What is Cognitive Science?

Cognitive Science is the interdisciplinary attempt to understand the human mind. It focuses on abilities such as reasoning, perception, memory, awareness, emotion, attention, judgment, motor control, language use, and the connections between them. Cognitive Science brings together scholars from informatics, linguistics, philosophy, neuroscience, and psychology. Its methods include computer modelling, linguistic analysis, philosophical reasoning, robotics, neuroimaging, and psychological experiments. Cognitive Science degrees are relevant to careers ranging from academic research on human mental capacities to highly practical work in robotics or software development.

The University of Edinburgh played a key role in founding this discipline, by exploiting and enriching long-standing connections between the disciplines that contribute to the study of human cognition. The Cognitive Science programme at Edinburgh is jointly organised by the School of Informatics and the School of Philosophy, Psychology and Language Sciences, creating an exciting and stimulating research, teaching and learning environment. Cognitive Science students can register in either School, and choose their courses from both.

The Cognitive Science programme allows students to combine the study of core computing and human science subjects with a specialisation of their choosing. The possible specialisations include:

- **Computational Linguistics**: The nature of human language, and computational models of language and language use.
- **Computational Cognitive Psychology**: The nature of the human mind, and computational models of reasoning, vision, memory and other cognitive processes.
- **Philosophy of Cognition**: The relation of mind and brain, formal logic and computer reasoning as a model of human understanding.

Why study Cognitive Science at Edinburgh?

Between the two Schools which offer the Cognitive Science programme, Edinburgh has the largest centre in Europe for the study of human cognition. We not only helped create the field, we are still at the forefront of it, so you will be taught by the researchers who laid the foundations and are still making key advances. The course content is regularly reviewed to ensure our students learn about current developments.

The two Schools both received outstanding ratings in the most recent Research Assessment Exercise, achieving the best result in the UK in the areas of Informatics and Linguistics. Both Schools also received an ‘excellent’ rating in the latest Teaching Quality Exercise. As well as a thorough grounding in the fundamentals, we offer you a large range of specialist topics, and the opportunity to participate in leading-edge research projects. We have excellent and extensive facilities, both for computing and for experimental investigation.

What does the degree involve?

The Cognitive Science programme offers a choice of two honours degrees, both of which are four years long and flexible in structure. The Cognitive Science BSc in the School of Informatics emphasises mathematical and computational approaches. The Cognitive Science (Humanities) MA in the School of Philosophy, Psychology and Language Sciences emphasises theoretical and experimental approaches. Both degrees permit significant student choice, with the number of required courses decreasing after the first two years. Usually students will choose to focus on particular disciplines in the last two years. Nevertheless, the programme is fundamentally interdisciplinary and inclusive, aiming to create a community of students and staff from both Schools and for experimental investigation.

In first year, students from both degrees study together in a general Cognitive Science course that gives an overview of perception, memory, language and reasoning, as well as introducing experimental, neural and computational methods. Students also choose two or three introductory courses from informatics, philosophy, psychology and linguistics. In the MA degree, the courses aim to introduce students to philosophical, linguistic and psychological approaches to studying the nature of language and the mind. Students on the BSc degree will also take courses on mathematics and programming.

In second year you choose from more specific courses in the sub-disciplines: artificial intelligence, algorithms and learning (in informatics); knowledge and reality (philosophy); language processing, linguistics, mind and language (linguistics); and a wide ranging theoretical, methodological and experimental course in psychology. You will also take further mathematics courses if you are registered for the BSc degree.

In third and fourth year the choices are: informatics (e.g. language processing, neural computation, robotics and vision, machine learning); linguistics (e.g. language evolution, language acquisition, speech processing); philosophy (e.g. ontology of mind, theories of mind, theories of truth, ethics); and psychology (e.g. psycholinguistics, memory and perception, attention, development, neuropsychology).

What sort of teaching and assessment methods are used?

You will be taught by a mixture of lectures, tutorials, practical classes and projects. Lectures enable an efficient transfer of information from staff to students, and usually include demonstrations of experiments and models, and discussion of extended examples; to complement the presentation of theoretical ideas. Tutorials in small groups (typically 8 to 12 students) offer the opportunity to ask questions and receive personalised explanations. We recognise that understanding and skills in cognitive science are often best acquired by doing, and hence throughout the course you will have practical classes and project work to complete. You will thus develop your analytical and problem-solving skills, be trained in good practice in programming, and learn to present your work in written reports and verbal presentations. Assessment is by a mixture of examinations and coursework.

