Department of Computer Science and Technology

M.Phil in Advanced Computer Science

Course Information for Applicants

UNIVERSITY OF CAMBRIDGE

Welcome

Welcome to the Postgraduate Studies Open Day.

We hope that this brief guide will be of some help but if you have further questions you are welcome to ask us, Lise Gough, Joy Rook and Marketa Green, the Course Administrators, by email cst-graduate-admissions@cst.cam.ac.uk.

Postgraduate Education Team

Contents

1. Department of Computer Science and Technology

The Department of Computer Science and Technology was founded in 1937 as the Mathematical Laboratory on the part of the New Museums Site now occupied by the Arup Building. The name was changed to Computer Laboratory in 1969 and the Computing Service was created in 1970 as part of the same department. With effect from 1 October 2017, the name changed to the Department of Computer Science and Technology.

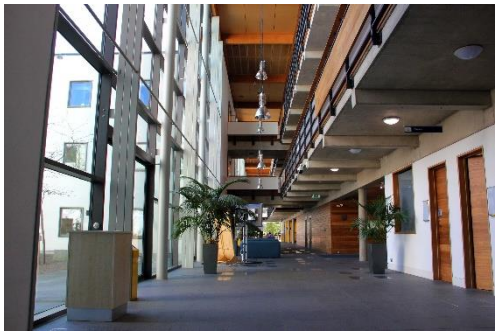
Professor Sir Maurice Wilkes was the Head of Department from 1946 until 1980 when he was succeeded by Professor Roger Needham. In 1996, Roger was appointed Pro-Vice Chancellor of the University. Subsequent heads have been Professor Robin Milner, Professor Ian Leslie, Professor Andy Pitts and currently Professor Andy Hopper.

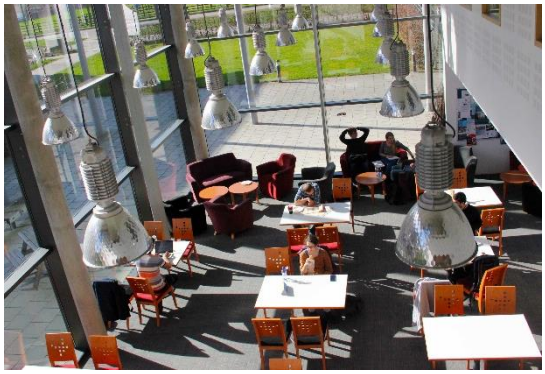
In 2001 we moved into purpose-built facilities in West Cambridge. Our address is:

Department of Computer Science and Technology
The Computer Laboratory
William Gates Building
15 JJ Thomson Avenue
Cambridge, CB3 0FD

The Department of Computer Science and Technology and is part of the School of Technology along with Engineering, Chemical Engineering and Biotechnology and the Judge Business School. See https://www.tech.cam.ac.uk/postgraduate

The department occupies the ground, first floor and most of the second floor of the William Gates Building. The large central entrance corridor is known as The Street. MPhil students use Teaching Rooms SW01, FS07 and FS09 and the Teaching Laboratory SW02. The Intel Lab in SW11 is a large computer room for undergraduate students.





Other facilities include a small café on the ground floor which is open 09:30-16:00 Monday to Friday excluding public holidays, and small kitchens around the department. There is also a cafe in the Hauser Forum at the end of JJ Thomson Avenue south of the West Cambridge site. A Sainsbury's supermarket is a ten-minute bike ride away in the new Eddington site, and there is a state-of-the-art Sports Centre on the West Cambridge site.

2. THE COURSE FORMAT

The Basics

The MPhil in Advanced Computer Science (the ACS) is designed to prepare students for doctoral research, whether at Cambridge or elsewhere. Typical applicants will have undertaken a first degree in computer science or an equivalent subject, and will be expected to be familiar with basic concepts and practices. The ACS is a nine–month course which starts in early October and finishes on 30 June. It covers advanced material in both theoretical and practical areas as well as instilling the elements of research practice. The course combines lectures, seminars and project work in various combinations tailored to the individual student. The course code for the MPhil in Advanced Computer Science is **CSM3**.

Prerequisites

Applicants for the MPhil in ACS are expected to have met the following prerequisites:

- First-class honours degree, or equivalent, in computer science. Alternatively, a degree of equal status in engineering, science, or mathematics where the applicant can demonstrate significant relevant preparation for the Cambridge MPhil course.
- Mathematics to A-Level standard or equivalent
- Programming experience
- A good IELTS or TOEFL score is also required where an English Language qualification is necessary.

