



Mathematics

WELCOME TO THE DEPARTMENT OF MATHEMATICS 2016/17

On behalf of the entire Department of Mathematics, we welcome you to our MPhil/PhD Programme, and to this, your Research Student Handbook. You will find that the Department's relatively small size enables us to meet individual students' needs, wherever viable; its hallmarks are friendliness and a supportive environment for all our members.

You are joining a Department with a strong focus on the mathematics of the Social Sciences; it is well known for its research excellence and plays a key role within the School, providing expertise in mathematics related to quantitative social sciences such as Accounting, Economics, Finance, Decision Science and Statistics. No matter, therefore, what your chosen field of specialisation, your time at LSE will open up to you wider and ever-more inspiring intellectual vistas.

We encourage you to look through this booklet in your first few days at LSE. There will be parts you can skip now, but keep this booklet for later use; you'll then find that regularly turning back to this resource will guide you through your studies. Please do let us know if you think there is anything that should be added to assist future students.

There are many other places where you can find important information about the LSE and your degree. Where appropriate, we give pointers to those in this booklet; please do take the time to investigate these as well.

**Welcome to LSE and to the Department of Mathematics.
We hope you enjoy your time here!**

Bernhard von Stengel
Doctoral Programme
Director



Rebecca Lumb
Research Manager



Martin Anthony
Head of Department



Department of Mathematics
London School of Economics & Political Science
Houghton Street
London WC2A 2AE

Tel: 020 7955 7494
Email: PhD@maths.lse.ac.uk
Website: lse.ac.uk/maths
Twitter: [@LSEMaths](https://twitter.com/LSEMaths)
Blog: blogs.lse.ac.uk/math/

Our Three Roles

The Head of Department is in overall charge of all academic activities, people (both students and staff), and study programmes offered by the Department. The Doctoral Programme Director has a pastoral role towards the PhD students of the Department and is in overall charge of all academic aspects of the degree. The Research Manager deals with all non-academic aspects of the degree and should normally be your first point of contact for such matters.

Contents

| | |
|---|-----------|
| YOUR PHD | 5 |
| IMPORTANT DATES: ACADEMIC YEAR 2016-2017 | 6 |
| <i>Statement on Dates and Vacations</i> | 6 |
| NEW ARRIVALS, SCHOOL ORIENTATION, REGISTRATION AND FEES..... | 7 |
| <i>New Arrivals Information and Orientation</i> | 7 |
| <i>Programme Registration</i> | 7 |
| <i>How to Activate your IT Account</i> | 7 |
| <i>Certificate of Registration</i> | 8 |
| <i>Fees</i> | 8 |
| YOUR MPhil/PhD PROGRAMME IN DETAIL | 9 |
| <i>Departmental Orientation</i> | 9 |
| <i>Lead Supervisor and Second Supervisor</i> | 9 |
| <i>Doctoral Programme Director</i> | 10 |
| <i>Mentor</i> | 10 |
| GENERAL GUIDANCE FROM THE DOCTORAL PROGRAMME DIRECTOR | 11 |
| RESEARCH TRAINING | 13 |
| <i>Supervisory Meetings</i> | 13 |
| <i>Monitoring Student Progress – Progress Reports</i> | 13 |
| <i>Taught Courses for PhD Students</i> | 13 |
| <i>Postgraduate Taught Course Choice at LSE</i> | 14 |
| <i>Skills Training</i> | 16 |
| PHD OVERVIEW: YEAR BY YEAR..... | 19 |
| <i>Year One</i> | 19 |
| <i>Year Two</i> | 21 |
| <i>Year Three</i> | 22 |
| <i>Year Four</i> | 23 |
| <i>Special Arrangements for Students with Disabilities</i> | 27 |
| STUDY AND WORK | 28 |
| INTERRUPTION / ILLNESS / WITHDRAWAL / PROGRAMME TRANSFERS / CHANGE OF MODE OF STUDY | 29 |
| STUDY AND RESEARCH REGULATIONS..... | 30 |
| <i>General School and Programme Regulations</i> | 30 |
| <i>Regulations on Plagiarism / Academic Dishonesty</i> | 30 |
| <i>Seeking Outside Help During Your Research</i> | 32 |
| FINANCIAL SUPPORT AND FUNDING..... | 33 |
| <i>Financial Support Office</i> | 33 |
| <i>PhD Student Research Fund</i> | 33 |
| <i>Travel Insurance</i> | 33 |
| <i>Postgraduate Travel Fund</i> | 34 |
| <i>Santander Travel Research Fund</i> | 34 |
| YOUR DEPARTMENT | 35 |
| ABOUT THE DEPARTMENT OF MATHEMATICS | 36 |
| THE DEPARTMENT..... | 37 |
| <i>Members of the Department and Contact Details</i> | 37 |
| <i>Staff Academic Interests</i> | 39 |
| <i>Departmental Activities</i> | 41 |
| <i>Departmental Facilities</i> | 43 |
| <i>IT Facilities</i> | 45 |
| GUIDE TO WEB FACILITIES | 47 |
| <i>LSE for You</i> | 47 |
| <i>PhD Log</i> | 47 |
| <i>LSE Email and Webmail</i> | 47 |
| <i>Departmental Website</i> | 47 |
| <i>Departmental Social Media Accounts</i> | 48 |
| <i>Moodle</i> | 48 |

| | |
|---|-----------|
| PhD Portal | 48 |
| YOUR SCHOOL | 49 |
| LEARNING DEVELOPMENT | 50 |
| <i>LSE Study Toolkit</i> | 50 |
| <i>Learning Development Events</i> | 50 |
| <i>Language Support</i> | 50 |
| <i>Academic and Professional Development for PhD students</i> | 50 |
| PERSONAL DEVELOPMENT | 52 |
| <i>Personal Development Events</i> | 52 |
| <i>Student Wellbeing Service</i> | 52 |
| <i>LSE Personal Development Aide Memoire (PDAM)</i> | 52 |
| SCHOOL SERVICES AND SOURCES OF HELP, ADVICE AND INFORMATION | 53 |
| <i>Student Service Centre</i> | 53 |
| <i>Financial Support Office</i> | 53 |
| <i>Results and Transcripts of Results</i> | 54 |
| <i>Graduation Ceremonies</i> | 54 |
| <i>Degree Certificates</i> | 54 |
| <i>International Student Immigration Visa Advice Team (ISVAT)</i> | 54 |
| <i>The Language Centre</i> | 55 |
| <i>Student Study Advice</i> | 55 |
| <i>Residential Services Office</i> | 55 |
| <i>Dean of Graduate Studies</i> | 55 |
| <i>LSE Careers</i> | 56 |
| <i>LSE Volunteer Centre</i> | 56 |
| <i>Volunteering with LSE's Widening Participation Team</i> | 57 |
| <i>Alumni Association</i> | 57 |
| <i>Catering Services</i> | 57 |
| <i>sQuid Card</i> | 58 |
| <i>PhD Parent group</i> | 58 |
| <i>LSE Day Nursery</i> | 58 |
| <i>The Chaplaincy and Faith Centre</i> | 58 |
| <i>St Philip's Medical Centre</i> | 59 |
| <i>Business Continuity Management</i> | 59 |
| <i>Quality Assurance</i> | 59 |
| <i>Advisers to Students</i> | 60 |
| <i>Nightline</i> | 60 |
| <i>University of London</i> | 60 |
| GREEN IMPACT | 61 |
| <i>How to Live Sustainably at LSE</i> | 61 |
| THE LIBRARY | 62 |
| <i>Mathematics' Provisions in the Library</i> | 62 |
| <i>SCONUL Access Scheme</i> | 62 |
| <i>Accessing the Financial Times and The Economist</i> | 63 |
| THE LSE STUDENTS' UNION | 64 |
| STUDENT CHARTER | 65 |
| <i>Introduction</i> | 65 |
| <i>Our Vision</i> | 65 |
| <i>The LSE Community</i> | 65 |
| <i>Teaching, Learning and Assessment</i> | 66 |
| <i>Academic, Personal and Professional Development</i> | 66 |
| <i>Student Engagement</i> | 66 |
| <i>LSE And Your Future</i> | 67 |
| ETHICS CODE | 68 |
| <i>What Is The Ethics Code?</i> | 68 |
| <i>Who Does It Affect?</i> | 68 |
| <i>The Ethics Code</i> | 68 |



Mathematics

Your PhD

This section guides you through the key tasks and milestones you will encounter during your MPhil/PhD studies – from registration to graduation. You will find a year by year guide which you should frequently review to ensure you remain on track. Some processes happen only once, some occur every year and others will be a regular part of your LSE life.

Important Dates: Academic Year 2016-2017

Term Dates and School Closures

Michaelmas Term (MT)

Thursday 22 September - Friday 9 December 2016 (*teaching begins on Monday 26 September 2016*)

Lent Term (LT)

Monday 9 January - Friday 24 March 2017

Summer Term (ST)

Monday 24 April - Friday 9 July 2017

The School will also be closed on English public holidays*. In 2016/17 these will be:

| | |
|----------------------------|--|
| Christmas Closure | Thursday 22 December 2016– Monday 2 January 2017 |
| Easter Closure | Thursday 13 April – Wednesday 19 April 2017 |
| May Bank Holiday | Monday 1 May 2017 |
| Spring Bank Holiday | Monday 29 May 2017 |
| Summer Bank Holiday | Monday 28 August 2017 |

*Some facilities, such as the Library, may open on some of these dates. The School will issue updates throughout the year.

Statement on Dates and Vacations

When you register for a research programme, you are expected to reside within the UK in order to attend supervision meetings and taught courses at the LSE. In exceptional circumstances, the Research Degrees Subcommittee Chair might permit you to reside outside of the UK during the final stages of your research: for further information on residing outside of the UK please see the PhD Academy website: lse.ac.uk/study/PhDAcademy/a-z-of-guidance.aspx.

For full-time students, you will be registered for a maximum of four years, until you submit your thesis for examination. Part-time students are registered for a maximum of eight years.

For all registered research students **vacations are the Christmas and Easter breaks** in each year of registration. You are considered a registered student, continuing your studies during each summer vacation; this is therefore **not** vacation time. You can request one short vacation (of up to 4 weeks) during each summer vacation in years 1 to 3 (or 1 to 7 if part time). This does not normally apply in the summer of your final year when you are expected to be completing your thesis for submission. Vacations during the summer must be negotiated with your supervisor and Doctoral Programme Director in good time before you plan to leave. Agreed vacation periods should be notified to the Research Manager and the PhD Academy (Phdacademy@lse.ac.uk). If additional vacation periods of this kind are granted to you, this cannot then be used as a reason for needing to extend your maximum period of registration in order to complete your thesis.

New Arrivals, School Orientation, Registration and Fees

New Arrivals Information and Orientation

Please refer to the Welcome Guide 2016 for information on what's on during your first weeks at LSE. Welcome Week will be your opportunity to make friends and learn more about studying at LSE and living in London. You will be invited to attend a number of events throughout the week – some of which are optional and others compulsory. You'll also find information regarding what to expect after you arrive, how to open a bank account, what to do if you arrive early or late to LSE, crucial health information, how to set up your LSE IT account, School support services and much more: lse.ac.uk/intranet/students/yourFirstWeeks/welcomeWeek/home.aspx.

For those students joining the LSE in January of the academic year, the School holds a smaller series of orientation events. Further details will be made available at lse.ac.uk/intranet/students/home.aspx.

Programme Registration

At the start of the academic year, or as soon as possible thereafter, you will need to formally register on your programme of study with the PhD Academy (lse.ac.uk/study/PhDAcademy/home.aspx). New students need to do this in person, whilst most continuing students will be able to do so online.

To ensure new students are able to complete the registration process as quickly as possible, each programme is allocated a specific time slot in which to register at the beginning of the academic year. At Registration, you will be asked to provide proof of your eligibility to study in the UK in order to receive your LSE ID card. This card will, amongst other things, allow you to access your library account and to the Department outside core hours.

Students registering for their programme outside of the start of the academic year are welcome to visit the PhD Academy (fourth floor Lionel Robbins Building) any weekday between 10.00–16.30 during term-time. No appointment is necessary.

Each student will register initially for an MPhil programme. Such a programme will not result in examination for a PhD unless the student has been upgraded in accordance with the School's Regulations for Research Degrees (further details on this process can be found in this Handbook under "The MPhil / PhD Programme in Detail").

For more registration information, including schedules, how to provide your eligibility to study in the UK and information for continuing students, please see: lse.ac.uk/study/PhDAcademy/admissions-and-registration.aspx.

How to Activate your IT Account

Before you can use LSE IT facilities, you need to activate your IT account, which will give you a network username, password, and email address. This will enable you to log on to the LSE network and access your email at mail.lse.ac.uk. We recommend that you activate your IT account in the Library on registration day where you can easily gain assistance if you need it. However, you can activate your IT account from

any LSE public computer room, if you wish to do so.

You must know your LSE student number before you can obtain your IT account. This number is printed on your ID card and on all your LSE correspondence.

1. Go to any LSE-networked computer. Press the [Ctrl] + [Alt] + [Delete] keys.
2. You will see a Conditions of Use message. When you have read and understood this, click OK to go to the Windows 7 log on screen.
3. Type SELFREG (case sensitive) for both the username and password and click the right arrow icon (or press Enter) to access the account activation system.
4. You will not be able to activate your IT account unless you agree to the IT Conditions of Use. Complete the account activation form by typing the requested information.
5. You will be asked to choose a password for your network account. Follow the on-screen instructions for creating a valid password.
6. Your username and email address will appear on the screen. You may want to make a note of these details. For security, please do not write down your password.

If, for some reason, the activation procedure fails, go to the IT Help Desk on the first floor of the Library, opposite the lifts.

Certificate of Registration

A certificate of registration provides proof to organisations, such as the Home Office, council tax offices and banks, that you are registered as a current student at LSE.

Once you are formally registered with the School you will be able to print out your certificate via LSE for You (further details can be found in this Handbook under "LSE for You"). The 'Certificate of Registration' option can be found in the 'Certification and Documentation' section of LSE for You. Please be aware it can take up to 4 hours for your change in Registration Status to be picked up by LSE for You so you may have to wait a short time if you've just registered. If you require this certificate to be signed and stamped, staff at the Student Services Centre will be happy to do this for you.

If you require a certificate with information beyond what is on the Certificate of Registration please see lse.ac.uk/registrydocuments.

Fees

The School offers two options for payment of fees. You can either pay them in full prior to Registration or via a payment plan, Full fee information, including how to pay, can be found at

lse.ac.uk/intranet/LSEServices/financeDivision/feesAndStudentFinance/Paying%20fees/How_to_Pay.aspx. If you do not know the cost of your fees, please see the Table of Fees at lse.ac.uk/feesoffice.

Your MPhil/PhD Programme in Detail

Departmental Orientation

New research students are given a series of orientation meetings during their first few days at LSE, at which point they will usually meet the following people:

1. your lead supervisor, to discuss academic matters. Initial supervisory arrangements are made and an explanation given of the general intentions with regard to research, training and monitoring
2. the Doctoral Programme Director, who will introduce you to your fellow research students and other members of the Department, and make you aware of the areas of specialisation of the academic staff
3. the Research Manager to discuss funding and departmental facilities. An introduction to the departmental responsibilities of various members of staff will also be provided, alongside information on general School orientation, School registration, use of the Library, obtaining a computer account, and other appropriate School facilities
4. the Departmental Manager, to discuss graduate teaching opportunities within the Department.

Lead Supervisor and Second Supervisor

If not already ascertained during the application process, a research student's lead supervisor will be allocated during their first few days within the Department. It is expected that the student will conduct research in an area where their lead supervisor has some expertise. It is also anticipated that the lead supervisor and student will develop a good working relationship, meeting and communicating on a regular basis.

