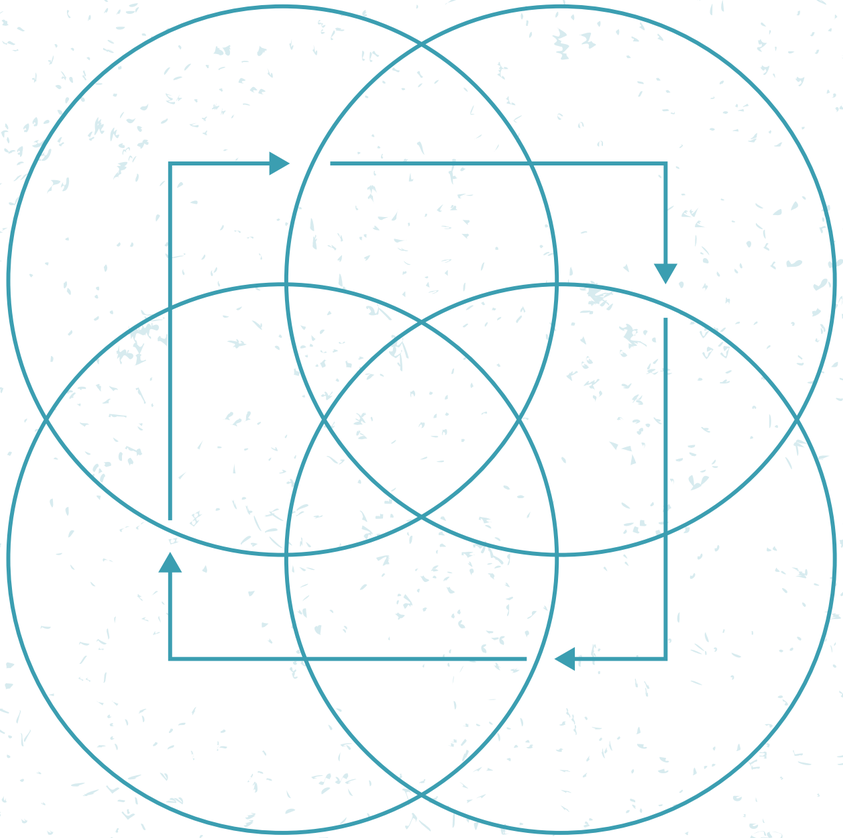
North Oxfordshire Academy
The best in everyone™
Part of United Learning

Introduction to Level 3 Engineering Course



Presented by Joshua Hoskins
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DESIGN, TECHNOLOGY & ENGINEERING
North Oxfordshire Academy
North Oxfordshire

Your Two-Year Journey Overview

01 Year 1 - The Year of Exams

- Unit 1: Engineering Principles
- Unit 2: Engineering Applications
- Skills: CAD, practicals, prototyping, electronics, theory

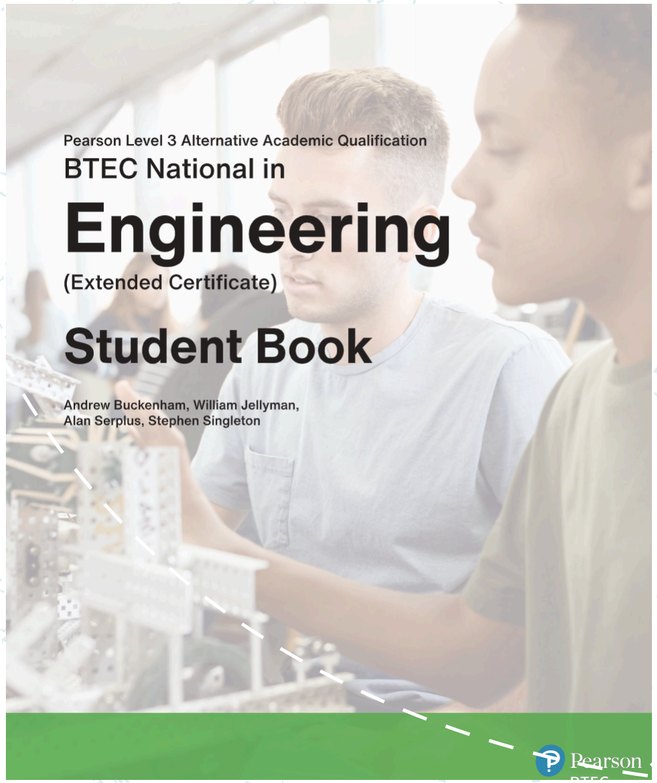
02 Year 2 - Culmination of Skills

- Unit 3: Engineering Design
- Unit 4: Engineering Project
- Final project: Solving a real engineering problem

03 Real-World Applications

Opportunities to engage with industry professionals and projects allow you to apply your knowledge in **real-world scenarios**.

