



UNIVERSITY OF  
CAMBRIDGE

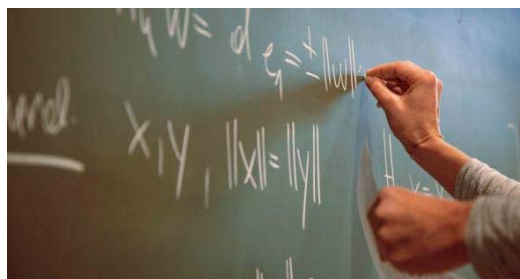
---

Department of Pure Mathematics and  
Mathematical Statistics

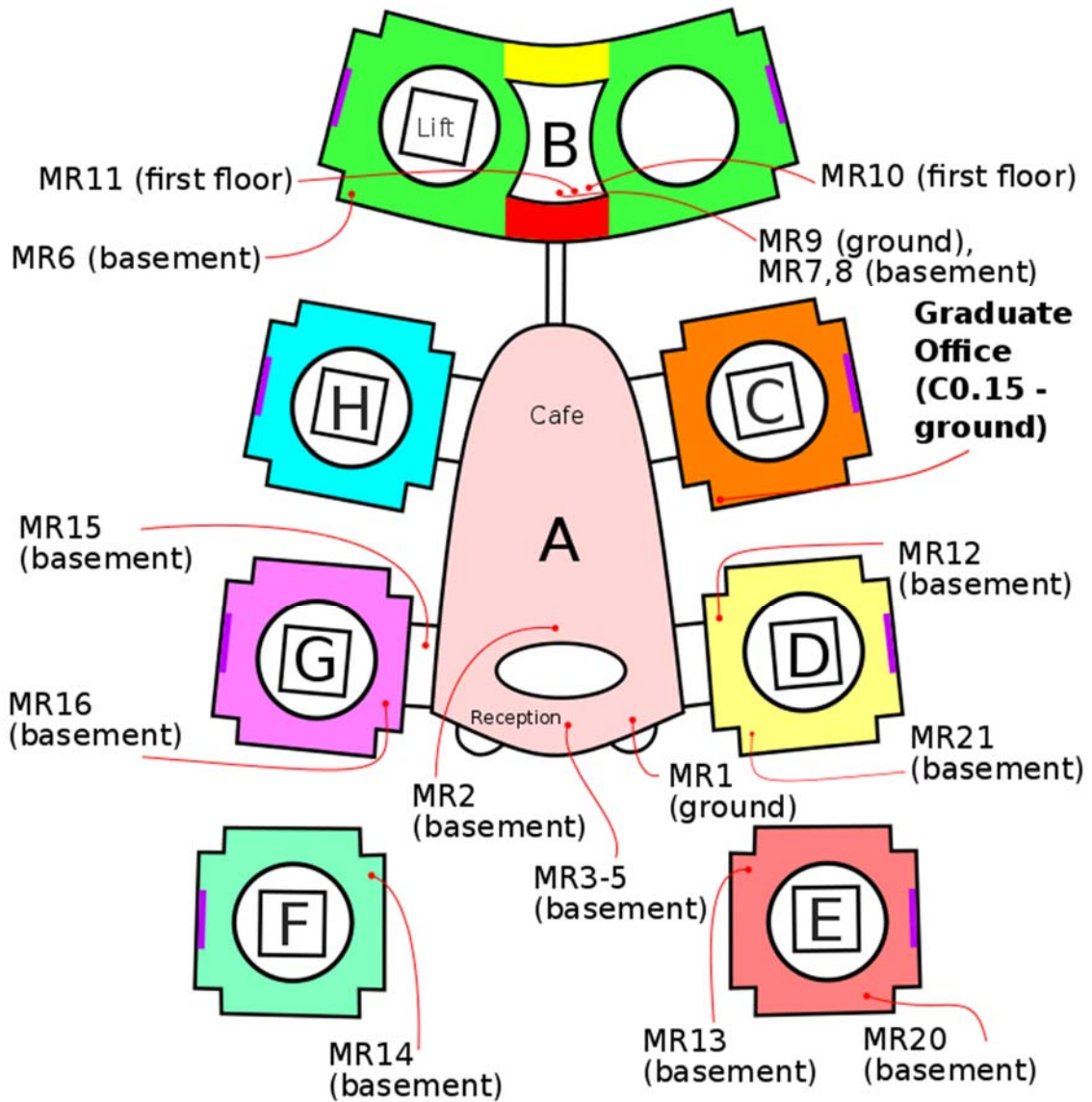
---

## Research Student Handbook

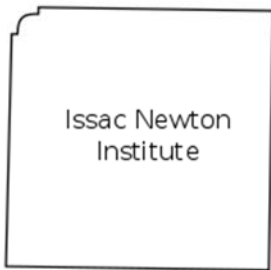
October 2018



Centre for Mathematical Sciences  
 Wilberforce Road, Cambridge



Access to MR1-5, MR13-16 is via reception in Pavilion A; disabled access is via lift in Pavilion D.



Issac Newton Institute

All pavilions except A have one lift each, marked above with squares.



Betty & Gordon Moore Library



Gatehouse

# CONTENTS

## Welcome Letter from the Head of Department

<b>SECTION 1 – INTRODUCTION</b>	<b>1</b>
The Faculty and CMS	1
The University	1
Your College	2
Equality & Diversity	2
Women in Maths	2
<b>SECTION 2 - GUIDELINES FOR STUDENTS AND SUPERVISORS</b>	<b>3</b>
Research at DPMMS	3
Your supervisor	3
Supervision: Meetings and Reports	3
Your adviser	4
Attendance in the Department	4
Lecture courses	5
Seminars	5
Conferences	6
Your PhD in outline: progress and funding	6
<b>SECTION 3 - RESEARCHER DEVELOPMENT</b>	<b>8</b>
Expectations	8
Recording and reporting on your activities	9
University Researcher Development Programme	9
Faculty Researcher Development Programme	9
Other opportunities	10
Further Information or Help	10
<b>SECTION 4 – PROGRESS WITH YOUR PhD</b>	<b>11</b>
Registration	11
Smith-Knight Rayleigh-Knight prize essay	11
Second year: optional report and interview	12
Between end of year two and submitting	12
Submitting your PhD and the Examination	12
<b>SECTION 5 – SUPPORT AND DEALING WITH PROBLEMS</b>	<b>14</b>
Dealing with Difficulties	14
<b>SECTION 6 – KEY CONTACTS</b>	<b>16</b>
Director of Graduate Education	16
Faculty Graduate Office	16
Departmental Administrator	16
Heads of Departments	16
Department Support Staff	16
Department Finance Office	16
<b>SECTION 7 – Departmental Information</b>	<b>17</b>
Access and Security at CMS	17
Bicycles	17
Cars	17
Catering Facilities and Common Rooms	17

Children	18
Computing	18
Disabled Students	18
Faults	18
Fire Safety	18
First Aid	19
Keys	19
Library	19
Mail Services	19
Phone	20
Photocopying	20
Safety	20
Seminars	20
Smoking	20
Stationery	20

**APPENDIX A: DPMMS RESEARCH STUDENT TIMELINE** **21**

## **Welcome to DPMMS**

Research is the central activity in DPMMS and graduate students are a significant component. Beginning research can seem daunting and we are keen from the start to provide encouragement and support. This handbook explains procedures and gives information and advice which I hope you will find useful as you start on your research path. Read it, and keep it on a shelf for future reference.