Applications

Formal application for admission for the M.Phil degree must be made via the applicant portal https://www.postgraduate.study.cam.ac.uk/application-process/applicant-portal-and-self-service-account. The deadline for all applications is the 10 February of the year preceding the October admission. However, if you are applying for funding support from the University and Cambridge Trust, please see the Funding competitions section below for the relevant deadlines.

The application will also require the submission of the following supporting documentation:

- Transcript
- Two academic references
- One personal reference *(only required if applying for the Gates Cambridge Scholarship)*
- CV / Resume

Please note that applications can only be considered by the department once they are complete.

Course specific questions

The application form also requires the following course specific questions to be answered:

- Write a brief project proposals of no more than 500 words each (see below)
- Choose five modules chosen from the current year's syllabus (please see section 3)
- Choose two research themes in preference order
- Programming experience

Research project proposal

Students will spend a considerable amount of their time carrying out an individual research project under the supervision of a member of faculty. Your brief research proposal will identify the area in which you wish you work and a possible research problem in that area.

This proposal is not by any means binding; rather it serves to help us with our assessment of your application as well as identify potential supervisors. Candidates who are not yet certain of their area can visit the web pages of the various research themes and faculty members for inspiration.

Applicants who have discussed a potential research project idea with one of the department's academics, should mention this in their application.

Funding competitions

Applicants wishing to be considered for funding competitions should check their eligibility on the University-wide Sources of Funding web page. The deadlines for the Postgraduate Funding competitions can be found on webpage https://www.postgraduate.study.cam.ac.uk/funding

Postgraduate Loans for postgraduate degrees for UK residents are also available. Please see the UK Government's web page for further details at https://www.gov.uk/funding-for-postgraduate-study

Application process

Applications are considered in three gathered fields:

Batch 1: USA applicants applying for Gates Cambridge Trust (US) scholarship by mid-October will be considered and interviewed in November/early December 2021.

Batch 2: All other applications, including Gates Cambridge Trusts (Rest of world) received before the 2 December 2021 deadline, will be considered in late December and early January 2022. Applicants invited to an interview by video conference or phone should make themselves available between 4-17 January 2022.

Batch 3: Applications received after 3 December 2021 but before 10 February 2022 will be considered in late March and early April 2022. Applicants invited to interview should make themselves available between 18 March and 22 April 2022.

Course Structure

This course consists of:

a) 5 taught full modules;
b) 12 units from the mandatory Research Skills programme; and
c) a research project report of no more than 15,000 words, and no more than 50 pages.

The project can be research or application oriented and industrial collaboration is possible. Project selection and planning occurs in the first term and the project is undertaken in the following two terms. A final report is submitted at the end of the project.

The taught modules are delivered in a range of styles. For example, there are traditional lecture courses, lecture courses with associated practical classes, reading clubs, and seminar style modules.

Course Advisers

In Michaelmas Term, students are assigned a Course Adviser who will monitors their progress, meets with them at least once during the term and write a progress report. In Lent Term, Project Supervisors take over as adviser. MPhil students will also have a Postgraduate Tutor assigned to look after pastoral matters by their College.

Research Skills Programme

The Research Skills Programme is designed to provide advice on and training in a variety of practical skills required for research. The skills learnt will be useful in the student's individual project, other research-led modules, and in the student's future career.

All MPhil students are required to take 12 units in total which includes the core units and a number of optional units.

Core Units

There are 4 - 5 mandatory core units covering topics such as Academic English; Academic Writing; How to prepare a research presentation.

Optional Units

Students should choose units that are most relevant to their research plans, and supplementary to their previous experience. Optional units will not require coursework to be completed or submitted beyond participation in the session itself. Some options will involve practical work, which will be carried out during the session. This will provide an opportunity for students to practice specific skills, but will not be formally assessed.

Examples of units offered in current and previous years are:

- How to write a good abstract
- CV writing workshop
- Research ethics and GDPR
- Introduction to qualitative research methods
- Correctness proofs of distributed systems with Isabelle/HOL
- How (not to) lie with statistics
- Applications of Blockchains to Decentralised Finance, Markets, Art, and Beyond
- Buzzwords surrounding data science
- How to Write a Research Paper
- Intellectual property and commercialisation
- Entrepreneurship; how to start a company and other routes to exploit your research
- Motion Capture for Experimental Robotics Research
- How to work with artists and designers

3. MODULES

Students study five taught modules, preferably 3 in Michaelmas Term and 2 in Lent Term. Module choices should ideally underpin the student’s research project. The taught modules are delivered in a range of styles: traditional lecture courses; lecture courses with associated practical classes; reading clubs; and seminar style modules.

