

Liverpool John Moores University

Title: AEROSPACE PRODUCTION
Status: Definitive
Code: **6510ENGRIV** (117229)
Version Start Date: 01-08-2016

Owning School/Faculty: Maritime and Mechanical Engineering
Teaching School/Faculty: Maritime and Mechanical Engineering

Team	Leader
Russell English	Y

Academic Level: FHEQ6 **Credit Value:** 20 **Total Delivered Hours:** 51
Total Learning Hours: 200 **Private Study:** 149

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	32
Practical	16

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	Exam		70	3
Essay	Essay		15	
Essay	Essay		15	

Aims

To provide an understanding of aerospace production technologies and their implications on design, and gives the understanding and practical experience of the techniques used in conventional and non-conventional machining required by graduates employed in aerospace manufacturing industries.

Learning Outcomes

After completing the module the student should be able to:

- 1 Employ a working knowledge of the range and properties of materials utilized in aerospace products
- 2 Employ a working knowledge of a range of processes and techniques utilized in the manufacture or assembly of aerospace products.
- 3 Identify and justify the selection of suitable materials and manufacturing processes for given aerospace products. Identify and then calculate or determine appropriate manufacturing parameters for selected processes.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Exam	1	2	3
CW 1	1	2	
CW 2	3		

Outline Syllabus

Aerospace Materials:

Applications and properties of aerospace materials: Composites (CFRP, GFRP, Carbon-Carbon Composites), Metals (Aluminium and alloys, Titanium and alloys, Nickel based alloys)

Composite Manufacturing Methods:

Composite manufacturing techniques and forms of supply, Pultrusion. Filament winding, Cloth layup, Integrated composite manufacturing methods for aerospace component production.

Aerospace Machining:

General Turning Technology, General Milling Technology, Chemical and electrical machining processes, Grinding.

Fabrication and Welding:

Sheet metal fabrication methods, Aerospace welding and joining methods (GTAW welding, Laser welding, EB welding, Resistance welding, Friction stir welding, Superplastic forming & diffusion bonding)

Aerospace Assembly:

Non-welding joining methods (adhesives and mechanical fastenings), Jig and tooling design concepts.

Learning Activities

Combination of lectures and laboratory work

Notes

To provide an understanding of aerospace production technologies and their implications on design, and gives the understanding and practical experience of the techniques used in computer aided manufacture required by graduates employed in the aerospace manufacturing industries.