You are encouraged to ask your more senior colleagues for help along the way. More experienced PhD students, postdocs and also more senior academic staff all once started where you are now, so use their experience and advice.

The Department works best if the academic staff, postdocs and graduate students appreciate that they are part of one integrated research community and so naturally look out for each other. If at any point you have worries - whether mathematical or procedural - please do not hesitate to ask. There will always be someone happy to help.

Most of all, enjoy your time in DPMMS and make the most of it! Use opportunities to interact at seminars and to learn the key skills which will benefit your research career.

Professor James Norris, Head of DPMMS

## SECTION 1 – INTRODUCTION

As a research student in DPMMS, the department should be the focal point of your working life. This handbook explains how a PhD in DPMMS is structured, including key procedures for assessing your progress. It describes what is expected of you, and of your supervisor, and explains the roles of other members of the department who may also prove instrumental in helping you to succeed in your research. It contains advice on how to make the best of your time here, highlighting opportunities that will be available to you, but also giving guidance on how to deal with problems that may arise. Information for current graduate students can be found at <http://www.maths.cam.ac.uk/postgrad/current/information-current-phd-students>.

DPMMS does not exist in isolation, however: it belongs to the Faculty of Mathematics, and so do you, as one of its students. You are also a member of the University and of a College. Here are a few additional words of explanation:

### The Faculty and CMS

The Faculty of Mathematics (<https://www.maths.cam.ac.uk/>) comprises both DAMTP (Department of Applied Mathematics and Theoretical Physics) and DPMMS. Both departments are housed under the same roof, at the Centre for Mathematical Sciences, or CMS (<http://www.cms.cam.ac.uk/>). The CMS also hosts Cambridge Centre for Analysis and Cambridge Mathematics of Information, both of which are postgraduate training centres covering work in DAMTP and DPMMS.

The **Faculty Degree Committee** (<https://www.maths.cam.ac.uk/degreecommittee>) has key statutory duties and responsibilities in relation to all research students in Mathematics, from appointing a supervisor to recommending the award of a PhD.

The **Faculty Graduate Office** handles the administration of graduate affairs in the Faculty. It is located in Pavilion C room C0.15 and staff will be happy to give advice and answer questions in person, by email or phone. Key contact details are given in [Section 6](#). A full list is available on the website (<http://www.maths.cam.ac.uk/internal/admin/graduate-office>).

There are many joint ventures within the Faculty. In particular, the Faculty Researcher Development programme (see [Section 3](#)) has workshops that are led by one or other of the departments. Graduate Students from both departments are welcome and encouraged to participate in all the activities on offer.

### The University

The University has an over-arching role in administration and regulation, with rules that apply to research students in all subjects. The central University bodies for administrative matters relating to research students are the Student Registry and the Board of Graduate Studies (<https://www.cambridgestudents.cam.ac.uk/>)

The University issues a Code of Practice for graduate students which you should consult: <http://www.admin.cam.ac.uk/students/studentregistry/current/graduate/policy/quality/cop/>

The Code of Practice sets out the formalities of life as a research student in terms which are broad enough to apply to all PhD students in the University, whereas this handbook explains how the principles in the Code of Practice are implemented, in detail, within the department. You will be asked to sign a copy of the Code of Practice to confirm that you have read and discussed it with your supervisor and advisor.

You should also consult and familiarise yourself with the University web pages on research integrity (<http://www.research-integrity.admin.cam.ac.uk/>) and consider participating in the training provided (<https://www.research-integrity.admin.cam.ac.uk/training>).

### **Your College**

Your College is yet another institution that will be a key part of your life in Cambridge. Each college is an academic community, governed by its own rules and regulations. It will give you the opportunity to meet students and academics outside Mathematics, through a range of intellectual, social and recreational activities. Very importantly, your College can also provide support and advice if you encounter difficulties, whether these are academic-related or personal in nature. A primary point of contact is your College Graduate Tutor, whom you should arrange to meet at the first opportunity.

### **Equality & Diversity**

The Mathematics Faculty is committed to creating and maintaining an environment of mutual respect where everyone feels valued, listened to and protected from discrimination. We recognise that the safety and welfare of our staff and students is paramount to creating a safe and supportive learning environment and we ensure that staff are aware of how to put our commitment to inclusion in to practice.

We are currently developing a programme of initiatives aimed at enhancing the inclusivity of the environment in which we work and study, and strongly adhere to a zero tolerance approach to harassment and bullying based on sexual orientation, gender, race, disability or faith.

The Faculty has an LGBTQ+ mailing list. You can sign up for this at: <https://lists.cam.ac.uk/mailman/listinfo/soc-maths-lgbt> and you can send messages to the list at [soc-maths-lgbt@lists.cam.ac.uk](mailto:soc-maths-lgbt@lists.cam.ac.uk)

If you have concerns about any such matter, you are encouraged to approach, in confidence either one of the Faculty Equality and Diversity contacts: Stephen Eglon ([sje30@cam.ac.uk](mailto:sje30@cam.ac.uk) , G0.05), or Orsola Rath Spivack ([or100@damtp.cam.ac.uk](mailto:or100@damtp.cam.ac.uk),G0.09), or your College Tutor.

The Faculty of Mathematics has a Bronze Athena SWAN Award <http://www.ecu.ac.uk/equality-charters/athena-swan/> and also supports the principles laid out in the London Mathematical Society Good Practise Scheme <http://www.lms.ac.uk/women/good-practice-scheme>

### **Women in Maths**

Female mathematicians at all levels, from Part III students to University Officers, meet in an informal group several times a year, usually at lunchtime. For support, advice or just a chat, contact Perla Sousi (ps422) from DPMMS, or Carola Schönlieb (cbs31) (on sabbatical Lent Term 2019) from DAMTP.

The Faculty's Women in Maths pages ([www.maths.cam.ac.uk/women-mathematics](http://www.maths.cam.ac.uk/women-mathematics)) link on to the Athena SWAN pages and some profiles of female mathematicians in CMS, as well as the Emmy Noether Society (<http://emmynoethersoc.tumblr.com/>). The Emmy Noether Society aims to promote women studying mathematical sciences and host talks from female mathematicians and informal events between students and academics, from both Cambridge and other universities.



