

Current Topics Assignment

Main objectives of the assessment: To research a topic of current interest in aerospace. To assess and communicate the current state and potential impact of the topic. You are required to prepare a technical report.

1. Assignment report

Students are required to submit an individual report which satisfies the main objectives of the assessment. The report assessment will be based on the following categories:

- Introduction, context and current state (20%)
- Current research and development (40%)
- Future development and potential impact (30%)
- Style and presentation (10%)

2. Indicative content

Your report must cover the following aspects of your chosen topic.

- **Introduction, context and current state:** **[20%]**
 - The context of the topic within aerospace.
 - The current state of knowledge or practice relevant to the topic.
- **Current Research and Development:** **[40%]**
 - The research challenges that need to be addressed and their context within aerospace.
 - What research and development is currently ongoing or planned. How is this being funded.
- **Future development and potential impact:** **[30%]**
 - The potential impact of the topic on the design or operation of aerospace vehicles.
 - Are there wider impacts relevant to the economy, government and regulation or society?
 - The timeframe when the topic is expected to deliver the anticipated impact.
 - Your critical assessment of the challenges facing the research and the likelihood of the research delivering the potential impact.

The remaining 10% of marks is awarded for style and presentation.

Style: You are writing a technical report as an engineer and for an engineering audience. Clear and concise communication is important. Please avoid language more appropriate

for marketing material. Appendices are discouraged and should only be used if absolutely necessary.

Referencing: All sources of information should be appropriately cited. Sources such as peer reviewed journals, technical reports, technical and aviation periodicals are preferred. The use of Wikipedia or similar online sources as references in the final report is discouraged and should be avoided unless no alternative exists.

Length: The report should be 4,000-5,000 words in length. The maximum word limit does not include: title page, contents list, references and appendices.

The report must be typed using Arial font, single spaced, font size 11. Page margins not less than 2 cm on all sides. The report should include the following:

- Cover sheet.
- Table of contents.
- Main body of report (divided into subsections as appropriate including 'introduction' and 'summary')
- References should be presented in a consistent and standard style.

Proposed topic

Aerodynamic drag reduction

Even a small reduction in drag can have a significant effect on fuel economy. For instance the laminar flow wing is an example of a technology aimed at delivering this. A technology demonstrator for a transonic Natural Laminar Flow (NLF) wing is now flying under the EU Clean Sky 2 programme. NLF potentially offers significant drag reduction, delivering reduced environmental impact. A NLF wing requires a high quality aerodynamics surface that is challenging to manufacture and maintain under realistic conditions. It would also require a reduced cruise speed over current airliner designs. (this is just an example)

Learning outcomes for the assessment:

- Awareness of current research and development trends in aerospace.
- Appreciation of discipline interaction.
- Recognition of practical design drivers and constraints.
- Analysis and interpretation of specialist knowledge.
- Use of broad aeronautical knowledge to evaluate potential impact of current research and development on future aerospace practice.
- Independently research and apply technical information.
- Communicating information, opinions and arguments coherently and effectively.