Instructor: Lennart Nacke, Ph.D.
ASSOCIATE PROFESSOR

UX FUNDAMENTALS AND USER EXPERIENCE RESEARCH

COURSE DESCRIPTION

This course will cover the fundamentals of UX design and provide the students with insights into the "real-life" processes, challengers, considerations, tools, teams, models, etc. of a user experience designer. Students will be introduced to the UX principles, designing, evaluating, implementing and measuring of UX.

LEARNING OUTCOMES

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

• Plan field visits to
  • run interviews and analyze responses, and
  • observe users and take helpful notes.

• Create
  • research questions (art of asking the right questions)
  • personas
  • user stories
- user journey maps
- Choose appropriate means of
  - classifying information, and
  - organizing an information architecture.
- Design and conduct online and offline card sorting sessions
- Gather knowledge of and be able to select user interface design patterns
- Develop inexpensive, throwaway prototypes to receive quick and constant feedback from your users
- Create user interface designs based on principles of visual design
- Design usability tests to measure time-on-task, error and success rates, user satisfaction (and more measures of user experience)
- Moderate a usability test and prioritize your observations
- Evaluate the usability of a systems by applying usability heuristics

**COURSE SCHEDULE**

Important: **ALL TIMES EASTERN** - Please see the [University Policies](#) section of your Course Outline for details

