Course Information Sheet for entry in 2025-26:
MSc in Advanced Computer Science

Course facts

Mode of study	Full Time Only
Expected length	12 months

About the course

The MSc in Advanced Computer Science at Oxford has been designed to teach a range of advanced topics to graduates of computer science and other mathematical disciplines.

As in other branches of applied mathematics and engineering, improvements in the practice of computing necessitate a deep and broad engagement with the foundations of computer science.

Recognising this, this full-time, twelve-month MSc has been designed to teach the mathematical principles of specification, design and efficient implementation of computing technologies.

The MSc is designed to combine theory and practice. It teaches the advanced techniques and ideas that are being developed in application domains (such as machine learning, verification and computer security) and the rich and diverse theories that underpin them. These include models of computation and data, and mathematical analysis of programs and algorithms.

The course aims:

- to provide a challenging and supportive learning environment that encourages high quality students to reach their full potential, personally and academically;
- to provide the foundation for a professional career in computing-based industries;
- to enhance the skills of a professional who is already working in one of these industries;
- to provide a foundation for research into the theory and computing;
- to present knowledge, experience, reasoning methods and design and implementation techniques which are robust and forward-looking.

The Department of Computer Science is committed to the development and application of effective theory based on realistic practice. The MSc in Advanced Computer Science is heavily informed by the department's consultation and collaboration with industry, and some of the modules were developed through consultation and collaboration with industry. The department believes that only by the interplay of theory and practice can you be trained properly in such a rapidly advancing subject. Practice alerts us to real contemporary problems - theory is a shield against professional obsolescence.

Entrants to the course will come from either a computer science or mathematical background. You may be a recent graduate in computer science and will supplement your knowledge with the kind of sound mathematical basis which is not always found in undergraduate courses. If you are a graduate in mathematics you will apply your training in the context of a rigorous application of the fundamental techniques of computer science.

You will develop knowledge and understanding of a formal disciplined approach to computer science, a range of relevant concepts, tools and techniques, the principles underpinning these techniques and the ability to apply them in novel situations. On subsequent employment, you will be able to select techniques most appropriate to your working environment, adapt and improve them as necessary, establish appropriate design standards for both hardware and software, train colleagues in the observance of sound practices, and keep abreast of research and development.

Course outline

The academic year is split into three terms of eight weeks but work on the MSc course continues throughout the year and is not restricted just to term time. During the three terms of the course, you will choose from modules on various aspects of computer science. Most modules will last for one term and will be between 16 to 24 lectures. In addition, all modules will have associated classes and some may also have practical sessions (labs) associated with them.

In the third term (Trinity term) you will undertake a dissertation. Subject to meeting the relevant requirements (which may depend upon your module choices, dissertation subject and other academic factors), you may have the opportunity to transfer to a specialist stream of the course prior to completing your dissertation: either the MSc Advanced Computer Science (Artificial Intelligence) or the MSc Advanced Computer Science (Foundations of Computer Science).

A typical week for a student taking three courses in each of the first two terms may be as follows:

- Lectures - eight hours
- Tutorial classes - three hours
- Practicals - four hours
- Self-directed study, including preparatory reading, problem sheets, revision of material - 20 hours

Total - 35 hours

The split of work may differ depending on whether a course has practicals associated with it. This should be taken as a guide only.

Examples of modules offered:

- Advanced Security
- Computational Biology
- Computational Learning Theory
- Foundations of Self-Programming Agents
- Geometric Deep Learning
- Graph Representation Learning
- Probabilistic Model Checking
- Deep Learning in Healthcare
- Quantum Software

The options that are offered may vary from year to year as the course develops, and according to the interests of teaching staff. The above examples illustrate the kinds of topics that have been offered recently.

Attendance

The course is full-time and requires attendance in Oxford. Full-time students are subject to the University's Residence requirements.

Resources to support your study

As a graduate student, you will have access to the University's wide range of world-class resources including libraries, museums, galleries, digital resources and IT services.

The Bodleian Libraries is the largest library system in the UK. It includes the main Bodleian Library and libraries across Oxford, including major research libraries and faculty, department and institute libraries. Together, the Libraries hold more than 13 million printed items, provide access to e-journals, and contain outstanding special collections including rare books and manuscripts, classical papyri, maps, music, art and printed ephemera.

The University's IT Services is available to all students to support with core university IT systems and tools, as well as many other services and facilities. IT Services also offers a range of IT learning courses for students, to support with learning and research.

The Department of Computer Science's teaching network comprises over 80 PCs located in the Department of Computer Science and the Practicals Laboratory of the Thom Building, the main building of the Department of Engineering Science. The machines in the Thom Building are mostly used for undergraduate practical sessions, though you may occasionally have a practical session scheduled here.

