CARLETON UNIVERSITY
SCHOOL OF INDUSTRIAL DESIGN

COURSE OUTLINE IDES 3302A • PROJECTS IIIB • Winter (2024)

Instructor: **Ben Kaufmann**

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Location: TBD

Office Hours: During class hours or by appointment

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Office Hours: During class hours or by appointment

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

Introduction to the principles of innovation as found in industrial design. Invention, innovation, entrepreneurship, basic mechanisms. The design project(s) explore some or all of the design principles covered in the lectures.

Includes: Experiential Learning Activity.
Precludes additional credit for IDES 3301 (no longer offered).
Prerequisite(s): IDES 3300 or IDES 3310 or permission of the School of Industrial Design.
Studio and lectures six hours a week.

Learning Outcomes

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

1. Generate creative and compelling design solutions through the meeting to the deliverables presented in a design brief.
2. Develop a final design solution that integrates a test protocol for quality assurance of a specific product requirement and a detailed assembly drawing with Bill of Materials.
3. Demonstrate an ability to develop prototypes to explore, prove and understand ergonomics, materials, and structures as a collective requirement.
4. Design and test a mechanism incorporating movement through sliding, hinging, or another relevant principle of movement.
5. Recognize the relationships between aesthetic, ergonomic, and usability to develop an industrial design solution.
6. Employ research synthesis tools- to Identify latent user needs and contextual concerns.
7. Apply the given business and/or technological requirements presented by a third party to develop a product opportunity.
8. Demonstrate professional behavior as an industrial designer.

Course Deliverables

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

1. Major Project - **65%**

With a design business perspective, design research will be conducted to define a product opportunity for a defined user group and context of use. Design research will reveal an opportunity to develop a dynamic, structural, sustainable, ergonomic and aesthetic consumer product design that is validated and optimized through user research, prototyping, prototype testing and analysis.

Deliverables:

- Phase 1 – Research Synthesis - 15%
- Phase 1 – Midterm Review – Consultations / Feedback
- Phase 2 – Model & Mechanism Prototype Review - 30%
- Phase 3 – Technical Drawings, Specifications and Major Project Presentation - 20%

2. Minor Project - **25%**

- Presentation slides/boards - 15%
- Model/prototypes - 10%

3. Professionalism and attendance - **10%**

See Appendix A for deliverable and course schedule:

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.

General ID Tools/supplies: Sketchbook or 1 pack of HP bright white paper, markers, pens, pencils, Olfa segmented knife (or similar), scissors, rulers, square, glue gun, safety glasses, dust masks etc.

Desktop modeling materials as needed (eg. popsicle sticks, wire, blue foam, foam core, modeling clay, hot glue sticks, roll of masking tape, sand paper (120/220grit wet/dry)

Prototyping and modeling: As required: Blue foam, acrylic or PETG (laser cutting), plywood, structural lumber, tubular steel/aluminum, basswood, Renshape foam, common fasteners and hardware, 3d printing materials, textiles.

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 10% 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

Date	Studio Activities	Formal Deliverables
#1 Jan 9	Presentation • Introductions • Review the course outline and outcomes • Introduce the major project, project brief, CPD's and project planning • Professionalism and communication • Market and user research Activities: • Project planning • CPD's • Research – market analysis, defining the user and context	
#2 Jan 16	Presentation: • Design research, story boards, mood boards, defining the user(s) and context of use Activities: • Research, project plan development, counter brief, mood board and story board development, define the user and the context of use	
#3 Jan 23	Review: • Phase 1 research review Presentation • Prototyping, materials and mechanisms Activities:	• Phase 1 research Synthesis / Mood Board / Presentation Slide deck/process book

	• Ongoing research • Ideation and early prototyping • CPD updates	• Present formalized project plan and CPD's
#4 Jan 30	Guest Lecture: Tentative Presentation • Prototype testing, quality assurance test protocol and design requirements review Activities: • Ideation and mechanism development • Activities: Project planning and project definition, CPD development	
#5 Feb 6	Review: • Mid-Project informal project presentation slides/process book Activities: • Informal project presentation updates • Shop time + concept refinement • Lo-fi mechanism exploration • Ergonomic prototyping and testing • 1 on 1 review and exploration	• Mid-Project project presentation (informal) slides/process book (concepts, prototypes, & research) • Project plan and CPD review
#6 Feb 13	Presentation • Fastening, mechanical components and joinery Activities: • Shop time - prototyping • 1 on 1 concept refinement, CPD + project plan check-in + updates • Mechanism and structural reviews • Testing prototypes • Quality assurance testing protocol	
Feb 20	STUDY BREAK	
#7 Feb 27	Presentation: • Product detailing & housekeeping Activities: • Shop time - models and mechanisms • 1-on 1 concept refinement – CPD + project plan check-in + updates • Final adjustments, details, assembly • Testing	
#8 Mar 5	Review: • Major Phase 2 review of model and mechanism prototypes • Process book/slides to compliment model Activities: • Work on deliverables for major phase 3	• Major Phase 2 review (Process book/slides update) • Scale model • Mechanism prototypes • Ergonomic prototypes

#9
Mar 12
	Presentation:
	• Project review, updates and planning status
	Activities:
	• Major Phase 3 – work session
	  ○ Material and component sourcing
	  ○ Specifications
	  ○ Technical Drawings
	  ○ 3D CAD model/assembly completion
	  ○ Quality Assurance
	• 1 on 1 review check in	

#10 Mar 19	Review: • Phase 3 – Presentation & process book/slides + Technical drawing review Presentation: • Introduction of the Minor Project Activities: • Research and concept development for Minor Project	• Major Project Phase 3 Presentation • Full process book printed + slides • Technical drawings & presentation materials
#11 Mar 26	Activities: • Work Session - Minor Project • 1 on 1 review check in	
#12 Apr 2	Review: • Minor Project Presentation Activities: • Final Check-in	• Minor Project Review and Presentation