<table>
<thead>
<tr>
<th>Week</th>
<th>Module</th>
<th>Readings</th>
<th>Activities and Assessments</th>
<th>Weight</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Module 1: Introduction and What is UX Research and Design?</td>
<td>Garrett: Ch. 1 Goodman, Kuniavsky, Moed: Chs. 1 &amp; 2</td>
<td>Introduce yourself in Miro Module 1 <a href="#">Quiz</a> Module 1-4 Discussion. Choose 1 of the 4 discussion options to complete before due date.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(January 5-9, 2022)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sunday, January 30, 2022 at 11:55 PM</td>
</tr>
<tr>
<td>Week 2</td>
<td>Module 2: UX Research Planning</td>
<td>Garrett: Ch. 2 Goodman, Kuniavsky, Moed: Chs. 4 &amp; 5</td>
<td>Groups for <a href="#">Final Project</a> will be created by Instructor</td>
<td>Check after Friday, January 14, 2022 at 4:30 PM</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>---------------------------------</td>
<td>--------------------------------------------------</td>
<td>----------------------------------------------------------</td>
<td>-----------------------------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Module 2 <a href="#">Quiz</a></td>
<td></td>
<td></td>
<td>Sunday, January 30, 2022 at 11:55 PM</td>
<td></td>
</tr>
<tr>
<td>Module 1-4 Exercise. Choose 1 of the 4 exercise options to complete before due date.</td>
<td>6%</td>
<td>2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 3</td>
<td>Module 3: UX</td>
<td>Garrett: Ch. 3</td>
<td>Module 3 <a href="#">Quiz</a></td>
<td>Sunday,</td>
<td></td>
</tr>
<tr>
<td>Week Number</td>
<td>Module Title</td>
<td>Week Date</td>
<td>Reading Material</td>
<td>Assignment Details</td>
<td>Due Date</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------------------------------------</td>
<td>--------------------------</td>
<td>-------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Module 1-4 Exercise. Choose 1 of the 4 exercise options to complete before due date.</td>
<td></td>
</tr>
<tr>
<td>Week 4 (January 24-30, 2022)</td>
<td>Module 4: UX Scope: Functional Specification and Content Requirements</td>
<td></td>
<td>Garrett: Ch. 4 Goodman, Kuniavsky, Moed: Ch. 9</td>
<td>Module 4 Quiz Modules 1-4 Discussion. Choose 1 of the 4 discussion options to complete before due date.</td>
<td>Sunday, January 30, 2022 at 11:55 PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Module 1-4 Exercise. Choose 1 of the 4 exercise options to complete before due date.</td>
<td></td>
</tr>
<tr>
<td>Week 5 (January 31-February 6, 2022)</td>
<td>Checkpoint 1: Field Observation of a Twitch Gamer</td>
<td>Goodman, Kuniavsky, Moed: Ch. 9</td>
<td>Checkpoint 1</td>
<td>15%</td>
<td>Sunday, February 6, 2022 at 11:55 PM</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>-----------------------------------------------</td>
<td>---------------------------------</td>
<td>--------------</td>
<td>-----</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Week 6 (February 7-13, 2022)</td>
<td>Module 5: UX Evaluation: Research Methods</td>
<td>Goodman, Kuniavsky, Moed: Chs. 6, 7, 9, 10, 11</td>
<td>Module 5 Quiz</td>
<td>3%</td>
<td>Sunday, Feb 20, 2022 at 11:55 PM</td>
</tr>
<tr>
<td></td>
<td>Module 5-6 Discussion. Choose 1 of the 2 discussion options to complete before due date.</td>
<td></td>
<td>Module 5-6 Discussion. Choose 1 of the 2 discussion options to complete before due date.</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Module 5-6 Exercise. Choose 1 of the 2 exercise options to complete before due date.</td>
<td></td>
<td>Module 5-6 Exercise. Choose 1 of the 2 exercise options to complete before due date.</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Module 6 Quiz</td>
<td></td>
<td>Module 6 Quiz</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Module 5-6 Discussion. Choose 1 of the 2 discussion options to complete before due date.</td>
<td></td>
<td>Module 5-6 Discussion. Choose 1 of the 2 discussion options to complete before due date.</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Week 8  (February 28 - March 6, 2022)</td>
<td>Reading Week (Saturday, February 19, to Sunday, February 27, 2022)</td>
<td>Week 9  (March 7-13, 2022)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>------------------------------------------------------------------</td>
<td>-------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Checkpoint 2:</strong> Research Questions and User Research Plan</td>
<td><strong>Checkpoint 2</strong></td>
<td><strong>Module 7: UX Structure:</strong> Information Architecture and Card Sorting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Module 5-6 Exercise. Choose 1 of the 2 exercise options to complete before due date.</strong></td>
<td><strong>Module 7 Quiz</strong></td>
<td><strong>Module 8: UX</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>6%</strong></td>
<td><strong>Quiz</strong></td>
<td><strong>Garrett: Ch. 5</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sunday March 6, 2022 at 11:55 PM</strong></td>
<td><strong>Module 7-9 Discussion. Choose 1 of the 3 discussion options to complete before due date.</strong></td>
<td><strong>Garrett: Ch. 6 &amp;</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>16%</strong></td>
<td><strong>2%</strong></td>
<td><strong>Moed: Ch. 8</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tuesday, April 5, 2022 at 11:55 PM</strong></td>
<td><strong>Module 7-9 Exercise. Choose 1 of the 3 exercise options to complete before due date.</strong></td>
<td><strong>Module 8 Quiz</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3%</strong></td>
<td><strong>Optional</strong></td>
<td><strong>Tuesday, April 5, 2022 at 11:55 PM</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
There is no final examination for this course.

**CONTACT INFORMATION**

**ANNOUNCEMENTS**

Your instructor uses the Announcements widget on the Course Home page during the term to communicate new or changing information regarding due dates, instructor absence, etc., as needed.

You are expected to 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.
DISCUSSIONS
Discussions for this class will happen in the DEI 626 - Winter 2022 Microsoft Teams Team only. Your instructor is available in MS Teams.

