

Mathematics Undergraduate Programmes

F111	BSc (Hons) in Mathematics
F141	BSc (Hons) in Mathematics with Physics
F181	BSc (Hons) in Mathematics with Computer Science
F191	BSc (Hons) in Mathematics with a European Language
F1A1	BSc (Hons) in Mathematics with Statistics
F1B1	BSc (Hons) in Mathematics with Finance
F1F1	BSc (Hons) in Mathematical, Statistical and Actuarial Sciences
F1G1	BSc (Hons) in Mathematics and Computer Science
F1H1	Master of Mathematics
F111	BSc (Hons) in Mathematical Studies
F1J1	BSc (Hons) in Mathematical Statistical and Actuarial Sciences with Diploma in Industrial Training
F1K1	BSc (Hons) in Mathematics with Finance with Diploma in Industrial Training

Selection of Courses for Second, Third, Fourth and Fifth Year Students

The online enrolment system will allow you to select the courses you wish to study during Academic Year 2017/18. Your courses are categorised into Mandatory and Optional courses:

<u>Mandatory Courses</u>	<u>Optional Courses</u>	<u>Elective Courses</u> (shown under <u>Optional Courses</u> during online enrolment)
All mandatory courses for your programme are listed on the online enrolment system. These courses cannot be altered and must be taken to meet the requirements for your programme of study. If your programme consists entirely of mandatory courses then no further action is required regarding selection of courses.	All optional courses for your programme are listed within the online enrolment system, if applicable. If no optional courses are listed, please ignore and move to the next screen within the online enrolment system. For further information on the selection of your courses, please refer to your specific programme information below.	You will need to use the course search facility within the online enrolment system to find elective courses. These may be listed under the specific programme information found in this document. If no information is present, please ignore.

Further Information

To assist you in the selection of your optional/elective courses, please find below additional information relating to the programme you are currently enrolling for. Be aware that there may be more than one year of study for this programme, therefore please ensure that you only refer to your appropriate year. For example, if you are enrolling for year/level 4 of the programme, only refer to Year/Stage 4 within the appropriate information below.

Number of Courses – Here are the typical number of courses you are expected to register on for the academic year. Undergraduate students 8 courses, Postgraduate students 8 courses plus the dissertation course and Research students do not select any courses.

Timetable Clashes - Please note that mandatory courses will not clash on your timetable. Whilst the University aims to accommodate a full range of optional/elective courses, it may not be possible for the timetable to provide all choice combinations.

Timetables will be available 2 weeks prior to the start of Semester and you are advised to check your timetable at this time. In the unlikely event that you have selected courses which result in a timetable clash,

you should seek advice from your Academic School as to the availability of alternative courses. Timetables can be found at: <http://www.macs.hw.ac.uk/students/maths/>

Please be aware that your optional/elective courses may be subject to change before the start of Semester.

Maximum Limit Exceeded for a Course - We try to offer everyone the possibility to study the optional/elective course they request. However, in certain courses, we are required to limit the numbers participating. In the event that you have selected a course which is over-subscribed, you will be contacted by your Academic School and advised accordingly.

Change of Course Selection - Providing that you have not completed the online enrolment process, you will be able to update your selection of courses. If however, you decide to change courses following the completion of this procedure, you will be required to complete a 'Change of Course' form found at: <http://www.hw.ac.uk/registry/resources/changeofcourseform.pdf>. Please be aware that this form requires to be approved by your Academic School and decisions may not be made until the start of the Academic Year.

NEW FIRST YEAR STUDENTS

Because this process is new to you and potentially confusing, we have grouped all your programmes together. Please go straight to that section.

RETURNING STUDENTS

You will find your programmes after the first year programmes.

PROGRAMMES FOR FIRST YEAR STUDENTS ONLY

- The First Year Director of Studies is Prof Mark V Lawson (email: M.V.Lawson@hw.ac.uk)
- At this stage, it is important that you enrol for *some* programme. If you think you might want to change --- don't worry --- you can discuss this with me during Welcome Week. Nothing is set in stone at this stage.
- For each of the degree programmes below, I have marked in **bold** those courses which you need to enter manually. *Please ensure that the campus says Edinburgh otherwise you will have long commutes.*
- If no courses are marked in bold you don't have anything to do.
- All programmes are four years except where indicated.
- Many programmes are identical in the first year making programme changes in the second year easier.
- Programmes with WITH in the title are 75% Mathematics (over four years).
- The programme with AND in the title is 50% Mathematics (over four years).

F111 BSc (Hons) in Mathematics			
F17GC and F17SC may be replaced with a language elective Please enrol in these courses anyway and discuss these elective with me during Welcome Week when changes can be made			
Year/ Stage	Course Code	Semester	Course Title
1	F17CA	1	Calculus A
1	F17CC	1	Introduction to University Maths
1	F77SA	1	Introduction to Statistical Science A
1	F17GC	1	Mathematics in Context
1	F17CB	2	Calculus B
1	F17GA	2	Problem Solving
1	F77SB	2	Introduction to Statistical Science B
2	F17SC	2	Discrete Mathematics

F141 BSc (Hons) in Mathematics with Physics			
Year/ Stage	Course Code	Semester	Course Title
1	B27MW	1	Mechanics and Waves
1	F17CA	1	Calculus A
1	F17CC	1	Introduction to University Maths
1	F77SA	1	Introduction to Statistical Science A
1	B27FF	2	Waves and Matter
1	F17CB	2	Calculus B
1	F17GA	2	Problem Solving
1	F77SB	2	Introduction to Statistical Science B

F181 BSc (Hons) in Mathematics with Computer Science (75% and 25% over four years)			
Year/ Stage	Course Code	Semester	Course Title
1	F17CA	1	Calculus A
1	F17CC	1	Introduction to University Maths
1	F27SA	1	Software Development 1
1	F77SA	1	Introduction to Statistical Science A
1	F17CB	2	Calculus B
1	F77SB	2	Introduction to Statistical Science B
1	F27SB	2	Software Development 2
1	F27SG	2	Software Development 3

F191 BSc (Hons) in Mathematics with a European Language FRENCH			
Year/ Stage	Course Code	Semester	Course Title
1	F17CA	1	Calculus A
1	F17CC	1	Introduction to University Maths
1	F77SA	1	Introduction to Statistical Science A
1	C47LF	1	French Intermediate 1
1	F17CB	2	Calculus B
1	F17GA	2	Problem Solving
1	F77SB	2	Introduction to Statistical Science B
1	C47MF	2	French Intermediate 2

F191 BSc (Hons) in Mathematics with a European Language GERMAN			
Year/ Stage	Course Code	Semester	Course Title
1	F17CA	1	Calculus A
1	F17CC	1	Introduction to University Maths
1	F77SA	1	Introduction to Statistical Science A
1	C47LG	1	German Intermediate 1
1	F17CB	2	Calculus B
1	F17GA	2	Problem Solving
1	F77SB	2	Introduction to Statistical Science B
1	C47MG	2	German Intermediate 2

