Module Description Form

16259 Aero-Design 1

Module Registrar: Dr M Macdonald
malcolm.macdonald.102@strath.ac.uk

Taught To (Course): Cohorts for whom class is optional/elective

Other Lecturers Involved: Prof R Brown

Credit Weighting: 10 (ECT 5)

Semester: 2

Assumed Prerequisites: 16231 Flight and Space Flight

Optional / elective class

Academic Level: 2

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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<tr>
<td>24</td>
<td>10</td>
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<td>50</td>
<td>16</td>
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Educational Aim

This module builds on the initial work carried out in Flight and Space Flight 1. The taught part of the class is reinforced by experimental investigation, flight experience and flight test. The class is also intended to introduce students to the mathematical modelling tools they will require in the third year aero design class.

Topics covered include:
- Aircraft design.
- Airworthiness and the flight envelope.
- Static, longitudinal stability and control of aircraft is considered.
- The standard atmosphere – variation of temperature, pressure and density with height is explained.


Learning Outcomes

On completion of the module the student is expected to be able to,

LO1 Demonstrate a thorough understanding of high lift devices on wings

LO2 Demonstrate a thorough understanding of the linkages between aircraft performance and aerodynamic performance

LO3 Demonstrate a thorough understanding of the relationship between the centre of gravity location and the stability and controllability of conventional aircraft.

Syllabus

The module will teach the following:

1. Aircraft design process
2. Airworthiness
3. Longitudinal stability and control.
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 & 2 Are assessed by a coursework.
C1 Understanding of principles demonstrated through calculations and written descriptions.
C2 Through calculations and written descriptions, demonstrate understanding of how overall performance is affected by design selections – e.g. wing sections and wing configuration.

LO3 Is assessed by a second coursework.
C1 Understanding of principles demonstrated through calculations and written descriptions.
C2 Through calculations and written descriptions, demonstrate understanding of how overall stability and control effectiveness is affected by design selections and aircraft configuration.

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

Assessment is by three courseworks and a laboratory exercise and report; students should expect to spend a considerable amount of effort completing these courseworks as they form an important learning exercise as well as an assessment unit.

Informal feedback is provided directly within lectures, with self and peer-directed feedback encouraged in course and laboratory work to the extent that it does not impinge on collaborative working. Written feedback is provided on returned courseworks and laboratory reports.

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

<table>
<thead>
<tr>
<th>Examinations</th>
<th>Courseworks</th>
<th>Projects</th>
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<tbody>
<tr>
<td>Number</td>
<td>Month(s)</td>
<td>Duration</td>
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<td>2</td>
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Indicate which learning outcomes (LO1, LO2 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines:
Late submission will not be accepted, deadlines will be communicated in lectures with at least two-week notice.
Laboratory assessment is two weeks after completion of laboratory exercise.

Resit Assessment Procedures: Submission of re-sit coursework prior to the commencement of the August Examination diet; students must contact class registrar to gain appropriate re-sit courseworks.

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 by the August diet. This re-examination will consist entirely of coursework.

Recommended Reading


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

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<th>Time</th>
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Session: 2014/15

Approved:

Course Director Signature:  

Date of Last Modifications: 27 August 2014
**Brief Description of Assessment:**

2 Courseworks and a laboratory report; *assessment timings are indicative only.* Laboratory reports are due two weeks after completion of laboratory exercise, which will run through the first six weeks of the semester.

**Assessment Timing:**

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

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<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>
<th>WK8</th>
<th>WK9</th>
<th>WK10</th>
<th>WK11</th>
<th>WK12</th>
<th>Exam Period</th>
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<th>Semester Two</th>
<th>WK1</th>
<th>WK2</th>
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