

## MEng Design Engineering

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.

<b>Programme Information</b>				
Award(s)	MEng			
Programme Title	Design Engineering			
Programme code	28G3			
Awarding Institution	Imperial College London			
Teaching Institution	Imperial College London			
Faculty	Faculty of Engineering			
Department	Dyson School of Design Engineering			
Associateship	City and Guilds of London Institute (ACGI)			
Mode and Period of Study	4 academic years full-time			
Cohort Entry Points	Annually in October			
Relevant <a href="#">QAA Benchmark Statement(s)</a> and/or other external reference points	<a href="#">Honours Degrees in Engineering</a> and <a href="#">Master's Degrees in Engineering</a>			
Total Credits	ECTS:	270 - 274	CATS:	540 - 548
<a href="#">FHEQ Level</a>	Level 7			
<a href="#">EHEA Level</a>	2 <sup>nd</sup> cycle			
External Accrerator(s)	<a href="#">Institution of Engineering Designers</a> (IED) Accreditation received: 2017 Accreditation renewal: 2020			
<b>Specification Details</b>				
Student cohorts covered by specification	2016/17 entry cohort (year of study 4)			
Person responsible for the specification	Lorenzo Picinali (DUGS)			
Date of introduction of programme	October 2015			

Date of programme specification/revision	February 2019
<b>Description of Programme Contents</b>	
<p>The School of Design Engineering aims to deliver a course that prepares the next generations of engineering entrepreneurs and designers. The programme will provide students with a solid foundation in a wide-range of traditional engineering disciplines and, by combining this with modules in business, design, and a range of project- and industrially-oriented modules, including a 6 month on-site placement within industry, will produce engineers who are able to solve problems creatively and take products from the first stages of design right through to the market. To this end, the course has a particularly strong focus on the communication and translation of engineering.</p> <p>The degree programme contains a balance of theoretical and practical modules. Modules of the same credit volume often have a considerable variation in the ratio between scheduled learning and teaching activities, and independent study. This change in ratio is dependent on the subject matter (and learning objectives) of the module.</p> <p>Certain modules require more contact time to achieve the learning objectives, particularly in the form of lab and other practical activities. Where modules require more teaching and learning time, students are required to undertake less independent study. For other modules students are required to work more independently, either individually or with a group of other students on the programme group, therefore less learning and teaching hours are scheduled.</p>	
<b>Learning Outcomes</b>	
<p><i>At the end of this programme, students should be able to:</i></p> <p><b>Knowledge and Understanding</b></p> <ul style="list-style-type: none"> <li>• Demonstrate comprehensive knowledge of concepts and procedures in the engineering sciences of mechanics, materials, thermodynamics, computing, and electrical &amp; electronic systems</li> <li>• Demonstrate comprehensive knowledge and understanding of principles and methodology in creativity, human factors, user interaction and experience, and sustainable product development</li> <li>• Demonstrate comprehensive knowledge and understanding of the principles and value associated with an integrative design engineering approach, including systems design and engineering, design for manufacture, design engineering processes and design engineering research</li> <li>• Demonstrate comprehensive knowledge and understanding of methodology in innovation, entrepreneurship, business, and project-management in relation to design engineering</li> </ul> <p><b>Intellectual &amp; practical skills</b></p> <ul style="list-style-type: none"> <li>• Select and apply concepts, methods, techniques, tools and technologies associated with design engineering with high levels of skill and imagination</li> <li>• Evaluate systems that are complex or ambiguous with appropriate design engineering methods and approaches, assessing their potential social, environmental, technological and economic impact.</li> <li>• Synthesize knowledge and understanding, attributes and skills in effective ways in the contexts of design engineering practice, research and personal development</li> <li>• Create innovative products, services and systems that challenge the understanding of design engineering practice and discipline, and deliver economic and social value</li> </ul> <p><b>Attitudes</b></p> <ul style="list-style-type: none"> <li>• Reflect critically on own work and peer review, to identify strengths and areas that need improvement</li> </ul>	

