

## Programme Handbook for BSc. Actuarial Science and BSc. Statistical Data Science

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## **PART A: SCHOOL INFORMATION**

### **A1. How to Use This Handbook**

This handbook provides you with:

- An overview of your programme, its structure and its courses.
- Contact information for key staff in your programme, subject and academic School.
- Details of support and resources available to you as a Heriot-Watt student.

Take time to look through the information provided, but also use it for reference if you are unsure of anything, if you want to contact someone, or if you want to find out more about any aspect of your studies. This Handbook is not just for your first week or two at University, nor is it something to be read once and discarded, you will find it useful to refer back to its contents in the coming weeks and months. If you can't find the information you are looking for then you can ask your personal tutor.

All information is correct at the time the Handbook was produced.

### **A2. Welcome and Introduction**

#### **Welcome from the Principal and Vice Chancellor of Heriot-Watt University**

I am delighted that you have chosen our unique and innovative University and have entrusted us with your education for the next few years. Heriot-Watt has been at the forefront of pioneering education and future thinking since 1821, and each year, whether it be in league tables or the testimonies of our brilliant students and our supportive staff, we continue to lead the way in world class education.

We are very aware that you are joining us in uncertain times but let me reassure you that Heriot-Watt University continues to rise to these challenges. Our Learning and Teaching Academy has been working tirelessly to create and implement a Responsive Blended Learning (RBL) model, which enhances teaching practices both on campus and at home, ensuring that you will still receive inspiring learning experiences and practical support. Now more than ever, we are thankful for our global OneWatt community of students, colleagues and alumni, who continue to actively take part in our supportive network, which spans five campuses in three countries.

Throughout your studies you will have the opportunity to thrive both personally and academically, and I would encourage you to take advantage of all that our campuses, student societies and global community has to offer you. As a University committed to preparing you for your future, we're delighted to offer opportunities for students to gain a global perspective, whether at a single campus or abroad. As travel restrictions are eased, our Go Global programme will continue to offer inter-campus transfers and exchanges across our campuses in Dubai, Scotland and Malaysia, allowing you to study, socialise or experience new cultures and places. We encourage you to connect with likeminded individuals across the globe and grasp every opportunity with both hands.

Our graduates are sought-after by global professions and industries all over the world. The very nature of a Heriot-Watt education is one that allows you to benefit from our research-informed approach, underpinned by our rich heritage and values. We're dedicated to providing you with the confidence and leadership skills to be a global citizen, and the expertise to one day become a leader in your chosen field or career. Together we will help shape tomorrow to deliver benefits for all of society. We look forward to supporting you as you grow and become a successful graduate of Heriot-Watt University. On behalf of our global One-Watt community, I'd like to take this opportunity to say: welcome to the family.

Professor Richard A. Williams OBE  
Principal and Vice-Chancellor

### **Welcome from the Provost and CEO, Heriot-Watt University Malaysia**

It is with great pleasure that I welcome you to Heriot-Watt University Malaysia. You are starting your academic journey at a very special and challenging time for the whole world due to COVID19 crisis. The way we respond to life's challenges will shape us as individuals and I believe that choosing to continue pursuing your dreams and further your studies will positively impact you for years to come. I am confident that this crisis will pass, and our number one objective now is to prepare all of our students to be ready to lead the recovery effort when this happens.

To support our students, we developed Responsive Blended Learning (RBL) as a strategic approach where the combination of face-to-face, online and self-directed learning are used to ensure that our students' learning continues as planned. RBL capitalises on our world class digital learning platforms and Malaysia's first purpose-built green campus that offers excellent facilities while overlooking a stunning lake and providing an inspiring environment for academic study, flourishing and holistic growth.

Heriot-Watt University Malaysia will provide you with access to high quality UK higher education with a focus on delivering professionally-relevant learning and industry-linked research and knowledge exchange. The portfolio of programmes on offer at Heriot-Watt University Malaysia is aligned with the National and global plans for post pandemic recovery, economic growth and development.

Congratulations on choosing Heriot-Watt University Malaysia and I wish you a very successful and rewarding journey with us.

Professor Mushtak Al-Atabi  
Provost and Chief Executive Officer

### **Welcome from the Associate Head of School (Malaysia Campus)**

Welcome and congratulations on your acceptance to Heriot-Watt University Malaysia (HWUM). We are thrilled that you are joining our BSc. (Hons) Actuarial Science or BSc. (Hons) Statistical Data Science programme.

The information in this handbook has been carefully prepared and presented in an effort to help you adjust to, and become an integral part of, our School of Mathematical and Computer Sciences (MACS).

In attending to your academic responsibilities, we hope that you will participate in our varied activities and enjoy your studies at HWUM. Remember, your success in this programme will be directly proportional to your efforts. Set goals for the upcoming academic year; visualise where you want to go, what you want to do, and then work to unlock your potential to achieve them.

On behalf of the entire school of MACS, we wish you the very best for the upcoming academic year. Take advantage of everything a technical education can offer and strive to be the very best.

The new academic year is upon us and all our staff are looking forward to providing you with a unique, engaging, and challenging educational experience, even if we are entering an unusual and unexpected period of human existence, and we will endeavour to provide the best education we can in the circumstances.

This coming academic year Heriot-Watt University will be employing Responsive Blended Learning (RBL). This means centring the education on a digital core through the University's virtual learning environment Vision but also blending this with face to face classes and contact where safe and permissible, while meeting all of the requirements of government guidance.

Good luck to all and have a great academic year!

Dr Alistair Wallis  
Associate Head of School

### **A3. COVID-19 and Responsive Blended Learning**

The COVID-19 pandemic means that we have adapted the way we deliver learning and teaching across our campuses to enable us to continue to offer an inspiring learning experience, whatever pandemic-related restrictions may be in place.

Our approach is called **Responsive Blended Learning (RBL)**.

- **Responsive** to the changing environments our students are living and learning in, to the wellbeing concerns of students and staff, and to the diversity of students' learning needs at this challenging time.
- **Blended** to combine the very best use of online and on-campus teaching, learning and student support. The exact balance of this blend of online and on-campus learning will flex depending on local conditions and individual student context.

Our Responsive Blended Learning approach means that you will be able to learn, interact and collaborate with your classmates, whether you are on campus or studying at a distance. It will enable you to access materials, collaborate and learn alongside your class cohort, and build and strengthen friendships, wherever you begin your studies from. This means our response will flex with the local conditions, and with your particular

circumstances. It will also allow us to slowly and safely phase the return of students and staff on to our campuses, when conditions allow.

As campuses reopen, there will be increasing opportunities for on-campus teaching activities. Labs, studios and maker-spaces will, when safe to do so, be opened to allow students to engage in practical activities. Tutorials and other class teaching will also resume on campus, when space and safety guidance allows this. Whenever you can return, we will be here to welcome you and support you to adjust to campus life.

You can discuss any issues around your learning or your wellbeing with your personal tutor (see below) and with the University's support services (see section B6 below).

*As part of the University's Responsive Blended Learning approach, in 2020/21 learning and teaching activities may be recorded for academic purposes. Students will have access to these recordings for use in their studies, but must not download, access or use these recordings for any purpose other than their studies at the University. Equally, students must not copy or share the recordings, in whole or in part, in any way with any other party. New and continuing students will be invited to sign up to these requirements as part of the Student Declaration at the point of enrolment.*

## **A4. Personal Tutors**

Every student has a member of academic staff allocated to them as a personal tutor who will be a key source of advice, guidance and support during your time at Heriot-Watt. Your personal tutor is your first point of contact if you need advice on any issue, both academic and non-academic, and can refer you to other support services where relevant for non-academic matters. Personal tutors provide a clear point of contact for you throughout your degree.

While social distancing is in operation, or if you are off campus, you can still arrange to meet your personal tutor remotely and contact them by email or via Microsoft Teams.

### **Personal Tutor Contact Points for New and Continuing Students.**

#### **Key contact points for new students (first year)**

- *Welcome Week*: during your induction programme you will find out about the personal tutoring system and have the opportunity to ask any questions.
- *End of teaching week 2*: you will be invited to a meeting to discuss settling in and check that things are going well.
- *Week 7 or 8*: you will meet with your personal tutor to discuss end of semester assessments. It is an opportunity for you to discuss any anxieties you have over assessments, seek guidance on revision, and reflect on your learning and the academic skills they need to develop to be successful in your assessments.
- *Post-assessment*: early in semester 2, you will be invited to a meeting to discuss your semester 1 results. This is an opportunity for you to discuss what has gone well, or not so well, and how the 1st semester experience will help in semester 2 and beyond.

In addition, you may be invited to other meetings throughout the year and should attend. You may request meetings at other times if you need to talk to your personal tutor, you don't have to wait until the scheduled meeting.

## **Key contact points for continuing students**

*By the end of teaching week 5:* you will be invited to discuss how you are settling into the new academic year, and if there are any points of discussion arising from the previous semester's assessments.

*Semester 2 post assessments:* early in semester 2 you will be invited to a meeting to discuss your semester 1 results. This is an opportunity for you to reflect on what has gone well, or not so well, and how your 1st semester experience will help you in semester 2 and beyond.

In addition, you may be invited to other meetings throughout the year and should attend. You may request meetings at other times if you need to talk to your personal tutor, you don't have to wait until the scheduled meeting.

More details about personal tutoring can be found [here](#).

## **Help and Advice**

Every year a few students run into serious personal difficulties (e.g. family illness, accommodation, financial, etc.). As well as being generally supportive, your personal tutor can help in a number of practical ways. For example, if you are prevented from completing project work or sitting exams, your personal tutor can sometimes help with re-scheduling or making alternative arrangements for assessment. However, you must notify your personal tutor as soon as possible, or there is very little that can be done. This is particularly important if the difficulty affects your sitting Level 9 or 10 honours papers, as once taken there are **no resits allowed for honours papers**. Also, it is essential to submit a Mitigating Circumstances Form.

With other problems, your personal tutor can put you in touch with the appropriate University support service (e.g. Student Support Services or Student Union). Personal tutors are there to help; do not hesitate to contact yours if you need help.

## **A5. MALAYSIA Campus Information**

### **University contact details**

Address: Heriot-Watt University Malaysia,  
No 1 Jalan Venna P5/2, Precinct 5, 62200, Putrajaya, Malaysia  
Phone: +603 8894 3888  
Fax: +603 8894 3999  
Website: [www.hw.edu.my](http://www.hw.edu.my)

The programme is supported through the School Administration Office and Student Service Centre. Staff in the office can help with administrative information and procedures.

### **School Administration Office**

Ms Nuryati Fazrina Zahari  
Location: Staff Office 1, E1.17, Level 1, East Wing  
Phone: +603 8894 3870  
Email: [n.zahari@hw.ac.uk](mailto:n.zahari@hw.ac.uk)

### **Student Service Centre**

Location: Student Service Centre, E1.12, Level 1, East Wing

Phone: +603 8894 3610

Email: [MYStudentCentre@hw.ac.uk](mailto:MYStudentCentre@hw.ac.uk)

### **Significant Dates in Academic Year \*to be confirmed by registry**

HWUM Campus session dates for September Intake 2020/21

<b>Dates</b>	<b>Activity</b>
1 September – 4 December 2020	Semester 1 teaching
19 - 23 October 2020	Consolidation Week
7 – 18 December 2020	Semester 1 exams
21 December 2020 – 8 January 2021	Semester 1 break
11 January – 23 April 2021	Semester 2 teaching
TBC	Consolidation Week
26 April – 21 May 2021	Semester 2 exams
24 May - 3 September 2021	Semester 2 break
5 - 13 August 2021	Resits*
TBC	Graduation

\* Note: The dates stated above are tentative and subject to change.

Please refer to the University's website at <https://www.hw.ac.uk/study/apply/academic-calendar.htm>, which contains detailed information about the Malaysia Campus session dates and holidays.

### **Consolidation Week**

The Consolidation Week is an opportunity to pause within the semester. It will allow both staff and students to reflect on courses, catch-up with outstanding pieces of work and consolidate material that has been covered in the first half of semester to determine aspects of the course that may need to be revisited, re-enforced, etc. There will also be the opportunity for students to engage in additional induction and wellbeing activities, careers sessions, etc.

The following outlines the main expectations for both staff and students:

- The Consolidation Week is not a vacation/break. It is intended to slow the pace, somewhat, and allow reflection and consolidation of learning. Support activities will still take place during this week.
- No new material will to be covered during Consolidation Week.
- There will be no assessment submissions for students during Consolidation Week.
- Schools can continue to actively support student learning activities, for example, laboratory, studio and workshop sessions as this helps to consolidate theoretical learning that has taken place.
- For example, during Consolidation Week, instead of providing activities which staff actively lead, students can be asked to work independently, catch up with coursework/tasks, undertake some revision and reflection activities, and so on.
- Staff are not expected to fill the timetable up with additional activities in Consolidation Week – remember this is meant to be a change of pace at a point in the middle of semester.

## **A6. Key Staff Contact Details**

Professor Beatrice Pelloni is the Head of the School of Mathematical and Computer Sciences, and Professor Damian Clancy is the Head of the Department of Actuarial and Mathematical Statistics. The School is led by Associate Head of School and each Programme is led by the Programme Director of Studies, who is supported by an experienced team of academic staff located at the University's Campus in Putrajaya.

### **Associate Head of School (AHOS)**

Dr Alistair Robert Wallis

Location: Staff Office 1, E1.17.2, Level 1, East Wing

Phone: +603 8894 3705

Email: [A.Wallis@hw.ac.uk](mailto:A.Wallis@hw.ac.uk)

### **Associate Director Learning and Teaching (ADLT)**

Mr Karamjeet Singh Kranthir Singh

Location: Staff Office 1, E1.17.20, Level 1, East Wing

Phone: +603 8894 3857

Email: [k.kranthir\\_singh@hw.ac.uk](mailto:k.kranthir_singh@hw.ac.uk)

### **Programme Director (PD) – BSc. Actuarial Science (AS)**

Mr Lawrence John O'Brien

Location: Staff Office 1, E1.17.4, Level 1, East Wing

Phone: +603 8894 3794

Email: [L.O'Brien@hw.ac.uk](mailto:L.O'Brien@hw.ac.uk)

### **Programme Director (PD) – BSc. Statistical Data Science (SDS)**

Dr Marjan Qazvini

Location: Staff Office 1, E1.17.21, Level 1, East Wing

Phone: +603 8894 3882

Email: [m.qazvini@hw.ac.uk](mailto:m.qazvini@hw.ac.uk)

### **Year Coordinator – Year 1**

Dr Laila El Ghandour

Location: Staff Office 1, E1.17.7, Level 1, East Wing

Phone: +603 8894 3880

Email: [l.el\\_ghandour@hw.ac.uk](mailto:l.el_ghandour@hw.ac.uk)

### **Year Coordinator – Year 2**

Dr Roberto Pulmano Briones

Location: Staff Office 1, E1.17.46, Level 1, East Wing

Phone: +603 8894 3867

Email: [r.briones@hw.ac.uk](mailto:r.briones@hw.ac.uk)

### **Year Coordinator – Year 3**

Dr Suzan Jabbar Obaiys

Location: Staff Office 1, E1.17.7, Level 1, East Wing  
Phone: +603 8894 3858  
Email: [s.obaiys@hw.ac.uk](mailto:s.obaiys@hw.ac.uk)

### **Academic Staff**

Students are encouraged to contact directly any member of staff whose lectures they have attended if further help or advice is needed.

The AMS academic staffs for 2020-21 are listed below, together with their offices and telephone extensions.