Additionally there is a server-based remote access service available, such as personal laptop at home or through networked computers in college computer rooms.

Linux is used throughout the teaching network.

The Department of Computer Science Library contains books, monographic series, journals, technical reports and past theses covering the main research interests of the department. It is principally for use by graduate students and staff. You will also be able to access other relevant libraries elsewhere in the University such as the Radcliffe Science Library, the Whitehead Library (at the Mathematical Institute for numerical analysts and formal mathematicians), and the Engineering Science Library (especially for those interested in robotics and machine vision).

The Department of Computer Science houses lecture theatres and seminar rooms in which most of the University lectures in Computer Science take place.

There are department kitchens on each floor and a central common room where you can meet informally. There is an active social committee organising events for staff, students and families.

Supervision

The allocation of thesis supervision for the course is the responsibility of the Department of Computer Science and it is not always possible to accommodate the preferences of incoming graduate students to work with a particular member of staff. Under some circumstances it may be appropriate for a student's thesis work to be supervised by a faculty member outside the department of Computer Science.

You will be assigned an initial supervisor on arrival in Oxford whose role is to act as an academic advisor during the first two terms of the course. In the third term, a thesis supervisor will be agreed on.

Assessment

For the taught modules, the mode of assessment shall be either written assignment or written examination, dependent on the module you are taking.

A dissertation, completed independently under the guidance of an expert supervisor, on a topic of your choice and approved by the supervisor and MSc Course Director will be submitted by the end of the third term (Trinity Term).

Changes to this course

The University will seek to deliver this course in accordance with the description set out above. However, there may be situations in which it is desirable or necessary for the University to make changes in course provision, either before or after you commence your course. These might include significant changes made necessary by any pandemic, epidemic or local health emergency. For further information, please see the University's Terms and Conditions (http://www.graduate.ox.ac.uk/terms) and our page on changes to courses (http://www.graduate.ox.ac.uk/coursechanges).

Costs

Annual fees for entry in 2025-26

Fee status	Annual Course fees
Home	£17,900
Overseas	£41,250

Information about course fees

Course fees are payable each year, for the duration of your fee liability (your fee liability is the length of time for which you are required to pay course fees). For courses lasting longer than one year, please be aware that fees will usually increase annually. Information about how much fees and other costs may increase is set out in the University's Terms and Conditions (http://www.graduate.ox.ac.uk/terms).

Course fees cover your teaching as well as other academic services and facilities provided to support your studies. Unless specified in the additional cost information (below), course fees do not cover your accommodation, residential costs or other living costs. They also don't cover any additional costs and charges that are outlined in the additional cost information.

Additional cost information

There are no compulsory elements of this course that entail additional costs beyond fees and living costs. However, as part of your course requirements, you may need to choose a dissertation, a project or a thesis topic. Please note that, depending on your choice of topic and the research required to complete it, you may incur additional expenses, such as travel expenses, research expenses, and field trips. You will need to meet these additional costs, although you may be able to apply for small grants from your department and/or college to help you cover some of these expenses.

Living costs

In addition to your course fees and any additional course-specific costs, you will need to ensure that you have adequate funds to support your living costs for the duration of your course.

The likely living costs for the 2025-26 academic year are published below. These costs are based on a single, full-time graduate student, with no dependants, living in Oxford. We provide the cost per month so you can multiply up by the number of months you expect to live in Oxford.

Likely living costs for one month

	Lower range	Upper range
Food	£330	£515
Accommodation	£790	£955
Personal items	£200	£335
Social activities	£45	£100
Study costs	£40	£90
Other	£20	£40
Total	£1,425	£2,035

Likely living costs for nine months

	Lower range	Upper range
Food	£2,970	£4,635
Accommodation	£7,110	£8,595
Personal items	£1,800	£3,015
Social activities	£405	£900
Study costs	£360	£810
Other	£180	£360
Total	£12,825	£18,315

Likely living costs for twelve months

	Lower range	Upper range
Food	£3,960	£6,180
Accommodation	£9,480	£11,460
Personal items	£2,400	£4,020
Social activities	£540	£1,200
Study costs	£480	£1,080
Other	£240	£480
Total	£17,100	£24,420

When planning your finances for any future years of study at Oxford beyond the 2025-26 academic year, it is suggested that you allow for potential increases in living expenses of 4% each year – although this rate may vary depending on the national economic situation.

More information about how these figures have been calculated is available at www.graduate.ox.ac.uk/livingcosts.

Document accessibility

If you require a more accessible version of this document please contact Graduate Admissions and Recruitment by email (graduate.admissions@admin.ox.ac.uk) or via the online form (http://www.graduate.ox.ac.uk/ask/form).