

SYDE 548 User-Centred Design (UCD) Methods- Syllabus Components.

HEADS-UP: SYDE 548 focuses on “hands-on” interactive User Research Methods. User Research requires interacting with others. Students are expected to attend and participate in all synchronous sessions. (It is not as scary as it sounds. We will get through SYDE 548 together!)

Here is what you will find in this course syllabus:

1. Territorial Acknowledgement
2. Communicating with Your UCD Mentors (Instructional Team)
3. Course Description, Course Format and Covid-19 Contingency Plans
4. Learning Objectives
5. Course Assessments
6. Course Schedule of Topics (separate document)
7. Materials and Resources
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1 Territorial Acknowledgement.

“We acknowledge that we live and work on the traditional territory of the Attawandaron (Neutral), Anishinaabeg, and Haudenosaunee peoples. The University of Waterloo is situated on the Haldimand Tract, the land promised to the Six Nations that includes ten kilometres on each side of the Grand River.”

2 Communicating with Your UCD Mentors (Instructional Team).

2.1 Professor Carolyn MacGregor, PhD, CCPE, LEL(ON).

Pronouns: She/Her/anything respectful [Email Prof. MacGregor](#)

Prof. MacGregor originated what is now SYDE 548 back in 2000 as SYDE 348. The course and Professor MacGregor continue to evolve. Carolyn is a Canadian Certified Professional Ergonomist (CCPE) with advanced degrees in industrial engineering and over 30 years of experience in the field of human factors engineering, UCD, and User Research. Passionate about research (any type – qualitative, quantitative), driving (actual driving not just research), and grandchildren (greatest reason for doing crafts and building with Lego).

2.2 Alexander Glover, BAsC (SYDE'20)

Pronouns: (he/him) [Email Alexander](#)

Alexander is an SYDE graduate and a current SYDE MASc student at the Games Institute. Alexander’s research is focused on explainable artificial intelligence (XAI) and the use of interactive digital environments (Civilization V) in the development and research of XAI techniques. His professional experience is in video game programming where he focused on AI and gameplay development.

2.3 Communicating via Email through LEARN.

Periodically, we will contact the class using the email feature through LEARN. The advantage of using LEARN email through the course is that it will automatically put SYDE 548 in the subject line. You can use LEARN email to contact your UCD Mentors to check-in (say "Hi"), or for personal questions about UCD, User Research, course content or administration (e.g., you must miss a synchronous session, or something is preventing you from handing in an assignment); and as

important, LEARN will send from your @uwaterloo email address so that we can confirm that it is coming from you rather than spam.

2.4 Communicating through Course Announcements.

We will use the **Announcements** widget on the Course Home page during the term to communicate weekly updates, new or changing information regarding due dates, etc. Please read the announcements on a regular basis. To ensure you are viewing the complete list of announcements, you may need to click Show All Announcements.

2.5 Connecting through Discussion Boards.

We will use Discussion Boards to help with staying connected and feeling part of a larger team. The advantages of LEARN Discussion Boards are that they are centralized (not having to go to yet another platform), and they can be monitored and answered asynchronously (rather than getting floods of emails). Discussions can be accessed from the Course Home page by clicking Connect and then Discussions on the course navigation bar.

3 Course Description, Course Format & Contingency Plans.

3.1 SYDE 548 Course Description.

SYDE 548 (UCD Methods) approaches the design of tasks, tools, products, and systems from a user-centered design perspective. Emphasis is on the human factors and usability methods, and techniques that can and should be applied throughout the iterative design process. While design issues pertaining to human-computer interaction are discussed, the methods presented can be applied to the design of almost any user interface. Major topics include user research methods for usability and user experience, inspection methods, user testing, and applied statistical analysis.

SYDE 548 User-Centred Design Methods is a technical elective. It builds from earlier SYDE core courses in design (SYDE-BME 161 Introduction to Design, SYDE-BME 162 Human Factors in Design, and SYDE-BME 361 Engineering Design). Motivated students willing to become familiar with basic human factors engineering can participate and contribute to course activities. Whether you are interested in becoming a UCD specialist, a certified ergonomist, or just want to be a wise designer or consumer, this course will supply you with a range of practical tools (methods).

3.2 Course Pedagogy – Blended Learning (“Live” Workshop sessions & Self-Paced Activities).

This course runs using a “flipped” format. User Research (UR) and User-Centred Design approaches require interacting with others. Our “In-class” sessions are used as workshops for interactions and hands-on skill development with different UR methods. “Out-of-class” time is used for preliminary work for workshops, learning more about methods through readings, and strengthening skills and insights through course deliverables.