<b>Name</b>	<b>Email</b>	<b>Extension</b>
Dr Alistair Robert Wallis	<a href="mailto:a.wallis@hw.ac.uk">a.wallis@hw.ac.uk</a>	43705
Mr Karamjeet Singh Kranthir Singh	<a href="mailto:k.kranthir_singh@hw.ac.uk">k.kranthir_singh@hw.ac.uk</a>	43857
Mr Larry O'Brien, ASA	<a href="mailto:l.obrien@hw.ac.uk">l.obrien@hw.ac.uk</a>	43794
Dr Marjan Qazvini	<a href="mailto:m.qazvini@hw.ac.uk">m.qazvini@hw.ac.uk</a>	43882
Dr Laila El Ghandour	<a href="mailto:l.el_ghandour@hw.ac.uk">l.el_ghandour@hw.ac.uk</a>	43880
Dr Roberto Pulmano Briones	<a href="mailto:r.briones@hw.ac.uk">r.briones@hw.ac.uk</a>	43867
Dr Suzan Jabbar Obaiys	<a href="mailto:s.obaiys@hw.ac.uk">s.obaiys@hw.ac.uk</a>	43858
Dr Soo Huei Ching	<a href="mailto:h.soo@hw.ac.uk">h.soo@hw.ac.uk</a>	43703
Dr Ong Kai Lin	<a href="mailto:k.ong@hw.ac.uk">k.ong@hw.ac.uk</a>	43793
Dr Teoh Wei Lin	<a href="mailto:wei_lin.teoh@hw.ac.uk">wei_lin.teoh@hw.ac.uk</a>	43879
Dr Sarat Chandra Dass	<a href="mailto:s.dass@hw.ac.uk">s.dass@hw.ac.uk</a>	43706
Dr Mahendran Shitan	<a href="mailto:m.sshitan@hw.ac.uk">m.sshitan@hw.ac.uk</a>	43881
Dr Hamidreza Farhadi	<a href="mailto:h.farhadi@hw.ac.uk">h.farhadi@hw.ac.uk</a>	43912
Dr Abdullah Almasri	<a href="mailto:a.almasri@hw.ac.uk">a.almasri@hw.ac.uk</a>	43920

## **A7. Programme Overview**

### **A7.1 Introduction**

This handbook provides a reference to degree programme structures and other departmental information for students on Actuarial Mathematics and Statistics (AMS) degrees. This handbook is intended as a summary of AMS Programme Structures, but note that the University Regulations and Programme Structures take precedence in case of any discrepancy between them and the guide.

Information concerning examination timetables, University regulations and other general information can be found on the Academic Registry website at <https://www.hw.ac.uk/uk/services/academic-registry.htm>.

Further sources of information are the MACS web site at <https://www.hw.ac.uk/uk/schools/mathematical-computer-sciences.htm> and the MACS Organisation section on VISION (see Section A6.4).

## **A7.2 Programmes Offered**

The following three years undergraduate programmes are offered:

- F723 BSc (Hons) in Actuarial Science
- F740 BSc (Hons) in Statistical Data Science

The degrees may be awarded at honours or ordinary level. Study for an honours degree usually takes three years, and for an ordinary degree, two years.

All the degrees are designed to make it easy in most cases to transfer from one to another during the first years. In addition, the Heriot-Watt course scheme is compliant with the Scottish Credit and Qualifications Framework (SCQF). This makes credit transfers between Scottish universities easier.

## **A7.3 Programme Structure**

The academic year is divided into two semesters. In Semester 1 there will normally be around 12 weeks of teaching (including a Consolidation Week, and revision time at the end) followed by a 2-week exam session. In Semester 2 there will be around 12 weeks of teaching (including a Consolidation Week, and revision time at the end), followed by a 3-week break and then a 4-week exam session. Students must register for four courses each semester. These courses are listed in the relevant tables overleaf.

Each course has a five-character code; the first two characters indicate the department, the third is the level (0, 1 indicate Levels 10, 11 respectively). Usually, but not always, Level 8 courses are taken in the 1st year, and Level 9 and 10/11 courses in the 2nd and 3rd years respectively.

A course is regarded as requiring 150 hours of student effort, and is worth 15 SCQF credits.

### **Assessment**

Each course is awarded a grade in the range A-F: grade E is the minimum required for the award of credits, but at least a grade D is needed for progression to subsequent courses. Other grades are interpreted as follows:

A - excellent, B - very good, C – good, F - inadequate. (See University Regulations for further details).

The minimum mark needed to gain a grade D is usually 40%. The correspondence between marks and other grades varies from course to course, but is approximately as follows: grade A, 70% or over; grade B, 60-69%; grade C, 50-59%; grade D, 40-49%.

### **Level 7 and 8 Courses**

Course assessment is generally based on either coursework, an exam at the end of the semester, or a combination of both. Details for individual courses can be found in the relevant course description. If you do not obtain a grade D (or higher) in a Level 7 or 8 course at the first attempt, you are entitled to one further attempt.

## **Level 9, 10 and 11 Courses**

Assessment of Level 9, 10 and 11 courses is generally as for Level 7 and 8. However, in some cases, the exam for a first semester course may take place at the end of the second semester. Also, note that some pairs of courses are **synoptically linked**; that is, both courses are assigned the same grade, based on the average mark for the individual courses. Details are in the relevant course description. All Level 9, 10 and 11 course marks count towards the **final degree classification** (see also Section A6.4 Final Degree Assessment).

### **A7.4 Communications Medium**

#### **Contact Details**

It is essential that the School and the University are kept informed of any changes to students' contact details, particularly term-time and home addresses. It is the responsibility of the student to ensure that the University has the most up-to-date contact information.

Please inform the University of any changes to personal details to ensure that we hold up-to-date records.

If you wish to change your address, please login to Student Self Service at [www.hw.ac.uk/selfservice](http://www.hw.ac.uk/selfservice).

If you require your name to be changed, please inform the Student Service Centre and provide the appropriate paperwork.

Please note that letters from the University are automatically sent to students' term addresses as recorded on the student record system, so it is particularly important to ensure address details are kept up to date.

#### **E-mail**

New students will be issued with instructions on how to set up their e-mail account during enrolment. Returning students will have continued access to their e-mail.

Please note that students' Heriot-Watt e-mail addresses are used by academic and administrative staff to send important information throughout the year. Staff will only use official Heriot Watt e-mail addresses when writing to their students.

Students are expected to check their HW e-mail regularly (at least once a day). More information regarding Heriot-Watt's I.T. facilities and regulations can be found at: <https://www.hw.ac.uk/uk/services/information-services.htm>.

#### **VISION**

Heriot Watt University has a Virtual Learning Environment (VLE) called VISION. Each of your courses will have a space on the VLE and your lecturers will use this space to post class materials, such as reading lists, details of assignments or announcements of revision sessions.

You may also be required to use VISION to upload your work through Turnitin, a plagiarism detection programme which is in regular use by the Schools. Many courses will also include online assessment which is accessed and submitted through VISION. Other important information, such as the AMS Code of Practice can be found in the MACS Organisation section of VISION.

Once you have registered and have your username and password, you can access VISION here: <http://vision.hw.ac.uk/>.

### **Social Media and Personal Channels**

Students should communicate with academic and administrative staff via approved Heriot-Watt University internal channels (e.g. official Heriot-Watt email and telephone, Skype for Business, MS Teams, Collaborate Ultra and Vision). Students should NOT use personal social media profile (e.g. Facebook, Instagram, Twitter, etc.) or other personal channels for any communications with staff (e.g. personal mobile use for calls, text / WhatsApp, personal emails, etc.).

### **Staff-Student Committee**

The Staff-Student Committee provides an additional channel of communication between staff and students within the AMS department. It consists of the School Officer, the Year Co-ordinators, the President of the Students' Actuarial Society and two student representatives from each of the three undergraduate years. Student representatives are elected annually.

The committee meets once or twice each semester. One of its major functions is to consider any concerns about current lecture courses, including teaching quality, and to take appropriate action for their resolution. Other matters of interest, such as the provision of computing facilities or the timing of lectures, may be discussed. Minutes of the meetings are available on VISION.

### **Course Evaluation**

At the end of each course you take, you will be asked to complete a course evaluation questionnaire, normally through VISION. Your views are important to us and the information gathered from these evaluations is analysed by the University and the resulting information is then fed into an annual review of the programme.

### **Feedback**

Feedback is a two-way process. Feedback is provided to students in a variety of ways in order to help you to reflect on and to evaluate your progress and to assist you to take steps to improve before the next relevant assessment. For most courses, students can expect feedback on assessed coursework within three teaching weeks of the coursework due date. Feedback is sought from students via Student-Staff Liaison Committees and various surveys so that the School can continue to enhance the student learning experience. Your feedback is valued by the School, so please be sure to provide feedback whenever it is sought.

## **Computing Facilities**

All students are issued with accounts on the University Desktop Service. Students are expected to use the computer facilities in an appropriate and considerate way. Abuse of the facilities is subject to various disciplinary measures, ranging from a ban on access to the facilities to, in extreme and flagrant cases, expulsion from the University. Examples of abuse include monopolising a terminal for non-academic related purposes, running excessively long or inappropriate print jobs, and displaying, circulating or printing offensive material on or from the Internet. Computer games and relay chat are specifically forbidden. Further information on policy regarding the abuse of computer facilities is available from Information Technology (IT) <https://www.hw.ac.uk/documents/it-communications-facilities-acceptable-use.pdf>.

## **A7.5 Course Requirements**

### **Attendances**

In order to achieve course and programme learning outcomes, students are expected to attend all scheduled course learning sessions (e.g. timetabled lectures, tutorials, lab sessions, etc).

Students who fail to satisfy course attendance requirements may, after due warning, be disallowed from presenting themselves for examination in the course (see <https://www.hw.ac.uk/uk/students/doc/withdrawalprocedures.pdf>).

### **Mitigating Circumstances**

Should you have to miss a number of timetabled classes due to ill health or other legitimate reasons, or there are any circumstances which could adversely affect your examination performance, it is very important that you notify your personal tutor as soon as possible.

You should also submit an application for consideration of Mitigating Circumstances (<https://www.hw.ac.uk/students/studies/examinations/mitigating-circumstances.htm>), together with any supporting documents (e.g. medical certificates) to the Student Service Centre.

The Examiners will always take such circumstances into account where appropriate, but the later the notification, the less scope there is to do so. In particular, notification should be as soon as possible after the mitigating circumstances have arisen, and certainly no later than the Examiners Meeting (usually at the end of the assessment period, or mid-August in the case of re-sits). Late notification will mean that either no account can be taken, or that formal procedures have to be invoked. In the latter case, final year students will not be permitted to graduate until these procedures have been completed. For further details, see the University Regulations.

### **Temporary Suspension of Studies**

In certain situations it may be in your best interests to suspend your studies temporarily. It sometimes helps to take time out to deal with issues that are stopping you studying effectively – this might be a health or personal issue – and return to University at an agreed date. A Temporary Suspension of Studies (TSS) is when a student stops studying at the university for an extended period of time (usually no longer than one academic year), and then returns to resume their studies.

For further information see

<https://www.hw.ac.uk/students/studies/leaving/temporary-suspension-studies.htm>.

If you are considering applying for a suspension of studies you should contact your personal tutor or the Programme Director in Malaysia to discuss this with them.

### **Examinations**

It is the student's responsibility to check all relevant examination timetables (including resits) on the Registry webpage

<https://www.hw.ac.uk/services/academic-registry/registry-operations.htm>.

Should you be required to resit any exams, you **must** be available to take them. Therefore **do not book holidays or take on any other commitments during the resit diet**. Note that students must take all examinations at the campus at which they are studying. Resits can only be taken at an overseas location in exceptional circumstances.

Any basic scientific calculator other than graphics calculators, programmable calculators, or those with text storage or retrievable facilities may be used in examinations. (Calculators are not provided). Unless there are special circumstances, students are **not** allowed to use translation dictionaries in examinations.

Students are not allowed to have mobile phones or other communication devices on or about their persons during examinations. Phones may be left at the front of the examination room but they must be switched off.

**Cheating in an exam or other assessed work is considered to be a very serious offence.**

Students should be aware that reading exam papers or communicating with other candidates prior to the start of an exam, or taking unauthorised material into an exam (even if you don't use it), is considered to be an attempt to cheat. **Do not take any material into the exam hall with you – put it in your bag or in the bin.**

If a student is found cheating in an exam the Student Discipline policy will apply – see <https://www.hw.ac.uk/students/doc/discguidelines.pdf>.

### **Coursework and Continuous Assessment**

As well as end of semester examinations, most courses on the AMS degree programmes involve some element of coursework or continuous assessment such as midterm tests. Students will be informed by the course lecturer of the important dates for tests and project submission and must ensure that they attend / submit at these times. These dates are fixed and cannot be altered for individual students. If you are unexpectedly unable to attend or submit due to circumstances beyond your control you should contact the course lecturer and your personal tutor as soon as possible, as well as submit an application for consideration of Mitigating Circumstances to the Student Service Centre (see Section A3.4 Mitigating Circumstances for more detail). If it is a scheduled midterm test you have missed, you should also submit a self-certification form in addition to the application for consideration of Mitigating Circumstances.

### **Submission of Coursework Policy**

The University recognises that, on occasion, students may be unable to submit coursework and dissertations by the submission date. As such, the University has agreed a new policy from 2018/19 which states:

- No individual extensions are permitted under any circumstances (unless course coordinators decide to give an extension to an entire class);
- Standard 30% deduction from the mark awarded (maximum of five working days).

In the case where you submit coursework up to five working days late and you have valid mitigating circumstances, the mitigating circumstances policy will apply and appropriate mitigation will be applied.

Formative feedback will be provided on all coursework submitted up to five working days late. Any coursework submitted after five calendar days of the set submission date shall be automatically awarded no grade with no formative feedback provided.

There will be no extensions granted to coursework (this includes undergraduate and postgraduate taught dissertations).

### **A7.6 Plagiarism, Collusion and Cheating**

Cheating in examinations and coursework, and plagiarism, that is, the presentation of another person's ideas or work as one's own, are very serious offences and are dealt with severely. They carry a range of penalties up to and including expulsion from the University. Students are responsible for familiarising themselves with the University policy on these matters.

The University website contains detailed explanation of what is meant by plagiarism with examples and consequences - see <https://www.hw.ac.uk/students/studies/examinations/plagiarism.htm>, as well as Appendix A of this Guide, and Regulations 9 and 50 on the Registry's website <http://www1.hw.ac.uk/ordinances>.

Your lecturer will always be very clear about the extent to which you can collaborate and share ideas with your classmates. It is never acceptable to share your electronic files with others.

### **A7.7 Graduate Attributes**

As a student of Heriot Watt you are part of a global community. You will meet new people, discover new interests, develop your life skills and enhance your employability and career prospects. The University will provide you with the opportunity to develop skills, qualities and academic abilities during your time as a student. These are known as the Four Heriot Watt Graduate Attributes: Specialist, Creative, Global and Professional,

These Graduate Attributes can help you shape your experiences while studying and to present your skills and qualities effectively to employers. For more information see <https://www.hw.ac.uk/services/academic-registry/quality/learning-teaching/graduate-attributes.htm>.

## **A7.8 Professional Development & Careers Advice**

Professional development planning (PDP) is incorporated in all three years of the Actuarial Science degree. This is a structured process designed to help students reflect upon their own learning, performance and achievements. One of its main purposes is to support students in the planning of their professional, education and career development, keeping the University's Graduate Attributes in mind.

Students will periodically be invited to attend seminars on developing these skills, given by, for example, prospective employers. In later years there will be opportunities to develop presentation and group working skills. Students are encouraged to take every opportunity to help develop their own skills.