Key Focus Areas in Engineering



01 Theory and Practical Skills

You'll gain a solid foundation in **theory and hands-on experience**, preparing you for real-world engineering challenges.

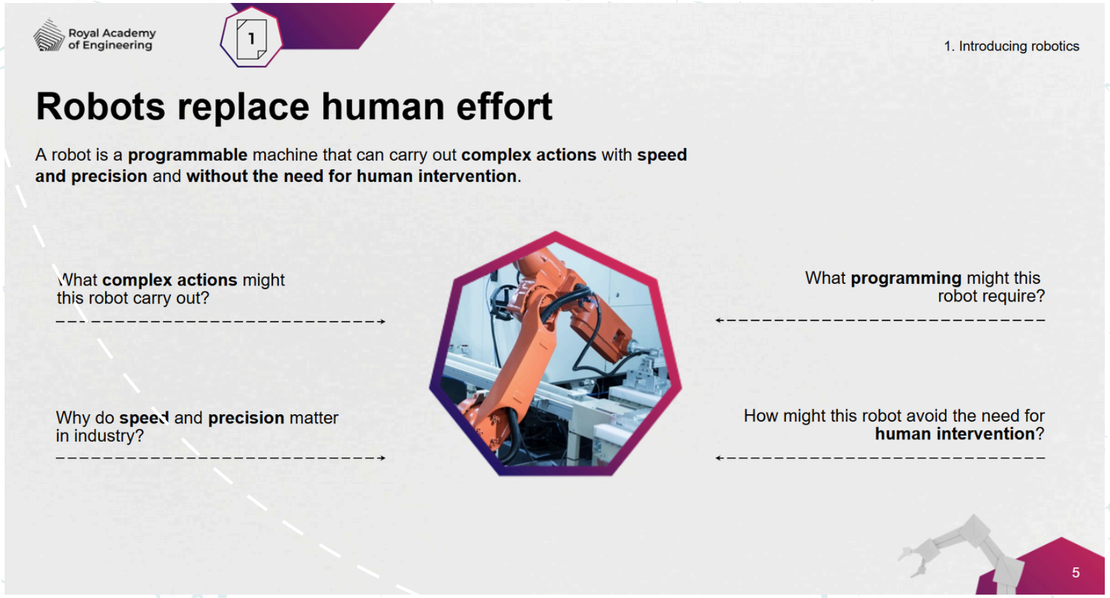
02 Design and Present

You'll develop creative design solutions and learn how to present your ideas clearly and confidently just like professional engineers do in the real world.

Mandatory units – students complete and achieve all units

Unit number	Unit title	GLH	Type	How assessed
1	Engineering Principles	120	Mandatory	External
2	Engineering Applications	60	Mandatory	External
3	Engineering Design	120	Mandatory	Internal
4	Engineering Project	60	Mandatory	Internal

Engaging with Emerging Technologies



01 Emerging Technologies

|Hands-on experiences in **AI, VR**, and robotics, 3D Printing that enhance your engineering skills.

02 Links with Engineering Sectors

Collaborate with industry professionals on projects that drive innovation and inform your own pathway.

03 Challenges

Experience live engineering challenges set by professionals where they want to see what you can do!

Building Connections for Success

01 Mentorship Programme

Connect with industry professionals for **guidance and insight** with Driving Ambition

