This document provides a definitive record of the main features of the programme and the learning outcomes that a typical student may reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities provided. This programme specification is intended as a reference point for prospective students, current students, external examiners and academic and support staff involved in delivering the programme and enabling student development and achievement.

### Programme Information

<table>
<thead>
<tr>
<th>Programme Title</th>
<th>Physics with Shock Physics</th>
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<tr>
<td>Award(s)</td>
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<td>Mode and Period of Study</td>
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<td>Cohort Entry Points</td>
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<td>Master’s Awards in Physics, Astronomy and Astrophysics</td>
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### Specification Details

| Student cohorts covered by specification | 2016/17 entry |
| Person responsible for the specification | Dr William Proud |
| Date of introduction of programme       | October 2013   |
| Date of programme specification/revision | March 2017    |
Description of Programme Contents

Shock physics focuses on the understanding of what happens to matter under extreme conditions. This research can be applied in many ways, including:

- Analysing the effect of meteorite impacts on planets, spacecraft and satellites
- Understanding how tsunamis are formed
- Understanding the high pressure conditions that occur at the core of planets

This course explores the response of a wide range of materials, from rock to plasma, when subjected to rapid or high pressure loading. This area is important for a number of applications, such as:

- Preventing impact damage to transportation vehicles
- Petrochemical and other offshore platforms
- Astrophysics and studies into the internal conditions of nuclear energy reactors

You will be trained in techniques that are of value to potential industrial employers, government agencies and other organisations.

Learning Outcomes

The Imperial Graduate Attributes are a set of core competencies which we expect students to achieve through completion of any Imperial College degree programme. The Graduate Attributes are available at: www.imperial.ac.uk/students/academic-support/graduate-attributes

MSc in Physics with Shock Physics graduates will have:

- Undertaken an intellectually challenging and stimulating degree programme in shock physics;
- Extended their knowledge of advanced mathematical methods;
- Been given the opportunity to embark on a major, individual research project, with potential for scientific publication;
- Been given training in appropriate theoretical, computational and experimental research methods;
- Developed general skills as regards to written and oral communication, both to scientific and to more general audiences;
- Been equipped for doctoral research in shock physics and for careers where shock physics is an enabling discipline.

Entry Requirements

<table>
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<tr>
<th>Academic Requirement</th>
<th>First class (1st) Honours degree in physics. Other scientific disciplines (e.g. engineering, chemistry, mathematics) may be considered.</th>
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<tr>
<td>Non-academic Requirements</td>
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<td>English Language Requirement</td>
<td>Standard requirement</td>
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The programme’s competency standards document can be found at: http://www.imperial.ac.uk/physics/students/current-students/taught-postgraduates/
## Learning & Teaching Strategy

### Scheduled Learning & Teaching Methods
- Lectures
- Problem classes
- Practical work
- E-learning
- Tutorials
- Practical classes

### E-learning & Blended Learning Methods
- Blackboard
- Panopto

### Project and Placement Learning Methods
- Self-study project

## Assessment Strategy

### Assessment Methods
- Examinations
- Problem sheets
- Small projects
- Written report
- Oral presentation
- Report
- Viva
- Poster
- Dissertation

## Academic Feedback Policy
The feedback policy will follow the guidelines of the Department of Physics, where written feedback should be provided to the student within two weeks of the work being submitted.

Many of the lecture modules have classworks, which allow students to work through problems under the guidance of the lecturer.

The practical work is continually assessed.

### Re-sit Policy
The College’s Policy on Re-sits is available at: [www.imperial.ac.uk/registry/exams/resit](http://www.imperial.ac.uk/registry/exams/resit)

### Mitigating Circumstances Policy
The College’s Policy on Mitigating Circumstances is available at: [www.imperial.ac.uk/registry/exams](http://www.imperial.ac.uk/registry/exams)
Programme Structure

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<th>Summer Term</th>
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Assessment Dates & Deadlines

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<th>Assessment Type</th>
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<td>Written Examinations</td>
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<td>Practical Assessments</td>
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Assessment Structure

Marking Scheme

The MSc consists of two elements:
- Taught modules, accounting for 52% of the total programme mark, and;
- Practical work, accounting for 48% of the total programme mark.

The marking scheme for the elements and components will follow the ‘Regulations for the Examinations of Masters Degrees’

Final Degree Classifications

Pass - a candidate must:
- Achieve an aggregate mark of 50% or higher in each element;
- Pass each component with a mark of 40% or higher.

Merit - a candidate must:
- Achieve an aggregate mark of ≥60% and;
- A mark of ≥60% for at least two of the elements and;
- An aggregate mark of ≥50% for the other element.

Distinction - a candidate must:
- Achieve an aggregate mark of ≥70% and;
- A mark of ≥70% for at least two of the elements and;
- An aggregate mark of ≥60% for the other element.
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<th>Element (% Weighting)</th>
<th>Module</th>
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<td>Shock Waves in Context</td>
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<td>Fluid Dynamics</td>
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<td>Elective modules to the value of 12 ECTS</td>
<td>7.69% or 15.38% each**</td>
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*These modules may be replaced if the material has already been covered at undergraduate level.

**Module weightings are dependent on the size of the module e.g. modules worth 3 ECTS are weighted at 7.69%. Modules worth 6 or 8 ECTS are weighted at 15.38%.
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<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<th>Ind. Study Hours</th>
<th>Placement Hours</th>
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Please note that additional modules from outside the department as well as a range of specialist modules within the Department of Physics may be taken at the discretion of the Programme Director.
# Supporting Information

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<tr>
<th>Topic</th>
<th>URL</th>
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<tr>
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<td><a href="http://www.imperial.ac.uk/natural-sciences/departments/physics/students/current-students/taught-postgraduates/">http://www.imperial.ac.uk/natural-sciences/departments/physics/students/current-students/taught-postgraduates/</a></td>
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<td><a href="http://www.imperial.ac.uk/study/pg/apply/requirements">www.imperial.ac.uk/study/pg/apply/requirements</a></td>
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<td><a href="http://www.imperial.ac.uk/registry/proceduresandregulations/qualityassurance">www.imperial.ac.uk/registry/proceduresandregulations/qualityassurance</a></td>
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<td><a href="http://www3.imperial.ac.uk/registry/proceduresandregulations/regulations">http://www3.imperial.ac.uk/registry/proceduresandregulations/regulations</a></td>
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