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<tr>
<th>Degree in Humanities and Social Science</th>
<th>Degree in Science and Engineering</th>
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<tr>
<td>MA Honours in: Cognitive Science (Humanities)</td>
<td>BSc Honours in: Cognitive Science</td>
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See also separate sheets on Artificial Intelligence, Linguistics, Philosophy, and Psychology.
Typically, in the first two years, your week will contain around 20 timetabled hours of lectures, tutorials and practicals, and you will need about 15 to 20 hours private study to consolidate the material from lectures, prepare for exams, and to work individually on tutorial and practical assignments. In later years the balance tips more towards private study (e.g. with 10 to 15 timetabled hours per week) as you develop independence in thinking and working. You will have individual supervision for your final year project.

The School of Informatics and the School of Philosophy, Psychology and Language Sciences provide a number of support mechanisms to enhance your learning. Each student is assigned a Personal Tutor who oversees their progress and advises on course choices. Lecturers can be approached outside the lecture times to answer questions, and maintain a mailing list or news group to inform and support the students on the course each year. Course materials, including lecture slides, assignment details, and past exam papers and solutions, are always available online. The School of Informatics also has a helpdesk staffed by Informatics course tutors and graduate students known as InfBase. InfBase offers support and advice on all Informatics taught courses, particularly non-honours courses and mathematics taught in 1st and 2nd year.

Are there any opportunities to study abroad?

Both Schools encourage students to consider the possibility of spending one year of their undergraduate degree course (typically the third) at a university in another country. We believe this will help you learn a new language and open new employment markets for you. The School of Informatics has some specific exchange schemes with foreign universities, but we will consider any other university you wish to attend, as long as certain curriculum requirements are met.

Are there any links with industry or commerce?

The School of Informatics has many links with industry, stemming from its research work. The Scottish economy boasts a strong IT sector, with many companies located in or near Edinburgh. These companies sponsor scholarships, work placements and prizes, and offer jobs to our graduates.

Are there any bursaries or scholarships available?

The School of Informatics awards merit scholarships (i.e. based on your course performance). The scholarships are sponsored by the global software company, KAL and the Bank of America. There are prizes sponsored by the British Computer Society, Citigroup, Microsoft, Google, JP Morgan, Accenture, FreeAgent and Netcrafl. In addition, the University has a range of additional support schemes. For more information please visit: www.scholarships.ed.ac.uk

What can I do after my degree?

Graduates with degrees in Cognitive Science have good prospects of employment, in fields that will shape our society. These include not only those which obviously depend on computers, such as economics, entertainment, user-friendly technology, mobile systems, manufacturing and health, to name but a few, but also those thought of traditionally as more ‘Arts’-orientated such as the Civil Service, commerce, management, finance, journalism, law, social work and teaching.

Recent employers include: Cadence, Civil Service Fast Track, Ingenio Fortronic, Shell International, VIS Entertainment, Credit Suisse First Boston, Citigroup, and the British Council. Some graduates have set up their own companies. For those looking towards advanced degrees, many research opportunities are open, ranging from language technology and communications disorders to child development and cognitive neuroscience.

What are admissions staff looking for?

You will find our most up to date entry requirements at: www.ed.ac.uk/studying/undergraduate/degrees

We do not generally expect or require prior study of computer science, psychology, linguistics or related topics; it is more important that you have an interest in this area, and the ability to think logically and creatively. Entry to the Cognitive Science BSc in the School of Informatics does require Higher or A Level Mathematics (or equivalent), at grade A. If you are unsure which of the two degrees suits you best, please contact us to talk about it.

How do I find out more?

Visit our websites: www.inf.ed.ac.uk or www.ppls.ed.ac.uk

Or contact either:
Informatics Teaching Organisation
The University of Edinburgh
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Crichton Street
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Tel: 0131 650 5194
Email: ito@inf.ed.ac.uk

Teaching Office
The School of Philosophy, Psychology and Language Sciences
The University of Edinburgh
Dugald Stewart Building
Charles Street
Edinburgh, EH8 9AD

Tel: 0131 651 3628
Email: lelinfo@inf.ed.ac.uk

For more detailed information on degree structure and content, please see: www.ed.ac.uk/schools-departments/student-recruitment/publications-resources/degree-programmes

Typical degree curriculum: BSc Honours in Cognitive Science

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<th>2nd Year</th>
<th>3rd Year</th>
<th>4th Year</th>
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<td>Cognitive Science</td>
<td>Informatics ¹</td>
<td>Mathematics ²</td>
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<td>Mathematics ²</td>
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Topics

1. Computation; logic and programming
2. Linear algebra
3. A choice of Psychology, Linguistics and English Language or Philosophy and Logic
4. Algorithms, reasoning and agents; natural language and processing
5. Discrete mathematics and probability and applications
6. A choice of Psychology, Philosophy and Linguistics courses
7. The dissertation can be in Informatics, Philosophy, Language Sciences or Psychology

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