02 Rutherford Appleton Lab

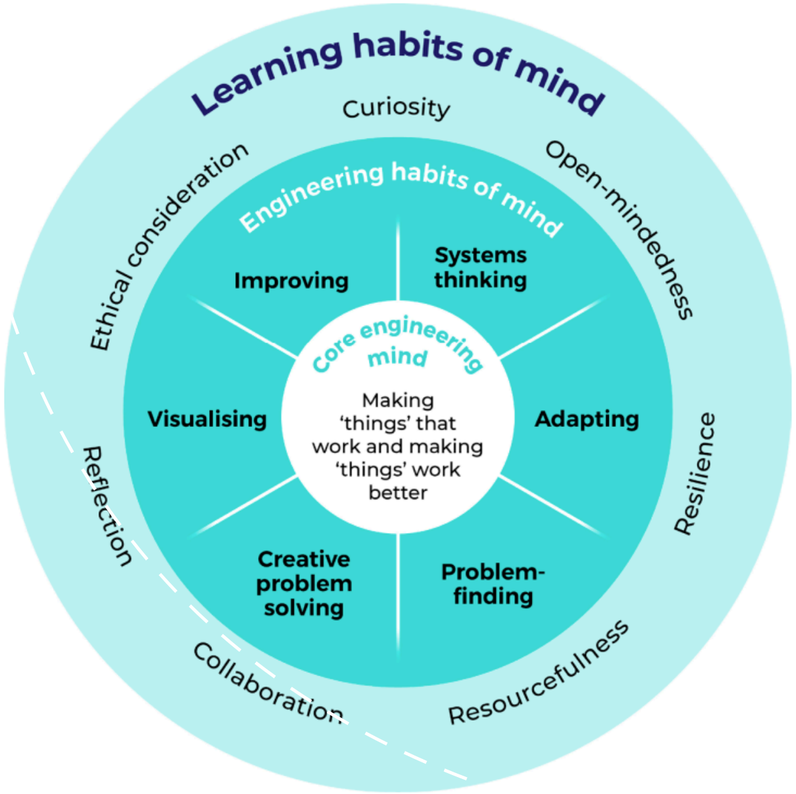
Experience cutting-edge research and **hands-on learning** at one of the UK's leading science facilities.

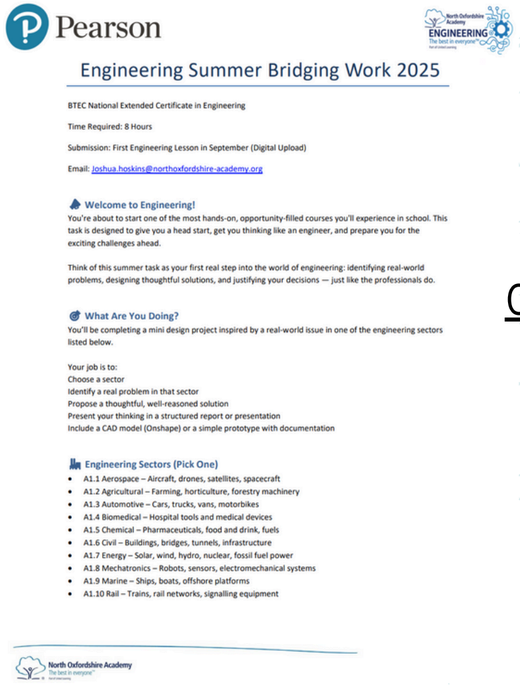
03 University & Industry Engagement

Participate in workshops and events that promote **career readiness** and real-world engineering experiences. whilst building towards your individual project...

Your Summer Challenge Overview

abits of mind (EHoM) (Lucas, Hanson and Claxton, 2014)





Pearson

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Engineering Summer Bridging Work 2025

BTEC National Extended Certificate in Engineering

Time Required: 8 Hours

Submission: First Engineering Lesson in September (Digital Upload)

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Welcome to Engineering!

You're about to start one of the most hands-on, opportunity-filled courses you'll experience in school. This task is designed to give you a head start, get you thinking like an engineer, and prepare you for the exciting challenges ahead.

Think of this summer task as your first real step into the world of engineering: identifying real-world problems, designing thoughtful solutions, and justifying your decisions — just like the professionals do.

What Are You Doing?

You'll be completing a mini design project inspired by a real-world issue in one of the engineering sectors listed below.

Your job is to:
Choose a sector
Identify a real problem in that sector
Propose a thoughtful, well-reasoned solution
Present your thinking in a structured report or presentation
Include a CAD model (Onshape) or a simple prototype with documentation

Engineering Sectors (Pick One)

- A1.1 Aerospace – Aircraft, drones, satellites, spacecraft
- A1.2 Agricultural – Farming, horticulture, forestry machinery
- A1.3 Automotive – Cars, trucks, vans, motorbikes
- A1.4 Biomedical – Hospital tools and medical devices
- A1.5 Chemical – Pharmaceuticals, food and drink, fuels
- A1.6 Civil – Buildings, bridges, tunnels, infrastructure
- A1.7 Energy – Solar, wind, hydro, nuclear, fossil fuel power
- A1.8 Mechatronics – Robots, sensors, electromechanical systems
- A1.9 Marine – Ships, boats, offshore platforms
- A1.10 Rail – Trains, rail networks, signalling equipment

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Explore a Sector

01

- Choose one of the 10 engineering sectors from the course
- Identify a real-world safety-related problem in that sector
- Do some research to understand the context and needs

