COURSE OUTLINE IDES 3302 • PROJECTS III B • WINTER (2020)

Instructor: WonJoon Chung / Thomas Garvey

wonjoonchung@cunet.carleton.ca

Room 2492 Mackenzie (ME).

Tel. 613 • 520 • 2600, ext. 6606

Office Hours: During studio/lecture hours or by appointment.

Teaching Assistant: Eric Wolfe

ericwolfe@cmail.carleton.ca

During studio/lecture hours of by appointment.

Time and Location: Please refer to Carleton Central under Student Services – Registration – Search Schedule: https://admissions.carleton.ca/faqs/where-can-i-find-the-class-schedule/

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 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.

The 1st Project: Designing a Bird House (7 weeks)

Birds are an important part of our urban ecology, controlling insect populations and other pests, pollinating flowers, and bringing nature into our lives. Ontario is a large province with a high diversity of birds and bird habitats. Birds like Ontario for many of the same reasons we do — our extensive park system, riverfront green spaces, leafy streets, and yards, etc. In this project, you are designing unconventional, bird-friendly, mass-produced birdhouse for a selected species and human users. A detailed project description, including background, objectives, process and evaluation criteria, will be detailed in Appendix B which will be provided by the instructor in the first week of the term.
2nd Project (2 weeks)

In this project, students will focus on the technical drawing of the outcome of their 1st project in terms of detail technical drawings and General assembly drawing. 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 previous to the design process.

3rd Project (3 weeks)

TBD

Evaluation information

Evaluation will be based on the quality of the design outcomes and on the demonstration of the required design skills. The evaluation is distributed as following:

- 1st Project 50%
- 2nd Project 20%
- 3rd Project 30%

Project 1 will be evaluated for:

- Design Research (Research report) 15%
- Bird-friendliness (Functionality) 15%
- Product Semantics (rational aesthetics) 15%
- Manufacturing considerations 15%
- The quality of the final poster and Model 40%

Student Access to Quiz, Test and Exam Papers

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

Required Materials

Standard design studio tools to enable note taking, design research, concept generation, sketching, design mock-ups, cad design development and their presentation (slides/boards). You may be asked by your instructor or teaching assistant to refer to cuLearn for a more comprehensive list of required materials.
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 cuLearn 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 receive a 10% grade reduction for that review.

If you are not able to attend a Review/Presentation, foresee arriving late or need to leave before it is complete, please e-mail 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. Failure to submit within 3 days, without approval from the instructor, will result in a grade of F.

Deliverable should be hand in according to given instructions: failure to follow the instructions will result in a 10% grade reduction for that deliverable.

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/](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/](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 cuLearn. 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. Every effort will be made to inform students in as timely a manner as possible.

**Appendix A - Course Schedule**

<table>
<thead>
<tr>
<th>WEEK</th>
<th>Phase</th>
<th>Topic</th>
<th>Studio</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wk1</td>
<td>Introduction &amp; Research</td>
<td>Introduction to the course, and to the 1st project.</td>
<td>Investigate the bird you chose in terms of their habitat, unique characteristics, living patterns and distinctive features and nesting, etc.</td>
<td>Summarize what nesting birds need and how best to meet those needs with the house you design is required.</td>
</tr>
<tr>
<td>Jn. 10</td>
<td>Design Research</td>
<td>Types of Design research &amp; Research report</td>
<td>Sharing and summarizing data through group discussion</td>
<td>Research Report. Key data must be summarized with infographics in the report.</td>
</tr>
<tr>
<td>Wk2</td>
<td>sketching for ideation</td>
<td>Ideas generation and visualization in 2D</td>
<td>Develop several alternative ideas through Idea sketches</td>
<td>Explorative idea sketches of alternative design ideas</td>
</tr>
<tr>
<td>Jn. 17</td>
<td>Ideation by prototyping</td>
<td>Ideas generation and visualization in 3D</td>
<td>Prototypes to test design ideas</td>
<td>Quick and dirty Prototypes</td>
</tr>
<tr>
<td>Wk3</td>
<td>Design iteration (Individual review)</td>
<td>Design iteration through test, modify, and change</td>
<td>Idea refinement and specification</td>
<td>User scenario and specific modeling plan</td>
</tr>
<tr>
<td>Jn. 31</td>
<td>Model making</td>
<td>Final model making</td>
<td>Work on physical and digital models, rendering, and presentation boards.</td>
<td></td>
</tr>
<tr>
<td>Feb. 07</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wk5</td>
<td>Project 1: Final presentation</td>
<td>Introduction to the 2nd project.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wk6</td>
<td>Wk28</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb. 14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FEBRUARY 17-21 WINTER BREAK - NO CLASSES</td>
<td>Final Model and Poster</td>
<td>Final Model and Poster</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix B – The 1st Project Guideline: Designing a Birdhouse