Every year new modules are introduced and obsolete one removed. Below is a list of some of the modules which have been previously or are currently on offer to MPhil students. Details of modules on offer this academic year can be found on the webpage www.cl.cam.ac.uk/teaching/current/acs.html.

- Advanced Graphics and Image Processing
- Advanced Operating Systems
- Advanced Robotics
- Advanced Topics in Computer Architecture
- Advanced Topics in Computer Systems
- Advanced Topics in Machine Learning
- Automated Reasoning
- Category Theory
- Cybercrime
- Digital Signal Processing
- Distributed Ledger Technologies: Foundations and Applications
- Interaction with Machine Learning
- Interactive Formal Verification
- Introduction to Computational Semantics
- Introduction to Natural Language Syntax and Parsing
- Introduction to Networking and systems Measurements
- Introduction to Robotics
- Large-scale data processing and optimisation
- Machine Learning and the Physical World
- Machine Learning for Language Processing
- Machine Visual Perception
- Multicore Semantics and Programming
- Network Architectures
- Overview of Natural Language Processing
- Principles of Machine Learning Systems
- Probabilistic Machine Learning
- Representation Learning on Graphs and Networks
- Technology, Law and Society
- Theory of Deep Learning
- Topics in Logic and Complexity

4. ASSESSMENT AND EXAMINING

Students must take five modules, selected from those offered in each year in consultation with their course adviser, each of which is assessed independently.

Each year ACS teaching staff will propose research projects that they are willing to supervise and these will be published on the web in the second part of Michaelmas Term.

Students must obtain an average mark of **60.0%** (300/500 marks) across all taught modules and also **60.0%** (420 / 700 marks) in the project to obtain the MPhil degree. The Distinction grade is awarded to candidates obtaining **75.00%** (900 / 1200 marks) and greater overall.

Coursework and Written Tests

Each student must take 5 taught modules, 12 units from the Research Skills Programme and undertake a project and submit a project report of no more than 15,000 words, and no more than 50 pages.

Each taught module consists generally of 16 contact hours over 8 weeks which may consist of any combination of lectures and/or supervised practical classes, seminars or reading groups.

Modules may be assessed by a combination of tests and/or coursework. Coursework may consist of recorded ‘ticks’ for ungraded assignments and/or graded term papers, practical reports, or essays. Ticks for ungraded reading assignments, oral presentations, or practical work may constitute a maximum of 25% of the coursework for any individual module.

Written papers may be set on selected modules. Test questions are marked according to a marking scheme and solution notes that are made available to the course examiners and agreed in advance of the test. Test papers will indicate the assignment of marks to each question and each component of a question. Students taking modules in which a ‘take home test’ test is set will be required to sign an undertaking that the work will be their own and not completed in collaboration with any other person.

Formal notices of the schedule and format of **written and take-home tests** will be sent electronically to all students and posted in the teaching laboratory SW02 at the end November (for Michaelmas modules) and early March (Lent modules). Written and take-home tests are, in general, set during the first week of following term. Written tests are no longer than two hours’ long and reading time is provided; students are generally given between 48 and 72 hours to complete take-home tests. For modules where assessment is by **coursework alone**, the deadlines for final essays and mini-projects are, usually, also set for the first week of the following term.

Students are recommended to use the ‘study weeks’ immediately after and immediately before the Cambridge full terms to revise for the tests and to complete coursework.

Deadlines

A schedule of coursework deadlines will be published each term. Deadlines are taken seriously and marks will be deducted for late coursework submission.

The penalty will be calculated as follows: **penalty = n/10 x mark** where **n** is the integer part of the number of days late, rounded up to the nearest integer. Failure to submit the **research project** by the published deadline will result in outright failure of the course.

Oral examinations (viva voce examinations)

After the final meeting of the Examiners for the course, the Examiners will announce which students will be called for an oral examination after the meeting. An oral examination can only improve a result or leave it unchanged.

Research projects

Every student is required to conduct a substantial research project. A research project is equivalent to seven taught modules. Students are required to pass the research project report with a minimum mark of 60%.