CONTACT US

<table>
<thead>
<tr>
<th>Who and Why</th>
<th>Contact Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructor</td>
<td>Post your course-related questions to the Ask the Instructor Teams channel. This allows other students to benefit from your question as well. Questions of a personal nature can be directed to your instructor.</td>
</tr>
<tr>
<td>Instructor</td>
<td>Instructor: Dr. Lennart Nacke</td>
</tr>
<tr>
<td></td>
<td>• Schedule online appointment: <a href="#">Calendly - Office Hours</a></td>
</tr>
<tr>
<td></td>
<td>• Email: <a href="mailto:lennart.nacke@uwaterloo.ca">lennart.nacke@uwaterloo.ca</a></td>
</tr>
<tr>
<td></td>
<td>✦ I prefer to be contacted using Microsoft Teams for anything related to the course that is urgent. I use email only for non-urgent (slow-response) communication.</td>
</tr>
<tr>
<td>Miro, Doodle, Calendly, MS Teams</td>
<td>For instructions on how to use the tools, please contact your instructor or visit:</td>
</tr>
<tr>
<td>Miro, Doodle, Calendly, MS Teams</td>
<td>Miro - <a href="#">miro support and help centre</a></td>
</tr>
<tr>
<td>Miro, Doodle, Calendly, MS Teams</td>
<td>Calendly - <a href="#">Calendly Help Center</a></td>
</tr>
<tr>
<td>Miro, Doodle, Calendly, MS Teams</td>
<td>MS Teams - <a href="#">Microsoft Office 365</a></td>
</tr>
<tr>
<td>Technical Support, Centre for Extended Learning</td>
<td><a href="mailto:learnhelp@uwaterloo.ca">learnhelp@uwaterloo.ca</a></td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>• Technical problems with Waterloo LEARN</td>
<td>Include your full name, WatIAM user ID, student number, and course name and number.</td>
</tr>
<tr>
<td></td>
<td>Technical support is available during regular business hours, Monday to Friday, 8:30 AM to 4:30 PM (Eastern Time).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learner Support Services, Centre for Extended Learning</th>
<th>Student Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>• General inquiries</td>
<td><a href="mailto:extendedlearning@uwaterloo.ca">extendedlearning@uwaterloo.ca</a></td>
</tr>
<tr>
<td>• Examination information</td>
<td>Include your full name, WatIAM user ID, student number, and course name and number.</td>
</tr>
</tbody>
</table>

## GRADE BREAKDOWN

The following table represents the grade breakdown of this course.

<table>
<thead>
<tr>
<th>ASSESSMENT TYPE</th>
<th>ASSESSMENT ITEM</th>
<th>GRADE WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussions</td>
<td>3 Discussion Posts (2% each)</td>
<td>6%</td>
</tr>
<tr>
<td>Exercises</td>
<td>2 Exercises (6% each)</td>
<td>12%</td>
</tr>
</tbody>
</table>
DISCUSSIONS
Throughout the term, you have to submit 3 discussion posts in the module discussion channels in Microsoft Teams, where you can discuss your modules. To make this easier, the instructor has provided discussion prompts in your Content section in Learn under Activities and Assessments > Discussions. You can take these prompts as inspiration for your discussion but you can also choose to focus on your own topic, which you should then outline in the discussion post at the beginning. Pass/fail criteria for a successful discussion post to count on Teams are (all criteria need to be met for a pass):

- Minimum 100 words.
- Maximum 400 words.
- Reflective of the module topic.
- Thoughtful. A good faith effort counts more than absolute precision.
- Respectful and non-repetitive of other people's posts.
- Error-free (no grammatical, spelling, or punctuation errors).

EXERCISES
Each module will provide at least one possible exercise for you to do as an individual. Out of all available exercises, you can choose 2 exercises and submit them in an exercise dropbox. Make sure to label the exercise submission with the exact module number and exercise number when submitting it to the Dropbox.
MODULE QUIZZES
Each module has a quiz attached to it. You will need to complete each module quiz with 100% correct answers to advance to the next module quiz (i.e., it will only become available once you have completed the previous one). You have infinite attempts for each quiz until you get all the answers right. However, quizzes also have due dates (before the checkpoints), so to make sure your quizzes receive full marks at the end of the course, make sure to not submit them late.

- Complete a quiz with 100% correct answers for each module.
- Redo a quiz as often as necessary to advance.
- Make sure to submit quizzes before their due date.

GROUP ASSIGNMENTS
This class will have three larger group assignments, two checkpoints during the term and then one final project at the end of the term. Checkpoint 1 and Checkpoint 2 are video-based assignments submitted to a Dropbox in Learn to allow you to record your check-ins and assignment feedback using video. In the same way, you will be using video to present your final term project assignment.

OFFICIAL GRADES AND COURSE ACCESS
Official Grades and Academic Standings are available through Quest.

