

**COURSE OUTLINE IDES 2105A • COMPUTER APPLICATIONS B • Winter (2025)**

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Location: 2498 ME

Office Hours: **Available upon request**

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**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**

Provides industrial design students with working knowledge of design related three-dimensional (3D) computer applications, such as solid and surface modelling computer-aided design (CAD) software. Labs and projects are oriented towards building a foundation in software and group work skills for studio courses.

Includes: Experiential Learning Activity

Prerequisite(s): IDES 2104.

Lecture and tutorials three hours a week.

**Learning Outcomes**

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

1. Identify the different digital three-dimensional (3D) file types and their optimal uses within industry-relevant software applications.
2. Apply the use of 3D Computer-Aided Design (CAD) software in the industrial design problem-solving process.
3. Develop parametric part and assembly models utilizing industry-standard 3D CAD software.
4. Execute detailed technical drawings for parts and assemblies including standard drawing views and annotations utilizing industry-standard 3D CAD software.
5. Illustrate a basic understanding of allowances and tolerances.
6. Produce product renderings utilizing industry-standard 3D rendering software.
7. Understand the basics of 3D scanning and how it can be used to develop 3D CAD geometry.
8. Identify other relevant 3D computer applications for design.
9. Create assignment/project submissions that meet professional and technical standards.
10. Effectively work within a design team environment while demonstrating professionalism as an industrial designer.

## **Course Deliverables**

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

Weekly Lab Exercises 30%

There will be 10 lab exercises to complete in class (3% each). These labs will focus on experiential learning and group work to develop skills using SolidWorks for creating parametric models and detailed technical drawings, and Keyshot for creating photo-realistic renderings.

CAD Project 50%

This project runs throughout the entire semester and is broken down into four phases, all of which build upon the skills gained from previous courses and the weekly lab exercises in class. It is about developing 3D CAD software skills using SolidWorks and Keyshot while practicing the use of computer applications as a tool within the overall design process.

<i>Product Proposal</i>	(10%)
<i>Parts &amp; Assemblies</i>	(20%)
<i>Technical Drawings</i>	(10%)
<i>Renderings</i>	(10%)

Take-home Exam 15%

This final exam will test your working knowledge of design-related 3D computer applications based on the content from this course and the learning outcomes. It is broken down into two parts: (1) a written quiz and (2) a small CAD assignment.

Participation & Professionalism 5%

A discretionary grade based on the student's observed performance and conduct in class. It is a reflection of the student's soft skills that may not be captured in deliverables, but rather through their actions and behaviors. Attendance, communication, and teamwork play a major role in this evaluation.

### **Student Access to Quiz, Test, and Exam Papers**

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

### **Required Materials**

All Materials required for the course and their costs are listed below. Please note some materials costs are dependent on the project and the materials chosen so a range listing minimum and maximum values will be given..

#### *Computer Software:*

The latest versions of the following software (provided by the School of Industrial Design at no cost) must be installed on your personal laptop computer before the first scheduled class:

- SolidWorks
- KeyShot
- Illustrator
- Photoshop

#### *Computer Input Device:*

- Basic computer mouse (left+right button with scroll wheel at minimum) (Cost: ~\$30.00)

### *Measuring Tools:*

- Caliper (Cost: ~\$30.00)
- Ruler (Cost: ~\$10.00)
- Sewing/Tailor Tape Measure (Cost: ~\$5.00)

### *Sketching Tools:*

- Sketchbook and/or paper (Cost: ~\$10.00)
- Pen(s), pencil(s), and/or marker(s) (Cost: ~\$3.00 to \$50.00 (range))

### *Project Specific Materials:*

Other specific materials will be dependent upon each student's project. You must be prepared to purchase or acquire the appropriate materials necessary for you to complete your own work throughout the term. This can range anywhere from \$0.00 to \$50.00.

## **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 **10%** 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

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

Date	Topic	Lab Activity	Project Deliverables
Week 1 Jan 7	Course Overview & Introduction SolidWorks: Fundamentals	Lab 1: Initials	
Week 2 Jan 14	SolidWorks: Parts	Lab 2: LEGO Lab 3: Water Bottle	
Week 3 Jan 21	SolidWorks: Parts	Lab 4: iPod Classic	CAD Project: Product Proposal (due <b>Tues, Jan 21 @ 2:35pm</b> )
Week 4 Jan 28	SolidWorks: Parts	Lab 5: Earbuds	
Week 5 Feb 4	SolidWorks: Parts	Lab 6: iPod Classic Revisions & Case	
Week 6 Feb 11	SolidWorks: Assemblies	Lab 7: LEGO	
Feb 18	Winter Break		
Week 7 Feb 25	SolidWorks: Assemblies	CAD Project Working Period	CAD Project: Parts & Assemblies (Progress)
Week 8 Mar 4	SolidWorks: Drawings	Lab 8: LEGO	
Week 9 Mar 11	SolidWorks: Drawings	Lab 9: LEGO	CAD Project: Parts & Assemblies (due <b>Tues, Mar 11 @ 2:35pm</b> )
Week 10 Mar 18	Keyshot: Renderings	Lab 10: iPod Classic & Accessories	
Week 11 Mar 25	Keyshot: Renderings	CAD Project Working Period	CAD Project: Technical Drawings (due <b>Tues, Mar 25 @ 11:59pm</b> )
Week 12 Apr 1	3D Scanning	CAD Project Working Period	
Week 13 Apr 8	No Class		CAD Project: Renderings (due <b>Tues, Apr 8 @ 11:59pm</b> )
Apr 26	Take-Home Exam		