CARLETON UNIVERSITY
SCHOOL OF INDUSTRIAL DESIGN

COURSE OUTLINE IDES 4310B • CAPSTONE PROJECT • FALL/WINTER(2021/2022)

Instructor: **Juan Jiménez**

Juan.JimenezGarcia@carleton.ca

Location: 2496 Mackenzie

Office Hours: by appointment and studio hours

Teaching Assistant: Maya Chopra

mayachopra@cmail.carleton.ca

Office Hours: by appointment and studio hours

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

Course Description

Application of design principles in a comprehensive design project. Problem area chosen should be product oriented and of sufficient complexity. Normally undertaken in consultation with off-campus organizations and industry; supervised by faculty members. Includes: Experiential Learning Activity. Precludes additional credit for IDES 4300 (no longer offered). Prerequisite(s): IDES 3302 or permission of the School of Industrial Design. Studio and lectures six hours a week in Fall and twelve hours a week in Winter.

Learning Outcomes

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

1. Apply research methods to define a unique design problem.
2. Bridge their research to the development of an appropriate design proposal.

3. Evaluate their proposed design solution with relevant stakeholders reflective of practitioner behaviour.
4. Demonstrate a basic understanding and need for ethics to develop and evaluate appropriate designs.
5. Develop methods and materials to develop and assess design solutions.
6. Produce a range of appropriate professional deliverables at each phase as reflected in the fields of design.
7. Establish a good working relationship with external partners, which includes receiving and incorporating feedback from partner groups.

Course Deliverables

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

Fall Term – 35 % Final grade

Phase 1: Project definition - Background research, state of the art, and design challenge (10%)

Phase 2: Concept development – Research, concept direction, design brief, and planning (25%)

Winter Term – 65% Final grade

Phase 3: Preliminary Design – Idea testing, usability experimentation, and user experience (15%)

Phase 4: Definitive Design – Prototyping and design testing (15%)

Phase 5: Final Design – Design detailing, tests conclusions, and communication (30%)

Participation and Professionalism (5%)

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.

Ian Li, Anind Dey, and Jodi Forlizzi. 2010. A stage-based model of personal informatics systems. Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. Association for Computing Machinery, New York, NY, USA, 557–566. DOI:https://doi.org/10.1145/1753326.1753409

Goodwin, K. (2009). Designing for the Digital Age: How to Create Human-Centered Products and Services.

Guy Andr Boy. (2012). Orchestrating Human-Centered Design. Springer Publishing Company, Incorporated.

Kumar, V. (2012). 101 design methods. John Wiley & Sons.

Martin, B., & Hanington, B. (2012). Universal methods of design: 100 ways to research complex problems, develop innovative ideas, and design effective solutions. Rockport Publishers.

Preece, J., Rogers, Y., & Sharp, H. (2019). Interaction design: beyond human-computer interaction (Fifth Edition.). Wiley.

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 and phases description

IDES 4310 Section B Capstone Project F21

Course description

The Capstone project puts into practice what the students have learned over the last 4 years in the School of Industrial Design to a project that addresses a real context situation with a significant complexity. The project follows an incremental, multi-phased approach with several iterative actions culminating in a series of deliverables. Students propose their own solution considering the aspects of design research, human-centered design, innovation, context analysis, human factors, theoretical references, prototyping, technology, visual communication, historical, cultural and aesthetics contexts. This final design is derived from a structured, yet no straight process, involving multidisciplinary knowledge from different sources.

Phases:

The project will utilize the Double Diamond model as a design development process. The first “diamond” will take place in fall semester with two main phases, while the second “diamond” will take place in winter semester with three main phases (see Appendix B).

Fall:

a) **Project definition.** Students will conduct exploratory research with the assistant of your team to build an understanding of the context and the people involved. By the end of this phase students will have identified an area of focus, a problem, a gap or a design opportunity (deliverables are group deliverables).

b) **Concept development.** Design concepts will be explored and developed through an iterative process in consultation with the instructor, experts, users and possible stakeholders. These concepts will be supported by the insights gathered from primary and secondary research, with theoretical grounds involved. This phase will end with the definition of a concept direction, a definitive project brief and a design process planning (deliverables are individual deliverables from here).

