

## **ENGG 1300 – Design Thinking for Health Innovation (3 credits)**

**Tu 01:30 - 04:20 PM**

**Fall 2023/24**

### **Course Description:**

A project-based, experiential course that exposes students to the Design Thinking process for health innovation to address real-world unmet needs in society. The goal of this course is to develop students' communication, interpersonal, teamwork, analytical, design, and project management skills through a multi-disciplinary, team-based design experience. The Design Thinking process modules: empathize, define, ideate, prototype and test, will be introduced and the students will learn experientially by applying these process modules to solve the unmet health needs they observe in real life. The students are required to report their progress throughout the semester. Throughout the course, they will showcase their prototype in the project pitch and submit their project report. It is a common core course for students from different schools who have no background in Design Thinking or are looking for practical experience in Design Thinking.

This year the course will focus on how to improve our personal health and well-being.

**Learning Outcomes:** At the end of the course, students will be able to:

- State and explain the process modules of Design Thinking
- Apply Design Thinking to solving real-world health issues in the society
- Work and communicate effectively in a multi-disciplinary team
- Generate innovative ideas, assess and perform iterative prototyping cycles to decide the best solution and implement ideas into innovations.
- Learn professional and technical knowledge on the design and innovation processes.

**Course Plan:** The course plan is designed to reflect the course goal and facilitate the learning outcomes. Workshops, sharing sessions and evaluations are planned for this course. The schedule may be subject to minor changes depending on the circumstances. The course details are as follows:

Week	Date	Remarks
1	Sep 05	<u>Introduction and team building activities.</u> - Ice-breaking - Introduction to course and Problem Statement. - Introduction to personal Miro-board - Team building activities
2	Sep 12	<u>Understand user needs</u> - Understand the user needs and problem space - Observe existing technologies and practices - User research & brainstorm new ideas - Team formation for 1 <sup>st</sup> round.
3	Sep 19	<u>Ideation</u> - Identify user needs - Brainstorm ideas - Develop initial prototypes.
4	Sep 26	<u>Presentation: User Research &amp; Initial Ideas</u> - Team presentation on user/market research & initial ideas: Identified Problem Statement, existing technologies, findings from observations, proposed ideas - Feedback from peers and teaching team. - Peer evaluation (5%)
5	Oct 03	<u>Introduction to Design Thinking: Workshop</u> - Introduction to Design Thinking - Activities to practice Design Thinking concepts - Team time: Ideation for Problem Statement
6	Oct 10	<u>Prototyping Workshop I</u> - Basic prototyping methods using cardboard, foam and other materials available at home. - Teams will conduct initial prototyping for their filtered ideas.
7	Oct 17	<u>Team presentation: 1<sup>st</sup> Prototype</u> - 1 <sup>st</sup> Prototype presentation: Teams will present their ideas and prototypes to the whole class. - Peer evaluation (5%) - 2 <sup>nd</sup> Round team formation - (Re)-defining the problem space
8	Oct 24	<u>Prototyping Workshop II &amp; Team Time</u> - Teams will present their new Problem Statement and ideas to the class in the form of conversational prototypes and gather feedback.

		<ul style="list-style-type: none"> <li>- Workshop to introduce 3D printing, 3D modelling, laser cutting, app prototyping, simple handtools</li> <li>- Team time to develop prototypes</li> </ul>
<b>9</b>	<b>Oct 31</b>	<u>Prototyping Workshop II &amp; Team Time</u> <ul style="list-style-type: none"> <li>- Teams will present their new Problem Statement and ideas to the class in the form of conversational prototypes and gather feedback.</li> <li>- Workshop to introduce 3D printing, 3D modelling, laser cutting, app prototyping, simple handtools</li> <li>- Team time to develop prototypes</li> </ul>
<b>10</b>	<b>Nov 07</b>	<u>Prototyping Workshop III</u> <ul style="list-style-type: none"> <li>- Media Production</li> <li>- Photography and storytelling</li> </ul>
<b>11</b>	<b>Nov 14</b>	<u>Team time &amp; Final testing</u> <ul style="list-style-type: none"> <li>- Final testing on prototypes before presenting at the Final Project Pitch</li> </ul>
<b>12</b>	<b>Nov 21</b>	<u>Final Project Pitch: 2<sup>nd</sup> Prototype</u> <ul style="list-style-type: none"> <li>- The pitch should include background and scope of the project, rationale and evolution of the design, demonstration(s) of prototype(s), and introduction of implementation plan.</li> </ul>
<b>13</b>	<b>Nov 28</b>	<u>Course de-briefing</u> <ul style="list-style-type: none"> <li>- De-briefing session on the activities of the semester, lessons learned, what can be improved and possibilities to further develop ideas.</li> <li>- Teams will submit the group design video.</li> <li>- Peer evaluation (10%)</li> </ul>

**Assessment:** The assessment outline is as follows

<b>Assessment procedure</b>	<b>Percentage</b>
Presentation: User/Market Research & Initial Ideas (Week 04)	15%
Team presentation: 1 <sup>st</sup> Prototype (Week 07)	15 %
Final Project Pitch: 2 <sup>nd</sup> Prototype (Week 12)	20%
Group Design Video	15%
Personal Miro-board	15%
Peer Evaluation (x3)	20%