- Project selection and planning is in Michaelmas Term.
- The project itself is undertaken in Lent and Easter Terms.
- Projects can be research oriented or application oriented. Industrial collaboration on projects is possible.
- A member of the Faculty's academic staff will be appointed as a project supervisor. This person is responsible for overseeing the project student.
- A member of the Faculty's academic staff may be appointed as a project advisor. The person is available as a second advisor to the project student.
- The supervisor and adviser will assist the student in producing a Project Proposal document and work plan.
- If the research project involves experiments on human subjects, approval from the Department's Ethics Committee is required.
- The supervisor, the adviser, and the Management Committee must all approve the Project Proposal document prior to the student starting work on the tasks specified in the Proposal.
- The supervisor will monitor the progress of the project and a formal progress review will be conducted in conjunction with the student and advisor at the end of Lent term. Presentations of work in progress will be given in the second week of Easter term to all students and departmental teaching staff.

The report shall provide evidence that the candidate can design and carry out investigations, assess and interpret the results obtained, and place the work in the wider perspectives of the subject.

5. RESEARCH GROUPS

Students are integrated into the research culture of the Department by joining one of the research groups. Students are expected to attend the Department's and research group's programme of research seminars. An element of the research training will be in the context of a research group and will be overseen by their project supervisor.

Algorithms and Complexity Theme

Algorithms are fundamental objects of study in computer science. Algorithmic processes are not only executed in digital electronic computers but occur everywhere in the world around us. The Algorithms and Complexity research theme focuses on the mathematical modelling and analysis of algorithmic processes.

Computer Architecture Theme

Computer Architecture has been at the heart of the Department's research since it was first created – work on mechanical calculators and analogue computers drove the Lab's founders, which led to the development of EDSAC, the world's first practical stored-program computer in 1949.

Nowadays, research on Computer Architecture considers traditional general-purpose CPUs, GPUs, and accelerators for areas like machine learning, artificial intelligence, scientific computing and data processing. We have strong links with security through the CHERI project, machine learning and artificial intelligence, and programming language research via compilers and binary modification tools.

Through collaboration, we undertake complete system designs from gates through to applications with everything in between: processors, accelerators, compilers, linkers, run-times, operating systems, applications and verification at many levels.

Graphics, Vision and Imaging Science Theme

The areas of computer graphics, computer vision and imaging science address creating, capturing, rendering, and analyzing visual information in the forms of 2D/3D images, geometry, appearance, deformation, and motion models.

The tasks of computer graphics and vision are profoundly related. While computer graphics considers the forward problem of generating images and video from a description of a scene, computer vision considers the inverse problem of recovering and understanding scene properties from images and video. We utilize machine learning to exploit this duality and develop effective systems for digitizing and interacting with the visual world.

We build tools involving novel software and hardware components to tackle some of the fundamental problems of computer graphics, vision, and imaging. Our research often involves working with capture and display technologies, such as motion capture sensors, cameras, prototype displays, augmented and virtual reality headsets, or humanoid robots.

Human-Centred Computing Theme

The goal of human-centred computing is to create technologies that better meet human needs, through studying the needs of humans. Using diverse research methods from social science, experimental psychology, cognitive science and other disciplines, we address grand challenges such as social and emotional interaction with robots, or crossing the perceptual line between interaction with virtual and real worlds. We work with AI, machine learning and data science methods to build intelligent tools for digital life, supporting business and engineering, artistic expression and enquiry, and enabling collaborative design processes that address global challenges. Through addressing human priorities with a commitment to cross-disciplinary rigour, we make research contributions in core fields of computer science such as human-computer interaction, computer graphics, visualisation, and display technologies. Members of the group are also leaders in emerging specialist fields including affective computing, computer music, human-robot interaction, diagrammatic reasoning, computational photography, end-user programming and ubiquitous computing.

Machine Learning and Artificial Intelligence Theme

The goal of our research in artificial intelligence and machine learning is to understand, represent, model, learn and reason about problems in the real world. We create AI technologies that benefit society and increase social awareness. The theoretical methods we develop and employ span all varieties of deep learning, classical statistical learning, computational biology, knowledge representation, Bayesian inference, causal modelling, logical reasoning, probabilistic reasoning, visual reasoning, stochastic processes, human-like computing, and natural language processing. We apply these methods and approaches in numerous settings such as personalised medicine and education, automated theorem proving, policy work and data, systems applications, sensor networks, and end-to-end solutions in the African context.

