



Design Week:

A week of discovery through mechanical engineering design

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Senior Teaching Fellow
Department of Mechanical Engineering

What is Design Week ?

Design Week is a project-based activity for Year 2 Mechanical Engineering students in the Spring term that serves as their exam

Objective: To experience an entire design process, as a team, in one week, from 'initial idea' to 'engineering delivery'

The students have (almost) complete design freedom:

We expect the students to use all their knowledge from modules AND to be creative, curious, search information independently, communicate, conclude, collaborate → **be an engineer.**

Close simulation of the real-life design practice

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Close simulation of the real-life design practice

The scenario for Design Week

You [the student] are part of an engineering design consultancy firm.

Four companies contacted you to execute an idea they recently proposed. They expect a fully developed concept by next Friday.

You can deliver only one project:

- *Portable device that can **deal playing cards** from a standard deck*
- ***Motorised ratchet** that has an adjustable socket head*
- *Battery-operated device that can **butter toast** consistently*
- *Device which can utilize the **flushing water of a toilet** to charge a battery*

The scenario for Design Week

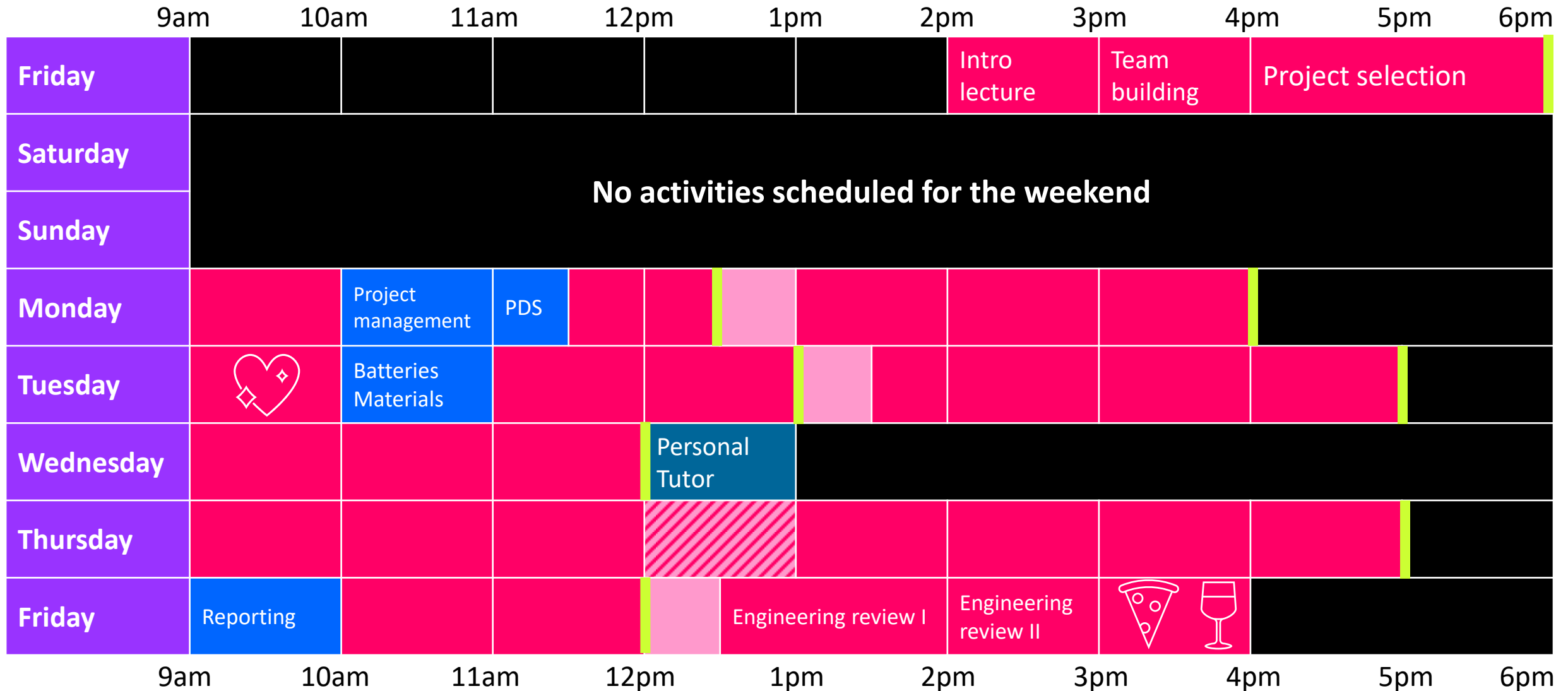
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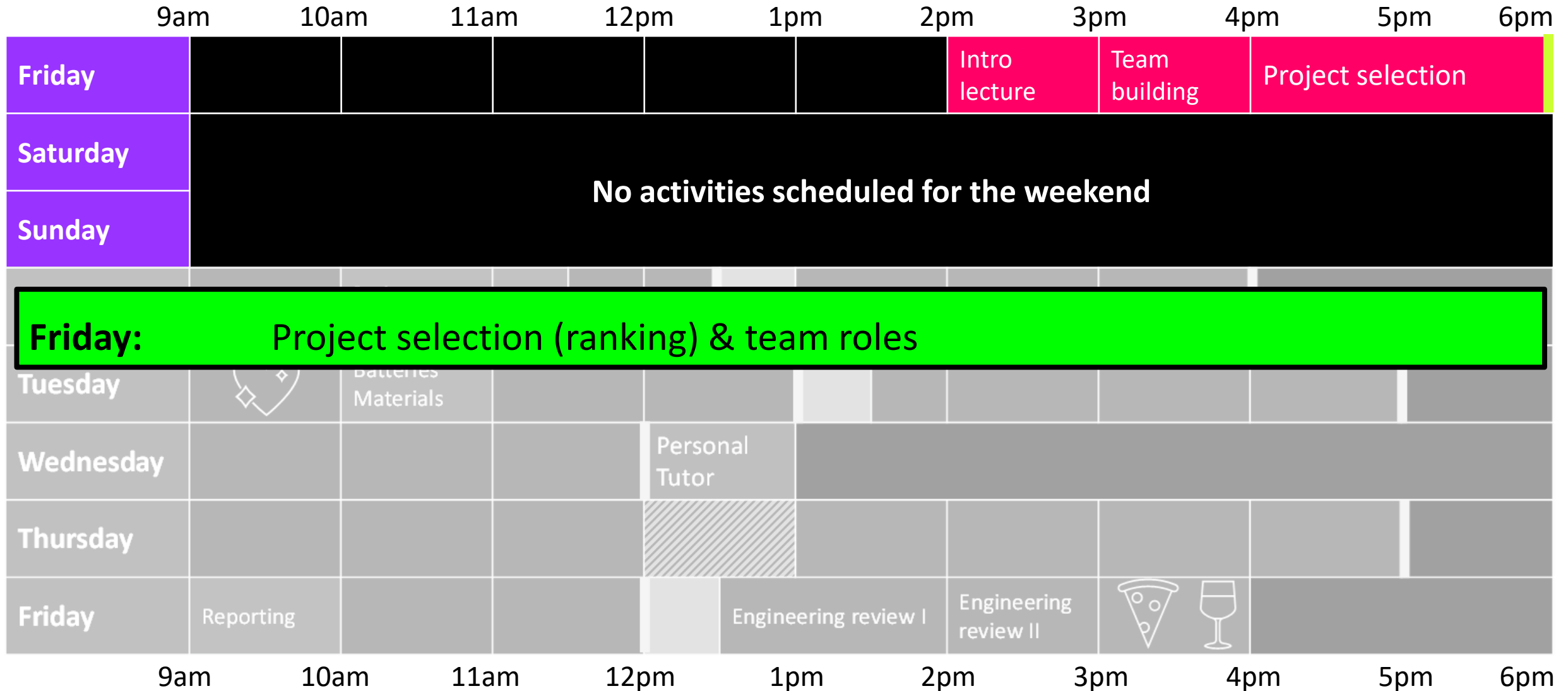
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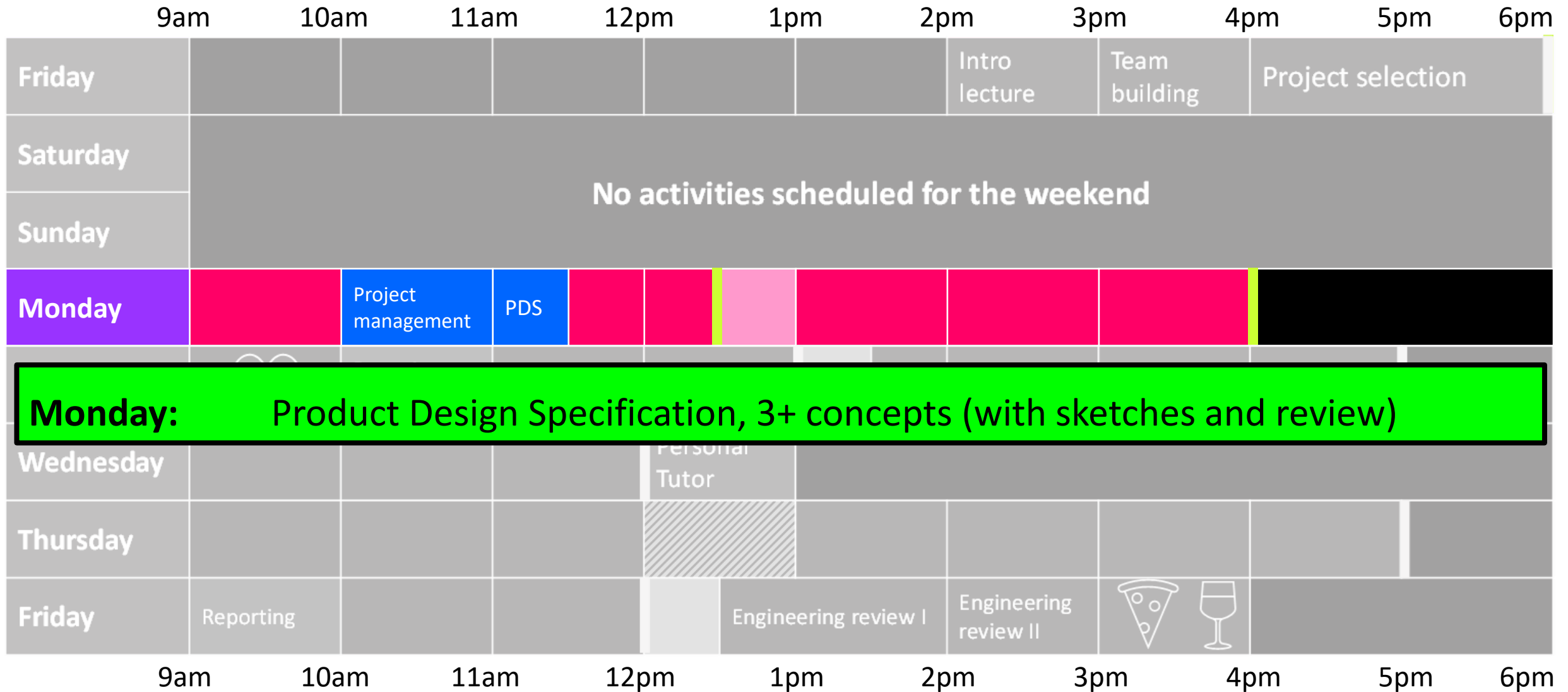
Structure of the week