Career guidance is available through the University's Careers Advisory Service, which aims to help students identify their career goals and develop the skills required to gain employment. Students have access to the Careers Website (<http://www.careers.hw.ac.uk/>) which is managed by the Edinburgh campus and supported by local staff.

## **A7.9 Exchange Opportunities**

Students on the Actuarial Science programme have the opportunity to transfer to the University's Edinburgh campus. Students can transfer for one or two semesters in Year 2 (and then return to Malaysia), or students can permanently transfer to Edinburgh in either of Years 2 or 3. Further information about Inter-Campus transfers is available on the Go Global site: <https://www.hw.ac.uk/uk/students/studies/go-global.htm>.

## **A7.10 University Prizes**

A number of prizes, for overall performance in each year, are available to AMS/SDS Students.

**Year 1:** University Prize

**Year 2:** University Prize, Longevitas Prize for Survival Models

**Year 3:** Watt Club Medal for the Best Student, Roger Gray Memorial Prize in Statistics, and the Sir Edward (SEJ) Prizes for Best Student in Malaysia Campus

### A7.11 Compulsory General Studies (MPU) Courses

The Malaysian Qualifications Agency (MQA) requires all Malaysian and non-Malaysian students to pass the Ministry of Education General Studies (MPU courses) as stipulated in **Section 43(3), Act 555** of the Private Higher Educational Institution Act as requirement to qualify for the award of an undergraduate degree.

The objective of General Studies is to provide a holistic education across the disciplines for both Malaysian and International undergraduate students and opportunities to engage in diverse life-long learning skills while acquiring valuable knowledge. The General Studies comprises four broad categories namely:

**U1: Appreciation of the philosophy, values and history**

**U2: Soft skills mastery**

**U3: Knowledge expansion about Malaysia**

**U4: Community management skills that are practical, such as community service, extra-curricular.**

#### MPU Course Schedule

Year	Semester	MPU Group	Course Code	Course Name	Credit
1	1 (Sept'20)	U4 (for Malaysian students and International Students)	MPU 3422 (K20AI)	Self-Empowerment and Social Responsibility I	-
		U2 ( for Malaysian students only, applicable to students who did not sit for SPM or did not obtain a Credit in SPM Bahasa Melayu)	MPU 3212 (K20AE)	National Language A	2
	2 (Jan'21)	U1 (for Malaysian students)	MPU 3123 (K20AA)	Islamic Civilizations and Asia Civilizations (TITAS)	3
		U1 (for International students)	MPU 3143 (K20AB)	Malay Language Communication 2	3
		U4 (for Malaysian students and International Students)	MPU 3422 (K20CI)	Self-Empowerment and Social Responsibility II	2
2	1 (Sept'21)	U1 (for Malaysian students)	MPU 3113 (K20AC)	Ethnic Relations	3
		U1 (for International students)	MPU 3173	Malaysian Studies 3	3
3	2 (Jan'22)	U2 ( for Malaysian and International students)	MPU 3222 (K20AG)	Life Skills (Curriculum Mapping by HWUM)	2
		U3 ( for Malaysian and International students)	MPU 3312 (K20AH)	Knowledge Expansion about Malaysia (Curriculum Mapping by HWUM)	2

**Important Notes:** It is the responsibility of each undergraduate student to complete and pass the MPU courses scheduled by the University as a prerequisite for the award of a Bachelor Degree. MPU courses must be taken within the duration of studies, regardless of the year of entry. The University is required to provide evidence of completion of compulsory courses to the relevant Malaysian authorities in order to ensure that student's academic qualifications are fully recognised upon completion of studies.

**Passing Marks, Attendance and Deferment:** Passing mark for compulsory courses is **40%**. An attendance record of **80%** is compulsory for all students taking MPU courses. Students who wish to defer any MPU courses in a particular semester should submit their deferment form to the Head of MPU by the second week of the semester, which the courses are offered. Students who are enrolled to the course but do not turn up for their classes and examinations will be given grade "F". Whereas, students who were absent for their final exams will receive grade "ABS (Absent)" for their MPU Courses, and would need to take the August resit examination. If students fail to take the August resit examination, they must re-take the course the following year. The duration and completion for Self-Empowerment and Social Responsibility (MPU 3422) is two semesters (one Year) and Final grade and marks for this course will only be revealed at the end of semester 2.

**MPU Courses for Transfer Students:** As long as students are registered and studying in Malaysia, they are required to take MPU courses according to the schedule above. Only students who have received their acceptance letter for transfer and are studying abroad do not need to take MPU Courses. However, if they return to complete the programme in Malaysia, they must complete all the required MPU courses for a degree to be conferred. Students who are unable to complete their MPU courses following the given schedule will be required complete their MPU Courses during the Summer Break (May to August each year).

## A8. Programme Structure and Delivery

The University operates a Heriot-Watt Assessment and Progression System (HAPS) which specifies minimum progression requirements. Schools have the option to apply progression requirements above the minimum University requirement, which are approved by the Studies Committees. Students should refer to the programme specific information on progression requirements. This information is detailed below.

The Progression Board meets at the end of the academic year to decide which students will be allowed to proceed to the next year of their degree programme. The Year Co-ordinators will write to inform you if you must resit any exams. The Registry also makes the results available online.

### A8.1 Year 1

#### ▪ First Year Courses

1st Semester Courses		Required	Optional
F78PA	Probability & Statistics A	AS, SDS	
F78AA	Actuarial & Financial Mathematics A	AS, SDS	
F18CD	Multivariable Calculus & Real Analysis A	AS, SDS	
F18CF	Linear Algebra	AS, SDS	

2nd Semester Courses		Required	Optional
F78PB	Probability & Statistics B	AS, SDS	
F78AB	Actuarial & Financial Mathematics B	AS, SDS	
F78AP	Algorithmic and Scientific Programming	AS, SDS	
F18CE	Multivariable Calculus & Real Analysis B	AS, SDS	
C37FF	Finance & Financial Reporting		AS, SDS

AS-Actuarial Science

SDS-Statistical Data Science

#### ▪ Degree Requirements

##### Actuarial Science and Statistical Data Science

Seven mandatory courses, plus one optional course in Semester 2.

Students should note that C37FF can lead to exemption from the CB1 examination of the Institute and Faculty of Actuaries (see Section A7 - Actuarial Exemptions).

#### ▪ Proceeding to 2nd Year

If you obtain a grade D or better in all eight courses at the first attempt, you will be allowed to proceed to the 2nd year of both AS and SDS. Otherwise, you will be required to resit some exams in August. If you do not obtain D or better at this second attempt, you will not be able to continue on the AS or SDS programmes but it may be possible to transfer to another degree programme subject to the approval of the School.

## A8.2 Year 2

### ▪ Second Year Courses

1st Semester Courses		Required	Optional
F79MA	Statistical Models A	AS,SDS	
F79SP	Stochastic Processes	AS,SDS	
F79PS	Statistics for Social Science	SDS	
F70LA	Life Insurance Mathematics A	AS	
F79PA	Portfolio Theory & Asset Models	AS	SDS

2nd Semester Courses		Required	Optional
F79MB	Statistical Models B	AS, SDS	
F79BI	Bayesian Inference & Computational Methods	SDS	
F79SU	Survival Models	AS, SDS	
F70LB	Life Insurance Mathematics B	AS	
F79DF	Derivative Markets & Discrete-time Finance	AS	SDS
F19MO	Ordinary Differential Equations		SDS

AS-Actuarial Science

SDS-Statistical Data Science

### ▪ Degree Requirements

#### **Actuarial Science**

Eight mandatory courses.

#### **Statistical Data Science**

Three mandatory and one optional course each semester. SDS students may choose any Level 7, 8 or 9 course as an option, subject to timetable constraints and the approval of the Year Co-ordinator. However, note that only Level 9 and 10 courses count towards the final degree assessment (see Section A6.4 - Final Degree Assessment).

### ▪ Synoptic Links (see Section A6.3 – Level 9, 10 and 11 Courses)

The following pairs of courses are synoptically linked:

F79MA and F79MB,

F79SP and F79SU,

F79PA and F79DF,

F70LA and F70LB.

### ▪ Proceeding to 3rd Year

Students who obtain a grade D or better in all eight courses will be allowed to proceed to the 3rd year.

If you obtain a grade D or better in at least six courses and have an average mark of at least 40%, you may be permitted, at the discretion of the examiners, to proceed to the 3rd year of an AMS degree. In these cases, you will be advised by the examiners of your options and may be required to resit some papers in August, to satisfy the prerequisites for the 3rd year courses.

However, note that otherwise, no resit is allowed for an Honours paper, and in all cases, it is the marks obtained at the first attempt that form part of the Final Degree Assessment (see Section A6.4). For further information, consult your personal tutor.

- **Ordinary Degrees**

A candidate who obtains a grade D or better in at least four Level 9 courses and a total of at least 360 credits may be awarded the ordinary degree of BSc.

### A8.3 Year 3

- **Third Year Courses**

1st Semester Courses		Required	Optional
F70DA	Statistics Dissertation A	SDS	
F79PS	Statistics for Social Science		AS
F70CF	Continuous-time Finance		AS, SDS
F10MM	Optimisation	SDS	AS
C27IE	Introductory Economics		AS
F20ML	Statistical Machine Learning	SDS	AS
F10DA	Data Assimilation		SDS

2nd Semester Courses		Required	Optional
F70DB	Statistics Dissertation B	SDS	
F70TS	Time Series Analysis	SDS	AS
F79BI	Bayesian Inference & Computational Methods		AS
F70RT	Risk Theory		AS, SDS
F19MO	Ordinary Differential Equations		AS
F70ST	Statistics Special Topic		SDS

AS-Actuarial Science

SDS-Statistical Data Science

- **Degree Requirements**

#### **Actuarial Science**

Eight optional courses.

Direct entrants to AS may take C27IE and/or C37FF to obtain exemption from the CB2 and/or CB1 examinations of the Institute and Faculty of Actuaries

### **Statistical Data Science**

Three mandatory courses plus one optional course first semester, and two mandatory courses plus two optional courses second semester.

Students transferring to the SDS degree from one of the other AMS degrees must take F79PS and F79BI (if not already taken).

### **A6.4 Final Degree Assessment**

The Examiners take into account all course marks at Level 9 and above in deciding the class of Honours: the final mark is the average of those marks (note that Level 7 and 8 course marks are not included). In broad terms, an average mark of over 70% for first class honours, 60% - 70% for upper second class honours, 50% - 60% for lower second class honours, and 40% - 50% for third class honours, would be required, subject to the agreement of the Examiners.

Note that 480 credits are required for the award of an honours degree.

In borderline cases, a positive view may be taken of an improving performance from second to third year.

## **A9. Actuarial Exemptions**

### **A9.1 Introduction**

The Actuarial Science degree has been accredited by the Institute and Faculty of Actuaries (IFoA), which means that students can obtain exemption from some of the subjects in the IFoA's examination system. There are two routes to gaining exemptions: Accreditation (or “block” exemption) and individual exemptions.

Exemptions are awarded by the IFoA based on the information provided to them by Heriot-Watt. They are not awarded by Heriot-Watt. The guidance we provide to students regarding exemptions in student guides and elsewhere is our understanding of how the IFoA normally expects to determine exemptions. However, the IFoA and the Independent Examiners appointed by the IFoA retain discretion regarding exemptions. Normally what that means in practice is that the score required for individual exemptions (see “individual exemptions” below) varies from year-to-year. But we cannot guarantee any aspect of the exemptions process.

#### **▪ Accreditation**

Students graduating with a good upper second class degree (normally an overall average of at least 65%), and who have passed all relevant courses, will generally be eligible for exemption from all Core subjects covered in their degree.

This is often called the “block exemption”.

#### **▪ Individual Exemptions**

Students who do not attain the accreditation threshold as above will be considered for exemption from individual subjects as described below. The exemption standard for each subject will be reviewed each year by the profession's Independent Examiners and may vary from year to year.

Note that the accreditation policy does not cover exchange arrangements; in this case, all exemptions will be recommended on a subject-by-subject basis, taking into account performance at Heriot-Watt and the exchange university.

### **A9.2 Core Principles Stage**

Exemptions will normally be awarded under the IFoA Curriculum 2019 system (CM1, CM2, CS1, CS2, CB1, CB2) not the old IFoA CT system.

We expect exemptions to be based on performance in university examinations as set out in the following tables, but note the comments above regarding IFoA discretion. These are not guaranteed to be the final mappings. The exemption mapping depends on when you joined year 1 of the degree, since courses were updated in 2019-20. The numbers in each table represent the weighting given to each subject in each individual exemption. So, for example, we would expect eligibility for exemption from CM2 to be based on the average of F79PA, F70CF and F79DF, ie one-third (0.33) each.

Students who joined Stage 2 in 2018-19 or earlier (Stage 2 is Year 2 in Edinburgh and year 1 in Malaysia)						
Course Code	CM1	CM2	CS1	CS2	CB1	CB2
C27IE						1.00
F78AA	0.25					
F78PA			0.50			
F79PA		0.33				
F79SP				0.25		
F70LA	0.25					
F70CF		0.33				
C37FF					1.00	
F78PB			0.50			
F78AB	0.25					
F79SU				0.25		
F70LB	0.25					
F79DF		0.33				
F70TS				0.25		
F70RT				0.25		

Students who joined Stage 2 in 2019-20 or later (Stage 2 is year 2 in Edinburgh and year 1 in Malaysia)						
Course Code	CM1	CM2	CS1	CS2	CB1	CB2
C27IE						1.00
F78AA	0.25					
F78PA			0.25			
F79MA			0.25			
F79PA		0.33				
F79SP				0.25		
F70LA	0.25					
F70CF		0.33				
C37FF					1.00	
F78PB			0.25			
F78AB	0.25					
F79MB			0.25			
F79SU				0.25		
F70LB	0.25					
F79DF		0.33				
F70TS				0.25		
F70RT				0.25		

(The difference between these two tables is the weightings for CS1.)

Note that from 2021-22 onwards, F78AA will change to a half course (i.e., 7.5 credits not 15 credits) and F78AB will be a full course. As such, it is possible that the weightings for CM1 may change for students sitting F78AA/B in 2021-22 or later.

The IFoA assesses CB3 (Business Awareness) through an online test and does not grant exemption from this subject on the basis of university studies.

### **Covid-19 adjustments**

Where students were given a “P” grade in respect of courses for which an exam was cancelled in April or May 2020, the following adjustments will be made:

- There will not be any additional examinations required to obtain exemptions in the following cases:
  - **F70LB:** Normally, F70LB would be one quarter of the CM1 individual exemption. For students whose exam has been cancelled, the F70LB weighting will be reduced to reflect coursework only.
  - **F79SU:** Normally, F79SU would be one quarter of the CS2 individual exemption. For students whose exam has been cancelled, the F79SU weighting will be reduced to reflect coursework only.
  - **F79DF:** Normally, F79DF would be one third of the CM2 individual exemption. For students whose exam has been cancelled, the F79DF weighting will be reduced to reflect coursework only.
  - **F78PB:** Normally, F78PB would be one quarter of the CS1 individual exemption. For students whose exam has been cancelled, the F78PB weighting will be reduced to reflect summative coursework only. Formative coursework will not be included.
  - **F78AB:** Normally, F78AB would be one quarter of the CM1 individual exemption. For students whose exam has been cancelled, the F78AB weighting will be reduced to reflect summative coursework only. Formative coursework will not be included.
  
- Additional exams for exemptions in August 2020 in the subjects C37FF and F70RT and F70TS. These exams are for exemption purposes only and will not affect your degree average or eligibility for block exemption.

See also Section A.3 - COVID-19 and Responsive Blended Learning.