The role of the lead supervisor is to direct the student's research programme. That will normally involve proposing an area of study, suggesting research papers or books to read, pointing out particular research problems for the student to work on, and providing detailed feedback on work done. The lead supervisor will also offer advice and guidance on how to get research published, how to prepare and give talks, which conferences to attend, and which taught courses to take. The exact nature of the lead supervisor's role will vary to some extent from student to student, depending on their needs.

More formally, the lead supervisor is responsible for making regular reports on a student's progress (see "Monitoring Student Progress – Progress Reports" elsewhere within this handbook). Once the student is ready to submit their thesis, the lead supervisor will recommend the appointment of the examiners, and arrange for the examination to take place.

Each research student is also assigned a second supervisor. This is another member of the Department, normally with research interests or expertise related to the area of the student's research. If the student's lead supervisor has limited experience of PhD supervision, then a second supervisor will be appointed who has such experience. Typically, a second supervisor will be assigned within the student's first term of registration, following consultation with the student and the lead supervisor.

The second supervisor is an additional source of advice and guidance for the student. They will keep themselves informed about the student's progress, and will be able to

act, in most respects, as a back-up if the lead supervisor is away from the Department for a period of time (for instance, on sabbatical leave). In some instances, a student will consult with their second supervisor about research topics, but this is not always appropriate or necessary.

Some students in the Department have two co-supervisors instead of a lead supervisor and a second supervisor. It is possible for supervisory arrangements to change in the course of a student's studies, with the agreement of all parties, for instance if the student's research interests change or if the lead supervisor leaves the Department. In exceptional circumstances, it is possible to arrange for a specialist working outside LSE to take the role of a student's second supervisor, following a successful application to the PhD Academy.

Doctoral Programme Director

Professor Bernhard von Stengel, our Doctoral Programme Director (also referred to as 'DPD'), has overall responsibility for all aspects of the PhD programme. He appoints supervisors, approves continued annual registration and makes recommendations about any change of status (e.g. transfer from full-time to part-time, or interruption of study) and about upgrading from MPhil to PhD. He also monitors the progress of individual students, by receiving regular progress reports and, when necessary, by meeting with the student and their lead supervisor. When the DPD is also the student's lead supervisor, they may ask another member of the Department to stand in for them in this capacity (for example, the Head of Department).

The DPD is also available to give advice and guidance of a general nature: research students are welcome to approach him (for instance by sending an email to stengel@nash.lse.ac.uk) at any time.

If, for some reason, a student is unable to resolve an issue with the DPD, they should see the Head of Department.

Mentor

In addition to your supervisor, second supervisor and the Doctoral Programme Director, every PhD student can consult one of our PhD mentors. Mentors are Departmental academic members of staff who are not involved in your studies. You can arrange to meet with whoever you prefer by contacting them directly (or the Research Manager can arrange this on your behalf, if you prefer). The role of a mentor is that of a trusted advisor who can provide counsel, encouragement and career advice: someone who will generally take an interest in your development (as opposed to your academic progress). A mentor is independent of your supervisors and takes no responsibility for performance or assessment of your progress. Where students need more pastoral support the mentor may refer them to the Doctoral Programme Director.

2016-17 mentors are:

| Mentor | Website | Contact Details |
|----------------------------|--|--|
| Prof Martin Anthony | maths.lse.ac.uk/Personal/martin/ | M.Anthony@lse.ac.uk |
| Dr Andy Lewis-Pye | aemlewis.co.uk/ | A.Lewis7@lse.ac.uk |
| Dr László Végh | personal.lse.ac.uk/veghl/ | L.Vegh@lse.ac.uk |
| Dr Giacomo Zambelli | personal.lse.ac.uk/Zambelli/ | G.Zambelli@lse.ac.uk |

General Guidance from the Doctoral Programme Director

This is a necessarily vague description of what conducting research in mathematics is all about, and what skills a student can expect to acquire as part of their research training. The details of the training, and of the student's experience, will inevitably vary enormously from student to student. As ever, it is imperative for a student to take responsibility for their own learning.

A PhD is awarded on the basis of a student's ability to carry out independent, original research of high quality and to submit a thesis within a maximum of four years. A research student typically grows into the role of an independent researcher, under the guidance of their lead supervisor and others within the Department, rather than first being formally 'trained' to perform research and then setting out to do it.

There is a vast amount of mathematical literature on an enormous range of topics, and a student beginning their research career cannot be expected to be familiar with even a small corner of this literature. A student should begin with some idea of what areas of mathematics they find appealing, and possibly what tools they are comfortable with, but they will normally be reliant (at least initially) on their lead supervisor for information about the frontiers of current knowledge, and about the previous work and techniques they will have to familiarise themselves with in order to tackle a specific research problem. A student should not be surprised if they find themselves devoting most of their time at the beginning of their studies to reading and understanding existing literature.

On the other hand, research requires an active willingness to 'attack' mathematical problems, which should be started early with small toy problems or variations of examples discussed in research papers. This active mode, rather than just 'learning' from the literature, should be practised early on; it is a danger to postpone this in favour of 'ever more learning', which can be an excuse not to get down to conducting research. The lead supervisor will give guidance on this. It is a known marker that a PhD will be more successful if the student has a research result of their own (which may only be small) at the end of their first year, and has not simply just passed their courses.

One of the skills that a student should acquire by the end of their studies is how to go about searching for information on a given mathematical topic, and how to appraise and assess research papers. For example, the website "Google Scholar" lists papers on a topic together with other papers which cite it, which allows students to find cross-connections beyond the references listed in the paper itself.

It is normal in mathematics, more so in some fields than others, for two or more people to collaborate in research. For a student, this will normally involve working with their lead supervisor, but sometimes they will have the opportunity to work with others as well (joint work may be included as part of a PhD thesis, provided it is declared as such). One arrangement is for the student and lead supervisor to sit together and discuss how to attack a problem in fairly general terms, working out what is likely to be true, and what methods are likely to be successful, and then for the student to try and work through the details, and report back at the next supervisor meeting.

Of course, one goal of such joint research is for the student to learn about the research methods applicable in their particular field. A general lesson is that it helps to

be familiar with a wide variety of techniques, including some from entirely different branches of mathematics. During the PhD, students are strongly encouraged to broaden and deepen their knowledge of mathematics in general, partly in case what they learn is relevant to their own research, but also generally to prepare them for a career as a mathematician. As described in the "Research Training" section of this handbook, there is a formal requirement for students to take taught courses in their first year, and students are strongly encouraged to continue to attend courses in future years as well.

It is normal in mathematics for research to be published as a paper in a specialist journal. A student will learn the particular skills of mathematical writing, partly by reading papers written by others, but mostly by writing up their own results and getting feedback from their supervisors and peers. Eventually, these skills will also be put to use in writing the thesis.

By the end of the PhD, a student should have become an expert in the particular area of their research. They should have a good working knowledge of the literature, and should be keeping abreast of the latest developments in the field.

In the course of their studies, students should take the opportunity to attend seminars, workshops and conferences, and to meet with other researchers in their field. Part of the purpose of this is to learn about what problems in the area are attracting attention, and what interests other people. It is also important for a student to see their own research in a wider context, and to become part of a community of researchers. To this end, it is crucial for a research student to take every opportunity to present their own research at seminars and conferences; especially for the first few presentations, the lead supervisor will normally give advice on how and what to present in a talk.

Research Training

Research training is likely to vary to some extent, dependent upon the research topic and the preferred methods of the lead supervisor. What is described below should be considered a standard minimum:

Supervisory Meetings

A research student should meet with their lead supervisor on average once a week during term-time to discuss progress. These regular meetings with the lead supervisor will constitute the major part of a student's research training on a mathematics PhD; their purpose is to review work done and to agree further work. Advice or guidance may be given regarding directed reading and in election of taught courses to be followed, as well as to participation in conferences and graduate schools, when appropriate. **All meetings must be recorded in the PhD Log**, available via LSE for You (lse.ac.uk/lseforyou) – full details can found in this handbook, under the heading "PhD Log".

Monitoring Student Progress – Progress Reports

Two formal **progress reports** should be submitted to the Doctoral Programme Director each academic year; one in the Michaelmas Term and the other in the Summer Term. They should include a record of meetings with the lead supervisor, a review of work carried out, including information about any research articles that the student has produced, a review of courses and conferences attended and a brief plan of work to come. They should be signed off as a fair record by the student and their lead supervisor. In the case of first-years, the form in the Summer Term leads to decisions concerning their major review.

Taught Courses for PhD Students

Taught courses comprise an important part of a student's training, as they are intended to provide a broader knowledge of mathematics, including areas outside of the specialised domains of a student's own individual research project.

All first-year research students are required to attend a minimum of four taught courses. For those students working in financial mathematics this will usually comprise a number of units organised by the London Graduate School in Mathematical Finance (LGSMF). Students working in other areas of mathematics will be required to take courses from the selection offered by the London Taught Course Centre (LTCC). Lead supervisors will advise on taught course selection.

A student may, with the agreement of their lead supervisor and the Doctoral Programme Director, substitute one or more LSE Masters Course for courses offered by either the LGSMF or the LTCC. Some courses will have restricted access and you will need to apply to the department teaching the course for permission. For more information please see:

lse.ac.uk/intranet/students/registrationTimetablesAssessment/Registration.

For students joining us part-way through the academic year, some taught courses will not be available until the start of the following academic year.

There will be examinations for most of the courses offered by both the LGSMF and LTCC. Students should be aware that their Major Review, which usually takes place within the first fifteen months of registration, will take into account performance in these examinations. Where examinations are not held, students will be expected to provide clear evidence of their attendance and achievements to their lead supervisor and the Doctoral Programme Director at the Student Progress Interview (further details on this process can be found in this Handbook under "Reviews and Upgrade from MPhil to PhD"). Evidence will take the form of feedback, certification of attendance and performance in course assessments.

Postgraduate Taught Course Choice at LSE

Courses are chosen via LSE for You (LFY), LSE's web-based self-service student administration system. If you are attending a course and not taking the assessment for it, please contact Phdacademy@lse.ac.uk. Please see below for links to the various courses and registration details.

Taught/online courses and examinations -

lse.ac.uk/intranet/students/registrationTimetablesAssessment/Registration/Course/Graduate/pgcoursechoice.aspx.

Course choice opens for browsing during Welcome Week so that you can get used to the system; you will not be able to make any selections during this period. The system opens fully from 23 September 2016 but you will only be able to access the 'Graduate Course Choice' option in LSE for You once your admissions paperwork is completed. The deadline for course choices for postgraduate students is 10 October 2016. The system will re-open at the beginning of Lent Term so you can make any changes that are needed for Lent Term.

To choose your courses first visit lse.ac.uk/coursechoice. Here you will find links to the programme regulations which outline your available course choices and a course guide for each of those. You will also find tutorials on how to use the Graduate Course Choice system.

Many courses have 'controlled access' and you will need to apply to the department teaching the course for permission to take it, before you can select it. If such an application is required, it will be indicated in the system. You can make applications to take these courses within the system. Your overall selection of courses is also subject to the approval of your home department, care of your lead supervisor.

Results from LSE postgraduate taught courses can be obtained by requesting your transcript from the PhD Academy.

Some departments allocate places to seminars centrally whilst others permit you to choose using the seminar signup facility in LSE for You. Personal Timetables can be viewed there too.

Methodology courses - lse.ac.uk/methodology/courses/Home.aspx.

Academic and Professional Development courses -

lse.ac.uk/study/PhDAcademy/academicAndProfessionalDevelopment/home.aspx.

- **London Graduate School in Mathematical Finance:**
londonmathfinance.org.uk

The London Graduate School in Mathematical Finance (LGSMF) is a consortium of the mathematical finance groups of Birkbeck College, Brunel University, Cass Business School, Imperial College, King's College, UCL and LSE. Its main purpose is to provide a programme of advanced courses in mathematical finance, primarily but not exclusively for first-year PhD students in the various groups. The programme started in October 2006 and continues for its eleventh year in October 2016.

Ideally, students will attend all modules provided by the LGSMF during the course of their MPhil/PhD studies. In a student's first year, we recommend you attend a minimum of four taught courses in your first year, to be agreed with your lead supervisor.

In general, each course will be given at the lecturer's home college. Each course will consist of 10 weekly sessions of 3 hours. All PhD students from the member institutions are free to attend the courses provided by the LGSMF. The courses offered in 2016/17 can be viewed at londonmathfinance.org.uk/3.html.

In addition to the courses, there are specific seminars for PhD students: once a term, a PhD day takes place, providing the most advanced PhD students with the opportunity to present their work in front of other students and academics, and to help prepare them for larger seminars and international conferences. The next date for this event will be announced by Dr Umut Çetin (LSE).

Further information on the courses offered by the LGSMF, including timetabling arrangements, can be found on their website at the link above.

To register on any of the courses, you should, in the first instance, contact Dr Johannes Ruf (LSE). You should then email Udomsak Rakwongwan (King's College London; lgs-fm@kcl.ac.uk) to register as a participant in the programme. Your message should state which Department and University you are from, and who your lead supervisor is. Please also notify Rebecca Lumb (Research Manager; R.C.Lumb@lse.ac.uk) of your choices.

- **London Taught Course Centre:**
www.ltcc.ac.uk

The London Taught Course Centre (LTCC) was formed to foster the training of doctoral research students in the Mathematical Sciences. Its courses cover key areas of statistics, applied mathematics and pure mathematics, with the goals of providing students with an overview of these areas, and of acquiring a working knowledge of classical results and recent developments not only in their own broad research fields but also outside the specialised domains of their individual research projects. There is a wide range of expertise among the staff of the institutions currently in the LTCC consortium: UCL, Queen Mary (QMUL), Imperial College (Statistics), King's College, City, Kent, Brunel, Royal Holloway, The Open University and LSE.

The vision for the LTCC stems directly from the finding of the international review of UK research in mathematical sciences commissioned by EPSRC, that

while the UK PhD standard remains high, recent changes in content of undergraduate degrees along with pressure for PhD completion resulted in reduced opportunity for PhD candidates to study mathematical sciences outside the immediate areas of their research projects.

The LTCC is one of six networks supported by the EPSRC. The programme has an emphasis on direct teaching and personal contact rather than distance learning – taking advantage of the excellent transport links in the London region. The programme includes modular lecture courses and short intensive courses. First-year Discrete Mathematics, Operational Research and Game Theory research students will be expected to attend four of the LTCC's basic courses, which run for five weeks each and usually take place on Monday (although exceptions may apply in individual cases; please check with your lead supervisor to confirm how many courses you should be taking). They will cover a variety of topics and be taught by staff from the different partner institutions. There will also be advanced courses directed towards second and third year PhD students. The courses are usually taught at De Morgan House, a few minutes' walk from the LSE.

For more details please contact Nisha Jones (LTCC Administrator) – office@ltcc.ac.uk

Full information on the courses offered by the centre including full text syllabi, timetables and registration forms can be found on their website at the link above.

In line with EPSRC guidelines, there will be 'light touch' assessments for every module, both basic and advanced. Basic exams will take place in the Lent Term. Assessments for advanced courses will take place at the end of each module.

Skills Training

Students will be encouraged to attend appropriate conferences, both nationally and internationally. Information about summer schools, research competitions and poster/abstract calls will be publicised and applicants will be supported by the Department. Opportunities to teach our undergraduate students and represent the Department on committees are also provided.