## **SECTION 2 - GUIDELINES FOR STUDENTS AND SUPERVISORS**

### **Research at DPMMS**

There are about 50 research students, together with a comparable number of postdoctoral research staff, who carry out research in a wide variety of fields. Academic staff, research staff and research students are organised into a number of broad research areas or groups. As a student member of the Department, you share with your more senior colleagues the responsibility of making the Department a stimulating place to come and work, and we strongly encourage you to engage with both academic and social activities on offer.

### **Your supervisor**

All research students carry out their work under the direction of a supervisor, who is normally a member of department academic staff, but may occasionally be a member of the research staff. Most students arrive knowing the identity of their supervisor. If you do not yet have a supervisor, one will be assigned after discussions within your research group.

The duty of your supervisor is to guide your research, and to monitor progress towards successful completion of your dissertation. To achieve this, they will be available to meet you on a regular basis (see below).

Your supervisor will suggest preliminary reading and possible research projects, help you to get started, and be on hand to provide assistance and advice. Some students may work collaboratively with their supervisors on certain projects, while others may work more independently, though still relying on their supervisor for overall guidance. When the time comes to prepare results for publication, or to draft sections of your thesis, you should expect your supervisor to read and comment on what you produce. They will guide you on matters of good conduct and integrity in research and on the academic conventions for acknowledging the work of others. Over the course of your PhD, your supervisor will also advise you about attendance at courses and conferences. They can also give valuable advice on the next stage of your career, after your PhD.

### **Supervision: Meetings and Reports**

Good communication is essential for a fruitful working relationship with your supervisor and it is most important that you keep in close contact. Supervisors are often very busy, so you must be proactive in your approach, especially if you are stuck or need help with a problem. Don't hesitate to send an e-mail to request a meeting if you find it difficult to track down your supervisor in person!

Individual supervisors will vary considerably in the detailed arrangements they make for seeing their students, but there are some general guidelines. In your first year you should expect to meet your supervisor at least once a week, on average, to review and discuss your progress at regular intervals. As time passes, your supervisor will still be available for weekly meetings if needed, but it may not always be necessary to meet so frequently, depending on your progress (if you need time to make headway with a complicated calculation, for example). At some stages you may also find it beneficial to have regular informal conversations (over coffee or after seminars, for instance) rather than a more formal meeting. Nevertheless, you should normally meet your supervisor for a detailed discussion at least every two to three weeks during



the course of your second year and into your third year. In the final stages of your PhD, as you are writing up, it may be best to arrange meetings simply as needed.

Your supervisor will keep a record of meetings and progress throughout your PhD and they will write regular reports on the Postgraduate Feedback & Reporting System (PFRS). You will be able to read these reports on CamSIS (<http://www.camsis.cam.ac.uk/cam-only/index.shtml>) and you should comment on them or discuss further with your supervisor as necessary. Reports are disclosed to the Department, Degree Committee, Student Registry and your College. If you have difficulty finding your reports you should contact the Faculty Graduate Office. The PFRS system allows for ad hoc reports to be submitted by the student, supervisor, department, Degree Committee, or College at any point during the year.

You will also receive an email invitation from the University to complete a self-evaluation report each year in Michaelmas term. Submission of this report is voluntary, but it provides a good opportunity for you to take stock of your own progress and to highlight any concerns that you have. The report you submit will be sent to your supervisor for comment, and you may wish to arrange to discuss it with them. If you do choose to submit a self-evaluation, this will replace your supervisor report for the term in question.

### **Your adviser**

Besides your supervisor, you will also be assigned an adviser, who will usually be another senior member of your research group. This person should have some level of expertise in your area of research but will not have a “hands on” role in your study. However, you are free to contact them for additional advice and, for example, if your supervisor is absent for a while and unable to supervise you, your adviser will probably be the person most likely to be able to help. Your adviser will be one of two assessors responsible for carrying out your third term registration review. Provided their engagement with your research has not become so involved as to cause a potential conflict of interest they may, with the Degree Committee’s agreement, act as the internal examiner for your PhD. If you are unsure who your adviser is, then ask your supervisor in the first instance, or the Graduate Office.

### **Attendance in the Department**

Experience has shown that coming to the Department on a regular basis is extremely beneficial for the progress of a student’s research. Accordingly, you are expected to keep regular hours, and to be present in the Department for a substantial part of each weekday, for example 0900 to 1730 or 1000 to 1830. Attendance is not expected at weekends or in the evenings (though you may, of course, come in if you wish). You are entitled to holidays (normally 6-8 weeks per year in total) and you are urged to take some holiday every few months to provide a proper break from study.

Please keep your supervisor informed if you are going to be away for an extended period, for whatever reason. Any planned absence of more than two weeks must be discussed with your supervisor in advance, and also with your College Tutor if you are an international (non-EU) student, since the immigration regulations require the University to keep track of students’ movements more closely. Most absences of more than two weeks require formal permission from the University (<https://www.cambridgestudents.cam.ac.uk/your-course/graduate-study/your-student-status/work-away-cambridge>).

## Lecture courses

You probably will continue going to one, possibly two, lecture courses during term time. It is a good way to continue learning, including learning subjects of only tangential relevance to your field. It is not difficult in a place like Cambridge to maintain a healthy breadth of interest; these can be a source of both information and ideas.

## Seminars

CMS has the potentially lethal luxury of an enormous choice of seminars. It is possible to suffer from seminar overload even when only attending the seminars which are of direct relevance to your own research. The problem then arises that you have little idea what your colleagues are doing, and no chance of the cross-fertilization from other fields which often seeds really interesting research. Moreover, in the beginning it is inevitably going to be the case that you will not understand the seminar talks even if the talk is within your subject. Nonetheless, going to seminars is important, and you must take advantage of these opportunities, right from the beginning. If the subject is unfamiliar, make note of new words/constructions. At tea following the talk grab a more senior student, and get them to explain. As a first year graduate student you are expected not to know things: take full advantage of this useful status. All available seminars should be listed on the Department website, as well as on [www.talks.cam.ac.uk](http://www.talks.cam.ac.uk), which also feeds to the monitors around CMS.

### *Subject seminars*

Almost certainly you will be part of a research group that has a regular meeting seminar during term. Make this an obligation, whether or not you understand even the title of the talk. The important point is to talk with people after the seminar, and be part of the group. There may also be reading seminars or junior seminars. Make these a must and be an active participant.

### *Reading seminars*

These can be relatively formal occasions in which the major part of a research group share out the responsibility to work through a paper or a book, or an extremely informal one, where two or three students get together to explain a paper to each other. This is an excellent exercise in whatever form it is offered: not only does it make reading the paper orders of magnitude easier, it gives those involved a common topic of interest.

### *General audience seminars*

These range from Colloquia to the Part III seminar series at the end of Michaelmas and Lent terms. This is your chance to broaden your knowledge. The Part III seminar series are particularly valuable as a chance to learn the basics in other areas in a relaxed setting. These are usually accorded lowest priority, but there are several reasons why you should attempt to get to these at least occasionally. First, as mentioned before, it will help prevent your interests from growing too narrow. Secondly, supporting these very useful series ensures that they will still be there when you need such an opportunity.