Winter

c) **Preliminary design.** The design concept approved in phase b will be developed further and evaluated through multiple iterations, exploring and reviewing how different ideas comply with the design problem, the context, the user(s), and the functional and not functional requirements. By the end of this phase, students will present conclusions derived from the most promising design idea through low-mid-fi prototypes.

d) **Definitive design.** In an incremental approach, students will iteratively develop and test prototypes that represent improvements from the previous revisions, and to validate the design concept from phases b and c. This phase will involve in-situ, real context tests with users to gather experiential and contextual information to inform the design solution. By the end of this phase, students will present a low to mid-fi prototype that encloses important insights from user experience.

e) **Final design.** A final solution will be refined through a mid to hi-fi prototype tested and validated in the field. Defining the technicalities, industrial design aspects, aesthetics, scalability and implementation are part of this phase. The second part of this phase will be dedicated to prepare a compelling communication strategy of both the process and the final solution in a variety of mediums. By the end of this phase, students will be ready to present their work at the Grad Show.

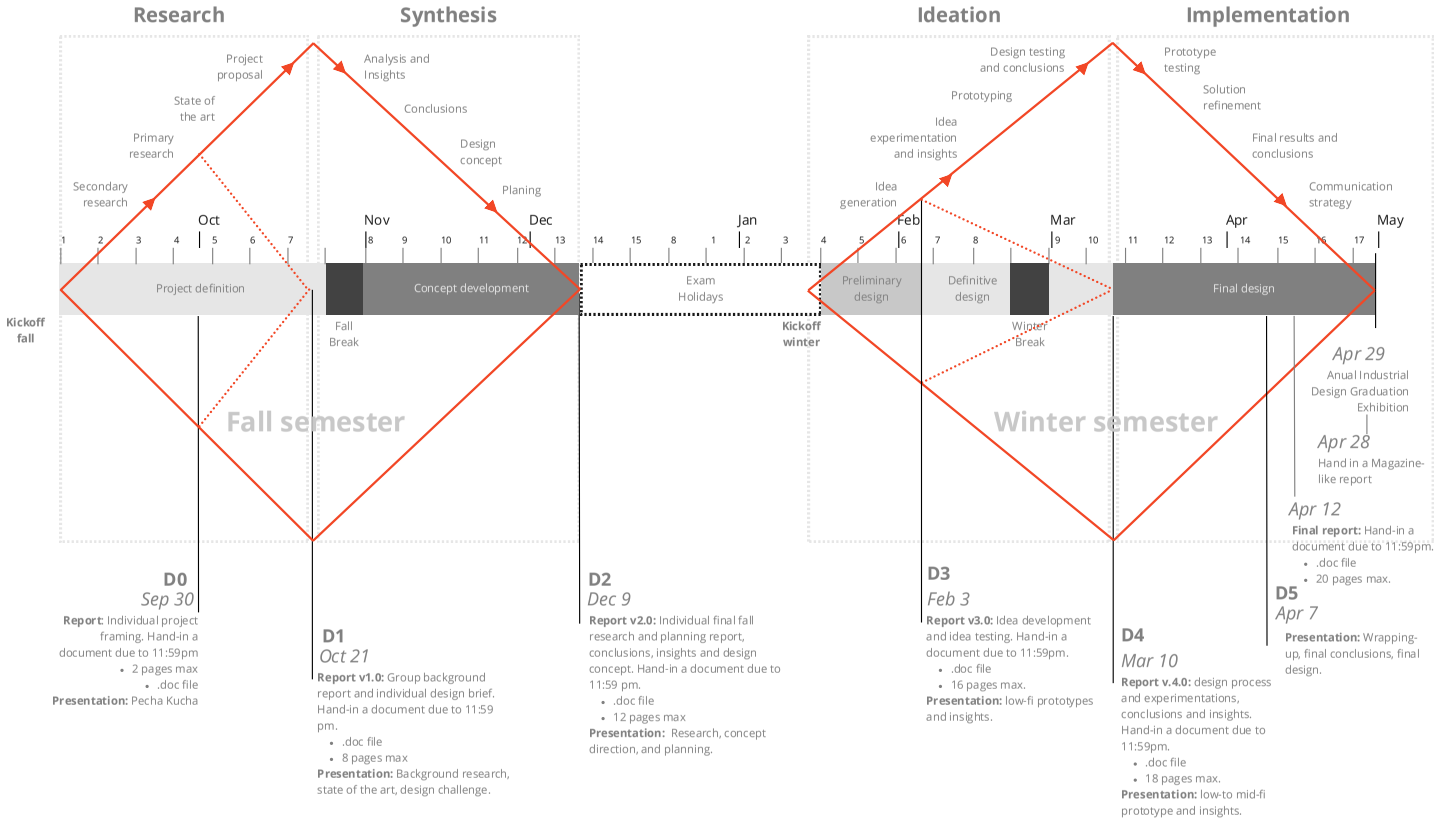
Appendices B and C

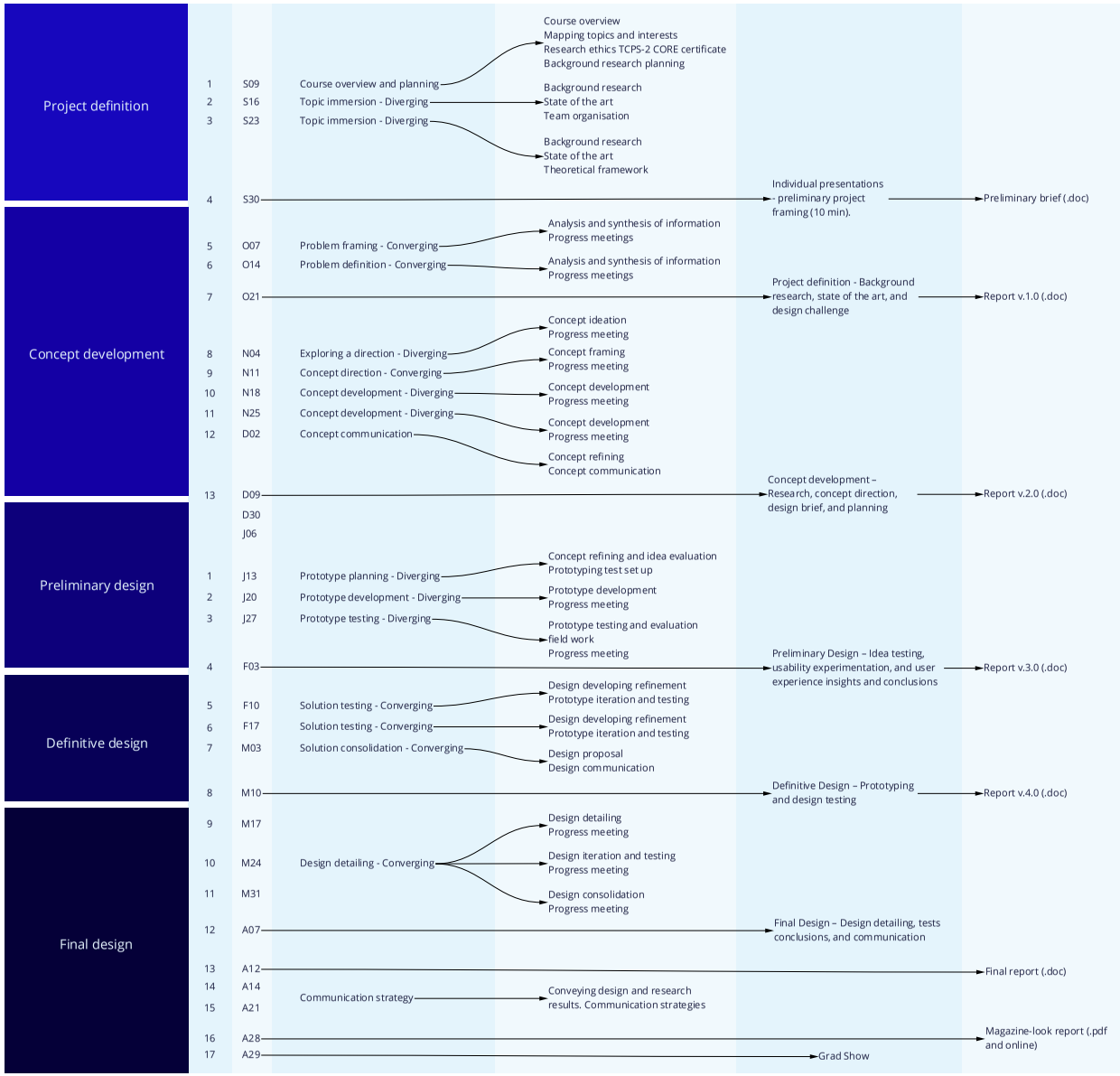
IDES 4310 Section B Capstone Project F21

Following, you will find the main structure (Appendix B), the schedule for activities and deliverables (Appendix C) that will help you to manage your progress. There will be weekly project meetings to discuss progress, which will include meetings with the teaching assistant, lead studio lab technician and project specific lab technicians. Workshops and lectures may change in order to accommodate everyone's schedules or respond to changes needed in project management.

Appendix B - Course structure

IDES 4310B • CAPSTONE PROJECT • FALL/WINTER(2021/2022)



Appendix C - Course schedule

IDES 4310B • CAPSTONE PROJECT • FALL/WINTER(2021/2022)