

<p>Category: 1 Faculty: Arts Department: School of Information Faculty Approval Date: Effective Session (W or S): W Effective Academic Year: 2021-2022</p>	<p>Date: July 30, 2020 Contact Person: Rick Kopak Phone: (604) 822-2898 Email: r.kopak@ubc.ca</p>
<p>Proposed Calendar Entry:</p> <p>INFO 300 (3) Information and Data Design</p> <p>Design of interactive information systems informed by human capabilities and behavior. Application of contemporary information design principles and practices to the conceptualization, creation, and testing of real-world prototypes of information objects and applications.</p> <p><i>Prerequisite:</i> INFO 200. INFO 100 is recommended.</p>	<p>URL: http://www.calendar.ubc.ca/vancouver/courses.cfm?page=code&code=INFO</p> <p>Present Calendar Entry: N/A</p> <p>Type of Action: New course</p> <p>Rationale for Proposed Change:</p> <p>INFO 300 will serve as a required course for a prospective Minor in Informatics offered through UBC’s School of Information .</p> <p>As the first dedicated course on design practice in the Minor, INFO 300 will create space for students to implement acquired theoretical knowledge through analysis and creation of various information artifacts, e.g., websites, blogs, mobile apps, digital ‘books,’ etc. The course is important to developing in students a ‘design thinking’ frame of mind essential to meeting any number of real-world information design challenges. More specifically, the course will provide students with a robust, user-centred design method along with exposure to, and practice with, techniques and procedures typically found effective in support of the method, e.g., techniques and procedures for user data collection and analysis, usability and user experience evaluation, and so on. The course also enables collaborative skill development through assignments carried out in design teams.</p> <p>Further, the course contributes directly to student learning in one of the three main focal areas of the Minor as identified in the Minor in Informatics Executive Summary – “the application of information technologies using human-centred design methodologies.” The course also contributes to acquisition of requisite knowledge and skills for at least 5 of the Minor’s Program Learning Outcomes</p>



(Analyze, Critique, Design, Communicate, and Manage), and is exemplary of transformative learning through ‘Innovation’ and ‘Collaboration’ as described in the UBC Strategic Plan (2018-2028).

Note: This Category 1 course proposal is submitted at the same time as a Category 1 proposal for a new Minor in Informatics.



We acknowledge that we are on the traditional, ancestral and unceded territory of the hə́nq̓mí̓nə́m speaking Musqueam people.

iSchool Mission: Through innovative research, education and design, our mission is to enhance humanity’s capacity to engage information in effective, creative and diverse ways.

INFO300 – Information and Data Design– Course Syllabus (3)

Program:	BA Minor in Informatics
Year:	3
Course Schedule:	
Location:	
Instructor:	R. Kopak (placeholder)
Office location:	IKBLC 495
Office phone:	(604) 822-2898
Office hours:	TBA
E-mail address:	r.kopak@ubc.ca
Learning Management Site:	http://lthub.ubc.ca/guides/canvas/

Course Overview:

Designing effective interactive information systems of any kind requires understanding the needs and capabilities of the people who will be using them, and the purposes for which the system will be used. “Good information design makes information accessible (easily available), appropriate (to its contents and users), attractive (inviting), concise (clear and without embellishments), relevant (connected to the purpose of the user), timely (available when the user needs it), understandable (without doubts or ambiguities), . . . ” (Frascara, 2015). Above all, it needs to be usable. In this course we will examine human capabilities and behavior as they relate to the design of these interactive information systems. We will survey contemporary theories and findings from the social sciences and information design literature, with special attention given to how these concepts influence the way we design for human interaction with information. Though based firmly in the research literature, the course is design forward, and students will learn not only principles of information use and interaction, but will be actively involved in designing and building their own information artifacts. Although our discussion in class is framed around more traditional digital “interfaces” to information, and the processes that support their development, the scope of objects are not limited by traditional forms, and students are encouraged to experiment in new ways of thinking about information and interaction in our contemporary information environment.



Learning Outcomes:

Upon completion of this course students will be able to:

Language in LOs styled after recommendations from Krathwol's (2002) revision of Bloom's cognitive hierarchy.