## Conferences

Going to scientific conferences is regarded as an important part of the training of research students (see below). Your first conference visit will usually be as an observer, but later you will be expected to present a poster or paper as appropriate.

The Department will normally provide support towards your attendance at meetings (national or international) during your three years of up to £500 per year. All students should seek funding from alternative sources, e.g. conference organisers, wherever possible.

Details of the process are available at <http://www.maths.cam.ac.uk/postgrad/phd-degree/time-away-department>. Forms are available from the website or hard copies can be picked up from outside C1.19)

A summary of the process is as follows:

**BEFORE** making any arrangements or committing to any expenditure you must:

- (i) Discuss the matter with your supervisor and obtain their approval.
- (ii) Contact your College (via your Graduate Tutor, if necessary) and any other possible sources to enquire about funding.
- (iii) Complete a pre-travel application form, to include a risk assessment, and obtain permission from the Department for your trip and, if appropriate, for funding support. Forms should be submitted to the Departmental Secretary (C1.20).

If you are planning on being away for more than two weeks you will require permission from the University to work away from Cambridge.

(<https://www.cambridgestudents.cam.ac.uk/your-course/graduate-study/your-student-status/work-away-cambridge>).

Once your application is agreed, for overseas trips it is ESSENTIAL that you take out University travel insurance. This is free of charge and can be arranged by visiting the page <https://www.admin.cam.ac.uk/offices/insurance/travel/students/bgs/index.html>

When you return from your trip, you will need to complete a reimbursement form and submit it to the Department Finance Office (C1.19). You must submit this with details of your actual expenditure supported by receipts in order to receive support from the department.

Some financial support may also be obtained from the Cambridge Philosophical Society <http://www.cambridgephilosophicalsociety.org>, which all research students are urged to join. Application forms and information about the Cambridge Philosophical Society are also available from the Graduate Office.

## Your PhD in outline: progress and funding

Most students' maintenance funding lasts for three years, and you are expected to complete your research and submit your dissertation no later than the end of your tenth term or very soon thereafter. A typical outline of progress would be as follows: the first year spent mostly reading the literature and attending courses while working on an initial 'starter problem'; the next 18

months spent carrying out the main calculations that will form the basis for your thesis; and the final 6-9 months spent writing up.

Your supervisor is required to post termly reports on your progress on CamSIS, which you may access via the page <http://www.camsis.cam.ac.uk/cam-only/index.shtml>. You are expected to read these reports, and to discuss them with your supervisor, as necessary. Other, independent, assessments of your progress are made at the end of your first year as part of the PhD registration process, and optionally, during your second year. (see [Section 4](#)),

No PhD student on a standard 3-year course is liable for University fees once these have been paid for 9 terms of study, but additional help with maintenance may be needed if writing up requires a tenth term. You may need to seek such help from a number of sources: from your funding body; from your College; and for instance from the Cambridge Philosophical Society <http://www.cambridgephilosophicalsociety.org>.

It is essential that you submit your thesis before the end of your fourth year (at which point you will automatically be removed from the Register of Graduate Students). If you think that you may have difficulties in meeting this deadline, you must discuss this with your supervisor at the earliest possible opportunity.

While your supervisor is available for advice and direction, you have the final responsibility for writing and submitting the dissertation, and for checking that the work in it is free from error. The work presented must be your own; if some of the material has been produced in collaboration, this must be declared. Your supervisor can advise you in doubtful cases.

## SECTION 3 - RESEARCHER DEVELOPMENT

The purpose of graduate study is not just to develop into a skilled mathematician who produces a PhD thesis, but also to learn the skills which will help you to have a successful career, whether in research and teaching, or beyond academia, for example in industry. Researcher Development (RD) is therefore an essential part of any research degree.

Whatever your abilities, your effectiveness as a mathematician will also depend on other skills: these include the ability to give good talks, write clear papers, negotiate with other department members, teach, run a research project, interact with and encourage others. We have a responsibility to provide opportunities for you to develop these skills. The policy within the Faculty is to give students the opportunity to develop their skills through taking on real responsibilities within their research groups and the Department, supported appropriately by more formal training.

### Expectations

You are expected to spend approximately 10 days each year in acquiring and developing your skills.

All first year students are expected to:

- undertake the SPS Core Skills Training Programme (<http://www.maths.cam.ac.uk/postgrad/phd-degree/researcher-development/faculty-researcher-development-programme/sps-core-skills>);
- attend the University Graduate Safety Course (<https://www.safety.admin.cam.ac.uk/training/graduate-safety-course/students>); and
- attend a Faculty supervision training session (<http://www.maths.cam.ac.uk/postgrad/phd-degree/researcher-development/faculty-researcher-development-programme/supervision-and>).

Each graduate student is expected to:

1. Undertake activities that help you to develop your core research skills, such as:

*Presentation skills:* Your work must be communicated to be effective. You learn communication skills primarily by giving talks and using feedback to make improvements. Giving talks and presenting posters at conferences, or participating in seminars and in reading groups are all good experience. In addition, you should consider attending presentation skills training.

*Writing Skills:* It is important to learn how to present your work clearly and you will need to acquire writing skills, in particular for scientific writing. In addition, you might wish to write more general articles. Throughout the course of your graduate work, you will be expected to write or contribute towards research papers for publication in scientific journals, and to submit written work as part of formal progress assessments. In your third year, you will have the biggest challenge of all - writing your dissertation. Various workshops are available to give you advice and practice. If your first language is not English, the Language Centre and Graduate Union can advise you on additional help.

*Good Academic Practice:* Your supervisor, as well as helping you on the academic side, will be responsible for much of your training, by helping you to acquire the

skills needed to survey the literature, show you how to organise your work and how to keep records, and to present your results in a clear and coherent way. They will be able to provide you with guidance on good academic practice. The University also provides guidance and training in these areas.

Different research groups have different ways of organising these aspects of your training but a general overview of what is expected is provided in the programme timeline (see [Appendix A](#)).

2. Learn skills in addition to those specifically targeted at your research, such as communication skills, outreach activities (helping with open days, Millennium Maths Project), organisational (helping with seminars, workshops), teaching, computing, learning another language, etc.

We strongly recommend when planning your RD that you aim to undertake a combination of both research related and transferable skills training activities. Whilst direct experience is essential, formal training sessions provide valuable opportunities to take stock and think about best practice.

### **Recording and reporting on your activities**

In June each year you will be asked to complete and return a log (template available on the website) giving details of the activities that you have undertaken to develop your skills, so please keep a record throughout the year of what you have done. The University provides the facility to download a customisable transcript of training that you have undertaken from different providers across the institution via the online RDLog system (<https://www.rdlog.admin.cam.ac.uk/>).

