MAC-MIGS Programme Handbook — 2019 entry

Important Dates in Year 1

		2019 (Room numbers are in the Bayes Centre unless otherwise noted)
	9-13 September	Arrival Week and UoE Registration
IW1	16 September	Office Induction, 10:00 Intro to Research Services 11:00 Welcome to MAC-MIGS, 14:15, all in room 5.10
	17 September	Photos for web 10:00 Get computer, e-mail and software sorted out How to get the most from a maths talk, 14:00, room 5.46
	18 September	Introduction to Unix, 9:00-12:00, room 5.10 Introduction to Python, 13:00, room 5.10 Taster Project Fair, 14:15, room 5.10
	19 September	MIGS PhD Talks, afternoon, room 5.10
	20 September	MIGS PhD Talks, morning, room 5.10 MIGSAA Annual Colloquium, 13:00-17:00, room 5.10
IW2	23 September	Generic skills talks, registration, etc. at HW 10:30-17:00
	25 September	Responsible Research & Innovation 9:30-12:00 & 13:00-15:00, room 5.46. Training Needs Interviews 15:10-17:20 room 5.46 (book a slot)
	26 September	Presentation Skills, 9:30-12:45, room 5.02 Python part 2, 14.00, room 5.02
	27 September	Training Needs Interviews 09:00-12:35 room 5.46 (book a slot)
IW3	1 October	Python part 3, 12:00-13:00, room 5.46
	2-3 October	Scottish Mathematical Sciences Training Centre (SMSTC) Opening Symposium in Perth. Stay overnight.
Semester 1	7 October	Semester 1 classes start
	TBC	This Is What We Do, dates/times to be confirmed
	10 October	Python part 4, 12:00-13:00 room 5.10
	18 October (tbc)	PhD Welcome Reception at Heriot-Watt, 4.00pm
	15 November	Group Project interim presentations, 10:00-11:30
	18 November	Presentation skills feedback & follow-up, 13:00-15:00
	22 November	Industrial Sandpit, Bayes
	29 November	Industrial Sandpit, Bayes
	12 December	Semester 1 classes end
	13 December	Group Project 1 final presentations and social event
	17 December	Group Project 1 report submission deadline
		2020
S	6 January	Semester 2 classes start

e m e s t e r 2	*TBC*	This Is What We Do, dates/times to be confirmed
	Mid February	Extended Projects and PhD matching process begins
	14 February	Group Project 2 interim presentations (note date change)
	13 March	Semester 2 classes end
	17 March	Group Project 2 report submission deadline
	start of April	Finalise Summer Project matching process
	11 - 13 May	Residential symposium, Field Studies Council, Millport, Cumbrae
	19 - 22 May	Modelling Bootcamp, Bayes
	End May	Progression Board - taught component
	24 June (TBC)	Extended Project interim presentations
	24 July (TBC)	Extended Project final presentations
	31 July	Extended Project submission deadline
	End August	Progression Board - full programme

Induction Programme Key Events

Monday 16th September
- 10:00, Bayes Centre Room 5.10. You will collect your building access card, your office keys and first payment.
- MAC-MIGS Welcome Event, 14:15, Bayes Centre Room 5.10 Welcome Event giving a general introduction to MAC-MIGS, a chance to meet your student mentor, and a reception to welcome you to the programme.

Tuesday 17th September
- Photo for web page, Bayes, 10:00
- Generic skills: "How to get the most out of a mathematics talk", 14:00, Bayes, 5.46. You'll be asked to to put this into practice at the Colloquium on Friday.

Wednesday 18th September
- Python Course starts, 13:00 in room 5.10. It continues over the next few weeks with 3 more sessions and practical work to complete.
- Group Project Fair, 14:15 room 5.10 You'll be completing a collaborative project during the first semester. This fair gives you a chance to see which projects are on offer, meet potential supervisors, and to begin to think about which one you'd like to pursue over the semester within a small group of fellow MAC-MIGS students. We'd like you to pick a topic that you are less familiar with.

Friday 20th September
- MIGS PhD students will give short presentations on their work.
- Annual CDT Colloquium, 13:00, Bayes Centre Room 5.10. This annual colloquium is organised by the MIGSAA CDT students (those in Years 2+) themselves. All PhD students and staff are invited. It features external speakers renowned for their expository talks. You will write a short account of one of the talks - you can choose which one. This will be followed by a drinks reception.