### **A9.3 Later Stages of the Professional Syllabus**

The later parts of the professional syllabus are divided into three stages: Core Practices, Specialist Principles, and Specialist Advanced. To qualify as a Fellow it is also necessary to fulfil the profession’s Personal and Professional Development (work experience) requirements and online professional skills courses.

The profession recommends that UK-based students taking a Specialist Advanced paper also take the corresponding UK Practice Module. UK Practice Modules are not required to qualify as a Fellow, but are required in order to practise in the UK in certain reserved roles.

No exemptions are available from the undergraduate course for the later stages of the professional syllabus, although some courses are relevant, as indicated in the brackets. Graduates who proceed to the MSc in Actuarial Management (available at the UK campus) may obtain exemptions from later stages.

#### **A9.3.1 Core Practices Stage**

- Subject CP1** Actuarial Practice
- Subject CP2** Modelling Practice
- Subject CP3** Communications Practice

### **A9.3.2 Specialist Principles Stage**

Students choose two subjects.

- Subject SP1** Health and Care
- Subject SP2** Life Insurance (F70LP)
- Subject SP4** Pensions and Other Benefits (F70PE)
- Subject SP5** Investment and Finance
- Subject SP6** Financial Derivatives (F70CF, F79DF)
- Subject SP7** General Insurance: Reserving and Capital Modelling (F70RT)
- Subject SP8** General Insurance: Pricing (F70RT)
- Subject SP9** Enterprise Risk Management (F71RM)

It is also possible to pass one of two subjects from the Specialist Principles stage by writing a Master's thesis in an actuarially relevant subject (Subject SP0).

### **A9.3.3 Specialist Advanced Stage**

Students choose one subject.

- Subject SA1** Health and Care
- Subject SA2** Life Insurance (F70LP)
- Subject SA3** General Insurance
- Subject SA4** Pensions and Other Benefits (F70PE)
- Subject SA7** Investment and Finance

It is also possible to pass the Specialist Advanced stage by writing a research dissertation (Subject SA0).

## **A9.4 General Information**

Some general points to note about the exemption system are:

**A9.4.1** The University cannot grant exemptions, the Independent Examiner appointed by the IFoA makes recommendations to the IFoA. Usually the recommendations are accepted.

**A9.4.2** Decisions regarding recommendations for exemptions are generally made on the basis of the student's performance at the first sitting of the relevant University exam. Resits granted as a first attempt under University rules, eg because of medical or other mitigating circumstances, are counted as a first attempt for exemption purposes also. A resit that does not count as a first attempt under University rules but which is necessary for the purposes of progression or graduation may be counted for exemption purposes but the maximum mark that can be used for exemption purposes is the pass mark (40%). Any other resit is not normally counted for exemption purposes, ie the mark is used for exemptions is the mark achieved on the first attempt.

**A9.4.3** Decisions on a particular exemption are made at a meeting of staff and an

independent examiner held at the end of the academic year in which the relevant information becomes available, following which students are informed of these decisions. However, the recommendations are not sent to the IFoA until the end of the academic year in which the student graduates. Graduating students will be issued with a letter confirming the recommendations, and advising on how to claim them upon joining the IFoA as a student member.

**A9.4.4** The IFoA will not grant any exemptions (or confirm that any will be granted) until a student has joined the profession, at which time you should apply through the IFoA Website. State clearly on the form that you are a graduate of the AMS Department at Heriot-Watt University; there will then be no need to supply details of syllabi or exam papers. Note there is a fee payable to the profession for each exemption granted.

**A9.4.5** There are frequent discussions between the AMS department and the IFoA about the rules and practices concerning exemptions. The above notes reflect the current position but it is possible that changes may occur without prior notice.

### **A9.5 Further Information**

Further information about the IFoA's Education strategy can be found on their website ([www.actuaries.org.uk](http://www.actuaries.org.uk)).

## A9.6 Exemption FAQs

### A9.6.1 What happens regarding the individual exemptions if I don't pass a course that contributes to that exemption?

You must have attempted all the courses that contribute to the relevant exemption. For example, to be recommended for exemption from CS2 you must have attempted all four of F79SP, F79SU, F70TS, F70RT. Your weighted average for that exemption subject must also be at least the level set each year by the independent examiners. The required average is often around 60%, but it can vary and is not known until the end of the year.

However, you do not need to have passed each one of F79SP, F79SU, F70TS, F70RT individually so long as your weighted average is sufficient. So if the required average was 60% and you scored 30%, 90%, 64%, 64% in F79SP, F79SU, F70TS, F70RT then your average for CS2 exemption would be 62% and your score in F79SP would not be expected to prevent you from receiving an exemption from CS2.

See also the information regarding resits at A7.4.2.

### A9.6.2 What subjects is the accreditation average (used for block exemption) based on?

For students who joined stage 2 (i.e. year 2 in Edinburgh, year 1 Malaysia) in 2019-20 or earlier we expect the accreditation average to be based on the same subjects as the average which is used to determine your degree classification. So it includes level 9, 10 and 11 courses but not level 8 courses (e.g. F78AA).

## A10. Course Descriptions

The aims and summary of the courses are provided in this section. For detailed course guide please follow this link:

<https://www.hw.ac.uk/uk/study/undergraduate/actuarial-science.htm#programme-content>

### A10.1 Level 7 Courses

**C37FF**

**FINANCE AND FINANCIAL REPORTING**

#### **Aims:**

To provide a basic understanding of issues in corporate finance and cover the syllabus of subject CB1.

#### **Summary:**

1. Instruments used by companies to raise finance
2. Management of financial risk
3. Personal and corporate taxation
4. Interpretation of financial statements of companies and financial institutions

## **C27IE INTRODUCTORY ECONOMICS**

### **Aims:**

To equip students with knowledge and understanding of the fundamental principles and concepts of microeconomics and macroeconomics. By the end of the course students should be able to apply their knowledge and understanding in the analysis of a range of economic problems. Students who perform well in this course may be recommended for exemption from subject CB2.

### **A10.2 Level 8 Courses**

## **F78PA PROBABILITY & STATISTICS A**

### **Summary:**

The main topics covered in this course are:

1. Probability models: sample spaces, events, probability measures, axioms of probability and related results.
2. Random variables and their distributions.
3. Expectation, variance, and standard deviation of random variables.
4. Important random variables including Binomial, Geometric, Hypergeometric, Poisson, Uniform, Normal, Exponential, Gamma variables.
5. Conditional probability and independence including the chain rule, the partition rule and Bayes' Theorem.
6. Joint probability distributions, marginal and conditional distributions.
7. Independent random variables and sums of independent random variables, generating functions, the weak law of large numbers and the Central Limit Theorem.
8. Expectation of a function of random variables, covariance and correlation.
9. Computer simulation of random variables and its applications in probability and statistics.

### **Books:**

Some helpful reference books include:

- R.P. Dobrow, Probability with Applications and R (Wiley, 2014);
- S. Ross, A First Course in Probability (details are already in the guide)
- T. Cacoullos, Exercises in Probability (Springer-Verlag, 1989);
- Grimmett & Welsh, Probability: An Introduction (Clarendon Press, 1988)
- Verzani, Using R for Introductory Statistics (Chapman and Hall, 2005).

**F78PB****PROBABILITY & STATISTICS B****Aims:**

To reinforce basic ideas related to the description and analysis of data, and provide the basis for the application of statistical modelling, estimation, hypothesis testing and regression.

**Summary:**

This course follows on from Probability and Statistics A. It develops the basic ideas used in statistical analysis and inference, with an emphasis on how we learn from data using both graphical techniques and statistical methodology based on probability theory. Topics presented include: analysis of simple data; construction of statistical models; sampling distributions and properties of estimators; method of moments and introduction to maximum likelihood estimation; inference for data from one population; comparisons of data from two populations; confidence intervals with samples from one or two populations; hypothesis testing; issues related to association between two variables; linear regression; statistical computing.

**Books:**

- Miller & M. Miller, *J.E. Freund's Mathematical Statistics with Applications*, 7th ed (Prentice Hall, 2004).

**F78AA****ACTUARIAL & FINANCIAL MATHEMATICS A****Aims:**

The aim of this course, along with F78AB, is to give students a thorough understanding of basic actuarial techniques. Exemptions from Subject CM1 may be recommended for candidates who score sufficiently well in F78AA, F78AB, F70LA, and F70LB.

**Summary:**

In this course, you will learn how to deal with questions involving cash flows at discrete time points, and the accumulation and discounting of payments over discrete time intervals. Topics include:

1. interest rates and some actuarial notation,
2. loan schedules,
3. yields,
4. fixed interest securities,
5. discounted cash flows.

There are three lectures per week. Students attend weekly tutorials and three computer labs during the semester.

**Books:**

Useful reference:

- S.J. Garrett, *An Introduction to the Mathematics of Finance: A Deterministic Approach*. (Butterworth-Heinemann, 2013).  
Alternative reference with additional exercises:
- *Schaum's Outlines of Mathematics of Finance* (McGraw-Hill, 1996).

## **F78AB ACTUARIAL & FINANCIAL MATHEMATICS B**

### **Aims:**

1. To introduce the continuous-time concept of cash flows and interest,
2. develop skills in applying continuous-time models to financial contracts and transactions,
3. model interest rates as random variables and apply those models,
4. introduce the principle of no-arbitrage and how to price financial contracts and construct the term-structure of interest rates assuming no-arbitrage,
5. value inflation-indexed cash flows.

### **Summary:**

This course builds on and extends the ideas contained in the related course F78AA. The concepts of a continuously-payable cash flow and the force of interest are considered. We incorporate inflationary increases into cashflows and value index-linked bonds. We see how interest-rate risk can be managed through the use of Redington's immunisation theory. As rates of return can be random, we see how to model them using random variables. Using the no-arbitrage principle, we price forward contracts. This leads on to a wider discussion of the term-structure of interest rates and the yield curve.

### **Book:**

- S.J. Garrett, *An Introduction to the Mathematics of Finance: A Deterministic Approach*. (Butterworth-Heinemann, 2013).

## **F18CD MULTIVARIABLE CALCULUS & REAL ANALYSIS A**

### **Aims:**

The course aims to provide an introduction to the calculus for functions of several variables, which will provide sufficient expertise for use in various later courses. The students will also develop their general skills in differentiation, integration and algebraic manipulation.

### **Summary:**

1. Partial differentiation: Functions of several variables, partial derivatives and higher order partial derivatives. Matrix 'total' derivatives. The chain rule, implicit differentiation.
2. Applications of partial differentiation: Taylor expansions, tangent planes, maxima and minima, Lagrange multipliers. The inverse function theorem (in 1 and 2-dimensions).
3. Integration: Double integrals interchange of order of integration. Change of variables. Polar coordinates. Triple integrals.
4. Applications of integration: Areas, volumes.
5. Integrals over infinite regions: The definition of the convergence of integrals of functions on unbounded intervals. Comparison tests and absolute convergence tests of integrals.
6. Sequences: Define a sequence of real numbers. Define bounded and convergent sequences, and the limit of a convergent sequence.

## **F18CE      MULTIVARIABLE CALCULUS & REAL ANALYSIS B**

### **Aims:**

The course aims to introduce students to the idea of rigorous mathematical arguments and, in particular, to discuss the rigorous foundations of calculus. An important feature of the course is the use of careful, rigorous proofs of the theorems used and one of the aims of the course is to improve student's ability to understand such arguments and to develop such proofs for themselves. A central concept in analysis is the idea of convergence, either of sequences, series or of functions, and this course aims to introduce this concept and provide the basic results which will be used in later courses. In addition, it will give methods of obtaining inequalities and approximations (with precise estimates of how good the approximations are), tests for convergence of series and power series and ways of identifying functions defined by power series and characterisations of functions (over bounded and unbounded intervals) for which the concept of area under the graph of a function makes sense.

### **Summary:**

1. Sequences: Briefly recall the idea of a sequence of real numbers, and of bounded and convergent sequences.
2. Suprema and infima: Sup and inf of sets of real numbers. The completeness axiom for real numbers.
3. Monotone sequences: Monotone sequences and the monotone convergence theorem. Use of the monotone convergence theorem to prove convergence of sequences without knowing the limit.
4. Subsequences: Subsequences and the Bolzano-Weierstrass theorem.
5. Continuous functions: Limits of functions, manipulation of limits. Continuity, combinations of continuous functions. Boundedness of continuous functions on closed intervals. The intermediate value theorem.
6. Differentiability: Differentiability. Continuity of differentiable functions. Rolle's theorem. Local maxima and minima.
7. First mean value theorem: Statement and proof of the first mean value theorem, applications to inequalities.
8.  $n^{\text{th}}$  mean value theorem: Statement and proof of the  $n^{\text{th}}$  mean value theorem, applications to approximations.
9. Series and power series: Convergence of series, the comparison, ratio zero, absolute convergence and alternating series tests for series, radius of convergence of a power series, properties of functions defined by power series, convergence of standard power series.
10. Riemann integration and convergence of integrals: Partitions, upper and lower sums, Riemann integrable functions.

## **F18CF      LINEAR ALGEBRA**

### **Aims:**

This is a Level 8 course in Linear Algebra aimed at students specializing in Mathematics, Statistics, or Actuarial Mathematics. The course aims to provide sufficient knowledge of matrix theory and of the solution of systems of linear equations for use in later courses in mathematics and statistics; to give an understanding of the basic concepts of linear algebra; and to develop the ability to solve problems and prove theorems involving these concepts.

**Summary:**

1. Euclidean space: Vector spaces  $R^2$ ,  $R^3$  and  $R^n$ , Matrices, Basic matrix operations, Determinants.
2. Systems of linear equations: Gaussian elimination, Results on homogeneous and inhomogeneous systems, Matrix inversion.
3. Vector spaces: Definition and examples of vector spaces, Subspaces, Span, Linear independence, Bases and dimension.
4. Inner product spaces: Scalar or Inner products, Cauchy-Schwartz inequality, Orthogonality, Orthogonal projection, Orthonormal bases, Gram - Schmidt process, Vector products.
5. Linear transformations: Row and Column rank of a matrix, Applications to systems of equations, Range, Kernel, Rank and Nullity, Invertibility of linear transformations, Linear transformations and matrices.
6. Eigenvalues and eigenvectors: Calculation of Eigenvalues and Eigenvectors, Symmetric matrices, Diagonalisation of a matrix, Cayley Hamilton theorem, Iterates of matrices, applications to quadratic forms.

**F78AP ALGORITHMIC AND SCIENTIFIC PROGRAMMING****Aims:**

1. To introduce the use of algorithms to solve computational problems
2. To equip students with fundamentals of computer programming; skills and techniques which may be applied in a wide variety of programming languages
3. To have students create algorithms to solve computational problems in at least two programming languages used in modern data science (such as R and Python)

**Summary:**

1. Introduction to computational algorithms
2. Conditional statements: if, else
3. Loops: for, while
4. Writing functions
5. Recursion
6. Vectors, arrays and matrices
7. Graphics

Students will study the above using at least two programming languages (e.g. R and Python)

**Books:**

- 1. Stephenson, B. - The Python Workbook: A Brief Introduction with Exercises and Solutions 2nd Edition (Springer 2019).
- 2. Ergül, O - Guide to Programming and Algorithms Using R (Springer 2013)

### A10.3 Level 9 Courses

#### F79MA STATISTICAL MODELS A

**Aims:**

To describe and compare the main approaches to statistical inference, including classical and Bayesian, and to develop students' skills in practical, computer-based estimation and inference. This course also aims to develop students' independent research skills, and their report writing skills.