### **University Researcher Development Programme**

The Researcher Development Programme (<https://www.rdp.cam.ac.uk/>) are the central providers of researcher development support and training for graduate students in the University. They have developed the Cambridge Researcher Development Framework (CamRDF), designed to help structure your RD and facilitate your development into a professional researcher. It's important to realise that the skills of a professional researcher will be helpful to you during your studies and beyond. The CamRDF helps you to prepare yourself in fifteen competencies that will be valued by both academic and non-academic employers in an increasingly interdisciplinary and international context. The work required to complete your research and write your PhD thesis is one part of that process, but you will also be able to learn through formal training and by applying your skills in non-research situations.

### **Faculty Researcher Development Programme**

The Faculty Researcher Development Programme is open to DAMTP and DPMMS students and is organised into four key themes as set out in the table below. Current opportunities within each theme are provide here, with full details available on the website (<http://www.maths.cam.ac.uk/postgrad/phd-degree/researcher-development>). Events will be advertised by email and in the Faculty News Bulletin.

A.	Training programme for new PhD students	B.	Supervision/teaching training
A1.	<b>SPS Core Skills Training Programme</b> <i>All first year PhD students are expected to complete this programme which has been designed as a starting point for your researcher development</i> <a href="http://www.maths.cam.ac.uk/postgrad/phd-degree/researcher-development/faculty-researcher-development-programme/sps-core-skills">http://www.maths.cam.ac.uk/postgrad/phd-degree/researcher-development/faculty-researcher-development-programme/sps-core-skills</a>	B1. B2. B3. B4.	<b>Supervision and Teaching Training</b> <i>Mandatory training for those wishing to supervise</i> <b>Supervising more effectively in Mathematics</b> <b>Mental Health Awareness</b> <b>Part III Support activities (various)</b>
C.	Career development	D.	Transferable skills
C1. C2.	<b>Grants and Fellowships Applications Toolkit</b> <b>Alumni in Industry Event</b>	D1. D2. D3. D4. D5.	<b>Mathematics and Science Writing</b> <b>Computer training for Maths students</b> <b>Training in public and schools' engagement</b> <b>STIMULUS</b> ( <i>volunteering in schools</i> ) <b>Lunch and learn events</b>

### Other opportunities

There are other many other opportunities (e.g. Smith-Knight Rayleigh-Knight Prize essay; language training), and resources (e.g. Careers Service, National Training opportunities) available to you as a research student. Further details are available from the website (<http://www.maths.cam.ac.uk/postgrad/phd-degree/researcher-development/overview-researcher-development-training-opportunities>).

### Further Information or Help

For further information on Researcher Development or careers advice, please contact the DPMMS DGE (Dr Tom Fisher, [t.fisher@dpmms.cam.ac.uk](mailto:t.fisher@dpmms.cam.ac.uk)) or the DPMMS Departmental Administrator (Dr Vivien Gruar, [dpmmssec@maths.cam.ac.uk](mailto:dpmmssec@maths.cam.ac.uk)), or the Researcher Development Administrator ([researcherdevelopment@maths.cam.ac.uk](mailto:researcherdevelopment@maths.cam.ac.uk)). We encourage you to use your initiative and be proactive in developing your skills; if you have a new idea for training or would like information on funding for researcher development, then please contact us.



## **SECTION 4 – PROGRESS WITH YOUR PhD**

### **Registration**

During your first year as a research student your official status is probationary, and it is necessary to pass a progress examination before you can be registered for a PhD (there are similar arrangements across the University although the details may differ in other departments).

In DPMMS the progress examination is initiated in the third term, and involves you preparing a concise report, of no more than 1500 words, on the progress of your research. You may not have done any actual research at this stage, but that is no cause for alarm: write about what you have been doing and thinking about, and what you hope to do next. Your supervisor will be able to give you advice on what to include in the report. Although it does not form part of the formal progress examination, you are required to submit a Researcher Development Log alongside your 3<sup>rd</sup> term report. This will also be sent to your assessors for information. See [Section 3](#) for further details.

The report will be read by two assessors, one of whom is normally your adviser. The assessors will complete a report form which is sent to your supervisor, the Department and the Degree Committee. The assessors can recommend: (a) that you are registered for the PhD; or, (b) that a decision regarding registration should be postponed until a further assessment has taken place.

The outcome of the assessment will be communicated to you via your Supervisor. If you are recommended for registration, your supervisor, the Department and Degree Committee will review the report and, assuming all parties are content with the recommendation, your student record will be updated to show that you are formally registered.

If the recommendation is that a further assessment is required, it is not a disaster. In this event, you will be informed of the recommendation and why it is being made. The most common outcome is that a further review will take place (usually in the fourth or fifth term). The details of the arrangements in your own case will be set out by the Department. Registration is perfectly possible after a second review, and such a delay in registration has no effect whatsoever on the eventual outcome of your PhD.

### **Smith-Knight Rayleigh-Knight prize essay**

In your second year we encourage you to submit an essay in the Smith-Knight Rayleigh-Knight competition (<http://www.maths.cam.ac.uk/smith-knight-rayleigh-knight-prizes>). While it is rare at this stage that you will have done enough for a thesis or even a paper, it is a worthwhile exercise to write up your results. The essay may prove an extremely useful starting point when you begin to write your thesis, and the process also gives you a chance for self-reflection and to your review your progress. The rewards are modest, and the ranking of papers can provide unwelcome comparisons; nonetheless we would encourage you to take advantage of the opportunity, and to do so without attaching too much consequence to the outcome. In terms of experience you have nothing to lose and everything to gain. The deadline is the first day of Full Lent term. You will get an email reminder nearer the time.

## **Second year: optional report and interview**

The process of writing a report and holding a discussion about it has great educational value. It encourages you in the discipline of writing down your work properly and gives you the experience of expounding your work to those who have at least some understanding of your subject area. DPMMS therefore recommends that all students submit a more substantial report for review by, and discussion with, two assessors before the end of the second year (usually in the 5<sup>th</sup> term). This process has no formal role, and therefore is a good opportunity to receive informal feedback on your work and progress. You should discuss the possibility with your supervisor if this is an opportunity you would like to take advantage of.

## **Between end of year two and submitting**

Hopefully the act of preparing a report, and/or submitting a prize essay will have revealed profitable avenues to explore, and attempting to frame your own conjectures and write your own proofs will take up an increasing proportion of your time. You will have established a habitual relationship with your supervisor and found sources of support to complement that which your supervisor is able to provide.

Do not be surprised or discouraged if you feel as if you are getting nowhere. A thesis often depends on one small observation. Even established mathematicians have the experience of chasing blind avenues for months before stumbling on the solution, or even a completely different result than the intended one. Keep coming in to the Department. Keep going to seminars and courses. Pay even closer attention to the work of colleagues in neighbouring fields; when the obvious methods don't work, sometimes methods from other fields can be adapted. Keep talking; try explaining what you need to your colleagues. Often the process of trying to explain what you are looking for clarifies the situation so that you can see what you need.

By the time you come to write up your final thesis, you should have attempted to write at least three pieces of work, and indeed much of the background material and even the new material will have been presented in seminars. This will make the task of finalising your thesis easier, but do not underestimate the time it takes to produce the final version and start drafting chapters well in advance of your target completion date.