F191 BSc (Hons) in Mathematics with a European Language SPANISH			
Year/ Stage	Course Code	Semester	Course Title
1	F17CA	1	Calculus A
1	F17CC	1	Introduction to University Maths
1	F77SA	1	Introduction to Statistical Science A
1	C47LE	1	Spanish Intermediate 1
1	F17CB	2	Calculus B
1	F17GA	2	Problem Solving
1	F77SB	2	Introduction to Statistical Science B
1	C47ME	2	Spanish Intermediate 2

F1A1 BSc (Hons) in Mathematics with Statistics F17GC and F17SC may be replaced with a language elective Please enrol in these courses anyway and discuss these elective with me during Welcome Week when changes can be made			
Year/ Stage	Course Code	Semester	Course Title
1	F17CA	1	Calculus A
1	F17CC	1	Introduction to University Maths
1	F77SA	1	Introduction to Statistical Science A
1	F17GC	1	Mathematics in Context
1	F17CB	2	Calculus B
1	F17GA	2	Problem Solving
1	F77SB	2	Introduction to Statistical Science B
2	F17SC	2	Discrete Mathematics

F1B1 (F1K1) BSc (Hons) in Mathematics with Finance (+Dip)			
Year/ Stage	Course Code	Semester	Course Title
1	F17CA	1	Calculus A
1	F17CC	1	Introduction to University Maths
1	F77SA	1	Introduction to Statistical Science A
1	C27OA	1	Introductory Economics
1	F17CB	2	Calculus B
1	F17GA	2	Problem Solving
1	F77SB	2	Introduction to Statistical Science B
1	C37FF	2	Finance and Financial reporting

F1F1 (F1J1) BSc in Mathematical, Statistical and Actuarial Sciences (+Dip) (known as MSAS) Please enter the courses in bold. You will then be following the same courses as Actuarial students including professional exemptions			
Year/ Stage	Course Code	Semester	Course Title
1	F17CA	1	Calculus A
1	F17CC	1	Introduction to University Maths
1	F77SA	1	Introduction to Statistical Science A
1	C27OA	1	Introductory Economics
1	F17CB	2	Calculus B
1	F77SB	2	Introduction to Statistical Science B
1	F77PD	2	Professional Development Planning
1	C37FF	2	Finance and Financial Reporting

F1G1 BSc in Mathematics and Computer Science (50% and 50% over four years)			
Year/ Stage	Course Code	Semester	Course Title
1	F17CA	1	Calculus A
1	F17CC	1	Introduction to University Maths
1	F27SA	1	Software Development 1
1	F27IS	1	Interactive Systems
1	F17CB	2	Calculus B
1	F27SB	2	Software Development 2
1	F27SG	2	Software Development 3
1	F27CS	2	Introduction to Computer Systems

F1H1 Master of Mathematics (5 years)			
<i>This currently differs from the BSc degree in the first year in requiring higher grades to pass.</i>			
F17GC1 and F17SC may be replaced with a language elective			
Please enrol in these courses anyway and discuss these elective with me during Welcome Week when changes can be made			
Year/ Stage	Course Code	Semester	Course Title
1	F17CA	1	Calculus A
1	F17CC	1	Introduction to University Maths
1	F77SA	1	Introduction to Statistical Science A
1	F17GC	1	Mathematics in Context
1	F17CB	2	Calculus B
1	F17GA	2	Problem Solving
1	F77SB	2	Introduction to Statistical Science B
2	F17SC	2	Discrete Mathematics

F111 Mathematical Studies
If you are a Mathematical Studies student it is essential that you consult the Programme Director of Mathematical Studies, Dr Martin Youngson (M.A.Youngson@ma.hw.ac.uk) before attempting online enrolment.

**THIS CONCLUDES THE INFORMATION FOR FIRST YEAR STUDENTS
INFORMATION FOR OTHER STUDENTS FOLLOWS**

PROGRAMMES FOR SECOND, THIRD AND FOURTH YEAR STUDENTS

F111 BSc (Hons) in Mathematics

Further Assistance

If you require further help in choosing your courses, please contact the Head of Department Professor Bernd Schroers (HoD@hw.ac.uk)

Year/Stage 2

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
2	F18AA	1	Applied Mathematics A
2	F18CD	1	Multivariable Calculus and Real Analysis A
2	F18CF	1	Linear Algebra
2	F18CE	2	Multivariable Calculus and Real Analysis B
2	F18NA	2	Numerical Analysis A
2	F18PA	2	Pure Mathematics A

Optional/Elective Courses

If you are doing an honours degree you should choose one optional course each semester. F17SC can only be chosen if you did not take this course in Year 1. F18GD Mathematics for Direct Entrants may be chosen only by students entering directly into 2nd year. Before you can choose C38FR, C38FM, C38MO, C38FN or C38SE you have to have a grade D or above in C37FF. Before you can choose B28PO or B28TP you have to have a grade D or above in B27MW and B27FF. Due to timetabling reasons it is unlikely that it will be possible to choose C28EP or C38SE during the academic year 2017/18.

If you are doing an ordinary degree instead of an optional course you can take an elective course each semester.

Optional Courses

Year/Stage	Course Code	Semester	Course Title
2	B28PO	1	Photonics and Optics
2	C38FM	1	Financial Markets Theory
2	C38FR	1	Financial Reporting
2	F17LP	1	Logic and Proof
2	F18GD	1	Mathematics for Direct Entrants
2	F27IS	1	Interactive Systems
2	F78PA	1	Probability and Statistics A
2	B28TP	2	Thermal Physics and Properties of Matter
2	C28EP	2	Contemporary Economic Policy and Institutions
2	C38FN	2	Corporate Financial Theory
2	C38MO	2	Management Accounting in Organisations
2	C38SE	2	Social and Environmental Accounting
2	F17SC	2	Discrete Mathematics
2	F18GW	2	Mathematics Workshop
2	F27WD	2	Web Design and Databases
2	F78PB	2	Probability and Statistics B
2	F78SC	2	Statistics for Science

Elective Courses

Year/Stage	Course Code	Semester	Course Title
2	C27OA	1	Introductory Economics
2	C47AP	1	Arabic Post-Beginners Elective 1
2	C47AX	1	Arabic Beginners Elective 1
2	C47CE	1	Chinese Beginners Elective 1
2	C47FI	1	French Intermediate Elective 1
2	C47FX	1	French Post-Beginners Elective 1
2	C47GP	1	German Post-Beginners Elective 1
2	C47GX	1	German Beginners Elective 1
2	C47SP	1	Spanish Post-Beginners Elective 1
2	C47SX	1	Spanish Beginners Elective 1
2	C37FF	2	Finance and Financial Reporting
2	C47AQ	2	Arabic Post-Beginners Elective 2
2	C47AY	2	Arabic Beginners Elective 2
2	C47CF	2	Chinese Beginners Elective 2
2	C47FJ	2	French Intermediate Elective 2
2	C47FY	2	French Post-Beginners Elective 2
2	C47GQ	2	German Post-Beginners Elective 2
2	C47GY	2	German Beginners Elective 2
2	C47SQ	2	Spanish Post-Beginners Elective 2
2	C47SY	2	Spanish Beginners Elective 2

Year/Stage 3

Mandatory Courses

There are no mandatory courses in this year of the programme.

