WEEK 1

Welcome!

- **DESN2000 Engineering Design and Professional Practice**
- Olivia Widjaja
- *15/09/2022*

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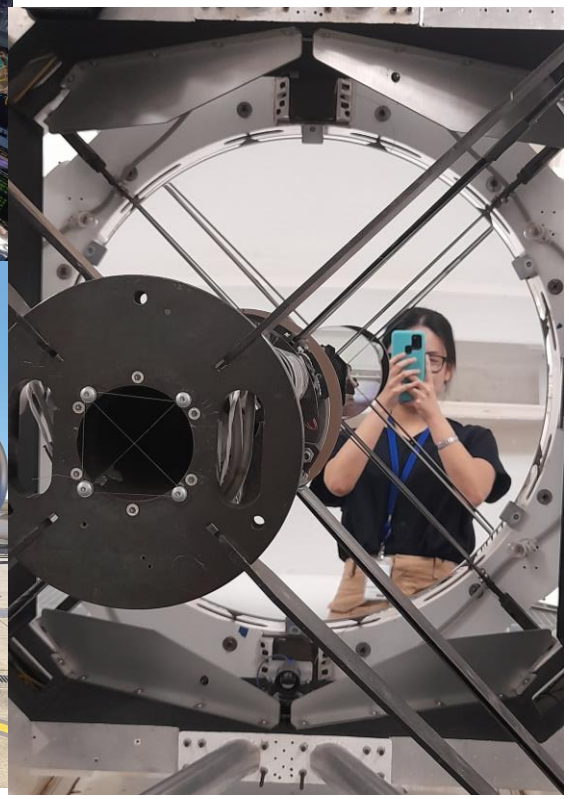
Who am I?

- 4th year aerospace engineering
- Completed the course in T3 2020
- Taught this course last year but it's my first time teaching face-to-face so please bear with me :')
- Currently doing a thesis on manoeuvre detection of Starlink satellites
- Worked at EOS Space Systems twice as an Astrodynamics Intern, then Orbit Determination Engineer
- Contact hours: DM me on Teams during business hours!
  - Give it about at least 1 day for me to respond
  - Response rates may vary as the term progresses



Course Assessments

	Item	Weight	CLO	Assessment criteria	Due date
Design 40%	**Design Journal (👤)**	20%	1-6	Refer to assessment guide	8 PM, Friday, October 14th (Week 5)
	Design Presentation (pitch) (👥)	20%	1-6	Refer to assessment guide	11:59 PM, Friday, November 18th (Week 10) - specific dates depend on workshop schedules
Technical 60%	**Interim Presentation:** Team **(👥)** and individual presentation **(👤)**	20%	1-6	Refer to assessment guide	11:59 PM, Friday, October 7th (Week 4) – specific dates depend on workshop schedules
	Final Design Report (👥)	40%	1-6	Refer to assessment guide	11:59 PM, Friday, November 25th (Week 11)

(👤) individual assessment. (👥) group assessment.