## **Submitting your PhD and the Examination**

The Faculty Degree Committee is responsible for overseeing PhD examinations, and the administration is undertaken by the Graduate Office. Guidance and forms are available from <http://www.maths.cam.ac.uk/internal/degreecommittee/exam-procedures>.

When you and your supervisor judge that your dissertation is around two months from completion, you send in an Appointment of Examiners Application Form, calling for examiners to be appointed, and giving the date of submission. The names of two examiners (one usually from your or a related group, one from outside the Department) are suggested by your supervisor, and formally appointed by the Faculty Degree Committee. You will be advised of the confirmed appointments in advance of submission, and have the right to appeal against an appointment if you believe there might be potential conflict of interest.

Please ensure that you read the University statement on plagiarism ([www.admin.cam.ac.uk/univ/plagiarism/students/statement.html](http://www.admin.cam.ac.uk/univ/plagiarism/students/statement.html)). Students should be aware that under University Policy any work submitted for assessment purposes may be submitted to Turnitin UK (text-matching software) for screening. Further details are available at (<https://www.plagiarism.admin.cam.ac.uk/turnitin-uk>)

The actual process of getting the thesis bound and submitted must be done in accordance with University guidelines. (<https://www.admin.cam.ac.uk/students/studentregistry/exams/submission/phd/>).

Prior to the oral examination, students are able to make a voluntary disclosure on grounds of disability or serious illness which will allow the examiners to make reasonable adjustments to the oral examination. Application is via the Degree Committee. See the website for further details, or ask the Graduate Office.

The examiners will contact you to arrange for the oral examination. Your supervisor will not be present at this, and it may well last 2 to 4 hours. The oral examination can take several forms, but typically you might be asked to give a short presentation and then be asked detailed questions on your dissertation. Your supervisor can normally offer you advice as to how to prepare. At the end of the oral exam you will normally receive some (purely unofficial) indication of the recommendation that the examiners will make to the Degree Committee.

The possible outcomes of the examination are given at the Board of Graduate Studies website <http://www.admin.cam.ac.uk/offices/gradstud/current/examination/>. Briefly, the possible recommendations are:

- a) the thesis is satisfactory for the award of the degree sought (pass); or
- b) the thesis should be approved subject only to correction (i.e. the thesis is essentially of a standard for the degree sought providing certain matters are put right to the satisfaction of one or both Examiners) (conditional pass)(*this is the most common outcome*); or
- c) the thesis requires revision such that the Examiners are unable to recommend the award of the degree sought without a fresh examination of a revised thesis. If the revision required is very substantial, the Examiners may indicate that a lower degree might be offered in lieu of revision for the degree sought. ('referral'); or
- d) the thesis can be approved for a lesser degree only or for no degree (failure).

When approval is deferred until more work has been done, a second oral examination is sometimes necessary. With all the safeguards and assessment that has preceded the examination, it is most unlikely that a thesis will be rejected outright at this stage.

All students submitting the final hardbound version of their doctoral thesis will also be required by the Board of Graduate Studies to submit an electronic version. Electronic theses should be submitted to Apollo, the University's institutional repository <https://www.repository.cam.ac.uk/>.

## SECTION 5 – SUPPORT AND DEALING WITH PROBLEMS

Although in the vast majority of cases a student's time passes in a trouble-free manner, there can be occasional problems. These might be personal in nature, or stem from failure to make progress with research. The department is committed to the welfare of students and there are various people you can turn to for help and advice. The first, of course, is your Supervisor; a second is your Adviser. In addition, the Director of Graduate Education (DGE), Departmental Administrator (DA) and Graduate Office Administrator are available to offer help and guidance to research students in difficulties. The DGE and DA will act as moderators in case of any complaint or disciplinary matter. Please contact one of them as soon as possible if there is a problem that is hindering your progress. Contact details are available in [Section 6](#).

Students with personal difficulties may also turn to their College Tutor, or the University Counselling Service ([www.counselling.cam.ac.uk](http://www.counselling.cam.ac.uk)). The Students' Unions' Advice Service provide independent advice for anything ranging from procedural matters to welfare support. Their website ([www.studentadvice.cam.ac.uk](http://www.studentadvice.cam.ac.uk)) also lists all the University's support organisations for various different things.

The Student Welfare website is a useful resource which includes a directory of advice and support for dealing with specific issues: <https://www.studentwellbeing.admin.cam.ac.uk/>

### Dealing with Difficulties

It is the intention to resolve problems or disputes within the Department, as far as possible.

#### (a) *Academic problems*

##### 1. Informal Procedure

If any serious academic problem (including lack of progress) becomes apparent, or any serious dispute between a student and a supervisor should arise, then the DGE should be consulted. The DGE will discuss the problems with the student in confidence and offer advice. If the problem is not resolved after a reasonable time, then the next step would normally be for the DGE to arrange an informal meeting with both student and supervisor to try to sort out any misunderstanding or disputes. The aim is to improve the relationship and communication between them so that a fruitful working relationship can be resumed. The DGE may on occasion find it necessary to consult the Head of Department.

If the informal procedure does not work, it may be necessary to follow a more formal procedure.

##### 2. Formal Complaints Procedure

For students who wish to make a formal complaint against their supervisor or to complain that they have not been permitted to continue on to a PhD, the procedure below will be followed:

- the student will be asked to prepare a written complaint and the DGE will ask the supervisor to prepare a response.

- the DGE will then review all the documents, including the reports made by the supervisor on the student, and vice versa.
- the DGE will meet with the student and a friend (to be another student or Graduate Union Representative) and meet separately with the supervisor. The DGE will then provide a judgement on the case to both parties.
- if the student or supervisor is not satisfied with the result, then the DGE will pass the paperwork, together with his written judgement (giving reasons), to the Head of Department, who will convene an *ad hoc* panel to consider the matter. The panel would consist of the Head of Department and three members of staff not in the group concerned but in cognate subjects (this may include a member of staff in a cognate subject from another department). The panel would be supported by one of the Departmental Administrators.
- the panel would have all the documentation available and would have the obligation to speak to the student (who might be accompanied by a friend or an Officer of the Graduate Union) and to the supervisor. The panel could, at its discretion, also call the DGE.
- the panel's decision, which - for the Department - will be final, will then be transmitted to the student, the supervisor, the Degree Committee, College and Board of Graduate Studies.

(b) *Disciplinary Problems*

Any complaint about a student's conduct will initially be referred to the DGE. If a *prima facie* disciplinary case is found, and if the matter cannot be resolved by negotiation between the parties (first trying an informal approach), then the complaint will be referred to an *ad hoc* panel as in (a) above.

In either of these cases, if a student does not accept the judgement of the DGE or the panel, then there is normally a right of appeal to University disciplinary bodies. The DGE and/or the student's Tutor can advise about the options available; see also the University web page <https://www.studentcomplaints.admin.cam.ac.uk/>

It is very rare for a PhD student in DAMTP or DPMMS to encounter serious difficulties. When they do, it is the policy at both DAMTP and DPMMS to offer help and support, to enable the PhD student to successfully complete their studies.