Optional/Elective Courses

If you are studying at the Edinburgh campus and doing an honours degree you must choose F19GB, F19MV, F19PB, F19PL, F19AB, F19MC, F19MO and F19NB.

If you are studying at the Edinburgh campus and doing an ordinary degree you must choose F19GB, F19PL and F19MO at least one of F19MV and F19PB in Semester 1 and at least two of F19AB, F19MC and F19NB in Semester 2. If do not choose both of F19MV and F19PB in Semester 1 or all three of F19AB, F19MC and F19NB in Semester 2 you can chose an elective course instead in the relevant semester.

If you are studying abroad at Waterloo you must choose both F19WA and F19WB.

Optional Courses

Year/Stage	Course Code	Semester	Course Title
3	F19GB	1	Project Preparation
3	F19MV	1	Vector Analysis
3	F19PB	1	Pure Mathematics B
3	F19PL	1	Abstract Algebra
3	F19WA	1	Year Abroad Waterloo A
3	F19AB	2	Applied Mathematics B
3	F19MC	2	Complex Analysis
3	F19MO	2	Ordinary Differential Equations
3	F19NB	2	Numerical Analysis B
3	F19WB	2	Year Abroad Waterloo B

Elective Courses

Year/Stage	Course Code	Semester	Course Title
3	C27OA	1	Introductory Economics
3	C47AP	1	Arabic Post-Beginners Elective 1
3	C47AX	1	Arabic Beginners Elective 1
3	C47CE	1	Chinese Beginners Elective 1
3	C47FI	1	French Intermediate Elective 1
3	C47FX	1	French Post-Beginners Elective 1
3	C47GP	1	German Post-Beginners Elective 1
3	C47GX	1	German Beginners Elective 1
3	C47SP	1	Spanish Post-Beginners Elective 1
3	C47SX	1	Spanish Beginners Elective 1
3	F27IS	1	Interactive Systems
3	C37FF	2	Finance and Financial Reporting
3	C47AQ	2	Arabic Post-Beginners Elective 2
3	C47AY	2	Arabic Beginners Elective 2
3	C47CF	2	Chinese Beginners Elective 2
3	C47FJ	2	French Intermediate Elective 2
3	C47FY	2	French Post-Beginners Elective 2
3	C47GQ	2	German Post-Beginners Elective 2
3	C47GY	2	German Beginners Elective 2
3	C47SQ	2	Spanish Post-Beginners Elective 2
3	C47SY	2	Spanish Beginners Elective 2
3	F27WD	2	Web Design & Databases

Year/Stage 4

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
4	F10GP	2	Mathematics Project Dissertation

Optional Courses

You should choose four courses in the first semester and three courses in the second semester from those listed.

Year/Stage	Course Code	Semester	Course Title
4	F10AC	1	Applied Mathematics C
4	F10AM	1	Mathematical Biology A
4	F10MF	1	Functional Analysis
4	F10MM	1	Optimisation
4	F10NC	1	Numerical Analysis C
4	F10PC	1	Pure Mathematics C
4	F10AN	2	Mathematical Biology B
4	F10MP	2	Partial Differential Equations
4	F10ND	2	Numerical Analysis D
4	F10PD	2	Pure Mathematics D
4	F10PG	2	Geometry

F141 BSc (Hons) in Mathematics with Physics

Further Assistance

If you require further help in choosing your courses, please contact the course director Dr Robert Weston (R.A.Weston@hw.ac.uk).

Year/Stage 2

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
2	B28PO	1	Photonics and Optics
2	F18CD	1	Multivariable Calculus and Real Analysis A
2	F18CF	1	Linear Algebra
2	B28TP	2	Thermal Physics and Properties of Matter
2	F18CE	2	Multivariable Calculus and Real Analysis B
2	F18NA	2	Numerical Analysis A
2	F18PA	2	Pure Mathematics A

Optional Courses

Continuing students cannot choose F18GD Mathematics for Direct Entrants which may be chosen only by students entering directly into 2nd year. Due to timetabling reasons it is unlikely that it will be possible to choose F17LP during the academic year 2017/18.

Year/Stage	Course Code	Semester	Course Title
2	F18AA	1	Applied Mathematics A
2	F18GD	1	Mathematics for Direct Entrants
2	F17LP	1	Logic and Proof

Year/Stage 3

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
3	B29EM	1	Electromagnetism
3	F19PL	1	Abstract Algebra
3	F19GB	1	Project Preparation
3	F19MV	1	Vector Analysis
3	B29QS	2	Quantum Theory and Spectroscopy
3	F19AB	2	Applied Mathematics B
3	F19MO	2	Ordinary Differential Equations
3	F19MC	2	Complex Analysis

Optional Courses

There are no optional courses for this year

Year/Stage 4

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
4	B29DR	1	Dynamics and Relativity
4	B29SS	2	Solid State Physics
4	F10GP	2	Mathematics Project Dissertation

Optional Courses

You must choose 3 mathematics courses from those listed in the first semester and two mathematics courses in the second semester.

Unfortunately, there are likely to be timetable clashes between some optional courses so that not all choices will be possible. Please contact the programme director before you make your choice of optional courses.

Year/Stage	Course Code	Semester	Course Title
4	F10AC	1	Applied Mathematics C
4	F10AM	1	Mathematical Biology A
4	F10MF	1	Functional Analysis
4	F10MM	1	Optimisation
4	F10NC	1	Numerical Analysis C
4	F10PC	1	Pure Mathematics C
4	F10AN	2	Mathematical Biology B
4	F10PG	2	Geometry
4	F10MP	2	Partial Differential Equations
4	F10ND	2	Numerical Analysis D
4	F10PD	2	Pure Mathematics D

F181 BSc (Hons) in Mathematics with Computer Science

Further Assistance

If you require further help in choosing your courses, please contact the programme director Professor Mark V Lawson (M.V.Lawson@hw.ac.uk)

Year/Stage 2

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
2	F18CD	1	Multivariable Calculus and Real Analysis A
2	F18CF	1	Linear Algebra
2	F17LP	1	Logic and Proof
2	F18CE	2	Multivariable Calculus and Real Analysis B
2	F18NA	2	Numerical Analysis A
2	F18PA	2	Pure Mathematics A
2	F28SD	2	Software Design

Optional Courses

Continuing students must choose F18AA Applied Mathematics A. F18GD Mathematics for Direct Entrants may be chosen only by students entering directly into 2nd year

Year/Stage	Course Code	Semester	Course Title
2	F18AA	1	Applied Mathematics A
2	F18GD	1	Mathematics for Direct Entrants

Year/Stage 3

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
3	F19PL	1	Abstract Algebra
3	F19GB	1	Project Preparation
3	F29FA	1	Foundations 1
3	F19MO	2	Ordinary Differential Equations
3	F19MC	2	Complex Analysis
3	F29FB	2	Foundations 2

Optional/Elective Courses

If you are doing an honours degree you should choose F19PB in Semester 1 and F19NB in Semester 2. If you are doing an ordinary degree you can instead replace these optional courses each semester with elective courses.