Monday 23rd September
- Generic Skills talks and Heriot-Watt Registration, 10:15 in CMT01, Heriot-Watt Colin Maclaurin Building. You will spend the day at the Heriot-Watt campus at Riccarton to complete the Heriot-Watt registration process that day as well as having two generic skills presentations: "Why should I collaborate?"; and "Mathematical sciences resources". In the afternoon there will be short talks by 4 new staff who work on MAC-MIGS research topics.

Wednesday 25th September
- Responsible Research & Innovation (RRI) training 9:30-12:00 & 13:00-15:00; Room 5.46. This is the start of a sequence of activities (there are further sessions to be scheduled) giving and overview of major RRI and Equality, Diversity and Inclusivity concepts.

Thursday 26th September
- Presentation Skills, 9:30 - 13:00, Bayes Centre 5.46. Initial training in presentation skills which you will be putting to use throughout the MAC-MIGS programme and, most likely, your future careers. A follow up feedback session comes a few weeks later, after you do your interim Taster Project presentations.

Wednesday 2nd October - Thursday 3rd October
- You will go to the SMSTC opening symposium in Perth to meet most of the new mathematical sciences PhD students from across Scotland, to hear about the details of SMSTC courses, and to learn about various aspects of being a PhD student and about skills for working in mathematical sciences research. Detailed information about booking and travel to this event will follow.

Training Needs Interviews - 25th or 27th September
- You will meet the Directors for an individual 25 minutes chat to explore the range of training which will be suitable for you and to discuss any other circumstances which might be relevant. We'll tell you how to sign-up for one of the slots.

Semesters 1 and 2

This Is What We Do (TIWWD) - continuing through Semester 1 and 2

The standard sessions will involve short talks from staff from both Heriot-Watt and Edinburgh Universities to talk about their research, as well as from our industrial partners to talk about potential projects. This is partly to give you a broad picture of the range of mathematics going on, and partly to give ideas for possible extended and PhD research directions. (Industry-stream students have this settled already.) We expect the rest of you to keep an open mind until we start matching you with extended and PhD projects and supervisors in Semester 2, and in particular *not to make any informal agreements with staff about supervision.*

Note for MAC-MIGS industry-stream students

All of the requirements of the programme apply equally to standard and industry-stream MAC-MIGS students. The only difference is the allocation of extended and PhD project topics and supervisors.

Programme in Year 1

The main part of the programme consists of two core courses, four elective courses, two group projects and a solo summer project. The total credit count is 180 SCQF credits[1]. The other generic skills activities and Python programming are treated as the preparatory parts for the core courses and projects. Each course and group project should take about 25% of your time during the semester. The table below gives an overview and details of the different parts.

Activity	Semester	Credits
Core Course 1	1	15
Group Project 1	1	15
Elective Course 1	1	15
Elective Course 2	1	15
Core Course 2	2	15
Group Project 2	2	15
Elective Course 3	2	15
Elective Course 4	2	15
Extended Project	Summer	60

Core Courses

Computational methods for data-driven modelling (Semester 1)
Topics include: optimisation, Bayesian inference, sampling methods, and uncertainty quantification. Uses an intuitive hands-on approach, with Python as a platform; includes case studies from our industrial partners.

Mathematical modelling and applied analysis (Semester 2)
A course providing emphasis on the mathematical foundations of modelling. It will include methods in analysis applied to ODEs, PDEs and SDEs with application to model reduction, inverse problems, data assimilation, etc.

Elective Courses

You should choose courses from the list below across the broad range of MAC-MIGS interests. The aim is to learn new things to get a broad education in the area as a basis for a wide range of PhD projects and for post-PhD employment. Unless otherwise noted, the details of the content of the courses below can be found on the Scottish Mathematical Sciences Training Centre web site www.smstc.ac.uk

You may take advanced level courses from the list below, or other courses from the taught postgraduate portfolio of both universities if they fit within timetable restrictions and are sensible for your development. This will be discussed with you in your training needs interview. Assessment for each course listed here is completed within a few weeks of the end of the semester, usually by one or more take away assignments during the semester. You may be required to complete assignments using LaTeX. You are expected to engage fully with the assessments and the results will be taken into account by the First Year

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[1] Each Scottish Credit and Qualifications Framework (SCQF) credit corresponds to a notional 10 hours of work.

Progression Boards in May and August.