Learning Outcomes
LO1. <i>Recognize</i> the various outcomes of the human-centred design approach as ways of creatively solving cognitive, social, and ethical information design challenges
LO2. <i>Differentiate</i> the various work roles involved in collaborative design processes and the relationships between these roles
LO3. <i>Apply</i> human-centred design methods and techniques in investigating and solving information design problems
LO4. <i>Analyze</i> data collected from the application of these design methods and techniques
LO5. <i>Apply</i> principles of visual design and aesthetics
LO6. <i>Create</i> physical prototypes of design solutions through application of techniques and tools suitable at various points in the design lifecycle
LO7. <i>Evaluate</i> the usability of the design prototypes created
LO8. <i>Create</i> effective ways of communicating the design outcomes to stakeholders

Course Topics:

- Human-centred design, and the information design lifecycle
- Design Thinking and related perspectives in information analysis and design
- Identifying and assessing information needs and information tasks
- Theories of human visual perception and cognition
- User modeling including personas and scenarios



- Information architecture
- Information representation
- Visual display of information
- Prototyping
- Usability evaluation and assessment

Prerequisites:

INFO 200 required; INFO 100 recommended.

Format of the course:

The course comprises a mix of lecture, in-class activities, and collaborative workshops.

Required and Recommended Reading:

Required Reading

This is the proposed main text for the course. Chapters from the book are assigned as required, weekly readings. It is recommended that you obtain your own copy of the Tidwell book. Copies are available through Library Online Course Reserves (LOCR), and through the Canvas course site.

- Tidwell, J., Brewer, C., and Valencia, A. (2020). *Designing interfaces: Patterns for effective interaction design*. Sebastopol, CA: O'Reilly Media. [framework text]
- Cost for text approximately \$60.

Additional Required Reading

Individual chapters from these texts are regularly included as required reading. Copies of the chapters are available through Library Online Course Reserves (LOCR), and through the Canvas course site.

- Arango, J. (2018). *Living in information: Responsible design for digital places*. Brooklyn, NY: Two Waves Books.
- Black, A., Luna, P., Lund, O., and Walker, S. (2017). *Information design: Research and practice*. New York: Routledge Publishing.
- Duarte, N. (2019). *Data story: Explain data and inspire action through story*. Ideapress Publishers.
- Fascara, J., ed. (2015). *Information design as principled action*. Champaign, IL: Common Ground Publishing.
- Hinton, A. (2015). *Understanding context: Environment, language, and information architecture*. Sebastopol, CA: O'Reilly Media.
- Hall, E. (2019). *Just enough research, 2nd ed.* New York, NY: A Book Apart Publishing.
- Holtzblatt, K., and Beyer, H. (2016). *Contextual design: Design for life*. New York: Morgan Kaufmann.
- Jacobson, R., ed. (2000). *Information design*. Cambridge, MA: MIT Publishing.
- King, R., Churchill, E.F., and Tan, C. (2017). *Designing with data*. Sebastopol, CA: O'Reilly Media.
- McElroy, K. (2016). *Prototyping for Designers*. Sebastopol, CA: O'Reilly Media.
- Rosenfeld, L., Morville, P., and Arango, J. (2015). *Information Architecture: For the Web and Beyond*. Sebastopol, CA: O'Reilly Media.
- Sharp, H., Preece, J., and Rogers, Y. (2019). *Interaction Design, 5th ed.* New York: Wiley Publishing.



Recommended Reading [Sample only - addition of up-to-the-minute sources, e.g., websites, will be added closer to the course date]

- Dahlström, A. (2019). *Storytelling in design*. Sebastopol, CA: O’Reilly Media.
- Dillon, A. (2004). *Designing Usable Electronic Text*. New York: Taylor & Francis.
- Gothelf, J., & Seiden, J. (2016). *Lean UX: Designing Great Products with Agile Teams* (2nd Ed.). O’Reilly Media.
- IDEO.org. (2015). [The field guide to Human-centered design](#).
- IDEO.org. (2020). [Design Thinking Resources](#).
- Nielsen/Norman Group. [Articles and videos on research-based user experience](#).
- Norman, D. (2013). *The design of everyday things*. Revised and Expanded Edition. Basic Books.
- Nussbaumer Knaflic, C. (2019). *Storytelling with Data: A Data Visualization Guide for Business Professionals*
- Preece, J., Sharp, H., & Rogers, Y. (2019). *Interaction Design: Beyond human-computer interaction*, 5th ed. Wiley.
- Ware, C. (2015). *Information Visualization*, 3rd ed. New York: Morgan Kaufmann.