Optional Courses

Year/Stage	Course Code	Semester	Course Title
3	F19PB	1	Pure Mathematics B
3	F19NB	2	Numerical Analysis B

Elective Courses

Year/Stage	Course Code	Semester	Course Title
3	C47AP	1	Arabic Post-Beginners Elective 1
3	C47AX	1	Arabic Beginners Elective 1
3	C47CE	1	Chinese Beginners Elective 1
3	C47FI	1	French Intermediate Elective 1
3	C47FX	1	French Post-Beginners Elective 1
3	C47GP	1	German Post-Beginners Elective 1
3	C47GX	1	German Beginners Elective 1
3	C47SP	1	Spanish Post-Beginners Elective 1
3	C47SX	1	Spanish Beginners Elective 1
3	F27IS	1	Interactive Systems
3	C27OA	1	Introductory Economics
3	C47AQ	2	Arabic Post-Beginners Elective 2
3	C47AY	2	Arabic Beginners Elective 2
3	C47CF	2	Chinese Beginners Elective 2
3	C47FJ	2	French Intermediate Elective 2
3	C47FY	2	French Post-Beginners Elective 2
3	C47GQ	2	German Post-Beginners Elective 2
3	C47GY	2	German Beginners Elective 2
3	C47SQ	2	Spanish Post-Beginners Elective 2
3	C47SY	2	Spanish Beginners Elective 2
3	F27WD	2	Web Design & Databases
3	C37FF	2	Finance and Financial Reporting

Year/Stage 4

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
4	F10GP	2	Mathematics Project Dissertation

Optional Courses

You have to choose 5 Maths courses and 2 Computer Science courses. Unfortunately, there are likely to be timetable clashes between some Maths courses and some Computer Science courses so that not all choices will be possible. Please contact the programme director before you make your choice of optional courses.

Year/Stage	Course Code	Semester	Course Title
4	F10AC	1	Applied Mathematics C
4	F10AM	1	Mathematical Biology A
4	F10MF	1	Functional Analysis
4	F10MM	1	Optimisation
4	F10NC	1	Numerical Analysis C
4	F10PC	1	Pure Mathematics C
4	F20DL	1	Data Mining and Machine Learning
4	F20CN	1	Computer Network Security
4	F20RS	1	Rigorous Methods for Software Engineering
4	F10AN	2	Mathematical Biology B
4	F10MP	2	Partial Differential Equations
4	F10ND	2	Numerical Analysis D
4	F10PD	2	Pure Mathematics D
4	F10PG	2	Geometry

F191 BSc (Hons) in Mathematics with a European Language

Further Assistance

If you require further help in choosing your courses, please contact the programme director Dr Martin Youngson (M.A.Youngson@ma.hw.ac.uk)

Year/Stage 2

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
2	F18CD	1	Multivariable Calculus and Real Analysis A
2	F18CF	1	Linear Algebra
2	F18CE	2	Multivariable Calculus and Real Analysis B
2	F18NA	2	Numerical Analysis A
2	F18PA	2	Pure Mathematics A

Optional Courses

Continuing students cannot choose F18GD Mathematics for Direct Entrants which may be taken only by students entering directly into 2nd year. Each continuing student must choose either F18AA, Applied Mathematics A or F17LP, Logic and Proof.

Each student must also choose a language option each semester. For students studying French the language options will be C48LF and C48MF. For students studying German the language options will be C48LG and C48MG. For students studying Spanish the language options will be C48LE and C48ME.

Year/Stage	Course Code	Semester	Course Title
2	F18AA	1	Applied Mathematics A
2	F18GD	1	Mathematics for Direct Entrants
2	F17LP	1	Logic and Proof
2	C48LE	1	Spanish Advanced 1
2	C48LF	1	French Advanced 1
2	C48LG	1	German Advanced 1
2	C48ME	2	Spanish Advanced 2
2	C48MF	2	French Advanced 2
2	C48MG	2	German Advanced 2

Year/Stage 3

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
3	F19YA	1	Year Abroad
3	F19YB	2	Year Abroad

Optional Courses

There are no optional courses in this year of the programme

Year/Stage 4

Mandatory Courses

There are no mandatory courses in this year of the programme.

Optional Courses

You should choose any four courses per semester. Unfortunately, there are likely to be timetable clashes between some optional courses so that not all choices will be possible. Please contact the programme director before you make your choice of optional courses.

Year/ Stage	Course Code	Semester	Course Title
4	F19PL	1	Abstract Algebra
4	F10AM	1	Mathematical Biology A
4	F10MF	1	Functional Analysis
4	F10MM	1	Optimisation
4	F10NC	1	Numerical Analysis C
4	F19MC	2	Complex Analysis
4	F10AN	2	Mathematical Biology B
4	F10PG	2	Geometry
4	F10MP	2	Partial Differential Equations
4	F10ND	2	Numerical Analysis D

F1A1 BSc (Hons) in Mathematics with Statistics

Further Assistance

If you require further help in choosing your courses, please contact the programme director Dr Martin Youngson (M.A.Youngson@ma.hw.ac.uk)

Year/Stage 2

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
2	F18CD	1	Multivariable Calculus and Real Analysis A
2	F18CF	1	Linear Algebra
2	F78PA	1	Probability and Statistics A
2	F18CE	2	Multivariable Calculus and Real Analysis B
2	F18NA	2	Numerical Analysis A
2	F18PA	2	Pure Mathematics A
2	F78PB	2	Probability and Statistics B

Optional Courses

Continuing students cannot choose F18GD Mathematics for Direct Entrants which may be taken only by students entering directly into 2nd year. Each continuing student must choose either F18AA, Applied Mathematics A or F17LP, Logic and Proof.

Year/Stage	Course Code	Semester	Course Title
2	F18AA	1	Applied Mathematics A
2	F18GD	1	Mathematics for Direct Entrants
2	F17LP	1	Logic and Proof

Year/Stage 3

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
3	F19PL	1	Abstract Algebra
3	F79MA	1	Statistical Models A
3	F19MC	2	Complex Analysis
3	F19MO	2	Ordinary Differential Equations
3	F79MB	2	Statistical Models B

Optional/Elective Courses

If you are doing an honours degree you should choose both F19MV and F19PB in Semester 1 and one of F19AB or F19NB in Semester 2. If you are doing an ordinary degree you can instead replace up to one of the optional courses each semester with elective courses.

