**Module Description Form**

**16231 (ME207 sem1/ME213 sem2) Flight and Spaceflight 1**

**Module Registrar:** Dr M Stickland  
[matt.stickland@strath.ac.uk](mailto:matt.stickland@strath.ac.uk)

**Other Lecturers Involved:** Prof R Brown

**Credit Weighting:** 10 (ECTS 5)

**Semester:** 1 and 2

**Assumed Prerequisites:** none

**Compulsory / elective class**

**Academic Level:** 2

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**Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):**

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Tutorial</th>
<th>Laboratory</th>
<th>Groupwork</th>
<th>External</th>
<th>Online</th>
<th>Project</th>
<th>Assignments</th>
<th>Private Study</th>
<th>Total</th>
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<tbody>
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<td>24</td>
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**Educational Aim**

This module aims to give a theoretical and historical background to the development of modern aircraft and spacecraft design.

**Learning Outcomes**

On completion of the module the student is expected to have a sound knowledge of:

- **LO1** The history of flight, aircraft propulsion, and spaceflight.
- **LO2** The generation of lift, drag and thrust.
- **LO3** Aircraft flight instruments.
- **LO4** Aircraft and rocket propulsion and rocket staging.

**Syllabus**

The module will teach the following:

1. History of flight.
2. Theoretical aerodynamics: aircraft layout and nomenclature, lift and drag coefficients, Bernoulli’s equation.
7. Generation of thrust: propeller theory, history of turbojet development, gas turbines, inlets, compressors, combustion chambers, turbines and afterburners.
8. Spaceflight: history of rocket development, rocket engines, multistaging, escape velocity.

**Assessment of Learning Outcomes**

**Criteria**

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

- **LO1** The history of flight, aircraft propulsion, and spaceflight.
  - **C1** Have a sound knowledge of the history of aviation and be able to discuss this.

- **LO2** The generation of lift, drag and thrust.
  - **C1** Be able to explain how lift is created and what causes flow separation.
  - **C2** Understand non dimensional numbers in relation to lift drag and Reynolds effects.
  - **C3** Be able to calculate lift and drag forces using lift and drag coefficients.
LO3 Aircraft flight instruments.
C1 Understand how flight instruments work and be able to describe them in detail.
C2 Be able to explain the difference between true, indicated and equivalent airspeed.

LO4 Aircraft and rocket propulsion and rocket staging.
C1 be able to describe how jet and rocket engines produce thrust.
C2 be able to describe the purpose of both constant pitch and variable pitch propeller.
C3 calculate burnout velocities for multiple stage rockets.

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

12 Principles of Assessment and Feedback
(on Learning & Teaching web pages: [www.strath.ac.uk/learnteach/informationforstaff/staff/assessfeedback/12principles/](http://www.strath.ac.uk/learnteach/informationforstaff/staff/assessfeedback/12principles/))

Assessment will be by online examination using MyPlace.

Students will be able to assess their progress and obtain feedback by a number of online quizzes that will not be assessed.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

<table>
<thead>
<tr>
<th>L/Outcomes</th>
<th>Examinations</th>
<th>Courseworks</th>
<th>Projects</th>
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<tbody>
<tr>
<td>LO1-4</td>
<td>Number</td>
<td>Month(s)</td>
<td>Duration</td>
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<tr>
<td>2</td>
<td>Jan / May</td>
<td>30min each</td>
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</table>

Indicate which learning outcomes (LO1, L02 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines:

Resit Assessment Procedures: 1 hour online examination via MyPlace in August resit diet.

PLEASE NOTE:
Students need to gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of an online exam.

Recommended Reading


Additional Student Feedback
(Please specify details of when additional feedback will be provided)

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<th>Date</th>
<th>Time</th>
<th>Room No</th>
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Session: 2014/15

Approved:

Course Director Signature: [Signature]

Date of Last Modifications: 28 August 2014
## Module Timetable

**Module Code:** 16231  
**Module Title:** Flight and spaceflight 1

### Brief Description of Assessment:

On line class tests

### Assessment Timing:

Indicate on the table below the start/submission dates for each assignment/project and the timing of each exam/assessment(s).

<table>
<thead>
<tr>
<th>Semester One</th>
<th>WK1</th>
<th>WK2</th>
<th>WK3</th>
<th>WK4</th>
<th>WK5</th>
<th>WK6</th>
<th>WK7</th>
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<th>WK10</th>
<th>WK11</th>
<th>WK12</th>
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<th>WK2</th>
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<th>WK4</th>
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