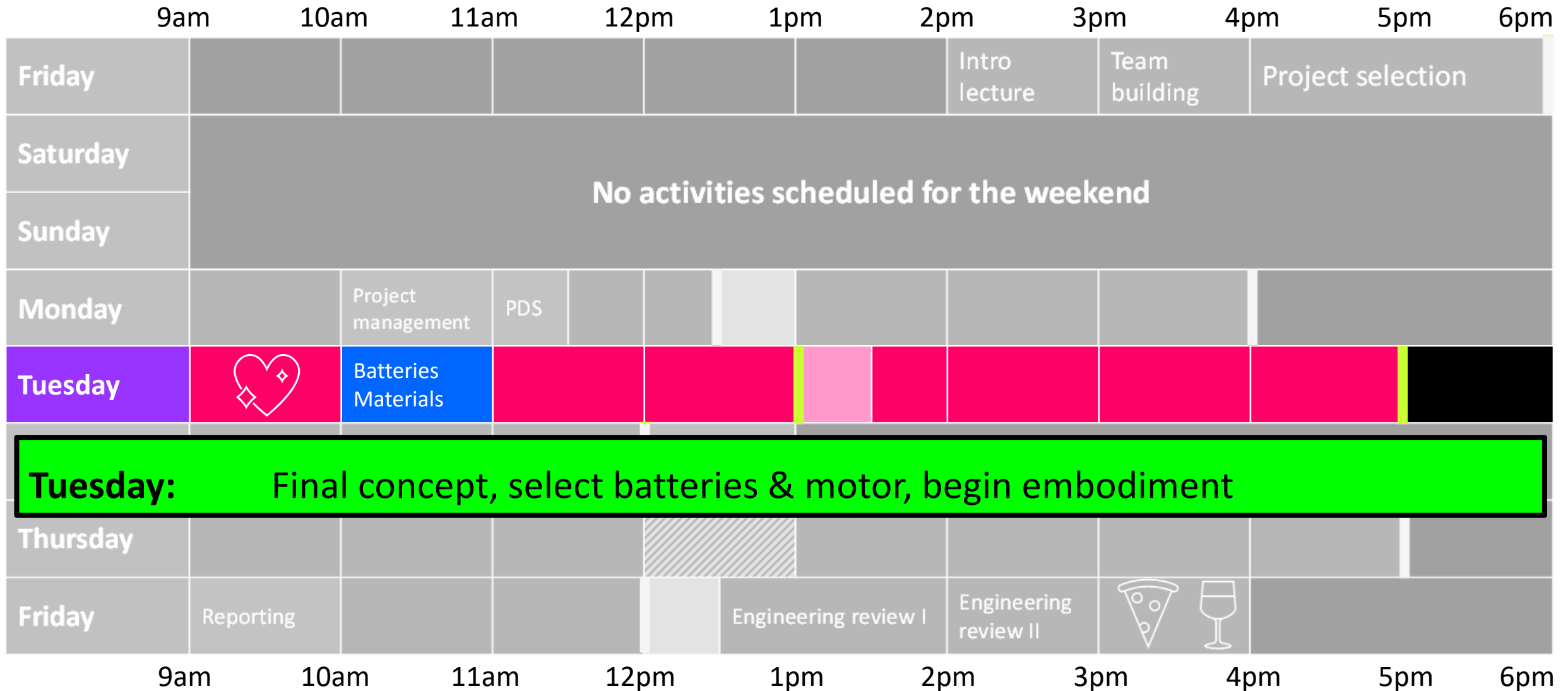
Daily tasks



Daily tasks

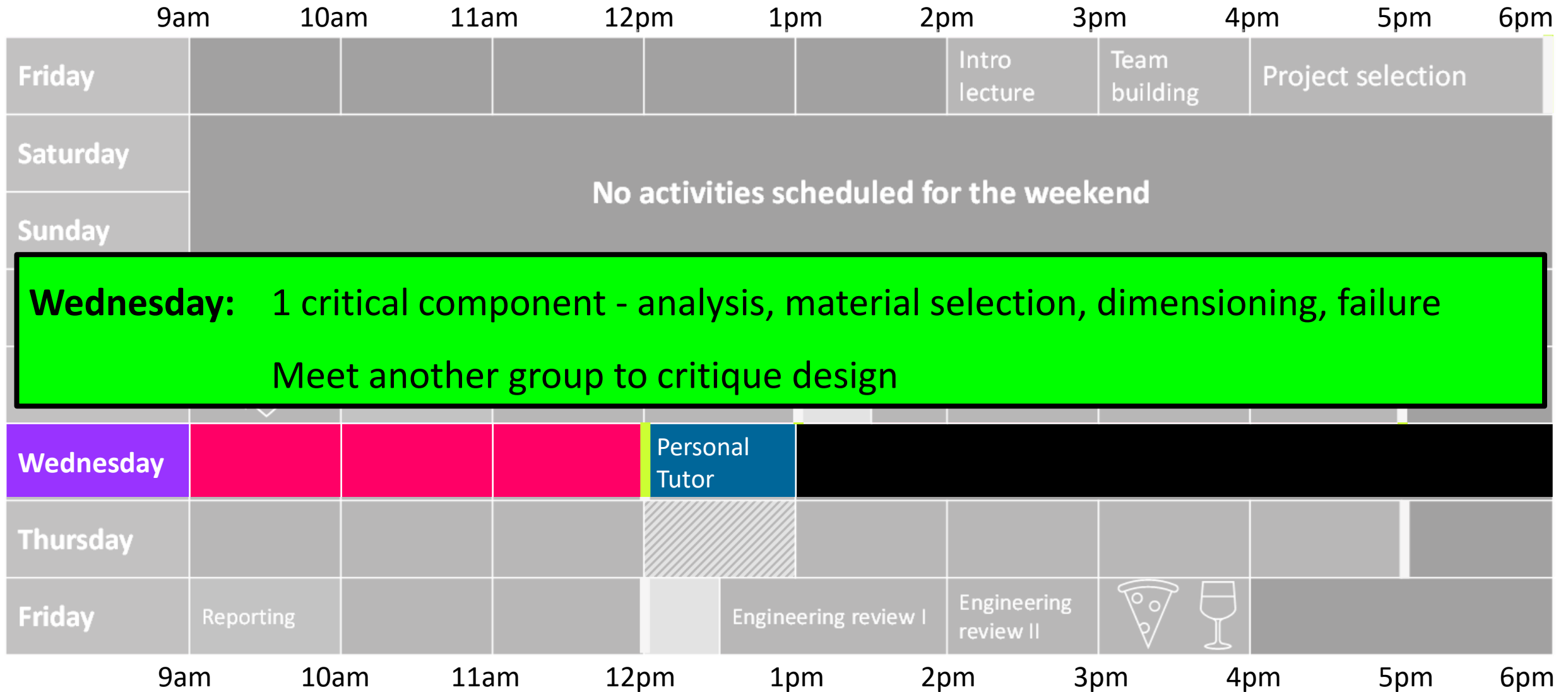