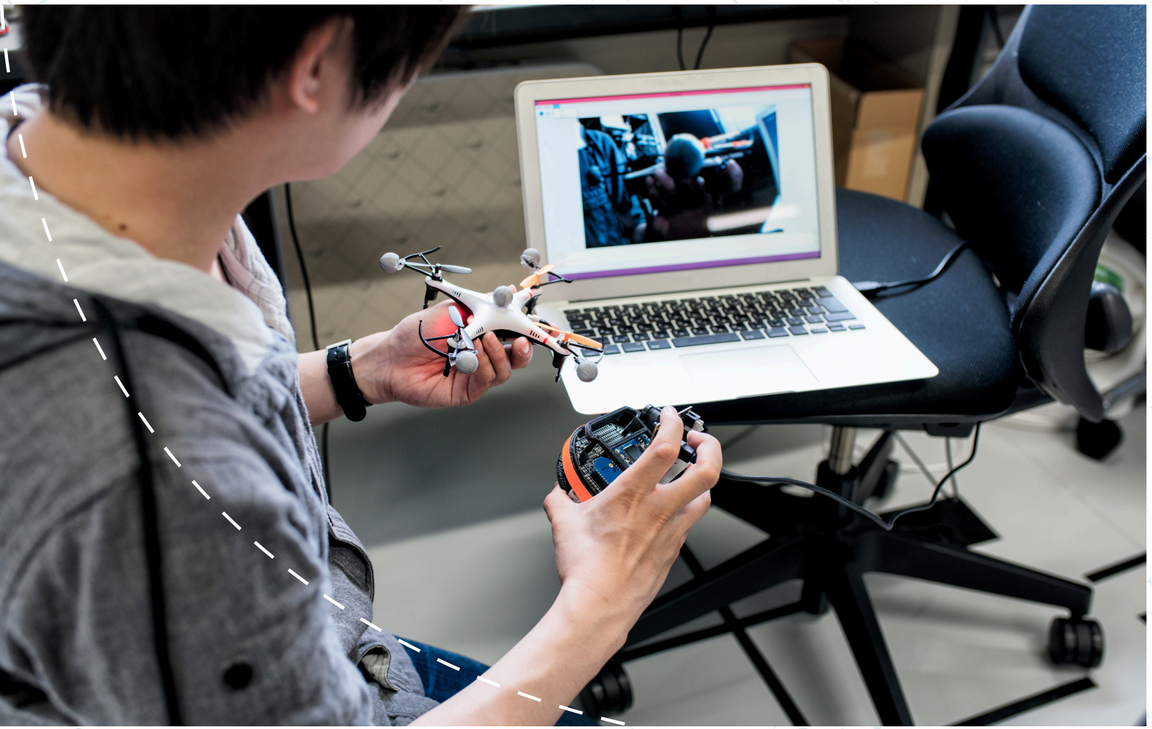
02 Design a Solution

- Come up with your own idea to solve the problem
- Create either a basic prototype or an Onshape CAD model
- Consider safety, materials, and how it might work in real life

03 Send ME your work!

- Write a report explaining your process and solution
- Include sketches, photos, or CAD screenshots
- Reflect on what worked, what didn't, and what you'd improve

Submission Requirements Overview



01 Detailed Report

A well-structured report is essential for demonstrating your **understanding of engineering concepts**.

02 CAD or Prototype

Creating a CAD model or physical prototype allows you to apply theoretical knowledge **practically**.

03 Optional Extras

Incorporating additional elements can enhance your submission and show your creativity and **commitment to excellence**.

ITS NOT AN ASSESSMENT!!

Being Prepared for Next Year

01 Core Equipment

- Large ring binder, pens, and booklets
- A personal lab coat – white or blue (Portwest preferred)
- Enthusiasm and a readiness to get hands-on

02 Tech Setup

- Laptop (optional) – avoid Apple, aim for strong specs (RAM, GPU, CPU)
- SolidWorks will be used at school and home
- Tablets can be used for notes and assignments too

03 Independent Mindset

Independent Mindset

- Take ownership of your learning and creativity
- Our workshops and tools are yours to use
- Build, design, and experiment in your own time

Join the Subject Leadership Team

01 What It Is

- A new Engineering subject leadership team
- Help shape the future of Engineering at NOA
- Be a voice for your class and your ideas

