



Excellence & Opportunity

Year 9 to KS4 Transition Support Engineering



Transition Project: Learning aim A: Understand engineering sectors, products and organisations, and how they interrelate

Teaching content A1: Engineering sectors, engineered products and interconnections

In preparation for the start of your course in September, you need to complete the following project.

Week 1: What is engineering?

Complete the following tasks:

1. Consider the meaning of the term 'engineering' and how engineering affects you in everyday life. Describe what you think engineering is.
2. Watch this video link: <https://www.youtube.com/watch?v=bipTWWHya8A>
3. Now aim to improve engineering description based on what you have learned from the video.
4. Watch this video link and take notes: Short video clip from the internet that illustrates engineering innovation, e.g. 'What is engineering?', <https://www.youtube.com/watch?v=FAJGx3zP-Eo>
5. Make a list of five engineered examples that you think are innovative

Week 2: 57 EXTREME building Fails.

Complete the following tasks:

1. Watch this video: 57 Extreme building fails: <https://www.youtube.com/watch?v=qPhVZExcGXg&t=14s>
2. Go back through the video and choose ten examples out of the fifty seven engineering fails.
3. Create a solution to the engineering issues you have chosen by either sketching or writing the improved idea.

Week 3: The need for engineers.

Complete the following tasks:

1. State why engineers are needed and how many types of engineers you can think of.
2. Use the internet to find as many types of engineers as you can and compare this with the original number of types you knew at the start of the task.
3. Create a diagram through digital or writing media showing the interconnections between types of engineers and engineering disciplines. So for example a Software engineer will work and communicate with an electrical engineer when designing and manufacturing a new mobile phone.

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Week 4: The safe application of practical knowledge.

Complete the following tasks:

1. Watch the following video: Short video clip from the internet that illustrates how accidents are caused, e.g. 'What Causes Accidents - Safety Training Video - Preventing Accidents & Injuries',

<https://www.youtube.com/watch?v=dBf6BTX1bmM>

2. Who is responsible for safety in the work place?

3.

Week 5: Engineering sectors.

Complete the following tasks:

Here are the main engineering sectors – **aerospace, automotive, communications, electrical/electronics, mechanical, environmental, transport, rail and marine**

1. Watch the following video:

'Aerospace Engineers – What is it?':

<https://www.youtube.com/watch?v=STYw2OTOveY&list=PLTQHtldEisnXVcVlQHT7Bosd4xj-YQXpW&index=1>

2. Research online and take notes on what the other engineering sectors do:

- **automotive**
- **communications**
- **electrical/electronics**
- **mechanical**
- **environmental**
- **transport**
- **rail**
- **marine**

Week 6: Specialist organisations in sectors.

Complete the following tasks:

1. Consider if any organisations you have looked at are seen as performing very highly specialist functions.
2. Watch the following video: Short video clips from the internet that illustrate more about specialist engineering organisations, e.g. 'Boeing 737 MAX winglets in the wind',
<https://www.youtube.com/watch?v=vD828p9NtOU>



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2. Watch the following video: 'Boeing 787 conducts fatigue testing',
<https://www.youtube.com/watch?v=TH9k9fWaFrS>
4. Find out, by researching online, what radar is and what an auxiliary power unit is.
5. Find out which hydraulic systems are used in motor vehicles, making notes and using sketches to help explain.
6. what could go wrong if a product idea is not communicated correctly?

Week 7: Job roles.

Complete the following tasks:

1. Make a list of different engineering job roles that are required within engineering organisations.
2. Describe the job roles of the following: of maintenance technician, machine operator, aircraft fitter and design engineer.
3. Use your notes to create a mind map including the skills required for each role. Check if there are any similarities between the different job roles.
4. Choose an engineering job role and find out their annual salary.
5. Find out what a telecommunications engineer does.

Suggested Reading or Viewing:

Websites

<https://www.imeche.org/industry-sectors>, *Institution of Mechanical Engineers, Industry Sectors* – latest news in various industry sectors

<https://www.theiet.org/apprentices/area-engineering>, *The Institution of Engineering and Technology, Which area of engineering?* – looking at the opportunities for different types of apprenticeships

<https://www.eef.org.uk>, *The manufacturers' organisation, We are EEF* – information on supporting manufacturing and engineering in the UK

<https://www.bbc.co.uk/education/subjects/zmhg9j6>, *BBC Bitesize Engineering* – learning resource information for engineering

<https://www.careersadviceforparents.org>, *Careers Advice for Parents, creating better futures* – information to help plan careers and the skills needed for employment