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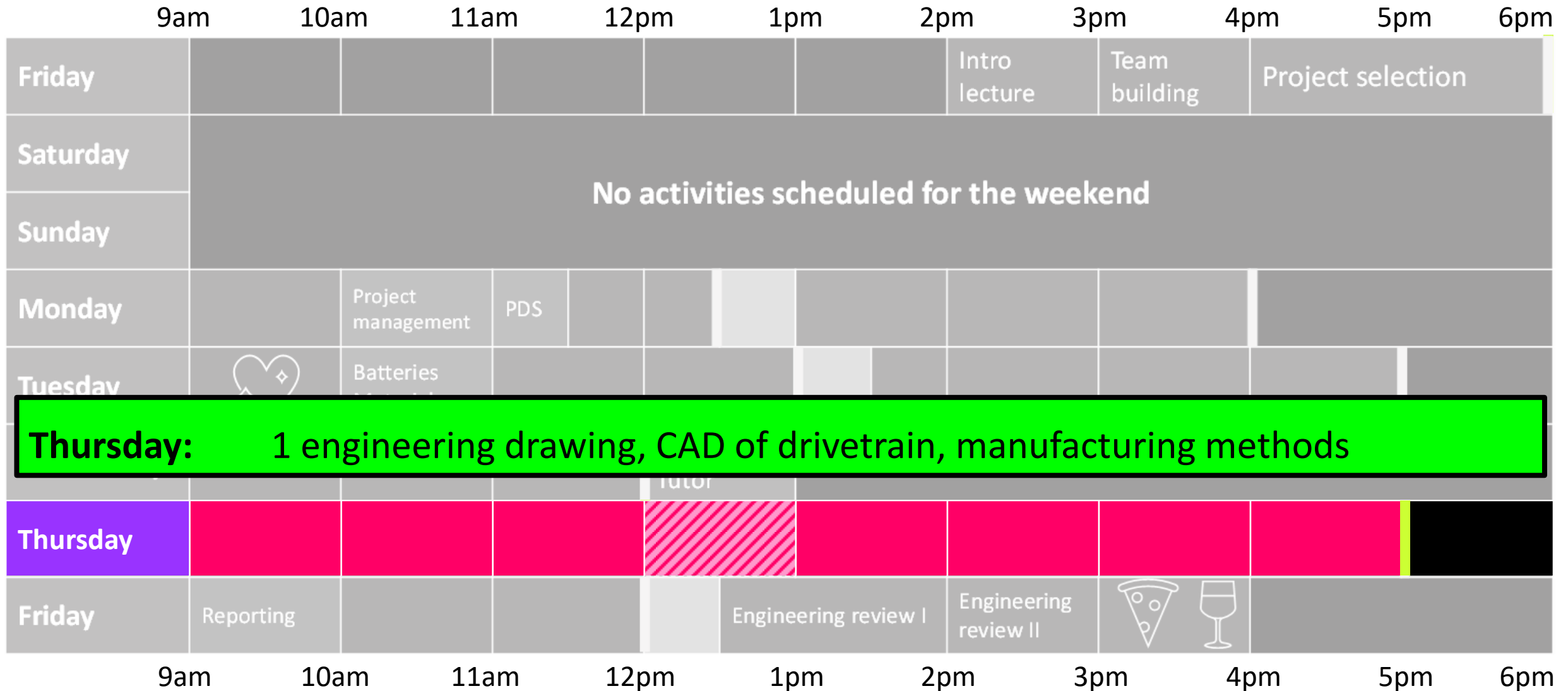