<ul style="list-style-type: none"> <li>• Communicate effectively through oral presentations, graphical representations, and written reports</li> <li>• Value collaborative group working and demonstrate individual responsibilities of managing and contributing in effective teams</li> <li>• Analyse global professional contexts to define an evolving individual professional identity and environment in which they seek to operate.</li> </ul>	
<b>Entry Requirements</b>	
Academic Requirement	A*AA overall, to include A or A* in Mathematics
Non-academic Requirements	None
Home/EU/international students will be invited to attend an interview.	
English Language Requirement	IELTS 6.5 with a minimum of 6.0 in each element or equivalent
The programme's competency standards document can be found at: <a href="http://www.imperial.ac.uk/engineering/departments/design-engineering/study/meng/">http://www.imperial.ac.uk/engineering/departments/design-engineering/study/meng/</a>	
<b>Learning &amp; Teaching Strategy</b>	
Scheduled Learning & Teaching Methods	<ul style="list-style-type: none"> <li>• Lectures</li> <li>• Tutorials</li> <li>• Workshops</li> </ul>
E-learning & Blended Learning Methods	<ul style="list-style-type: none"> <li>• On-line lecture materials via Blackboard</li> </ul>
Project and Placement Learning Methods	<ul style="list-style-type: none"> <li>• Group project</li> <li>• Individual project</li> <li>• Industrial placement</li> </ul>
<b>Assessment Strategy</b>	
Assessment Methods	<p>The following assessment methods will be used in the programme (as stated in the module descriptors):</p> <ul style="list-style-type: none"> <li>• Individual project work</li> <li>• Group project work and group reports</li> <li>• Lab practicals</li> <li>• Critiques. The consensual assessment technique (CAT) will be used for the assessment of individual and group project work where a substantial element of subjectivity is implicit.</li> <li>• Individual written reports</li> <li>• Oral presentations to staff and peers</li> <li>• Written Examinations</li> <li>• Vivas (where appropriate for borderline candidates)</li> </ul>

## Academic Feedback Policy

Critique will be used regularly throughout project work in order to provide peer and expert feedback. In particular the CAT process will be used for project gateways giving students effective feedback prior to finalisation of project work.

Voting applications for smartphones ('clickers') will be used to conduct informal test questions where appropriate within lecture series to enable lecturers to assess and adjust the lectures to account for areas of difficulty. This will be organised in consultation with the Learning Support team in the Faculty.

Coursework papers will be double-marked and comments by the markers will be annotated directly on the papers. A summary of the feedback (with tick boxes indicating relative attainment on key dimensions) will be completed, and an indicative grade will be given (actual marks will not be communicated to the students). These papers will then be returned to the students as soon as possible and within two weeks of submission.

Personal tutor meetings will also serve as part of the formative assessment process, as tutors will, where appropriate set questions for their tutees in order to monitor their progress and subjects where they may require further assistance.

The quality of the feedback provided to the students will be monitored by anonymous questionnaires set up on Blackboard.

## 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)

For students not in their final year; it is possible, but not guaranteed, that a candidate who fails a Part can re-sit all the assessments in the following session. In the case of a marginal fail (i.e. with a grade in the range 30-39%) in one, or exceptionally two, modules, the examiners may set a **Supplementary Qualifying Test (SQT)** to allow the candidate to reach the pass mark and progress to the next part without delay. This course of action is not guaranteed and is only available where the performance in other assessments is very good.

### About SQT (Supplementary Qualifying Test)

SQTs are carried out before the start of the next academic year (end of August/beginning of September).

SQTs can take the form of examination or coursework. The decision on the exact form of the SQT will be taken by the module leader and will be designed to ensure that the module learning outcomes are achieved.

SQTs are capped at 40% in cases where a student has failed the module during the year. If a student subsequently fails the SQT, he/she will fail the year. An extraordinary Board of Examiners meeting will need to take place, where it will be decided whether the student will be offered an opportunity to retake the year.

Students may also be permitted to progress to the next academic year if they marginally fail one SQT with a grade in the range 30-39%, and where their overall aggregate mark for the year is 45% or higher.

An extraordinary Board of Examiners meeting will need to take place to determine whether the student will be permitted to bring forward the fail grade. This can ONLY be permitted after the SQT (not before).

