Course Description:
To help start the year and as a segway to the foundation of CPDs, we will read, review and discuss a short required reading. The book is Drive by Daniel Pink (pg 1 to 145) which delves into what motivates right brained human designers …… that’s us!
Please get it and read it prior to the first class on Sept 12th.


This course is about effectively defining, managing and designing a sophisticated physical product to address specific needs. The designer will select a product topic (see below), will define a need within that topic, fully define it’s requirements and then develop that product through the term with the goal of producing a compelling product for your portfolio …… and, maybe an international competition award?

A key objective is to build design and analytical expertise while developing a strong portfolio piece. The course will be run on a coaching model where the instructor(s) will help guide the individual designers to define and take ownership of the product through the use of Critical Project Drivers (CPDs).

CPDs are determined by asking questions related to Quality, Timing, Cost and Risk (QTCR) in order to understand and meet the needs and requirements of all stakeholders as well as the product goals, opportunities and constraints. These are compiled in a hierarchy of importance into a CPD document. CPDs will be considered as a living document and can be renegotiated with agreement from all stakeholders based on discovered challenges or new opportunity potential.

Designers will then design a product solution to address the CPDs. Designers are expected to include research, conceptual work, development mockups, design tuning iterations, final design with 3D CAD and renderings. Efficient and creative problem solving will be required to bring
forward an innovative, well considered design solution that addresses the CPDs. Designers will present their progress during in-class reviews. One on one interaction/coaching with the instructor(s) will be ongoing. Deliverables include presentations of development progress at the identified project phases (see below).

**Project Topics:**
Project should qualify for the International Housewares Association (IHA) Student Design Competition. See the link [http://www.housewares.org/show/sdc](http://www.housewares.org/show/sdc) to the 2019 competition requirements. The deadline to submit to the competition online is December the 18th

Designers will be asked to select one of the topic areas indicated below. Ideally, there would be approximately an equal number of designers for each topic. Designers will need to identify a specific opportunity within the selected topic. The product must not require the use of a horizontal surface, and as such, it saves space or makes use of under utilized space.

This opportunity will need to be captured in a CPD that defines the design goals and constraints.

**General Theme:** A product that has the potential to **SAVE A LIFE** or **PROTECT A LIFE**

- should contain electrics, electronics or a mechanical mechanism of some sort
- can be evolutionary or revolutionary or cross pollinate a technology to a different use
- should work for young and old and/or your identified target market
- should assist with disruption or disaster or outage or fire or sickness or displacement or emergency travel.
- could be designed using soft goods and/or rigid housings.
- size limitation; it should fit in the palms of your hands(-ish) to enhance small space living.
- ideally, it would fit within IHA competition categories.

1. A product that assists a person/people to organize personal items in the home. This could be a light or offer charging, or other electronic function(s). Maybe phone, charging device, eyeglasses, medicines/pills, mobility aid (e.g. cane), .... other, etc.

2. In the context of wildfires, floods, earthquakes or other natural (or unnatural) events, a compact, portable and cost affordable product that would provide a 1 to 2 minute emergency air supply. To allow a person to escape a burning space, escape a vehicle that has gone underwater and/or provide oxygen for a heart attack victim ...

3. Safe cannabis storage (or concealment) is an emerging need. Its use is becoming more mainstream and legally accepted in an increasing number of countries. It can be dangerous in the hands of children and ensuring that it is used only by those intended to use it is desirable. There are opportunities for products that respond to these new needs.
4. A product that enhances the usefulness of an outdoor living area such as a backyard or an apartment balcony. Consider functional features that enhance the time spent in these limited spaces while having a safety component to it.

5. Other opportunity/product spaces will be considered with a good rationale and justification for its need from the student designer. It must have a similar level of complexity to the suggested projects.

Learning Outcomes:

1. Define product context, understand product space, understand the competition, generate the product definition and design a compelling product.

2. Develop an iterative approach that includes divergent and convergent design thinking and deliverables as shown in the Double Diamond model (UK Design Council)

3. Develop, prepare and be able to present a great portfolio piece.

4. Set the context and be able to make the project relevant to a portfolio interviewer (or, competition judge)

5. Work within an agreed to space and time frame (as would be expected in a professional design studio) in a collaborative fashion within the coaching model.

6. Demonstrate managing and working within design constraints using the Critical Project Driver method (CPDs).

7. Ask relevant/guiding questions and be able to take notes to capture relevant key points

8. To manage a project with multiple stakeholders.

9. Develop a presentation approach/style that engages the intended viewer to key design issues.

10. Apply industrial design sketching techniques and methods to demonstrate breadth of ideation, and refining concepts through iterations that are appropriately presented.