Tuesday: Final concept, select batteries & motor, begin embodiment

Daily tasks





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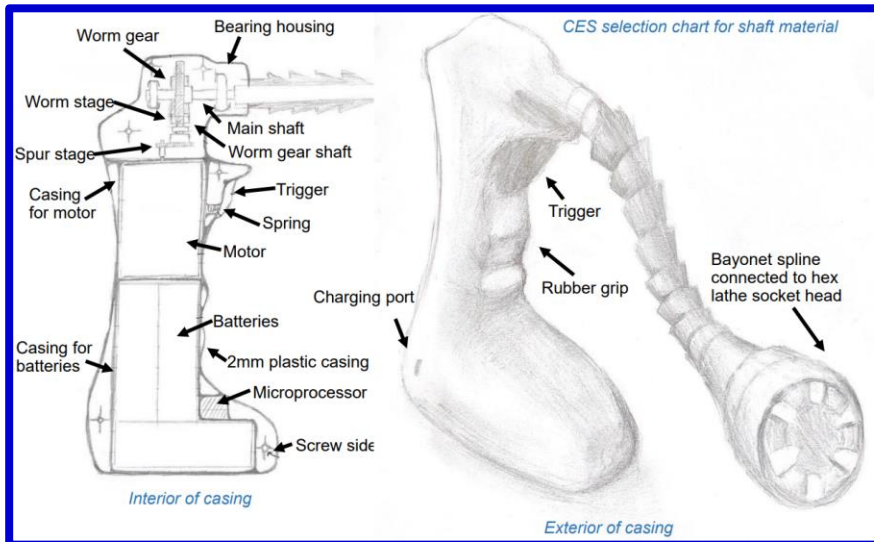
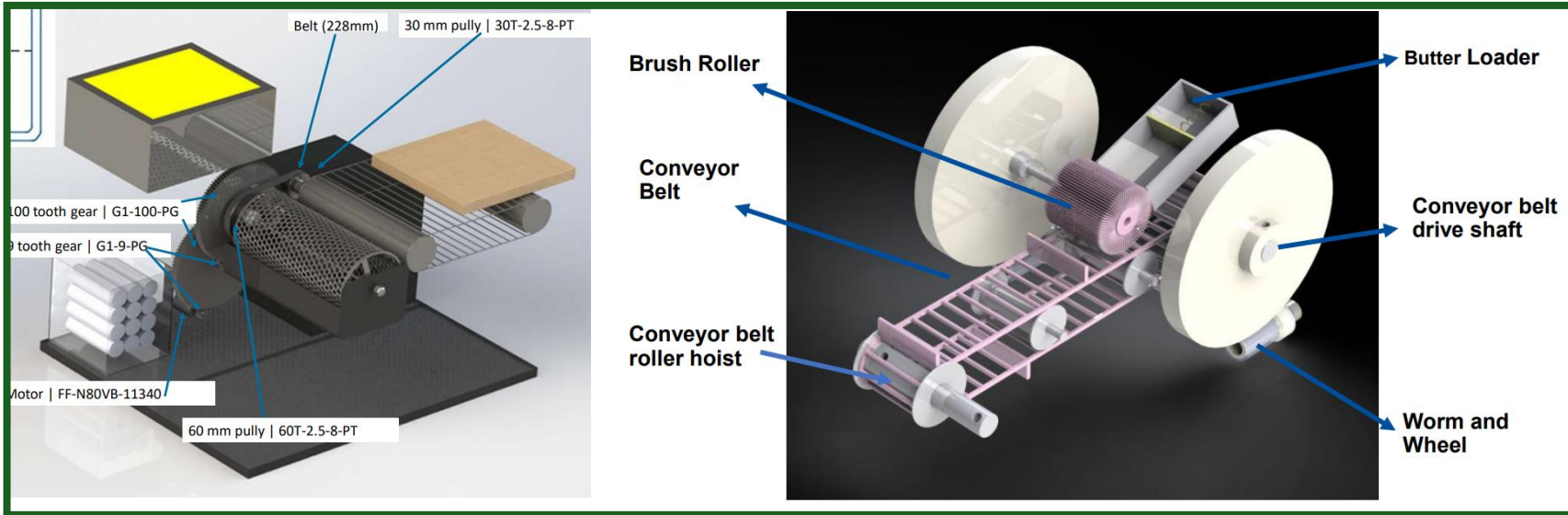
Daily tasks

	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm	6pm
Friday						Intro lecture	Team building	Project selection		
Saturday	No activities scheduled for the weekend									
Sunday										
Monday		Project management	PDS							

Friday: Compile slide deck; make poster
 20 mins presentation to tutor and tutor's groups
 10 mins poster assessment

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Friday		Reporting				Engineering review I	Engineering review II	 		

