

## Liverpool John Moores University

Title: AEROSPACE TECHNOLOGY  
Status: Definitive  
Code: **5513ENGIOM** (107414)  
Version Start Date: 01-08-2011

Owning School/Faculty: Engineering  
Teaching School/Faculty: Isle of Man College

Team	Leader
Gary Colquhoun	Y

**Academic Level:** FHEQ5  
**Credit Value:** 12.00  
**Total Delivered Hours:** 26.00  
**Total Learning Hours:** 120  
**Private Study:** 94

### Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	16.000
Practical	4.000
Tutorial	4.000

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Essay	AS1	Laboratory report(s)	30.0	
Exam	AS2	Examination	70.0	2.00

### Aims

*To develop the students ability to understand the advanced technologies that the aerospace industry relies on in particular aerodynamics, propulsion and environmental aspects.*

### Learning Outcomes

After completing the module the student should be able to:

- 1 apply the principles of thermodynamic and fluid mechanics principles to the solution of engineering problems
- 2 apply the theories and procedures associated with the aerodynamics and propulsion of aerospace vehicles.
- 3 recognise the causes and methods for prevention of environmental issues within the aerospace industry

### Learning Outcomes of Assessments

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

CW	1	2	
EXAM	1	2	3

### Outline Syllabus

*Fluid Mechanics – Aerodynamics*

*Introduction to basic internal/external aerodynamics at various Mach No's.*

*Evaluation of lift and drag wrt aerospace vehicles and air flow through a jet engine.*

*Applied Thermodynamics and Heat Transfer*

*Gas power cycles, gas turbine analysis, 1-d steady flow and jet propulsion.*

*Advanced forced convection, boundary layer theory, dimensional analysis, radiation.*

*Propulsion Technology*

*Appraisal of basic methods of propulsion associated with aerospace including i.c.engines, jet engines, turbomachinery and rockets. Fuels employed. Future developments.*

*Environmental aspects*

*Environmental issues. Measurable performance indicators : fuel burn ; emissions of nitrogen oxides (NOx) ; noise. Design optimisation trade-offs ; life cycle assessment.*

### Learning Activities

Lectures, tutorials and laboratory work.

### References

<b>Course Material</b>	Book
<b>Author</b>	Franzini, J.B., Finnemore, E.J.
<b>Publishing Year</b>	2001
<b>Title</b>	Fluid Mechanics with engineering applications
<b>Subtitle</b>	
<b>Edition</b>	10th ed

<b>Publisher</b>	McGraw-Hill
<b>ISBN</b>	

<b>Course Material</b>	Book
<b>Author</b>	Wilson, D.G.,
<b>Publishing Year</b>	1998
<b>Title</b>	The design of high-efficiency turbomachinery and gas turbines
<b>Subtitle</b>	
<b>Edition</b>	
<b>Publisher</b>	Prentice-Hall
<b>ISBN</b>	

<b>Course Material</b>	Book
<b>Author</b>	Rogers G.F.C. and Mayhew Y.R.
<b>Publishing Year</b>	1992
<b>Title</b>	, Engineering Thermodynamics Work and Heat Transfer
<b>Subtitle</b>	
<b>Edition</b>	
<b>Publisher</b>	Longman
<b>ISBN</b>	

## Notes

The module introduces the student to the underlying theory and practice of aerospace technology to enable a basic understanding of aerodynamics, propulsion and environmental aspects.

@inproceedings{Daugherty1965FluidMW, title={Fluid Mechanics with Engineering Applications}, author={R. L. Daugherty and Joseph B. Franzini and E. Finnemore}, year={1965} }. R. L. Daugherty, Joseph B. Franzini, E. Finnemore. Published 1965. Mathematics, Engineering. Properties of fluids fluid statics basics of fluid flow energy considerations in steady flow momentum and forces in fluid flow similitude and dimensional analysis steady incompressible flow in pressure conduits forces on immersed bodies steady flows in open channels fluid measurements unsteady-flow problems steady flow of compressible fluids Getting the books fluid mechanics with engineering applications si metric edition solution manual now is not type of challenging means. holychild.org. holychild.org/.../viewcontent.php? fluid . mechanics.with.engineering . applications clipped from Google - 1/2021. Fluid mechanics with engineering applications. www.philadelphia.edu.jo. Fluid Mechanics with Engineering Applications -Robert Long Daugherty 1985 This restandrun.holidayinn.com. restandrun.holidayinn.com/.../viewcontent.php? fluid . mechanics.with. engineering . applications clipped from Google - 1/2021. Fluid Mechanics With Engineering Applications By Daugherty www1.alvdalskurlag.no. The aim of Engineering Applications of Computational Fluid Mechanics is a continuous and timely dissemination of innovative, practical and industrial applications of computational techniques to solve the whole range of hitherto intractable fluid mechanics problems. The journal is a truly interdisciplinary forum and publishes original contributions on the latest advances in numerical methods in fluid mechanics and their applications to various engineering fields including aeronautic, civil, environmental, hydraulic and mechanical. Publons users have indicated that they sit on Engineering Applications of Computational Fluid Mechanics' editorial board but we are unable to verify these claims. Top reviewers on Publons (Manuscripts reviewed in last 12 months).