About these workshops

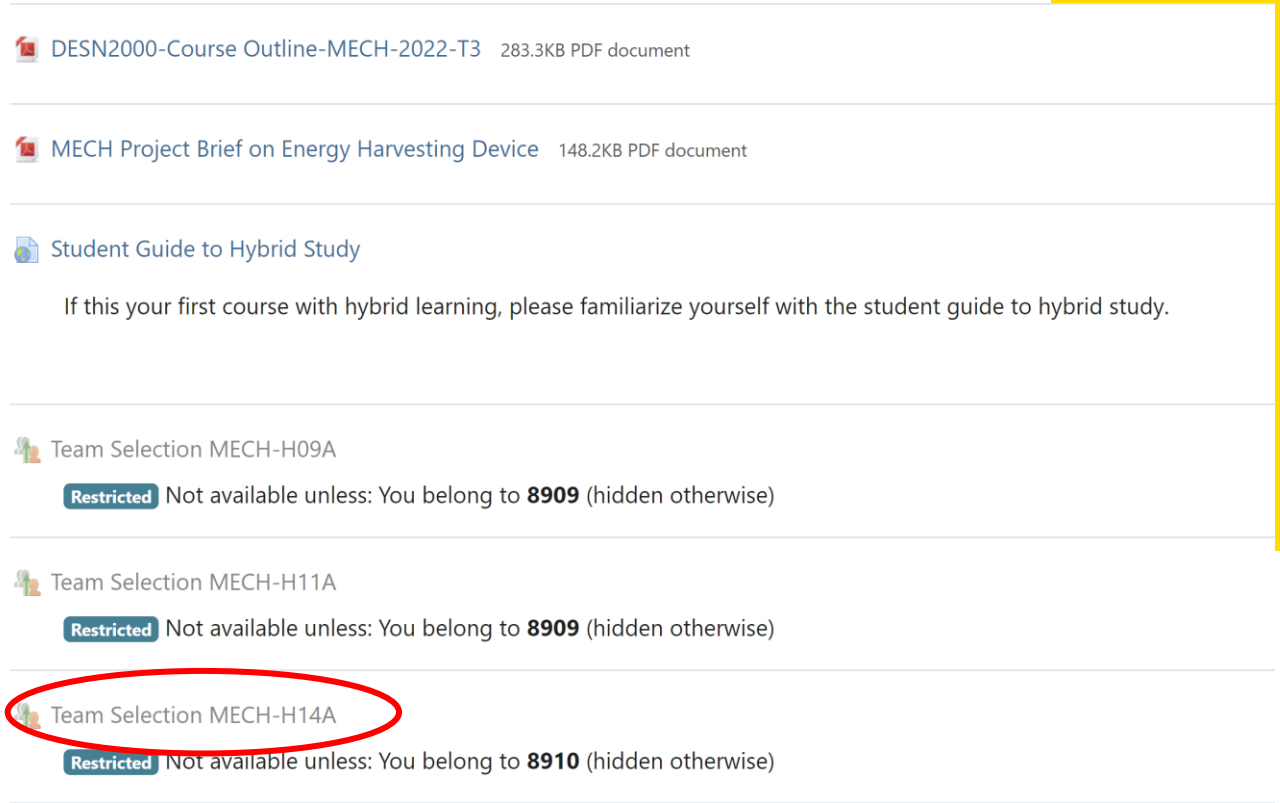
- Compulsory
- Attendance is used to evaluate contributions to teamwork
- From Weeks 1-5, there'll be 2 workshops per week
  - From Week 6 onwards, there'll be 1 workshop per week
- Workshop content will be split into two categories:
  - DESN content
  - Technical content
- Last 30 minutes – 1 hour are for group meetings

Expectations

- Contribute to your group
  - Attend lectures
  - Attend workshops
  - Contribute and attend group meetings
  - **Communicate with your group members**
- Distribute your workload
  - Don’t leave things to the last minute!
  - If you’re having issues with ‘free riders’, let me know
- Maintain your design journal

Groups

- 6-7 students in one group
  - If there's a group with 5 or less, I will have to move you around
- Please go to Moodle to join a team



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Project Brief

- Energy harvesting device:
  - **Accumulation**
  - Storage
  - **Utilisation**
- Note the degrees of freedom:
  - Define the environment
  - Kind of energy
  - How to use the harvested energy

Project Constraints

- Overall cost of energy harvesting device should not exceed $10,000 AUD
- Must comply with relevant safety regulations in Australia
- Any additional design constraints and risks identified by your group
- 2 out of the 4 technical concepts taught in this course must be applied to your device:
  - Sensors
  - Fasteners
  - Power transmission
  - Materials

Getting started with the project

- **DO NOT** start with the solution
  - The whole point of this course is to provide a systematic approach to design
- Start brainstorming to define your constraints
- Take a look at current energy harvesting methods
- Revisit Ang's lectures on how energy harvesting works