Optional Courses

Year/Stage	Course Code	Semester	Course Title
3	F19MV	1	Vector Analysis
3	F19PB	1	Pure Mathematics B
3	F19AB	2	Applied Mathematics B
3	F19NB	2	Numerical Analysis B

Elective Courses

Year/Stage	Course Code	Semester	Course Title
3	C27OA	1	Introductory Economics
3	C47AP	1	Arabic Post-Beginners Elective 1
3	C47AX	1	Arabic Beginners Elective 1
3	C47CE	1	Chinese Beginners Elective 1
3	C47FI	1	French Intermediate Elective 1
3	C47FX	1	French Post-Beginners Elective 1
3	C47GP	1	German Post-Beginners Elective 1
3	C47GX	1	German Beginners Elective 1
3	C47SP	1	Spanish Post-Beginners Elective 1
3	C47SX	1	Spanish Beginners Elective 1
3	F27IS	1	Interactive Systems
3	C37FF	2	Finance and Financial Reporting
3	C47AQ	2	Arabic Post-Beginners Elective 2
3	C47AY	2	Arabic Beginners Elective 2
3	C47CF	2	Chinese Beginners Elective 2
3	C47FJ	2	French Intermediate Elective 2
3	C47FY	2	French Post-Beginners Elective 2
3	C47GQ	2	German Post-Beginners Elective 2
3	C47GY	2	German Beginners Elective 2
3	C47SQ	2	Spanish Post-Beginners Elective 2
3	C47SY	2	Spanish Beginners Elective 2
3	F27WD	2	Web Design & Databases

Year/Stage 4

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
4	F79PS	1	Statistics for Social Science
4	F70TS	1	Time Series

Optional Courses

You should choose 3 mathematics courses from those listed in each semester. Unfortunately, there are likely to be timetable clashes between the mandatory and some optional courses (for example F10PC) so that not all choices will be possible. Please contact the programme director before you make your choice of optional courses.

Year/Stage	Course Code	Semester	Course Title
4	F10AC	1	Applied Mathematics C
4	F10AM	1	Mathematical Biology A
4	F10MF	1	Functional Analysis
4	F10MM	1	Optimisation
4	F10NC	1	Numerical Analysis C
4	F10PC	1	Pure Mathematics C
4	F10AN	2	Mathematical Biology B
4	F10MP	2	Partial Differential Equations
4	F10ND	2	Numerical Analysis D
4	F10PD	2	Pure Mathematics D
4	F10PG	2	Geometry

F1B1 BSc (Hons) in Mathematics with Finance

Further Assistance

If you require further help in choosing your courses, please contact the programme director Dr Kevin Painter (K.Painter@hw.ac.uk)

Year/Stage 2

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
2	F18CD	1	Multivariable Calculus and Real Analysis A
2	F18CF	1	Linear Algebra
2	C38FM	1	Financial Markets Theory
2	F18CE2	2	Multivariable Calculus and Real Analysis B
2	F18NA	2	Numerical Analysis A
2	F18PA	2	Pure Mathematics A
2	C38FN	2	Corporate Financial Theory

Optional Courses

Continuing students cannot choose F18GD Mathematics for Direct Entrants which may be taken only by students entering directly into 2nd year. Each continuing student must choose either F18AA, Applied Mathematics A, C38FR Financial Reporting or F17LP, Logic and Proof.

Year/Stage	Course Code	Semester	Course Title
2	C38FR	1	Financial Reporting
2	F18AA	1	Applied Mathematics A
2	F18GD	1	Mathematics for Direct Entrants
2	F17LP	1	Logic and Proof

Year/Stage 3

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
3	C39SM	1	International Bond and Currency Markets
3	F19GB	1	Project Preparation
3	F19PL	1	Abstract Algebra
3	C39SN	2	Financial Derivatives
3	F19MC	2	Complex Analysis
3	F19MO	2	Ordinary Differential Equations

Optional/Elective Courses

If you are doing an honours degree you should choose **either** F19MV **or** F19PB in Semester 1 and **either** F19AB **or** F19NB in Semester 2. If you are doing an ordinary degree you can instead replace up to one of the optional courses each semester with elective courses.

Optional Courses

Year/Stage	Course Code	Semester	Course Title
3	F19MV	1	Vector Analysis
3	F19PB	1	Pure Mathematics B
3	F19AB	2	Applied Mathematics B
3	F19NB	2	Numerical Analysis B

Elective Courses

Year/Stage	Course Code	Semester	Course Title
3	C47AP	1	Arabic Post-Beginners Elective 1
3	C47AX	1	Arabic Beginners Elective 1
3	C47CE	1	Chinese Beginners Elective 1
3	C47FI	1	French Intermediate Elective 1
3	C47FX	1	French Post-Beginners Elective 1
3	C47GP	1	German Post-Beginners Elective 1
3	C47GX	1	German Beginners Elective 1
3	C47SP	1	Spanish Post-Beginners Elective 1
3	C47SX	1	Spanish Beginners Elective 1
3	F27IS	1	Interactive Systems
3	C47AQ	2	Arabic Post-Beginners Elective 2
3	C47AY	2	Arabic Beginners Elective 2
3	C47CF	2	Chinese Beginners Elective 2
3	C47FJ	2	French Intermediate Elective 2
3	C47FY	2	French Post-Beginners Elective 2
3	C47GQ	2	German Post-Beginners Elective 2
3	C47GY	2	German Beginners Elective 2
3	C47SQ	2	Spanish Post-Beginners Elective 2
3	C47SY	2	Spanish Beginners Elective 2
3	F27WD	2	Web Design & Databases

Year/Stage 4

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
4	C30SX	1	Risk Management and Derivatives
4	C30SY	2	Equity Markets and Fund Management
4	F10GP	2	Mathematics Project Dissertation

Optional Courses

You should choose three courses in the first semester and two courses in the second semester from those listed.

