

**COURSE OUTLINE IDES 3302A • PROJECTS IIIB • WINTER(2022)**

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**Instructor: Nathalie Tambay**

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Location: **In-Person (AP 448)**

Office Hours: Tues & Wed 9:30-4:30 Location Virtual and/or AP 434

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Office Hours: By appointment

**Time and Location:** Please refer to Carleton Central under Student Services – Registration – Search Schedule: [https://central.carleton.ca/prod/bwysched.p\\_select\\_term?wsea\\_code=EXT](https://central.carleton.ca/prod/bwysched.p_select_term?wsea_code=EXT)

### **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 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 a creative and compelling design solutions through meeting to the deliverables presented in a design brief.

2. Develop a final design solution which 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 other relevant principle of movement.
5. Recognize the relationships among aesthetic, ergonomic, and usability to develop an industrial design solution.
6. Employ research synthesis tools used in IDES 3601, 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.

### **Course Deliverables**

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

#### 1. Major Project - 75%

- Phase 1 – Furniture Model and Mechanism - 50%
- Phase 2 – Technical Drawings and Specifications - 25%

#### 2. Minor Project - 20%

- Submission to competition

#### 3. Professionalism - 5%

## **Major Project 75%**

### **Phase 1 – (7 weeks) Model and Mechanism 50%**

Beginning with the project brief and applying one of the four themes provided, students will design a piece of high-end furniture for a specific residential area. Further, the furniture piece will incorporate an innovative design by the student of a relevant movement by use of a mechanism such as hinging, sliding, or another displacement/adjustment feature. The goal of the project is to design and prototype a furniture piece that yields deliverables that meet the guidelines outlined in the [www.ideasxwood.it](http://www.ideasxwood.it) design competition.

Students will initially focus on ideation, mood-boards, radical innovation, and experimentation of motion-enabling mechanisms with theme-specific functionality. Prototypes and initial mock-ups to prove functionality will be done off-site and explored via Solidworks where appropriate. Exploration of latent user needs and context will be explored here also.

Further exploration of the initial design concept, of structural principles and mechanisms. Through an iterative modeling and prototyping approach, students will design and develop in detail the mechanism of the designed artifact resulting in either a final full or scale model prototype of the furniture piece with an accompanying or incorporated full-scale prototype of the mechanism. Phase 1 of the Major Project will culminate in a review of the finished model of the furniture piece and its respective mechanical movement component.

A detailed project description, including background, objectives, process, and evaluation criteria, will be detailed in Appendix B, which will be provided by the instructor during the term and before the design process.

### **Phase 2 - (2 weeks) Manufacturing Drawings, BOM, specifications 25%**

Having completed the furniture and mechanism model, students will answer to upcoming competition submission requirements for Minor Project 1 while finalizing technical drawings and manufacturing specifications for the Furniture design from Phase 1 using bottom-up approach to ensure an accurate representation in the drawings of the prototype.

A detailed project description, including background, objectives, process, and evaluation criteria, will be detailed in Appendix C, which will be provided by the instructor during the term and before the design process.

### **Minor 1 – Competition Submission of the Major Project 20%**

Renderings and boards needed for Competition submission will be evaluated and ultimately uploaded to the competition website.

A detailed project description, and evaluation criteria, will be detailed in Appendix D, which will be provided by the instructor during the term and before the due date.

## **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.

As needed for Prototype mechanism development and Furniture scale or full-size model.

Some materials and services are available for purchase from the Labs.

## **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 contribution.

## **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 which 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.

## **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 following topics below, refer to the link provided for more information: <https://students.carleton.ca/course-outline/>

- *Parental Leave*

- *Religious/Spiritual Obligation*
- *Academic Accommodations for Students with Disabilities*
- *Survivors of Sexual Violence*
- *Accommodations for Student Activities*

### **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**

#### **Week 1 – Jan 14,15**

- Review the Course Outline and Outcomes
- Miro
- Introduce the Major Project Brief – Theme Exploration
- Contextual Research –
- Review Competition Deliverables

- WBS – Presentation – Assignment / Activity/

### **Week 2 – Jan 20,21**

- Research and Design Explorations – Articles – Research activity
- Development of the Counter brief – Mood Board- team
- Ideation and Furniture /mechanism Development

### **Week 3 – Jan 27,28**

- Presentation - TBD
- Concept Generation
- Present Formalized WBS and Game plan
- Pattern Exercise
- Get materials list, sizes and lab time booked

### **Week 4 – Feb 3,4**

- Mid-Phase check-ins and informal presentation
- WBS and Game plan
- Concept technical development

### **Week 5 – Feb 10,11**

- Shop time – 1-on –1 furniture concept refinement
- Lo-fi mechanism exploration

**Week 6 – Feb 17,18**

- Shop time – 1-on –1 furniture concept refinement
- Mechanism and Structural Reviews/test

-----=**STUDY BREAK**-----

**Week 7 – Mar 3,4**

- Shop time – 1-on –1 furniture concept refinement
- Final adjustments, details, assembly

**Week 8 – Mar 10,11**

- Major Phase 1 Review – Model and Mechanism

**Week 9 – Mar 17,18**

- **Major Phase 2 – begins**
  - Material and component sourcing
  - Specifications
  - Technical Drawings
  - 3D model/assembly completion
  - Quality Assurance

**Week 10 – Mar 24,25**

- Pin Up and Peer Review / feedback



- Streamline and align to client requirements per original project Brief

**Week 11 – Mar 31, April 01**

- Revisions from Feedback and Project Submission prep work
- Studio time for Renderings and High-end Presentation Boards
- Mood Board

**Week 12 – April 07**

- Minor -Review of Submission materials
- Submission to Competition - Final Check-in and Sign off