Mobile Systems, Robotics and Automation Theme

Research in Mobile Systems, Robotics and Automation encompasses the fundamental challenges introduced by systems that either move autonomously or are made mobile by human movement through wearable technology. The research spans issues related to how to make these systems more efficient, how to design algorithms that control and coordinate autonomous mobility and communication, and how to devise suitable machine learning models to analyze the data produced by them. This thrust also involves the investigation of security and privacy aspects and the interfaces between devices/robots and users.

Applications of the research include mobile health, industrial automation, transport and logistics, to name a few.

Natural Language Processing Theme

The aim of Natural Language Processing is to develop computational models for analysing and generating human language. Research in the Department encompasses many areas of NLP, ranging from fundamental theory to real-world applications.

The models we develop are mainly based on modern machine learning techniques. On the theoretical side, we seek to understand the structure needed to represent language, how language is learned and processed by people, and how language varies between people and over time. On the application side, the ALTA institute develops technology to support second language teaching and

assessment. Other researchers work on automated fact checking, dialogue systems, document summarisation and scientific text processing, as well as interdisciplinary work in various domains such as healthcare and cybercrime.

Programming Languages, Semantics and Verification Theme

Research in the Programming, Logic, and Semantics group is centred around the study of programming languages, logics, and mathematical models, addressing hardware, software, and networks. It spans a wide range of applied and theoretical work: programming language design, compilers, and program analysis; the development of interactive theorem provers and automatic proof procedures; the formal verification of computational systems; and semantic models using techniques such as structural operational semantics, type systems, domain theory, category theory, finite model theory and linear logic. Work is in progress on the underlying mathematical structures of these, and on their application to the study of higher-order typed programming languages; object-based languages; low-level machine languages; foundational languages for concurrent, distributed and mobile computation; hardware description languages; security and networking problems; database theory; and computational complexity.

Security Theme

Computer security has been among our research interests for many years, along with related topics such as privacy, safety and maintainability. We research the technologies used by security engineers including access controls, protocols, cryptology, formal methods, hardware design, biometrics and usability; we also study the dependability of whole systems, which involves the economics of information security and spills over into policy.

We have established groups collecting data on cybercrime and abuse for use by researchers worldwide (the Cambridge Cybercrime Centre); developing novel vulnerability-mitigation mechanisms that are now starting to appear in commercial CPU designs (the CHERI project); and studying hardware tamper-resistance and emission security (the Tamper Lab).

Systems and Networking Theme

The Systems Research Group is one of the largest groups in the Department, undertaking research and teaching into all aspects of computer systems, broadly conceived, including computing and communications hardware and software, operating systems, distributed and mobile systems, and the legal and policy implications of future computing systems. The group has a strong tradition of design, implementation, and deployment of working platforms.

Systems research has been at the heart of the Department since its inception. Past systems developed and deployed here include the EDSAC (1949), the Titan operating system (1966), the Cambridge Ring (1974), the CAP (1976), and the Cambridge Distributed Computing System (1982).

More recent work includes the Desk Area Network (1991), the Tempest distributed network control system (1996), the Nemesis operating system (1999), the Xen hypervisor (2003), NetFPGA (2008), and the MirageOS unikernel system (2013).

Successful recent platforms include Xen, NetFPGA, and MirageOS.

6. STUDENT REPRESENTATION

M.Phil Students are represented on the **Faculty of Computer Science and Technology** by a Junior Member. Elections for members are held in the November of each academic year. The Faculty receives the Minutes of the Staff Student Consultative Forum, the Postgraduate Education Committee, the Teaching Committee, and the Forum of Directors of Studies, and itself reports to the General Board of the University. The Faculty Minutes are sent to the Secretary General of the Faculties, the members and to Officers in the department.
The junior members attend the first part of each meeting during which unreserved business is discussed - that's the bulk of the business and includes things like the Head of Department's annual report, accreditation matters, examiners' reports, teaching matters related to the Tripos and M.Phil courses, the use of calculators in exams, new proposals for courses, etc.

Reserved business covers matters referring to named members of staff (e.g. promotions and leave of absence), and such things as the appointment of Examiners and the Form and Conduct of examinations.
Whilst the faculty representative elections are formally independent of the Graduate Union, under the terms of the GU Constitution (which has the approval of the University Council) the elected postgraduate representative is also a voting member of the GU governing council. Further information about the GU Council is available at
http://www.gradunion.cam.ac.uk/gradunion/council/

Faculty meetings are fairly formal and reasonable dress is required!

