### University of Dundee
#### Module Specification

<table>
<thead>
<tr>
<th>Code</th>
<th>Suggesting MA52005</th>
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<tbody>
<tr>
<td>Module title</td>
<td>Advanced Fluid Dynamics</td>
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<tr>
<td>College</td>
<td>CASE</td>
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<tr>
<td>School</td>
<td>EPM</td>
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<tr>
<td>Credit rating: level, no. of credits</td>
<td>SHE H (SCQF 11) 15 SCOTCAT credits</td>
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#### Aims
The aim of this course is to provide insight into the wide range of phenomena in fluids which require advanced mathematical techniques.

#### Intended learning outcomes
1. **Skills**
   - Analysis of fluid dynamical systems,
   - problem solving,
   - mathematical modelling.

2. **Knowledge and Understanding**
   - Analysis of partial differential equations,
   - boundary layer problems,
   - statistical analysis of a stochastic system,
   - scaling laws of turbulence,
   - description of non-Newtonian fluids.

#### Indicative content
- Introduction (recap of basic fluid dynamics)
- Boundary Layers
- Instabilities
- Vortex Dynamics
- Turbulence
- Non-Newtonian fluids

#### Modes of delivery and student participation
on-campus

#### Teaching, learning and assessment
There will be three contact hours each week, a mixture between lectures and tutorials. Items of continuous assessment will be given regularly throughout the semester, with full feedback given. A 3-hour exam will be held during the December diet.

#### Summative assessment:
- **Coursework (%)**
- **Examination (%), No. and duration of exams.** coursework (20%), examination (80%), one three hour exam held in December

When taught
- Semester 2

Pre-requisites or entry requirements
- Basic fluid dynamics

Co requisites
- none

Anti-requisites
- none
<table>
<thead>
<tr>
<th>Further information</th>
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<tr>
<td>Date of Approval</td>
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<tr>
<td>Applicability of Module Specification</td>
<td>Optional module for mathematics students matriculating from session 2014/15 onwards.</td>
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*Academic Affairs*

*December 2008*