Notes:
- progression to Year 2 normally requires an average of 65% or more in the six taught courses (2 core + 4 elective);
- you cannot accumulate more than 90 credits from courses in your first year.

Elective Semester 1 Courses - normally do 2 std	Level	Credits
Dynamical Systems and Conservation Laws	std	15
Asymptotic and Analytical Methods	std	15
Continuum Mechanics	std	15
Foundations of Probability	std	15
Measure and Integration	std	15
Regression and Simulation Methods	std	15
Advanced PDE I (Elliptic and parabolic)	adv	15
Stochastic networks in the presence of heavy tails	adv	15
Stochastic PDEs, applications and numerics	adv	15

Elective Semester 2 Courses - normally do 2 std	Level	Credits
Elliptic and Parabolic PDEs	std	15
Numerical Methods	std	15
Mathematical Biology and Physiology	std	15
Stochastic Processes	std	15
Functional Analysis	std	15
Modern Regression and Bayesian Methods	std	15
Advanced PDE II (Hyperbolic)	adv	15
Numerical analysis of PDEs	adv	15

Adv = advanced level provided by MIGSAA. Std = standard level

Projects

The Group Projects and Generic skills activities together should take about 25% of your time during semesters 1 and 2.

Group Project 1 (semester 1)
You will work together with a small number of other students under the direction of one or more members of staff on a short research investigation over the first semester. The end result will be a joint report submitted by the end of the semester, together with a brief presentation and production of a poster. The topic of the taster project should be from a different area from your initial ideas about your PhD research topic, and is intended to

broaden your outlook into less familiar areas. For example, if you've got your heart set on a main project within numerical PDEs then you could do a taster project on applied probability.

Group Project 2 (semester 2)

Groups will work on aspects of a real problem from industry or another discipline. Some problems will be described at an Industrial Sandpit in Semester 1. The project work not only provides insights into real-world challenges for mathematics and how mathematical scientists work with industry and other disciplines, but also provides general research skills training to give you experience in a broad range of activities that will be useful during and after your PhD, irrespective of your topic and later employment. Each group will have an academic supervisor and a contact from industry or another discipline. Ideally each group will have a mixed skill set so that some members can work on background theory, others on modelling, and some on efficient implementation. The output is a joint presentation on progress in the middle of the semester and a written report submitted at the end of the semester.

Spring and Summer: Extended Project

You will work on your own on an extended project under the direction of one or more members of staff. You will give a very brief presentation that outlines your topic at the Residential Symposium, a progress report presentation after a few weeks and the final submission of the written report (a properly structured document) and the final oral presentation is at the end of July. You will create a poster summarising your extended project work which will be displayed at the annual CDT Colloquium in September.

For students on the standard MAC-MIGS programme, a variety of possible PhD supervisors and topic areas will be presented in the "This is What We Do" series, and the matching process will follow in the Spring. Early in semester 2 we will ask you to give us a broad idea of the area or areas you are interested in. Then we will ask staff to come up with more detailed project proposals within these areas and have discussions with all involved to match students and projects. This will be guided by a combination of student and staff preferences, as well as the requirements of the two universities. Please do not make your own arrangements with staff outside the "official" process - we will not honour any such arrangement.

Students on the industry stream already have a designated supervisor and the general area for their projects, both Extended and PhD, is agreed in advance.

Normally we expect the topic and supervisor of the summer project to continue into your PhD. Confirmation of the match of students with PhD supervision teams will be made before the end of the summer. It would be possible to change topic/supervisor then.

Generic Skills

These activities are credited within the various core activities listed above. Activities will include Python, Responsible Research and Innovation, Working with Industry (Industry Sandpits and Modelling Camp) and Presentation Skills as well as other, short topics.

Presentation skills. This has been developed in partnership with Seeingstone Consultants, and addresses presentation of technical content clearly to specialist or non-specialist audiences. We cover: generic presentation skills; mathematical talks; and professional mathematical writing. Students get many opportunities to present their work over the year (3 projects, each with written and oral reports) and get detailed, constructive

feedback afterwards.

Responsible Research and Innovation. Some of the areas of academic research that relate to responsible research, equality, diversity and inclusivity will be presented and an overview of major RRI and EDI concepts will be discussed. We will consider what it means to discuss a system or model systematically and identify aspects of it that are relevant to responsible research, based on the book by O'Neil's "Weapons of Math Destruction", and discuss examples of models and RRI issues considered in the book. We will also consider how to read the academic literature in social science, ethics, and related fields that are relevant to continuing engagement with RRI and EDI, and how this differs from reading articles or textbooks in mathematics.