M.Phil students are also represented on the **Staff Student Consultative Forum** and the **Postgraduate Students' Forum.** Both of these groups are relatively relaxed occasions and provide the opportunity for student and staff representatives to exchange comments about facilities and teaching.

The **Postgraduate Students' Forum** is made up of research student representatives from research students and the M.Phil course, the Postgraduate Students Coordinator and a member of the Student Administrative team. The Forum has the opportunity to suggest courses and activities that fall within the remit of the Transferable Skills allocation as well as issues that are particularly relevant to research students in the Faculty. Meetings are held at lunch time once a term and the minutes are received by the Postgraduate Education Committee and Degree Committee.

The **Staff Student Consultative Forum** (SSCOF) is made up of student representatives from every year of the undergraduate course, a M.Phil student, a research student, and members of the academic, support and Student Administration team. Meetings are held at lunch time twice a term.

Postgraduate Students also have a representative on the **Postgraduate School of Technology Committee.**

7. WOMEN@CL

The purpose of the women@CL network is to put in place a positive action programme for women in computing research, with a particular focus on interdisciplinary research, leadership and enterprise.
The programme consists of career development activities including regional and national workshops, mentoring and networking, with long term goals of:

- providing support for women in computing research;
- stimulating new research by bringing diverse viewpoints and expertise to bear;
- increasing the recruitment and retention of women in computing research careers;
- encouraging and supporting women to aim for early leadership roles;
- increasing women's understanding and participation in entrepreneurial ventures;
- contributing to a positive public perception and image of computer science;
- increasing public engagement in computer science;

The programme consists of a variety of local activities such as women@CL lunch talks that provide role models to our students and early career women, and our national and international activities include events like career development workshops at major conferences, regional technical meetings, and senior women leadership summits. We forge formal connections with existing bodies with similar goals. We also promote successful women and projects by placing articles, profiles and interviews in all forms of media.

women@CL events are open to all, women and men. For more information on the meetings and resources for and about women in computing, please visit the *women@CL* webpage http://www.cst.cam.ac.uk/women.

For more information please email women-at-cl-admin@cst.cam.ac.uk

8. AFTERWARDS…

Graduation

Graduation ceremonies are handled by the colleges and students can choose from a number of Congregation dates throughout the year. They are generally held about three times a term and once in the Long Vacation. The earliest date MPhil students can graduate is at the mid-July ceremony.

Students graduate with their college. It is possible to take the degree in person or in absence (also known as 'in absentia'). Please note that if a degree is taking in absence, it is not possible to subsequently graduate in person with the same degree.

Degree ceremony dates can be found at https://www.cambridgestudents.cam.ac.uk/your-course/graduation-and-what-next/degree-ceremony-dates. Note that not all Colleges present candidates at every date listed.

MPhil students 2019-20

Applying to study for a Ph.D.

Many of our successful M.Phil students have progressed to study for the Ph.D. Degree in our department, other departments at the University of Cambridge and other UK and overseas institutions.

Applications

There are two intakes of research students each year: October 1st (preferred) and January 5th. The latter date may be of interest to M.Phil students as there is a small possibility that students *might* not graduate until the beginning of the new academic year.

If you are considering applying for admission at Cambridge as a research student after the M.Phil in Advanced Computer Science course you should complete an online application form available via your CamSIS self-service webpage. It is very important to discuss your research ideas with a potential supervisor before submitting your application.

The application, which should include two references and a research proposal, will be made as an electronic submission

When applying for admission as a research student in the Department of Computer Science and Technology we will expect you to submit a proposal of research. This will be a document of no more than 3,000 words. You should be able to show an understanding of existing work in the field, the first-year deliverables and be able to identify an area for new work. You will also need to provide two academic references one of which should be from a staff member from the department. At present, you will not need to provide transcripts again.

If you are accepted by the department as a research student we would not necessarily expect you to adhere to the draft proposal, but it is useful to be able to pin down your area of interest more specifically. It also provides a good opportunity for you to demonstrate that you are able to select an interesting research topic, and present any insight you may have into how it could be tackled. We would recommend that you look at our web pages at http://www.cl.cam.ac.uk/research/ to gain some insight in to our current areas of research.