Student Seminar Series

lse.ac.uk/maths/Seminars/Research_Seminars.aspx

- Joint Mathematics and Philosophy Reading Group on Game Theory (lse.ac.uk/maths/Seminars/Game_Theory_Reading_Group.aspx)
- Financial Mathematics Reading Group (lse.ac.uk/maths/Seminars/Financial_Mathematics_Reading_Group.aspx)
- PhD Seminar on Combinatorics, Games and Optimisation (lse.ac.uk/maths/Seminars/PhD-Seminar-on-Combinatorics,-Games-and-Optimisation.aspx)

These seminar groups are intended to form an important part of a research student's formal training. They provide students with a regular opportunity to make presentations on topics they are interested in. This may take the form of a survey of current knowledge or an explanation their own work. Your lead supervisor will be able

to help guide your choice of seminar topic. The aims of the seminars are to improve students' presentation skills, to provide structure to students' research reading, to foster communication within the research group and, inevitably, to broaden their knowledge. These workshops are also an opportunity for LSE research students to meet peers from other Mathematics Departments within the University of London. Attendance at the PhD Seminar on Combinatorics, Games and Optimisation is compulsory for PhD students working in the areas of discrete mathematics, operational research, game theory and probability theory; Financial Mathematics and Game Theory students are required to attend their Reading Groups. Students are expected to give at least one talk per academic term; this should not be a daunting prospect - rather than being additional workload, giving talks is an opportunity to discuss your work and progress in a responsive environment.

Please note that although there are four separate meetings aimed at different research areas, students are strongly encouraged to attend talks at meetings not specifically aimed at them. In addition, students will be advised to regularly attend:

- the Seminar on Combinatorics, Games and Optimisation (lse.ac.uk/maths/Seminars/Seminar-on-Combinatorics-Games-and-Optimisation.aspx)
- the Joint Risk & Stochastics and Financial Mathematics Seminar ([lse.ac.uk/maths/Seminars/Risk%20 Stochastics-Maths_Dept_Joint_Seminars.aspx](http://lse.ac.uk/maths/Seminars/Risk%20Stochastics-Maths_Dept_Joint_Seminars.aspx))
- the London Mathematical Finance Seminar Series (londonmathfinance.org.uk/14)

as well as other appropriate mathematics seminars in London, as applicable.

Class Teaching

In addition to the research training provided, all our research students are offered the opportunity to teach for the Department (graduate teaching is a requirement of all LSE Studentship recipients), subject to a successful interview. This is an opportunity to acquire some valuable skills and experience, especially for those students intending to go on to an academic career (as well as to earn some additional money, if you are not an LSE Studentship recipient). The majority of class teaching opportunities are in introductory mathematics courses; it will rarely be possible for research students to teach within their own specialised area. The LSE provides comprehensive certificated class teacher training to support new teachers. If you opt to teach, you will be provided with a copy of our Class Teaching Handbook; an extensive document detailing what we expect from our class teachers and the support you should expect from the Mathematics Department and LSE as a whole; the Handbook also provides useful guidance and advice on teaching and marking. A compulsory LSE training course must also be attended. Students who are interested in teaching should contact the Research Manager in the first instance.

PhD Workshops

We run an occasional personal development workshop for PhD students, designed to provide tailored support for specific areas of interest, such as careers, impact, final year processes, etc. You will find materials relating to these workshops in the specific **Department of Mathematics Research Students Moodle course** (located by searching for "Maths PhD").

Staff Student Liaison Committee (SSLC)

At the start of the academic year you will be asked if you would like to represent your programme on the SSLC. These important Committees meet once a term and provide

a forum for feedback from students on their programme and for discussion of issues which affect the student community as a whole. The role of an SSLC representative is central to effective quality assurance of courses and programmes in the School; representatives will be provided with training.

SSLC members include both student representatives (ideally one from each year of the programme) and appropriate academic and professional services staff. Representatives are expected to attend all SSLC meetings, but any research students are welcome. If you are interested in being a representative, please contact the Research Manager.

The SSLC also elects one representative to attend the relevant School-level Students' Consultative Forum. More information on the Consultative Fora can be found at lse.ac.uk/studentrepresentation.

Women in Mathematics seminar series

The London Mathematical Society for some years has run "Women in Mathematics" seminars and events to help promote the careers of women in mathematics and to provide support, advice and networking opportunities. The Department of Mathematics will be supporting its staff and students in a similar way by running a termly lunchtime academic and professional development seminar series which focuses on issues of particular interest to women in Mathematics. For each seminar we plan to invite a prominent female mathematician to introduce their area of research to our students and discuss other issues of relevance to the group. While our female UG, MSc, PhD students and academic staff are especially encouraged to attend these seminars, everybody is welcome.

These seminars will be held on Wednesday afternoons when there is no timetabled teaching. Look out for an invitation from the Research Manager confirming the dates and times to book your place.

PhD Overview: Year by Year **(Reviews and Upgrade from MPhil to PhD)**

The Department expects each registered student to be able to complete a PhD within the School's four year time limit; the length of time available gives a strong indication of the amount of work required to achieve the goal of carrying out PhD-level research and submitting your thesis.

The Department has a formal process of reviews to check whether a student is on course, to provide timely guidance if not, and, ultimately, to determine whether registration may continue. If a student's studies are proceeding well, it is possible that some stages of review may be more 'light-touch' than is suggested. Each step is highlighted below.

Year One

Registration and Orientation

Registration takes place in the PhD Academy, LRB 4.03; for further details please see the "Registration" section of this handbook. In addition to departmental welcome activities, the School runs a number of events during Welcome Week aimed at new research students.

Attendance

Whilst registered, you are expected to be in regular attendance at the LSE for workshops, seminars and supervisory meetings (usually held weekly and reported in the PhD Log (see "Monitoring Student Progress – Progress Reports" in this handbook). If you are going to be absent from the School for more than 2 weeks you will need to notify your department and the PhD Academy; the way in which you do so will depend on the reason for and length of your absence (you will find the School's statement on term dates, vacations and working during MPhil/PhD study under the Academy's A-Z of guidance documents - lse.ac.uk/study/PhDAcademy/a-z-of-guidance.aspx). If you are going to be absent for a short period of time of between 2 and 4 (for example, to attend a conference) you should simply email phdacademy@lse.ac.uk confirming the date you will be absent from, when you will return and where you will be. It is important that you do take some holiday, or at least have a break from your studies. You should consult with your supervisor over holiday arrangements.

Information for Research Students with a Tier 4 Visa

If you are sponsored by the School for a Tier 4 student visa to study in the UK, you need to make sure you understand the conditions of your visa and are not in breach of them. You will find guidance and updates on rule changes on the ISVAT website: lse.ac.uk/intranet/students/ISVAT/currentstudents/visa-newsletters.aspx

Changes to Your Registration

At certain times you may need to apply for a change to your student registration (e.g. study interruption). You will need to complete the relevant form to request such a change which you will find at lse.ac.uk/study/PhDAcademy/a-z-of-guidance.aspx. You can speak to the Research Manager or to a member of the PhD Academy about any questions you may have before submitting your request.

Courses

Please see "Taught Courses for PhD Students" section of this handbook.

Choosing LSE taught courses is done in LSE for You (LFY), LSE's web-based self-service student administration system. If you are attending a course and not taking the assessment for it, please contact phdacademy@lse.ac.uk. Please see below for links to the various courses and registration details.

Taught/online courses and examinations -

lse.ac.uk/intranet/students/registrationTimetablesAssessment/Registration/Course/Graduate/pgcoursechoice.aspx.

Methodology courses - lse.ac.uk/methodology/courses/Home.aspx.

Academic and Professional Development courses -

lse.ac.uk/study/PhDAcademy/academicAndProfessionalDevelopment/home.aspx.

Support

If you experience a problem with your programme of study there are a number of places you can go to for help. You should always try and resolve any issues immediately by discussing it with **your supervisor** where possible. You can also take an issue to the Doctoral Programme Director for your department and/or the Head of Department. Beyond these departmental provisions, you can also seek assistance from the PhD Academy.

Progress Monitoring

The PhD

Log ([auth.lse.ac.uk/auth/login?service=https://lfy.lse.ac.uk/portal/p/&renew=true](https://lfy.lse.ac.uk/portal/p/&renew=true)) should be used to record meetings with your supervisor throughout your time at the School. You will also be able to find your submission deadline and other information on the Log. You should discuss with your supervisor how you will use the Log.

The Regulations for Research

Degrees (lse.ac.uk/intranet/LSEServices/TQARO/Calendar/RegulationsForResearchDegrees.pdf, paragraphs 19-21) set out School-wide requirements for progress review.

Student Progress Interview

At the end of a student's first year, they will be interviewed about their academic progress by two members of staff who have not been at the forefront of the student's supervision. These might, for instance, be the Doctoral Programme Director (unless they are directly involved in the student's supervision) and the student's second supervisor. The first supervisor is encouraged to attend, as well.

One week prior to the interview, the student will be expected to provide the Research Manager with:

- a short document outlining the research problem(s) they have been or will be working on, and the progress they have made to date
- their taught course marks / attendance record to demonstrate that they have performed to at least a satisfactory level (roughly, an average of B) in their examinations.

The lead supervisor will also be asked to comment in writing on the student's progress.

The outcome of the meeting will be a decision as to whether progress is sufficient to permit re-registration for the following academic year. In addition, a statement of when Major Review will take place, and what the student needs to achieve in order to be upgraded at Major Review will be issued. In extreme cases, if progress is deemed to be wholly unsatisfactory.

Year Two

Re-registration

The department will confirm with the PhD Academy whether or not you have met the academic progression requirements from your first year and can be re-registered for year two. The Academy will email you to confirm that either they have re-registered you automatically (which means you do not need to attend in person to do so) or to let you know that you need to visit their office with the relevant documents in order to complete the re-registration process.

Attendance, Tier 4 Visas, Changes to Your Registration, Regulations, Courses and Support

The rules remain the same as for Year One (above).

Progress Monitoring

The PhD

Log (auth.lse.ac.uk/auth/login?service=https://lfy.lse.ac.uk/portal/p/&renew=true) should be used to record meetings with your supervisor throughout your time at the School. You will also be able to find your submission deadline and other information on the Log and can use it to post work for comment. You should discuss with your supervisor how you will use the Log.

Major Review / Upgrade

The timing of Major Review will vary for each student but we aim to upgrade all students between 15 months and two years from the date of their enrolment. Exceptionally, if the Student Progress Interview was wholly satisfactory, the Review may take place at the beginning of the second year, and the student upgraded to PhD status with no requirement for a further meeting. If the student was given a target of work to be completed by a certain date, then the Review should take place soon after that date, ideally conducted by the same people who attended the Student Progress Interview. If a student cannot be upgraded by the end of their second year of registration, they will not normally be permitted to re-register.

As a general guide, in order to be upgraded, a student will:

- be expected to have produced an advanced draft of a piece of work that will be suitable for inclusion as a chapter of their thesis (preferably an article submitted to a conference or published as a preprint on arXiv) – this should be sent to the Research Manager one week before their upgrade meeting.
- provide the meeting with their taught course marks / attendance record at the meeting to demonstrate that they have performed to at least a satisfactory level (roughly, an average of B) in their examinations.
- be prepared to give a short presentation (approximately 15 minutes) on what he/she has achieved.

The lead supervisor will be asked to comment in writing on the student's progress.

The aim is to indicate that the student is well on track to produce a PhD with original research. However, it is acknowledged that there will be variation in expectations depending on the topic: e.g. taking into account that more preliminary reading is required in some subjects than in others.

The Regulations for Research

Degrees (lse.ac.uk/intranet/LSEServices/TQARO/Calendar/RegulationsForResearchDegrees.pdf, paragraphs 22-25) set out School-wide upgrade requirements.

Year Three

Re-registration

The department will confirm with the PhD Academy whether or not you have met the academic progression requirements from your first year and can be re-registered for year two. The Academy will email you to confirm that either they have re-registered you automatically (which means you do not need to attend in person to do so) or to let you know that you need to visit their office with the relevant documents in order to complete the re-registration process.

Attendance, Tier 4 Visas, Changes to Your Registration, Regulations, Courses and Support

The rules remain the same as for Year One (above).

Progress Monitoring

The PhD

Log (auth.lse.ac.uk/auth/login?service=https://lfy.lse.ac.uk/portal/p/&renew=true) should be used to record meetings with your supervisor throughout your time at the School. You will also be able to find your submission deadline and other information on the Log and can use it to post work for comment. You should discuss with your supervisor how you will use the Log.

The Regulations for Research

Degrees (lse.ac.uk/intranet/LSEServices/TQARO/Calendar/RegulationsForResearchDegrees.pdf, paragraphs 19-21) set out School-wide requirements for progress review.

3rd Year Review

At the end of a student's third year of registration, a further progress review will take place. This will normally be a formal meeting between the student, the lead supervisor and the Doctoral Programme Director.

For the meeting, the student will be asked to provide:

- a copy of all work produced to date
- a full statement of anticipated progress.

The outcome of the review should normally be a clear strategy and agreed timetable for completion of the thesis within a maximum of four years. If this is deemed not to be feasible, then a decision will be made on how best to proceed.

Year Four

Re-registration

The department will confirm with the PhD Academy whether or not you have met the academic progression requirements from your first year and can be re-registered for year two. The Academy will email you to confirm that either they have re-registered you automatically (which means you do not need to attend in person to do so) or to let you know that you need to visit their office with the relevant documents in order to complete the re-registration process.

Attendance, Tier 4 Visas, Changes to Your Registration, Regulations, Courses and Support

The rules remain the same as for Year One (above).

Progress Monitoring

The PhD

Log (auth.lse.ac.uk/auth/login?service=https://lfy.lse.ac.uk/portal/p/&renew=true) should be used to record meetings with your supervisor throughout your time at the School. You will also be able to find your submission deadline and other information on the Log and can use it to post work for comment. You should discuss with your supervisor how you will use the Log.

The Regulations for Research

Degrees (lse.ac.uk/intranet/LSEServices/TQARO/Calendar/RegulationsForResearchDegrees.pdf, paragraphs 19-21) set out School-wide requirements for progress review.

PhD Examination

(Disclaimer: this is an informal account of a formal, regulated process. For further information, see the official LSE Regulations for the degrees of MPhil and PhD: lse.ac.uk/resources/calendar/academicRegulations/regulationsForResearchDegrees.htm)

The PhD (and the MPhil) is assessed on the basis of a dissertation, or thesis. This should be a sustained exposition of original research, typically around 100pp, sometimes significantly longer but with a maximum of 100,000 words. Often it will contain expanded versions of papers that are also submitted for journal publication. Your lead supervisor will advise you on when you have enough thesis material to prepare for your examination. You should be aware that, even when the material is prepared, writing the thesis will take several months.

Examiner Nomination

Your supervisor is responsible for **nominating your two thesis examiners**. One is an 'internal' examiner, who is normally from another college of the University of London. The other is an 'external' examiner, who cannot be from the University of London. Your lead supervisor is expected to choose the examiners, and arrange the examination, but cannot be one of the examiners. Details of this can be found at

lse.ac.uk/study/PhDAcademy/documents/PDFs/nominatingExaminers2014-15.pdf.

Examination Entry Form

At least three months before you plan to submit your thesis you should start completing the examination entry form (lse.ac.uk/study/PhDAcademy/documents/Word/examEntry.docx) with your supervisor. **Completed entry forms should be returned to the PhD Academy at least two months in advance of submitting your thesis:** this is to allow sufficient time for your examiners to be formally appointed (see below). If you are unable to meet this deadline, please seek advice from a member of the Academy.