Background

Birds are an important part of our urban ecology, controlling insect populations and other pests, pollinating flowers, and bringing nature into our lives. Ontario is a large province with a high diversity of birds and bird habitats. Birds like Ontario for many of the same reasons we do — our extensive park system, riverfront green spaces, leafy streets, and yards, etc. In this project, you will design not conventional, aesthetically pleasing, functionally appropriate, mass-produced birdhouse for a selected species and human users.

Design Focuses

Building a birdhouse may seem like an easy project, but there is much more to an attractive, bird-friendly house than a wooden box with an entrance hole.

1. Research

In the beginning, you are doing research to understand what nesting birds need and how best to meet those needs with the house you construct is required. Just as home buyers look for specific features when house shopping such as a large kitchen, enough bedrooms, or sufficient garage space, birds also look for certain features that affect which birds will use a birdhouse such as entrance hole size, overall cavity depth, and house height, interior floor dimensions, general house shape and design, materials used, house location and mounting style. Also, the collected data must be presented through graphical representation (refers to http://infosthetics.com/archives/2006/09 as examples). Whereas the customer is “a bird”, please consider other stakeholders and research methods from IDES 3601.

2. Bird-friendliness

To design a more bird-friendly birdhouse, you need to consider some factors below.

- Ventilation to reduce heat and keep nestlings comfortable.
- Drainage system to remove waste and water and help with ventilation.
- Deep roof overhang or countersunk hole to keep rain out of the house.
- Natural building materials (untreated hardwood is best).
- Avoid toxic paint or varnish the house interior.
• Avoid houses with perches that make it easier for predators to reach nestlings.
• A hinged roof or side door that can be opened for seasonal cleaning, etc.

3. **Product Semantics (aesthetics)**
Your birdhouse design should not be a conventional but innovative and attention-grabbing design that is also harmonized with the surrounding context. Refer to what you have learned in previous courses such as IDES 1001 (Product Analysis). Not only does your visual aspects need to be original, but it also needs to be rationalized in terms of formal and visual qualities including colors and formal details.

4. **Manufacturability**
Assume that your design will be a mass-produced birdhouse. Consider materials, cost, packaging, and develop a preliminary drawing called a General Arrangement drawing. This is similar to a General Assembly drawing, but it does not have as much detail and mainly consists of drawing the entire product, with a cross section and specifying what types of materials are going to be used. This is also often called a “layout” and precedes the final design drawings that will be produced in the second project.

**Bird Species**

_The six birds below are native species in the southern Ontario region that like to nest in birdhouses._

1. Cardinal
2. Chickadee
3. House Sparrow
4. Blue Jay
5. Purple Martin
6. Tree swallow

**To do list.**

**Week 1. Data gathering**
Introduction to the course, and to the 1st project. Choose a species and gather relevant data through desk research & Literature review process. Investigate the bird you chose in terms of their habitat, unique characteristics, living patterns and distinctive features and nesting, etc. Summarize what nesting birds need and how best to meet those needs with the house you design is required. Please note that the library has several bird books. Also the Nature Museum has an excellent bird display and has free admission on Thursday evening.

**Week 2. Data collection (01.17)**
Sharing and summarizing data through group discussion in a class. The relevant data must be summarized with infographics in a report.

**Week 3. Early Ideation – sketching for ideation**
Develop several design ideas through sketches and quick prototypes. Explorative sketches are mandatory and lo-fi prototypes are optional.

**Week 4. Testing alternatives – Prototyping for ideation**

Develop quick and dirty prototypes to test alternative design ideas.

**Week 5. Idea refinement**

Some of initial ideas will be modified and refined to specific design concept. Idea sketches, prototypes and CAD will be used as tools to develop potential design ideas further.

**Week 6. Model making**

Final design is specified, and students are making a physical model to represent the definitive design solutions. This is to represent important aspects of the proposed designs in sufficient detail to evaluate the integrity of final solutions. Please note that we expect the final models to be mostly hand made in the shops, whereas you may select to 3D print some detailed parts.

**Week 7. Winter Break**

Develop a final poster and finalize the model.

**Week 8. Final presentation**

Present a final poster and a final model