If a student is taking an SQT following the approval of mitigating circumstances, the 40% cap will not apply. If a student with approved mitigating circumstances subsequently fails the SQT at the first attempt, an extraordinary Board of Examiners meeting will need to take place, where it will be determined whether the student will be permitted to take an additional SQT which will be capped at 40%. If the student subsequently fails this second SQT, he/she will fail the year, and an extraordinary Board of Examiners meeting will need to take place to determine whether the student will be offered an opportunity to retake the year.

Failing to attend an SQT without approved mitigating circumstances will result in a 0% grade, therefore a fail of the year.

#### 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)

#### Assessment Structure

##### Marking Scheme

##### Year One

A student must:

- Achieve a mark of at least 40% in each module

##### Year Two

A student must:

- Achieve a mark of at least 40% in each module

##### Year Three

A student must:

- Achieve a mark of at least 40% in each module

##### Year Four

A student must:

- Achieve a mark of at least 40% in each module

##### Final Degree Classifications

Third – a student must achieve an aggregate mark of 40%

Lower Second – a student must achieve an aggregate mark of 50%

Upper Second – a student must achieve an aggregate mark of 60%

First - a student must achieve an aggregate mark of 70%

Please find the full Academic Regulations at <https://www.imperial.ac.uk/about/governance/academic-governance/regulations/>. Please follow the prompts to find the set of regulations relevant to your programme of study.

Year	% Year Weighting	Module	% Module Weighting
Year One	11.1%	Engineering Mathematics	12.5%
		Communication in Design	16.67%
		Production and Materials	16.67%
		Design 1	20.83%
		Engineering Analysis 1.1 - Mechanics	8.33%
		Engineering Analysis 1.2 – Energy and Design	8.33%
		Engineering Analysis 1.3 – Electronics	8.33%
		Computing 1	8.33%
Year Two	22.2%	Gizmo ( Physical Computing)	20.83%
		Engineering Analysis 2.1 – M4DE (Mechanics for Design Engineers)	8.33%
		Engineering Analysis 2.2 – Computer Aided Engineering	8.33%
		Engineering Analysis 2.3 – Electronics for Product and System Design	8.33%
		Design 2	12.5%
		Computing 2	12.5%
		Big Data	8.33%
		Engineering Design Project	20.83%
Year Three	22.2%	Enterprise Management	12.5%
		Robotics	20.83%
		Group Project	25%
		<i>Two modules from elective group (A)</i>	8.33% each

		Maximum of 1 BPES/ Horizons module	
		Industry Placement A	25.0%

Year	% Year Weighting	Module	% Module Weighting
Year Four	44.5%	Industry Placement B	7.14%
		Optimisation	7.14%
		Sensing and the Internet of Things	7.14%
		Solo Project	42.87%
		Enterprise Roll Out	21.43%
		<i>Two modules from elective group (A/B)</i> Maximum of 1 BPES/Horizons module	7.14% each

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
DE1-MEM	Engineering Mathematics	CORE	1	52.5	125	0	187.5	100%	0%	0%	4	7.5
CDE1-CID	Communication in Design	CORE	1	88	162	0	250	0%	100%	0%	4	10
DE1-PMAT	Production and Materials	CORE	1	83	167	0	250	50%	50%	0%	4	10
DE1-DES1	Design 1	CORE	1	150	162.5	0	312.5	20%	80%	0%	4	12.5
DE1-EA1M	EA 1.1 - Mechanics	CORE	1	44	81	0	125	80%	20%	0%	4	5
DE1-EA1ED	EA 1.2 - Energy and Design	CORE	1	36	89	0	125	90%	10%	0%	4	5
DE1-EA1E	EA 1.3 - Electronics	CORE	1	86	39	0	125	60%	40%	0%	4	5
DE1-COM1	Computing 1	CORE	1	24	101	0	125	0%	100%	0%	4	5
DE2-GIZ	Gizmo (Physical Computing)	CORE	2	50	262.5	0	312.5	0%	100%	0%	5	12.5
DE2-EA2AM	EA 2.1 - M4DE (Mechanics for Design Engineers)	CORE	2	35	90	0	125	85%	15%	0%	5	5
DE2-EA2FEA	EA 2.2 - Computer Aided Engineering	CORE	2	35	90	0	125	0%	100%	0%	5	5
DE2-EA2EPSD	EA 2.3 - Electronics for Product and System Design	CORE	2	35	90	0	125	60%	40%	0%	5	5
DE2-DES2	Design 2	CORE	2	30	157.5	0	187.5	0%	100%	0%	5	7.5