Course Assignments and Assessment

Assignment Name	Due Date	Weight
Group design project	See weekly schedule	50% (2 x 25%)
In-class quizzes (2)		30% (2 x 15%)
Information design journals		20% (2 x 10%)

Assignment	Short description	Learning Outcomes
<i>Group design project</i>	<i>The major assignment for INFO 300 is a group project, with a group size of four or five students depending on the size of the class. The project is broken down into two parts, each part providing students a means to explore specific components of the design lifecycle (Empathy, Definition, Ideation, Prototyping, and Evaluation), along with gaining experience in applying associated tools and techniques.</i>	Overall LO2; LO3; LO4; LO5; LO6; LO7; LO8
Design Part 1 (25%)	In Part 1 of the Group assignment, students <ul style="list-style-type: none"> • Empathize: Identify a design object (e.g., informational website, interactive e-text, informational/wayfinding resource for a gallery or museum exhibit, a data visualization, etc.), identify an audience, gain an understanding of the problem space and user needs, create a project plan, prepare for data collection, and collect data • Define: Analyze the data collected from the empathy stage. They will then create personas, empathy maps, 	LO2; LO3; LO4; LO5;



	<p>and use scenarios. They will identify and frame design opportunities and create a design story (storytelling)</p> <ul style="list-style-type: none"> • Ideate: Operationalize the data analysis from the definition assignment. Depending on the nature of the project, this might involve creation of content inventory, creation of structure and schema, navigation, labeling, etc. • The deliverable for this assignment is a written document in the form of a project plan that includes the following sections: <ul style="list-style-type: none"> • Project Description – a description of the design object (e.g., website) with rationale and justification for its selection. [4%] • Empathy Statement – a description of procedures followed/methods used for identifying user group, and methods selected for identifying user needs. This should include samples outcomes from associated tools and techniques employed, e.g., competitor analysis, empathy maps. [7%] • Definition Statement – a report of the results of your needs analysis in previous section, and identification of working Personas. [7%] • Ideation Statement – a report of possible alternatives on how the results from the Definition phase might be manifested in the physical design of the system. Example storyboards, story maps, use cases, etc. should be included in this section. [7%] <p>Working in teams is essential to success in design environments. The mark for the assignment will be assessed based on the document submitted. Everyone in the group will receive the mark given for the assignment.</p>	
<p>Design Part 2 (25%)</p>	<p>In Part 2 of the Group assignment, students</p> <ul style="list-style-type: none"> • Prototype: Generate storyboards, leading to development low fidelity prototypes that instantiate the conceptual design of the ideation assignment. This may be done using paper and pencil techniques, or prototyping applications depending on availability. • Evaluate: Test designs with representative users and iterate on the findings. This will involve use of both analytical and empirical methods of evaluation. Students will propose improvements as an outcome of the exercise. • The deliverable for Part 2 of the major assignment is a written document in the form of a project plan that includes the following sections: <ul style="list-style-type: none"> • A summary of the results from Part 1 of the project. 	<p>LO2; LO4; LO5; LO6; LO7; LO8;</p>