Once your completed examination entry form is received, the examiner nominations will be sent to the relevant subject panel for approval. The Academy will then formally invite the examiners to act. Until the examiners have confirmed with the PhD Academy that they can act, they cannot be appointed as your examiners. Therefore, the Academy cannot send your thesis to them until that time and no arrangements for the viva examination should be agreed. Once the Academy approves all selections, your supervisor and the Research Manager will make viva arrangements. The oral exam should be held in London and should take place within three months of your examiners receiving your thesis.

Submitting Your Thesis

You will need to submit two soft-bound copies of your thesis to the PhD Academy formatted in line with the School's requirements (Formatting your thesis:

lse.ac.uk/study/PhDAcademy/documents/PDFs/thesisFormat.pdf). The front pages of your thesis should contain certain information (template for thesis front pages:

lse.ac.uk/study/PhDAcademy/documents/PDFs/thesisFrontPage.pdf).

IMT Training run a PhD Thesis Surgery (apps.lse.ac.uk/training-system/userBooking/course/160582) which may be of help to you when formatting your thesis.

You must submit your thesis by the deadline (if you are unsure what your deadline is, please email Phdacademy@lse.ac.uk). **Theses** that are submitted late cannot be accepted without an approved extension from the Research Degrees Subcommittee Chair. You should ensure you allow time for the final editing, printing and binding of your thesis within your deadline. If you are unable to submit your thesis (or submit a revised thesis) by the deadline, please see the information provided on applying for an extension: lse.ac.uk/study/PhDAcademy/documents/Word/extendYourRegistration.doc.

You can choose to either print and bind your thesis yourself or use a company to do this for you. Details of companies you may wish to use for this purpose can be found

at lse.ac.uk/intranet/students/archive/researchDegrees/guidance/thesisformat.doc, including details for Walter Newbury (who deliver directly to the PhD Academy).

Once the Academy has received your thesis, they will post it to your examiners and confirm with you once they have done so. If your examiners require an electronic copy of your thesis, the Academy will arrange to send this to them. Examiners are not permitted to accept a thesis, in any format, from any source other than from the PhD Academy.

Editorial Help with Your Thesis

You might wish to seek help from a third party in editing your thesis before you submit it for examination. You will need to read the School's Statement on Editorial Help:

lse.ac.uk/resources/calendar/academicRegulations/statementOnEditorialHelp.htm, provide a copy of it to any third party you use and declare what help you have received from a third party in the front pages of your thesis (see template for front pages of your thesis: lse.ac.uk/study/PhDAcademy/documents/PDFs/thesisFrontPage.pdf).

Viva (Oral) Examination

Your viva examination will take place at the LSE unless, exceptionally, permission has been given for it to take place elsewhere. It should normally take place within three months of your examiners receiving

your thesis. The examiners will have read your thesis, and will ask you questions about parts of it. If they are broadly satisfied, they will recommend that you be awarded the degree, but they are almost certain to demand that you make some 'minor' amendments first. These amendments should be made within three months with the amended thesis submitted to the examiners for confirmation that the amendments are satisfactory. If the examiners are not satisfied, they will tell you exactly why not, and you will normally have a chance to re-present it in a revised form within 18 months. If the thesis is deemed to meet the relevant criteria but the oral examination fails to satisfy the examiners they can request that you re-present the same thesis and take a further oral examination within 18 months. You can find the possible outcomes from the examination at paragraphs 52 (for PhD awards) and 54 (for MPhil awards) of the Regulations for Research Degrees (lse.ac.uk/resources/calendar/academicRegulations/regulationsForResearchDegrees.htm).

Confirmation of Your Examination Outcome

After your examination, the PhD Academy will email you to confirm the examiners' decision and give full details of what you will then be required to do. Examiners are asked to confirm their decision within two weeks of your viva and the Academy will normally email you confirmation of the examination outcome within a further two weeks. The Academy cannot confirm an examiners decision with you until they have received the relevant information from both of your examiners.

Providing a Final Copy of Your Thesis

When you have successfully completed your PhD (i.e. once you have completed your viva examination and any revisions your examiners have required you to make in your thesis) and in accordance with the School's Regulations for Research Degrees (lse.ac.uk/resources/calendar/academicRegulations/regulationsForResearchDegrees.htm, paragraphs 39.3, 41 and 56), the PhD Academy will ask you to provide a final electronic copy of your thesis for deposit in LSE Theses Online (etheses.lse.ac.uk). Once you have submitted a final copy of your thesis in accordance with the School's requirements, the Academy will produce your degree certificate. This can take up to two months.

Graduation

Once you have satisfied the examiners and the bureaucratic processes have been completed, you will be invited to the next LSE graduation ceremony, which take place in July and December each year. Further details of graduation can be found in the section of this Handbook entitled "Graduation Ceremonies".

Special Arrangements for Students with Disabilities

Special arrangements can be made for examinations and assessment, if appropriate. This may include extra time to take an examination, the use of specialist equipment or an examination paper provided in an alternative format. Any student who requires special examination arrangements must contact the Adviser to Students with Disabilities and/or Dyslexia so that reasonable adjustments can be made. Applications for special exam arrangements should normally be made no later than seven weeks before the date of the student's first examination.

Further information can be found in the section of this Handbook entitled "Services for Disabled Students (including students who have dyslexia)" and at lse.ac.uk/intranet/LSEServices/disabilityAndWellBeingService/currentStudents/Home.aspx.

Study and Work

Being a full-time research student means just that: your time commitment is the same as if you were in full-time employment. There are no set 'vacations', and you are still expected to work on your research outside university term dates, although, of course, you are entitled to time off for holidays. Your goal is to carry out substantial original research and write it up as a thesis within a maximum of four years: the length of time available gives a strong indication of the amount of work you will need to put in to achieve this goal.

If you are going to be away, or otherwise unavailable, for an extended period of time (say, more than a week), then it is important that you inform your lead supervisor and the Research Manager beforehand. A maximum of four weeks' leave is permitted at any one time.

You are likely to be offered the opportunity to work for, or on behalf of the Department. For instance, you may be offered the opportunity to teach classes, and possibly (once you have acquired some experience with teaching) to mark examinations. You may also choose to take on some paid part-time work outside LSE. This is permitted; indeed gaining some experience in teaching in particular is likely to be very beneficial for you, but studying at the LSE and completing an MPhil or PhD is intensive and demanding so it is up to you to ensure that you are not taking on so much paid work that you are unable to keep up with your research. As a rough guide, if you are spending an average of at most one day a week on non-research activities, then this is not generally a cause for concern, but you might choose to cut down at critical phases of your studies (e.g. when writing up your thesis). We recommend that all students limit work during term time to a maximum of 20 hours per week, and fewer if possible. You should also inform your supervisor and the Research Manager of any work or external task you undertake, no matter how small.

If you find yourself, for whatever reason, unable to devote yourself to full-time research, you may wish to discuss the possibility of moving to part-time status for some period, or interrupting your studies. You should talk to your lead supervisor first, or the Doctoral Programme Director. Further information on the process of interrupting can be found in the section of this Handbook entitled "Interruption".

If you are on a Tier 4 (General) student visa which permits working in the UK, you may only work up to 20 hours per week except during vacations, when you are permitted to work full-time. The number of hours that you can work is the same regardless of whether you are paid or unpaid. If you have completed your programme, and have a visa that permits you to work, you can work during the short period you are permitted to be in the UK after your programme ends. However, if you withdraw from your programme or interrupt your studies, you are not entitled to work regardless of when your permission in the UK ends. Further guidance on working during your studies as a Tier 4 visa holder can be sought from the International Student Visa Advice Team at the LSE (lse.ac.uk/intranet/students/ISVAT/home.aspx).

Interruption / Illness / Withdrawal / Programme Transfers / Change of Mode of Study

Interruption: with approval from your department you can take a break in your studies. Interruptions are one term long. You are usually required to return at the start of the nearest applicable term – be that Michaelmas or Lent term. Summer term interruptions are not possible. For more information, please see lse.ac.uk/study/PhDAcademy/documents/Word/interruptionToStudy.doc.

Illness: if you are ill during your studies, information about the School's procedure can be found at lse.ac.uk/intranet/students/registrationTimetablesAssessment/examinationsAndResults/exceptionalCircumstances/illnessExceptionalCircumstances.aspx.

Withdrawal: withdrawing means that you are leaving the programme permanently. Before withdrawing you may want to consider interruption so that you have some time to consider your options. For more information, please see lse.ac.uk/study/PhDAcademy/documents/Word/withdrawal.doc.

Programme Transfers: you can request to transfer from your current programme to another programme at the same level according to the School's regulations. There are usually restrictions on transferring programmes, and sometimes transfers are not possible. All transfer requests are considered by and require approval from both academic departments and the School before being authorised. For more information, please see lse.ac.uk/study/PhDAcademy/documents/Word/ProgrammeTransfer.doc.

Change of Mode of Study: if a change in your circumstances occurs that means that you need to change your study mode from full-time to part-time, you will need to seek authorisation from your academic department. Changing from full-time to part-time study mode is generally acceptable, and your course choice will be amended according to programme regulations. Your fees will also be amended in line with the part-time fees published in the Table of Fees for the same academic year. Changing from part-time to full-time may not always be possible. Requests to change from part-time to full-time study mode will be considered on a case-by-case basis. For more information please see lse.ac.uk/study/PhDAcademy/documents/Word/changeToPartTime.doc.

Study and Research Regulations

General School and Programme Regulations

lse.ac.uk/resources/calendar

The School has regulations, policies and procedures covering many aspects of student life and you should familiarise yourself with them.

Some of the regulations explain the organisation and conduct of your academic study. These include information about the structure of programmes, assessment, graduation and what to do if illness affects your studies.

The following web links will be particularly relevant during your studies.

Regulations for Research Students

lse.ac.uk/resources/calendar/research.htm

Regulations for Research Degrees

lse.ac.uk/resources/calendar/academicRegulations/regulationsForResearchDegrees.htm

MPhil/PhD Programme Regulations

lse.ac.uk/resources/calendar/programmeRegulations/mPhilPhD/mathematics.htm

Conditions of Registration

lse.ac.uk/intranet/LSEServices/TQARO/Calendar/ConditionsOfRegistration2015.pdf

General Academic Regulations

lse.ac.uk/resources/calendar/academicRegulations/generalAcademicRegulation.htm

Graduate Course Guides

lse.ac.uk/resources/calendar/courseGuides/graduate.htm

Student Charter

lse.ac.uk/intranet/LSEServices/policies/pdfs/school/stuCha.pdf

Ethics Code

lse.ac.uk/intranet/LSEServices/policies/pdfs/school/ethCod.pdf

All School Regulations

The following web link gives you an A-Z list of relevant regulatory documents where you can find further details of all School regulations:

lse.ac.uk/intranet/LSEServices/policies

Regulations on Plagiarism / Academic Dishonesty

Students must make themselves familiar with the School's Regulations on Assessment Offences (of which there are separate versions on plagiarism and other offences). These regulations will be used to deal with any allegation that any part of a thesis has been plagiarised or any infringement of the declaration in regulation 39 of the Regulations for Research Degrees:

(lse.ac.uk/resources/calendar/academicRegulations/regulationsForResearchDegrees.htm).

- The following web link details the School's Regulations on Assessment Offences, other than plagiarism:
lse.ac.uk/resources/calendar/academicRegulations/RegulationsOnAssessmentOffencesOtherThanPlagiarism.htm.
- The Regulations on Plagiarism can be found at the following web link:
lse.ac.uk/resources/calendar/academicRegulations/RegulationsOnAssessmentOffences-Plagiarism.htm.

The work you submit for assessment must be your own. If you try to pass off the work of others as your own, whether deliberately or not, you will be committing plagiarism. If you are found to have committed an assessment offence (such as plagiarism or exam misconduct) you could be expelled from the School.

Any quotation from the published or unpublished works of other persons, including other candidates, must be clearly identified as such, being placed inside quotation marks and a full reference to their sources must be provided in proper form. A series of short quotations from several different sources, if not clearly identified as such, constitutes plagiarism just as much as does a single unacknowledged long quotation from a single source. All paraphrased material must also be clearly and properly acknowledged.

Any written work you produce (for classes, seminars, examination scripts, dissertations, essays, computer programmes and MPhil/PhD theses) must be solely your own. You must not employ a "ghost writer" to write parts or all of the work, whether in draft or as a final version, on your behalf. For further information and the School's Statement on Editorial Help, see link below. Any breach of the Statement will be treated in the same way as plagiarism.

You should also be aware that a piece of work may only be submitted for assessment once. Submitting the same piece of work twice will be regarded as an offence of "self-plagiarism" and will also be treated in the same way as plagiarism.

Examiners are vigilant for cases of plagiarism and the School uses plagiarism detection software to identify plagiarised text. Work containing plagiarism may be referred to an Assessment Misconduct Panel which may result in severe penalties.

If you are unsure about the academic referencing conventions used by the School you should seek guidance from your Department, Academic Advisor, the Teaching and Learning Centre (TLC - lse.ac.uk/intranet/LSEServices/TLC/undergraduateMScStudents/academicWriting.aspx) and the Library (lse.ac.uk/library/usingTheLibrary/training/home.aspx) as soon as possible.

A Statement on Editorial Help can be found at:
lse.ac.uk/resources/calendar/academicRegulations/statementOnEditorialHelp.htm.

Seeking Outside Help During Your Research

PhD students are encouraged to seek advice on the different aspects of their research in the form of 'peer review' (for example, by presenting at conferences). It is also legitimate for a student to seek outside help with particular aspects of their research. However, it is important that external input of this kind is not excessive. To ensure that the levels of outside help a student might seek are within acceptable norms, students should:

1. discuss with their supervisor(s) any help they are considering using with any aspect of the research process;
2. discuss with their supervisor(s) any advice they are seeking from other departments at the School or from sources outside of the School;
3. credit any help received appropriately within his/her work.

Financial Support and Funding

Financial Support Office

The Financial Support Office (FSO) is responsible for the administration and awarding of scholarships, bursaries, studentships and School prizes. It is located within LSE's Student Services Centre with a daily drop-in session during term time between 13.00-14.00 (Mondays, Wednesdays and Fridays during vacations). No appointment is necessary.

Full details of the funds the FSO manages, visit
lse.ac.uk/intranet/students/moneyMatters/financialSupport.

PhD Student Research Fund

Each registered PhD student in the Department is entitled to claim up to £500 per academic year towards their research expenses relating directly to your studies, such as the purchase of books or conference attendance. All claims should be directed to the Research Manager and should be accompanied by full receipts and an explanatory note on all expenses incurred. The refund will come to you from LSE's FSO; they contact students directly to notify when the reimbursement cheque is available for collection. Please note:

- reimbursements can only be made by cheque; electronic payments are not possible
- only the recipient can collect cheques
- unfortunately it is not possible to arrange advance payments and therefore all payments must take the form of refunds
- general maintenance and living costs cannot be covered by this fund.

The PhD Student Research Fund operates on a cumulative year model, as follows:

Year 1: £500 paid

Year 2: £500 paid; able to hold up to £1000 in fund (i.e. can carry over £500)

Year 3: £500 paid; able to hold up to £1500 in fund (i.e. can carry over £1000)

Year 4: £500 paid; able to hold up to £2000 in fund (i.e. can carry over £1500)

Travel Insurance

lse.ac.uk/intranet/LSEServices/healthAndSafety/Home.aspx

The School's travel insurance policy covers MPhil/PhD students for travel on School business which includes going to conferences to give a paper, fieldwork, etc. It may be that you have an annual policy, which will still be of use to you for private travel; if that is the case, you are advised to claim on the School's policy if a problem arises on a research-based trip and to notify your other insurer that you have done so.