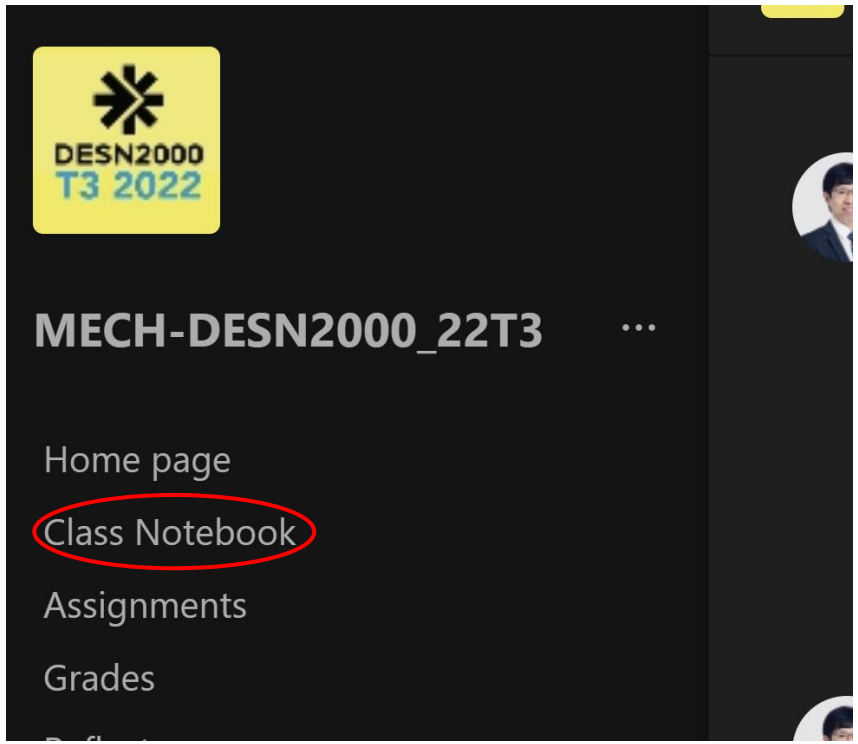
Interim Design Presentation

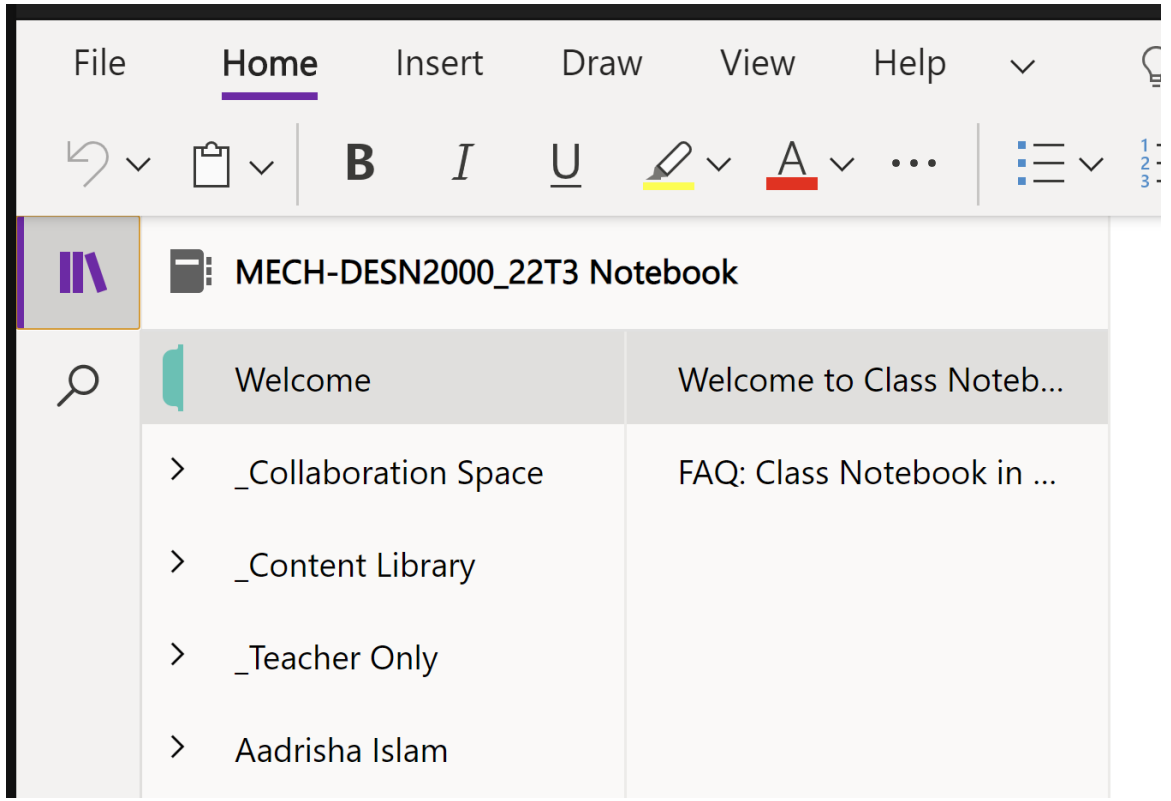
- General structure:
  - Interpretation of project brief
  - Formulation of design problem
  - Investigation of preliminary design concepts
  - Work responsibilities and schedule for the rest of term
- Presentations are done face-to-face during Week 4 workshop
- Slides need to be submitted before **9pm Sunday Week 3**
- 15-minute time-limit (including Q&A)
- All group members need to speak!

A few pointers

- Treat this presentation as a progress review
- You're expected to at least make a preliminary decision on what you'll focus on
- Make the content engaging and interesting to listen to
  - Don't just put slabs of information on your slides or read off the script
- Be prepared to provide detailed responses to questions

Design Journals





- **DO NOT** write your journals in “Collaboration Space”

Design Journals

- Document your design process
- Illustrate sketches and ideas
- Show how you and your group have managed your time
- Contain reflection on your group progress
- Provide evidence of your contributions

17/09/2020: Background Research for Report and Design

Following the idea of modifying an existing design of an ergonomic chair to address office-related health risks (as shown in my research above), I've used my current chair as a baseline to figure out how to design an ergonomic chair by annotating it. I created annotations based on reflecting on how I use my chair. My current chair is an Officeworks Typhoon Gaming Chair. The annotations are seen below:

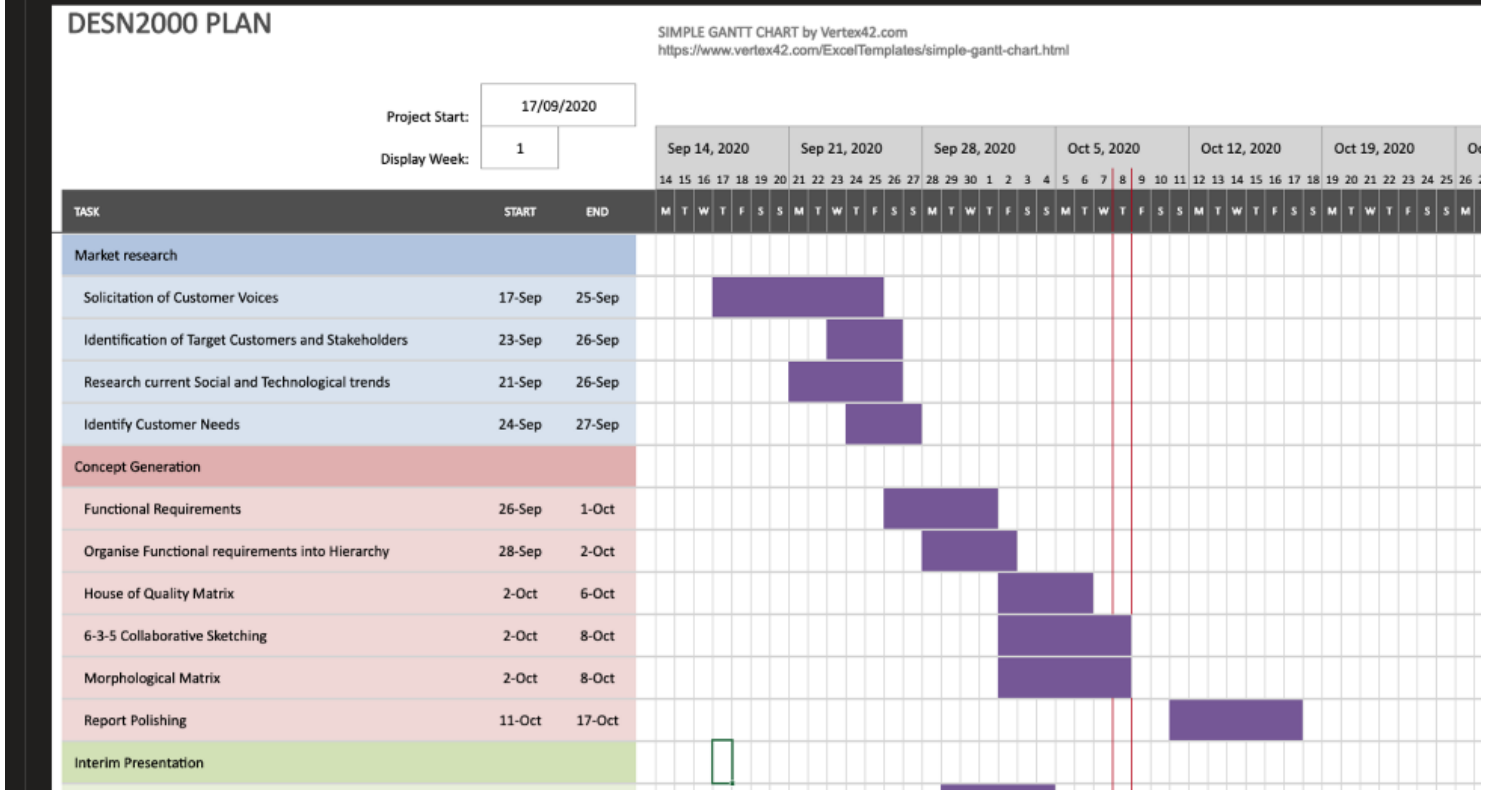
Figure 1: Photograph of my current office chair

Design Journals

- Document your design process
- Illustrate sketches and ideas
- Show how you and your group have managed your time
- Contain reflection on your group progress
- Provide evidence of your contributions

While I finished writing the analysis, I was still a bit unhappy with how it sounds, especially since the market research section looks a bit messy. I also thought it was a bit weird how customer needs are set in a different sub-section and are placed before the analysis. I'll be bringing this up in the next meeting, especially since I think it would flow a lot nicer if the table is placed below my analysis.

Although I'm a bit dissatisfied with the analysis, I'm glad that I completed my part on time based on the Gantt Chart Mahin just created:



Design Journals

- General rule of thumb: if you're making any progress towards your project, put it in your design journal
- Things **NOT** to include:
  - Lecture notes from this course
  - Work from another course