**Summary:**

This course will consist of a mixture of lectures, tutorials, and project work. First and second year courses have discussed how to draw conclusions from data, and introduced some basic methods in an informal way. In this course we take a more fundamental approach to estimation and quantifying the accuracy of estimates. In lectures we introduce the principles of classical and Bayesian inference discussing their different philosophical bases, and comparing the different solutions that each method gives to various problems of inference. The properties and fundamental importance of the likelihood are described, along with some important results on the sampling properties of estimators.

The course will emphasise worked examples and there will be project work based on the computer implementation of the theory taught in lectures and tutorials. The statistical computer package R will be used for the project work.

**Prerequisites:**

F78PA and F78PB.

**Books:**

- P.H. Garthwaite et al, *Statistical Inference*, 2nd ed. (Oxford Science Publ., 2002);
- G. Casella & R.L. Berger, *Statistical Inference*, 2nd ed. (Thomson Learning, 2002);
- V. Barnett, *Comparative Statistical Inference*, 3rd ed. (Wiley, 1999).

#### F79MB STATISTICAL MODELS B

**Aims:**

To develop students abilities in understanding and solving statistical problems, and to teach them how to choose appropriate techniques, analyse data and present results, especially in applications related to linear and generalised linear models.

**Summary:**

The course will consist of a mixture of lectures and practical work. The first part of the course will focus on statistical modelling, including the selection of appropriate models, the analysis and interpretation of results, and diagnostics. Exploratory and graphical techniques will be considered, as well as more formal statistical procedures. Both parametric and nonparametric methods will be discussed, as will modern robust techniques. There will be considerable emphasis on examples, applications and case studies, especially for continuous response variables. Some

theory of multiple linear regression in matrix notation will be presented. The course will go on to consider the theory and techniques for the analysis of categorical data, including the use of generalised linear models (log-linear and logistic regression models). Practical applications will be emphasised throughout and computing facilities, especially R, will be used extensively.

**Prerequisites:**

F78PA and F78PB.

**Books:**

The following textbooks are recommended:

- A.J. Dobson, *An Introduction to Generalized Linear Models*, 2nd ed. (Chapman & Hall, 2002) (reference);
- J. Faraway, *Linear models with R* (Chapman & Hall, 2005);
- J. Faraway, *Extending the Linear Model with R: Generalized Linear, Mixed Effects and Nonparametric Regression Models* (Chapman & Hall/CRC, 2006);
- P.H. Garthwaite, I.T. Jolliffe & B. Jones, *Statistical Inference*, 2nd ed. (Prentice Hall, 2002);
- J. Verzani, *Using R for Introductory Statistics* (Chapman & Hall/CRC, 2005) (background);
- S. Weisberg, *Applied linear regression*, 3rd ed. (Wiley/Interscience, 2005).

**F79PS**

**STATISTICS FOR SOCIAL SCIENCES**

**Aims:**

To introduce students to the main classical statistical methods that are commonly applied in psychology and other social sciences and to give hands-on experience of using more advanced techniques for exploring multivariate data.

**Summary:**

In social sciences, such as psychology, experiments and surveys typically yield large quantities of high-dimensional data (e.g. in the form of questionnaire responses) from which we wish to extract simpler underlying relationships, or evidence of differences in subgroups in a population. The course will give students a grounding in the most common classical statistical methods used in analysing psychological data, the correct interpretation of results, and the application of methods to real data sets using the computer package SPSS. Topics covered will include: confidence intervals, hypotheses testing, parametric and non-parametric statistical methods, analysis of variance (incorporating one-way designs, planned and unplanned comparisons, factorial designs and interactions), principal components analysis and the interpretation and use of factor analysis.

**Prerequisites:**

F78PA and F78PB, or F78SC (or equivalent).

**Books:**

- Brace, Kemp & Snelgar, *SPSS for Psychologists*, 3rd ed. (Palgrave Macmillan, 2006);
- H. Coolican, *Research Methods and Statistics in Psychology* (Hodder & Stoughton, 1999);
- D.C. Howell, *Statistical Methods for Psychology*, 5th ed. (Duxbury, 2002).

**F79SP****STOCHASTIC PROCESSES****Aims:**

To introduce fundamental stochastic processes which are useful in insurance, investment and stochastic modelling, and to develop techniques and methods for simulation and the analysis of the long term behaviour of these processes.

**Summary:**

In this course, we develop methods for modelling systems or quantities which change randomly with time. Specifically, the evolution of a system is described by a collection  $\{X_t\}$  of random variables, where  $X_t$  denotes the state of the system at time  $t$ . Discrete-time processes studied include Markov chains. In particular, we consider branching processes, random walk processes, and more general countable state-space chains. Continuous-time processes studied include point processes, Poisson and compound Poisson processes; continuous time Markov processes; population, queueing and risk models.

**Prerequisites:**

F78PA and F78PB.

**Books:**

Most useful reference book

- Essentials of Stochastic Processes by Richard Durrett, 2nd edition, 2012.

Other useful reference books are

- P. Bremaud, *An Introduction to Probabilistic Modeling*, (Springer, 1997);
- Grimmett & Stirzaker, *Probability and Random Processes*, 3rd ed. (OUP, 2001);
- Grinstead & Snell, *Introduction to Probability*, (Amer. Math. Soc., 1997);
- W. Feller, *An Introduction to Probability Theory and Its Applications*, Vol. 1, 3rd ed. (Wiley, 1968);
- S.M. Ross, *Stochastic Processes*, 2nd ed. (Wiley, 1996).
- Essentials of Stochastic Processes by Richard Durrett, 2nd edition, 2012.

**F79BI****BAYESIAN INFERENCE & COMPUTATIONAL METHODS****Aims:**

To provide students with a knowledge of modern Bayesian statistical inference, an understanding of the theory and application of stochastic simulation methods including MCMC, and experience of implementing the Bayesian approach in practical situations.

**Summary:**

The course will review subjective and frequentist probability, the role of likelihood as a basis for inference, and give a comparative treatment of Bayesian and frequentist approaches. The key concepts in practical Bayesian statistics will be covered including: likelihood formulation; the incorporation of prior knowledge or ignorance in the prior; the interpretation of the posterior distribution as the totality of knowledge and its use in prediction. Methods for assessing the goodness-of-fit of models in the Bayesian context will be considered. A range of stochastic simulation methods for investigating posterior distributions will be considered. Methods will include rejection sampling, and Markov chain methods such as the Metropolis-Hastings algorithm and the Gibbs sampler. The use of stochastic methods for inference for partially observed processes will be discussed and students will gain experience of implementing methods in computer laboratory sessions.

**Prerequisites:**

F78PA and F78PB (or equivalent).

**Books:**

- (Useful) P. H. Garthwaite et al, *Statistical Inference*, 2nd ed. (Oxford Sc. Publ., 2002);
- W. M Bolstad, *Introduction to Bayesian Statistics* (Wiley, 2004);
- Gelman et al, *Bayesian Data Analysis*, 3rd ed., (CRC Press, 2014);
- G. Cassella & R. L. Berger, *Statistical Inference* (2nd Edition) (Duxbury, 2002)
- S. M. Ross, *A course in simulation* (Macmillan, 1990)

**F79PA****PORTFOLIO THEORY & ASSET MODELS****Aims:**

To introduce asset pricing and portfolio selection models. This course covers the first third of the material in Subject CM2 of the Institute and Faculty of Actuaries examinations.

**Summary:**

This course covers the following topics:

1. Utility theory,
2. Stochastic dominance,
3. Measures of investment risk,
4. Mean-Variance Portfolio theory,
5. Models of asset returns, and
6. Efficient markets hypothesis.

Students are expected to understand the basic mathematical skills of decision theory and apply them to various stochastic problems.

**Prerequisites:** F78PA and F78AB.

**Books:**

- Joshi & Paterson, *Introduction to Mathematical Portfolio Theory*, 1st ed. (CUP) – main reference
- Brown, Elton, Goetzman & Gruber, *Modern Portfolio Theory and Investment Analysis*, 9th ed. (Wiley, older editions are adequate).

**F79DF DERIVATIVE MARKETS & DISCRETE-TIME FINANCE****Aims:**

This course introduces students to derivatives, their use in financial markets and how they are priced and hedged in discrete time. It introduces the relationship between financial markets and stochastic analysis.

**Summary:**

The course introduces the idea of derivative securities and why they exist, explaining the role of forward and option contracts in risk management, and discusses various investment strategies involving derivatives. The concept of arbitrage-free pricing (cash-and-carry pricing) is explained and developed into the fundamental theorem of asset pricing in discrete time. Pricing on the binomial tree (the CRR model) is explained, for both European- and American-style derivatives.

The course involves coding tasks that contribute 30% of the assessment. Competence in R is assumed.

This course covers some of the material in Subject CM2 of the Institute and Faculty of Actuaries examinations.

**Prerequisites:**

F78PA and F78AB.

**Books:**

Recommended texts are:

- A. Chatterjea & R.A. Jarrow, *An Introduction to Derivative Securities, Financial Markets and Risk Management* (W.W. Norton, 2013);
- M. Baxter & A. Rennie, *Financial Calculus* (Cambridge University Press, 1996);
- J.C. Hull, *Options, Futures and Other Derivatives*, 8th ed. (Prentice Hall, 2011).

**F79SU SURVIVAL MODELS****Aims:**

1. To understand the use of mathematical models of mortality, illness and other life-history events in the study of processes of actuarial interest.
2. To be able to estimate the parameters in these models, mainly by maximum likelihood.
3. To describe and apply methods of smoothing rates of mortality and other actuarial statistics based on observed data.

**Summary:**

1. Estimation procedures for lifetime distributions: Kaplan-Meier estimate of the survival function, the Nelson-Aalen estimate of the cumulative hazard function and estimation for the Cox model for proportional hazards.
2. Models for transfers between multiple states (e.g., alive, ill, dead), relationships between probabilities of transfer and transition intensities, and estimation for the parameters in these models.
3. Methods of projecting future mortality rates to allow for improving longevity.
4. Tests of consistency of crude estimates of rates of mortality and rates in a standard table. Methods of graduation: parametric, standard table, graphical.
5. Computing facilities, especially R, will be used extensively and this work will be assessed by practical assignments.

**Prerequisites:**

F78PB.

**Books:**

- I.D. Currie, *Survival Models* (Heriot-Watt University notes, supplied by the department).
- The recommended textbook, supplementing these notes, is *Modelling Mortality with Actuarial Applications*, by A.S. Macdonald, S.J. Richards and I.D. Currie, Cambridge University Press, 2018.

**F19MO ORDINARY DIFFERENTIAL EQUATIONS****Aims:**

The course aims to give an understanding of linear and nonlinear ordinary differential equations and systems of equations and to show how ordinary differential equations are important in mathematical modelling.

**Syllabus:**

1. *Introduction to differential equations*: Revision of first-order equations, exact equations, existence and uniqueness of solutions, direction fields, exactly solvable second order equations. (4 lectures)
2. *Linear systems of ODEs*: Fundamental sets of solutions, equations with constant coefficients, Wronskians, inhomogeneous equations, variations of parameters, solution of linear systems by matrix methods. (9 lectures)
3. *Laplace transforms*: Calculation of transforms, solution of linear equations and systems, inverse transforms, equations with discontinuous or impulsive forcing terms, convolutions. (4 lectures)
4. *Boundary value problems*: Existence and uniqueness of solutions, Green's functions (4 lectures) Sturm Liouville problems: Eigenvalues and eigenfunctions, orthogonality of eigenfunctions, eigenfunction expansions. (4 lectures)
5. *Phase Planes*: Equilibrium points, phase planes for nonlinear second-order equations, the pendulum equation, phase planes for linear systems, classification of equilibrium points, stability. (7 lectures)

## A10.4 Level 10 and 11 Courses

### F70TS

### TIME SERIES ANALYSIS

**Aims:**

To introduce many of the fundamental concepts required for modelling and forecasting time series data.

**Summary:**

A time series is a set of data consisting of observations made one after another in time. The analysis of time series data is an area of practical importance in finance, business, economics, industry, medicine, life and physical sciences and many other fields.

The course begins with real data, and some descriptive methods for identifying, and removing if appropriate, trend and seasonal effects. We consider moving averages and exponential smoothing, along with other approaches. This leads into the important concepts of stationarity and autocorrelation.

The main body of the course consists of modelling the stochastic mechanism which gives rise to an observed series, and then using model-based forecasting procedures to predict future values of the series.

The models we consider are autoregressive moving average (ARMA) processes, and autoregressive integrated moving average (ARIMA) processes. Various methods of parameter estimation are considered, including the method of moments, least-squares, conditional least-squares, and maximum likelihood. We then perform residual analysis, and consider over-fitting and the principle of parsimony. The course ends with consideration of various forecasting methods.

Although the approach is mainly orientated to utilising time-dependence, we also consider the frequency aspects of series and study the periodogram and the spectral density. We relate the two approaches. We will also present a short introduction to some topics in machine learning.

**Prerequisites:**

F78PA and F78PB (or equivalent).

**Books:**

Useful references are

- C. Chatfield, *The Analysis of Time Series* (Chapman Hall);
- P. Diggle, *Time Series* (OUP);
- P. Cowpertwait and A. Metcalfe, *Introductory Time Series with R* (Springer).

### F70LA

### LIFE INSURANCE MATHEMATICS A

**Aims:**

To extend the coverage of life assurance mathematics in F78AB to include some of the material for Subject CM1 of the Institute and Faculty of Actuaries examinations.

**Summary:**

By combining the mathematics of finance and the mortality table, we can develop the functions necessary to value a wide range of benefits which may be

payable on death or survival. Some of the functions will be clear extensions of those previously encountered, while others will be new.

Such benefits are often provided by insurance policies. The course will study some of the essential calculations made by insurance companies in valuing their contracts and calculating premiums. You will learn how to deal with questions involving:

1. selection and select life tables,
2. actuarial functions using select life tables,
3. with profits policies,
4. net premiums and gross premiums,
5. expenses and bonuses,
6. net and gross premium policy values.

There will be three lectures, one tutorial and one computer lab in some weeks.

**Prerequisites:**

F78AA and F78AB.

**Books:**

- Formulae and Tables for Actuarial Examinations (several copies available in library).
- Dickson, Hardy & Waters, Actuarial Mathematics for Life Contingent Risks (CUP,2009). (F70LA covers material in the first seven chapters.)

**F70LB**

**LIFE INSURANCE MATHEMATICS B**

**Aims:**

To extend the coverage of life assurance mathematics in F70LA to include further material for Subject CM1 of the Institute and Faculty of Actuaries examinations.

**Summary:**

In this course, you will learn how to deal with questions involving:

1. Thiele's differential equation,
2. Markov multiple-state models,
3. risk reserves,
4. insurances written on multiple lives,
5. the features of disability and long-term care insurance contracts,
6. heterogeneity and selection,
7. single-figure indices,
8. profit testing conventional insurance contracts,
9. profit testing unit-linked contracts.

There will be three lectures and one tutorial per week. Also one computer lab (Microsoft Excel) in some weeks.

**Prerequisites & books:**

See F70LA.

**Aims:**

This course develops the theory and practice of financial derivatives pricing in continuous time, following on from the course F79DF Derivatives Markets and Discrete-Time Finance.

**Summary:**

1. Theory of martingales in continuous time, Brownian motion, and its properties, stochastic integration, stochastic differential equations and Ito's formula, Girsanov's theorem and the Martingale Representation Theorem.
2. The Black-Scholes model, derivatives pricing using the martingale and PDE approaches, extensions to foreign currencies and dividend-paying stocks.
3. Portfolio risk management.
4. Interest rate models, and credit risk models.
5. Other models of security prices.

