POLYTECHNIQUE MONTRÉAL
UNIVERSITÉ D'INGÉNIERIE

Course Plan

LOG6953A - Human-Centered Inquiry for Software and Computer Engineering

Département de génie informatique et génie logiciel
Winter 2019
3 Credits
3 / 0 / 6
https://moodle.polymtl.ca/course/view.php?id=2144

Professor

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Availability	By appointment

Course Description

Human-centered research methods for understanding and supporting computer and software developers, designers, users, and other stakeholders. Interview for understanding users/developers and eliciting requirements. Survey for collecting large-scale user and developer-centered data. Lab-based human-centered study for evaluating computer and software systems. Structured observation of usage and development activities. Automated human-centered data collection and open data. Physiological measures. Qualitative and quantitative analysis of human-centered development and usage data. Reporting and presentation of results. Ethical concerns when working with human subjects. Exemplars of these methodologies and methods in real-world computer and software engineering research scenarios.

Qualités du BCAPG

1 Connaissance en génie	2 Analyse de problèmes	3 Investigation	4 Conception	5 Utilisation d'outils d'ing.	6 Travail ind. et équipe
	X	X		X	X

7 Communication	8 Professionnalisme	9 Impacts environn.	10 Déontologie	11 Économie et gestion de projets	12 Apprentissage continu
X	X	X	X	X	X

Learning Objectives

This course aims to equip students with human-centered research methods for understanding and supporting computer and software users, developers, designers, and other stakeholders. These research methods are especially essential in empirical software engineering and human-computer interaction.

At the end of the course, the student will be able to:

- analyse the research design strategies, logistical considerations, and ethical concerns of human-centered inquiry in the context of computer and software engineering;
- design and execute common human-centered studies and evaluate their advantages and disadvantages;
- select and perform appropriate analysis techniques to examine data collected from human-centered studies, and;
- effectively summarize and communicate human-centered research findings.

Teaching and learning methods

This course adopts a project-based active learning approach. The structure of this course relies greatly on the contributions of the students. Students are expected to complete readings before each class, participate in class activities and discussions, and contribute to individual and team projects in order to grasp the course materials and practice critical thinking, teamwork, and communication skills.

Documents

This course relies on the following books (eBooks are available at the Polytechnique library) and various articles to be available online.

- Lazar et al. (2017). *Research Methods in Human-Computer Interaction* (2nd Edition). Elsevier. https://ebookcentral.proquest.com/lib/polymtl-ebooks/detail.action?docID=4851896
- Shull et al. (2008). *Guide to Advanced Empirical Software Engineering*. Springer. https://ebookcentral.proquest.com/lib/polymtl-ebooks/detail.action?docID=337436

A scheduling for required and optional readings will be available online.

Evaluation

Evaluation	*Weight*	*Date*
Reflective review of research papers (individual):		
• Response papers	6%	Every week
• Each student will lead the discussion of one paper.	4%	Different for each student
Individual project – an observation study:		
• Idea report describing the problem and the research questions	1%	Jan. 21
• Mock-up ethics application	2%	Jan. 28
• Observation study report	7%	Feb. 04
Team project:		
• Project proposal	5%	Feb. 11
• Project proposal presentation	5%	Feb. 11
• Mid-term project report	15%	Mar. 11
• Final project report	20%	Apr. 08
• Final project presentation	5%	Apr. 08
Final exam	30%	TBD

*** Due dates for each assignment are subject to change. Details and criteria of evaluation for each assignment will be available online.

*** **Late assignment**: Late assignments will be accepted ONLY if you (1) contact me at least two hours before it is due and (2) turn in the assignment within three days of the due date. Each day the assignment is late will decrease the possible point value by 10%.

*** **Team project**: We will be forming two to three-person teams for the project. All team members are expected to be active working on the project. However, to address team inequity, you will be asked to complete a form in the final in which you will evaluate all team members' contributions to the project. The evaluations will act as a multiplier to your score on the team projects.