Year/Stage	Course Code	Semester	Course Title
4	F10AC	1	Applied Mathematics C
4	F10AM	1	Mathematical Biology A
4	F10MF	1	Functional Analysis
4	F10MM	1	Optimisation
4	F10NC	1	Numerical Analysis C
4	F10PC	1	Pure Mathematics C
4	F10AN	2	Mathematical Biology B
4	F10MP	2	Partial Differential Equations
4	F10ND	2	Numerical Analysis D
4	F10PD	2	Pure Mathematics D
4	F10PG	2	Geometry

F1F1 BSc in Mathematical, Statistical and Actuarial Sciences

Further Assistance

If you require further help in choosing your courses, please contact the programme director Dr Martin Youngson (M.A.Youngson@ma.hw.ac.uk)

Year/Stage 2

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
2	F18CD	1	Multivariable Calculus and Real Analysis A
2	F18CF	1	Linear Algebra
2	F78AA	1	Actuarial and Financial Mathematics A
2	F78PA	1	Probability and Statistics A
2	F18CE	2	Multivariable Calculus and Real Analysis B
2	F78AB	2	Actuarial and Financial Mathematics B
2	F78PB	2	Probability and Statistics B

Optional Courses

If you have taken C37FF Finance and Financial Reporting in year 1, you must choose F18NA. Otherwise if you wish to have the opportunity to obtain an exemption from a Professional Actuarial Examination you should choose C37FF.

Year/Stage	Course Code	Semester	Course Title
2	F18NA	2	Numerical Analysis A
2	C37FF	2	Finance and financial reporting

Year/Stage 3

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
3	F19PL	1	Abstract Algebra
3	F79MA	1	Statistical Models A
3	F19MO	2	Ordinary Differential Equations
3	F79MB	2	Statistical Models B

Optional Courses

C27OA, Introductory Economics, may be chosen only by students who have not previously taken it previously in year 1. If you have previously taken C27OA Introductory Economics in year 1, you are advised to take F19MV Vector Analysis and F19MC Complex Analysis in order to maximise the number of prerequisites for year 4 courses. If you have not previously taken C27OA if you wish to have the opportunity to obtain an exemption from a Professional Actuarial Examination you should choose it in place of F19MV. If you want to get the chance of exemptions from other Professional Actuarial Examinations, for your other stream of courses you should choose either Stochastic Processes and Survival Models or Life Insurance Mathematics A and B. Note that if you do not do Life Insurance Mathematics A and B in year 3 you may do it instead in year 4.

There may be timetable clashes between mandatory courses and some of the other optional courses. Please contact the programme director if you have any questions about your choice of optional courses.

Year/ Stage	Course Code	Semester	Course Title
3	F19MV	1	Vector Analysis
3	F19PB	1	Pure Mathematics B
3	C27OA	1	Introductory Economics
3	F79PA	1	Portfolio Theory and Asset Models
3	F79SP	1	Stochastic Processes
3	F70LA	1	Life Insurance Mathematics A
3	F19AB	2	Applied Mathematics B
3	F19MC	2	Complex Analysis
3	F19NB	2	Numerical Analysis B
3	F79DF	2	Derivative Markets and Discrete Time Finance
3	F79SU	2	Survival Models
3	F70LB	2	Life Insurance Mathematics B

Year/Stage 4

Mandatory Courses

There are no mandatory courses in this year of the course.

Optional Courses

You must choose at least one course starting with F1 and one course starting with F7 each semester (except in semester 1 where it is possible to take four courses starting with F1 provided one of these is F10MM1, Optimisation.)

The following courses will not be running in 2017/18: F70SC (Statistical Computing) and F70SP (Further Stochastic Processes). If you have taken Life Insurance Mathematics A or B in Year 3 you cannot take Life Insurance Mathematics A or B in year 4. You can choose F70PE (Pensions) if and only if you choose F70LP (Life Office Practice).

Unfortunately, there are likely to be timetable clashes between some optional courses so that not all choices will be possible. Your choice of optional courses will also depend on what you studied in year/stage 3. Please contact the programme director before you make your choice of optional courses.

Year/ Stage	Course Code	Semester	Course Title
4	F10AC	1	Applied Mathematics C
4	F10AM	1	Mathematical Biology A
4	F10MF	1	Functional Analysis
4	F10MM	1	Optimisation
4	F10NC	1	Numerical Analysis C
4	F10PC	1	Pure Mathematics C
4	F79PS	1	Statistics for Social Science
4	F70CF	1	Continuous-Time Finance
4	F70FR	1	Financial Risk Management
4	F70LA	1	Life Insurance mathematics A
4	F70PE	1	Pensions
4	F70SC	1	Statistical Computing
4	F10AN	2	Mathematical Biology B
4	F10MP	2	Partial Differential Equations
4	F10ND	2	Numerical Analysis D
4	F10PD	2	Pure Mathematics D
4	F10PG	2	Geometry
4	F79BI	2	Bayesian Inference & Computational Methods
4	F70LB	2	Life Insurance Mathematics B
4	F70LP	2	Life Office Practice
4	F70RT	2	Risk Theory
4	F70SP	2	Further Stochastic Processes
4	F70TS	2	Time Series
4	F71TT	2	Risk Management: Techniques and Tools

F1G1 BSc in Mathematics and Computer Science

Further Assistance

If you require further help in choosing your courses, please contact the programme director Professor Mark V Lawson (M.V.Lawson@hw.ac.uk)

Year/Stage 2

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
2	F18CD	1	Multivariable Calculus and Real Analysis A
2	F18CF	1	Linear Algebra
2	F28PL	1	Programming Languages
2	F17LP	1	Logic and Proof
2	F18CE	2	Multivariable Calculus and Real Analysis B
2	F18NA	2	Numerical Analysis A
2	F28HS	2	Hardware-Software Interface
2	F28SD	2	Software Design

Optional Courses

There are no optional courses for this year.

Year/Stage 3

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
3	F19PB	1	Pure Mathematics B
3	F19PL	1	Abstract Algebra
3	F29FA	1	Foundations 1
3	F29DC	1	Data Communications & Networking
3	F19MO	2	Ordinary Differential Equations
3	F19NB	2	Numerical Analysis B
3	F29FB	2	Foundations 2
3	F29OC	2	Operating Systems and Concurrency

Optional Courses

There are no optional courses for this year.

Year/Stage 4

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
4	F20PA	1	Research Methods and Requirements Engineering
4	F20PB	2	Design & Implementation
4	F20PC	2	Project Testing and Presentation

Optional Courses

In Semester 1, you have to choose 2 Maths courses and 1 Computer Science course and in Semester 2, you have to choose 2 Maths courses. Unfortunately, there are likely to be timetable clashes between some Maths courses and some Computer Science courses so that not all choices will be possible. Please contact the programme director before you make your choice of optional courses.