For use of the School's Travel Insurance Policy, you must obtain a cover note. Travel insurance is provided by LSE, please contact the Health and Safety Advice Team at Health.And.Safety@lse.ac.uk with the following information:

- where you are going (country + city)
- dates of your intended travel
- dates of the conference
- purpose of your travel (that you are presenting at a conference/seminar)

Postgraduate Travel Fund

The Postgraduate Travel Fund is open to PhD students who have been invited to give a paper at the conference related to their research degree. Students will not normally be assisted with more than one conference per academic year.

Should an award be approved, it is unlikely to cover the full costs of attending the conference. Applicants are therefore encouraged to explore all other sources of funding. There are limited funds available in the Postgraduate Travel Fund and it is expected that funds will normally run out before the end of the academic year. Early application is therefore advisable, i.e. as soon as you receive an invitation to present a paper.

Completed applications should be submitted to the Financial Support Office at least two weeks before the departure date for the conference. Retrospective applications will not be considered. You can hand in your application form using the Graduate Drop Box in the Student Services Centre or by post. Provided all the supporting documentation has been submitted you will normally hear the outcome of your application within ten working days.

Full details of the scheme can be found at lse.ac.uk/intranet/students/moneyMatters/financialSupport/internal/registeredStudents/postgraduateTravelFund.aspx. Please speak to the Research Manager for more information.

Santander Travel Research Fund

The fund supports visits by LSE academic staff and PhD students to universities and other organisations in the Santander Universidades Network, which covers the countries comprising Argentina, Brazil, Belgium, Chile, China, Colombia, Germany, Mexico, Peru, Poland, Puerto Rico, Russia, Singapore, Uruguay, USA, Venezuela, Spain, Portugal and the UK.

There are a minimum of 12 awards of up to £2,000 each available for the 2016/17 academic year. Full details can be found at lse.ac.uk/intranet/researchAndDevelopment/researchDivision/applyingForFunding/internalFundingOpportunities.aspx. Please speak to the Research manager for more information.



Mathematics

Your Department

This section introduces you to the Department of Mathematics. Here, you can read about:

- The staff who work here and are available to help you, both Academic and Professional Service personnel
- Activities which the Department hosts throughout the year
- Facilities available to you during your studies.

About the Department of Mathematics

The LSE Mathematics Department is an active research unit within a world-class social science institution. The Department is a lively and bustling place during term-time and aims to be a leading centre for mathematics in the social sciences. The Department's growth trajectory reflects the increasing impact that mathematical theory and mathematical techniques are having on subjects such as economics and finance, and on many other areas of the social sciences.

The Department of Mathematics is renowned for its research excellence within its areas of specialisation. Our research staff work in four broad disciplines - Discrete Mathematics and Algorithms, Financial Mathematics and Control Theory, Game Theory and Operations Research. Supervision for MPhil and PhD research is available in: combinatorics, combinatorial game theory, graph theory, integer programming, mechanism design, polyhedral combinatorics, probabilistic analysis, theory of computation and algorithms, and in the applications of mathematics in areas such as inspections, network optimisation, telecommunications, transportation, and economics.

The Department of Mathematics was submitted jointly to REF 2014 with LSE's Department of Statistics: 84% of the research outputs of the two departments were classed as either "world-leading" or "internationally excellent" in terms of originality, significance and rigour. The most recent work produced by members of the Department can be found on our publications webpage.

We teach a range of lecture courses: from first-year undergraduate courses for students without A-level mathematics, to advanced postgraduate courses on the MSc programmes, through to PhD-level courses. Some of our undergraduate courses attract very large numbers of students, reflecting the fact that mathematical techniques and ideas underpin much of modern economics.

Alongside their research, academic staff in the Department are responsible for undergraduate and graduate teaching, and also carry out administrative tasks both for the Department and for the School as a whole.

The Department

Members of the Department and Contact Details

Academic Staff

| Name | Room | Internal Extension | Calling from outside LSE | Email |
|---------------------------|-------------|---------------------------|---------------------------------|--|
| Dr Peter Allen | COL 4.05 | 6289 | 020 7955 6289 | P.D.Allen@lse.ac.uk |
| Prof Martin Anthony | COL 3.13 | 7623 | 020 7955 7623 | M.Anthony@lse.ac.uk |
| Dr Tuğkan Batu | COL 4.04 | 6540 | 020 7955 6540 | T.Batu@lse.ac.uk |
| Prof Norman Biggs | COL 3.15 | 7858 | 020 7955 7640 | N.L.Biggs@lse.ac.uk |
| Dr Julia Böttcher | COL 4.03 | 7492 | 020 7955 7492 | J.Boettcher@lse.ac.uk |
| Prof Graham Brightwell | COL 3.03 | 7624 | 020 7955 7624 | G.R.Brightwell@lse.ac.uk |
| Dr Christoph Czichowsky | COL 3.11 | 2954 | 020 3486 2954 | C.Czichowsky@lse.ac.uk |
| Dr Albina Danilova | COL 4.09 | 7371 | 020 7955 7371 | A.Danilova@lse.ac.uk |
| Dr Paul Duetting | COL 3.08 | 7620 | 020 7955 7620 | P.D.Duetting@lse.ac.uk |
| Dr Pavel Gapeev | COL 4.10 | 6120 | 020 7955 6120 | P.V.Gapeev@lse.ac.uk |
| Prof Olivier Gossner | COL 2.05D | 3755 | 020 7852 3755 | O.Gossner@lse.ac.uk |
| Prof Jan van den Heuvel | COL 3.07 | 7625 | 020 7955 7625 | J.van-den-Heuvel@lse.ac.uk |
| Dr Eleni Katirtzoglou | COL 2.05C | 7325 | 020 7955 7325 | E.Katirtzoglou@lse.ac.uk |
| Dr Ioannis Kouletsis | COL 4.13 | 7969 | 020 7955 7969 | I.Kouletsis@lse.ac.uk |
| Dr Andy Lewis-Pye | COL 3.12 | 2955 | 020 3486 2955 | A.Lewis7@lse.ac.uk |
| Dr Arne Lokka | COL 4.08 | 6279 | 020 7955 6279 | A.Lokka@lse.ac.uk |
| Prof Adam Ostaszewski | COL 4.06 | 7656 | 020 7955 7656 | A.J.Ostaszewski@lse.ac.uk |
| Dr Katerina Papadaki | NAB 3.14 | 6538 | 020 79556538 | K.P.Papadaki@lse.ac.uk |
| Dr Johannes Ruf | COL 3.06 | 7640 | 020 7955 7640 | J.Ruf@lse.ac.uk |
| Dr Amol Sasane | COL 2.05B | 6106 | 020 7955 6106 | A.J.Sasane@lse.ac.uk |
| Dr Robert Simon | COL 4.07 | 6753 | 020 7955 6753 | R.S.Simon@lse.ac.uk |
| Dr Jozef Skokan | COL 3.04 | 7008 | 020 7955 7008 | J.Skokan@lse.ac.uk |
| Prof Gregory Sorkin | NAB 3.19 | 1228 | 020 7106 1228 | G.B.Sorkin@lse.ac.uk |
| Prof Bernhard von Stengel | COL 4.12 | 6438 | 020 7955 6438 | B.Von-Stengel@lse.ac.uk |
| Dr Konrad Swanepoel | COL 3.09 | 5095 | 020 7107 5095 | K.Swanepoel@lse.ac.uk |
| Dr László Végh | NAB 3.05 | 7591 | 020 7955 7591 | L.Vegh@lse.ac.uk |
| Dr Luitgard Veraart | COL 4.11 | 5062 | 020 7107 5062 | L.Veraart@lse.ac.uk |
| Dr James Ward | COL 4.14 | 6456 | 020 7955 6456 | J.M.Ward@lse.ac.uk |
| Dr Giacomo Zambelli | NAB 3.07 | 1265 | 020 7106 1265 | G.Zambelli@lse.ac.uk |
| Prof Mihail Zervos | COL 4.02 | 3751 | 020 7852 3751 | M.Zervos@lse.ac.uk |

Academic Visitors and Research Staff

| Name | Role | Email |
|-----------------------------|------------------------|--|
| Professor Steve Alpern | Visiting Professor | steve.alpern@wbs.ac.uk |
| Professor June Barrow-Green | Visiting Professor | june.barrow-green@open.ac.uk |
| Professor Nick Bingham | Visiting Professor | N.H.Bingham@lse.ac.uk |
| Dr Thomas Lidbetter | Visiting Fellow | T.R.Lidbetter@lse.ac.uk |
| Professor Antonio Montalban | Visiting Senior Fellow | antonio@math.berkeley.edu |
| Professor Robin Wilson | Visiting Professor | r.j.wilson@open.ac.uk |
| Professor Peyton Young | Centennial Professor | peyton.young@economics.ox.ac.uk |

Professional Services Staff

Rebecca Lumb, Jackie Everid, Rebecca Batey, Enfale Farooq and Kate Barker work together to provide the administrative support for the Mathematics Department.

Rebecca Lumb is the Research Manager - all non-academic enquiries should be directed to her; Rebecca will usually be your first port of call when you have a query.

| Name | Room | Internal Extension | Calling from outside LSE | Email |
|--|-------------|---------------------------|---------------------------------|--|
| Rebecca Lumb <i>Research Manager</i> | COL 3.14 | 7494 | 020 7955 7494 | R.C.Lumb@lse.ac.uk |
| Rebecca Batey <i>MSc Programmes Manager</i> | COL 4.01 | 7925 | 020 7955 7925 | R.Batey@lse.ac.uk |
| Jackie Everid <i>Undergraduate Programmes Manager</i> | COL 4.01 | 1193 | 020 7106 1193 | J.L.Everid@lse.ac.uk |
| Kate Barker <i>Departmental Manager</i> | COL 3.10 | 6373 | 020 7955 6373 | K.Barker@lse.ac.uk |
| Enfale Farooq <i>Departmental Administrator</i> | COL 4.01 | 7732 | 020 7955 7732 | E.Farooq@lse.ac.uk |
| Shared inbox: all course administrators | | | | maths.info@lse.ac.uk |

Most rooms are located on the 2nd, 3rd, and 4th floors of Columbia House. The entrance to Columbia House is on the Aldwych, next to the LSE Garrick. The remaining rooms, belonging to our Operational Research team, are located in the New Academic Building on Lincoln's Inn Fields.

Staff Academic Interests

Dr Peter Allen: extremal combinatorics; random discrete structures; Ramsey theory; algorithmical and structural graph theory; graph colouring.

Professor Martin Anthony: mathematical aspects of machine learning, particularly probabilistic modelling of learning and discrete mathematical problems in the theory of learning; data mining and artificial neural networks; Boolean function classes and their representations.

Dr Tuğkan Batu: algorithms and theory of computation, particularly randomized computation; sublinear algorithms on massive data sets; property testing; computational statistics.

Dr Julia Böttcher: extremal combinatorics; random discrete structures; Ramsey theory; algorithmical and structural graph theory; graph colouring.

Professor Graham Brightwell: combinatorics in general, especially finite partially ordered sets, probabilistic methods, and algorithmic aspects.

Dr Christoph Czichowsky: financial mathematics; stochastic optimal control; stochastic analysis; optimal portfolio choice; market frictions; transaction costs; shadow prices; duality; mean-variance portfolio optimisation.

Dr Albina Danilova: stochastic calculus and financial mathematics, in particular: filtering, enlargement of filtrations and stochastic control and optimisation; derivatives pricing and hedging in incomplete markets and/or under asymmetric information; utility maximization and equilibrium.

Dr Paul Duetting: algorithmic game theory; mechanism design; combinatorial auctions; sponsored search auctions; sequential posted pricing; price of anarchy

Dr Pavel Gapeev: stochastic calculus; optimal stopping and free-boundary problems; pricing of American options; sequential testing and disorder detection problems; interest rate and credit risk models; illiquidity markets; stochastic impulse control and optimization; Gaussian processes.

Professor Olivier Gossner: game theory; repeated games; economics of information; bounded rationality and complexity.

Professor Jan van den Heuvel: graph and matroid theory; applications and algorithmic aspects of graph theory; mathematical aspects of frequency assignment problems.

Dr Andy Lewis-Pye: algorithmic processes, randomness, computability, algorithmic game theory, agent based models, networks, discrete mathematics in general.

Dr Arne Lokka: probability and financial mathematics; with special emphasis on hedging and pricing of derivatives; utility maximization and equilibrium and real investment decisions under uncertainty.

Dr Adam Ostaszewski: mathematical finance, with a particular interest in real options and accounting theory, including corporate disclosure policy and bargaining theory; set-

theoretic and general topology and topics in analysis e.g. automatic continuity, regular variation.

Dr Katerina Papadaki: approximate dynamic programming algorithms; cooperative game theory; discrete optimization; network games; network optimization; patrolling games; reoptimisation; robust optimization; routing; scheduling; shortest path tree games; stochastic dynamic programming; stochastic programming; transportation; wireless network problems.

Dr Johannes Ruf: modelling of dynamic systems that arise in finance and economics

Dr Amol Sasane: applied analysis, in particular, control theoretic problems for models described by partial differential equations.

Dr Robert Simon: stochastic games and dynamic systems; games of incomplete information; ergodic theory and topology; matroids and other shellable simplicial complexes.

Professor Jozef Skokan: extremal set theory; quasi-random structures; probabilistic combinatorics; discrete geometry; graph theory; combinatorial games and topics in theoretical computer science.

Professor Gregory Sorkin: combinatorial optimisation; random structures and their overlap; exact exponential-time algorithms.

Professor Bernhard von Stengel: game theory (efficient computation of equilibria; theory of online algorithms); extensive form games; correlated equilibria; pivoting algorithms in linear programming and linear complementarity problems; polytope theory.

Dr Konrad Swanepoel: combinatorial and discrete geometry; axiomatic geometry; finite geometries; geometry of finite-dimensional normed spaces; geometric shortest networks, such as Steiner minimal trees and the Fermat-Torricelli problem; extremal combinatorics.

Dr László Végh: combinatorial optimisation, game theory, mathematical programming, network optimisation

Dr Luitgard Veraart: financial mathematics, particularly, optimal investment problems, stochastic volatility models, pricing of derivatives, risk management in financial markets.

Dr Giacomo Zambelli: combinatorial optimisation, integer programming, mathematical programming, operations research.

Professor Mihail Zervos: stochastic analysis; stochastic control and optimisation; optimal stopping problems; valuation of investment decisions and investments in real options; options of American type; derivative pricing in incomplete markets; weather derivatives.

Departmental Activities

The Department has research staff working in four broad disciplines: Discrete Mathematics and Algorithms, Financial Mathematics, Operational Research and Game Theory. Research is carried out over a wide range of specific areas, which reflect the diverse interests of our staff.

Seminars

The Department hosts a number of research seminars during term time. These include:

- the Seminar on Combinatorics, Games, and Optimisation (lse.ac.uk/maths/Seminars/Seminar-on-Combinatorics-Games-and-Optimisation.aspx), which covers many of the research areas in the Department: discrete mathematics, algorithms, game theory, optimisation and applications of operational research to real world problems
- the Joint Risk & Stochastics and Financial Mathematics Seminar ([lse.ac.uk/maths/Seminars/Risk%20 Stochastics-Maths_Dept_Joint_Seminars.aspx](http://lse.ac.uk/maths/Seminars/Risk%20Stochastics-Maths_Dept_Joint_Seminars.aspx)) which combines the Department's strengths in financial mathematics with expertise from the Department of Statistics
- the LSE Department of Mathematics co-hosts the London Mathematical Finance Seminar Series, collaborating with Birkbeck College, Brunel University, Imperial College, King's College and UCL (londonmathfinance.org.uk/14).

