Selection of Courses

The online enrolment system will allow you to select the courses you wish to study during the Academic Year 2020/21. Your courses are categorised into Mandatory and Optional courses:

<table>
<thead>
<tr>
<th>Mandatory Courses</th>
<th>Optional Courses</th>
<th>Elective Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>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.</td>
<td>Elective courses are listed under the specific programme information later in this document. If no information is present, please ignore and move on to the next screen on the online enrolment system.</td>
</tr>
</tbody>
</table>

Further Information

To assist you in the selection of your optional/elective courses, please find below additional information relating to the programme for which you are currently enrolling. 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 course, 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. You can obtain your timetable by following the link at [https://www.macs.hw.ac.uk/students/studies/timetables.htm](https://www.macs.hw.ac.uk/students/studies/timetables.htm). This will be available from mid – August. 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 – If you wish to change your course in 2020/21, you can do this online after you complete online enrolment up until the end of the second week of the semester. To swap a course you go to the ‘Student menu’ in self-service and select ‘Course Swap’. There is further guidance online as you follow the process.

In a case you unable to do it online, you will be required to complete a ‘Change of Course’ form found at: https://www.hw.ac.uk/students/doc/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.

Actuarial Exemptions – Please refer to page 8 of this document for a list of the professional examinations, and the courses which can lead to exemptions from examinations in these subjects.

Further Assistance

For more information about the undergraduate programmes offered by the Actuarial Mathematics and Statistics department, please consult the student pages of our website, available at https://www.macs.hw.ac.uk/students/ams/. This will help you choose your options as there are full details of content and outcomes. This will, of course, be updated before the start of the next academic year.

If you require further help in choosing your courses, please contact your Personal Tutor or the Year Coordinator for the year you are about to enrol on, as follows:

First year (not applicable in Malaysia) : -
Second year (Year 1 Malaysia) : Dr Laila El Ghandour (I.el_ghandour@hw.ac.uk)
Third year (Year 2 Malaysia) : Dr Roberto Briones Pulmano (r.briones@hw.ac.uk)
Fourth year (Year 3 Malaysia) : Dr Suzan Jabbar Obaiys (s.obaiys@hw.ac.uk)

F723  BSc in Actuarial Science

Year 2 (Year 1 Malaysia)

- Semester 1: You must select all the courses which are mandatory for the BSc in Actuarial Science
  - F18CD  Multivariable Calculus and Real Analysis A
  - F78PA  Probability and Statistics A
  - F78AA  Actuarial and Financial Mathematics A
  - F18CF  Linear Algebra

- Semester 2: You must select all the courses which are mandatory for the BSc in Actuarial Science
  - F18CE  Multivariable Calculus and Real Analysis B
  - F78PB  Probability and Statistics B
  - F78AB  Actuarial and Financial Mathematics B*
  - F78AP  Algorithmic and Scientific Programming*
  - C37FF  Finance & Financial Reporting**

* F78AB and F78AP will be considered half-courses.
** Mandatory even though the C37FF listed on the online system as optional courses, because this subject leads to exemption from the CB1 examination of the Institute and Faculty of Actuaries, provided your overall mark is high enough (see the last page of this document for more information).
**GoGlobal** students who took Finance and Financial Reporting (C37FF) in the first year should select Operational Management (F18OP). You cannot enrol for C37FF again in order to improve your grade.

- All students are **compulsory** to enrol for the **General Studies Courses** as per requirement by the MQA as follow:
  - **Semester 1**
    - K20AI Self-Empowerment and Social Responsibility I*
    - K20AE National Language A**

  *This course is pre-requisite for K20CI.

  **This course is to be enrolled by local students who did not credit for Bahasa Malaysia in SPM or did not sit for SPM examinations.

- **Semester 2**
  - K20CI Self-Empowerment and Social Responsibility II*
  - K20AA Islamic Civilization and Asian Civilization (TITAS)**
  - K20AB Malay Language Communication 2**

  *This course has synoptic link with K20AI

  **K20AA course is to be enrolled by local students only. Meanwhile, K20AB course is to be enrolled by international students only.

**Year 3 (Year 2 Malaysia)**

- **Semester 1:** You must select the following courses which are **mandatory** for the BSc in Actuarial Science (even though they may be listed on the online system as optional courses).
  - F70LA Life Insurance Mathematics A
  - F79MA Statistical Models A
  - F79PA Portfolio Theory and Asset Models
  - F79SP Stochastic Processes

  In addition, you **must** select the **General Studies Courses** as follow:
  - K20AC Ethnic Relations*
  - K20AD Malaysian Studies 3*

  * K20AC course is to be enrolled by local students only. Meanwhile, K20AD course is to be enrolled by international students only.