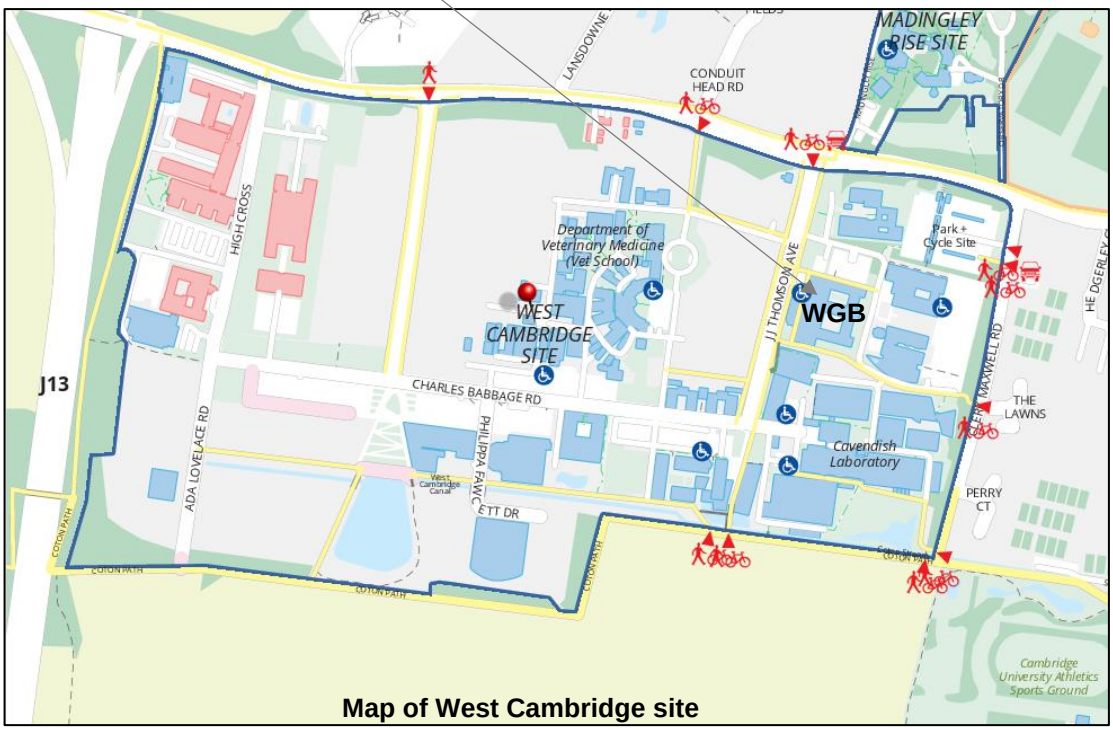
All offers for places as research students are conditional upon achieving a good pass in the M.Phil course as well as funding and College membership, **and** having secured the full support of a willing supervisor. All offers must be ratified by the Degree Committee at its final meeting following the approval of results and the awarding of degrees.

9. GETTING TO THE LAB

Students at the University of Cambridge are not permitted to have cars except under very special circumstances.

Walking or cycling

The William Gates Building is 2 km (1.3 miles) west of the city centre. From the city centre go west on Garret Hostel Lane, Burrell's Walk (past the University Library), Adams Road, the Coton Cycle-path, and then turn right into Clerk Maxwell Road then left beside the Centre for Applied Photonics and Electronics to the William Gates Building.



Map of West Cambridge site

Please take care when cycling. The EMBS has a useful website for cyclists, old and new, at http://www.admin.cam.ac.uk/offices/embs/travel/cycle/. We also strongly recommend purchasing a strong D-lock.

Buses

Buses **Universal** (substantially reduced fares for University Card holders) and **Citi 4** run from the city centre to the West Cambridge Site. Both buses stop on the West Cambridge Site itself. In the city centre they stop on Silver Street (on the west side of Silver Street Bridge) and Trumpington Street (near the Fitzwilliam Museum and near Pembroke Street).

For more information about these services, see the links from the Bus Services page (http://www.admin.cam.ac.uk/offices/embs/travel/bus/index.html) which is maintained by the Estate Management and Building Service.

Anyone planning to make three or more journeys in a day on Stagecoach buses (other than the **Universal** or **Citi 4)** will find it cheaper to purchase a *Dayrider* ticket, which can be used on any Stagecoach route within the city.

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