

IDES 4101A • ADV. STUDIES IN MANUFACTURING

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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

Advanced manufacturing concepts and workflows are examined through a series of workshops and minor projects utilizing state-of-the-art equipment.

Includes: Experiential Learning Activity.

Prerequisite(s): IDES 2101 and IDES 2102.

Lectures or laboratory three hours a week.

Learning Outcomes

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

1. Understand CNC hardware and use CAM software to generate programs to manufacture basic parts using appropriate machining strategies.
2. Demonstrate advanced workflow utilizing various digital and analog tools in a DFM project.
3. Understand the tools and process of capturing a 3D scan of an existing object and manipulating that scan for various workflows e.g. reverse engineering, renderings, redesign, underlays, etc.
4. Create a typical package of documentation to be used in the request for quote (RFQ) process and better understand communication between designer and manufacturer.
5. Document their process-work to enhance their portfolio and demonstrate their skills in specialized areas of design.

Course Deliverables

These are the deliverables for this course. For more detailed information, please see the Course Schedule, **IDES 4101A ADV. STUDIES IN MANUFACTURING F25 - Paul Durocher - Course Schedule**, in Brightspace.

<u>Assignment</u>	<u>Grading</u>
Lab 1: Manual CNC programming	10% (Individual)
Lab 2: 2.5D CAM programming	15% (Individual)
Lab 3: 3D CAM programming (CNC)	25% (Group)
Lab 4: 3D scanning	10% (Group / individual)
Lab 5: Technical drawing	20% (Individual)
Lab 6 Portfolio page / Report	10% (Individual)
<u>Attendance / Participation</u>	<u>10% (individual)</u>
Total	100%

Student Access to Exam

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

Cost of Educational 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.

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

An Autodesk student account must be set up to install Fusion 360 which will be used throughout the course. There is no cost to setup this account.

Technology Requirements

Please refer to the technology requirements on the School of Industrial Design Website (<https://carleton.ca/id/student-info/it-support/technology-requirements/>). You may be asked by your instructor to refer to Brightspace for other information or requirements related to coursework.

Individual/Group Work

Courses may include individual and group work, and the majority of the grade must reflect individual work. This will support the assessment of individual performance, which may be difficult to determine in group projects. It is also 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 **15%** per day at the instructor's discretion. Submissions more than 3 days late will not be accepted without the instructor's consent. 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. Students are welcome and encouraged to use available studio 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 whenever you are leaving the 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](https://carleton.ca/registrar/academic-integrity/) before conducting any work at the University.

Use of Artificial Intelligence (AI) Technologies

AI use in this course: Students may use AI tools for basic word processing and formatting functions, including:

- Grammar and spell checking (e.g., Grammarly, Microsoft Word Editor).
- Basic formatting and design suggestions (e.g., Microsoft Word's formatting tools, PowerPoint Design editor).

Documenting AI use: It is not necessary to document the use of AI for the permitted purposes listed above. If you have questions about a specific use of AI that isn't listed above, please consult your instructor.

Why have I adopted this policy? This policy ensures that student voices and ideas are prioritized and authentically represented, maintaining the integrity of the work produced by students while allowing basic support to enhance clarity, correctness, layout, and flow of ideas. The goal of adopting a limited use of AI is to help students develop foundational skills in writing and critical thinking by practicing substantive content creation without relying on AI support.

Limitations: Students may not use AI for the following tasks: • Programming • Design content generation including 2D, 3D, raster, or vector assets • Generation of written documents including but not limited to, reports, papers, analyses, or assignments.

As our understanding of the uses of AI and its relationship to student work and academic integrity continue to evolve, students are required to discuss their use of AI in any circumstance not described here with the course instructor to ensure it supports the learning goals for the course. Students can

access resources related to citing Generative AI on the [MacOdrum Library website](#). Plus, additional AI resources are also available on Carleton's [Artificial Intelligence Hub](#).

Requests for Academic Accommodation

Carleton is committed to providing academic accessibility for all individuals. You may require special arrangements to meet your academic obligations during the term. The accommodation request processes, including information about the *Academic Consideration Policy for Students in Medical and Other Extenuating Circumstances*, are outlined on the Academic Accommodations website (students.carleton.ca/course-outline). The website covers the below topics.

Topics:

- Pregnancy Obligations
- Religious/Spiritual Obligation
- Academic Accommodations for Students with Disabilities
- Survivors of Sexual Violence
- Accommodation 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.

Course Schedule

Please refer to Brightspace for a detailed Course Schedule: **IDES 4101A ADV. STUDIES IN MANUFACTURING F25 - Paul Durocher- Course Schedule**.