## SECTION 6 – KEY CONTACTS

Those who will be of chief importance to you in your life in the Department are your supervisor(s), your advisor, as well as your peers and colleagues. Beyond these, there are some who have particular roles.

### Director of Graduate Education

The Department has an appointed Director of Graduate Education (DGE) to oversee the PhD programme. If you have a problem which cannot be resolved by your supervisor or adviser then you can talk to the DGE about it. The current DGE is Dr Tom Fisher ([T.A.Fisher@dpmms.cam.ac.uk](mailto:T.A.Fisher@dpmms.cam.ac.uk); E1.09).

### Faculty Graduate Office

The Faculty Graduate Office (GO) provides a shared administrative service for both Mathematics Departments. It is located in C0.15 by the Pavilion C common room. Tessa Blackman ([purephd@maths.cam.ac.uk](mailto:purephd@maths.cam.ac.uk)) is the lead administrator for DPMMS research students and will be your main GO contact throughout your studies. Sarah Dodd ([grad-administrator@maths.cam.ac.uk](mailto:grad-administrator@maths.cam.ac.uk)) manages the GO and can advise on routine and non-routine matters. A list of the full team and who to contact is available here: <http://www.maths.cam.ac.uk/internal/admin/graduate-office>.

### Departmental Administrator

Dr Vivien Guar (C1.20, [dpmmssec@maths.cam.ac.uk](mailto:dpmmssec@maths.cam.ac.uk)) is the DPMMS Departmental Administrator (DA). She has administrative oversight of the Department, its finances and strategic planning. She works closely with the Head of Department, DGE and other senior academic staff. She is Secretary to the Departmental Graduate Education Committee, and is Secretary of the Faculty Degree Committee. Vivien can provide advice on finance and non-routine matters.

### Heads of Departments

DPMMS divides into two halves, Pure Mathematics and the Statslab. Professor Richard Samworth is Director of the Statslab, and Professor James Norris is Head of DPMMS. If there are problems within the Department which supervisors or the Director of Graduate Education cannot sort out, the Head of Department is your ultimate resource.

### Department Support Staff

Julia Blackwell (C1.01) is Personal Assistant to the Head of DPMMS, and the Director of the Statslab and should be contacted first if you need an appointment. From a PhD student perspective, Julia organises room allocations. John Shimmon (C1.05) looks after the office keys, and is also the port of call if you want to get your hands on some unusual stationary or if you want to arrange tea and biscuits after a junior seminar you might be organising.

### Department Finance Office

Faith Durup (Monday – Friday) and Angela Smith (Tuesday and Wednesday only) deal with finance queries and expense claims. They are based in C1.19.



## SECTION 7 – Departmental Information

### Access and Security at CMS

The main doors into Central Core are normally unlocked on weekdays between 8.00am-5.30pm, and on Saturdays from 8.30am-5.00pm in term time. Magnetically locked doors should not be propped open, or the alarm will sound. You need a *University Card* to unlock exterior doors and interior doors outside core hours. ***Keep your card on you at all times.***

Your College is responsible for providing you with a *University Card*, but it will need activating to work at CMS and will give you 24/7 access. Ask at Reception for activation of your card. If you wish to have out-of-hours access to the Betty and Gordon Moore Library, you will also need to take your card there for programming.

***If you lose your card*** report it immediately to Reception (65000) [reception@maths.cam.ac.uk](mailto:reception@maths.cam.ac.uk)

***Do not*** let strangers without keys or entry cards into the buildings and ***do not*** move computers without contacting the Computer Officers. Close manual windows and lock manual doors if you are the last to leave.

The University is not insured for *theft* of, or damage to, your personal property while you are on University premises, so if you bring a computer with you, you should take out insurance for it. The University is insured for *accidental personal injury* to staff, students and visitors while they are on University premises, *but only where the accident was due to fault on the University's part.*

### Bicycles

There are cycle racks at several points around the CMS site - please use these. A good lock is a necessity! Please take care **not** to lock your cycle to neighbouring cycles. *Cycles are not allowed inside the buildings or inside the courtyard between the Gatehouse and Pavilion A.*

### Cars

Unless you are registered disabled (and even then a place cannot be guaranteed) you will not be allocated parking.

### Catering Facilities and Common Rooms

The central dining facility is open from 09:00 to 16:00 for snacks, light lunches and coffee and tea. Please ensure you return your trays to the collection points and place all unwanted items in the appropriate bins. All cafeteria plates, cutlery, napkins etc. are made from Vegware and are biodegradable and should be placed along with any waste food in the bins marked as compostable waste. There are coffee machines in the common room in each pavilion and vending machines in Pavilion A and the Betty and Gordon Moore Library. Each pavilion has its own common room with fridge, kettle/water boiler, microwave and Flavia coffee machine; drink sachets for the Flavia machines can be purchased from Reception. Please wash and clear away any crockery and cutlery after use. The refrigerators should not be used for long-term storage of food as space is limited. Milk and sugar are provided for drinks are provide free of charge.

It costs the University twice as much to dispose of general waste as it does for mixed recyclables waste and one of many green initiatives within the University is to recycle as much waste as possible. CMS has one of the best recycling rates within the University; please help



us maintain and better this by thinking carefully about how you should dispose of the waste in your office / common rooms and select the correct waste stream.

### **Children**

Children brought onto the site should never be left unaccompanied. Children under the age of 12 are not allowed on the grass roof. Children should not be brought into the site routinely; the buildings are not designed and above all not used with their safety in mind (e.g. building work, doors and windows with automatic closers, congested car park, etc.). Anybody bringing a child into the site is responsible for that child's safety whilst he/she is on the premises.

The university offers some help with childcare (see: <https://www.childcare.admin.cam.ac.uk/>).

### **Computing**

New students are provided with information on getting started with IT, including the Maths Computer System at induction. Full information about your departmental computing services, including printing, are given at <http://www.maths.cam.ac.uk/computing>. For help and support with computing please email [help@maths.cam.ac.uk](mailto:help@maths.cam.ac.uk) / Ext. 66100.

**Do not** move computers without contacting the Computer Officers.

It is important that your computer monitor is running at the correct resolution for you. Please contact [help@maths.cam.ac.uk](mailto:help@maths.cam.ac.uk) if there is a problem.

### **Disabled Students**

The building was designed for universal access but please contact Mick Young (66915) for advice on your detailed access requirements. For the full range of support available via the Disability Resource Centre, please see <http://www.admin.cam.ac.uk/univ/disability> or contact your department Disability Liaison Officer, Vivien Gruar (37996).

### **Faults**

Report faults in your room (such as radiator or lights not working) to the Facilities Team by emailing [facilities@maths.cam.ac.uk](mailto:facilities@maths.cam.ac.uk). Serious faults that may affect the safety of occupants or security of buildings should be notified immediately during office hours to Reception (65000) or, if out of hours, to Security (31818).