	<p>The summary should include a re-statement of the major outcomes from Part 1, and provide sufficient context for the design decisions made in this part of the assignment (Part 2). [2%]</p> <ul style="list-style-type: none">• Prototype Reveal – A description of what physical design decisions were made based on the Ideation phase in Part 1, an elaboration on the design decisions including reference to any appropriate design guidelines or heuristics, and include screenshots of the actual prototype. A list of the tasks that the prototype was designed to accomplish will be included in this section as well. The url for the prototypes must also be included in this section of your report. [10%]• Usability Assessment – Results of the usability assessment are reported in this section. It should include a general description of who the assessors were, how well they represent the personas developed in Part 1, the kinds of assessment done, and the results of those assessments. [10%]• Conclusion – A short report on your journey through the overall design process, issues encountered, solutions to overcome issues, an overall evaluation of the perceived successes, and shortcomings of the design outcomes, and what you might have done differently were you to repeat the process. [3%]	
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In-class Quizzes (30%)	<p>There will be two (2) quizzes of 60 minutes comprising multiple choice, short answers, and case study questions, covering lectures materials, readings, and studios. Quizzes will focus on acquired definitional and application knowledge of tools, methods, procedures of design as provided in the required textbook, and noted recommended readings and texts.</p> <p>Examples</p> <ol style="list-style-type: none">Multiple choice questions: Which of the following reflect aspects of design ‘affordance’?<ol style="list-style-type: none">Attributes of an object that indicate its useActions that cannot be performed in relation to an objectMessages sent to the user indicating that an action has been performedOnly a. and b. aboveNone of the aboveShort answer questions:<ul style="list-style-type: none">Why is consistency in design virtuous?Describe 3 major differences between high-fidelity and low-fidelity prototypes.Case study questions: Below is a Figma prototype (prototype image not attached) consisting of three screens of a food logging app being created for mobile use (either Android or iPhone). As part of expert evaluation, you are to analyze each of the screens, and the flow between the screens (in sequence) doing a Cognitive Walkthrough, for the following task: Log a ‘meal’ consisting of ingredients and proportions given the following food items. A secondary goal is to end with a total calorie count of the meal given various portion sizes for the meal.	LO1; LO3; LO4
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Design Journals 20% (2x10%)	<p>Each student will prepare two (2) design journals where the student applies their knowledge of design to the analysis of design objects of their choosing. The purpose of the journals is to encourage a focus on specific design aspects of information objects encountered in the everyday world, and to relate the critical design skills learned in class, and from the readings, to observations about these objects. Expected as part of this exercise is application of suitable design guidelines and/or principles presented in the course, e.g., Nielsen’s usability heuristics.</p> <p>Each Design Journal is independent of the major Design Project, and should focus on an information object that is different (in the specifics). For example, you can focus on websites in both the Design Journals and the major project, just not websites in the same domain, or for the same, specific purpose, i.e., they must involve distinct contexts.</p> <p>The two examples can be of either effectively or ineffectively designed objects. The goal of the assignment is to explain why the designs are usable or not given the intended user group. They can be examples of virtual objects, e.g., a favourite music app, website, digital magazine, blog, etc. or physical, e.g., a TV remote, microwave oven controls, portable tent, etc.</p> <p>Each journal will be no longer than 2 pages (single spaced, 12 point Calibri) exclusive of screenshots, drawings, etc.</p> <p>Each journal will be assessed on the following basis:</p> <ul style="list-style-type: none">• Novelty and appropriateness: Does the object chosen reflect singular, identifiable design components that make the analysis informative and/or interesting. Or, the absence of such that substantially diminish its apparent effectiveness. [3%]• Appropriateness and correct application of design principles/guidelines brought to bear on the object in the assessment of its usability (or component of usability: efficiency, effectiveness, satisfaction or experience). [3%]• Recommendations for improvement of the object with rationale for how the proposed solution will results in a more usable object. [4%]	LO3; LO5; LO7; LO8;
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Course Schedule [week-by-week]:

Example dates for WT2 offering for one 3 hour/week meeting. Topics and readings will be divided out if 2 and 3 class meetings per week are scheduled. Reading Week is not included in syllabus.

