

COURSE OUTLINE IDES 3107A • DESIGN AND SUSTAINABILITY • Winter (2024)

Instructor: Kevin Brady

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Location:

Office Hours: Friday 13:00 - 14:00 or by appointment – 613 447 3451

Teaching Assistant: Shekinah Mcclymont

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Office Hours: TBD.

Course Time and Location:

Course locations are no longer displayed on the public class schedule and are subject to change. For the latest information please refer to Carleton Central under Student Services – Registration – Student Timetable.

Course Description

Explores the industrial designer's role in creating more environmentally and socially responsible products. Addresses imperatives and drivers for integrating sustainability into products. Includes: sustainable design strategies, strategies and tools, sustainable design business case, circular economy model for designed products, and case studies.

Includes: Experiential Learning Activity.

Prerequisite(s): IDES 2302 and Third or Fourth Year standing or permission of the School of Industrial Design.

Lectures and tutorials three hours a week.

Learning Outcomes

By the end of this course, students will be able to:

1. Articulate the principles of sustainable product design.
2. Discuss the important role of sustainability in product development.
3. Understand how to apply life cycle and circular design strategies to minimize potential impacts of current products or product concepts.
4. Discern and justify a viable eco-design strategy for a product.
5. Apply concepts and techniques of eco-design to real-life products.
6. Identify software and other tools for optimizing sustainable outcomes.
7. Recognize the role that marketing and stakeholders play in the design, development, and promotion of sustainably designed products.
8. Reflect on the ethical responsibilities influencing the future of the design profession.
9. Effectively communicate ideas through visual, written, and oral presentations.
10. Cooperate with team members in working through class exercises and assignments.
11. Adopt professional behaviour.

Course Deliverables

These are the deliverables for this course. Please see 'Appendix A Course Schedule' for more detailed information.

Assignment 1 (40% of course mark)

Research and write an analysis of a product that is marketed as being environmentally or socially responsible/preferred. Address the following:

1. Describe the product, its primary function and main life cycle stages (20 marks)
2. Document the "sustainability" benefits of the product being promoted by the manufacturer/brand owner (10)
3. Research and document the main environmental and social impacts associated with the product life cycle (30)
4. Compare 2 and 3 – do the benefits claimed adequately reflect the main issues identified in your research (30)
5. Speculate on the role of design in addressing any gaps or making additional improvements in the sustainability performance of the product (10)

Assignment 2 (35% of course mark)

Students will be assigned in groups to an “advanced concepts” cross functional product development team. Students in each group will agree on their individual role (e.g. supplier management, material selection, product development, marketing, production and sustainability). Each team will develop a product brief (this can be informed by assignment 1). The brief will include information on the current generation product – bill of materials, key functions, supplier information etc. Working in groups of 5 to 6 during class time, and outside of class as needed, the teams will come up with a set of recommendations for improving the sustainability of the **product system**. Each individual on the team will also be responsible for submitting a one page description of their area of responsibility and how it can/did influence sustainability of the product. Results will be presented in the last two class sessions.

2 Quizzes (total of 20 % of course mark)

Individual, marked on-line and recorded. These simple quizzes will help confirm your understanding of the concepts as we progress through the course.

Summary of Course Evaluation Information

40%	Assignment 1
35%	Assignment 2 (30 % group presentation 5% Individualreport)
20%	2 Quizzes (10% each)
5 %	Participation and Professionalism

Course Completion Requirements

Deliverables required to pass the course:

- Assignment 1
- Assignment 2 Group presentation and individual report

Student Access to Quiz, Test and Exam Papers

Examinations are for evaluation purposes only and will not be returned to the student.

Required Materials

Materials required for the course are listed below. You may be asked by your instructor to refer to Brightspace for a more comprehensive list of required materials.

A reference list will be provided on Brightspace.

Computer Requirements

Please refer to the computer requirements on the School of Industrial Design Website. You may be asked by your instructor to refer to Brightspace for other information or requirements related to computer work.

<http://www.id.carleton.ca/undergraduate/about-the-bid-program/computer-requirements>

Individual/Group Work

Courses may include individual and group work. It is important in collaborative work that students clearly demonstrate their individual contributions.

Review/Presentation Attendance

Attendance at scheduled SID Reviews/Presentations is mandatory. These are equivalent to exams when indicated in the course outline. Failure to attend the Review/Presentation without reasonable cause will result in a grade of F. Students arriving late for the Review/Presentation or not remaining for the complete session without approval from the instructor, will be addressed on a case-by-case basis at the discretion of the instructor.

If you are not able to attend a Review/Presentation, foresee arriving late, or need to leave before it is complete, please email your instructor in advance explaining the reason for the situation. It is important that you provide a reasonable rationale for your absence, late arrival, or early departure. In the event of an illness or death in the family, you will be required to sign a form verifying your claim and this form is available through the SID administration office.

Late Submission of Lecture & Studio Deliverables

Students who do not hand in deliverables on time will have their earned grade reduced by 5% per day up to a maximum of 3 days.

Participation and Professionalism

Active participation and professional conduct (e.g. class discussion, consultations with instructors, work ethic, etc.) are important in lecture and studio courses and may be formally evaluated by a grade.

Professionalism also includes Carleton's Policy on Academic Integrity described in more detail below with links to content that you are required to review.

