

DEPARTMENT OF EARTH SCIENCE AND ENGINEERING

SCHEME FOR THE AWARD OF HONOURS – 2020/2021

This document details the modules that students on different degree schemes in the Department of Earth Science & Engineering schemes may take in 2020-2021, and the rules used to determine progression and degree classification.

Abbreviations used throughout:

EPS: Earth and Planetary Science

ES: Earth Science

G&G: Geology and Geophysics

PG: Petroleum Geoscience

DUGS: Director of Undergraduate Studies

YEAR 1

MODULE	ECTS	TERM
<i>All students:</i>		
Dynamic Earth and Planets	7.5	1 & 2
Stratigraphy & Geomaterials	7.5	1
Chemistry for Geoscientists OR Low Temperature Geochemistry *	5	1
Mathematics for Geoscientists OR Maths Methods 1 *	5	1
Deforming the Earth	5	2
Programming for Geoscientists	5	1
Physical and Surface Processes	7.5	2
Volcanism and Internal Processes	5	2
Geology in the Field **	7.5	3
<i>Geology, PG:</i>		
Life over Deep Time	5	2
<i>Geophysics:</i>		
Maths Methods 2	5	2
<i>EPS:</i>		
Life over Deep Time OR Maths Methods 2	5	2

* This choice depends on the A-levels of A-level equivalents that the student has studied prior to entry to Imperial College. Students with A-level Chemistry take Low Temperature Geochemistry; those without take Chemistry for Geoscientists. Students with A-level Maths take Maths Methods 1; those without take Mathematics for Geoscientists. In cases that are not clear-cut, the choice of module is taken in consultation with the DUGS.

** At the time of writing, College has stated that it will not allow undergraduate fieldtrips in 20-21, but that this decision will be re-evaluated late in the Autumn term. If trips are permitted, students may either attend the physical trip OR attend a virtual replacement. If they are not permitted, then either (a) this module will run in virtual format only, or (b) the degree structure will be rearranged so that the field module can take place in November 2021 (i.e. in year 2), with the module 'High Temperature Geochemistry' swapped from year 2 to year 1 to take place in term 3 of year 1. This decision will be taken in consultation with students once college policy has been clarified; we expect this to be late in Autumn term.

All students may also take a Horizons module, but this is not for credit. Horizons modules take place on Tuesdays, 4-6pm. There are no associated timetable clashes with ESE modules.

Note that other timetabled teaching (e.g. tutorials, workshops, briefings) occurs throughout the year, but is not associated with a formal module.

YEAR 2

MODULE	ECTS	TERM
All students:		
Geology in the Field (moved from year 1)	7.5	1
Pure and Applied Geophysics	7.5	1 & 2
Solar System Science	5	1
Maps and Structures	5	1
Remote Sensing Earth & Planets	5	2
Geology/PG/Geological EPS:		
Igneous & Metamorphic Petrology [<i>Palaeontology & Opt. Min</i>]	7.5	2
Sediments and Stratigraphy	7.5	1 & 2
Palaeontology and Optical Mineralogy	7.5	1 & 2
Rocks and Structures in the field (<i>Pyrenees + Scotland trips</i>) *	10	3
Geophysics/Geophysical EPS:		
Mechanics and Waves [<i>requires maths methods 2</i>]	7.5	1 & 2
Maths for Scientists and Engineers [<i>requires maths methods 2</i>]	7.5	1 & 2
Seismology & Numerical Methods [<i>requires maths methods 2</i>]	7.5	2
Field Geophysics *	10	3
Earth Science: **		
Environmental Geochemistry and Climate Report	10	2 & 3

* At the time of writing, College has stated that it will not allow undergraduate fieldtrips in 20-21, but that this decision will be re-evaluated late in the Autumn term. If trips are permitted, students may either attend these physical trips OR attend virtual/remote replacements. If they are not permitted, then either (a) these module will run in virtual/remote format only, or (b) the degree structure will be rearranged so that the field modules can take place in Autumn 2021 (i.e. in year 3), with selected year 3 term 1 elective modules swapped from year 3 to year 2 to take place in term 3 of year 2. This decision will be taken in consultation with students once college policy has been clarified; we expect this to be late in Autumn term.

