

Mechanism Feasibility Design

Tutorial Session Notes

Dr. James Gopsill

Lecture Before Reading Week

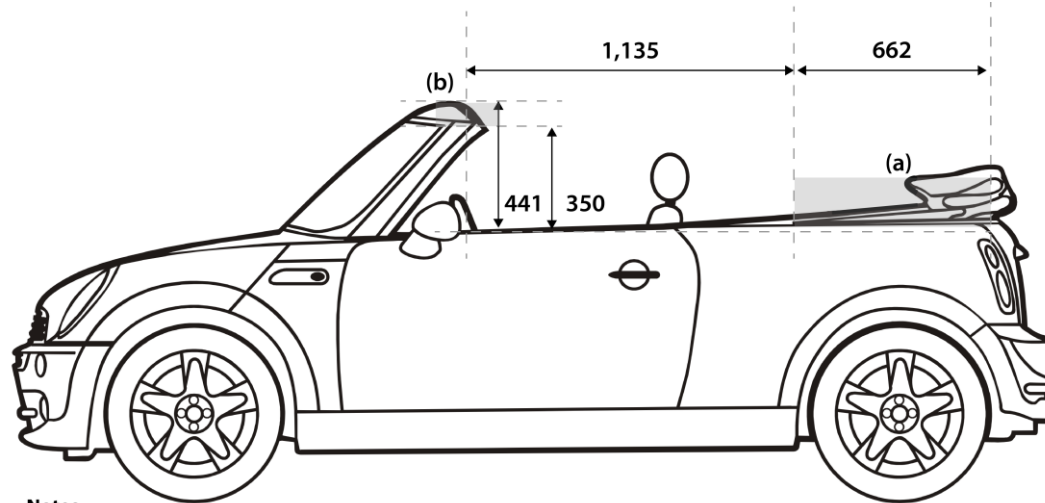
1. Teaching Aims
2. Multi-Bar Mechanisms
3. Feasibility Design
4. Exercise
5. Design Process
6. Previous Years
7. Timeline & Resources
8. Skills Applied
9. After Reading Week Prep

Exercise

To design a mechanism to deploy and retract a car convertible roof



Exercise

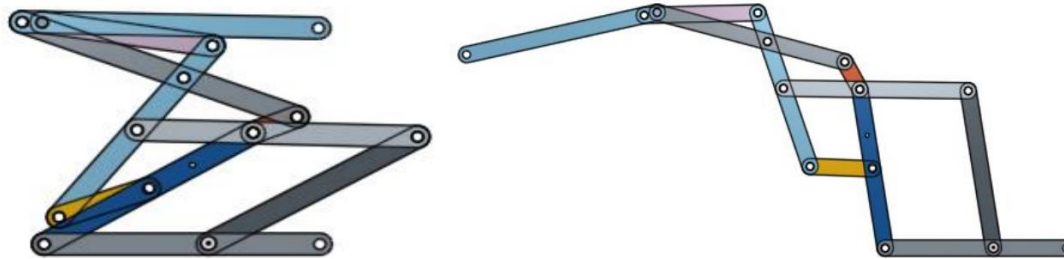


Notes

All dimensions in mm

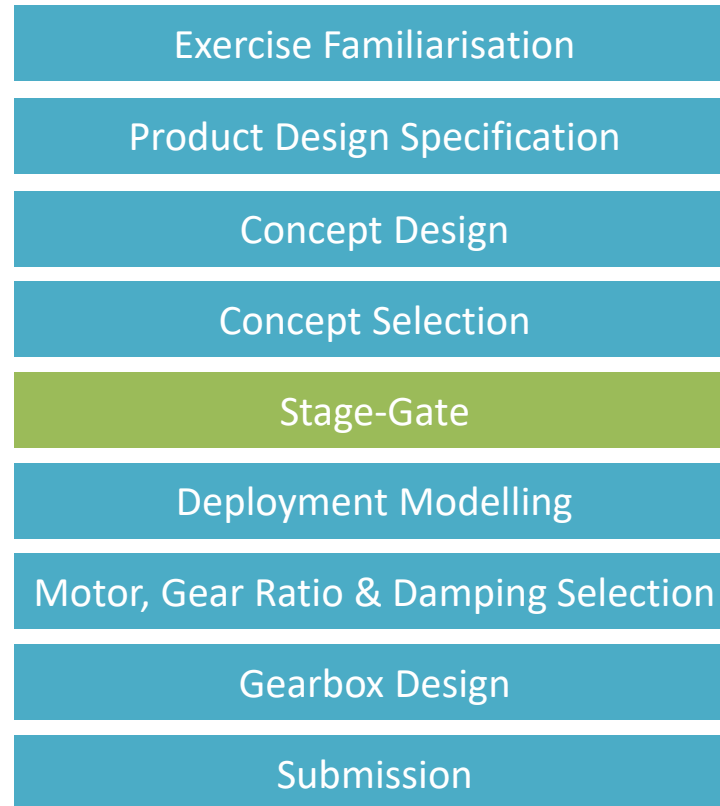
(a) - Ideal position where the deployment mechanism can be connected to the vehicle