Seminar presentations are mostly given by mathematicians from outside the LSE. Speakers are urged to make their talks accessible to non-specialists, and research students are strongly encouraged to attend these seminars, even if the talks are distant from their own research.

There are also seminars organised by, presented by and aimed specifically at research students:

- the PhD Seminars on Combinatorics, Games and Optimisation takes place on Fridays and is designed for students working in discrete mathematics, algorithms, game theory and operational research (lse.ac.uk/maths/Seminars/Lunchtime_Seminar.aspx)
- the Financial Mathematics Reading Group, which usually takes place on Tuesday evenings, is aimed at those students working in financial mathematics (lse.ac.uk/maths/Seminars/Financial_Mathematics_Reading_Group.aspx)
- The Joint Mathematics and Philosophy Reading Group on Game Theory normally takes place on Mondays from 4.00 pm - 5.30 pm. The primary focus of the group is on foundational and philosophical issues in game theory, but applications will also play a role (lse.ac.uk/maths/Seminars/Game_Theory_Reading_Group.aspx).

Research students are expected to attend all sessions of the relevant seminar and to contribute talks once per academic term. Although the seminar series have different focuses, students are encouraged to attend talks whenever possible since these events are an excellent opportunity for peers to share thoughts, ideas, experience and knowledge.

A list of forthcoming seminars hosted by the Department can be found at:
lse.ac.uk/maths/Seminars/Research_Seminars.aspx.

Events

Besides the weekly seminars, the Department organises a number of other key events throughout the year.

- Since 2007, LSE has hosted an annual one-day Colloquium in Combinatorics. This meeting, held in May, is organised jointly with Queen Mary, University of London, who host a linked event on the previous day. These two meetings are very popular and, in particular, attract a large number of research students.
- The Department has hosted a series of International Workshops on Search Games and Rendezvous and ESRC Game Theory Workshops. One of the recent highlights was a presentation by 2012 Nobel Memorial Prize in Economic Sciences winner Alvin Roth: "Who Gets What? The New Economics of Matchmaking and Market Design". Research students are encouraged to attend these and other events organised by the Department.
- We work with the Conferences team at LSE to host occasional public events, where some of the most influential figures in the social sciences can be heard.
- We host an annual Alumni reception to build bonds and networks between current students, staff and alumni.

There are many other open-access seminar series organised at LSE; some of these likely to be of interest to our students are those run by the Statistics, Philosophy and Finance Departments. Such events are widely publicised on LSE's website.

Newsletter

The Department issues a weekly email bulletin every Monday during term time, providing details of all the Department's seminars and workshops, along with other related seminars and conferences at LSE. PhD students should receive this automatically to their LSE inbox.

Research Visitors

The department hosts a steady stream of Research Visitors, who work with us for a fixed period of time, usually in connection with research grants awarded to the Department. Anyone based in the Department will normally be happy to discuss research with interested students so please do take the opportunity to contact them.

Social Media

At blogs.lse.ac.uk/maths/ you can read our research blog, the core mission of which is to increase public awareness and understanding of the research we undertake within the Department. We're really keen to hear your news and views and help publicise your work – if you have anything you would like to contribute, please read the advice at blogs.lse.ac.uk/maths/about/ and contact the Research Manager. We run a popular twitter feed ([@LSEMaths](https://twitter.com/LSEMaths)) which we highly recommend you follow – this is the quickest and easiest way for you to receive up-to-date information about the Department, the School and issues relating to mathematics. You also can join our LinkedIn group, "LSE MSc and MPhil/PhD Mathematics" to connect with your peers.

Departmental Facilities

The Research Student Study Area, COL 3.16

The Mathematics Department has a specific study area for its research students, located on the 3rd floor of Columbia House (COL 3.16). We hope this area provides you with a comfortable working environment. We do ask you to keep the area clean and tidy and to be respectful of your peers and individuals' work space. If you have any suggestions about how this room can be improved, please let the Research Manager know.

We aim to provide you with access to a desk and Windows computer in the study area when required (although see the note below under "IT Facilities" regarding hot-desking at busy times). You also have access to a locker in the PhD area for personal use.

Printers

All research students are able to print for free to the shared printer on the 3rd floor (named 'MAT-COL-B320' on the LSE network). You may need to re-add this printer to your PC to send printing to it. To do this on a (Windows 7) PC:

Start menu > Devices and printers > Add a printer > Add a network, wireless or Bluetooth printer > "the printer I want isn't listed" > "find a printer in the directory, based on location or feature".

Then in the name line put 'MAT-COL-B320' and click ok to all the options which follow to install the printer driver.

On the rare occasion when colour printing is required, students should print to 'HP Color LaserJet Enterprise CP4525' (named 'MAT-COL-4.01C' on the LSE network) which is located in the Mathematics Department office (room COL 4.01).

Photocopying

Research students have access (via the Departmental copycard) to the photocopier located on the 4th floor of Columbia House.

Scanning

An all-in-one printer/copier/scanner can be found in COL 4.16. It can scan anything from a book page (on the flat bed) to a long, double-sided document (via the feeder). When you scan something, it is emailed to whatever address you choose as a PDF file by default but there are other options. The attachment will arrive in an email from math.scan@lse.ac.uk.

Kitchens

The Department has kitchens on the 3rd and 4th floors of Columbia House. Tea, coffee and milk are provided free of charge and you can find a water cooler, kettle, fridge, coffee machine and microwave oven provided in both kitchens. A dishwasher can also be found on each floor; all members of the Department share the loading/unloading duties so please do take your turn. It is important we keep these areas hygienic and tidy – thank you for your assistance with this.

Mailbox

Please check regularly for post in your mailbox in the 4th floor kitchen. You are welcome to use the Department's address for your mail to be delivered to.

Stationery

Stationery stores are located on the 4th floor. We carry a selection of pens, printer paper, notebooks, diaries, white board markers, etc. Please let the Research Manager know if you need anything that is not in stock.

Accessing the Department

Access to Columbia House, as well as all secure areas within it (e.g. 3rd and 4th floors, PhD room, Departmental Office, etc.) is readily available from 09.00–17.30 on weekdays. Beyond this, your student ID card will provide you with access:

- 07.00–midnight during the week
- 08.00–22.00 at weekends

Postgraduate Common Room

In addition to the space provided for you in Columbia House, a dedicated Postgraduate Common Room is available on the lower ground floor of 32 Lincoln's Inn Fields (32LIF.LG.05a). More Information can be found at lse.ac.uk/intranet/LSEServices/estatesDivision/buildingAndConstruction/32-Lincolns-Inn-Fields/pdfs/32LIF-study-rooms-V2-AB.pdf.

PhD Academy

lse.ac.uk/PhDAcademy

Key central services relating to PhD students are united in one office - the PhD Academy, which aspires to be one of the best graduate schools for doctoral students. LSE places doctoral candidates at the heart of our research culture and community. The Academy is located on the 4th floor of the library and offers a dedicated teaching room and common room for all PhD students to use. If you have any queries about registration, your student status, finance or professional development please visit the office in the Academy; staff operate an open door policy and aim to resolve any queries and problems on the spot where possible. Their goal is to support students in their quest to become creative intellectuals who can produce rigorous evidence-based research of the highest quality. They want to support students in creating impact outside of academia and in communicating their ideas to a range of different audiences. They offer training in advanced methodology, subject specific knowledge and professional development, equipping students with a range of advanced skills that allow them to meet, and exceed, their personal ambitions.

Please do check out their website – they have some really useful resources, including an overview of your PhD, year by year.

IT Facilities

There are 16 PCs in the study area, all of which are installed with Microsoft Windows. At busy times, it may be necessary to adopt a 'hot-desking' approach to the available PCs, rather than see a particular PC as being your own (final year students will, however, be allocated their own desk space). There are several mathematical software packages available as standard at LSE, including MAPLE, Java programming software, MATLAB, MINITAB, Scientific Workplace and SPSS. Access to MathSciNet, a comprehensive database covering the world's mathematical literature since 1940, is provided by the School and linked to from the Mathematics Department website. Your supervisor may be able to provide you with significant guidance in the use of some of this software, where appropriate to the research topic.

Departmental IT Officer

The Department's IT Officer is Dr Tuğkan Batu. He can provide you with informal advice and guidance on the IT facilities available in the Mathematics Department.

The Service Desk is your first point of contact for support:

- Email: IT.ServiceDesk@lse.ac.uk
- Tel: 020 7107 5000 / Ext: 5000

The Department has a very helpful IT Support Team (lse.ac.uk/intranet/LSEServices/IMT/about/contactStaff.aspx) who are available to assist with desktop support of School-owned hardware and software on the LSE network, network and email account issues and general IT queries. The IT Support Team implement a Service Desk; this desk provides Department-specific support and is available by telephone and email. The Service Desk:

- is the single initial point of contact for all IT queries
- is staffed 09.30-17.30, Monday – Friday (as a minimum); during these hours, someone will always be on hand to answer the phone, or call back as soon as a line becomes free
- centrally administers all calls and emails and ensures they are tracked to resolution
- resolves as many issues as possible at this first point of contact, providing immediate support for quick fixes and queries that can be resolved within 10 minutes
- provides enhanced services, such as Mac support
- escalates issues (when required) to a relevant Support Team member.

Student IT Help Desk – First Floor, Library

lse.ac.uk/intranet/LSEServices/itservices/about/studentOrientation.aspx - a Walk In Centre is available on the 1st Floor of the Library, providing additional services between 09:30 and 17:30, Monday to Friday.

Laptop Surgery – First Floor, Library

lse.ac.uk/intranet/LSEServices/itservices/remote/laptopSurgery/home.aspx – visit the Laptop Surgery for free advice and hands-on assistance with problems connecting to LSE resources from personally-owned laptops and mobile devices.

Apple Time - First Floor, Library

<https://apps.lse.ac.uk/training-system/userBooking/course/7339159> - if you are experiencing trouble with your personal Apple device you can visit Apple Time for specialist help and support.

LSE Mobile

Download the LSE Mobile app to access your course timetable, library information, LSE information, maps, guides and more. Search 'LSE Mobile' on the App Store or Google Play to download.

IT Support For Students With Disabilities

lse.ac.uk/intranet/LSEServices/itservices/about/studentOrientation.aspx - IT Services is committed to the provision of facilities and support for disabled students and staff, to assure equality of services. Additional PCs and printing facilities for disabled students are provided in the public computer areas in the Library. Other facilities are available in dedicated PC rooms on campus. We also provide one-to-one support for disabled students who wish to become familiar with adaptive technologies and software. To book an appointment, please contact the IT Help Desk (it.helpdesk@lse.ac.uk).

Social Media

The School has outlined guidance on the use of social media. You can find the full details here: lse.ac.uk/intranet/LSEServices/policies/pdfs/school/guiSocMedStu.pdf

WiFi at LSE

eduroam is the recommended wireless network in use at LSE which allows secure connectivity across campus including in major lecture theatres and public areas.

The exact method to connect to eduroam will vary from device to device but you will need to:

- Make sure you are at a place on campus which has wireless network availability
- Enable WiFi on your device. Scan for networks and choose eduroam
- When prompted, enter the following information:
 - **Username:** Your LSE **email address**, e.g. j.bloggs@lse.ac.uk
 - **Password:** Your LSE network password

For more information and detailed guidance,

see lse.ac.uk/intranet/LSEServices/IMT/guides/wirelessNetworks/eduroam.aspx.

Green Impact and Sustainability

We hope you will actively help to support the LSE's Environmental Policy (lse.ac.uk/intranet/LSEServices/estatesDivision/sustainableLSE/Get-Involved/Green-Impact/Home.aspx). One simple action which helps immensely is to maintain the printers' default setting; this should be to print on both sides of the paper ('duplex' printing). If this does not appear to work, please let the Research Manager know.

Guide to Web Facilities

The School and Departmental websites are important sources of information during your studies. What follows is a brief description of the various web pages you are most likely to become familiar with during the course of your studies.

LSE for You

LSE for You is a personalised web portal which gives you access to a range of services. For example, you can:

- Update your PhD Log – see *below*
- view or change your personal details
- reset your Library and network passwords
- monitor and pay your tuition fees online
- keep your personal details up to date so that LSE can contact you when necessary.

You can also access online tutorials on how to navigate and personalise LSE for You via its login page. Use your LSE network username and password to login via lse.ac.uk/lseforyou.

PhD Log

The PhD Log, available via LSE for You (lse.ac.uk/lseforyou), is a vital facility for tracking your progress. It is essential that you use this log to register each formal contact with your supervisor (the date it took place, the method of communication used, a brief résumé of items discussed and the actions you agreed). You should also encourage your supervisor to verify this meeting within the Log.

LSE Email and Webmail

The School will use your LSE email address to communicate with you so please check your account regularly. We recommend that you develop a filing system, frequently deleting and archiving mail to ensure you stay within your email storage limit. The email program, Microsoft Outlook, is available on all student PCs on the LSE network. When off-campus, you can also access your email account using webmail and the remote desktop. When on the move, you can use email clients for laptops and mobile devices to view your email account. For instructions on how to do this visit lse.ac.uk/intranet/LSEServices/IMT/remote.

Email is one of the main forms of communication used by the Mathematics Department, and we expect all research students to check their LSE email on a regular basis.

Departmental Website

lse.ac.uk/maths

This is the website of the Department of Mathematics. It is the primary source of information about the Department, detailing in particular our research and events. You will also find comprehensive information and material relating to the Department's taught courses. Please check this site regularly as it is frequently updated.

Departmental Social Media Accounts

We have an active **Twitter account** ([@LSEMaths](#)) which we would really appreciate you following. If you have anything you would like us to tweet/retweet, just send it to Rebecca Lumb (R.C.Lumb@lse.ac.uk) or use @LSEMaths in your own tweet.

We also have a **research blog** (blogs.lse.ac.uk/maths/), the core mission of which is to increase public awareness and understanding of the research we undertake within LSE's Department of Mathematics. We do this by highlighting news and views on the work of our academic colleagues, both those based here in the Department and our esteemed guests.

We're really keen to hear your news and views and help publicise your work on the blog – if you have anything you would like to contribute, please read the advice at blogs.lse.ac.uk/maths/about/ and contact the Research Manager.

Moodle

Moodle is LSE's Virtual Learning Environment (VLE). Moodle is a password-protected web environment that contains a range of teaching resources, activities, assignments, information and discussions relating to taught courses. The content of Moodle is the responsibility of class teachers and so it will vary from course to course (not all teachers choose to use Moodle).

Moodle can be accessed from any computer connected to the internet, both on and off campus. To access Moodle go to moodle.lse.ac.uk and use your LSE user name and password to log in. This page also has links to help and advice on using Moodle.

You will also find links to Moodle from a number of web pages, including the webpage for 'Staff & Students'. If you have any technical problems with Moodle you should contact the helpdesk at it.helpdesk@lse.ac.uk.

You will find the specific **Department of Mathematics Research Students Moodle course** by searching for "Maths PhD". This is where we post materials produced to support PhD workshops and is very worth subscribing to.

PhD Portal

lse.ac.uk/intranet/LSEServices/divisionsAndDepartments/TLC/TLCPHD

The PhD Students' Portal acts as an information gateway for all PhD students at LSE. It provides details about central development and training courses, and links to a range of other information relevant to PhD students across the School. It includes details on the courses offered by The Teaching and Learning Centre (TLC), which comprise an academic and professional development programme for PhD students. Of particular interest will be the courses on authoring a PhD and developing as a researcher. Further information on the services provided by the TLC can be found in this handbook, under the heading "Academic and Professional Development for PhD Students". The portal also contains links to the Careers Service, LSE Language Centre, and Methodology Institute as well as Library and IT Training information related specifically to research students. In addition, it provides a link to all the important administrative documentation you are likely to need during the course of your study.