Cl as s	Date		Topic and Readings (<i>Italics</i> indicate required reading)	Assignment Due
1	January 6		<p>Introduction to course and topics and techniques covered Design thinking and the notion of continuous assessment + What is human-centred design What is interaction design Where does information design fit in all of this + <i>Tidwell, Ch.1: Designing for People</i> + <i>One of:</i> <i>Frascara, Ch.1: What is information design</i> <i>Shedroff, Ch.11 in Jacobson: Information interaction design: A unified field theory of design</i> <i>Cooley, Ch. 4 in Jacobson: Human-centered design</i></p>	
2	January 13		<p>Different Ways of Thinking About Information + Data and Information Physical Information Semantic Information Digital Information + <i>Hinton, Ch. 8, 12-14: Physical, Semantic, and Digital Information</i> + Recommended: Duarte, Ch. 11: Storytelling with data</p>	



3	January 20	<p>Understanding the design space</p> <p>+</p> <p>Understanding the importance of context Understanding the importance of affordance Identifying and understanding who we are designing for and what they do</p> <p>+</p> <p><i>Hinton, Ch. 1-4: The context problem</i> <i>Rosenfeld, Ch. 4: Designing for understanding</i></p> <p>+</p> <p>Recommended: Arango, Ch. 2: Context Macy, Ch. 12 in Jacobson: Interactivity and meaning</p>	Design Journal 1
4	January 27	<p>Collecting and analysing data on users and tasks – Pt. 1</p> <p>+</p> <p>Identifying the optimal methods for finding out about our users Using empirical methods:</p> <ul style="list-style-type: none"> • Observation, interviews, questionnaires <p>Using analytical methods:</p> <ul style="list-style-type: none"> • competitor analysis, heuristics <p>+</p> <p><i>Sharp, Ch. 8: Data Gathering</i> <i>Rosenfeld, Ch. 11: Research</i> <i>Nielsen/Norman Group:</i> - How to Conduct a Heuristic Evaluation - 10 Usability Heuristics for User Interface Design</p> <p>+</p> <p>Recommended: Sharp, Ch. 16: Inspections, heuristics, and walkthroughs Dyson, Ch. 28 in Black: Information design research methods</p>	
5	February 3	<p>Collecting and analysing data on users and tasks – Pt. 2</p> <p>+</p> <p>Creating and using</p> <ul style="list-style-type: none"> • Personas • Empathy maps • Affinity diagrams • Use cases and scenarios <p>+</p> <p><i>Holtzblatt, Ch. 5-6: From data to insight/Affinity diagrams</i></p> <p>+</p> <p>One of: Hall, Ch. 8: Analysis and models. Rosenfeld, Ch. 13: Design and documentation</p>	Group Project 1: Empathy/Definition/ Ideation



6	February 10	<p>Designing at the macro Level: Organizing and classifying Assessing and applying models of information structure + Leveraging genre conventions Structure vs schema Hierarchy and hypertext Creating and using</p> <ul style="list-style-type: none"> • Card sort • Affinity diagrams <p>Design patterns for organization + <i>Tidwell, Ch. 2: Organizing the content: Information architecture and application structure</i> + Recommended: Rosenfeld, Ch. 5-6: The anatomy of IA; Organization systems</p>	
7	February 17	<p>Designing at the macro Level: Getting around Navigation, Signposts, and Wayfinding + Naming things: What make a good label? Where am I, where can I go? Networks and streams Design patterns for navigation + <i>Tidwell, Ch. 3: Getting around: Navigation, signposts, and wayfinding</i> + One of: Rosenfeld, Ch. 7-8: Labelling and navigation Systems Passini, Ch. 5 in Jacobson: Sign-posting information design Roefs & Mijksenaar, Ch. 35 in Black: Designing for wayfinding</p>	Quiz 1
8	February 24	<p>Prototyping Making it real + <i>McElroy, Ch. 2-4: Why we prototype, and the types and process of prototyping</i> + Recommended: Sharp, Ch. 12: Design, prototyping and construction</p>	