Year/ Stage	Course Code	Semester	Course Title
4	F10AC	1	Applied Mathematics C
4	F10AM	1	Mathematical Biology A
4	F10MF	1	Functional Analysis
4	F10MM	1	Optimisation
4	F10NC	1	Numerical Analysis C
4	F10PC	1	Pure Mathematics C
4	F20DL	1	Data Mining and Machine Learning
4	F20CN	1	Computer Network Security
4	F20RS	1	Rigorous Methods for Software Engineering
4	F10AN	2	Mathematical Biology B
4	F10MP	2	Partial Differential Equations
4	F10ND	2	Numerical Analysis D
4	F10PD	2	Pure Mathematics D
4	F10PG	2	Geometry

F1H1 Master of Mathematics

Further Assistance

If you require further help in choosing your courses, please contact the Head of Department Professor Bernd Schroers (HoD@hw.ac.uk)

Year/Stage 2

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
2	F18AA	1	Applied Mathematics A
2	F18CD	1	Multivariable Calculus and Real Analysis A
2	F18CF	1	Linear Algebra
2	F18CE	2	Multivariable Calculus and Real Analysis B
2	F18NA	2	Numerical Analysis A
2	F18PA	2	Pure Mathematics A

Optional Courses

You should choose one optional course each semester. F17SC can only be chosen if you did not take this course in Year 1. F18GD Mathematics for Direct Entrants may be chosen only by students entering directly into 2nd year. Before you can choose C38FR, C38FM, C38MO, C38FN or C38SE you have to have a grade D or above in C37FF. Before you can choose B28PO or B28TP you have to have a grade D or above in B27MW and B27FF. Due to timetabling reasons it is unlikely that it will be possible to choose C28EP or C38SE during the academic year 2017/18..

Year/Stage	Course Code	Semester	Course Title
2	B28PO	1	Photonics and Optics
2	C38FM	1	Financial Markets Theory
2	C38FR	1	Financial Reporting
2	F18GD	1	Mathematics for Direct Entrants
2	F27IS	1	Interactive Systems
2	F78PA	1	Probability and Statistics A
2	F17LP	1	Logic and Proof
2	B28TP	2	Thermal Physics and Properties of Matter
2	C28EP	2	Contemporary Economic Policy and Institutions
2	C38FN	2	Corporate Financial Theory
2	C38MO	2	Management Accounting in Organisations
2	C38SE	2	Social and Environmental Accounting
2	F17SC	2	Discrete Mathematics
2	F18GW	2	Mathematics Workshop
2	F27WD	2	Web Design and Databases
2	F78PB	2	Probability and Statistics B
2	F78SC	2	Statistics for Science

Year/Stage 3

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
3	F19GB	1	Project Preparation
3	F19MV	1	Vector Analysis
3	F19PB	1	Pure Mathematics B

3	F19PL	1	Abstract Algebra
3	F19AB	2	Applied Mathematics B
3	F19MC	2	Complex Analysis
3	F19MO	2	Ordinary Differential Equations
3	F19NB	2	Numerical Analysis B

Optional Courses

There are no optional courses for this year.

Year/Stage 4

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
4	F10GP	2	Mathematics Project Dissertation

Optional Courses

You have to choose four courses in the first semester and three courses in the second semester. To increase your course choice next year (Year 5) you are strongly recommended to choose at least 1 of F10AC or F10PC in semester 1. Choosing F10PD in semester 2 will also increase your course choice in Year 5. Please contact the 4th year Director of Studies Professor A. White before you make your choice of optional courses.

Year/Stage	Course Code	Semester	Course Title
4	F10AC	1	Applied Mathematics C
4	F10AM	1	Mathematical Biology A
4	F10MF	1	Functional Analysis
4	F10MM	1	Optimisation
4	F10NC	1	Numerical Analysis C
4	F10PC	1	Pure Mathematics C
4	F10AN	2	Mathematical Biology B
4	F10MP	2	Partial Differential Equations
4	F10ND	2	Numerical Analysis D
4	F10PD	2	Pure Mathematics D
4	F10PG	2	Geometry

Year/Stage 5

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
5	F11GS	1	Mathematics Project Dissertation Part II

Optional Courses

You have to choose three courses in the first semester and four courses in the second semester. You may not choose courses which have a large overlap with those you have previously studied in year 4, for example you cannot choose F11NC if you previously have studied F10NC. You can also not choose F11AL if you have previously taken F19NB. The following courses will not be running in 2017/18: F11ST (Special Topics 1) and F11SU (Special Topics 2). Unfortunately, there are likely to be timetable clashes between some of the courses so that not all choices will be possible. Please contact the 5th year Director of Studies Professor A. White before you make your choice of optional courses.

Year/ Stage	Course Code	Semester	Course Title
5	F11AE	1	Applied Mathematics E
5	F11AM	1	Mathematical Ecology
5	F11FM	1	Functional Analysis
5	F11MM	1	Optimisation
5	F11MS	1	Modelling and Simulation in the Life Sciences
5	F11MT	1	Modelling and Tools
5	F11NC	1	Numerical ODEs
5	F11PE	1	Pure Mathematics E
5	F11ST	1	Special Topics 1
5	F11AL	2	Applied Linear Algebra
5	F11AN	2	Mathematical Biology and Medicine
5	F11AS	2	Dynamical Systems
5	F11MP	2	Partial Differential Equations
5	F11DA	2	Data Assimilation with Applications to Climate Change
5	F11ND	2	Numerical Analysis (PDEs)
5	F11PF	2	Pure Mathematics F
5	F11PG	2	Geometry
5	F11SS	2	Stochastic Simulation
5	F11SU	2	Special Topics 2

F111 Mathematical Studies

Further Assistance

If you require further help in choosing your courses, please contact the programme director Dr Martin Youngson (M.A.Youngson@ma.hw.ac.uk)

Year/Stage 2

Mandatory Courses

There are no mandatory courses in this year of the programme.

Optional/Elective Courses

Please consult the programme director before you choose your optional and elective courses.

Year/Stage 3

Mandatory Courses

There are no mandatory courses in this year of the programme.

Optional/Elective Courses

Please consult the programme director before you choose your optional and elective courses.

Year/Stage 4

Mandatory Courses

There are no mandatory courses in this year of the programme.

Optional/Elective Courses

Please consult the programme director before you choose your optional and elective courses.

F1J1 BSc in Mathematical, Statistical and Actuarial Sciences with Diploma in Industrial Training

Further Assistance

If you require further help in choosing your courses, please contact the programme director Dr Martin Youngson (M.A.Youngson@ma.hw.ac.uk)

Year/Stage 2

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
2	F18CD	1	Multivariable Calculus and Real Analysis A
2	F18CF	1	Linear Algebra
2	F78AA	1	Actuarial and Financial Mathematics A
2	F78PA	1	Probability and Statistics A
2	F18CE	2	Multivariable Calculus and Real Analysis B
2	F78AB	2	Actuarial and Financial Mathematics B
2	F78PB	2	Probability and Statistics B

Optional Courses

If you have taken C37FF Finance and Financial Reporting in year 1, you must choose F18NA. Otherwise if you wish to have the opportunity to obtain an exemption from a Professional Actuarial Examination you should choose C37FF.