** Earth Science students normally take Environmental Geochemistry and Climate Report instead of the field modules. Beyond that, they may take any combination of modules from the geology/ geophysics sections, as timetabling and pre-requisites allow, in discussion with the DUGS. If field modules are moved into Autumn 2021

All students may also take a Horizons module, not for credit. Horizons modules take place on Mondays, 4-6pm. There are no associated timetable clashes with ESE modules.

Geology/Petroleum Geoscience/Geological EPS may also take Maths Methods 2 (MM2) in term 2, which may increase elective choice in years 3 and 4, but more importantly will better prepare them for more mathematical modules in years 3 and 4 even where these do not formally require MM2. Taking MM2 is 'not for credit' – students attend lectures and practicals and optionally submit coursework, but do not take the exam. MM2 does not clash with any second year modules, but DOES clash with year 2 Horizons – student should not take a Horizons module if they wish to take MM2.

Note that other timetabled teaching (e.g. tutorials, workshops, preparation sessions for independent projects) occurs throughout the year, but is not associated with a formal module.

Students re-entering year 2 after an interruption of studies will take High Temperature Geochemistry in term 1 instead of Geology in the Field (which they have already taken in their year 1).

YEAR 3

These are colour coded to give an indication of which degree streams normally take them, but most modules are open to most students. Fully red/green modules have pre-requisites that normally limit them to one degree stream, but these can be set aside in special cases, with the approval of the DUGS. Partially red/green modules are frequently taken by the other degree schemes. PG students take ‘Geology’ cores and options. *Geophys. Maths* means the 2nd year ‘Mathematics for Scientists & Engineers’ module.

Geological	Mostly Geol.	Both	Mostly Geophys.	Geophysical
MODULE				
Independent Project (Geological, Geophysics, or Earth Science projects)				
15				
1				
ONE* of the following elective modules:				
Continental Tectonics (weakly recommended for geophysics)				
5				
1				
Mining geology & Engineering (weakly recommended for geologists)				
5				
1				
FIVE* of the following elective modules:				
Clash				
Geomorphology				
5				
2				
A				
Ore Deposits [requires Mining Geology & Engineering]				
5				
2				
B				
Minerals Processing				
5				
2				
C				
Astrobiology				
5				
2				
D				
Advanced Applied Geophysics				
5				
2				
Environmental Seminars				
5				
2				
Planetary Chemistry				
5				
2				
Geohazards				
5				
2				
Earth Systems				
5				
2				
Meteorites				
5				
2				
Planetary Chemistry				
5				
2				
Geohazards				
5				
2				
BPES or Humanities module				
6/7.5**				
2				
Hydrogeology and Fluid Flow				
5				
2				
D				
Advanced Programming				
5				
2				
C				
Geophysical Inversion [<i>Requires Geophys. Maths</i>]				
5				
2				
B				
Geophysical Fluid Dynamics of the Oceans [<i>Requires Geophys. Maths</i>]				
5				
2				
A				
ONE of the following (depending on degree scheme)***				
Integrated Advanced Field Geology (Sardinia Fieldtrip)				
5				
3				
Seismic Processing [<i>Requires Maths Methods 2, Seismic Techniques</i>]				
5				
3				

Modules with the same letter code in the ‘Clash’ column are timetable clashes – students cannot take both (e.g. Astrobiology and Hydrogeology and Fluid Flow are both clash code ‘D’ – they are timetabled against each other, and both cannot be taken).

*The scheme above gives students the recommended 60 ECTS. Students may take up to 75 ECTS, by combinations of:

- Taking 2 modules in term 1 (adding 5 ECTS) – not recommended
- Taking up to 7 modules in term 2 (adding 5 or 10 ECTS)

**Business modules are all 6 ECTS, Humanities modules are 7.5 ECTS. These only count as a single 5 ECTS module for the purposes of the ‘choose five’ rule. Students will normally only be allowed to take a single external elective of this type. Going beyond 75 ECTS (e.g. to 76) by taking one of these modules is *not* allowed. Not all Horizons modules are eligible to be taken for credit in this slot; in most cases allowed modules are languages at at least level 3. Discuss options with the DUGS if you wish to explore this further.

*** At the time of writing, College has stated that it will not allow undergraduate fieldtrips in 20-21, but that this decision will be re-evaluated late in the Autumn term. If trips are permitted, the Sardinia trip will be offered both as a physical trip and a virtual/remote trip. If not, only the virtual/remote trip will be offered. Seismic techniques may be replaced with a similar module for Covid reasons. Earth Science students may optionally take neither of these term 3 modules, taking an extra term 2 elective instead.

