

Year 12 Transition

Welcome to Nailsea Sixth Form

KS5 Subject:

Engineering

Objectives for Transition Tasks:

- To start to develop expected 6th form study skills, including independence
- To culture an interest and passion for your chosen subject through enquiry
- To learn core concepts of the subject to use in your studies

Watch:

The Internet of Things (IoT) Explained:

This video explains the Internet of Things (IoT), highlighting how interconnected devices communicate and share data over the internet. It explores IoT's impact on sectors like healthcare, transportation, and agriculture, while also addressing associated security challenges.

[50 Years Of The Internet - BBC Click \(youtube.com\)](#)

20 Inventions That Changed The World:

The world has been changed by a series of innovative new machines, inventions and devices. Any effort to count down the most significant inventions is surely controversial, but there are some major improvements that should probably be on any such list. Watch this video to explore more about this.

[20 Inventions That Changed The World! - YouTube](#)

Past and Present | Technology Then and Now:

We've all seen how much technology has evolved during our lifetimes what was big became small, what was small became even smaller, and computing power accelerates at bewildering speeds. So we've put together this comparative infographic of technological evolution for the perusal and delectation of techno-geeks everywhere.

[Past and Present | Technology Then and Now \(youtube.com\)](#)

Great Inventions | 60 Minutes Full Episodes:

From 2010, Morley Safer's report on Marty Cooper's great idea: the cell phone. From 2018, Scott Pelley's look at MIT's Media Lab, the Future Factory. From 2022, Anderson Cooper's story on the development of eVTOL "air taxis." And from this past July, Pelley's report on advancements in prosthetic technology.

[Great Inventions | 60 Minutes Full Episodes \(youtube.com\)](#)

Read:

Independent Task (to be submitted):

Part 1: Research and Identification

1. Identify Major Developments:

Research and select three significant engineering or technological advancements from the past 30 years.

For each advancement, provide:

- The year it was introduced.
- The key engineers, scientists, or companies involved.
- A brief description (100-150 words) of each of the advancements.

Part 2: Detailed Analysis

1. Impact on Society:

For each of the three advancements, write a detailed analysis (200-250 words) covering:

- The specific problems or challenges the advancement addressed.
- How it has changed everyday life or specific industries.
- Any significant improvements in efficiency, safety, sustainability, or quality of life.

2. Technological Evolution:

- Discuss how each advancement has evolved since its introduction.
- Identify any subsequent innovations that were influenced by the original development.

Top 30 Innovations of the Last 30 Years: This resource from Knowledge at Wharton provides a comprehensive list of significant innovations, including the Internet, PC/laptop computers, mobile phones, DNA testing, and more. Each entry includes a description of the innovation and its impact on society.

[A World Transformed: What Are the Top 30 Innovations of the Last 30 Years? - Knowledge at Wharton \(upenn.edu\)](#)

Electronics Engineering Technology

Advances: This document from ECPI University highlights advancements in electronics engineering technology, including control systems, embedded systems, and power systems. It also discusses the impact of these technologies on various industries.

[Electronics Engineering Technology Advances that Benefit Everyone \(ecpi.edu\)](#)

The 20 Biggest Tech Advances of the Past 20 Years:

The Institute of Economic Affairs provides an overview of significant technological advancements, including Skype, Google, the Human Genome Project, and electric cars. Each section explains the development and its broader implications.

[The 20 biggest tech advances of the past 20 years — Institute of Economic Affairs \(iea.org.uk\)](#)

Engineering in Society: The Royal Academy of Engineering explores the role of engineering within society, highlighting key advancements and their societal impacts. This resource is useful for understanding how engineering innovations influence various aspects of daily life and industry.

[rae-engineering-ethics-full-report_v7.pdf \(raeng.org.uk\)](#)

Part 3: Case Study

3. Select One Advancement for a Case Study:

- Choose one of the three identified advancements for a more in-depth case study.

4. In-Depth Analysis:

- Explain the engineering principles and technologies involved in the development of this advancement (150-200 words).
- Discuss the development process, including any obstacles faced and how they were overcome (150-200 words).
- Analyse current trends and future directions related to this advancement (150-200 words).

Part 4: Reflection

5. Personal Reflection:

- Write a reflection (200-250 words) on what you learned from this task.
- Discuss how understanding these advancements has influenced your perspective on the engineering profession.
- Reflect on the importance of continuous innovation and adaptability in engineering.

Submission Requirements:

- A detailed report including all research, analyses, case study, and reflection.
- Use appropriate diagrams, charts, or timelines to support your data and comparisons.
- Ensure all sources of information are properly cited.

Learning Outcomes:

- Understanding of significant engineering developments and their historical context.
- Ability to analyse the societal and technological impacts of these advancements.
- Research skills to conduct detailed case studies.

- Reflection on the importance of innovation and continuous learning in engineering.

Aim Higher Task:

Explore the Societal and Ethical Implications of Emerging Technologies



Question: Select one of the emerging technologies you identified in Part 1. Analyse the potential societal and ethical implications of this technology as it becomes more widespread over the next 20 years. Discuss how engineers and policymakers can address these issues to ensure the technology benefits society as a whole.

Guidelines:

- Identify and discuss potential ethical dilemmas associated with the technology (e.g., privacy concerns, job displacement, environmental impact).
- Explore how the technology might affect different societal groups, including potential benefits and drawbacks.
- Propose strategies that engineers and policymakers could implement to mitigate negative impacts and enhance positive outcomes.
- Write a detailed analysis (300-350 words) addressing these points.

DEADLINE FOR TRANSITION TASK: Please bring to your first lesson in September.