Your access to this course will continue for the duration of the current term. You will not have access to this course once the next term begins.
ABOUT THE COURSE AUTHOR/INSTRUCTOR

COURSE AUTHOR — DR. LENNART NACKE

Professor Nacke is an Associate Professor of UX Research and Design in Games and the Associate Director, Graduate Studies, at the Stratford School of Interaction Design and Business at the University of Waterloo. He is also part of the Department of Communication Arts, and the Games Institute, where he is researching player experience in video games, immersive VR environments, and gameful applications. Together with co-researchers, he published the PXI—player experience inventory, gamification user types hexad scale, guidelines for biofeedback and sound design in games, and a book on games user research. He is one of the world’s top three leading gamification scholars (on Google Scholar), one of the world’s top three leading UX researchers (on Google Scholar) and was named among the top 10 Most Influential Scholars in HCI over the past ten years (2009–2019, AMiner) and one of Canada’s Top 200 and the world’s Top 4,000 Computer Scientists (Guide2Research). His h-index is 51 (i-10 index: 132; Google Scholar), making him one of the world’s most prolific mid-career HCI researchers and putting him among the top 2% of scientists globally (in the areas of Human Factors, Artificial Intelligence & Image Processing, and Psychology & Cognitive Sciences).

WATCH: DR. NACKE, DIRECTOR OF THE HCI GAMES GROUP, PROFILE VIDEO (~5 MINS)

HCI Games. (2017, February 15). Dr. Nacke, Director of the HCI Games Group, Profile Video. [Video]. YouTube. https://www.youtube.com/watch?v=6k12M0lHo3l
CURRENT RESEARCH AREAS

Gamification: Involves the use of game design principles in systems that primarily support non-game tasks, with the goal of increasing fun, engagement and motivation. Dr. Nacke has been involved in the definition of the term and leading the academic movement in workshop and conference settings.

Games user research: Developing new methods and tools for improving player testing and user research in games and entertainment systems.

Games for human health and fitness: Making sports, physiological exercise, and health applications more playful has become one of Dr. Nacke's recent research focus areas, especially in light of the recent increase in sensor use and the quantified self movement. As part of this, he has investigated how to foster healthy habits, such as sticking to fitness routines and engaging older adults with technology. His students have developed their own apps and his research team has worked with companies such as Ayogo Health, Inc. in Vancouver, British Columbia, to analyze social health games on Facebook. A recent
Engage grant with Vintage Fitness in Toronto supported a project to develop a gamified online fitness service to keep older adults fit and healthy.

**HCI for games:** Finding novel sensors and interaction paradigms that drive the manner in which we interact with computers in a meaningful and engaging way.

**Affective gaming:** Research using psychophysiological analysis and physiological sensors to track player sentiments when gauging engagement, cognition and player emotions.

**Social relationship-building games:** Developing games and installations that can be used in public spaces to build relationships and foster social interaction in groups.

Dr. Nacke is cross-appointed with the *Cheriton School of Computer Science* and the *Department of Systems Design Engineering*. He can also be found working at the *Stratford School* and *The Games Institute*. For more information, please see Dr. Nacke’s research profile and publication links.

**MATERIALS AND RESOURCES**

**TEXTBOOK(S)**

**REQUIRED**


For textbook ordering information, please contact the [W Store | Course Materials + Supplies](#).

For your convenience, you can compile a list of required and optional course materials through [BookLook](#) using your Quest userID and password. If you are having difficulties ordering online and wish to call the Waterloo Bookstore, their phone number is +1
519-888-4673 or toll-free at +1 866-330-7933. Please be aware that textbook orders **CANNOT** be taken over the phone.

**RESOURCES**
- Library services for Co-op students on work term and students taking online courses

**COURSE AND DEPARTMENT POLICIES**

**E-MAIL POLICY**
I do not use email for urgent communication and answers are always delayed. If you have urgent communication, please send me a direct message in Microsoft Teams, which is available to you through the University. If you must send an email, please put DEI 626 in the subject line.