There will be weekly tutorial sessions, starting in the second week of term.

**Prerequisites:**

F79SP and F79DF.

**Books:**

- M. Baxter & A. Rennie, *Financial Calculus* (CUP, 1996);
- R. Durrett, *Stochastic Calculus* (CRC Press);
- J. Hull, *Options, Futures and Other Derivative Securities*, 3rd/4th ed. (Prentice Hall, 1996);
- B. Oksendal, *Stochastic Differential Equations* (Springer, 1998);
- D. Williams, *Probability with Martingales* (CUP, 1997).

## F70RT RISK THEORY

**Aims:**

To introduce and apply the statistical techniques used in the analysis of insurance processes, in particular for the assessment of premiums for short term insurance contracts, for reserving, and for assessing and managing solvency risk.

**Summary:**

We look at some mathematical/statistical models and techniques which are useful in insurance, particularly short term insurance (for example motor, household, employers' liability).

We look at how to find the compound distribution of aggregate claims by combining the frequency of claims with the distribution of the amounts paid out on individual claims; we will consider how this might be used to set a premium, and how the insurers insure themselves through reinsurance. We then study aspects of experience rating, which is a method of setting a premium for a policy which is affected by the claims history of that policy. We look at experience rating using Bayesian credibility theory, and in the context of No Claims Discount

systems.

The final three topics covered are:

1. ruin theory (we consider a stochastic model for the reserves of a general insurer and examine the probability that the reserves fall below zero);
2. run-off triangles (we study methods used to determine appropriate reserves for general insurance);
3. the use of copulas and extreme value theory;
4. simulation.

**Prerequisites:**

F79MA (or equivalent).

## F10MM OPTIMISATION

**Summary:**

The syllabus is as follows:

1. Introduction: simplified examples of common real world situations leading to optimisation problems.
2. Linear programming (optimisation of linear functions subject to linear constraints): basic theory, simplex method, duality, practical techniques.
3. Nonlinear programming (optimisation of nonlinear functions subject to constraints): Lagrange multipliers, Karush-Kuhn-Tucker optimality conditions, convexity, duality.
4. Approximation methods for nonlinear programming: line search methods, gradient methods, conjugate gradient methods.
5. Variational problems: Euler-Lagrange equation, boundary conditions constraints.

**Prerequisites:**

F18CD and F18CF.

**Books:**

The course is based on the following book:

- Pedregal, *Introduction to Optimization* (Springer, 2004).

## F20ML STATISTICAL MACHINE LEARNING

**Aims:**

To provide students with an in-depth introduction to data mining and machine learning and to the mathematics underpinning these techniques. Topics will include generative and discriminative approaches, classification, clustering, regression, and supervised and unsupervised learning.

**Summary:**

1. **Basic Concepts:** classification, clustering, regression, supervised and unsupervised learning.
2. **Generative Models:** probabilistic graphical models; cluster analysis (k-means, expectation-maximisation, mixture models, hierarchical models); regression analysis.

3. **Discriminative Learning:** Instance-based learning and decision tree learning; artificial neural networks (perceptron, MLPs, back propagation, introduction to deep learning architectures); maximum entropy models; support vector machines; ensemble learning (bagging, boosting, stacking, random forests).
- 4.

**Book:**

- Daumé III, H. (2012). A course in machine learning. *Publisher, ciml. info*, 5, 69

## F10DA DATA ASSIMILATION

**Aims:**

The course will develop a theoretical framework and present several techniques of data assimilation that are commonly used in practice.

**Summary:**

The fundamentals of probabilistic forecasting and the role of Bayesian inference in data assimilation will be taught. Data assimilation techniques that will be covered are the Kalman filter, the ensemble Kalman filter, 4d-var, and particle filter methodologies such as sequential importance sampling and re-sampling techniques.

**Main Text:**

Probabilistic forecasting and Bayesian data assimilation by Sebastian Reich and Colin Cotter. Cambridge: Cambridge University Press. 2015. (Available as e-book)

**References:**

- Non-linear data assimilation by Jan van Leeuwen, Yuan Cheng and Sebastian Reich. Springer 2010. (not available)
- Data assimilation: The Ensemble Kalman Filter by Gier Eversen, 2<sup>nd</sup> edition, Springer, 2009. (Available as e-book)
- Data Assimilation: A Mathematical Introduction by Kody Law, Andrew Stuart, and Konstantinos Zygalakis. Springer 2010 (Available as e-book)

## F70ST STATISTICAL SPECIAL TOPICS: APPLIED MULTIVARIATE ANALYSIS

**Aims:**

At the end of the course, students would be able to understand the theory of multivariate analysis and apply some of the tools of multivariate techniques to analyse data.

**Summary:**

This course would begin with a quick review of Matrix Algebra, which would be essential for the rest of the course. Random vectors and matrices would then be discussed followed by the Multivariate Normal Distribution and related theorems. Inference about the mean vector and comparison of multivariate means would be introduced. This would then be followed by Cluster Analysis and the course would end with Discriminant Analysis.

**Prerequisites:**

F78PA and F78PB.

**References:**

- Afifi, A., May, S., Donatello, R. A. and Clark, V. A., (2020), *Practical Multivariate Analysis*, 6th Edition, Chapman and Hall
- Hair, J. F., Black, W. C., Babin, B. J. and Anderson, R. E., (2019), *Multivariate Data Analysis*, 8th Edition, Cengage.
- Zelterman, D., (2015), *Applied Multivariate Statistics with R*, Springer.
- Rencher, A. C. and Christensen, W. F., (2012), *Methods of Multivariate Analysis*, 3rd Edition, Wiley.
- Everitt, B. S. and Dunn, G., (2010), *Applied Multivariate Data Analysis*, 2<sup>nd</sup> Edition, Wiley.
- Johnson, R. A, and Wichern, D. W., (2007), *Applied Multivariate Statistical Analysis*, 6th Edition, Prentice Hall, Inc.

## **A11. Actuarial Mathematics and Statistics: Code of Practice**

### **A11.1 What you can expect from AMS Staff**

Teaching is one of the most important duties for AMS staff. Although academic staff have research and administrative duties which also need our attention, we aim to provide:

- Commitment to helping you learn
- Politeness and respect
- Availability for face-to-face meetings, either during scheduled office hours or at pre-arranged times
- Timely feedback and marks for coursework
- A prompt response from your mentor
- A timely reply to general email questions
- An opportunity to see your exam script to see where you went wrong, either at scheduled feedback sessions or by applying via the school administrator to see your script. You can also make an appointment with the lecturer to get further advice on how to improve your work.

Sometimes staff members are away on University business and won't be able to respond as quickly as normal. If this happens, they will tell you about it (e.g. on an "out-of-office" message) and will advise you who to contact instead.

*If you have a problem...*

For personal problems or any other problem that is interfering with your studying, please discuss it with your personal tutor. We are here to help. You can also discuss any personal problems with the staff in Student Support Services.

For problems about a course, talk to the lecturer first. If that doesn't help, you can raise the matter with your Class Rep. or the Year Co-ordinator.

## **A11.2 What staff can expect from AMS students**

Most importantly, we expect you to take charge of your own learning. This is your degree - to get the most of your time at the University you need to be independent and proactive. We understand that you may have other demands on your time, but as full-time students, your studies should come first. In addition, we expect:

- Commitment to your learning
- Politeness and respect, including switching off phones and other social media during classes.
- Attendance, physical or virtual, at all scheduled learning sessions and tests
- Preparation for classes as specified by your lecturers, such as studying lecture notes, working on tutorial questions and participating in online activities. For every hour of timetabled class, we expect you to spend 2-3 hours in private study.
- Persistence. Some topics and problems in mathematics are challenging and we expect you to make a sustained effort to master difficult topics. We are there to help you if you get stuck.
- Basic organisational skills, including coming to classes with pen and paper ready to take notes or with equipment for electronic note-taking, and using a calendar so that you don't forget deadlines and appointments.
- Attendance at any scheduled meeting with a staff member. If you can't make a scheduled meeting with a staff member, please notify them in advance rather than just not turning up.
- Checking your email and logging into VISION at least every other day.
- A timely reply to email from staff.
- Willingness to learn from feedback on tutorial work, projects and exams, and an attempt to improve your work based on that feedback.
- Finally, we encourage you to keep yourself informed about new and interesting developments in your discipline (beyond what you learn in your courses). The department is full of experts in a wide range of areas who are happy to chat with you about topics of current interest. Seek them out!

## Appendix A

### STUDENT GUIDE TO PLAGIARISM <sup>2</sup>

**Plagiarism is intellectual theft and is a major offence which the University takes seriously in all cases. Students must therefore avoid committing acts of plagiarism by following these guidelines and speaking to academic staff if they are uncertain about what plagiarism means. Those who are found to have plagiarised will be subject to the University's disciplinary procedures, which may result in penalties ranging from the deduction of credits and modules already achieved by students to compulsory termination of studies. Students are advised to refer to Regulation 50 at <http://www.hw.ac.uk/ordinances/regulations.pdf> and to the Guidelines for Staff and Students on Discipline at <http://www.hw.ac.uk/students/studies/examinations/plagiarism.htm> for further details of how the University deals with all acts of plagiarism.**

#### **Article I. Introduction**

- 1.1. This guide is intended to provide students at Heriot-Watt University with a clear definition of plagiarism and examples of how to avoid it.
- 1.2. The guide may also be of use to members of staff who seek to advise students on the various issues outlined below.

#### **Article II.**

#### **Article III. Definition**

- 1.3. Plagiarism involves the act of taking the ideas, writings or inventions of another person and using these as if they were one's own, whether intentionally or not. Plagiarism occurs where there is no acknowledgement that the writings or ideas belong to or have come from another source.
- 1.4. Most academic writing involves building on the work of others and this is acceptable as long as their contribution is identified and fully acknowledged. It is not wrong in itself to use the ideas, writings or inventions of others, provided that whoever does so is honest about acknowledging the source of that information. Many aspects of plagiarism can be simply avoided through proper referencing. However, plagiarism extends beyond minor errors in referencing the work of others and also includes the reproduction of an entire paper or passage of work or of the ideas and views contained in such pieces of work.

#### **Article IV.**

#### **Article V. Good Practice**

- 1.5. Academic work is almost always drawn from other published information supplemented by the writer's own ideas, results or findings. Thus drawing from other work is entirely acceptable, but it is unacceptable not to acknowledge such work. Conventions or methods for making acknowledgements can vary slightly from subject to subject, and

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<sup>2</sup> The author acknowledges the following sources of information used in preparing this guide to Plagiarism:

"Plagiarism – A Good Practice Guide", Carroll, J and Appleton, J (2001) and various extracts from Student/Course Handbooks 2004/2005, Schools at Heriot-Watt University

students should seek the advice of staff in their own School about ways of doing this. Generally, referencing systems fall into the Harvard (where the text citation is by author and date) and numeric (where the text citation is by using a number). Both systems refer readers to a list at the end of the piece of work where sufficient information is provided to enable the reader to locate the source for themselves.

1.6. When a student undertakes a piece of work that involves drawing on the writings or ideas of others, they must ensure that they acknowledge each contribution in the following manner:

- **Citations:** when a direct quotation, a figure, a general idea or other piece of information is taken from another source, the work and its source must be acknowledged and identified where it occurs in the text;
- **Quotations:** inverted commas must always be used to identify direct quotations, and the source of the quotation must be cited;
- **References:** the full details of all references and other sources must be listed in a section at the end of any piece of work, such as an essay, together with the full publication details. This is normally referred to as a “List of References” and it must include details of any and all sources of information that the student has referred to in producing their work. (This is slightly different to a Bibliography, which may also contain references and sources which, although not directly referred to in your work, you consulted in producing your work).

1.7. Students may wish to refer to the following examples which illustrate the basic principles of plagiarism and how students might avoid it in their work by using some very simple techniques:

1.7.1. Example 1: A Clear Case of Plagiarism

Examine the following example in which a student has simply inserted a passage of text (*in italics*) into their work directly from a book they have read:

University and college managers should consider implementing strategic frameworks if they wish to embrace good management standards. *One of the key problems in setting a strategic framework for a college or university is that the individual institution has both positive and negative constraints placed upon its freedom of action.* Managers are employed to resolve these issues effectively.

This is an example of bad practice as the student makes no attempt to distinguish the passage they have inserted from their own work. Thus, this constitutes a clear case of plagiarism. Simply changing a few key words in such a passage of text (e.g. replace ‘*problems*’ with ‘*difficulties*’) does not make it the student’s work and it is still considered to be an act of plagiarism.

### 1.7.2. Common Mistakes

Students may also find the following examples<sup>3</sup> of common plagiarism mistakes made by other students useful when reflecting on their own work:

- “I thought it would be okay as long as I included the source in my bibliography” [without indicating a quotation had been used in the text]
- “I made lots of notes for my essay and couldn't remember where I found the information”
- “I thought it would be okay to use material that I had purchased online”
- “I thought it would be okay to copy the text if I changed some of the words into my own”
- “I thought that plagiarism only applied to essays, I didn't know that it also applies to oral presentations/group projects etc”
- “I thought it would be okay just to use my tutor's notes”
- “I didn't think that you needed to reference material found on the web”
- “I left it too late and just didn't have time to reference my sources”

**None of the above are acceptable reasons for failing to acknowledge the use of others' work and thereby constitute plagiarism.**

1.8. What follows are examples of the measures that students should employ in order to correctly cite the words, thought or ideas of others that have influenced their work:

#### 1.8.1. Example 2: Quoting the work of others

If a student wishes to cite a passage of text in order to support their own work, the correct way of doing so is to use quotation marks (e.g. “ ”) to show that the passage is someone else's work, as follows:

*“One of the key problems in setting a strategic framework for a college or university is that the individual institution has both positive and negative constraints placed upon its freedom of action”.*

#### 1.8.2. Example 3: Referencing the work of others

In addition to using quotation marks as above, students must also use a text citation. If the work being cited is a book, page numbers would also normally be required. Thus, using the Harvard system for a book:

*“One of the key problems in setting a strategic framework for a college or university is that the individual institution has both positive and negative constraints placed upon its freedom of action” (Jones, 2001, p121).*

The same reference could also be made to a book using the numeric system:

*“One of the key problems in setting a strategic framework for a college or university is that the individual institution has both positive and negative constraints placed upon its freedom of action” (Ref.1, p121).*

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<sup>3</sup> Extract from 'Plagiarism at the University of Essex' advice copyrighted and published by the Learning, Teaching and Quality Unit at the University of Essex (<http://www.essex.ac.uk/plagiarism/reasons.html>), reproduced with kind permission.