11. Create physical prototypes at different levels of fidelity to explore, test and verify design approaches and solutions.

12. Apply digital design software in the design process, with emphasis on testing alternative ideas through professional rendering, and technical drawings to communicate the final design intent.

13. Show the development path with research, product definition, constraints, design progression, mock-ups, final design, A + B surface CAD and CAD renderings (including product graphics) and summary presentation boards of their project.

14. Produce process documentation for competition submission

15. Be able to self assess on project progress and be able to self mark after identified presentations
## Schedule and Deliverables:

<table>
<thead>
<tr>
<th>Class date</th>
<th>#</th>
<th>Class Goals/Lecture</th>
<th>Deliverable(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 12 A + B</td>
<td>1</td>
<td>Class A+B Introductions. 1. W5+H 2. Quality, Timing, Cost + Risk (QTCR) 3. Intro to CPDs. 4. Daniel Pink’s Drive (DP). 5. Coaching 6. Self-marking 7. Housewares competition entry 8. Critical thinking</td>
<td>1. Select a Project Topic from the list provided. This is the focus for your term project. Identify a problem area within this space that requires a new product solution. What do users currently do in the absence of your product? Research the issue, and create a CPD set that defines the problem and opportunity. CPDs are detailed constraints and goals on a single page.</td>
</tr>
<tr>
<td>Sept 19 A + B</td>
<td>2</td>
<td>Class A+B Discuss DP Drive book. Review CPDs with classmates/coaches</td>
<td>Full class discussion on Drive. Have your Drive book at hand. Everyone will present one idea/finding/thought that resonates with you from the book - no duplicates</td>
</tr>
<tr>
<td>Sept 25 B</td>
<td>3</td>
<td>Studio class when not presenting with your team</td>
<td>1. CPD presentation to Team: Present the CPDs in detail that will guide the development of your selected project along with research identifying a specific compelling problem/ opportunity and its competitive difference.</td>
</tr>
<tr>
<td>Oct 02 B</td>
<td>4</td>
<td>Morning discussion. Sit-down with coach</td>
<td>Work in studio</td>
</tr>
<tr>
<td>Oct 09 B</td>
<td>5</td>
<td>Presentations</td>
<td>1. Concept Presentation to Class: Present 3 Concepts and communicate how they address the CPDs. (8+3 mins Qs) Consider and present the strength and weaknesses of each direction in relation to satisfying the CPDs. Choose concept direction to proceed with. 2. Deliverable: Hand in slide deck before midnight deadline</td>
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<tr>
<td>Oct 16 B</td>
<td>6</td>
<td>Morning Discussion. Sit-down with coach</td>
<td>Work in studio</td>
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<tr>
<td>BREAK</td>
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<tr>
<td>Oct 30 B</td>
<td>7</td>
<td>Morning Discussion. Sit-down with coach</td>
<td>Work in studio / or shops</td>
</tr>
<tr>
<td>Date</td>
<td>Event Description</td>
<td>Details</td>
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| Nov 06 B   | Presentations                                                                     | 1. **Preliminary Design presentation to Team:** Show progress on the selected concept direction. Present your development progression with mockups/ prototypes/ sketches, etc. Highlight outstanding issues and how they will be explored/addressed to arrive at the final design. Reference CPDs. Show slide deck+physical.  
2. **Deliverable:** Hand in presentation slide deck by 11:59 pm deadline |
| Nov 07 A   |                                                                                   |                                                                                                                                          |
| Nov 13 B   | Morning Discussion. Sit-down with coach                                           | Work in studio / or shops                                                                                                             |
| Nov 14 A   |                                                                                   |                                                                                                                                          |
| Nov 20 B   | Presentations and studio work                                                     | 1. **Working Presentation only to Instructors:** Explain highlights of the development path. Show final solution approach and identify remaining areas to be designed. Presentation Format is informal but comprehensive and goal oriented. Show logical advancement/ iterations with prototypes. (6 mins).  
2. **Deliverable:** Hand in presentation slide deck by 11:59 pm deadline   |
| Nov 21 A   |                                                                                   |                                                                                                                                          |
| Nov 27 B   | Morning Discussion. Sit-down with coach                                           | Work in studio / or shops                                                                                                             |
| Nov 28 A   |                                                                                   |                                                                                                                                          |
| Dec 04 B   | Discuss the Housewares Competition entry. Wrap up session and how can we do better | **REVIEW/ Full Presentation to Class:** Final design solution. Slides + physical prototypes (8+3 mins Qs). Highlight early research, and with in depth presentation on inprogress interactions leading to final design solution as guided by CPDs. Include key models, CAD details and product rendering. **Tech Drawings required:** General assembly drawing and exploded view. **Self evaluation to be on:** Complexity, evolution to address CPDs, design execution, presentation **Hand in presentation by 11:59 pm.** |
| Dec 05 A   |                                                                                   |                                                                                                                                          |
| Ongoing    | Term attendance, advanced notification if absent, ongoing note taking of key action tracking, presentations that meet timing, ongoing use of CPDs and in-class participation. |                                                                                                                                          |
| Dec 18     | IHA Competition Deadline                                                          | [http://www.housewares.org/show/sdc](http://www.housewares.org/show/sdc)                                                             |