- **Semester 2:** You must select the following courses which are **mandatory** for the BSc in Actuarial Science (even though they may be listed on the online system as optional courses).
  - F70LB Life Insurance Mathematics B
  - F79MB Statistical Models B
  - F79DF Derivative Markets and Discrete Time Finance
  - F79SU Survival Models

**Year 4 (Year 3 Malaysia)**

- **Semester 1:** You must select **three (3)** of the following **optional** courses:
  - F79PS Statistics for Social Science
  - F10MM Optimisation
  - F20ML Statistical Machine Learning
  - F70CF Continuous – Time Finance*

  In addition, you may select the following **elective** course:
• Semester 2: You must select the following optional courses:
  o F79BI Bayesian Inference and Computational Methods
  o F70TS Time Series Analysis
  o F70RT Risk Theory

In addition, you may select the following elective course:
  o F19MO Ordinary Differential Equations

(Note: On online enrolment you may need to search for F19MO, but it is an allowable option)

• IMPORTANT for Malaysia students: The following optional courses are NOT AVAILABLE in 2020-2021:
  o F70SC Statistical Computing
  o F70SP Further Stochastic Processes

IF THESE COURSES ARE SHOWING IN THE ONLINE ENROLMENT SYSTEM, DO NOT REGISTER FOR THESE!

• Please bear in mind the following important information when choosing your courses:
  o Stochastic Processes (F79SP), Survival Models (F79SU), Risk Theory (F70RT) and Time Series (F70TS) lead to exemption from the CS2 Risk Modelling and Survival Analysis examination of the Institute and Faculty of Actuaries, provided your overall mark is high enough (see page 4 of this document for more information).
  o Portfolio Theory and Asset Models (F79PA), Derivative Markets and Discrete-Time Finance (F79DF) and Continuous-Time Finance (F70CF) lead to exemption from the CM2 Financial Engineering and Loss Reserving examination of the Institute and Faculty of Actuaries, provided your overall mark is high enough (see the last page of this document for more information).

F740 BSc in Statistical Data Science

Year 2 (Year 1 Malaysia)

• Semester 1: You must select all the courses which are mandatory for the BSc in Statistical Data Science:
  o F18CD Multivariable Calculus and Real Analysis A
  o F78PA Probability and Statistics A
  o F78AA Actuarial and Financial Mathematics A
  o F18CF Linear Algebra

• Semester 2: You must select all the courses which are mandatory for the BSc in Statistical Data Science
  o F18CE Multivariable Calculus and Real Analysis B
  o F78PB Probability and Statistics B
  o F78AB Actuarial and Financial Mathematics B*
  o F78AP Algorithmic and Scientific Programming*
  o C37FF Finance & Financial Reporting**
* F78AB and F78AP will be considered half-courses.

**Mandatory** even though the C37FF listed on the online system as optional courses, because this subject leads to exemption from the CB1 examination of the Institute and Faculty of Actuaries, provided your overall mark is high enough (see the last page of this document for more information).

**GoGlobal** students who took Finance and Financial Reporting (C37FF) in the first year should select Operational Management (F18OP). You cannot enrol for C37FF again in order to improve your grade.

- All students are compulsory to enrol for the General Studies Courses as per requirement by the MQA as follow:
  
  **Semester 1**
  - K20AI  Self-Empowerment and Social Responsibility I*
  - K20AE  National Language A**
  
  *This course is pre-requisite for K20CI.
  **This course is to be enrolled by local students who did not credit for Bahasa Malaysia in SPM or did not sit for SPM examinations.

  **Semester 2**
  - K20CI  Self-Empowerment and Social Responsibility II*
  - K20AA  Islamic Civilization and Asian Civilization (TITAS)**
  - K20AB  Malay Language Communication 2**
  
  *This course has synoptic link with K20AI
  **K20AA course is to be enrolled by local students only. Meanwhile, K20AB course is to be enrolled by international students only.

**Year 3 (Year 2 Malaysia)**

- **Semester 1:** You must select the following courses which are mandatory for the BSc in Statistical Data Science.
  - F79MA  Statistical Models A
  - F79SP  Stochastic Processes
  - F79PS  Statistics for Social Science

  In addition, you may select the following optional course:
  - F79PA  Portfolio Theory and Asset Models

  Below is the General Studies Course that you must enrol:
  - K20AC  Ethnic Relations*
  - K20AD  Malaysian Studies 3*

  * K20AC course is to be enrolled by local students only. Meanwhile, K20AD course is to be enrolled by international students only.

- **Semester 2:** You must select the following courses which are mandatory for the BSc in Statistical Data Science.
  - F79MB  Statistical Models B
  - F79BI  Bayesian Inference and Computational Methods
  - F79SU  Survival Models

  In addition, you may choose one (1) of optional course as follow:
  - F79DF  Derivative Markets and Discrete Time Finance
Year 4 (Year 3 Malaysia)

- **Semester 1**: You must select the *three (3) mandatory* courses:
  - F70DA Statistics Dissertation A
  - F10MM Optimisation
  - F20ML Statistical Machine Learning

In addition, you may select one of the *two (2) optional* courses:
  - F70CF Continuous – Time Finance*
  - F10DA Data Assimilation

*If you are not eligible to take F70CF Continuous – Time Finance then you have to select F10DA Data Assimilation.