3.3 In-Person UCD Workshops (public health permitting).

Weekly Days/Times: Wednesdays (10:00 – 11:50 am EST) and Thursdays (2:30 – 4:20 pm EST).

Location: E5 6006.

Attendance: Active participation in all in-class sessions is expected for learning and skill development.

Learning Materials: Typically, slide decks will be provided for the in-person session time right before the session to aid notetaking. Relevant readings or worksheets will be posted on LEARN.

Recording of In-Person Sessions: No. Due to the interactive nature of the in-person workshops, recording is not feasible.

Accountability & Courtesy: Many workshops involve group work or discussion. To help us with planning, please contact [Prof MacGregor](#), if you are unable to attend a workshop session.

3.4 Contingency Plan for Emergency Remote Teaching (at the direction of University of Waterloo).

Weekly Days/Times: Wednesdays (10:00 – 11:50 am EST) and Thursdays (2:30 – 4:20 pm EST).

Location: Live Sessions will be held on MS Teams (SYDE 548 Teams) during scheduled course times. Links for live sessions will be provided in LEARN.

Attendance: Active participation in all live (MS Team) sessions is expected for learning and skill development.

Learning Materials: Typically, slide decks will be provided for the in-person session time. Typically, right before the session to aid notetaking. Relevant readings or worksheets will be posted on LEARN.

Recording of Live Sessions on MS Teams: For emergency remote teaching weeks ONLY. We will record any instructional portions of live sessions to provide an option for those students affected by time zone differences and/or technology disruptions. Class discussion and breakout rooms will not be recorded.

Accountability & Courtesy: Many workshops involve group work or discussion. To help us with planning, please contact [Prof MacGregor](#), if you are unable to attend a workshop session.

3.5 Covid-19 Emergency Remote Teaching-Learning Contingency for Assessments.

The SYDE 548 assessments and materials are suitable for use in remote teaching formats. All assessments are submitted in digital format: Industry Guest Workshop reflections (PebblePad+), quizzes and tests (LEARN Quiz Tools), and UR-Portfolio (LEARN Dropbox). Under emergency remote teaching conditions, time windows for assessments are set to take time zones into consideration.

3.6 Covid-19 Emergency Self-Isolation. [Undergraduate studies | COVID-19 Information |](#)

If you are unable to attend a session or meet a deliverable deadline, please let Prof. MacGregor know immediately. If you are facing challenges that are affecting more than one course, please contact your Associate Chair or Director of your program. They will review your case and coordinate a reasonable and fair plan in consultation with appropriate others (for example: instructors, Department Undergraduate Studies Committee, Chair, AccessAbility Services, Engineering Counselling services, Registrar's Office).

3.7 Estimated Weekly Course Commitment whether in-person or remote. (6-10 hours as per Faculty of Engineering expectations)

4 hours weekly "live" workshop sessions. When in-person (E5 6008), When remote learning (MS Teams).

1-3 hours course preparation (readings, tasks) – may vary depending on student's background & experience.

1-3 hours data collection, analysis & write-up related to User Research Portfolios and/or PebblePad assignments.

Individual Submissions: Note that you may work in small groups to do data collection for the same design project, but each student must submit their own individual User Research Portfolio reflecting unique work and personal learning.

When We Can be On-Campus, weekly workshops will be held in E5 6006.

Covid-19 Emergency Remote Teaching-Learning Contingency: MS Teams for Live Sessions.

- Attendance is expected. If you are unable to attend a session, let Prof. MacGregor know.
- Course workshop sessions (some with industry guests), and associated question and answer sessions.

Out-of-Class Asynchronous Activities (Times that suit student's schedule).

- Reviewing weekly Announcements posted to LEARN to understand plan for week.
- Reading/listening to prepared materials posted to LEARN. [To be uploaded each week.]
- Working on course deliverables; preparing for course quizzes.

3.8 Posted Materials on LEARN.

SYDE 548 course materials will be posted on LEARN. Students are allowed and encouraged to download materials for their own personal files but are **not authorized to post SYDE 548 materials on sites other than LEARN**. (See [UWaterloo Policy 71 Guidelines for the Assessment of Penalties](#)).

3.9 Mentoring/Office Hours.

Weekly live sessions should be used for getting clarification around concepts, methods, and deliverables. Course discussion boards are always available for posting questions (you can post anonymously).