As a follow-up, on a periodic basis (e.g. every 2-3 weeks during term) there will be a guided discussion, occasionally with a short preparatory activity or reading to be completed in advance and otherwise prefaced by a short presentation or in-person activity, developing a focused topic of RRI. This will all be consolidated at the Residential Symposium (see below) by analysing your own research projects using the perspectives and concepts developed during the year. There will be short presentations of research projects and collectively analysis of projects through a structured discussion. This will set the stage for the ongoing RRI education that will take place in later years of the program, which will be more oriented around your own project and possible issues encountered in the work.

Residential Symposium

All MI CDT students go to a residential study centre each year along with a collection of academic staff to hear short talks from all the students about what they are doing. This is an opportunity for a bit of relaxation, for all cohorts to mix and hear about new and ongoing research projects, and incorporates a stage-specific half day workshop. This will be on RRI for Year 1 students.

Industry Events

Industrial Sandpits. Industry and agency partners will be invited to attend these events at the end of semester 1 to present current mathematical problems and engage with staff and MAC-MIGS students. Their talks will also provide insight into the role of mathematicians in the industrial setting and introduce current challenges faced by the partners relevant to the CDT. Some of the problems will feature in the modelling projects during semester 2.

The **Modelling Camp** is a week of group industrial problem solving, run jointly with ICMS in the Spring. The important requirement is to solve a real-world problem under time pressure and with limited information. In this context getting something that works is more important than sorting out fine details. Creativity and leadership play key roles. It is a carefully managed introduction to the very successful Study Group format. Students are guided by experienced academics and industry partners in tackling challenging problems.

Further Information for Year 1

Training Log (Year 1)

Your Training Log is a combination of an electronic file and a folder containing printed documents. You will be issued with a template Training Log file into which you enter summary details of the academic and generic training which you undertake on an ongoing

basis. Copies of your completed course assignments (in LaTeX where requested) should be given to the Administrator and they will be stored in your Training Log folder. It is important that you ensure the Log file and folder are kept up to date by sending updates to the Administrator regularly.

Details from the Training Log will be submitted to the MAC-MIGS Progression Board as part of annual progress monitoring. The Progression Board may make recommendations for training to you if needed. At the end of the PhD it will provide you and MAC-MIGS with a useful record of your activities over the years which should prove valuable in taking your first steps beyond the MAC-MIGS programme. More details are in the *Year 2 and beyond* section later in this document.

Workload Planning

Please bear in mind that you have to plan out your work to meet various deadlines. Most courses will have some kind of assessment handed out in the middle of the semester to be completed by or before the end of the semester, and another set handed out at the end, to be completed within a few weeks. It is inevitable that deadlines are grouped together. You have to plan for that so that you do not run out of time. This document has a list of activities with dates that are set as far in advance as we can manage. Please check them and make yourself available to attend them.

Teaching Opportunities

We strongly discourage you from taking on any teaching or tutorial duties in your first year. You will be busy enough without doing this extra work. From Year 2 onwards, you will have the opportunity to undertake some **tutoring** and **teaching** in the university of your principal PhD supervisor. See later in this document.

First Year Facilities

During your first year you will have a desk on the 5th floor of the Bayes Centre at 47 Potterow, which is also the headquarters of the International Centre for Mathematical Sciences (ICMS). The building also hosts other organisations. Please respect the other users, particularly when they are hosting events - it is a shared building and you do not have complete free-range in it. Please note that it is your responsibility to keep your desk and the kitchen areas clean and tidy. Access to the building is with your swipe card. This is a town-centre building and so there are common-sense security requirements which you must observe.

Students are usually free from 15:00 to 15:30 between SMSTC classes, and this has been designated as coffee break time. All students are encouraged to take this opportunity to have tea and coffee together: staff may also come along to speak with you informally at this time. MAC-MIGS will provide tea and coffee for use at this regular event.

The majority of teaching in Year 1 will take place in the MAC-MIGS Webinar Room 5.46 on 5th Floor, Bayes Centre.

Registration at Both Universities

During each year of study in MAC-MIGS you will be a registered student of both Heriot-Watt and Edinburgh Universities, no matter who your supervisor is or where your desk is. For the whole time you will be entitled to take part in courses, clubs, sports, and other activities at both places as any other student of these two universities. The final PhD

degree award for each successful MAC-MIGS student is a joint degree of both universities, with both university crests.