More often, a piece of work will have multiple references and this serves to show an examiner that the student is drawing from a number of sources. For example, articles by Brown and by Smith may be cited as follows in the Harvard system

*“It has been asserted that Higher Education in the United Kingdom continued to be poorly funded during the 1980’s [Brown, 1991], whereas more modern writers [Smith, 2002] argue that the HE sector actually received, in real terms, more funding during this period than the thirty year period immediately preceding it”.*

or as follows using the numeric system:

*“It has been asserted that Higher Education in the United Kingdom continued to be poorly funded during the 1980’s [Ref 1], whereas more modern writers [Ref 2] argue that the HE sector actually received, in real terms, more funding during this period than the thirty year period immediately preceding it”.*

### 1.8.3. Example 4: Use of reference lists

Whichever system is used, a list must be included at the end, which allows the reader to locate the works cited for themselves. The Internet is also an increasingly popular source of information for students and details must again be provided. You should adhere to the following guidelines in all cases where you reference the work of others:

If the source is a book, the required information is as follows:

- Author’s name(s)
- Year of Publication
- Title of Book
- Place of Publication
- Publishers Name
- All Page Numbers cited
- Edition (if more than one, e.g. 3<sup>rd</sup> edition, 2001)

If the source is an article in a journal or periodical, the required information is as follows:

- Author’s name(s)
- Year of Publication
- Title of Journal
- Volume and part number
- Page numbers for the article

If the source is from the Internet, the required information is as follows:

- Author’s or Institution’s name (“Anon”, if not known)
- Title of Document
- Date last accessed by student
- Full URL (e.g. <http://www.lib.utk.edu/instruction/plagiarism/>)
- Affiliation of author, if given (e.g. University of Tennessee)

The way in which the information is organised can vary, and there are some types of work (for example edited volumes and conference proceedings) where the required information is slightly different. Essentially, though, it is your responsibility to make it clear where you are citing references within your work and what the source is within your reference list. **Failure to do so is an act of plagiarism.**

- 1.9. Students are encouraged to use a style of acknowledgement that is appropriate to their own academic discipline and should seek advice from their mentor, course leader or other appropriate member of academic staff. There are also many reference sources available in the University Library which will provide useful guidance on referencing styles.

## Article VI.

### Article VII. Managing Plagiarism

- 1.10. Students, supervisors and institutions have a joint role in ensuring that plagiarism is avoided in all areas of academic activity. Each role is outlined below as follows:

*How you can ensure that you avoid plagiarism in your work:*

- Take responsibility for applying the above principles of best practice and integrity within all of your work
- Be aware that your written work will be checked for plagiarism and that all incidents of plagiarism, if found, are likely to result in severe disciplinary action by the University. The standard penalty is to annul all assessments taken in the same diet of examinations (for details please refer to Regulation 50 at <http://www1.hw.ac.uk/ordinances> and to the Guidelines for Staff and Students on Discipline at <http://www.hw.ac.uk/students/studies/record/discipline.htm>).

*How your School will help you to avoid plagiarism:*

- Highlight written guidance on how you can avoid plagiarism and provide you with supplementary, verbal guidance wherever appropriate
- Regularly check student work to ensure that plagiarism has not taken place. This may involve both manual and electronic methods of checking. A number of plagiarism detection packages are in use at Heriot-Watt University, one example being the Joint Information Systems Committee (JISC) "Turnitin" plagiarism detection software.
- Alert you to the procedures that will apply should you be found to have committed or be suspected of having committed an act of plagiarism and explain how further action will be taken in accordance with University policy and procedures.

*How the University will endeavour to reduce student plagiarism:*

- Provide clear written guidance on what constitutes plagiarism and how to avoid it directly to your School and to you
- Alert you and staff in your School to the penalties employed when dealing with plagiarism cases
- Take steps to ensure that a consistent approach is applied when dealing with cases of suspected plagiarism across the institution
- Take the issue of academic dishonesty very seriously and routinely investigate cases where students have plagiarised and apply appropriate penalties in all proven cases.

## PART B: UNIVERSITY INFORMATION

### B1. Programme and Course Content

The content of our programmes and courses is reviewed annually to make sure it's up-to-date and relevant. Individual courses are occasionally updated or withdrawn. This is in response to discoveries through our world-leading research; funding changes; professional accreditation requirements; student or employer feedback; outcomes of reviews; and variations in staff or student numbers. In the event of changes the University will consult and inform students in good time and will take reasonable steps to minimise disruption.

### B2. Our Values

At Heriot-Watt, we have an established set of values that help us to nurture innovation and leadership and show our commitment to continuous development in all our activities. They are:

- **Belong** to a diverse, inclusive and international community working together across boundaries and cultures
- **Inspire** curiosity to learn and find solutions that transform lives
- **Collaborate** by working in partnership to shape the future whilst taking responsibility for our own actions
- **Celebrate** excellence and take pride in the achievements of our students, staff and alumni

Find out more about the [Heriot-Watt values](#) and what they mean to us.

### B3. Student Partnership Agreement

Heriot Watt University and the Heriot Watt University Student Representative Bodies work in partnership to develop a Student Partnership Agreement (SPA) each year. The Agreement identifies the main, agreed priorities for working in partnership each academic year and outlines an associated action plan.

Heriot-Watt University has a long and proud tradition of student engagement in institutional governance and decision-making and the Student Partnership Agreement sets out our ambition to continue to work in partnership across all of our campus locations, with the aim of increasing engagement with the institution, enhancing the student experience and engendering a sense of belonging to the University community.

The Student Partnership Agreement is available [here](#)

### B4. University Regulations

Heriot-Watt has a detailed set of rules that govern how the University operates, these are the University's [Ordinances and Regulations](#). Ordinances are set by the Court, which is the University's governing body, outline how the University is governed. University regulations provide the framework for the University's academic work and the education of our students and they define the policies, procedures and support outlined in the **Quick Finder Guide to Heriot-Watt University** section of this Handbook.

In addition to the university-wide regulations, students studying at Malaysia campus must adhere to the following policies:

#### 1) Attendance

Students are expected to attend all scheduled learning sessions (e.g. timetabled lectures, seminars, tutorials, workshops and laboratory sessions) as stipulated by your School.

For Online Learning, your academic progress and participation will be monitored and tracked by your lecturers to ensure that you are making adequate progress in your learning activities. Students are expected to log into the live tutorial webinar sessions as scheduled by their lecturers.

The only exception should be in circumstances where ill health or other legitimate reasons prevent student attendance. In this case, students should submit a self-certification with medical certification.

**i) Self-certification form and supporting documents**

Students who are absent from any learning-teaching activities are required to fill in the self-certification form which can be obtained from the Student Portal ([Self certification form](#)). Checks may be made with the authorising bodies/medical professionals to confirm the accuracy of the supporting documents (e.g., medical certificates). If there is any concern that the supporting document provided has been submitted under false pretences, the student may be disciplined by the University. Disciplinary penalties previously issued for similar offences include suspension from the University. The submission of falsified documents to the University is taken very seriously.

**ii) International students attendance requirement-subject to change**

International students must maintain at least 80% attendance in all enrolled courses throughout each semester. Current regulations and requirements outlined by the Ministry of Education (Malaysia) and Immigration Department of Malaysia that the attendance of all international students are to be monitored and reported to the respective authorities.

**2) Policy on student fee refunds**

**i) Scope**

This policy applies to fees, charges and fines for on-campus students studying at Heriot-Watt University Malaysia.

**ii) HWUM policy**

Under Section E - Ordinance 1:

All fees and charges due to the University are payable in advance and except in exceptional circumstances shall not be returned.

However, at the University's discretion the following refund policy will apply and providing that a request in writing for such a refund is received:

- a. Registration Fee, Visa application and related fees are not refundable under any circumstances.
- b. Subject to sub paragraph (a) above, if a student provides notice more than 2 weeks before the commencement of the semester, 100% of the tuition fees paid may be refundable.
- c. Subject to sub paragraph (a) above, if a student provides notice within 2 weeks before the commencement of the semester, 50% of the tuition fees paid may be refundable.
- d. Subject to sub paragraph (a) above, if a student provides notice within 2 weeks after the commencement of the semester, 50% of the tuition fees paid may be refundable.
- e. No fees are refundable 2 weeks after the commencement of the semester.
- f. Subject to sub paragraph (a) above, if a student is required to leave the programme due to medical reasons based on medical evidence, the student may be eligible for a full refund of all fees paid.
- g. All refunds whether of fees, deposits or other payments, shall be free of interest and shall be subject to the right of set-off by Heriot-Watt University Malaysia against any fees or other payments due and owing to Heriot-Watt University Malaysia.
- h. For all semesters, all fees, charges and fine must be fully paid by the due dates. Heriot-Watt University Malaysia reserves the right to review the status and to take such necessary action as Heriot-Watt University Malaysia deems fit if payment is not received by the due dates. Such action may include the barring of the student from classes, examinations and facilities, result hold, suspension or termination of the student's studies. In such circumstances, Heriot-Watt University Malaysia further reserves the right and shall be entitled to defer the marking of any examination paper, and to withhold all certificates and records of the student. No student with outstanding debt shall be permitted to graduate.

In the event that a student is expelled or is suspended or discontinues the programme due to misconduct or any disciplinary matter or the non-attainment of academic requirement, there shall be no refund of fees paid.

## **B5. Your Student Portal**

The Student Portal brings together your services and relevant information in one place. Below is a summary of the services available to you via the portal:

- Office 365 suite: through single sign-on, all of your Office 365 services will be accessible through the Portal.
- Library: whether you want to search for books or view your loans & reservations, the Portal allows you to do this on your phone or desktop.
- Vision: your Portal will present you with announcements and tasks related to your course.
- Student Information: all university-level regulations and policies relating to your studies can be found on the Portal.
- Campus and School News: the Portal enables the University to promote events and experiences which will help you develop your skills.
- Personalised: You can hide, add and move tiles on your dashboard.
- AskHWU: You can find everything you need to help you navigate your time at HWU through the new AskHWU search tile. Ask questions of the University and enquire directly with members of staff to get information about ID cards, student finance, confirmation of studies letters, exams, enrolment, careers, wellbeing services and much more.
- Appointments: Book Careers & Wellbeing appointments through your student portal

You can access your student portal [here](#).

## B6. Quick Finder Guide to Heriot-Watt University

The following provides a guide to the support, resources, procedures and more which are available to you during your studies. This section is arranged alphabetically under four thematic headings:

- **Learning and Teaching**  
This covers issues related to your academic study.
- **Our Community**  
As a Heriot-Watt student you are part of a community where we value and draw strength from our diversity, and from the range of different experiences which have brought us together. This section helps you to find out about events, activities and opportunities for you to meet new people and get to know other students.
- **Supporting Success**  
This covers issues relating to student life in general and the support resources available to help you.
- **Developing Your Skills**  
It's not just knowledge of your subject that you acquire as a student, you will develop a range of skills that will not only help you study, but also help in everyday life. You will also develop skills which will help you get a job and develop your career.

Clicking on the links below allows you to find relevant information on the student web pages. Please make sure that you check myHWU the Student Portal, and the University web pages throughout the year for the most up-to-date information.

### Learning & Teaching

#### Academic Appeals

An academic appeal is a formal request by a student for the review of a decision made by the University on the student's progression, assessment or academic award. There are [valid and invalid grounds](#) for an appeal. Appeals cannot be made on the basis of academic judgment (for example, thinking that your work deserves a higher grade). You are strongly advised to seek advice before starting an appeal, and to try and seek an informal resolution before making a formal appeal

#### Assessment

Assessment is an essential part of learning at university. Make sure you are aware of the guidelines and regulations around University assessment.

#### Assessment Feedback

Heriot-Watt University aims to support students in becoming confident, independent learners; feedback is a key part of the student learning experience, as it is designed to help students to learn and improve. It's also important to know [what to do with the feedback](#) when you receive it.

#### Assessment Results

Once your course results have been released, you will automatically be sent an email (to your Heriot-Watt email address) to inform you that new assessment results are available online to view/download via the [Student Self-Service](#). Guidance is available on the [results and the grading system](#) used by the University.

#### Changing Your Course

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 2020/21, learning, teaching and assessment will be delivered through a combination of online and face-to-face methods as part of the University's Responsive Blended Learning Approach. Online activities will be delivered through Vision, the University's VLE. Prompt course registration will ensure that you are able to participate in all online activities.

### [Changing Your Programme](#)

The University recognises that students may wish to transfer to a different programme of study and will normally allow this provided that a student's prior study or subject knowledge meets the entry requirements of the new programme. Transferring after year 1 may be difficult without repeating stages of study. If you are considering changing to another Heriot-Watt programme please make sure you discuss this with your personal tutor and see the following advice.

- Think carefully about what you want to study instead
- Access all sources of information about any alternative programme. Find out who the programme contact is, what the entry requirements are and what careers it might lead to. You can find out the programme contact by contacting the School Office. Find out if you would you have to repeat a year.
- Talk to programme staff and students who are currently studying the programme.
- Remember, it is not automatic that you will be allowed to transfer to a different programme.
- If you are able to transfer, make sure you complete the correct forms and have the appropriate approval. Your new programme leader can advise you on this.
- You may have to repeat a year on your new programme, e.g. start again at Year 1, in which case you should check with your funding body what financial support will be available if you do this. Repeat funding can sometimes be offered but this will depend on your circumstances.

### [Examinations & Examination Diets](#)

There are three examination diets (assessment periods): December, Spring and the Resit Diet in the Summer.

### [Exam Conduct and Identity Checks](#)

Make sure you know what is required and permitted within each of your exams and understand the University exam conduct.

### [Exam Timetables](#)

Information on the exam timetable and when it will be available. Please note that exam timetables are subject to change so check regularly – we recommend checking the morning of each exam for any adjustments.

### [Exit Awards](#)

You will receive an award if you successfully complete your programme of study, however, if you leave the University part way through your programme, you may still have met the required criteria for receiving a Certificate of Higher Education, a Diploma of Higher Education or an Ordinary/Bachelors Degree as an exit award. (see also intermediate awards).

### [External Examiners Information](#)

External Examiners ensure that students are judged fairly according to academic standards. In addition, they ensure that that the processes for assessment, examination and determination of awards are sound and fairly operated.

### [Learning and Teaching Matters](#)

Across our campuses and global community of students, we are promoting learning and teaching with a series of key messages to provide you with advice and information at

crucial points during your Heriot-Watt experience.

### [Periods of Study](#)

The University Regulations explain the maximum time allowed to complete your programme of study.

### [Plagiarism](#)

Plagiarism is the act of taking the ideas, writings or inventions of another person and using these as if they were your own, whether intentionally or not. Here you can find out more about plagiarism, how the University responds to it and guidance on how to avoid plagiarism in your academic work. The Library also provides workshops and support on citing and referencing to avoid plagiarism.

### [Reassessment](#)

If you fail an assessment during the first or second semester of an academic year, then you will have to sit a reassessment for that course before being able to progress. This page contains information on reassessment procedures, how to register and pay for reassessments on your campus, reassessment diet dates, and information about additional reassessment opportunities.

### [Requirements for Awards](#)

Refer to the regulation(s) that are appropriate for your level of study. These regulations explain the number of credits required to receive an award from the University.

### [Recognition of Prior Learning & Credit Transfer](#)

If you have previously been in higher education, have passed courses or have academically relevant professional experience, then this could count as credit towards your Heriot-Watt degree. In the linked page, scroll down to 'Recognition of Prior Learning & Credit Transfer' to view the policy and procedures relating to this, as well as other information.

### [Submission of Coursework Policy](#)

You will have a set submission deadline for each piece of coursework. This policy explains how the deadline works.

### [Teaching Timetables](#)

Use the link above to find out when and where your lectures, tutorials, or labs will be taking place on your campus.

### [Use of Calculators in Examinations](#)

Refer to the link above to find out when you can use a calculator in an examination, and what kind of calculators are permitted.

### [Use of Dictionaries in Examinations](#)

Dictionaries are generally not permitted in exams. However, the following link details the exceptions and circumstances when a dictionary may be permitted.

## **Our Community**

### [Alumni](#)

Information on the opportunities available to students after they graduate from Heriot-Watt. These include membership of The Watt Club (Heriot-Watt's alumni association), how to network and connect with other alumni, and how alumni can give back to the University after they have left.

## **Armed Forces Reservists**

The University has signed up to the [Armed Forces Covenant](#) and we are committed to ensuring that current and former armed forces personal and their families are treated fairly. We will ensure that students who are reservists are not disadvantaged in their studies by undertaking compulsory training and service, and this includes the consideration of [Mitigating Circumstances](#) in assessments. You can discuss any issues relating to your service with your [personal tutor](#) .