Students re-entering year 3 after an interruption of studies will take a modified programme, agreed with the DUGS.

YEAR 4

See year 3 for explanation of the colour coding scheme.

MODULE	ECTS	TERM	
MSci Project	30	1	
FIVE* of the following elective modules:			Clash:
Geomorphology	5	2	A
Ore Deposits [requires Mining Geology & Engineering]	5	2	B
Minerals Processing	5	2	C
Astrobiology	5	2	D
Advanced Applied Geophysics	5	2	
Environmental Seminars	5	2	
Planetary Chemistry	5	2	
Geohazards	5	2	
Earth Systems	5	2	
Meteorites	5	2	
Planetary Chemistry	5	2	
Geohazards	5	2	
BPES or Humanities module	6/7.5**	2	
Hydrogeology and Fluid Flow	5	2	D
Advanced Programming	5	2	C
Geophysical Inversion [<i>Requires Geophys. Maths</i>]	5	2	B
Geophysical Fluid Dynamics of the Oceans [<i>Requires Geophys. Maths</i>]	5	2	A
ONE of the following elective modules: ***			
Field Geology of an Active Mountain Belt (Apennines Field Trip)	7.5	3	
Geophys. Analysis Gp Project [<i>Requires Geophys. Maths, Seismic Tecn.</i>]	5	3	

Modules with the same letter code in the 'Clash' column are timetable clashes – students cannot take both (e.g. Physics of Planet Earth and Arc Magmatic Processes & Products are both clash code 'A' – they are timetabled against each other, and both cannot be taken).

* Five is the recommended number, but students may take up to seven provided that their total ECTS is 75 or less.

** Business modules are all 6 ECTS, and Humanities modules are 7.5 ECTS. These modules only count as a single module for the purposes of the 'choose five' rule. Students will normally be allowed to take only one external elective of this type. Going beyond 75 ECTS (e.g. to 76) by taking one of these modules is *not* allowed. Not all Horizons modules are eligible to be taken for credit in this slot; in most cases allowed modules are languages at at least level 3. Discuss options with the DUGS if you wish to explore this further.

*** Geology/PG students will normally be required to take the Apennines trip; other students will take either the Geophysical Analysis Group Project. G&G students can take either. ES students can take either of these modules, OR an extra term 2 elective. Note that this means that most Geology students will take at least 62.5 not 60 ECTS. At the time of writing, College has stated that it will not allow undergraduate fieldtrips in 20-21, but that this decision will be re-evaluated late in the Autumn term. If trips are permitted, the Apennines trip will be offered both as a physical trip and a virtual/remote trip. If not, only the virtual/remote trip will be offered. Geophysical Analysis Group Project may be replaced with a similar module for Covid reasons.

All students may also take a Horizons module, normally not for credit. Taking a Horizons language module for credit in the Business / Management / Humanities slot is allowed with special DUGS dispensation. Taking other modules outside the department is not allowed.

PROGRESSION AND CALCULATION OF DEGREE RESULTS 2020-2021

Note – students whose entry year to Imperial is 2019 or 2020 are governed by a new set of academic regulations laid down at college levels. See <https://www.imperial.ac.uk/about/governance/academic-governance/regulations/> for the latest version of these. These supersede (in detail) the summary provided below for these cohorts.

To progress to the next year, students must pass at least 60 ECTS of modules in that year (although see compensation rules below for exceptions). The pass mark for all modules is 40%.

The overall year mark for each year (except year 3 for year abroad students) is calculated as the mean of all module marks, weighted by their ECTS value. The overall year mark is rounded to one decimal place.

To progress to the 3rd year of an MSci degree, students must achieve a cumulative overall year mark of 60% or higher at the end of year 2.

To progress to the 2nd year of a ‘Year Abroad’ degree, students must achieve an overall year mark of 70% or higher in year 1. Performance must also be highly satisfactory in the January examinations of year 2 in order to stay on the year abroad scheme.

To be awarded an MSci degree, students must achieve an overall year mark of 50% or higher in year 4.