Academic Integrity

Carleton's Policy on Academic Integrity is available at: <https://carleton.ca/registrar/academic-integrity/> and covers the following topics:

Plagiarism (e.g. submitting work in whole or in part by someone else, failing to acknowledge sources through the use of proper citations when using another's work).

Test and Exam Rules (e.g. attempting to read another student's exam paper, speaking to another student even if the subject matter is irrelevant to the text, using material not authorized by the examiner).

Other Violations (e.g. improper access to confidential information, disruption in classroom activities, misrepresentation of facts for any academic purpose).

This policy governs the academic behavior of students. In industrial design, ideas, and concepts come from a multitude of sources and may be modified and utilized in the design and development process. The student should reference such sources appropriately and it is strongly advised that you read Carleton's Policy on Academic Integrity prior to conducting any work at the University.

USE OF ARTIFICIAL INTELLIGENCE (AI) TECHNOLOGIES

To effectively address the incorporation of AI technologies, specifically generative AI tools, into courses, we have instituted the following guidelines.

1. Academic Integrity Standards: In the absence of explicit permission from the instructor within a given course, the use of generative AI tools to create content, (e.g., text, code, images, summaries, videos, etc.), is deemed a breach of academic integrity standards.
2. Instructor's Discretion: Instructors have the authority to grant permission for the use of generative AI tools, (e.g., ChatGPT and similar tools), based on alignment with the course's educational objectives and learning outcomes. Assignment and examination guidelines will be written to explicitly reflect this granted permission.
3. Clear Instructions: Should instructors choose to permit the use of generative AI tools, an assessment guideline will provide students with clear and detailed direction, including;
 - i. Identification of specific generative AI tools that are acceptable for use.
 - ii. Clarity on the approved applications of these tools.

These measures aim to create a balanced and transparent educational environment, ensuring both academic integrity and the responsible integration of AI technologies into the learning experience.

Requests for Academic Accommodation

You may require special arrangements to meet your academic obligations during the term. For an accommodation request for any of the below topics, refer to this link - <https://students.carleton.ca/course-outline/> and open the needed section.

Topics:

- *Pregnancy Obligations*
- *Religious/Spiritual Obligation*
- *Academic Accommodations for Students with Disabilities*
- *Survivors of Sexual Violence*
- *Accommodations for Student Activities*
- *Academic Considerations for Medical and Other Extenuating Circumstances*
- *Scheduling and Examination Support*

Statement on Student Mental Health

As a university student, you may experience a range of mental health challenges that significantly impact your academic success and overall well-being. If you need help, please speak to someone. There are numerous resources available both on- and off-campus to support you, refer to this link - <https://wellness.carleton.ca/> and open the needed section.

Topics:

- *Counselling*
- *Resource Guide*
 - *Thriving on Campus*
 - *Everyday Stress*
 - *Mild Mental Health Concerns*
 - *Moderate Mental Health Concerns*
 - *Complex Mental Health Concerns*
- *Umbrella Project*

Student Responsibility

The student is responsible for knowing the content of this course outline; the schedule of classes, assignments, and/or Reviews; and the material that was covered when absent. The studio is a professional environment and students should be working during the scheduled hours.

Unless otherwise arranged, the class will meet during scheduled class hours. Please note that attendance is important since issues and questions may be raised in class, and announcements made, along with information disseminated through Brightspace. As external professionals are often involved in our work, scheduling changes for guest lectures, presentations, and Reviews may occur at short notice, requiring students to stay informed.

Changes to the Course Outline

The course outline may be subject to change in the event of extenuating circumstances.

Appendix A - Course Schedule

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Appendix A - Course Schedule

Class	Date	Learning Focus	Evaluation	Lecture	Activity
1	Jan 12	Sustainable Development -societal and corporate context		Course Outline Introduction to sustainable development and the circular economy Introduction to corporate sustainability/ESG	The World in 2050
2	Jan 19	Sustainable products – overview impacts and benefits	Assignment 1 Introduced Choose topics	Product System Hot spots and impacts Sustainable Product Strategy	What is a Sustainable Product
3	Jan 26	Sustainable design concepts and tools (1)		Life cycle assessment, life cycle management, cradle to cradle 4Rs	Life Cycle Mapping

4	Feb. 2	Sustainable design concepts and tools (2)	Quiz 1	Eco-efficiency/effectiveness Total Cost of Ownership, Environmental Management Systems,	
5	Feb 9	Sustainable and eco-design strategies	Assignment 1 Due	Eco-Design Wheel Social responsibility considerations	Exploring Scenarios
6	Feb 16	Standards and guidelines	Assignment 2 introduced – Choose Topics	Design standards, manuals and guides	
7	Mar. 1	Design for Sustainability tools		Sustainable design tools and software	
8	Mar 8	Materials and sustainability		Sustainability Attributes of Materials	Responsible sourcing priority risks
9	Mar 15	Packaging	Quiz 2	Sustainable Packaging Coalition Guidelines	Packaging Redesign Exercise
10	Mar 22	Special topics		Trade-offs Social Life Cycle Assessment	
11	Apr 5	Assignment 2 presentations	Assignment 2 Due for all First set of presentations	Groups	
12	April 10 <i>Note this is a Wednesday and it is a make-up for the March 29th holiday</i>	Assignment 2 presentations (Cont'd) Reflections on sustainability and design	Assignment 2 – second set of presentations	Groups	