Office Hours for Professor MacGregor: Wednesdays 2:30 – 4:20 pm in E7 6302, or by appointment (MS Teams).

Office Hours for Alexander Glover: Tuesday & Thursday 1:00-2:30 pm (room TBD), or by appointment (MS Teams).

4 Intended Learning Objectives: Build Your UCD Skills.

Upon completion of this course, students should be able to:

- Describe UCD methods used for formal and informal design assessments with human participants.
- Investigate & Select appropriate ethical & equitable UCD methods for specific design situations.
- Apply UCD method protocols to instructor-defined design situations.
- Modify UCD method protocols to collect data for a student-defined design project.
- Select and apply appropriate statistical analysis for given UCD data
- Design appropriate UCD test plans for instructor-defined design situations
- Create a User Research Portfolio describing UCD process(es) and lessons learned
(See Table 1 at end of document for relationship between ILOs and Engineering Graduate Attributes)

5 Course Assessments.

5.1 Fair Contingencies for Emergency Remote Teaching.

We are facing unusual and challenging times. The course outline presents the instructor's intentions for course assessments, their weights, and due dates in Winter 2022. **As best as possible, we will keep to the specified assessments, weights, and dates.** To provide contingency for unforeseen circumstances, the instructor reserves the right to modify course topics and/or assessments and/or weight and/or deadlines with **due and fair notice to students.** In the event of such challenges, **the instructor will work with the Department/Faculty to find reasonable and fair solutions that respect rights and workloads of students, staff, and faculty.**

Table 2. Expected Assessments, Weights, and Due Dates for Winter 2022 offering of SYDE 548.

| Course Assessments (Individual work is expected for all graded components) | Course Weight | DUE DATES |
|--|---------------|---|
| User Research Diagnostics: LEARN Quiz (Open-Book) Ethics Questions - based on TCPS-2 Core Tutorial Applied Statistics Basics (QUX Appendix & Chp 1 & 2) | 5% | LEARN Quiz; Open-Book (~45 minutes) Quiz Available: Thursday, January 13 Quiz Closes: Thursday, January 20 by 11:30 pm |
| User Research Workshop Reviews (PebblePad+) Evidence-based demonstration of learning. | 15% | 5 opportunities (5 x 3%). Due dates depend on when workshops delivered. To be posted. |
| User Research Portfolio – Personas: At least 2 personas and associated methods to demonstrate user range for student-selected design project. Format: slide deck or word document. | 25% | Good Faith Submission: Thursday, February 3 Final Revisions: Thursday, February 10 by 11:30 pm [Good Faith submissions help students avoid 0] |
| UR Methods & Data Analysis Test (Open Book) Data analysis for given UCD scenarios. | 20% | LEARN Quiz; Open-Book (~120 minutes) Quiz Available: Thursday, March 10 Quiz Closes: Thursday, March 17 by 11:30 pm |
| User Research Portfolio – Methods: Demonstration of UCD methods applied to student-selected design project. Format: slide deck or word document. | 35% | Good Faith Submission: Thursday, March 31 Final Revisions: Thursday, April 14 by 11:30 pm. |
| Total | 100% | |

5.2 SYDE 548 Course "Submit in Good Faith" Policy to avoid "0" for late deliverables.

Rather than risking a 0 for a late submission, all students are encouraged to upload whatever they have completed on a deliverable by the specified deadline. This allows the instructor opportunity to take extenuating circumstances into consideration and/or grade "as is" (for part marks rather than 0).

5.3 Online Academic Integrity (include in syllabus and assessments).

All students are expected to work individually and submit their own original work. Under Policy 71, the instructor may have follow-up conversations with individual students to ensure that the work submitted was completed on their own. Any follow up will be conducted remotely (e.g., MS Teams, Skype, phone), as the University of Waterloo has suspended all in-person meetings until further notice.

6 Course Schedule of Topics (SYDE 548 Course Schedule W22 posted on LEARN).

Students are expected to review the course schedule, familiarize themselves with weekly expectations, and ask questions in advance of activities and associated deadlines to clear up any confusion. The course schedule is posted on LEARN and details the following important information:

- Weekly Topics (grouped by Themes)
- Weekly Insights from others (posted readings and/or videos)
- Weekly Activities (things for you to do),
- Course Deliverables (things for Instructional team to grade).