**Total Marks:** 100
The fine print:

Course Completion and Evaluation Information:
See evaluation and marking information in the outline above.

Course Completion Requirements
To be eligible to pass the course, students must complete all assignments, presentations, be present and participate.

Required Materials
The above mentioned book will be required for the first class. Standard Design Studio tools to enable note taking, sketching, concept generation, design research, design mockups, CAD design development and their presentation (slides/boards).

1. General Course Information And Scheduling
See Schedule and Deliverables chart above.

2. General Course Content Information
See Schedule and Deliverables chart above.

3. Particular Course Information And Scheduling
See Schedule and Deliverables chart above.

4. Course Completion And Evaluation Information
Schedule and Deliverables
See chart above.

Review Attendance
Attendance at scheduled SID reviews is mandatory. These are equivalent to exams in IDES courses when indicated in the course outline. Failure to attend will result in a grade of F. If you are not able to attend a review, you are required to call the General Office (613-520-5672) and/or send an email to id@carleton.ca to leave a message in advance. A comprehensive medical certificate or other documentation to substantiate the absence must be submitted as soon as possible after the review. The documentation must state the date of illness onset, the expected date of recovery, and the extent to which the student is incapacitated. The student is also required to set up a meeting with the instructor as soon as he or she is well enough to discuss and schedule an alternative date. Any student in the review should submit materials for presentation and present as scheduled. In addition, a student who does not remain for the complete review session, who does not
present as scheduled, or who arrives late for the review, without approval from the instructor, will receive a 10% grade reduction for that review.

Late Submission of Deliverables
All deliverables submitted late will accrue a 10% per day deduction from the determined grade, to a maximum of 3 days, from the original deadline time and date. Failure to submit within 3 days, without approval from the instructor, will result in a grade of F.

Student Access to Quiz, Test, and Exam Papers
Examinations are for evaluation purposes only and will not be returned to the student.

5. STUDENT CONSIDERATIONS AND RESPONSIBILITIES
Academic Accommodation (Equity Services)
You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

**Pregnancy obligation:** write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit: http://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

**Religious obligation:** write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit: http://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

**Academic Accommodations for Students with Disabilities:** The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). Requests made within two weeks will be reviewed on a case-by-case basis. After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website (www.carleton.ca/pmc) for the deadline to request accommodations for the formally-scheduled exam (if applicable).

Instructional Offenses / Plagiarism
The regulations of the university require that we bring to your attention regulations on Instructional Offenses, descriptions of which can be found in the current Academic Integrity Policy available on the Student Affairs website. The policy governs the academic behavior of students. At the same time it seems that students do not always understand the meaning of plagiarism and how to avoid it. In industrial design, ideas and concepts come from a multitude of sources to be modified and utilized in the design and development process. The student should reference sources appropriately.

Student Responsibility (Studio courses)
The student is responsible for knowing the content of this course outline, the schedule of classes, assignments, and reviews; and material covered during any absence from scheduled classes. Unless otherwise arranged, the class will meet during regularly scheduled studio hours. These meetings are mandatory; important issues and questions will be raised, and announcements might be made. Everyone is expected to be based in studio and to work during scheduled hours. The studio should be considered a professional design studio environment. Because of the special involvement of external professionals, scheduling changes for guest lectures, presentations, and reviews may occur at short notice; students should stay informed regularly.

Changes to the Course Outline
The course outline may be subject to change in the event of extenuating circumstances.

Challenges with studio attendance or timing
Should you not be able to make it to studio on time, please let your coach(es) know via e-mail/text before the day starts .... as would be expected in a full time employment designer work situation.