In your first year the Directors take the formal and legal role of PhD supervisor, even during your summer project. Your PhD supervisor will be Prof Ben Leimkuhler and second supervisor will be Prof Dugald Duncan. From Year 2 onwards your PhD supervisors will be determined by the project your are matched with.

Two e-mail addresses

As you are registered at both institutions, it is likely that both universities will contact you by e-mail from time to time, and they will use the e-mail address they have created for you. So you will have two "official" e-mail addresses. We need you to read messages from both of these addresses every day. A simple solution is to set an automatic redirect for these messages to whatever e-mail service you actually use.

Regulations

During your first year of study you will be covered by the regulations of the University of Edinburgh for all aspects of your programme. As well as observing the formal rules, we expect all students and staff to treat each other with respect. After your first year you will have an office on the campus of your main PhD supervisor and you will be governed by the regulations of that university.

Travel

While in your first year, you will occasionally have to travel to attend events throughout Scotland. In most cases we will ask you to arrange your own economy class travel well in advance: you will be reimbursed through the University of Edinburgh's eExpenses system. Reimbursement can only be made on valid receipts: please discuss with the Administrator for further information on this.

Please note that we do not expect you to spend more than a few days of year 1 attending conferences, summer schools etc. This applies during semesters 1 and 2 as well as during the summer project. All such trips have to be approved in advance by the Directors, and should not clash with the 1st year programme of activities detailed in the document. You will have far more flexibility and time for this during years 2-4.

Approved Absences

When you will be away from your desk, either due to attending an event or taking some annual leave, you should complete the form at https://info.maths.ed.ac.uk/ You are entitled to six weeks' leave per year. The main break periods are in the weeks between Semester 1 and 2, and immediately after you finish your extended project work at the end of July. Some time off at the end of Semester 2 might also be possible, but please check with the Cohort Director before making arrangements at that time since there are various activities whose exact timing will not be sorted out until closer to that time.

Progression to Year 2

We expect all of our students to progress to Year 2 without any trouble. However we do expect you to demonstrate your abilities and willingness to work. Progression from year 1 to year 2 requires the results for year 1 to be at a standard indicative of the desirability of continuing on to a PhD research project. In particular, we normally expect students to achieve marks of at least 65% on average (As and Bs in those graded that way) in the

taught courses (90 credits), at least 65% on average in the group projects (30 credits) and at least 65% in the summer project (60 credits). If a poor mark is obtained on an individual taught course or group project, we may require some extra work to be done to bring it up to an acceptable grade.

Progression is decided by the Progression Board whose members are drawn from the 1st year lecturers, project supervisors, MAC-MIGS role holders and an external examiner. It is convened by an independent chair. It meets twice: in May it considers all your course results, group project work and training participation in 1st and 2nd semesters and makes a preliminary decision for you to continue or to look for a way out (see below); in August we look at the extended project results and make the final progression decision.

In the unlikely event that things are not going well by Spring, and it's decided that the MAC-MIGS programme is not for you, the award of a Diploma or Certificate is possible depending upon the number of credits you have achieved and your performance in the taught component of the programme. There is also an exit route after the extended project in the summer. In such cases we will discuss options with you in detail.

Year 2 and Beyond

In Year 2 you will be given desk space at the university of your principal supervisor, but many MAC-MIGS activities will continue to take place in the town centre, usually in the Bayes Centre.

From Year 2 onwards you will mainly be working on the project for your PhD dissertation, but you are also expected to continue with further mathematical and other training. The outline requirements are:

- **Mathematical and scientific courses:** a total of 60 credits over years 2-4; at least 15 credits in year 2; and at least 15 credits in year 3.
- **Generic skills (GS):** 2nd year entrepreneurship course; seven other approved activities. (15 credits total)
- **Citizenship:** participation in MAC-MIGS events; attendance at relevant seminars in the two universities; participation in scientific conferences. (15 credits total)
- **Placement:** either in industry; or an extended research visit; or an extended period working with a group in a different discipline.

Notes:
- Many of these activities need approval in advance by the appropriate Director.
- It is not permitted to carry forward credits from "extra" activities or courses in year 1 into the categories above, or to trade off credits between different categories.

