

# Welcome to Mechanical Engineering at Brunel

A dark blue circular logo with the text "Discover Brunel" in white, bold, sans-serif font.

Discover  
Brunel

## Congratulations on securing your place at Brunel

We're looking forward to meeting you - either in person or online - and introducing you to life at Brunel.

To help us get started, we've put together a short activity and some further information to help you prepare for your course - including a snapshot of the topics you'll cover and useful resources.

If you have any questions please email [cedps-tpo-maceadmin@brunel.ac.uk](mailto:cedps-tpo-maceadmin@brunel.ac.uk).

## Pre-arrival activity

We'd like you to complete a short activity before you join us. We can discuss your answers in one of your first personal tutor sessions. Your work will not be officially assessed however it will allow your tutor to get to know you better.

**Please answer the following questions and create an A4 poster of your research findings using Powerpoint and save your final version as a PDF.**

1. Compare similar-sized 2020 light duty passenger vehicles in the hybrid, diesel, petrol and all-electric classes in terms of cost, range, time to re-fuel/charging, reliability, weight, tyre wear, maintenance, MPG and CO<sub>2</sub> emissions.
2. From your list, please consider which used-vehicle you would choose to purchase upon graduation of your engineering degree and explain your reasoning. Remember, the vehicles that you have studied will have become four years old and have done at least 60,000 miles.
3. Repeat the comparisons from question one for heavy duty trucks, ships and aeroplanes. Summarise your findings regarding a feasible technology (hybrid, diesel, petrol, natural gas and all-electric classes, gas turbine) that is best suited for heavy duty applications.
4. As an engineer, what will be your contribution towards the reduction of global CO<sub>2</sub> emissions?

## Sample lecture topics

Three core topics to get you started on Statics.

1. [Vector analysis: the basics](#)
2. [Equilibrium of a particle: here the use of vector analysis is required](#)
3. [Moment produced by a force vector](#)

More advanced topics.

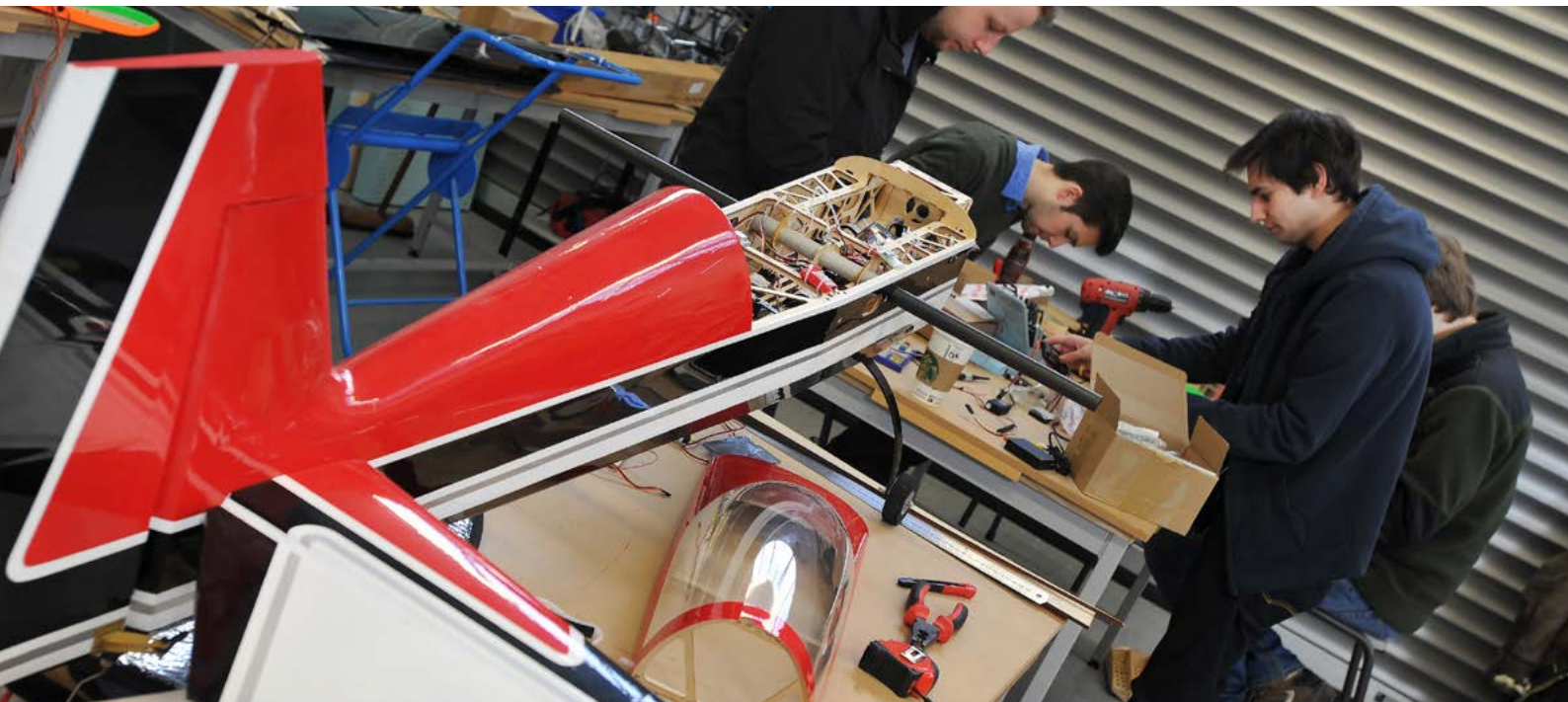
4. [Equivalent system force-moment: learn how to build an equivalent system that is in the same equilibrium conditions as the original system](#)
5. [Equilibrium of rigid bodies: different types of supports and reactions, and how to derive equilibrium equations](#)
6. [Beams: transverse shear force diagram, bending moment diagram](#)

## Reading list

- “Engineering Mechanics: Statics”, R.C. Hibbeler
- “Vector Mechanics for Engineers: Statics”, F. Beer and E. Johnston
- “Engineering Mechanics: Statics”, J.L. Meriam, J.N. Bolton and L.G. Kraige
- “Stress Analysis for Lightweight Structures: A Matlab Oriented Approach”, R. Cardoso

We look forward to meeting you in Welcome Week (Monday 21 – Friday 25 September).

*Mechanical Engineering Team*



Find out more about Welcome Week  
[brunel.ac.uk/welcome-week](http://brunel.ac.uk/welcome-week)

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