

Tutorials: Computer Science

THE COMPUTER SCIENCE DEPARTMENT AT OXFORD is one of the longest established such departments in the country, having been set up in 1957. It is now the base for world-class research into core computer science, as well as computational biology, quantum computing, computational linguistics, information systems, software verification, and software engineering. It has an award for encouraging gender diversity in science. Research and teaching happen in the lively Science Area, close to Wycliffe Hall and to the University Parks. Faculty, research staff, and students can socialize in one of the nearby University cafes.

PREREQUISITES

Computer science at Oxford focuses on the principles behind current computing technology, not the technology itself, and so demands a very high level of competence in the relevant areas of mathematics. Students should have studied computer science and/or relevant areas of mathematics at their home institutions for at least two years.

TEACHING

Teaching will happen in a mix of University lectures, which play a key part in computer science teaching, and/or departmental classes and/or tutorials (one to one meetings with a specialist tutor) and/or practical classes organized in the department. The mix will depend on the subjects chosen and will be designed to give students the best tuition organized in a way which most closely mirrors the experience of matriculated Oxford undergraduates. Students will prepare work for classes and tutorials, typically in the form of problem sheets. Students will not write essays (papers) for their computer science tutorials. Undergraduates are welcome to join the department's research seminars and industry seminars, given by faculty and scientists from industry respectively. Full lecture notes and other supporting materials are available on the University's virtual learning platform to which students will have full access once they are in Oxford.

Visiting Students may not undertake project work or an internship or practicum. Please ensure either that the subjects you choose work for credit at your home institution without having a practical component or that you can complete a lab asynchronously.

CHOOSING TUTORIALS

To choose your STEM tutorial(s), you'll need to find your way around the University of Oxford website. Go to the Undergraduate Courses webpage to find a list of subjects. Click on whichever area you intend

to study and for each there will be a tab along the top titled "Structure." Scroll down on that page to "Course Structure," where the tutorials offered are listed.

Please ignore information about how to apply, interviews, the acceptance rate, examinations, etc., as this is all intended only for matriculated students registered for degrees at Oxford. Don't be put off by the fact that it is called a 'BA' in computer science. Almost all first degrees at Oxford are BA degrees, whether the discipline is in humanities, social science, or science.

More information may be available on the Oxford computer science department's website. Keep in mind any posted course schedule is subject to change. Note: Hilary term is the spring term; Michaelmas term is the fall term.

Because lectures, classes, and practicals are offered by the Computer science department in specific Oxford terms, SCIO strongly recommends that its students opt for a course which is taught in the department in the term in which they want to come. If this is not possible SCIO can try to arrange tutorials in the subject when it is not being taught in the department, but students will be less well integrated into the department and have correspondingly fewer opportunities to meet and work with other Oxford students.

The Computer Science Tutorial schedule is subject to change. Please check [here](#) for up-to-date information or contact your Oxford advisor.

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COMPUTER SCIENCE TUTORIAL SCHEDULE

Name of tutorial	Taught in Michaelmas Term (Fall semester)	Taught in Hilary Term (Spring semester)
Advanced security		√
Algorithms		√
Automata, logic, and games	√	
Categorical quantum mechanics		√
Categories, proofs, and processes	√	
Compilers	√	
Computational complexity		√
Computational game theory		√
Computational learning theory	√	
Computer architecture		√
Computer graphics	√	
Computer networks*		
Computer security	√	
Computer-aided formal verification	√	
Computers in society		√
Concurrency*		
Concurrent algorithms and data structures	√	
Concurrent programming		√
Continuous mathematics		√
Database systems implementation		√
Databases	√	
Design and analysis of algorithms		√
Digital systems		√
Discrete mathematics	√	
Foundations of computer science	√	
Functional programming	√	
Geometric modelling		√
Group design practical		√
Imperative programming part 3 *		
Imperative programming parts 1 and 2		√
Introduction to formal proof *		
Knowledge representation and reasoning		√
Lambda calculus and types		√
Linear algebra	√	
Logic and proof *		
Machine learning	√	
Models of computation	√	
Physically based rendering	√	
Principles of programming languages	√	
Probabilistic model checking	√	
Probability and computing		√
Quantum computer science		√

Tutorial options marked * are taught only in Trinity Term (April to June) and so Visiting Students opting for those tutorials will never be able to join departmental lectures, classes, and practicals. Again, SCIO can try to arrange tutorials if a student needs to take such tutorials but would strongly recommend other tutorials.

Once you have looked at the website, please contact your Oxford advisor to discuss your tutorial requests in more detail. STEM classes are arranged on an individual basis.

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SUBMITTING YOUR COURSE SELECTIONS

Prior to submitting your Course Selections within your application, please alert your Oxford advisor via phone or email and include the following information for each STEM tutorial you are requesting:

- The exact title of the tutorial
- Which courses you have done which you feel will enable you to do this tutorial
- Whether you will be taking this course to fulfill a specific requirement at your home institution. If so, you should attach your institution's syllabus. If not, you should provide a list of any specific topics you wish to cover.

Note: All students take two tutorials—a primary (6 credits) and a secondary (3 credits)—and provide an alternative for each. Thus, if you want to take two STEM tutorials, you should list four unique titles and provide details for each according to the questions above.

After informing your Oxford advisor of your STEM tutorial requests, you may submit the titles within your application's Course Selection questionnaire. Armed with the additional information you provide from the questions above, the Oxford staff can search for the most appropriate tutor when the time comes. Your advisor will contact you should any queries arise.