## **Accommodation**

Information about student accommodation at each of our campuses

[Accommodation \(Dubai Campus\)](#)

[Accommodation \(Edinburgh Campus\)](#)

[Accommodation \(Malaysia Campus\)](#)

[Accommodation \(Scottish Borders Campus\)](#)

[Accommodation \(Orkney Campus\)](#)

## **Faith and Belief**

Heriot-Watt University respects religious and cultural diversity and aims to support individuals in their religious and cultural observance.

[Faith and Belief: Edinburgh Campus](#)

[Faith and Belief: Scottish Borders Campus](#)

[Faith and Belief: Orkney Campus](#)

[Faith and Belief: Dubai Campus](#)

[Faith and Belief: Malaysia Campus](#)

## **Residence Life**

Residence Life (Res Life) provide help and support for students living in University accommodation. This can be practical help and information, help with the transition to living in halls of residence, signposting to other sources of support and providing a calendar of social events.

## **Sport and Exercise**

Opportunities for a range of sport and exercise activities are available at all our campuses. From recreational fun to competition, there's a place in the WattFamily for everyone regardless of sporting ability or experience. The Edinburgh campus is also home to [Oriam](#), Scotland's Sports Performance Centre.

[Sport and Exercise: Edinburgh Campus](#)

[Sport and Exercise: Scottish Borders Campus](#)

[Sport and Exercise: Orkney Campus](#)

[Sport and Exercise: Dubai Campus](#)

[Sport and Exercise: Malaysia Campus](#)

## **Student Representation**

All students have representative bodies for their campus who will also oversee clubs and societies and organise events for students.

[Heriot-Watt University Student Union \(Edinburgh, Orkney and Scottish Borders Campuses\)](#)

All Heriot-Watt students at Scottish campuses are a member of the Student Union. In addition to the wide range of societies, the Student Union offers volunteering opportunities for students to get involved in and make friends and connections during their time at university. The Union regularly hold events and host campaigns for good causes. The Student Union can also provide advice and support for all Heriot-Watt students via the [Advice Hub](#) .

[Heriot-Watt University Dubai Student Council](#) is the primary representative body for all students at Dubai campus. Further details can be found on the Student Council's [Facebook](#) page

[Heriot-Watt University Malaysia Student Association](#) represents students at Malaysia campus, manages clubs, implements welfare projects and organises events for students.

## Supporting Success

### [Amendment to Enrolment](#)

Amendments can be made to a student's enrolment at any point during their studies. This can include Temporary Suspension of Studies, extension of study period or amendment to study level or method.

### [Assistive Technology](#)

We have a variety of assistive technology available at Heriot-Watt University. Our Technology Assistant is here to help you with the enabling technology that we have and can assist you with any queries or support needs.

### [Assistive Technology at Edinburgh Campus](#)

### [Assistive Technology at Scottish Borders Campus](#)

### [Assistive Technology at Orkney Campus](#)

### [Assistive Technology at Dubai Campus](#)

### [Assistive Technology at Malaysia Campus](#)

### [Attendance and Absence](#)

It is extremely important that you keep the University informed if you are unable to attend classes. Absence may affect your academic progress, so you should discuss with your personal tutor whether you may need to temporarily suspend your studies or apply for Mitigating Circumstances. If you are unable to attend an exam or complete an assessment due to an unforeseen absence beyond your control, such as significant illness, you will need to make an application for consideration of Mitigating Circumstances in writing with supporting evidence.

### [Big White Wall](#)

Big White Wall is an online support resource 24 hours a day every day which you can sign up to with your university email address then choose an anonymous username for your time on Big White Wall. You can use Big White Wall for help with a wide range of mental health and wellbeing issues.

### [Care Experienced Students](#)

We recognise that students with care experience are under-represented in higher education and are committed to offering support for you to study at Heriot-Watt. We can provide access to the advice, guidance, financial support and accommodation required to help you succeed at university. We offer a named point of contact and support within the University,

### [Caring Responsibilities](#)

Heriot-Watt University is committed to supporting students who are carers. A carer is anyone who cares, unpaid, for a friend or family member who due to illness, disability, a mental health problem or an addiction cannot cope without their support.

### **Change of Address**

For legal, academic and administrative purposes it is very important that the information the University holds about you is correct and up to date, including your address details. You can check and amend your personal information by logging in to [Student Self Service](#).

### [Childcare](#)

There is a nursery based at Edinburgh campus run by an independent company called Pinocchio's. At Scottish Borders there is no on-campus nursery, however Osito Nursery is close to the campus. You are advised to ensure that any nursery or childminder you use is registered with the Care Commission. Information about childcare provision in your area is available from the [Scottish Family Information Service](#). You may be eligible for help with

childcare fees through the Childcare Fund. Students wishing to apply must be home students who are fulltime, undergraduate and eligible for student loan support. Students must have applied for the maximum student loan available.

### [Complaints](#)

If for any reason you are unhappy with action taken (or not taken) by the University, or by the standard of service you have received, you may be able to make a formal complaint using the University's Complaints Procedure.

### [Counselling](#)

Being a student can be a very positive experience but there are also many challenges to deal with such as being away from home, being in a new country, exam pressures and building new relationships with friends. If you are worried about any issue or are thinking about dropping out of University we can offer you counselling, support, and information to help you deal with the difficulties you may face. It may be that you only need one appointment but can attend more if you wish

### [Data Protection](#)

Information about how the University uses and protects data.

### [Disability Support](#)

The Disability Service provides support for students with a range of disabilities (dyslexia and other specific learning difficulties, sensory impairment, mental health, medical and physical health conditions, Autistic Spectrum Condition). Let us know if you have a disability and we'll arrange an appointment. We also offer advice and screening if you think that you may have a disability. You may be eligible for additional funding from the Disabled Students Allowance. Drop-in times and contact details are available via the link above.

### [Discipline](#)

The University can take action against any student if they have committed an academic offence (such as plagiarism, collusion or cheating in an exam) or a non-academic offense such as improper use of, or damage to, university property, or unacceptable behaviour.

### [Discretionary Credit](#)

A student who has not achieved the minimum number of credit points necessary to qualify for consideration of an award or the minimum number of credit points to progress from one stage to another may be awarded the requisite credit points at the discretion of the Award Board or Progression Board, as appropriate.

### [Effective Learning Service](#)

Our global team of Effective Learning Advisers can provide advice and guidance on study skills for University work e.g. academic writing, study strategies, managing your time and effective group working.

### [Email](#)

Make sure you keep checking your Heriot-Watt email at least every day and use it if you need to contact the University. Sometimes mail from personal e-mail addresses is blocked by the University's IT systems, so use your Heriot-Watt e-mail to be sure your message gets through to us. Essential messages and information will also be available via myHWU the Student Portal.

### [Enrolment](#)

Enrolment is the formal process of becoming a student of the University, agreeing to abide by its rules and accepting any liability for fees or other costs associated with your studies. All new and continuing students must be enrolled while studying at Heriot Watt University. The enrolment process must be completed online at the start of each new academic year.

### [Equality and Diversity](#)

As well as meeting our [legal requirements](#) we make sure that people across the University

Community understand how they contribute to a Culture of Inclusion for All. This holistic approach helps us maintain an open and accessible working, living and learning environment where all are supported to reach their full potential.

### [Erasmus+](#)

Erasmus+ enables you to study or work in Europe as part of your degree programme, usually for a full academic year. At Heriot Watt students have the opportunity to study at a wide range of institutions in Europe.

### [Estranged Students](#)

An estranged student is "someone who no longer has the support of their family due to a breakdown in their relationship which has led to ceased contact. This might mean biological or adoptive parents or wider family members who have been responsible for supporting a student in the past". We recognise that estrangement causes particular challenges to students and the University is able to provide a range of support. If this applies to you, please get in contact.

### [Exchanges](#)

An exchange can be arranged with an institution abroad. This can be arranged with your school Exchange Coordinator but it is the responsibility of the student to complete the application for that institution.

### [Failing a course](#)

Failing a course may be a setback, but it is not necessarily a disastrous one. Students who have failed can go on to pass resits and still graduate with a good degree. If you fail a course it is important you discuss this with your personal tutor in the first instance. Your personal tutor will be able to offer advice on how to obtain detailed feedback and suggest sources of support.

### [Go Global](#)

Go Global is the University's inter-campus transfer opportunity and offers students the opportunity to study at a different Heriot-Watt campus.

### [Graduate Attributes](#)

Through your experience at Heriot-Watt University you will develop the skills and qualities of the four graduate attributes: specialist, creative, professional and global.

### [Graduation](#)

All the information you need to apply for and attend your graduation ceremony.

### [Guide to Student Life](#)

This A to Z guide, also available via the Student Portal, is another way you can access essential information on a range of issues you may encounter.

### [Harassment and Bullying](#)

Heriot-Watt University is committed to a working, learning and living environment that is free of discrimination and intimidation. If you feel that you are being bullied or harassed, in person or online, please talk to your personal tutor, or to Student Wellbeing.

### [Health and Wellbeing](#)

During your time at University it is important to look after yourself and use the resources available to help you with this, including Wellbeing Services, and medical and dental services.

### [Library Essentials](#)

Library essentials covers how to navigate the library service across campuses at the University. If you need to borrow a book or book out a study space this can be accessed from the library essentials webpage.

### [Library Resources for your Subject](#)

There is an Academic Support & Liaison Librarians supporting your subject or School. Together with [Library staff](#) at Malaysia and Dubai campuses they can provide advice and guidance on library resources and developing your information skills. See also the online subject guides for information about books, journals and online resources for each subject area.

### [Managing Your Money](#)

As a student you will find there is a lot to think about financially. For some of you, studying at university will be the first time you have had to manage your money and keep your expenditure within a fixed budget. Advice and support on money matters is available at all Heriot-Watt campuses.

### [Maternity and Paternity](#)

The University has a set of published guidelines to ensure that students who become pregnant during their studies know where to seek advice and support, including on matters such as returning to study following a period of maternity leave and on requests for shared leave or paternity leave.

### [Mental Health](#)

If you experience a mental health difficulty while at the University, or have a pre-existing mental health condition, you can discuss any issues and concerns with a professional counsellor or Student Advisor

### [Mitigating Circumstances](#)

There are circumstances which, through no fault of your own, may have affected your performance in an assessment (exams or other assessment), meaning that the assessment has not accurately measured your ability. These circumstances are described as 'mitigating circumstances'. You can submit an application to have mitigating circumstances taken into account.

### [Next Steps: Post result help](#)

Next Steps is a simple guide that can help you after you have received your course assessment results. The guide has information about importance of obtaining feedback from your assessments, and how to reflect and act on feedback to ensure you are more successful in your studies.

### [People Finder](#)

Find a key person on campus by using People Finder

### [Sexual Misconduct](#)

The University is committed to providing a safe environment that allows you to work, study, and fulfil your potential without fear of sexual misconduct and has a policy to combat sexual misconduct.

### [Software](#)

You can access a range of IT software provided by the University to help in your studies.

### [Student Success Advisors](#)

Nobody knows the challenges of being a Heriot-Watt student better than those who have been through it all themselves. With the benefit of recent experience and successful study at Heriot-Watt, the Student Success Advisors will be able to offer advice to students based on their own experiences. They will also have an overview of the other support resources available at Heriot-Watt and point you in the right direction if you need it.

### **Student Service Centre**

The Student Service Centre offers help and support relating to matters on enrolment, examinations, paying tuition fees, graduation, as well as advice for students holding a visa.

Dubai Campus: please contact [dubaistudentservices@hw.ac.uk](mailto:dubaistudentservices@hw.ac.uk)

[Edinburgh Campus](#)

[Malaysia Campus](#)

### [Student Fees, Funding and Additional Charges](#)

The University can give you advice about paying your tuition fees as well as information on scholarships and bursaries, and other means of financial support.

### [Student Policies and Guidance](#)

Our list of student policies can give you information on University regulations and guidance relating to issues including attendance, mitigating circumstances, mental health, and programme transfer.

### [Student Surveys](#)

Feedback from students is extremely important as it allows the University to further improve and enhance what it offers to students. Surveys give students the opportunity to feedback their thoughts and opinions to the University.

### [Temporary Suspension of Studies](#)

In certain situations, it may be in a student's best interests for them to suspend their studies temporarily to enable them to deal with particular issues and return at an agreed date. A Temporary Suspension of Studies (TSS) can be applied for and approved on the basis of genuine medical, personal, financial reasons or military service.

### [Thinking of Leaving](#)

If you are thinking about leaving university for whatever reason please talk through your decision with a member of staff at the university. Many students think about leaving university at some stage during their studies. If anything is bothering you or you are thinking about leaving, you can come along to a drop in to speak to a member of support staff to explore and understand all of your options.

### **Visa Advice**

Advice on visa requirements for studying at Heriot-Watt is available at all our campuses.

[Visa Advice: UK Campuses](#)

[Visa Advice: Dubai Campus](#)

[Visa Advice: Malaysia Campus](#)

### **Virtual Learning Environment (Vision)**

Vision is Heriot-Watt's Virtual Learning Environment (VLE) and is a vital learning and communication tool for you and your lecturers, so make sure you log in and check Vision every day. A Student Guide to VISION can be found [here](#).

## **Developing Your Skills**

### [Careers](#)

Careers advice and guidance is available to all students and recent graduates to help:

- Develop your employability skills
- Identify your potential career options
- Help you to find work experience/part time work
- Market yourself to employers

[Careers: UK Campuses](#)

Careers: Dubai Campus, contact Benita Maben, Careers Advisor, [B.Maben@hw.ac.uk](mailto:B.Maben@hw.ac.uk)

[Careers: Malaysia Campus](#), contact [MYCareers@hw.ac.uk](mailto:MYCareers@hw.ac.uk)

### [Career Mentoring](#)

Career Mentoring can connect a student with a professional working in a student's area of interest. The programme gives students an opportunity to gain an insight into what it is like working in a certain field. A mentor will also be able to support a student with their long-term career planning. This programme is mostly aimed at students in their penultimate year, however all students are welcome to apply.

### [Enhanced Transcript](#)

An Enhanced Transcript is a formal University document which will include not only details of your award and grades, but also a range of academic and extra-curricular activities undertaken whilst at University. The Transcript is designed to help you to maximise your employability as it records your University achievements in one document which you can share with prospective employers and postgraduate recruiters.

### [LinkedIn Learning](#)

As a Heriot-Watt student, you have full, free access to LinkedIn Learning. The platform hosts over 12,000 digital courses on business, creative and technology topics. These courses are broken into bitesize sections, making it easy to focus on developing the skills you need.

### [Maths Gym](#)

The Maths Gym is a cross-campus initiative aimed at supporting all HW students, from any subject, to strengthen their mathematical or statistical skills and gain confidence in applying these skills. We provide support through a variety of activities including:

- drop-in sessions
- one-to-one or small group appointments
- workshops.

Whether you want to brush up on basic skills or need help to understand new material from your course, the Maths Gym is there to help you.

### [Skills Development](#)

Studying at university gives you the opportunity to learn new skills or build on existing skills you already have. Information Services provide many workshops and resources to help you gain or develop the skills you will need to have a successful time at university.

### [Study Spaces](#)

Heriot-Watt provide a large number of modern and contemporary study spaces for both individuals and groups in convenient locations. Some of these spaces are open late, and offer IT access as well as food and drink.

### **Volunteering**

Volunteering offers you the opportunity to develop your skills and experience while helping your fellow students, your community or a charitable organisation. There are numerous opportunities for [volunteering](#) within and outside the University. The Careers service also provide [advice](#) on volunteering. Your experience as a volunteer can be logged and evidenced, and help enhance your employability.