**LATE WORK**
Individual assignments submitted late without approved extensions will be subject to late penalties. 5% will be deducted for projects that are handed in within 24hrs after the deadline and an additional 5% per day thereafter (including weekends) up to a maximum of 50%. After that time a grade of 0% will be assigned for the late work. Late penalties are not recoverable.

For group work: If one of you happens to be sick, the rest of your team members will be there to present for you or to upload your work. Ensure that you use your MS Teams channel for sharing your slides, research, design, other documents and media so that any team member can theoretically present all material involved, and a backup plan is in place if your key presenter cannot be present in the final week of classes.

**DEADLINES**
Assignments are due by the date given in the schedule at the time of day specified. Extensions to assignment deadlines will be granted only in cases of illness or emergency. Extensions are granted based on the discretion of the instructor. Students should contact the instructor as soon as possible to make their requests and provide credible documentation (such as a doctor’s note or a Verification of Illness Form).

**UNIVERSITY POLICIES**
SUBMISSION TIMES
Please be aware that the University of Waterloo is located in the Eastern Time Zone (GMT or UTC-5 during standard time and UTC-4 during daylight saving time) and, as such, the time that your activities and/or assignments are due is based on this zone. If you are outside the Eastern Time Zone and require assistance with converting your time, please try the Ontario, Canada Time Converter.

ACCOMMODATION DUE TO ILLNESS
If your instructor has provided specific procedures for you to follow if you miss assignment due dates, term tests, or a final examination, adhere to those instructions. Otherwise:

MISSED ASSIGNMENTS/TESTS/QUIZZES
Contact the instructor as soon as you realize there will be a problem, and preferably within 48 hours, but no more than 72 hours, have a medical practitioner complete a Verification of Illness Form.

Email a scanned copy of the Verification of Illness Form to your instructor. In your email to the instructor, provide your name, student ID number, and exactly what course activity you missed.

Further information regarding Management of Requests for Accommodation Due to Illness can be found on the Accommodation due to illness page.

MISSED FINAL EXAMINATIONS
Your faculty determines academic accommodation; therefore we advise you to speak with your professor if you anticipate being unable to fulfill academic requirements due to illness or other extenuating circumstances.

Further information about Examination Accommodations is available in the Undergraduate Calendar.

ACADEMIC INTEGRITY
In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect, and responsibility. If you have not already completed the online tutorial regarding academic integrity you should do so as soon as possible. Undergraduate students
should see the Academic Integrity Tutorial and graduate students should see the Graduate Students and Academic Integrity website.

Proper citations are part of academic integrity. Citations in CEL course materials usually follow CEL style, which is based on APA style. Your course may follow a different style. If you are uncertain which style to use for an assignment, please confirm with your instructor or TA.

For further information on academic integrity, please visit the Office of Academic Integrity.

**TURNITIN**

**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 the alternate assignment.

**Turnitin® at Waterloo**

**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. 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.

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.

FINAL GRADES
In accordance with Policy 46 - Information Management, Appendix A - Access to and Release of Student Information, the Centre for Extended Learning does not release final examination grades or final course grades to students. Students must go to Quest to see all final grades. Any grades posted in Waterloo LEARN are unofficial.

ACCESSIBILITY SERVICES
AccessAbility Services, located in Needles Hall, 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 accommodation to lessen the impact of your disability, please register with AccessAbility Services at the beginning of each academic term and for each course.

ACCESSIBILITY STATEMENT
The Centre for Extended Learning strives to meet the needs of all our online learners. Our ongoing efforts to become aligned with the Accessibility for Ontarians with Disabilities Act (AODA) are guided by University of Waterloo accessibility Legislation and policy and the World Wide Web Consortium's (W3C) Web Content Accessibility Guidelines (WCAG) 2.0. The majority of our online courses are currently delivered via the Desire2Learn Learning Environment. Learn more about Desire2Learn’s Accessibility Standards Compliance.