- **Semester 2**: You must select the *two (2) mandatory* courses:
  - F70DB Statistics Dissertation B
  - F70TS Time Series

In addition, you have to select the *two (2) optional* courses:
  - F70RT Risk Theory
  - F70ST Statistics Special Topic

- **IMPORTANT for Malaysia students**: The following optional courses are NOT AVAILABLE in 2020-2021:
  - F70SC Statistical Computing
  - F70SP Further Stochastic Processes

  **IF THESE COURSES ARE SHOWING IN THE ONLINE ENROLMENT SYSTEM, DO NOT REGISTER FOR THESE!**

Prerequisites

The following lists contains details of prerequisites for all level 8, 9 and 10 courses taught in the department of Actuarial Mathematics and Statistics. This information will be particularly useful for Year 4 students who are choosing their optional courses. For courses taught by other departments, please check the webpage of the relevant department. Where prerequisites are mentioned, students must have obtained a D or better in these subjects in order to be allowed to take their chosen course.

**Level 8**

**Probability and Statistics A (F78PA)**: Introduction to Statistical Science A (F77SA) and Introduction to Statistical Science B (F77SB) or equivalent.

**Probability and Statistics B (F78PB)**: Introduction to Statistical Science A (F77SA) and Introduction to Statistical Science B (F77SB) or equivalent.

**Actuarial and Financial Mathematics A (F78AA)**: No prerequisites.

**Actuarial and Financial Mathematics B (F78AB)**: No prerequisites.
**Level 9**

**Statistical Models A (F79MA):** Probability and Statistics A (F78PA) and Probability and Statistics B (F78PB) or equivalent.

**Statistical Models B (F79MB):** Probability and Statistics A (F78PA) and Probability and Statistics B (F78PB) or equivalent.

**Statistics for Social Science (F79PS):** Probability and Statistics A (F78PA) and Probability and Statistics B (F78PB), or alternatively Statistics for Science (F78SC), or equivalent.

**Stochastic Processes (F79SP):** Probability and Statistics A (F78PA) and Probability and Statistics B (F78PB) or equivalent.

**Bayesian Inference & Computational Methods (F79BI):** Probability and Statistics A (F78PA) and Probability and Statistics B (F78PB) or equivalent.

**Portfolio Theory and Asset Models (F79PA):** Probability and Statistics A (F78PA) and Actuarial and Financial Mathematics B (F78AB) or equivalent.

**Derivative Markets and Discrete-Time Finance (F79DF):** Probability and Statistics A (F78PA) and Actuarial and Financial Mathematics B (F78AB) or equivalent.

**Survival Models (F79SU):** Financial Mathematics B (F78AB) and Probability and Statistics B (F78PB) or equivalent.

**Level 10/11**

**Time Series (F70TS):** Probability and Statistics A (F78PA) and Probability and Statistics B (F78PB) or equivalent.

**Statistics Dissertation A (F70DA):** Statistical Models A (F79MA) and Statistical Models B (F79MB).

**Statistics Dissertation B (F70DB):** Statistical Models A (F79MA) and Statistical Models B (F79MB).

**Life Insurance Mathematics A (F70LA):** Actuarial and Financial Mathematics A (F78AA) and Actuarial and Financial Mathematics B (F78AB) or equivalent.

**Life Insurance Mathematics B (F70LB):** Actuarial and Financial Mathematics A (F78AA) and Actuarial and Financial Mathematics B (F78AB) or equivalent.

**Continuous-Time Finance (F70CF):** Stochastic Processes (F79SP) and Derivatives Markets and Discrete-Time Finance (F79DF) or equivalent.

**Statistics Special Topic (F70ST):** Statistical Models A (F79MA) and Statistical Models B (F79MB) or equivalent.

**Risk Theory (F70RT):** Statistical Models A (F79MA) or equivalent.

**Optimisation (F10MM):** Multivariable Calculus and Real Analysis A (F18CD) and Linear Algebra (F18CF).

**Risk Management: Techniques and Tools (F71TT):** Probability and Statistics B (F78PB) and Portfolio Theory and Asset Models (F79PA) or equivalent.
**Actuarial Subjects (Exemptions):**

- CS1A: Assessed via end of semester exam papers and coursework
- CS1B: Assessed via R-based project in F78PA, R-based project and class test in F78PB, R-based assignments in F79MA and F79MB

**CS2 Risk Modelling and Survival Analysis:** F79SP Stochastic Processes, F79SU Survival Models, F70RT Risk Theory, F70TS Time Series
- CS2A: Assessed via end of semester exam papers and coursework
- CS2B: Assessed via R-based assignments for the four courses listed above

- CM1A: Assessed via end of semester exam papers and coursework
- CM1B: Assessed via midterm tests & Excel assignments for F78AA and F78AB; assignments for F70LA & F70LB

**CM2 Financial Engineering and Loss Reserving:** F79PA Portfolio Theory & Asset Models, F79DF Derivative Markets and Discrete Time Finance, F70CF Continuous Time Finance
- CM2A: Assessed via end of semester exam papers and coursework
- CM2B: Assessed via R-based assignments for the three courses listed above

**CB1 Business Finance:** C37FF Finance & Financial Reporting

**CB2 Business Economics:** C27IE Introductory Economics