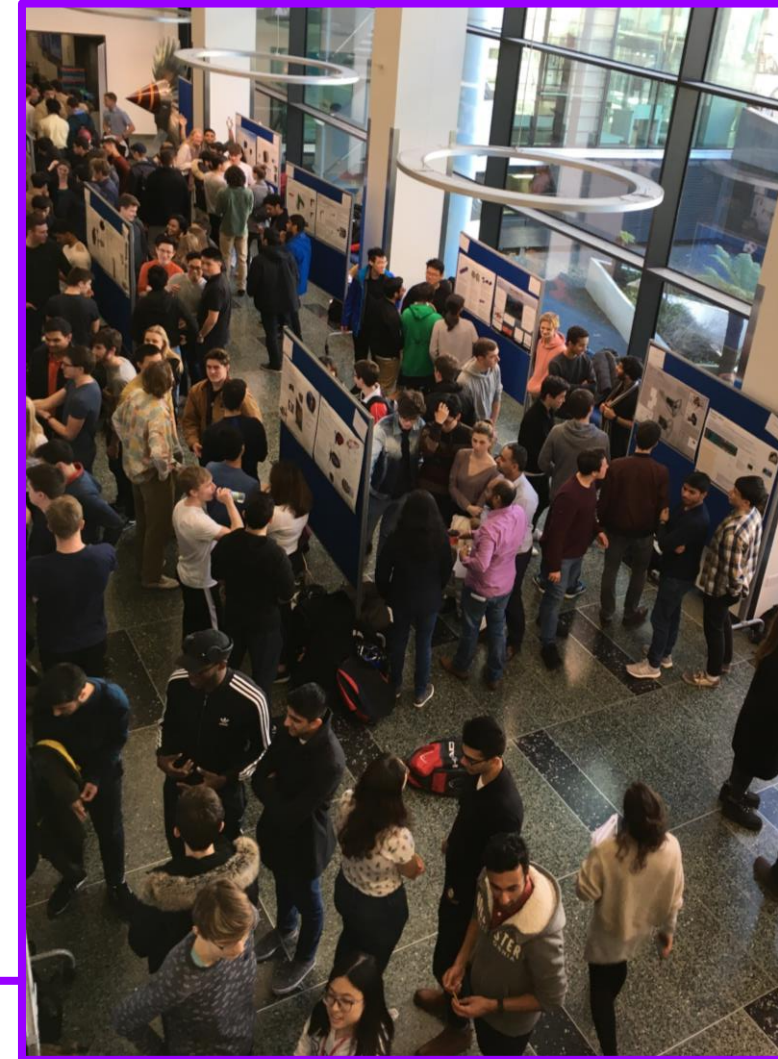
End result



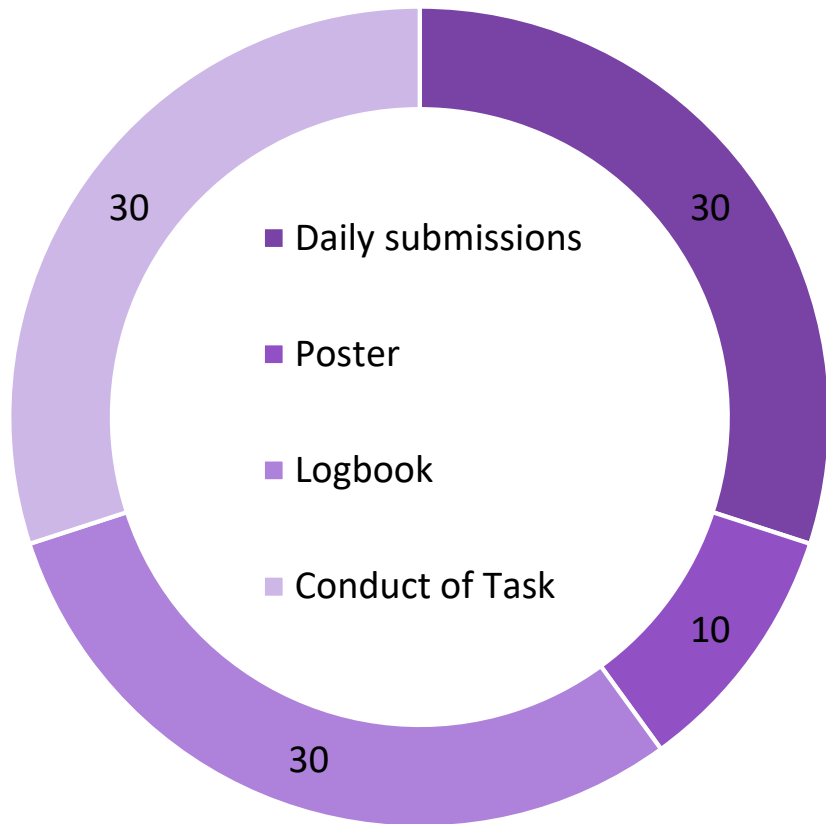
Final designs

Logbook sketch

Poster exhibition



Assessment



Daily submissions [group]:

Daily slides templates provided which are then compiled at end of week

The slide deck is presented to the Tutor and graded

All 48 slide decks are independently marked by me



Logbook [individual]:

The logbook is a record of process and development

It is marked by the Tutor and second marked by a GTA



Poster [group]:

Posters are printed in A1 size and displayed at an exhibition

It is marked by a random Tutor and a Postdoc



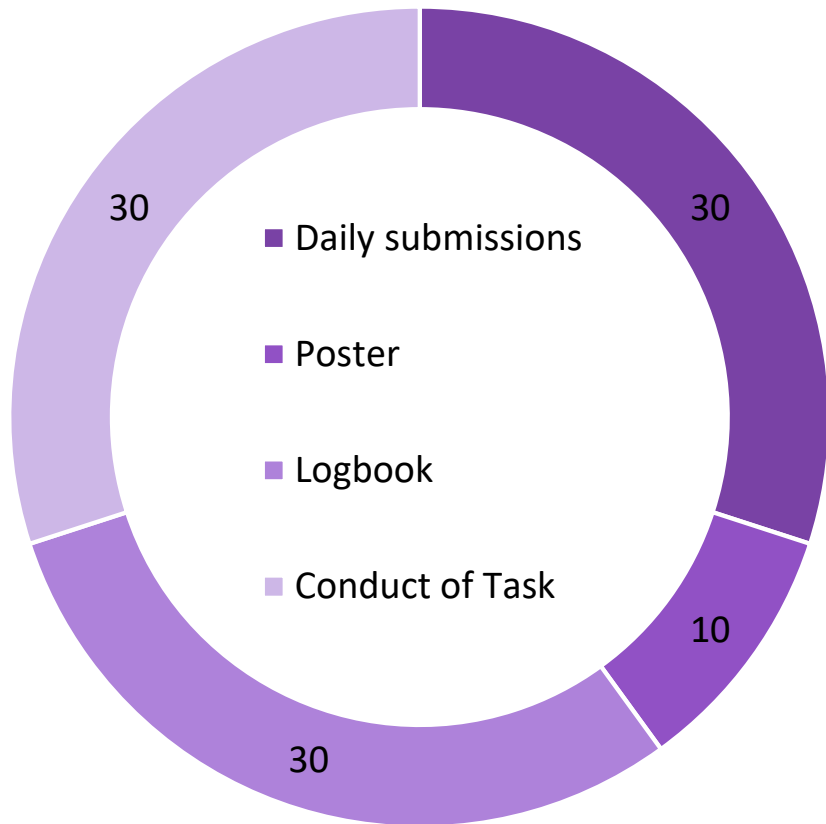
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A mark awarded by the Tutor to rate the performance of each team member based on how well they contributed to the team and the project