### **Fire Safety**

Familiarise yourself with entrances, emergency exits and fire-alarm assembly points. In the event of the fire alarm sounding, leave the building by the nearest exit. ***Do not re-enter the building, even if the alarm has been silenced, until advised to do so.***

The external doors do not unlock automatically for security reasons; exit in the normal way. Assembly points are shown on posted site plans and Fire Wardens will direct you. Do not attempt to enter another building if the alarm is sounding there also.

In an emergency, and in the event of doors failing to open, break the glass in the **green** "break glass" boxes located alongside each door. Please report this to Reception/Security, as the doors will remain unlocked until the glass is replaced.

Fire alarms are tested in each building every Wednesday morning between 08:30 and 09:00. The alarm will sound for only a few seconds and for this brief period only it can be ignored; if the alarm continues to sound please evacuate the building. Fire Safety training is provided at CMS in Michaelmas term and you are encouraged to attend.

### **First Aid**

First Aiders may be summoned via Reception (**65000**). First Aid boxes are held in each common room in one of the cupboards and a First Aid room is located in the lower ground floor of Pavilion F. There is an automated external defibrillator (AED) sited on the buttress adjacent to reception leading to the entrance to Pavilion G common room.

If an accident occurs outside normal office hours, telephone Security on 31818. The emergency number for FIRE, POLICE or AMBULANCE is **via Security on 101, or 1999 on any network phone**.

All incidents must be reported to Reception, and a report form completed. Forms can be downloaded from <http://www.safety.admin.cam.ac.uk/publications/hsd020e-accident-dangerous-occurrence-and-incident-report-form>. The completed form should be handed to reception or emailed to [reception@maths.cam.ac.uk](mailto:reception@maths.cam.ac.uk).

### **Keys**

A key to your Office is obtainable from John Shimmon (C1.05). Keep your office door locked at all times when the room is unoccupied. Do not leave any valuables unattended.

### **Library**

The Betty and Gordon Moore Library, located on the CMS site, is the main mathematical, physical and biological sciences library of the University. Detailed information is available from <http://moore.libraries.cam.ac.uk/>. Please note that you must register when you first use the Moore. Having done so, students are entitled to full borrowing rights and 24-hour access.

Other libraries in Cambridge may be relevant to graduate students. For example, the University Library in West Road holds a large collection of older mathematical material. A complete listing of Cambridge libraries may be found at: [http://www.lib.cam.ac.uk/libraries\\_directory/libraries\\_directory\\_n.cgi](http://www.lib.cam.ac.uk/libraries_directory/libraries_directory_n.cgi).

The library discovery system is iDiscover (<http://idiscover.lib.cam.ac.uk>). Use this to search the University's libraries print and online collections using a single search.

There are many specialist print and online resources to support mathematical sciences in Cambridge, please see the Maths LibGuide at: <https://libguides.cam.ac.uk/maths>

You may find that you have to search existing academic literature for your work. The Betty & Gordon Moore Library's Research Support team will be happy to help you do this so get in touch with them to book an appointment: [moore-rso@lib.cam.ac.uk](mailto:moore-rso@lib.cam.ac.uk). The team also offers useful training sessions on a range of topics and they are advertised to all Maths students throughout the year.

### **Mail Services**

Long-term members of the Department have their own pigeonholes; others (including research students) have shared pigeonholes allocated by first letter of surname. The pigeonholes are on

the ground floor of Pavilion A, near to Reception. Outgoing mail should be placed in the trays in Reception, before 15:00 on weekdays. A University Messenger Service circulates between the University's departments and Colleges. Mail is collected by the UMS daily, and needs to be in the trays in Reception by 10:00. There are no mail services at weekends. Please ask Reception if you have any queries.

### **Phone**

Dial 9 before the number to obtain an outside line. Student phones are restricted for outgoing calls to local calls only. University numbers are mainly 3nnnn, and outside callers have to prefix another 3 to the number. For those numbers starting with 6nnnn, callers from outside need to prefix with a 7.

### **Photocopying**

There are photocopiers in each pavilion in the stationery rooms: C1.17, D1.16 and E0.23. Some of the photocopiers can also scan: both in C, and one each in D and E.

### **Safety**

The CMS Safety Officer, Mick Young, will give a short safety briefing for new students as part of the Introductory Meeting. It is important that all members of the Department staff observe safe working practices and inform the appropriate Safety Officer or the relevant Departmental Administrator, if they see anything giving cause for concern. The CMS safety policy is available at [www.cms.cam.ac.uk/safety/safetypolicy/](http://www.cms.cam.ac.uk/safety/safetypolicy/).

All accidents or near misses should be reported, whether or not they involve personal injury. Accident report forms are available from Reception and online at <http://www.safety.admin.cam.ac.uk/publications/hsd020e-accident-dangerous-occurrence-and-report-form> and the completed form should be submitted to the Laboratory or Site Safety Officer as appropriate.

Site Officers are:

- For the Laboratory: Dr Mark Hallworth (37841)
- For the rest of the CMS site: Mr Mick Young (66915)
- For DAMTP: Hannah Fox, Departmental Administrator (37863)
- For DPMMS: Vivien Guar, Departmental Administrator (37996)

### **Seminars**

Lists of forthcoming seminars within DAMTP, DPMMS and the nearby Isaac Newton Institute for Mathematical Sciences are displayed on the screens in the common rooms and Pavilion A and on the relevant web pages. See also [www.talks.cam.ac.uk](http://www.talks.cam.ac.uk).

### **Smoking**

Smoking, including electronic cigarettes and vapour pipes, is not allowed in any of the CMS buildings and is actively discouraged near entrances or automatic vents and windows. Ashtrays are provided beneath the cycle shelters around the perimeter of the site and the circular seating areas outside the main entrance to Central Core.

### **Stationery**

There are stationery rooms in each pavilion: C1.17, D1.16 and E0.23. If you need anything which is not provided in these rooms, talk to John Shimmon (C1.05).

## APPENDIX A: DPMMS RESEARCH STUDENT TIMELINE

Year 1	
October	Faculty and Department Induction
	Graduate Safety Training
	Supervision Training (Maths Specific)
November	SPS Core Skills Training Programme (automatic enrolment to moodle)
May	Student Meeting: Registration process and requirements
June	3 <sup>rd</sup> Term assessment: report submission deadline (last day Easter term)
	Researcher Development Log submission (last day Easter term)
Year 2	
January	Smith-Knight Rayleigh-Knight Prize essay deadline (first day full Lent term)
	Fifth term assessment (optional but recommended)
June	Researcher Development Log submission (last day Easter term)
Year 3	
June	Researcher Development Log submission (last day Easter term)
Year 4	
	You should aim to complete the write up of your thesis within your 10 <sup>th</sup> term
	Two months prior to submission request appointment of examiners
	Submission Deadline: end of September