Mathematics

Your School

LSE provides a range of support services on campus to ensure that your whole student experience is as rewarding and enjoyable as possible. This section shows you how to make the very best out of your time at the School, in terms of opportunities, support and services.

Learning Development

LSE's Teaching and Learning Centre provides a range of events, resources and services that will complement your academic study and help you to make the most of your time here.

LSE Study Toolkit

lse.ac.uk/studytoolkit

The LSE Study Toolkit is designed to help you tackle LSE-style study with confidence. Four areas identified by current students as vital to success at LSE – justifying your arguments, studying independently, communicating your ideas and honing your quantitative skills – are addressed with short films and expert guidance that provide the tools necessary for effective and rewarding study.

Learning Development Events

lse.ac.uk/tlc/development

There is a year round series of workshops and lectures on topics such as effective reading strategies, exam preparation and participating in classes and seminars. You can just turn up, but booking guarantees you a place.

Language Support

lse.ac.uk/language/Home.aspx

As well as degree options, the LSE Language Centre provides a comprehensive programme of support if English is not your first language and a range of extra-curricular courses designed especially for LSE students.

Academic and Professional Development for PhD students

lse.ac.uk/intranet/LSEServices/TLC/TLCPhD/Home.aspx

Research students are encouraged to participate in the Academic and Professional Development Programme for PhD students (APD). This is offered by the Teaching and Learning Centre, together with colleagues from the Careers Service and Language Centre. The programme is based around the core course 'Authoring a PhD and Developing as a Researcher,' which covers topics from creativity in research design to preparing for the PhD viva examination. The course is organised into three strands – getting started, the middle years and the endgame – for students at different stages of their research.

Teaching and Learning Centre contact: Dr Sarabajaya Kumar – Academic and Professional Development Adviser for PhD and Postdoctoral Researchers.

Email: s.kumar3@lse.ac.uk.

The Teaching and Learning Centre also provides support and training for PhD students who teach. Those students who wish to take their teaching training further should consider taking the 'LSE Postgraduate Certificate in Higher Education' (PGCertHE), a formal qualification in teaching in HE, which is externally accredited by a national body, the Higher Education Academy. For further information about the LSE PGCertHE and other TLC teaching training, please contact the TLC Departmental Manager: tlc@lse.ac.uk.

There are a number of other training events and support networks for research students. Please see the training portal website for further details of courses and events: training.lse.ac.uk.

Personal Development

There are many ways in which LSE supports the personal development and wellbeing of students, both on and off campus.

Personal Development Events

lse.ac.uk/tlc/development and lse.ac.uk/counselling

There are lectures and group based workshops across the year on topics such as stress management, overcoming perfectionism and coping with personal difficulties.

Student Wellbeing Service

lse.ac.uk/counselling and lse.ac.uk/disability

Help is available for every problem regardless of its size.

LSE's Student Counselling Service is a free and confidential service. One to one appointments can be booked online in advance; they also provide daily drop in sessions. The Service's Peer Support scheme lse.ac.uk/peersupport enables students to talk with fellow students if they have any personal worries. The Disability and Wellbeing Service provides advice to disabled students, makes Individual Student Support Agreements and helps with Individual Examination Adjustments.

LSE Personal Development Aide Memoire (PDAM)

lse.ac.uk/apd/PDAM

This is a record that you can access and build in LSE for You and which enables you to keep track of the skills and experience you gain through any extra-curricular activity you undertake while you are at LSE, both within and beyond the School. The PDAM is automatically populated from a number of different LSE systems and can also be updated manually. Once completed, it will enable you to provide information and evidence about what you have done beyond your studies, making it useful for volunteering, internship and job applications.

School Services and Sources of Help, Advice and Information

Student Service Centre

lse.ac.uk/ssc

Although PhD administration is carried out by the PhD Academy, there are a number of functions that take place at the Student Service Centre (SSC), which is located on the ground floor of the Old Building. It provides advice and information on the following services:

- admissions (drop-in service)
- fees – process fee payments and distribute cheques (drop-in service)
- financial support – advice on scholarships, awards, prizes, emergency funding and studentships (drop-in service)
- information for new arrivals
- programme registration
- graduation ceremonies
- visa and immigration advice (drop-in service).

The SSC provides a general enquiry service for students between 11.00–16.00 every weekday. You can also contact them by telephone. Details of who to contact and more information on advice available can be found on their website.

Financial Support Office

lse.ac.uk/intranet/students/moneyMatters/financialSupport/Home.aspx

The Financial Support Office (FSO) is responsible for the administration and awarding of scholarships, bursaries, studentships and School prizes. It is located within LSE's Student Services Centre with a daily drop-in session during term time between 13.00–14.00 every weekday (Mondays, Wednesdays and Fridays during vacations). No appointment is necessary.

Funding administered by the FSO:

- Student Support Fund: for students who register with sufficient funding but who subsequently experience unforeseen financial difficulties. In all cases, applicants need to provide supporting documentation. PhD students who are in the final stages of completing their thesis are also eligible to apply.
- Access to Learning Fund: to assist Home UK students with their living costs. Funds are limited and priority is given to undergraduates, students with children, disabled students, and final year students.
- Short Term Loan: emergency short term loan facility for students who are experiencing a delay in obtaining funds from another source e.g. Student Finance payment, Canadian or American Student loans, a non-LSE scholarship, or wages. Short Term Loans normally take between 24 and 48 hours to process.
- Postgraduate Travel Fund: for postgraduate research students attending a conference at which they have been invited to give a paper.

Full details and application forms are available from their website.

Results and Transcripts of Results

lse.ac.uk/results

The School releases confirmed marks to students once the relevant School Board of Examiners has ratified them.

To ensure that your results are released as scheduled, please check your balance on LSE for You to see if you have any outstanding tuition, halls or library fees. You should contact the Fees Office (fees@lse.ac.uk) if you have any queries, since the School will not release your results if you have any outstanding debt.

Transcripts for finalists are issued digitally within five working days of final results being officially published. Continuing students will be able to request an 'intermediate transcript' of results as soon as they are officially published. For more information, please see lse.ac.uk/transcripts.

Graduation Ceremonies

lse.ac.uk/ceremonies

Graduation ceremonies are held twice a year: in July for students who have followed undergraduate or nine- or ten-month taught postgraduate degree programmes, and in December for students who have followed twelve-month taught postgraduate degree programmes. MPhil/PhD research students are presented at both the July and December ceremonies, in July for those awarded by 30 April and in December for those awarded by 30 September.

The Student Services Centre emails invitations, which include details of the ticket booking process, five to six months before the ceremonies are scheduled to take place. MPhil/PhD research students are invited once their degrees have been awarded. The ceremony itself usually lasts just over an hour and is followed by an on-campus drinks reception.

For more information, including the dates of future ceremonies and details of the School's overseas ceremonies, please visit their website.

Degree Certificates

lse.ac.uk/degreeCertificates

The degree certificate gives your full name, level of award, programme of study, and class of degree or other award obtained.

Your certificate will be available for collection on the ceremony days of the relevant graduation period in July or December. If you don't collect it at the ceremony, it will be posted to your home addresses within four to six weeks. It is therefore essential that you keep your details up-to-date on LSE for You.

International Student Immigration Visa Advice Team (ISVAT)

lse.ac.uk/isvat

ISVAT provides detailed immigration advice for International Students on their website which is updated whenever the immigration rules change. They can advise you by e-mail (if you complete an online query form on the ISVAT web pages) or at the drop-in service at the Student Services Centre. ISVAT run workshops to advise

students applying to extend their stay in the UK; and in complex cases, they will make individual appointments.

The Language Centre

lse.ac.uk/language/Home.aspx

Language support

As well as degree options the LSE Language Centre provides a comprehensive programme of support if English is not your first language and a range of extra-curricular courses designed for students of the social sciences.

Language, Linguistics and Literature – Degree Options and Certificate Courses

The Language Centre offers an extra-curricular programme in a range of modern foreign languages which is open to you for a fee. To help you choose the most appropriate course a series of information sessions and individual appointments is held during the first weeks of term.

The Department will subsidise students' costs for one Language Centre course by 40% of the total course cost, on a 'first come, first served' basis from an annual budget. These costs will be reimbursed to the student upon submission of proof of payment of course fees to the Language Centre.

Student Study Advice

lse.ac.uk/intranet/LSEServices/TLC/developmentAndTraining/Home.aspx

The LSE Teaching and Learning Centre offers study advice, with specialist provision for undergraduate and taught Masters students. There is a series of lectures and workshops throughout the academic year covering essay writing, time management, preparing for exams, dealing with stress, etc. A limited number of one-to-one appointments can also be booked with a study adviser to discuss strategies for quantitative/qualitative subjects or with the Royal Literary Fund Fellow to improve writing style.

Email studentsupport@lse.ac.uk for further details.

Residential Services Office

lse.ac.uk/lifeAtLSE/accommodation/home.aspx

The Accommodation Office can help current students with deciding on accommodation options. They will manage application for entrance to halls of residence (spaces are available on a first-come, first-served basis to post-graduate research students), as well as provide advice for finding private housing.

Dean of Graduate Studies

lse.ac.uk/intranet/students/academicSupportServices/home.aspx

The Dean of Graduate Studies, Dr Sunil Kumar, has a wide range of duties relating to the School's graduate community. He is available to any graduate student who wishes to discuss academic or personal issues. The Dean works closely with members of academic staff, including Supervisors, Programme Directors, Heads of Department, and with other support services across the School, such as the Disability and

Wellbeing Service and the Teaching and Learning Centre, to help maximise graduates' learning potential and enhance the student experience.

The Dean of Graduate Studies will see students by appointment or during his office hours which are published outside the Deans' Offices, OLD 1.07. Appointments can be booked through his Executive Assistant. To arrange an appointment with the Dean of Graduate Studies, please contact pg.dean@lse.ac.uk.

Although the Deans are available to meet any student to discuss personal or academic matters, students should seek the advice and support of their Academic Adviser and Departmental Tutor/Programme Director before coming to the Deans.

LSE Careers

lse.ac.uk/careers

LSE Careers offers a wide range of seminars, employer presentations, fairs and face-to-face career discussions to help you at every stage of your career planning process - from deciding what you want to do to preparing for interviews and settling into your first job. LSE Careers also works with your department to deliver events and services tailored to you.

LSE attracts top recruiters in many sectors who use our vacancy board to advertise hundreds of internships, voluntary, part-time and graduate positions. You can access the vacancy board and book career discussions and events through LSE CareerHub at careers.lse.ac.uk.

The LSE Careers website and blog are also full of tips, advice and information about every stage of the careers process from CV writing to interviews, and information about a wide range of employment sectors.

You can also browse our Graduate Destinations website (lse.ac.uk/GraduateDestinations) to find out what LSE graduates have gone on to do, organised by department or subject.

For up-to-date information about events, booking, resources, news and vacancies follow us on Facebook facebook.com/lsecareers and Twitter [@LSECareers](https://twitter.com/LSECareers).

LSE Volunteer Centre

lse.ac.uk/volunteercentre

The LSE Volunteer Centre is based within LSE Careers and is here to help you develop new skills and new friendships while making an impact through volunteering. We advertise volunteering opportunities at different charities across London and internationally, with positions ranging from one-off opportunities to part-time internships with charities. The annual Volunteering Fair takes place at the beginning of Michaelmas term and is a great opportunity to meet a wide range of charities and get a feel for the work they do. You can find out more, as well as tips and advice about volunteering, on the LSE Volunteer Centre website or [@LSEVolunteering](https://twitter.com/LSEVolunteering).

Volunteering with LSE's Widening Participation Team

lse.ac.uk/wideningparticipation

Widening Participation (WP) aims to raise aspiration and attainment in young people from London state schools. They deliver a number of key projects that encourage young people from under-represented backgrounds to aim for a university education. They seek enthusiastic LSE students to be inspiring role models and to contribute to the success of our programmes.

They require help with three particular projects: Student Ambassadors, Student Tutoring and Student Mentoring. Mentoring and Tutoring require a weekly commitment, while being a Student Ambassador is flexible, and you can volunteer when you're available.

There are many benefits to working with young people and volunteering your time. These include getting involved and giving back to your local community, strengthening your C.V. and personal satisfaction.

Alumni Association

alumni.lse.ac.uk

LSE's Alumni Association is the official voice of LSE's global alumni community, comprising more than 130,000 people in over 200 countries, nearly 100 regional groups, and 11 special interest groups. Its primary role is to support the alumni programme co-ordinated by the LSE Alumni Relations team by developing and supporting the network of international and special interest alumni groups and contact networks, and representing the voice of the alumni community within the School.

You automatically become a member upon graduation and membership is free. By registering with the LSE Alumni Online community, you will be able to stay connected with former classmates and the School after your graduation. You will also receive the monthly *LSE Alumni Echo* e-newsletter and the annual *LSE Connect* alumni magazine.

LSE alumni also have access to:

- Alumni Professional Mentoring Network
- LSE Careers for up to five years after graduation
- An email forwarding address to continue using an LSE email address
- The Library's printed collections on a reference basis, and can borrow free of charge

For more information about the benefits and services available to alumni, please visit LSE Alumni Online or contact the Alumni Relations team on alumni@lse.ac.uk.

Catering Services

lse.ac.uk/cateringServices/venues/Home.aspx

Our restaurants, cafes and bars offer a wide range of foods, drinks and services together with the opportunity to socialise with friends and colleagues. We aim to provide the highest quality possible in our products and customer service and to offer choice, value and variety at affordable prices. LSE Catering Services became the first London University to achieve Fairtrade status in 2004. Fairtrade refreshments are available in all the School's catering outlets.

sQuid Card

lse.ac.uk/intranet/students/moneyMatters/squid.aspx

sQuid provides the option for contactless payment for goods and services from a variety of vendors on campus using your student ID card. There is no obligation to use the sQuid option on your Student ID card. However, by doing so you may be eligible for special offers and promotions run by LSE and participating retailers.

PhD Parent group

Supported by the PhD Academy, the PhD Parent Group provides a source of information and support to parents and parents-to-be. The group offers advice on matters such as local child-friendly activities, childcare arrangements and balancing a PhD with parental duties. To find out more, please email Phdacademy@lse.ac.uk.

LSE Day Nursery

lse.ac.uk/intranet/LSEServices/nursery/Home.aspx

The LSE Day Nursery is registered under the Early Years sector and our Ofsted registration allows us to provide care and learning for 63 children in total, aged between 3 months and 5 years.

We are located in the basement of an LSE Hall of Residence on Wild Street. We primarily serve students and staff of the LSE. We offer full-time and part-times spaces.

We base our curriculum on the *Revised Early Years Foundation Stage Framework (EYFS)*. The nursery was rated *Satisfactory* on the last Ofsted Inspection in January 2013.

The nursery has four main rooms. There are two baby rooms, which can take up to 23 babies aged 3 months to 2 years. We can accommodate up to 26 toddlers aged between 2 to 3 years, and 16 pre-school children aged between 3 to 5 years.

The nursery is opened from 8.45–18.15. It is open for 50 weeks of the year, except for bank holidays and a week at both Christmas and Easter.

There are always places available and we welcome enquiries from interested parents, both students and staff.

The Nursery welcomes viewings any week day at 10.30 or 15.00 by appointment, please email nursery@lse.ac.uk or call 020 7107 5966.

