

**MSc Engineering Fluid Mechanics for the Offshore, Coastal and Built Environments**

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 primarily intended as a reference point for academic and support staff involved in delivering the programme and enabling student development and achievement, for its assessment by internal and external examiners, and in subsequent monitoring and review.

<b>Programme Information</b>				
Award(s)	MSc			
Programme Title	Engineering Fluid Mechanics for the Offshore, Coastal and Built Environments			
Programme code	H141 (1YFT) or H14124 (2YPT)			
Awarding Institution	Imperial College London			
Teaching Institution	Imperial College London			
Faculty	Faculty of Engineering			
Department	Department of Civil and Environmental Engineering			
Mode and Period of Study	Full-time: 1 calendar year (12 months)			
Cohort Entry Points	Annually in October			
Relevant <u>QAA Benchmark Statement(s)</u> and/or other external reference points	Master's Awards in Engineering			
Total Credits	ECTS:	90	CATS:	180
<u>FHEQ Level</u>	Level 7			
<u>EHEA Level</u>	2 <sup>nd</sup> cycle			
External Accreditor(s)	None			
<b>Specification Details</b>				
Student cohorts covered by specification	2021-22 entry			
Person Responsible for the specification	Dr Adrian Callaghan			
Date of introduction of programme	October 2017			
Date of programme specification/revision	July 2021			

## Description of Programme Contents

The MSc Engineering Fluid Mechanics for the Offshore, Coastal and Built Environments will educate future Engineers specialising in civil engineering fluid mechanics. The offshore, coastal and built environments represent a unique combination of areas, providing students with a well-rounded and broad knowledge of civil engineering fluid mechanics. The students will have access to the College's world-class Hydrodynamics Laboratory to perform and observe experimental investigations. This will allow students to cement principles introduced on the taught part of the programme, as well as inspiring the future crop of Engineers in Fluid Mechanics. In addition, there is a strong design component to the programme in the shape of four projects in the various topics to emphasis industry relevance. Students will also have the opportunity to undertake research with academics within the top-rated Civil & Environmental Engineering Department from REF2014 and RAE2008.

## Learning Outcomes

### Knowledge and Understanding

- A selection of the major topics in the subject, their recognition and underlying fundamental principles.
- Research techniques which might include information retrieval, experimental design and statistics, modelling and safety.
- The essential facts, concepts, principles and theories relevant to the students' chosen areas of research.
- Management and communication skills, including problem definition, project design, decision processes, teamwork, written and oral reports, and scientific publications.

### Intellectual/Thinking Skills

- Analyse and solve problems using a multidisciplinary approach, applying professional judgements to balance costs, benefits, safety and social and environmental impact.
- Integrate and critically evaluate information.
- Formulate and apply appropriate solutions.
- Plan, conduct and write-up a programme of individual research.

### Practical Skills

- Plan and execute safely a series of experiments and computations.
- Use laboratory methods and computer-based tools to generate data.
- Analyse results, determine their strength and validity, and make recommendations.
- Prepare technical and design reports.
- Give technical presentations.
- Use the scientific literature effectively.

### Transferable Skills

- Communicate effectively through oral presentations, computer processing and presentations, and written reports.
- Apply knowledge and modelling skills.
- Management skills: decision processes, objective criteria, problem definition, project design and evaluation needs.
- Integrate and evaluate information from a variety of sources.
- Transfer techniques and solutions from one discipline to another.
- Use Information and Communications Technology.
- Manage resources and time.

- Learn independently with open-mindedness and critical enquiry.
- Learn effectively for the purpose of continuing professional development.

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](http://www.imperial.ac.uk/students/academic-support/graduate-attributes)

### Entry Requirements

Academic Requirement	Normally a UK bachelor's honours degree at least 2:1, or equivalent, in an engineering or science-based discipline.  A-Level Mathematics at B, or equivalent.
Additional Requirements	None

Applicants who do not meet the academic requirements above but who have substantial relevant industry experience may be admitted following successful completion of a 'Special Qualifying Exam' (SQE)

Applicants may be invited to attend a post-application interview.

English Language Requirement	Standard Requirements: IELTS 6.5 with a minimum of 6.0 in each element or equivalent
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The programme's competency standards documents can be found at:  
<https://www.imperial.ac.uk/media/imperial-college/faculty-of-engineering/civil/public/msc/Competency-Standards-MSc-Civil-2019-2020.pdf>

### Learning & Teaching Strategy

Scheduled Learning & Teaching Methods	<ul style="list-style-type: none"> <li>• Lectures</li> <li>• Experimental demonstrations</li> <li>• Seminars</li> <li>• Case studies</li> <li>• Group work exercises</li> <li>• Formal presentations</li> </ul>
E-learning & Blended Learning Methods	<ul style="list-style-type: none"> <li>• Module content available on Blackboard</li> <li>• MapleTA</li> </ul>
Placement Learning Methods	Students may have the opportunity to undertake their research project on an industrial placement.