(b) - Windscreen connection point

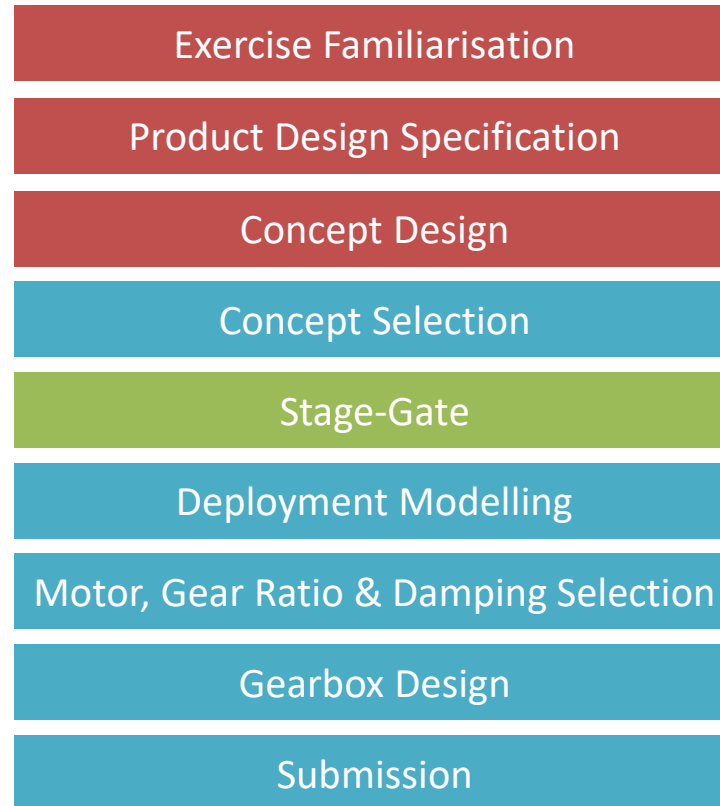


Taking a half-case approach

Design Process



Design Process



Today

Exercise Familiarisation

Product Design Specification

Concept Design

Concept Selection

Stage-Gate

Deployment Modelling

Motor, Gear Ratio & Damping Selection

Gearbox Design

Submission

1. Pair-up
 - Dating agency at the front
2. Pick-up a construction kit
3. Check the contents of kit
4. Initial research & calculations to start forming your PDS
5. Start generating some concept designs
6. Draw final concepts up using the linkage software

Support

<https://jamesgopsill.github.io/MechanismDesign/>

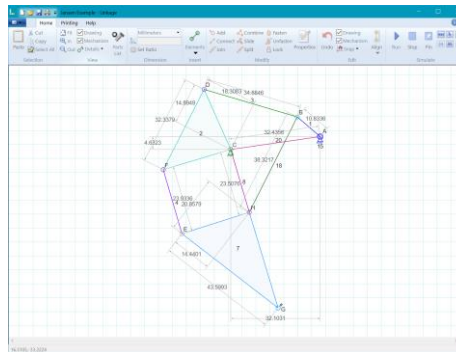
8 Academic Staff

Construction Kits

WARNING: Penalty for missing pieces at the end of the project! (0.5% per piece)

Linkage Software

- [Link on website](#)



001

MENG26000 DESIGN KITS

PART NO.	PART NAME	PART QTY
4121715	CONNECTOR PEG W. FRICTION	15
4211807	CONNECTOR PEG	15
4514554	3M CONNECTOR PEG	5
4542576	TECHNIC 15M BEAM	5
4522937	TECHNIC 13M BEAM	5
4603472	TECHNIC 11M BEAM	5
4645730	TECHNIC 9M BEAM	5
4495931	TECHNIC 7M BEAM	5
4210686	TECHNIC 5M BEAM	5
4210667	TECHNIC ANG. BEAM 4X2 90 DEG	2
4210753	TECHNIC ANG. BEAM 3X5 90 DEG	2

You are responsible for returning this box and its contents. Should you lose any parts, you must replace them with like-for-like from LEGO.

This Weeks Lecture

1. Before Reading Week
2. Product Design Specification
 - Refresher
 - Report Section Guidelines
3. Concept Generation
 - Present 6 Techniques
 - Report Section Guidelines
4. Concept Selection
 - Present 4 Techniques
 - Report Section Guidelines
5. This Weeks Task
6. Next Weeks Lecture

Q & A