The Chaplaincy and Faith Centre

lse.ac.uk/chaplaincy

The Faith Centre in the Saw Swee Hock Building opened in 2013/14, bringing together multi-faith facilities for prayer, worship and faith society meetings as well as providing a contemplative space on campus available to all staff and students. The Chaplain is also available to provide pastoral support to anyone seeking non-judgemental conversation or advice and to support religious life and cohesion within the wider School community.

St Philip's Medical Centre

lse.ac.uk/collections/medicalCentre/Default.htm

The Medical Centre is a general NHS practice which LSE students can use if they live within the practice's catchment area. The Centre also provides dental facilities, an osteopath, an acupuncturist, and more general first aid, vaccination, travel and contraceptive advice.

Business Continuity Management

Business continuity management in the LSE is concerned with:

- planning to ensure that the School runs as normally as possible during known or predicted major events and occurrences
- planning the School's response to and recovery from the impact of possible major incidents causing the loss of access to the site (such as a bomb threat), or a major loss of infrastructure or facilities (such as power failures, IT outages)
- managing other, less serious occurrences and events which may adversely affect the work of the School, such as unfavourable weather conditions or disruption to travel from the weather or other causes, industrial disputes, etc. These occur from time to time and we do all we can to keep the School running and keep you informed about what action is being taken.

The main method of communication with students and staff during all disruptive incidents is the LSE website and it is therefore important that you check the website regularly (lse.ac.uk). We may also try to contact you by other means, such as by 'phone or e-mail. Departments will be informed of developments and we may advise you to contact staff in your department during these periods.

In any emergency the key messages are to keep calm, follow instructions issued by the School, and to remain in touch with your department. The School seeks to manage all disruptive incidents swiftly so that work can return to normal as quickly as possible.

Quality Assurance

The School's approach to quality assurance is set out in the document "Strategy for Managing Academic Standards and Quality" (available electronically at lse.ac.uk/intranet/LSEServices/TQARO/InternalQualityAssurance/StrategyForManagingAcademicStandards.aspx). It sets out broad principles and processes for assuring academic standards and for enhancing the quality of educational provision.

Students are encouraged to contribute directly to the quality assurance of their courses and programmes. They can do so through their Staff-Student Liaison Committees (or via their representative; see the section in this handbook entitled "Skills Training"), by attending Academic and Student Affairs Committee reviews of their departments, and by conscientiously completing School surveys (see below).

Advisers to Students

lse.ac.uk/intranet/students/academicSupportServices/home.aspx

The school has specialist advisers to male and female students. They are available to discuss issues of concern to students in the School and to offer advice and support to students with personal problems.

- The Adviser is available to discuss issues of concern to women students in the School and to offer advice and support to female students with personal problems. The adviser is Dr. Bingchun Meng, Room TW2.1.01h, 020 7107 5020, b.meng@lse.ac.uk.
- The Adviser is available to discuss issues of concern to male students and provides a confidential point of contact. The adviser is Dr Jonathan Hopkin, Department of Government, Room CON 5.18, 020 7955 6535, j.r.hopkin@lse.ac.uk.

Nightline

nightline.org.uk

Nightline is a free and confidential listening service run by students for students from 18.00-08.00.

University of London

ulu.co.uk

All registered students are automatically members of the University of London Union (ULU). This is housed in Malet Street, 15 minutes north of the LSE, and the premises include numerous sports facilities and services such as banks, shops, bars, etc.

Green Impact

lse.ac.uk/intranet/LSEServices/estatesDivision/sustainableLSE/getInvolved/GreenImpact/home.aspx

One of the principle aims of LSE's Environmental Policy is to create a vibrant community in which staff, students and visitors have the opportunity to individually and collectively support the School in protecting the environment. Green Impact is an environmental accreditation scheme which empowers teams of staff and students across the School to be part of creating real environmental change. It recognises good practice, enables departments to benchmark their existing achievements, and is a key part of embedding the LSE Environmental Policy and Carbon Management Plan in the day-to-day life of the School.

The programme is run locally by the School but managed across 47 Higher Education Institutes by The Environmental Association for Universities and Colleges (EAUC), and the NUS. If you would like to join the Department of Mathematics' Green Impact team, please contact Rebecca Lumb (R.C.Lumb@lse.ac.uk).

How to Live Sustainably at LSE

LSE recycles! Make sure your waste sorting is first class:



Make your mark at LSE

- Join a Green Impact team in your academic department
- Contribute your research and views to the LSE Sustainability Blog
- Get your hands dirty at the roof gardens
- Volunteer at green events
- Apply for funding for your own project through the Sustainable Projects Fund

Get in touch

Website: lse.ac.uk/sustainableLSE

Blog: blogs.lse.ac.uk/sustainability

Twitter: [@SustainableLSE](https://twitter.com/SustainableLSE)

Top tips:

Switch things off when not using them, especially overnight

Use a reusable coffee cup / water bottle – available on campus

ReLove your old stuff at the ReLove fair – see website for details

Take a shorter shower

The Library

lse.ac.uk/library/home.aspx

Your LSE student card is also your Library card; no additional registration with the Library is required.

To help you make the most of the Library:

- ask Library staff for general information, your Library guide, and other freebies. Staff are available to answer your questions
- read the user guide specifically aimed at LSE students, available from the Library website (lse.ac.uk/library/usingTheLibrary/userGuides/home.aspx)
- use the Library Catalogue (catalogue.lse.ac.uk) to find both the Library's print and electronic resources. Locations in the Library are illustrated on an electronic map
- sign up to a course on how to find items from your reading list, and other training events from across the School, at apps.lse.ac.uk/training-system
- staff at the Help Desk on the 1st floor are available for any enquiries about using our collections and electronic resources.

When inside the Library building, please remember:

- respect the zone you are in and keep noise to a minimum in Quiet and Silent zones
- food cannot be consumed inside the library, although you are able to eat in the Escape area (before the turnstiles) and drinks with lids can be brought into the Library.
- fully vacate your study place for others when taking a break
- do not leave your bags unattended.

Follow the Library at:

- [@LSELibrary](https://twitter.com/LSELibrary)
- facebook.com/LSELibrary.

You can also contact the Library at library.enquiries@lse.ac.uk.

Mathematics' Provisions in the Library

LSE has the foremost social science library in the UK, with an extensive range of electronic resources, including MathSciNet, ISI Web of Science, JSTOR, IBSS and Econlit. These cover 372 individual titles in the mathematical sciences, with 45 Mathematics titles and 57 Statistics titles also available in print. The Department of Statistics has its own dedicated Leverhulme Library, which Mathematics PhD students also have access to.

The Department has a library liaison officer, Nancy Graham (N.Graham1@lse.ac.uk), who can help with any questions you might have regarding the Library, loans, SCONUL and other forms of access.

SCONUL Access Scheme

For those unfamiliar with the SCONUL Access scheme, more information can be found at lse.ac.uk/library/membership/usingOtherLibraries.aspx and sconul.ac.uk/page/about-sconul. Essentially, SCONUL facilitates easy access to most other university libraries in the UK and Ireland. Not all university libraries are a

member of the full scheme. For example, King's College and UCL do not allow access under the SCONUL scheme, but do under a University of London scheme. If the library you want to visit is not on the SCONUL list you should check their website to see what their policy is.

To apply for SCONUL Access:

- Go to the SCONUL homepage: sconul.ac.uk/sconul-access
- Select your student status
- Select "London School of Economics" and press 'Find'
- Select the institution you wish to visit
- Complete the online registration form
- A confirmatory email will be sent to you within one working day. Please take a copy of this email to the Library you wish to visit.

If you have difficulty selecting your status, please choose any category and the Library will correct your details when processing your request.

Accessing the Financial Times and The Economist

1. All LSE staff and students can use FT.com, which gives full online access to the Financial Times. To do this you will need to create your own FT.com account. To sign up, visit on.ft.com/MRotoM and use your LSE email address. You will need to be on campus when you set up the account, either on a PC or using the wireless network, but once you have done that you can access it from anywhere. The site should be easy to use but have a look at these training guides if you need some help: help.ft.com/tools-services. The Financial Times is available for 20p daily from the Student Shop.
2. All LSE staff and students have online access to the Economist through a service called ABI Inform. To access this go to the Library's website (lse.ac.uk/library/home.aspx) and search the catalogue for Economist Online. Click on the first record and follow the links for full text through to ABI Inform.
3. If you have any problems accessing or FT.com or the Economist, please ask the Library staff for help, either in person in the Library or via email to library.enquiries@lse.ac.uk or phone on 020 7955 7229.

The LSE Students' Union

lsesu.com

We believe that LSE has one of the most active student communities at any university, and is being led by students. The Student's Union is independent from the School. We'll help you out if you get into trouble, tell you how you can meet students with similar interests and views, and provide opportunities to have the sort of student experience you want.

Here are some of the ways in which we do it:

- Student activities – the Union funds and supports over 200 societies, sports clubs, Media Group societies and Raising and Giving charitable fundraising
- Campaigns and democracy – getting students together to take action on and influence the issues they care about within the School and wider society
- Representation – led by a Student Executive, working with representatives across the School, you influence and shape the decisions and direction of the School
- Welfare and student support – our independent, legally-trained advice workers offer free, confidential advice when things go wrong or you need help
- The Union runs a bar, some shops and the only gym on campus all designed for LSE students.

You will be part of one of the most important chapters in our history, where we go now and what happens next for your union is up to you.

Student Charter

Introduction

This Charter was written by LSE students and staff with the aim of helping you understand the vision and ethos of LSE. It is not a contract. Instead, it aims to set out the School's core principles and to signpost key information about our structures and services. We will review it regularly to make sure that it continues to reflect our intentions and expectations.

Our Vision

- To deliver challenging, stimulating research-led degree programmes in an environment that supports learning and develops independent thinking among our students.
- To ensure that our research and teaching remain at the forefront of the social sciences, addressing the evolving challenges of society.
- To be among the most internationally-oriented centres of social science excellence in the world.
- To extend our engagement with society across our full academic portfolio and into key regions of the world.
- To enrol the best students from around the world to benefit from, and contribute to, the learning environment at the School.

The LSE Community

LSE is a unique institution which values its international and diverse community. It aims to provide an inclusive and accessible environment, which supports learning and the pursuit and dissemination of knowledge and ideas. Its purpose can only be achieved if students can work and conduct their business peacefully, in a welcoming and non-threatening environment – one that permits freedom of thought and expression in a framework of collegiality and respect for the rights and dignity of others.

LSE aims not only to nurture debate, but also to ensure that it is conducted with mutual respect and consideration for all those involved. At LSE respect for the cultures, opinions and backgrounds of others, as well as for the physical environment of the institution and our neighbours, is an integral part of our culture.

LSE is committed to promoting equality of opportunity for students and staff from all social, cultural and economic backgrounds. The School aims to be an environment which is free from discrimination on the basis of race, disability, gender, age, religion, belief, sexual orientation, gender reassignment and pregnancy and maternity.

You are encouraged to be an active citizen, both of the School and the wider community, for example by taking part in volunteering opportunities, engaging with societies and attending the public lectures programme.

As a student at LSE you are expected to uphold the School's reputation by behaving in accordance with its Ethics Code and in all forms of interaction, spoken, written and virtual. We encourage those involved in any disagreement to seek informal resolution wherever possible. However, the School has regulations on appeals, complaints and discipline to protect both students and the community as a whole.

Teaching, Learning and Assessment

You will receive research-led teaching from internationally renowned academic staff. You will also be offered individual and group support from academic advisers and supervisors.

In order to make the most of your time at the School you are expected: to attend meetings with academic advisers and/or supervisors to discuss progress and raise concerns if need be; to seek guidance and support from academic staff in their office hours; to attend and take part in classes, seminars, lectures and mandatory departmental events; to inform the department of any essential absences; to manage your learning responsibly through private study; to adhere to guidance on good scholarly practice and assessment regulations; to submit course work by the deadline; and to seek and respond to feedback on coursework.

Undergraduate assessment is normally by end of year examinations, while graduate assessment relies on a combination of methods. The School is committed to high academic standards and all assessment is rigorous.

Academic, Personal and Professional Development

A variety of support services and programmes exists across LSE to support teaching and supervision by academic staff. Their purpose is to enhance your academic and personal development and to help maximise your future employability.

Support services available to you include: a programme of orientation events and transitional support (e.g. a student mentor for all new undergraduate students) to help you adapt to studying at LSE; study skill resources from the Teaching and Learning Centre; language teaching through the Language Centre; a specialist Disability and Well-Being Service for students who experience permanent, long term or temporary disability; a professional Counselling Service for students with personal difficulties; and expert advice and recruitment events provided by LSE Careers.

You can get information on academic provision and support services via the Library, websites, documentation, LSE for You and Moodle, our virtual learning environment.

Student Engagement

LSE values your opinion, and gives you opportunities to contribute to course and programme development and to provide feedback on academic provision and support services.

Student participation and representation on committees helps to ensure that your voice is heard across the School and in your Department. The School expects that you will support programme representatives and encourages you to take part in Staff Student Liaison Committees and Student Fora.

LSE will ask for your opinion on teaching and other issues via internal and national surveys. Your responses give us important information about how we can improve our services for students.

LSE Students' Union is an independent student-led, democratic organisation, which you will join automatically on becoming a student at LSE. Its focus is on improving the lives of students, through representation, campaigns and support. It exists to help students with academic, social and welfare problems, and to provide a range of sports clubs, societies, services and social activities.

LSE And Your Future

The School trusts that your relationship with LSE will be enjoyable and fruitful. We also hope that it will continue long after you have graduated, when you will join the worldwide network of our Alumni Association.

Date Last Reviewed ...May 2012

Director: Professor Craig Calhoun

General Secretary, Student Union: Alex Peters-Day

Further Information

Head of the Student Services Centre: c.child@lse.ac.uk

An electronic version of this charter can be found at
lse.ac.uk/intranet/LSEServices/policies/pdfs/school/stuCha.pdf

Ethics Code

What Is The Ethics Code?

The Ethics Code is a set of six core principles underpinning life at the LSE. It was drawn up by a Consultation Group established by Council in January 2012, after discussions with students, staff, governors, and alumni of the School. It is accompanied by a set of Ethical Guidelines that aim to show how each principle should apply in practice.

The Ethics Code sits alongside and supports the School's key objectives:

- to deliver challenging research-led degree programmes in an environment that supports learning and develops independent thinking among our students
- to ensure that our research and teaching remain at the forefront of the social sciences, addressing the evolving challenges of society
- to be among the most internationally-oriented centres of social science excellence in the world
- to extend our engagement with society across our full academic portfolio and in key regions of the world
- to enrol the best students from around the world to benefit from, and contribute to, the learning environment at the School (LSE Strategic Plan 2011-16, 5).

Who Does It Affect?

The whole LSE community, including all staff, students, and governors of the LSE, are expected to behave in line with the Code.

Council, Academic Board, their subsidiary committees, and the management of the School are responsible for the promotion, implementation, and application of the Code. Decisions should be taken at all levels with reference both to the School's objectives and to the principles set out in this Code.

The Ethics Code

All members of the LSE community, including all students, staff, and governors, are expected to behave in line with the following principles:

- Responsibility and Accountability: we will uphold this Code and be accountable for following it
- Integrity: we will demonstrate independence, consistency, honesty, and transparency in all our activities
- Intellectual Freedom: we will defend and promote the freedom to pursue, advance, and disseminate knowledge and ideas
- Respect: we will treat people with dignity, promote equality of opportunity, and celebrate diversity
- Collegiality: we will maintain a scholarly community based on consultation, participation, and good citizenship
- Sustainability: we will manage our resources in ways that meet the needs of the present without compromising the options of future generations.

Full details of LSE's Ethics Code are available electronically at lse.ac.uk/ethics.