7 Materials and Resources.

Students are strongly encouraged to purchase a copy of the required textbook and keep for professional careers. The Sauro & Lewis (2016) is focused specifically on the statistical methods and approaches relevant for small sample sizes which are the norm in user testing. The authors give clear direction on how to carry out data analysis using Excel, rather than relying on expensive licensed software or open-source software that requires programming to run statistical tests.

7.1 Required (Open-Book Exams).

- Sauro, J. and Lewis, J.R. (2016). *Quantifying the User Experience: Practical statistics for user research*. 2nd Edition. Waltham, MA: Morgan Kaufmann. [Note: an e-copy of the 1st edition can be accessed through UW Library Reserves]

7.2 Recommended (for Open-Book Exams & UCD Portfolios).

- Buley, L. (2013) *The User Experience Team of One*. Brooklyn, NY: Rosenfeld. [Note: an e-copy can be accessed through UW Library Reserves]
- Martin, B. and Hanington, B. (2012) *Universal Methods of Design: 100 Ways to research complex problems, develop innovative ideas, and design effective solutions*. Beverly, MA: Rockport Publishers. [Note: an e-copy of the 1st edition can be accessed through UW Library Reserves]
- Sharon, T (2016) *Validating Product Ideas*. Brooklyn, NY: Rosenfeld. [Note: an e-copy can be accessed through UW Library Reserves]

7.3 Design Materials (for workshops, data collection, and analysis).

For hands-on workshops, students are expected to basic design materials, like paper, pens, and sticky notes, or digital equivalents. Instructors may specify the use of mobile phones, digital cameras, tablets, and laptops for some activities.

7.4 Library Resources.

Students are encouraged to obtain their own copies of textbooks. Electronic copies of course textbooks are on reserve. The number of students who can access an e-copy at a given time may be limited. Students are warned as access may be limited during open-book exams. [Library COVID-19: Updates on library services and operations](#).

8 Course and Department Policies

8.1 Guiding Principles for our SYDE-BME Community (faculty, staff, and students).

1) Be compassionate. 2) Be accountable. 3) Be patient. 4) Be safe and healthy.

8.2 Compassionate and respectful communication.

Most online communication between the Department and students will be done through LEARN and/or email. Students are reminded that they should now use their email account name@uwaterloo.ca. Include an academic signature with your full name, program, student ID. We encourage you to include your preferred pronouns (he/him; she/her; they/them).

8.3 UW Attendance Policy.

The following statements are directly from the University of Waterloo's **2021-2022** Undergraduate Calendar, relating to attendance *"Students are expected to attend all scheduled components of the courses in which they have enrolled. Students may be required to present documentation confirming the reasons for non-attendance. During the course add period, students may be removed from a course for non-attendance. Students who are removed from a class will be notified by the Registrar's Office."* [UW Undergraduate Calendar - Student Responsibility](#) .

8.4 SYDE-BME Department Position on Accommodation.

We respect that our SYDE-BME students are independent adult decision-makers, with many opportunities to partake in activities that might be in time conflict with academic deadlines and deliverables. Along with the right to make adult decisions comes the responsibility and accountability for those decisions and any outcomes. The University of Waterloo's policy on accommodation for missed deliverables pertains to verifiable health matters, and highly unfortunate events (for example: family tragedies). The Department of Systems Design Engineering follows University of Waterloo's general policy: students who self-elect to forgo a deliverable receive a "0" for that deliverable. It is preferred practice so that fairness is maintained for members of the same class/course by avoiding preferential treatment, and so that instructors are not burdened with having to create extra quizzes, deliverables, etc. It also reflects professional practice, as failing to show up to work and missing deadlines can be very costly to the company and individual (for example: not submitting a contract proposal, or design review on time). Please read the policy here: [\[Academic Policy on Accommodation\]](#)

8.5 SYDE-BME Academic Priorities over Co-op Interviews.

With asynchronous schedules, students should be able to arrange co-op interviews and other personal appointments to avoid conflict with major deliverables (for example: timed course midterms, final exams). For deliverables with longer time windows (for example: 24-48 hours or more), students must manage their time for deliverables and (co-op) interviews accordingly. If a co-op interview conflicts with a short deliverable time window (for example: 1-3 hours), then students MUST follow the CECA procedure for rescheduling the interview: [\[Rescheduling Co-op Interviews\]](#)

8.6 Compassionate Consideration.

If you are facing challenges that are affecting more than one course, please contact you Associate Chair or Director of your program. They will review your case and coordinate a reasonable and fair plan in consultation with appropriate others (for example: instructors, Department Undergraduate Studies Committee, Chair, AccessAbility Services, Engineering Counselling services, Registrar's Office).

