1 Syllabus – Winter 2018
Cognitive Science in Practice
Thursdays 10–1, UC 248

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Course Description:
This is an Experiential Learning course; your time in a traditional classroom is combined with a volunteer placement (20-25 hours) in industry or community service. Readings and assignments aim to integrate your classroom learning with your experiential learning.

The theme is *Artificial Intelligence in Healthcare*. The Canadian government has pledged $125 million to make Canada a leader in AI. Hyperbolic news articles appear daily about how Toronto is Silicon Valley North, Deep Learning (which the "Godfather of AI" developed at U of T) is solving the hardest problems, automation is wiping out jobs, hackers are mining information to manipulate our beliefs and votes, and personalized medicine will soon cure every ill. As Cognitive Science majors, you are uniquely positioned to be able to critically evaluate claims like these. Are these claims accurate? What are the ethical drawbacks of massive deployment of AI? How can we design a better AI?

Learning Objectives:
- practice career-readiness skills like applying and interviewing for jobs
- apply academic skills to needs in the outside-world
- pitch, write and publish an article for a general audience
- communicate technical knowledge visually and orally
- become conversant on the intersection of AI and healthcare
- explore the ethical and policy implications of technological innovation
- evaluate the pedagogical experiment that is this course

Evaluation:

Professional Behaviour	15%
Job Application	10%
Mock Interview	10%
Project Poster	10%
Blog Post	35%
Stakeholder Meeting	10%
Program Evaluation	10%

Professional Behaviour:
This covers behaviour in class (attendance, punctuality, participation, respect for classmates, not texting in class, etc.), beyond class (email, group projects, etc.), and in your placements.

Job Application:
Each student will prepare an application for their preferred experiential learning placement. The resume should effectively translate academic and other experience into workplace skills. The cover letter should be tailored to the job and demonstrate research about the company. 2 copies of a resume draft must be brought to class on Jan. 11 to be workshopped in class. Final resume and cover letter are due Jan. 18 at 10:00 AM on Blackboard.

Mock Interview
In teams of 4 or 5 students, you will prepare interview questions and conduct mock job interviews (5-10 mins.). Each student will take a turn as interviewee, while the remaining team members act as the hiring committee. Interviews will be video recorded. Each student will give feedback to students they interviewed, as well as assessing their own performance.
Mock interviews will be held in class on Jan. 25.
Video uploads and feedback forms must be completed by Jan. 26 at 11:59 PM.

Project Poster:
With your placement team members, produce a poster for UC Research and Practice Day describing the project you are working on.
Time and date TBA (probably sometime in mid-March).

Blog Post:
Each student will write an article and/or make a podcast that reflects on their placement and the course content, but also makes a larger point. Students will pitch their pieces to media outlets (blogs, radio, magazines, newspapers) with the aim of getting them published.
Example topics: Why should we be concerned about privacy in Big Data projects? How can we adapt to the workplace changes AI automation is bringing?
A pitch outlining the topic of the piece is due in class on Feb. 1.
Drafts may optionally be handed in (via email) for feedback on or before Mar. 8.
The final piece is due on Blackboard at 10:00 AM on Mar. 22, ideally with a link to the published version.

Stakeholder Meeting:
On Mar. 15, we will hold a mock stakeholder meeting. Each student will occupy a role: patient advocate, healthcare worker, AI researcher, industry partner, or policy-maker. A problem for discussion will be agreed upon in advance. (For example, should rules about health information privacy be loosened to promote innovation in healthcare?) Each stakeholder will present their viewpoint, and a moderated discussion/negotiation will follow.

Program Evaluation:
On Day 1 of this in-class exercise, teams of 4-5 will develop methods for measuring the success of this course (what objectives did it have? how can those be measured?) and employ their methods to evaluate course outcomes.
On Day 2, each team will present their results, and the class as a whole will produce a report with recommendations to deliver to the Cog Sci program director, to be used in designing future iterations of the course.

Recommended Textbooks:
You do not need to buy either of these books.

Deep Learning, by Ian Goodfellow, Yoshua Bengio, Aaron Courville (2016), MIT Press. (Available in the University Bookstore, and for free online at www.deeplearningbook.org.)

2-Hour Job Search: Using Technology to Get the Right Job Faster, by Steve Dalton (2012), Ten Speed Press. (Available in the University Bookstore. Any other decent job search preparation resource would also be fine.)