Mathematical and Scientific Courses

Each year, after consultation with the student body, MAC-MIGS will offer a selection of advanced courses which reflect the developing interests of students and staff. We expect to offer most courses no more often than every two years, but might vary this between one year and many years according to demand. We also have a travel fund (see later) to enable you to attend approved summer/winter schools elsewhere.

Generic Skills

The aim is to give you a broad background of skills, experience and information that will help you in your future careers and studies. A compulsory (pass/fail) unit of 15 credit equivalents is completed by satisfactory attendance at and participation in generic skills activities over years 2-4. In particular you must attend the 2nd year entrepreneurship course along with seven other different, approved activities from the lists below.

You are registered students at both Heriot-Watt and Edinburgh Universities, and so you can attend formal training courses and take part in other activities in either or both universities. Lists of courses are at

- Heriot-Watt University Centre for Academic Leadership and Development General information - https://www.hw.ac.uk/services/ald/research-students.htm
  Course dates - https://pdms.hw.ac.uk/index.php
- University of Edinburgh Institute for Academic Development
  https://www.ed.ac.uk/institute-academic-development/postgraduate/doctoral

and examples are given below.

The two lists below contains some specific suggestions. If you don't know what type of skill you are lacking, please seek advice by asking your supervisor, the Cohort Director or Training Director. Please record what you do in the **Generic Skills section of your log book**. Otherwise we will not know that you have done it.

Examples of Training (Short/Long Courses/Workshops)

- Using your voice effectively in talks - (called *Voice in Action* at HW)
- Data visualisation and presentation
- Scientific writing
- How to avoid unconscious bias
- Time management
- Research ethics
- TA training (full day)
- Communicating with industry
- CV writing
- Non-native Language course
- Computing Course
- Careers in mathematics presentations (Year 4)
- Interview training (Year 4)
- Viva training (Year 4)
- Other equivalent events agreed in advance

Examples of Experience Gained by Playing an Active Part as

- Student representative (participating in/organising multiple, smaller activities)
- Organiser of a scientific event with external participants/speakers (e.g. minisymposium), including getting funding (includes the Annual Colloquium)
- Organiser of a reading group (including logistics, room bookings, funding, etc.)
- Presenter/assistant in an outreach activity
- Organiser of a different outreach activity
- Tutorial assistant
- Trained marker
- Grant proposer - make a properly costed funding proposal to an outside body for an event, visit or other activity.
- Participant in "European Study Group with Industry" (not the Modelling Camp)
- Another equivalent role agreed in advance

Citizenship

We expect all PhD students to attend general mathematical activities such as seminars, discussions, colloquia and Edinburgh Mathematical Society (EMS) meetings. As your PhD project develops, we expect you to present results at and attend conferences. We have a travel fund to enable you to do this - see later. MAC-MIGS students are also expected to attend the residential symposium, industrial sandpits, MAC-MIGS Colloquium and other MAC-MIGS events each year.

Attending mathematical or scientific conferences, seminars, reading groups, MAC-MIGS events (annual colloquium, residential symposium, industrial sandpit, etc.) are **not Generic Skills**. These should be recorded in the **Citizenship section of your log book**.

Teaching Opportunities

From Year 2 onwards (but not year 1 - see earlier section), you will have the opportunity to undertake some **tutoring** and **teaching** in the university of your principal PhD supervisor. Both universities offer extensive training in running tutorials, marking and other aspects of teaching which can lead to HEA accreditation. MAC-MIGS students are strongly encouraged to take advantage of these schemes. Note that teaching contributes to your Generic Skills activity portfolio explained above.

MAC-MIGS Training Logs

You will continue to complete your MAC-MIGS Training Logs (folders and on-line) and keep them up to date. The Training Log folders will be kept in the MAC-MIGS Administrator's office most of the time. Material for storage in the folder, including copies of course assignments (with marks and comments wherever possible), certificates of attendance for summer schools etc. should be given to the Administrator at least once per semester. Other details should be entered in your on-line Training Log including

- Details of courses attended
- Details of generic skills events attended
- Details of seminar series attended
- Details of talks given
- Details of other activities (e.g. tutorial work)

You will be invited to view and update your Training Logs before the annual progression process takes place. You should discuss your Training Log with your PhD supervisor(s) from time to time to help you shape your overall training. You can request access to see what is in your folder at any time, but you must give the Administrator enough notice to make this practical.