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
DE2-COM2	Computing 2	CORE	2	40	147.5	0	187.5	40%	60%	0%	5	7.5
DE2-BD	Big Data	CORE	2	30	95	0	125	0%	100%	0%	5	5
DE2-EDP	Engineering Design Project	CORE	2	45	267.5	0	312.5	0%	100%	0%	5	12.5
DE3-EM	Enterprise Management	CORE	3	45	142.5	0	187.5	50%	50%	0%	6	7.5
DE3_DLIE	Design Led Innovation and Enterprise	ELECTIVE (A)	3	40	85	0	125	0%	100%	0%	6	5
DE3-AXP	Audio Experience Design	ELECTIVE (A)	3	36	89	0	125	0%	100%	0%	6	5
DE3-ID	Industrial Design	ELECTIVE (A)	3	20	105	0	125	0%	100%	0%	6	5
DE3-D4AM	Design for Additive Manufacturing	ELECTIVE (A)	3	48	77	0	125	0%	100%	0%	6	5
N/A	Business for Professional Engineers & Scientists	ELECTIVE (A)	3	Various			150	Various			6	6
N/A	Horizons	ELECTIVE (A)	3	Various			150	Various			6	6
N/A	Selected IDX modules	ELECTIVE (A)	3	Various			150	Various			6	6
DE3-ROB	Robotics	CORE	3	90	222.5	0	312.5	0%	100%	0%	6	12.5
DE4-OPT	Optimisation	CORE	4	34	91	0	125	50%	50%	0%	7	5

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
DE3-GP	Group Project	CORE	3	30	270	0	300	0%	100%	0%	6	15
DE3-IP	Industry Placement A	CORE	3	15	0	360	375	0%	100%	0%	6	15
DE4-IP	Industry Placement B	CORE	4	0	0	625	625	0%	80% Pass / Fail; 20% Numeric	0%	7	25
DE4-SIOT	Sensing and the Internet of Things	CORE	4	36	89	0	125	0%	100%	0%	7	5
DE4-RRP	Robotics Research Projects	ELECTIVE (B)	4	40	85	0	125	0%	100%	0%	7	5
N/A	Selected IDX modules	ELECTIVE (B)	4	Various			150	Various			7	6
DE4-SP	Solo Project	CORE	4	30	720	0	750	0%	100%	0%	7	30
DE4-ERO	Enterprise Roll Out	CORE	4	45	330	0	375	0%	100%	0%	7	15

## Supporting Information

The Programme Handbook is available at:

<http://www.imperial.ac.uk/engineering/departments/design-engineering/study/meng/>

The Module Handbook is available at:

<http://www.imperial.ac.uk/engineering/departments/design-engineering/study/meng/>

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

[www.imperial.ac.uk/study/ug/apply/requirements/](http://www.imperial.ac.uk/study/ug/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/>

## Modifications

Change the re-sit policy	Programmes Committee	13 December 16	PC.2016.53
Addition of DE3-AXP elective module in Year 3-4	Faculty Education Committee	9 November 17	EEC.2017.04
<ul style="list-style-type: none"> <li>Revised programme learning outcomes</li> <li>Updated module codes and names</li> <li>Revised and rationalised module assessment weights</li> <li>Added Electives group A to possible choice for Year 4 students</li> <li>Removed Enterprise Management core module and added the Sensing and IoT core module.</li> <li>Added IED accreditation dates</li> <li>Removed accreditation from IET and IMechE (course to be accredited in 2019-20)</li> </ul>	Faculty Education Committee	28 February 2018	EEC.2017.86/87

<p>Name and contact hours changes for various modules Addition of the DE3-D4AM elective module in Year 3-4</p>			
<p>Phasing this version of the programme out</p> <ul style="list-style-type: none"> <li>• Specified cohorts covered by this specification.</li> <li>• Revised weight of modules in year 4 to give Industry Placement B a pass/fail component (unweighted towards the year mark).</li> <li>• Revised Optimisation (Year 4)</li> </ul>			