

**COURSE OUTLINE IDES 3107A • DESIGN AND SUSTAINABILITY • Winter (2025)**

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**Instructor:**                 **Kevin Brady**

KevinBrady@cunet.carleton.ca

Location: MC 3040.

Office Hours: Available upon request

**Teaching Assistant: Maria Choque**

[mariachoque@cmail.carleton.ca](mailto:mariachoque@cmail.carleton.ca)

**Course Time and Location:**

See Brightspace

**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**

### **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 the sustainability of the product. Results will be presented in the last two class sessions.

## **2 Quizzes (total of 20 % of course mark)**

Individually, marked in class. 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% Individual report)
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 will be returned to students with comments and explanations.

## **Required Materials**

### **Required Materials**

Students are not required to purchase textbooks or other learning materials for this course.

Recommended readings will be posted on Brightspace

## **Technology Requirements**

Please refer to the technology 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 coursework. <https://carleton.ca/id/student-info/computer-it-support/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 instructor's discretion.

If you are unable 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.

### **Late Submission of Assignments**

Students who do not hand in assignments on time will have their earned grade reduced by 2% per day at the instructor's discretion. If you foresee not meeting the submission due date and are requesting an extension, please provide your instructor with a minimum of 24 hours' notice.

### **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.

### **Health and Safety**

Students must participate in training to access all the SID Labs and Maker Space. Apart from this training, students are required to follow the health and safety standards of the School of Industrial Design as well as Carleton's health and safety standards. All materials related to SID health and safety are available here [Health and Safety](#) and it is expected that students review and understand these materials and apply these standards throughout their studies.

### **Use of Studio Spaces**

Access to studio space to attend courses and complete assignments is an important part of student success. To support access, specific studios have been designated to certain years and/or sections.

1<sup>st</sup> Year Studio Section A – Studio A

1<sup>st</sup> Year Studio Section B – Studio B

2<sup>nd</sup> Year Studio Section A – Studio A

2<sup>nd</sup> Year Studio Section B – Studio B

3<sup>rd</sup> Year Studio Section A & B – Studio C

4<sup>th</sup> Year Studio All Sections (Capstone and Minor) – Studio D

MDes Studio – MDes Studio

Students are welcome and encouraged to use their designated spaces to work during non-studio hours. Out of respect for your colleagues, instructors, and Carleton cleaning staff, ensure you leave the space in good condition. This includes cleaning your area and storing your items in your designated storage space. The School will not be responsible for items that are not stored properly.

## **Academic Integrity**

Carleton's Policy on Academic Integrity is available at: <https://carleton.ca/registrar/academic-integrity/> and covers the following violations, but is not limited to:

- *Plagiarism*
  - *Submitting work written 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*
  - *Attempting to read another student's exam paper*
  - *Speaking to another student (even if the subject matter is irrelevant to text)*
  - *Using material not authorized by the examiner*
- *Other Violations*
  - *Improper access to confidential information such as exams or test questions*
  - *Disruption of classroom activities or periods of instruction*
  - *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](#) before 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. Further information can be found here -

<https://carleton.ca/tls/teachingresources/generative-artificial-intelligence/recommendations-and-guidelines/>. Another useful resource is the Library's guide on AI tools - <https://library.carleton.ca/guides/subject/artificial-intelligence-ai-tools>.

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, or valuable information may be shared, all of which can greatly benefit the student's learning experience. As external professionals may be 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.

## Course Schedule

Class	Date	Learning Focus	Evaluation	Lecture	Activity
1	Jan 10	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 17	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 24	Sustainable design concepts and tools (1)		Life cycle assessment, life cycle management, cradle to cradle 4Rs	Life Cycle Mapping
4	Jan 31	Sustainable design concepts and tools (2)	Quiz 1	Eco-efficiency/effectiveness Total Cost of Ownership, Environmental Management Systems,	
5	Feb 7	Sustainable and eco-design strategies	<b>Quiz 1 Assignment 1 Due Feb 12</b>	Eco-Design Wheel Social responsibility considerations	Exploring Scenarios
6	Feb 14	Standards and guidelines	Assignment 2 introduced – Choose Topics	Design standards, manuals and guides	



<b>7</b>	Feb 28	Design for Sustainability tools		Sustainable design tools and software	
<b>8</b>	Mar 7	Materials and sustainability		Sustainability Attributes of Materials	Responsible sourcing priority risks
<b>9</b>	Mar 14	Packaging	Quiz 2	Sustainable Packaging Coalition Guidelines	Packaging Redesign Exercise
<b>10</b>	Mar 21	Special topics		Trade-offs Social Life Cycle Assessment	
<b>11</b>	Mar 28	Assignment 2 presentations	Assignment 2 Due for all  First set of presentations	Groups	
<b>12</b>	April 4	Assignment 2 presentations (Cont'd)  Reflections on sustainability and design	Assignment 2 – second set of presentations	Groups	