Research Support and Travel Fund

The centrally organised and compulsory MAC-MIGS activities are paid for from a central budget. However, each student can also make applications for the use of individual research support funds. This is mainly for students in years 2-4. The amounts available and application processes will be detailed in a separate document. This allows students to obtain reimbursement for incurred costs from research activities, such as travel/accommodation costs to attend a research-related conference or the cost of specific scientific software.

We do not normally expect students to request access to their research support funds until

they have firmly established their PhD research topic at the end of the first year. If exceptional cases are approved for spending in year 1, we do not expect to allocate more than a few hundred pounds at that time.

It is important to note that **you must obtain our approval before making any purchases or commitments to pay for something** since we may reject some proposals or award only part of the funding. You would then have to pay the balance yourself.

General Information

Some key MAC-MIGS people:

Role	*Person*	*University*	*e-mail*
MAC-MIGS Administrator	Katy Cameron	Edinburgh	Katy.Cameron@ed.ac.uk
Director	Prof Ben Leimkuhler	Edinburgh	b.leimkuhler@ed.ac.uk
Co-Director	Prof Dugald Duncan	Heriot-Watt	D.B.Duncan@hw.ac.uk
Training	Dr Mariya Ptashnyk	Heriot-Watt	M.Ptashnyk@hw.ac.uk
Cohort Director	Dr Kostas Zygalkis	Edinburgh	K.Zygalakis@ed.ac.uk
Industrial Liaison	Dr Ben Goddard Dr Cathal Cummins	Edinburgh Heriot-Watt	B.Goddard@ed.ac.uk c.cummins@hw.ac.uk

If these role holders will change during the year, then we will keep you informed.
There are many more people involved in MAC-MIGS and you will meet many of them as the academic year progresses.

Help and Support

Moving to a new city and course can be stressful and confusing and there are various types of support we can offer. As first points of contact the MAC-MIGS Administrator and the Cohort Directors are happy to help. We will of course treat all enquiries, including those about medical conditions, as strictly confidential. There is specialised welfare support for students at both universities, but in your 1st year you should consult the Edinburgh University Health and Welfare information page at

https://www.ed.ac.uk/studying/postgraduate/facilities/health

and select the appropriate service from there. Medical conditions, including mental health issues, should of course be dealt with by a GP in the first instance. There is information on that web page about finding a GP.

One of your responsibilities is to keep us informed of anything that may affect your studies. This will allow us to make reasonable adjustment to the programme requirements for you if needed. This should be done through MAC-MIGS Administrator or the Cohort Director. We

will of course treat all information, including about medical conditions, as strictly confidential.

Glossary

CDT	Centre for Doctoral Training. In mathematical sciences these are usually funded by EPSRC.
EPSRC	(UK) Engineering and Physical Sciences Research Council
HW & UoE	Heriot-Watt (HW) University & University of Edinburgh
ICMS	International Centre for Mathematical Sciences. Situated on the 5th floor of the Bayes Centre. It serves the UK mathematical sciences community by running workshops and conferences, and hosting academic visitors. It is jointly run by HW and UoE.
MAC-MIGS	This CDT programme. MAC = Mathematical Modelling, Analysis and Computation. Has 5 intakes of students in 2019, 20, 21, 22, 23. Ends 2027. It is jointly run by HW and UoE, partly funded by them, and mainly funded by EPSRC.
MI	Maxwell Institute for Mathematical Sciences. It brings together research activities at UoE and HW.
MIGS	Maxwell Institute (for Mathematical Sciences) Graduate School. The MAC-MIGS and MIGSAA CDTs are part of this, but MIGS usually refers to the PhD programme for those mathematical sciences students at UoE and HW who are not part of the CDTs.
MIGSAA	Maxwell Institute Graduate School in Analysis and its Applications. The "old" CDT programme. 5 student intakes 2014,15,16,17,18. Ends 2022. It is jointly run by HW and UoE.
SMSTC	Scottish Mathematical Sciences Training Centre for PhD students. A collaborative effort of 8 Scottish Universities who together provide courses for PhD students via video conferencing.
SoM & MACS	School of Mathematics (UoE) & School of Mathematical and Computer Sciences (HW).

Notes About This Document

This document gives a summary of some of the key features and requirements of the programme as well as some rules of the two universities. We make every effort to ensure that this document is accurate, but of course the official programme specification and rules and regulations of the universities take precedence. Further details can be found on the appropriate university web sites or by consulting details on the MAC-MIGS internal page above. If in doubt, please ask!

11:25, September 17, 2019, DBD