The mark is scaled based on peer-assessment score



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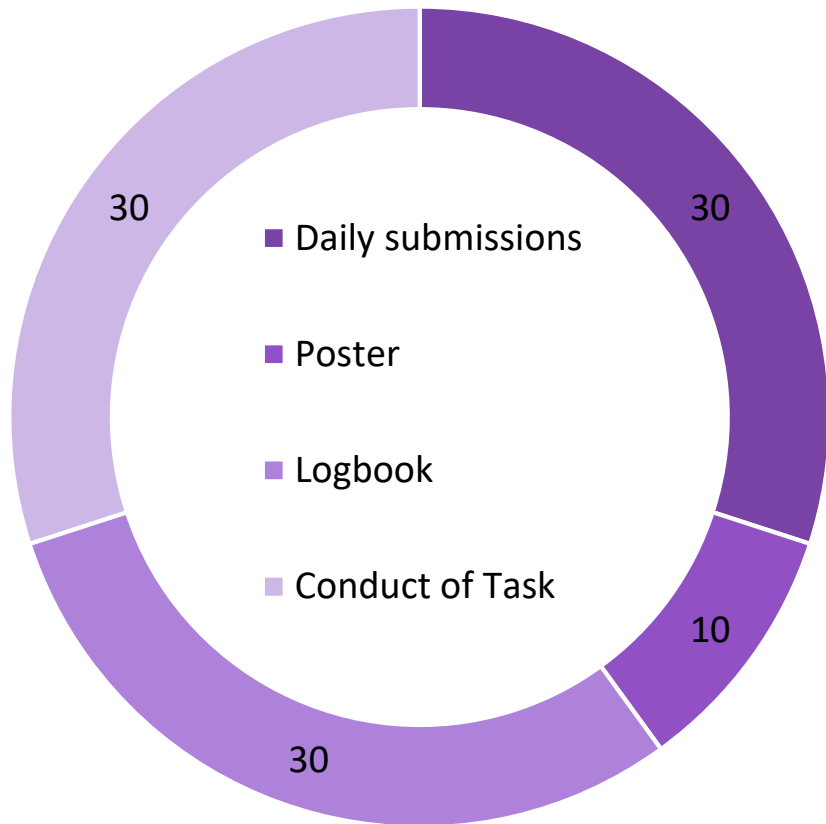
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Student Feedback

Collaboration:

I was able to collaborate effectively with my team members

Support:

The level of support available from my Design Tutor was sufficient

Challenge:

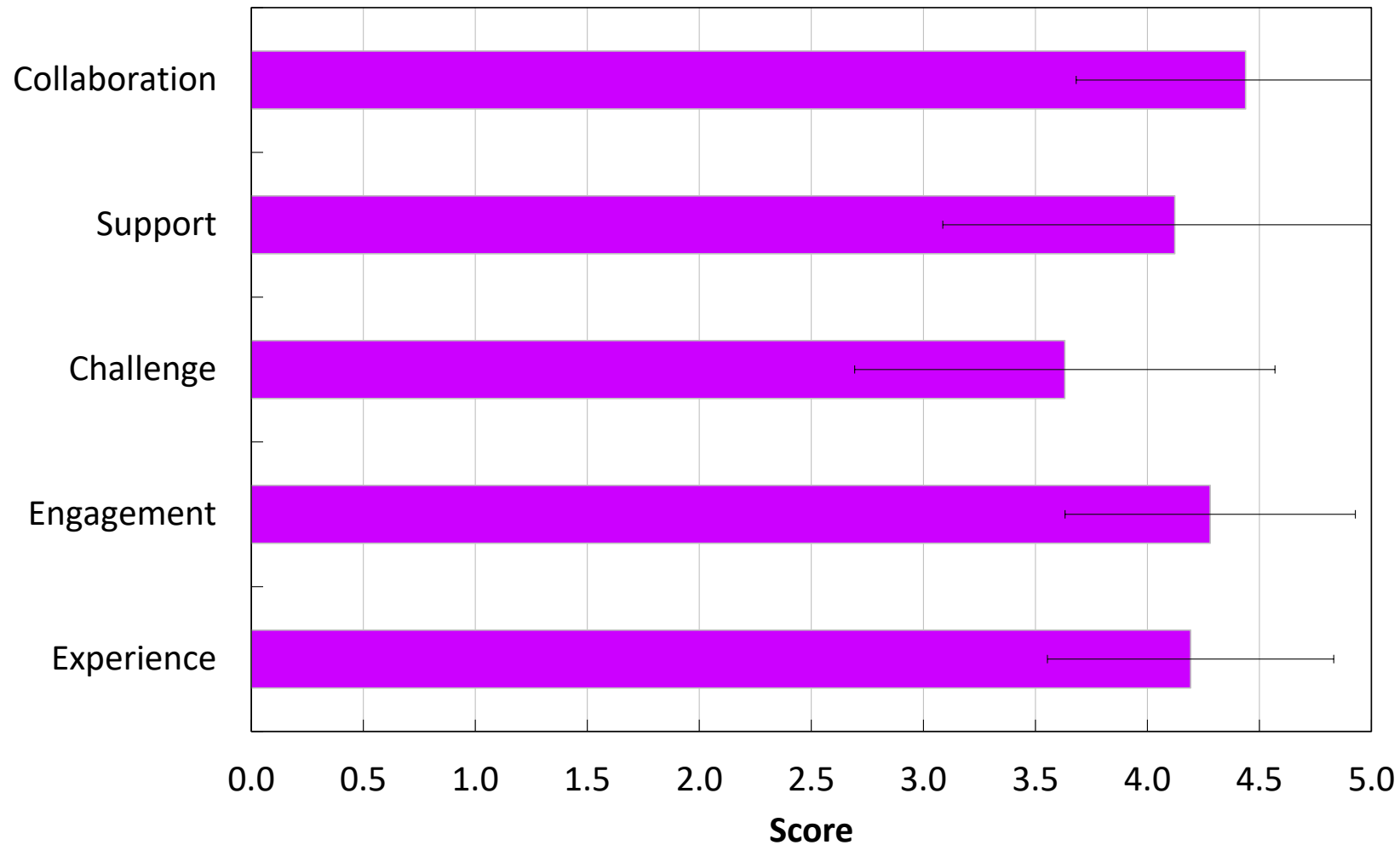
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Engagement:

I found the chosen project to be engaging and stimulating

Experience:

My overall experience of Design Week was enjoyable/positive/stimulating



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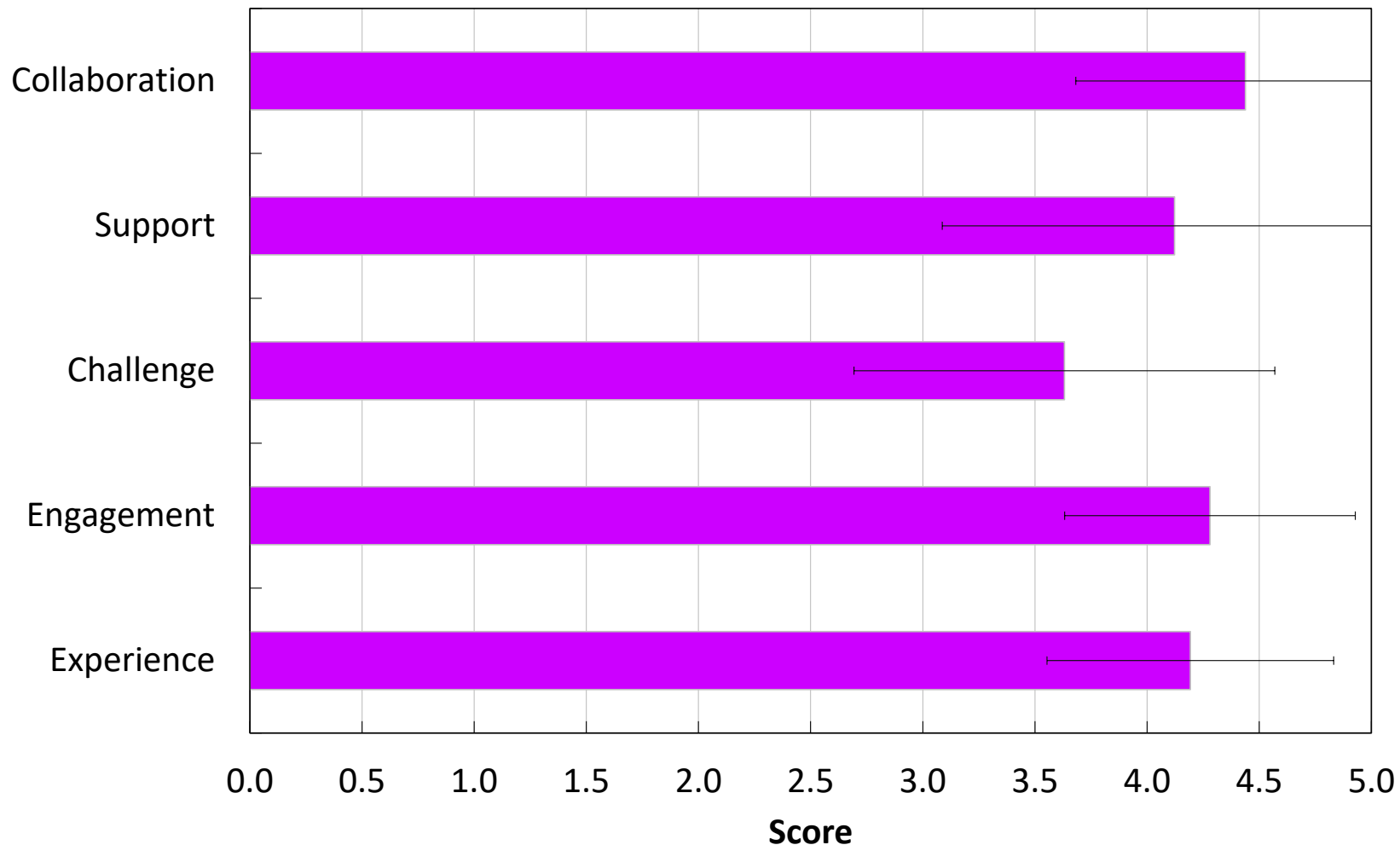
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Describe Design Week 2023 in one word:



Design Week & Discovery

King Charles II once called together the Fellows of the Royal Society and asked them, “My Lords and Gentlemen. Why is it that if I place the same amount of water into each of two pails, and then put a four-pound fish into one of them, this pail will not weigh more than the other?” After hearing several learned explanations, he told them that his claim was false and that **he was testing whether they followed facts or blindly followed authority.**

Mahajan, S., 2022. Toast sliding off a table. *American Journal of Physics*, 90(10), pp.727-729.

Oesper, R.E., 1948. A royal practical joke. *Journal of Chemical Education*, 25(2), p.93.



Acknowledgements

Thanks to Dr Marc Masen [the creator of Design Week]