### Assessment Strategy

Assessment Methods	<ul style="list-style-type: none"> <li>• Written examinations</li> <li>• Individual and group coursework</li> <li>• Design project reports</li> <li>• Research project report</li> </ul>
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	<ul style="list-style-type: none"> <li>• Oral presentations</li> </ul>				
<b>Academic Feedback Policy</b>					
Feedback on coursework will be provided within 3 weeks of the submission date. Provisional examination grade letters will be provided within 6 weeks of the end of the exam block. The final numerical marks will be provided by the Registry after the Board of Examiners' meeting at the end of the academic year.					
<b>Re-sit Policy</b>					
Students who fail assessments will be provided with the opportunity for one re-sit.					
Students may choose whether to re-sit failed examinations in the September re-sit period or with the next cohort in the following academic year. Students who need to re-sit examinations/resubmit their final report may be required to pay a re-sit fee.					
<b>Mitigating Circumstances Policy</b>					
The College's Policy on Mitigating Circumstances is available at: <a href="http://www.imperial.ac.uk/registry/exams">www.imperial.ac.uk/registry/exams</a>					
<b>Programme Structure</b>					
Full-time	Pre-session	Term One	Term Two	Term Three	Term Four
Core Modules	2	6	6	0	0
Research Project	0	0	0	1	
Part-time (Year One)	Pre-session	Term One	Term Two	Term Three	Term Four
Core Modules	2	6	0	0	0
Research Project	0	0	1		
Part-time (Year Two)	Pre-session	Term One	Term Two	Term Three	Term Four
Core Modules	0	0	6	0	0
Research Projects	1				
<b>Assessment Dates &amp; Deadlines</b>					
Written Examinations	January, April/May				
Coursework Assessments	Continuous				
Research Project Deadline	End of August				
Practical Assessments	Continuous				

<b>Assessment Structure</b>		
Programme Elements	ECTS	% Weighting
Coursework	28.75	31.9%
Examinations	31.25	34.7%
Research Project	30	33.3%
Total	90	100%
<b>Marking Scheme</b>		
<p>Clear criteria for marking written work, oral presentations and the research project will be used for assessments across all modules to ensure consistency in marking and requirements for Pass, Merit and Distinction grades.</p> <p>The MSc assessments are grouped into three elements consisting of coursework, examinations and a research project, as shown in the assessments structure table above. In order to graduate, students must pass all three elements and have no mark for an individual assessment fall below 40%.</p> <p>The Board of Examiners may award a result of Pass where a candidate has achieved at least 50% in each of the elements.</p> <p>The Board of Examiners may award a result of Merit where a candidate has achieved an aggregate mark of 60% or greater across the programme as a whole AND has obtained a mark of 60% or greater in each element.</p> <p>The Board of Examiners may award a result of Distinction where a candidate has achieved an aggregate mark of 70% or greater across the programme as a whole AND has obtained a mark of 70% or greater in each element.</p> <p>Except in situations involving mitigating circumstances, marks awarded for coursework or examination re-assessments will normally be limited to 50%. Re-entry candidates are not normally considered for a Merit or Distinction in their overall classification.</p>		

Indicative Module List												
Code	Title	Core/ Elective	Year	L&T Hours	Ind. Study Hours	Place- ment Hours	Total Hours	% Written Exam	% Course- work	% Practical	FHEQ Level	ECTS
<b>Non-assessed, Pre-session Material</b>												
CIVE97058	Mathematics Primer	Core	1	0	25	0	25	0	0	0	-	0
CIVE97059	Matlab Primer	Core	1	0	25	0	25	0	0	0	-	0
<b>Assessed Modules</b>												
CIVE96016	Fluid Mechanics Fundamentals	Core	1	30	95	0	125	0	100	0	6	5
CIVE97060	Modelling Tools	Core	1	30	95	0	125	0	100	0	7	5
CIVE97061	Transport Processes	Core	1	25	100	0	125	75	25	0	7	5
CIVE97062	Wave Mechanics	Core	1	30	95	0	125	75	25	0	7	5
CIVE97063	Buoyancy-driven Flows	Core	1	30	95	0	125	75	25	0	7	5
CIVE97064	Air-sea Interaction Dynamics	Core	1	25	100	0	125	75	25	0	7	5
CIVE97065	Computational Analysis	Core	1	30	95	0	125	0	100	0	7	5
CIVE97066	Fluid Loading	Core	1	30	95	0	125	75	25	0	7	5
CIVE97067	Coastal Processes	Core	1	30	95	0	125	75	25	0	7	5
CIVE97068	Energy Systems	Core	1	25	100	0	125	75	25	0	7	5

**Indicative Module List**

Code	Title	Core/ Elective	Year	L&T Hours	Ind. Study Hours	Place- ment Hours	Total Hours	% Written Exam	% Course- work	% Practical	FHEQ Level	ECTS
CIVE97069	Urban Fluid Mechanics	Core	1	25	100	0	125	100	0	0	7	5
CIVE97070	Design Projects	Core	1	20	105	0	125	0	100	0	7	5
CIVE97071	Research Project – Fluid Mechanics	Core	1	0	750	0	750	0	100	0	7	30

## Supporting Information

The Programme Handbook is available at:

<https://www.imperial.ac.uk/civil-engineering/prospective-students/handbooks/>

The Module Handbook is available at:

<https://www.imperial.ac.uk/civil-engineering/prospective-students/handbooks/>

The College's entry requirements for postgraduate programmes can be found at:

[www.imperial.ac.uk/study/pg/apply/requirements](http://www.imperial.ac.uk/study/pg/apply/requirements)

The College's Quality & Enhancement Framework is available at:

[www.imperial.ac.uk/registry/proceduresandregulations/qualityassurance](http://www.imperial.ac.uk/registry/proceduresandregulations/qualityassurance)

The College's Academic and Examination Regulations can be found at:

<http://www3.imperial.ac.uk/registry/proceduresandregulations/regulations>

Imperial College is an independent corporation whose legal status derives from a Royal Charter granted under Letters Patent in 1907. In 2007 a Supplemental Charter and Statutes was granted by HM Queen Elizabeth II. This Supplemental Charter, which came into force on the date of the College's Centenary, 8th July 2007, established the College as a University with the name and style of "The Imperial College of Science, Technology and Medicine".

<http://www.imperial.ac.uk/admin-services/secretariat/college-governance/charters-statutes-ordinances-and-regulations/>

Imperial College London is regulated by the Higher Education Funding Council for England (HEFCE)

<http://www.hefce.ac.uk/reg/of/>