9	March 3	Evaluation and Usability Putting the prototypes to work + More about continual assessment Analytical methods <ul style="list-style-type: none">• Heuristics and walkthroughs Empirical methods <ul style="list-style-type: none">• Think-aloud + <i>McElroy, Ch. 7: Testing prototypes with users</i> + Recommended: Sharp, Ch. 8: Data gathering Stahl-Timmins, Ch. 29: Methods for evaluating information design	Design Journal 2
10	March 10	Designing at the micro level: Layout What goes where in a view? + Gestalt Visual hierarchy Grids Visual flow Design patterns for layout + <i>Tidwell, Ch. 4: Layout of Screen Elements</i> <i>Pettersson, Ch.27 in Black: Gestalt principles</i>	
11	March 17	Designing at the micro level: Visual aesthetics and graphical design The relationship between content and style + Colour Typography Iconography Design patterns for visual design + <i>Tidwell, Ch. 5: Visual Style and Aesthetics</i> + Recommended: Moys, Ch. 12 in Black: Visual rhetoric in information design Luna, Ch. 31 in Black: Choosing type for information design	Quiz 2



12	March 24	Showing complex data The visual presentation of data +	
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		Organizational models of data Pre-attentive variables More about navigating and browsing Sorting and filtering + <i>Tidwell, Ch. 9: Showing Complex Data</i> + Recommended: Duarte, Ch. 8: Building a skimmable slidedoc	
13	March 31	Course wind-up + Group project presentations	Group Project 2: Prototyping/ Evaluation

Attendance:

- Attendance at every class is expected. If you know you are going to be absent be sure to inform me beforehand.
- Chronic absence from class will require a note from a healthcare provider or an accommodation notice from Centre for Accessibility. Failure to provide this documentation could result in a lower course mark.
- Any penalties imposed for excessive absences are at the discretion of the instructor.

Evaluation:

All assignments will be marked according to standard [UBC grading](#) practices.

Reassessment: A student (group) who believes that their term work has been unfairly graded may submit a request for re-evaluation. Students have up to two weeks from the date of return of a graded item (or from the date the mark was made available) to submit a request. For example, should the work be returned, or the mark be made available on 10 February, the student has until 24 February to make the request in written form. The instructor must acknowledge receipt of a student request for re-evaluation within 3 working days, and decisions should be provided in a timely fashion. Re-evaluation requests **must be submitted in writing** to the person who graded the work. The student must submit (1) the original piece of work and (2) a written explanation detailing why they believe the work was unfairly/incorrectly graded. If a grade is changed by the instructor, the student must accept the resulting mark as the new mark, whether it goes up or down or remains the same. When submitting a re-evaluation request, the student shall accept this condition. The instructor should ensure all communications with the student are in writing (e.g. follow-up e-mail) and keep a copy for later reference.

Late submission: The course requirements and weights are final and will not be modified throughout the term. The penalty for late assignments is a 5% deduction from the final mark for each day past the stated due date, to a maximum of one week; submissions will not be accepted after one week. Exceptions will be made only when supported by appropriate documentation.



Academic Concession: If you miss marked coursework (assignment, exam, presentation, participation in class) and are an Arts student, review the Faculty of Arts' [academic concession page](#) and then complete Arts Academic Advising's [online academic concession form](#), so that an advisor can evaluate your concession case. If you are a student in a different Faculty, please consult [your Faculty's webpage on academic concession](#), and then contact me where appropriate.

Policies and Resources to Support Student Success: UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious and cultural observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available here (<https://senate.ubc.ca/policies-resources-support-student-success>)

Academic Integrity:

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating may result in a mark of zero on the assignment or exam and more serious consequences may apply when the matter is referred to the Office of the Dean. Careful records are kept in order to monitor and prevent recurrences. A more detailed description of academic integrity, including the University's policies and procedures, may be found in the [UBC Calendar: Student Conduct and Discipline](#).

Academic Accommodation for Students with Disabilities:

Academic accommodations help students with a disability or ongoing medical condition overcome challenges that may affect their academic success. Students requiring academic accommodations must register with the [Centre for Accessibility](#) (previously known as Access & Diversity). The Centre will determine that student's eligibility for accommodations in accordance with [Policy LR7: Academic Accommodation for Students with Disabilities](#). Academic accommodations are not determined by your instructors, and instructors should not ask you about the nature of your disability or ongoing medical condition, or request copies of your disability documentation. However, your instructor may consult with the Centre for Accessibility should the accommodations affect the essential learning outcomes of a course.