Course Policies

Electronic Devices

Use of phones, laptops, or tablets is not permitted during lectures or discussions, but is welcome during most in-class activities. If for any reason you need to use an electronic device at other times, please inform the instructor, and an exception will be granted.

Communication

Information about readings, assignments, and general announcements will regularly be posted to the course Blackboard site, and occasionally sent to students' utoronto.ca email accounts. You are responsible for checking your utoronto.ca email and the Blackboard site regularly.

I'm happy to answer questions via email. On weekdays, I'll usually reply within a couple of hours. Emails from non-U of T accounts, highly unprofessional emails, emails sent on the weekend, and questions that are answered on the syllabus may receive slower replies.

Accommodations

If you have concerns about any of the course policies, the course material, the ways in which course material is delivered, or your ability to complete course work, please do talk to the instructor. Exceptions or modifications are always possible if there is a compelling reason.

Please consult your college registrar if you have ongoing difficulties during term – health related or otherwise – that prevent you from completing your course work satisfactorily. If you require accommodation for a disability or long-term illness, or have any accessibility concerns about the course, the classroom or course materials, please contact Accessibility Services as soon as possible at disability.services@utoronto.ca.

Academic Integrity

Academic integrity is fundamental to learning and scholarship at the University of Toronto. The following things are considered academic offences:

- Using someone else's ideas without appropriate acknowledgement (i.e., in-text citation)
- Copying material directly from a source and not placing the words within quotation marks
- Submitting your own work in more than one course without permission
- Making up sources or facts, or including references to sources that you did not use.
- Obtaining or providing unauthorized assistance on any assignment including:
- Having someone else complete part or all of an assignment for you
- Working in groups on assignments that are supposed to be individual work
- Having someone rewrite or add material to your work while editing
- Lending your work to a classmate who submits it as their own.

The University of Toronto treats cases of academic misconduct very seriously. All suspected cases of academic dishonesty will be investigated following the procedures outlined in the Code. The consequences for academic misconduct can be severe, including a failure in the course and a notation on your transcript. If you have any questions about what is or is not permitted in this course, please do not hesitate to contact the instructor, or other available campus resources like the U of T Writing Website. More information is available at www.artsci.utoronto.ca/osai/students.

Schedule of Classes:
This schedule is subject to change. Do not book travel or appointments on the days marked "Work Placement Time" as classes may need to be rescheduled.

#	Date	Topics	**Readings** (to be done before class)	**Assignments Due**
1	Jan 4	Introduction, Career Goals		
2	Jan 11	The Value of CogSci, Resume Workshop	"There is a Blind Spot in AI Research" From the career centre: Resume Workbook and Resume and Cover Letter Toolkit	Resume draft
3	Jan 18	AI's Applications and Biases	"How artificial intelligence could transform the medical world" "AI Now 2017 Report" (excerpts) *Alumni visitor, Laura Martin	Resume & Cover Letter
4	Jan 25	Fairness in Machine Learning, Mock Job Interviews	"Learning Fair Representations" From the career centre: Preparing for the Job Interview *Guest speaker, Prof. Rich Zemel	Interview videos & feedback
5	Feb 1	Deep Learning	*Deep Learning*, Chapter 1 Marcus, "Deep Learning: A Critical Appraisal"	
6	Feb 8	Work Placement Time		Blog post pitch
7	Feb 15	Work Placement Time		
Feb 19-23		READING WEEK		
8	Mar 1	Health Policy and Data Privacy	"AI Report fed by DeepMind, Amazon, Uber urges greater access to public sector data sets" "WHO Guidelines on Ethical Issues in Public Health Surveillance" (excerpts) *Alumni visitor, Blake Richards	
9	Mar 8	Work Placement Time		Blog drafts
March 14		Last day to drop S classes		
10	Mar 15	Stakeholder Meeting	"Responsible AI in the Government of Canada" *Alumni visitor, Maggie MacDonald	
March 16		UC Research & Practice Day, 12:00 – 2:00 PM		Poster
11	Mar 22	Program Evaluation 1	Ryerson's "Best Practices in Experiential Learning" Kolb & Kolb, "Learning Styles and Learning Spaces: Enhancing Experiential Learning in Higher Education"	Blog post
12	Mar 29	Program Evaluation 2	Gosenpud, "Evaluation of Experiential Learning"	Evaluation Results