The aggregate mark for the entire degree is calculated as the weighted mean of the overall year marks. Weightings are given in the table below:

	Year 1	Year 2	Year 3	Year 4
BSc students (entry year before 2019) *	1/8	3/8	4/8	-
MSci students (entry year before 2019) *	1/9	2/9	3/9	3/9
BSc students (entry year 2019/20)	7.5%	35%	57.5%	-
MSci students (entry year 2019/20)	7.5%	20%	36.25%	36.25%

* These weights are given as fractions to avoid recurring decimals

Final degree classification uses the following rules, although the examination board reserves the right to ‘uplift’ candidates close to a boundary.

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

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

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

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

Compensation

In addition to the progression rules detailed above, the Examination Board may choose to apply *compensation*. Compensation is a mechanism by which a module can be passed and credit can be awarded by the Examination Board where the student has achieved a marginal failure. Where a student has achieved an aggregate module result of 30-39%, the Examination Board can, at its discretion, offer a compensated fail. A compensated fail cannot be offered for a core module. Compensated fails can be awarded for up to a maximum of 15 ECTS credits per credit level, and for year of study. Where a student has been awarded a compensated fail they cannot re-attempt that module. For the purposes of this compensation rule, but not for any other purposes, the following level 4 and 5 (year 1 and 2) modules are considered NOT to be core modules:

Programming for Geoscientists (all degree schemes)

Pure and Applied Geophysics (for all degree programmes except geophysics)

Maps and Structures (for Geophysics degree programmes)

Remote Sensing Earth and Planets (for all degree programmes except Earth & Planetary Science)

Supplementary Qualifying Tests

At the discretion of the examiners, supplementary qualifying tests (SQT) may be offered to candidates whose performance is marginally unsatisfactory, in not more than 15 ECTS in total. The performance required to pass an SQT is determined by the examiners having regard to the nature of the SQT; the required level will not be less than the original pass mark, and may be set at a higher level.

Supplementary qualifying tests are normally examined by written papers, or by re-submission of relevant project reports or coursework, and may include an additional oral examination; they may be used to examine the whole of a module, or where the examiners deem it appropriate, one or more constituent assessments. SQTs may be held at any appropriate time, but are normally held in September ahead of the start of the next session.

Supplementary qualifying tests do not constitute re-examination; rather, they provide a means by which a marginally unsuccessful candidate, who is otherwise qualified to proceed, may improve their preparedness and demonstrate their fitness to proceed successfully. Candidates whose performance in SQTs is found to be satisfactory by the examiners, will be deemed to have passed the appropriate module, and, subject to satisfactory performance in all other modules, will be deemed to have passed the year, and may proceed to the following year of the programme without penalty.

Where a supplementary qualifying test has been applied to a candidate, final marks appearing on transcripts and used in calculating final year and degree totals, shall be those derived following the SQT, such marks shall normally be capped to the original pass mark for the module or constituent assessment that has been tested.

Candidates who do not pass a year

Candidates who are invited to re-attend and repeat the year must normally be re-examined and re-assessed in all modules of the year including any that were nominally previously passed; marks are not capped during a repeated year. Repeating candidates will normally be transferred onto the BSc programme; they may only proceed onto the MSci programme with the special agreement of the examiners.

Candidates who fail the year, and who are not invited to re-attend and repeat the year, may retake examinations and be re-assessed in those modules that they have previously failed. Such re-assessment should normally happen at the first available opportunity. Excluding any Supplementary Qualifying Tests that may be offered, re-assessment in any module is allowed once only.

Mitigating circumstances

Students with recorded mitigating circumstances are treated as special cases by the Board of Examiners, which may choose to modify normal progression and award rules.

Modifications to these rules as a result of Covid

The 2019/20 overall year marks were awarded under college level 'safety net' rules (see <https://www.imperial.ac.uk/media/imperial-college/about/public/Safety-Net-Policy.pdf>). Where the safety net 'activated' for any particular student, the safety net mark will be used in the final degree result calculation instead of the normally-calculated result. At the time of writing, college has not announced any safety net policy for the 2020/21 academic year.

For students in years 2 and 3 in 2020/21, a complication is that certain modules have been moved between years as a result of Covid-related degree-programme restructuring. These will in due course count towards the year-mark for the year in they were originally intended to be taken, rather than the mark for the academic year in which they were actually taken. In addition, safety net principles will be applied to ensure that the inclusion of any marks from the Covid-affected portion of the 19/20 academic year cannot disadvantage a student. The details of the interplay between the safety net and the year-swapping are beyond the scope of this document, and will be laid out for affected students during the 20/21 academic year.