8.7 Wellness Support and Contact Information.

University can be a challenging environment and it is normal to need support from time-to-time. Campus Wellness services are available to students through counselling and health services. If you are struggling or need someone to talk to you, please reach out. To book an appointment or learn more about the services, call 519-888-4567 x 32655 or explore www.uwaterloo.ca/campus-wellness. If you are experiencing a crisis and feel unable to cope and Campus Wellness is closed, contact any of these after-hours supports: EmpowerMe (1-833-628-5589), Good2Talk (1-866-925-5454) or Here 24/7 (1-844-437-3247). They are available at any time of the day or night to help.

9 University Policies.

Academic integrity: To maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect, and responsibility. [Check the [Office of Academic Integrity](#) for more information.]

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read [Policy 70, Student Petitions and Grievances, Section 4](#). When in doubt, please be certain to contact the department's administrative assistant who will provide further assistance.

Discipline: A student is expected to know what constitutes academic integrity to avoid committing an academic offence, and to take responsibility for his/her actions. [Check the [Office of Academic Integrity](#) for more information.] A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about “rules” for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate associate dean. For information on categories of offences and types of penalties, students should refer to [Policy 71, Student Discipline](#). For typical penalties, check [Guidelines for the Assessment of Penalties](#).

Appeals: A decision made or penalty imposed under [Policy 70, Student Petitions and Grievances](#) (other than a petition) or [Policy 71, Student Discipline](#) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to [Policy 72, Student Appeals](#).

Note for students with disabilities: [AccessAbility Services](#), located in Needles Hall, Room 1401, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with AccessAbility Services at the beginning of each academic term.

Turnitin.com: Text matching software (Turnitin®) may be used to screen assignments in this course. Turnitin® is used to verify that all materials and sources in assignments are documented. Students' submissions are stored on a U.S. server, therefore students must be given an alternative (e.g., scaffolded assignment or annotated bibliography), if they are concerned about their privacy and/or security. Students will be given due notice, in the first week of the term and/or at the time assignment details are provided, about arrangements and alternatives for the use of Turnitin in this course. It is the responsibility of the student to notify the instructor if they, in the first week of term or at the time assignment details are provided, wish to submit alternate assignment.

Writing and Communication Centre: The Writing and Communication Centre works with students in all Faculties to help you consider your audience, clarify your ideas, develop your voice, and write in the style appropriate to your discipline. We offer one-on-one support for writing papers, delivering presentations, integrating research, and revising for clarity and coherence. Group appointments for team-based projects, presentations, and papers are also available. All services are available virtually: booked appointments, drop-ins, resources, and writing groups. Check out our website for other ways to interact with us, such as open online forums and online “Question and Answers”. Visit us at www.uwaterloo.ca/wcc. Please note that communication specialists guide you to see your work as readers would. We can teach you revising skills and strategies but will not change or correct your work for you. Please bring your assignment instructions and any notes or drafts to your appointment.

10 Coronavirus Information

[Coronavirus Information for Students](#)

This resource provides updated information on COVID-19 and guidance for accommodations due to COVID-19.

11 Mental Health Support

All of us need a support system. We encourage you to seek out mental health supports when they are needed. Please reach out to [Campus Wellness and Counselling Services](#). We understand that current circumstances can be troubling, and you may need to speak with someone for emotional support. [Good2Talk](#) is a post-secondary student helpline based in Ontario, Canada that is available to all students.

12 Table 1. Relationships between Intended Learning Objectives, Engineering Graduate Attributes & Assessments

| Engineering Graduate Attribute | Learning Objectives | Assessment |
|--|---------------------|---------------------------------|
| Knowledge Base for Engineering | A | Tests |
| Problem Analysis | B, C, D, E | Tests |
| Investigation | B, G | |
| Design | F | User Research Portfolio & Tests |
| Use of Engineering Tools | B, C, D, E, G | User Research Portfolio, Tests |
| Individual and Teamwork | D | |
| Communication | B, C, D, F, G | User Research portfolio |
| Professionalism (Engineering) | - | - |
| Impact of Engineering on Society and the Environment | B, D, F | |
| Ethics & Equity | A, B, D, F | User Research portfolio, Tests |
| Economics & Project Management | - | - |
| Life-Long Learning | D, G | User Research portfolio & Tests |

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