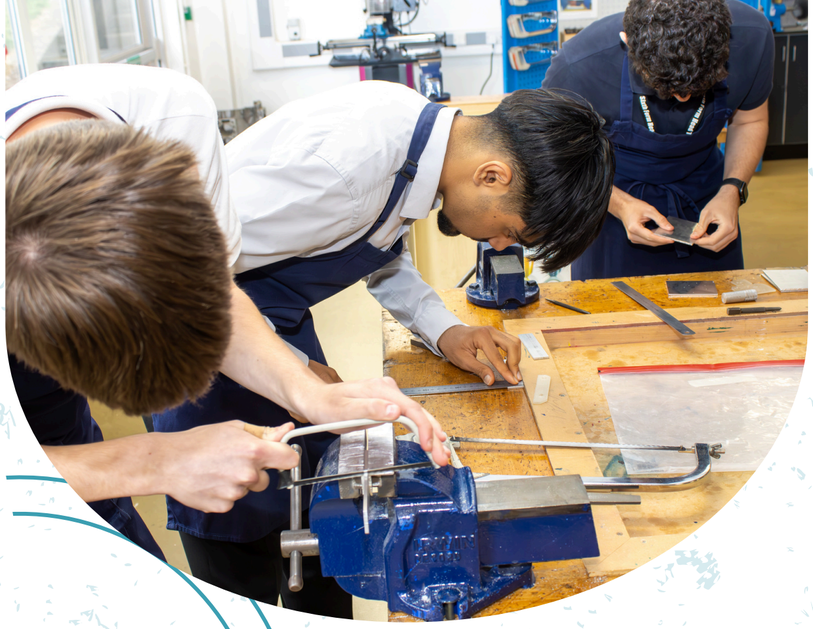
02 What You'll Do

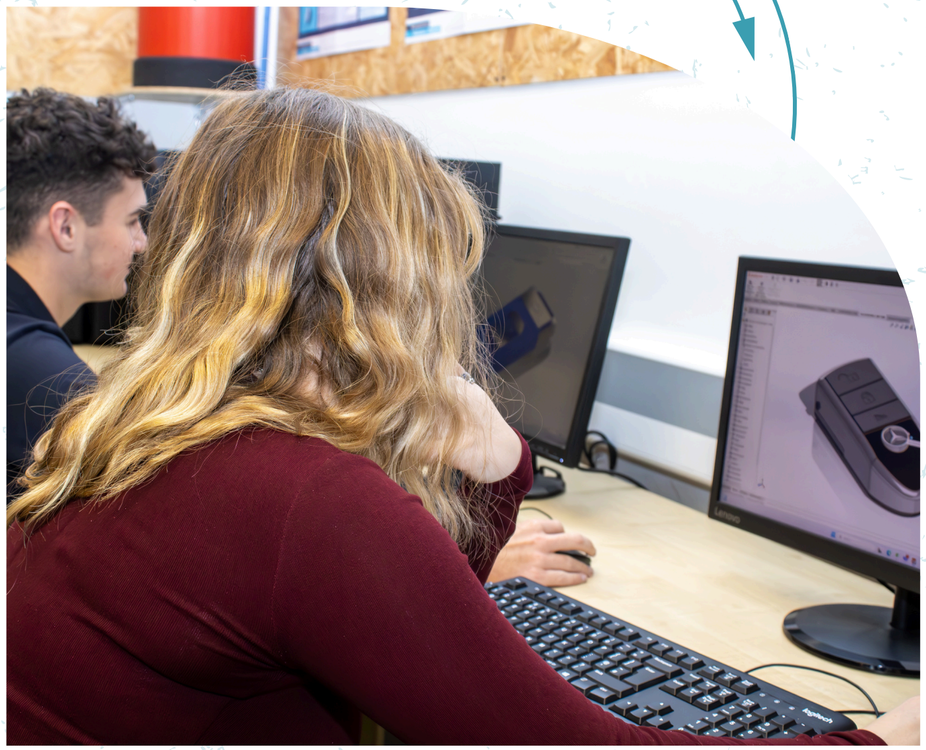
- Suggest projects, trips and events
- Support school events and department needs
- Take on roles like organiser, promoter or spokesperson

03 Why It Matters

Shape your own experience and **make a difference** in the learning experience for future students in engineering.

- Real leadership experience to add to your CV
- Possible small project budget to bring ideas to life
- Details coming in September — let me know if you're interested!





“It’s going to be an incredible year — nothing could possibly go wrong… absolutely everything will go perfectly… probably!”

Mr. Hoskins, speaking with complete confidence (and maybe a little hope)

Thank you for listening!

Questions?