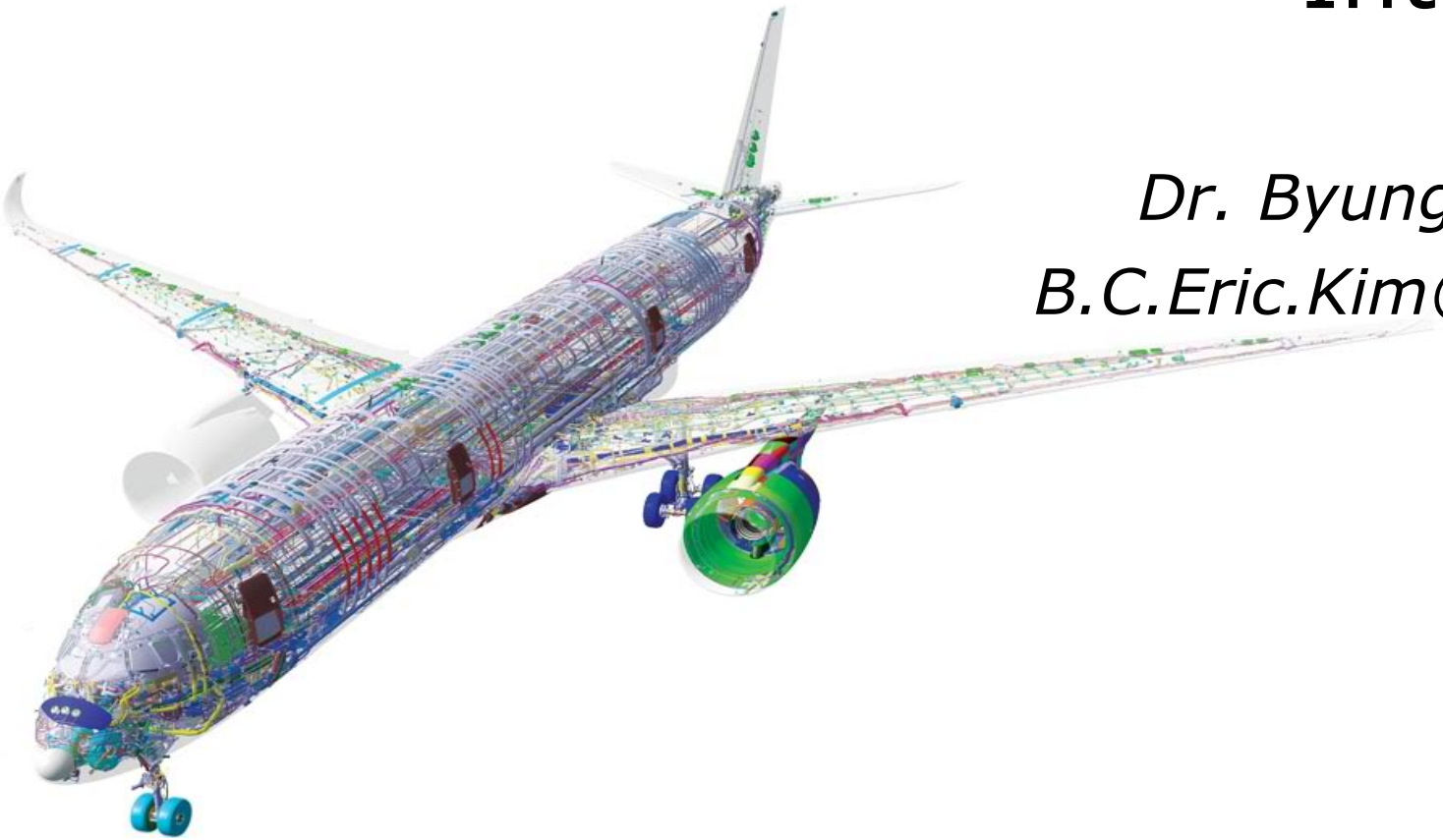
University of BRISTOL

StM3. Aircraft Manufacture
Introduction



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Course introduction

- **Lecture 1 (Week 1)**
  - Manufacturing: Metallic Wings
- **Lecture 2 (Week 2)**
  - Manufacturing: Composite Wings
- **Lecture 3 (Week 3)**
  - Assembly: Mechanical Joining
- **Lecture 4 (Week 4)**
  - Assembly: Adhesive Joining

Organisation of the course

- You will be given *a research topic to work on*, *it will appear in the June exam* and *must be answered* as a compulsory question (in about 30 minutes during 3 hour exam).

- During the course, we will reverse engineer two representative aircraft components (metallic and composite aircraft wings) and discuss how they are manufactured.
- You need to apply the same analysis method to investigate the given engineering products for your research.

- The examiner (me) will be looking for evidence of coherent thought and study and not a simple regurgitation of notes.
- Basically the amount of time and effort you spend to study the subjects can be reflected by the depth and details of your exam answer.

Exam questions

Q5.1 10 short answer questions ***(10 marks in total)***

- a)
- b)
- c)
- …

From the lecture notes

Q5.2 Describe the manufacturing processes used to produce (_____) ***(10 marks in total)***

- Describe the main functions of the product and what material and structural requirements exist. ***(3 marks)***
- Describe what materials would be used and why it would be more suitable than other materials to satisfy the manufacturability and performance requirements. ***(3 marks)***
- Describe what manufacturing processes are used for the product and explain their working mechanisms taking into account the material characteristics and relevant fundamental theories. ***(4 marks)***

Research topic

Composite Pressure tank

Hydrogen storage tank

Cryogenic fuel tank for rockets (SPACE-X)

CNG or hydrogen storage tank