Year/Stage	Course Code	Semester	Course Title
2	F18NA	2	Numerical Analysis A
2	C37FF	2	Finance and financial reporting

Year/Stage 3

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
3	F19PL	1	Abstract Algebra
3	F79MA	1	Statistical Models A
3	F19MO	2	Ordinary Differential Equations
3	F79MB	2	Statistical Models B

Optional Courses

C27OA, Introductory Economics, may be chosen only by students who have not previously taken it. If you have previously taken C27OA Introductory Economics in year 1, you are advised to take F19MV Vector Analysis and F19MC Complex Analysis in order to maximise the number of prerequisites for year 4 courses. If you have not previously taken C27OA if you wish to have the opportunity to obtain an exemption from a Professional Actuarial Examination you should choose it in place of F19MV. If you want to get the chance of exemptions from other Professional Actuarial Examinations, for your other stream of courses you should choose either Stochastic Processes and Survival Models or Life Insurance Mathematics A and B. Note that if you do not do Life Insurance Mathematics A and B in year 3 you may do it instead in year 5.

There may be timetable clashes between mandatory courses and some of the other optional courses. Please contact the programme director if you have any questions about your choice of optional courses.

Year/ Stage	Course Code	Semester	Course Title
3	F19MV	1	Vector Analysis
3	F19PB	1	Pure Mathematics B
3	C27OA	1	Introductory Economics
3	F79PA	1	Portfolio Theory and Asset Models
3	F79SP	1	Stochastic Processes
3	F70LA	1	Life Insurance Mathematics A
3	F19AB	2	Applied Mathematics B
3	F19MC	2	Complex Analysis
3	F19NB	2	Numerical Analysis B
3	F79DF	2	Derivative Markets and Discrete Time Finance
3	F79SU	2	Survival Models
3	F70LB	2	Life Insurance Mathematics B

Year/Stage 4

Mandatory Courses

Year/ Stage	Course Code	Semester	Course Title
4	F18ZA	1	Industrial Training Placement A
4	F18ZB	2	Industrial Training Placement B

There are 2 mandatory (60-credit courses) for the Diploma in Industrial Training. Students spend a year in industrial placement.

Optional Courses

There are no optional courses for this year.

Year/Stage 5

Mandatory Courses

There are no mandatory courses in this year of the course.

Optional Courses

You must choose at least one course starting with F1 and one course starting with F7 each semester (except in semester 1 where it is possible to take four courses starting with F1 provided one of these is F10MM1, Optimisation.)

The following courses will not be running in 2017/18: F70SC (Statistical Computing) and F70SP (Further Stochastic Processes). If you have taken Life Insurance Mathematics A or B in Year 3 you cannot take Life Insurance Mathematics A or B in year 4. You can choose F70PE (Pensions) if and only if you choose F70LP (Life Office Practice).

Unfortunately, there are likely to be timetable clashes between some optional courses so that not all choices will be possible. Your choice of optional courses will also depend on what you studied in year/stage 3. Please contact the programme director before you make your choice of optional courses.

Year/ Stage	Course Code	Semester	Course Title
5	F10AC	1	Applied Mathematics C
5	F10AM	1	Mathematical Biology A
5	F10MF	1	Functional Analysis
5	F10MM	1	Optimisation
5	F10NC	1	Numerical Analysis C

5	F10PC	1	Pure Mathematics C
5	F79PS	1	Statistics for Social Science
5	F70CF	1	Continuous-Time Finance
5	F70FR	1	Financial Risk Management
5	F70LA	1	Life Insurance mathematics A
5	F70PE	1	Pensions
5	F70SC	1	Statistical Computing
5	F10AN	2	Mathematical Biology B
5	F10MP	2	Partial Differential Equations
5	F10ND	2	Numerical Analysis D
5	F10PD	2	Pure Mathematics D
5	F10PG	2	Geometry
5	F79BI	2	Bayesian Inference & Computational Methods
5	F70LB	2	Life Insurance Mathematics B
5	F70LP	2	Life Office Practice
5	F70RT	2	Risk Theory
5	F70SP	2	Further Stochastic Processes
5	F70TS	2	Time Series
5	F71TT	2	Risk Management: Techniques and Tools

F1K1 BSc (Hons) in Mathematics with Finance with Industrial Diploma

Further Assistance

If you require further help in choosing your courses, please contact the programme director Dr Kevin Painter (K.Painter@hw.ac.uk)

Year/Stage 2

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
2	F18CD	1	Multivariable Calculus and Real Analysis A
2	F18CF	1	Linear Algebra
2	C38FM	1	Financial Markets Theory
2	F18CE2	2	Multivariable Calculus and Real Analysis B
2	F18NA	2	Numerical Analysis A
2	F18PA	2	Pure Mathematics A
2	C38FN	2	Corporate Financial Theory

Optional Courses

Continuing students cannot choose F18GD Mathematics for Direct Entrants which may be taken only by students entering directly into 2nd year. Each continuing student must choose either F18AA, Applied Mathematics A, C38FR Financial Reporting or F17LP, Logic and Proof.

Year/Stage	Course Code	Semester	Course Title
2	C38FR	1	Financial Reporting
2	F18AA	1	Applied Mathematics A
2	F18GD	1	Mathematics for Direct Entrants
2	F17LP	1	Logic and Proof

Year/Stage 3

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
3	C39SM	1	International Bond and Currency Markets
3	F19GB	1	Project Preparation
3	F19PL	1	Abstract Algebra
3	C39SN	2	Financial Derivatives
3	F19MC	2	Complex Analysis
3	F19MO	2	Ordinary Differential Equations

Optional Courses

You should choose **either** F19MV **or** F19PB in Semester 1 and **either** F19AB **or** F19NB in Semester 2

Optional Courses

Year/Stage	Course Code	Semester	Course Title
3	F19MV	1	Vector Analysis
3	F19PB	1	Pure Mathematics B
3	F19AB	2	Applied Mathematics B
3	F19NB	2	Numerical Analysis B

Year/Stage 4

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
4	F18ZA	1	Industrial Training Placement A
4	F18ZB	2	Industrial Training Placement B

There are 2 mandatory (60-credit courses) for the Diploma in Industrial Training. Students spend a year in industrial placement.

Optional Courses

There are no optional courses for this year.

Year/Stage 5

Mandatory Courses

Year/Stage	Course Code	Semester	Course Title
5	C30SX	1	Risk Management and Derivatives
5	C30SY	2	Equity Markets and Fund Management
5	F10GP	2	Mathematics Project Dissertation

Optional Courses

You should choose three courses in the first semester and two courses in the second semester from those listed.

Year/Stage	Course Code	Semester	Course Title
5	F10AC	1	Applied Mathematics C
5	F10AM	1	Mathematical Biology A
5	F10MF	1	Functional Analysis
5	F10MM	1	Optimisation
5	F10NC	1	Numerical Analysis C
5	F10PC	1	Pure Mathematics C
5	F10AN	2	Mathematical Biology B
5	F10MP	2	Partial Differential Equations
5	F10ND	2	Numerical Analysis D
5	F10PD	2	Pure Mathematics D
5	F10PG	2	Geometry