USE OF COMPUTING AND NETWORK RESOURCES
Please see the Guidelines on Use of Waterloo Computing and Network Resources.
COPYRIGHT INFORMATION

UWATERLOO’S WEB PAGES
All rights, including copyright, images, slides, audio, and video components, of the content of this course are owned by the course author and the University of Waterloo, unless otherwise stated. By accessing this course, you agree that you may only download the content for your own personal, non-commercial use. You are not permitted to copy, broadcast, download, store (in any medium), transmit, show or play in public, adapt, or change in any way the content of these web pages for any other purpose whatsoever without the prior written permission of the course author and the University of Waterloo, Centre for Extended Learning.

OTHER SOURCES
Respect the copyright of others and abide by all copyright notices and regulations when using the computing facilities provided for your course of study by the University of Waterloo. No material on the Internet or World Wide Web may be reproduced or distributed in any material form or in any medium, without permission from copyright holders or their assignees. To support your course of study, the University of Waterloo has provided hypertext links to relevant websites, resources, and services on the web. These resources must be used in accordance with any registration requirements or conditions which may be specified. You must be aware that in providing such hypertext links, the University of Waterloo has not authorized any acts (including reproduction or distribution) which, if undertaken without permission of copyright owners or their assignees, may be infringement of copyright. Permission for such acts can only be granted by copyright owners or their assignees.

If there are any questions about this notice, please contact the University of Waterloo, Centre for Extended Learning, Waterloo, Ontario, Canada, N2L 3G1 or extendedlearning@uwaterloo.ca.

TERRITORIAL ACKNOWLEDGEMENT
The Faculty of Arts acknowledges that we are living and working on the traditional territory of the Attawandaron (also known as Neutral), Anishinaabe and Haudenosaunee peoples. The University of Waterloo is situated on the Haldimand Tract, the land promised to the Six Nations that includes six miles on each side of the Grand River. The Stratford School of Interaction Design and Business is situated on the traditional territory of the
Anishinaabe, Haudenosaunee, and the Ojibway/Chippewa peoples. This territory is covered by the Upper Canada Treaties.

**CREDITS AND COPYRIGHT**

This online course was developed by Dr. Lennart Nacke, with instructional design and multimedia development support provided by the Centre for Extended Learning. Further media production was provided by Instructional Technologies and Multimedia Services.

**CREDITS**

- Header graphic (mountains): Terriana/iStock/Getty Images
- Header graphic (tree): elenabs/iStock/Getty Images
- Header graphic (architect holding blueprint): Anastasiia_New/iStock/Getty Images
- Header graphic (architectural drawing of house):
- Header graphic (surveyor): Alexandrus1/iStock/Getty Images
- Header graphic (construction workers and machinery): intararit/iStock/Getty Images
- Header graphic (people in lab coats): Olga Kurbatova/iStock/Getty Images
- Header graphic (Architectural outline and completely furnished home interior): Oleksandr Basulin/iStock/Getty Images
- Header graphic (furniture truck and moving men): Macrovector/iStock/Getty Images
- Header graphic (people in car, walking, carrying bag, jogging): intararit/iStock/Getty Images
- Header graphic (home exterior): Oleksandr Basulin/iStock/Getty Images
- Blockquote speech bubble, level up bullseye icon, pro-tip business men icon, microscript speech bubble icons: Gugai/iStock/Getty Images
- Activity icon (computer with paper/pencil): Scar1984/iStock/Getty Images
- Heads up icon (Light bulb brain): 3tOn4k/iStock/Getty Images
- Further reading icon (apple on books): Scar1984/iStock/Getty Images
- Assignment Workflow icon: Scar1984/iStock/Getty Images
- Watch icon (computer with gears): Scar1984/iStock/Getty Images
- Q & A Drop in icon: Scar1984/iStock/Getty Images
COPYRIGHT
© Course Author(s) and University of Waterloo.

For further information, please contact the Centre for Extended Learning, University of Waterloo, 200 University Ave. W., Waterloo, ON, Canada, N2L 3G1, extendedlearning@uwaterloo.ca.

LICENSES
This course contains materials that have the following Creative Commons licenses:

- CC BY 2.0
- CC BY 2.5
- CC BY-NC-SA 2.0
- CC BY-ND 2.0
- CC BY-SA 3.0
- CC BY-SA 4.0