Calendar of class meetings

Meeting time and location:

- Mondays, 12:45 PM – 15:45 PM
- Location: A-404

Week	Date	Topics	Assignments/Tasks Due
1	Jan. 07	- Introduction - History and motivations - Overview of methods	
2	Jan. 14	- Observation - Individual ideas discussion	- Paper review signup - Initial idea report for individual project
3	Jan. 21	- Ethics: Basic concepts - Observation (cont.) - Narrative inquiry and phenomenology	- Updated idea report for individual project
4	Jan. 28	- Interview - Content analysis: Inductive coding and affinity diagramming	- Mock-up ethics application for observation study
5	Feb. 04	- Interview (cont.) - Content analysis: Deductive coding and inter-rater reliability - Team project ideation	- Observation study report
6	Feb. 11	- Survey - Project proposal presentations	- Team project proposal and presentation
7	Feb. 18	- Survey (cont.) - Grounded theory	
8	Feb. 25	- Lab-based study - Writing a report	
School break. No class			
9	Mar. 11	- Lab-based study (cont.) - Experimental design - A review of basic statistics	- Mid-term project report
10	Mar. 18	- Mixed methods - Persona and scenario	
11	Mar. 25	- Experience sampling and diary studies - Guest speaker: TBD	
12	Apr. 01	- Physiological tools and telemetry - Course review	
13	Apr. 08	- Final project presentations	- Final Project Report and Presentation

*** Depending on the course progress, this calendar may be subject to change.

Fraud

Fraud, including plagiarism, cheating, and other illicit means to obtain an undeserved evaluation result, is not tolerated at Polytechnique Montréal, including in this course. It is your professional responsibility to ensure that all submitted work is your own. Please familiarize yourself with the definition and policies of plagiarism at Polytechnique Montréal here: https://www.polymtl.ca/plagiat

The following is a general description of fraud policies of this course:

En tant que futur ingénieur, l'étudiant doit adopter une attitude professionnelle exemplaire. L'article 8 des règlements des études au baccalauréat présente la position de Polytechnique Montréal à l'égard de la fraude sur la base du principe de tolérance zéro. Voici quelques éléments de cet article tirés de l'annuaire.

Par fraude, on entend toute forme de plagiat, de tricherie ou tout autre moyen illicite utilisé par l'étudiant pour obtenir un résultat d'évaluation non mérité ou pour influencer une décision relative à un dossier académique.

À titre d'exemple, constituent une fraude :

- l'utilisation totale ou partielle, littérale ou déguisée, d'une œuvre d'autrui, y compris tout extrait provenant d'un support électronique, en le faisant passer pour sien ou sans indication de référence à l'occasion d'un examen, d'un travail ou de toute autre activité faisant l'objet d'une évaluation;
- le non respect des consignes lors d'un contrôle, d'un examen, d'un travail ou de toute autre activité faisant l'objet d'une évaluation;
- la sollicitation, l'offre ou l'échange d'information pendant un contrôle ou un examen;
- la falsification de résultats d'une évaluation ou de tout document en faisant partie;
- la possession ou l'utilisation pendant un contrôle ou un examen de tout document, matériel ou équipement non autorisé y compris la copie d'examen d'un autre étudiant;

Selon la gravité de l'infraction et l'existence de circonstances atténuantes ou aggravantes, l'étudiant peut se voir imposer une sanction correspondant à, entre autres, l'attribution de la cote 0 pour l'examen, le travail ou toute autre activité faisant l'objet d'une évaluation qui est en cause, l'attribution de la note F pour le cours en cause, l'attribution de la note F à tous les cours suivis au trimestre.

Dans le cas d'un travail en équipe, les étudiants d'une même équipe de travail tel que reconnu par l'enseignant sont solidaires du matériel produit au nom de l'équipe. Si un membre de l'équipe produit et remet un travail au nom de l'équipe et qu'il s'avère que ce travail est frauduleux tous les membres de l'équipe sont susceptibles de recevoir une sanction à moins qu'il soit démontré sans ambiguïté que l'infraction est le fait d'un ou de quelques membres de l'équipe en particulier.