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Module Code: 3AAD0009

Title of Module

Full Title: Aerospace Performance, Propulsion, Design & Manufacture

Short Title: Aero Per Pro Des Man

MODULE

3AAD0009 (A 05/6)

Aerospace Performanc...

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Version: 1

Credit Points: 30

Level / ECTS Level: 3

First Offered: 1/9/2004 00-00-00

6. Home Department:

AAD

7. Departments(s) contributing to teaching:

9. Module Aims:

- * develop an understanding of the theories and practices associated with the performance analysis of aircraft
- * acquire an understanding of the design and performance of aircraft powerplant
- * experience the process of producing preliminary designs for a whole aircraft through group activity
- * develop a professional attitude and critical approach to the application of engineering knowledge and skills
- * acquire a knowledge and understanding of the manufacturing process used in the aircraft industry

10a. Learning Outcomes: Knowledge and Understanding:

- * have knowledge and understanding of aircraft gas turbine component design and performance
- * understand how metallic and polymer-composite aircraft components are manufactured to shape, using conventional forming, joining and surface finishing techniques
- * have knowledge of the principal methods of aircraft assembly
- * have understanding of aircraft performance analysis methods

10b. Learning Outcomes: Skills and Attributes:

- * demonstrate practical skills in teamwork, leadership, planning and project management
- * exercise effective communications skills
- * apply knowledge of aircraft aerodynamics, performance, propulsion, stability, control, structures, materials and manufacture
- * specify the manufacturing and assembly processes for an aircraft structure

11. Module Content

11a Module Content:

A typical Aerospace Design Group Project involves the design of an aircraft to meet a specification stated by the course leader, to a depth normally associated with an industrial feasibility study.

Students have individual responsibility for particular aspects of the overall design but must interact closely with the other group members to ensure that their work is completed within a suitable timescale to meet the overall aims of the aircraft.

Performance of Aerospace Vehicles covers atmospheric properties and air speed definitions, straight and level flight, climbing flight, take-off and landing performance and procedure.

Propulsion of Aerospace vehicles covers the development and variants of gas turbine engines, gas turbine component design and performance.

Aerospace manufacture covers the metallic forming, joining and surface finishing processes used in the aircraft industry. Fibre-reinforced polymer manufacturing technology is also covered, and assembly methods are discussed.

11b. Further details on how the learning outcomes of the module will be achieved:

Performance

1. Atmosphere properties and air speed definitions
2. Straight and level flight
3. Range
4. Climbing flight
5. Take-off and landing

Propulsion

1. Development and variants of gas turbine engines
2. Gas turbine component design and performance characteristics. Intakes; axial and centrifugal compressors; combustion chambers; turbines; exhaust systems; engine systems
3. Gas turbine performance

Assessment of aerospace performance and propulsion is through written assignments and a phase test.

Aerospace Manufacture

1. Metallic forming, joining and surface finishing processes
2. Fibre-reinforced polymer manufacturing technology
3. Assembly methods

Assessment of aerospace manufacture is through a written assignment.

12. Language of Delivery:

English

13. Language of Assessment:

English

14. Assessment Details (Academic):

Coursework: 100

Exam: 0

Other: In-course assessment consists of-

Performance Coursework (12.5%)

Propulsion Coursework (12.5%)

Design Project Coursework comprising peer phase assessment, seminar presentation and report (50%)

Manufacture Coursework (25%)

Assessment Notes:

15. Locations(s):
UH HATFIELD

16. Pre and Co-Requisite:
Pre-Requisite

Co-Req

Prohibited

17. Subject Board of Examiner/s:
AERO/CIVIL/MECH ENG L2/3

18. Comments

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