BA (Mod) in Computer Science and Language
(formerly known as Computer Science, Linguistics and a Language)
www.scss.tcd.ie

Course Code: TR039
(Replaces TRO10/TRO11/TRO13)

Special Entry Requirements:
Leaving Certificate: HC3 Mathematics and either HC1 German or HC1 French or HB3 Irish (chosen language of study)

Other Examination Systems:
www.tcd.ie/Admissions/undergraduate

It is astonishing what language can do.
With a few syllables it can express an incalculable number of thoughts… This would be impossible, were we not able to distinguish parts in the thoughts corresponding to the parts of a sentence, so that the structure of the sentence serves as the image of the structure of the thoughts. – Frege 1923

What is CSL?

Computer Science and Language (CSL) is a combined study of computer science, linguistics, and a language, with a study of computational linguistics as a unifying thread.

Computer Science: Would you like to master the techniques and technologies that lie behind what you see on the screen of one of today’s computers? The computer science component of CSL seeks to give you this mastery, fully understanding the computer applications of today, and able to participate in the development of the applications of the future. No prior knowledge of computing is required. Some aptitude for mathematics, for the analysis of a system, for recognition of structure will help. For this reason the degree requires a C3 or better in Higher Level maths.

Language: In CSL, language consists of Language Studies and Linguistics.

Language Studies: Are you a student of German, French or Irish? The language component of CSL will provide you with a degree-level standard of comprehension, grammatical competence and fluency, in both written and spoken language. Part of this is a year spent abroad as an Erasmus exchange student.

Linguistics: Have you ever been intrigued by languages themselves, how they are learned, how they differ from each other, how ambiguity arises, how words emerge from a sea of sound, how they are made by manipulating a flow of air, how language relates to the mind and thoughts? These are the questions looked at in linguistics, the scientific study of language, one of CSL components.
Studies in Computer Science and Language are united in the field known as Computational Linguistics. On the one hand this uses computational techniques to further the scientific study of human languages, and on the other, seeks to develop computer applications which handle language intelligently. Examples of such applications are machine translation, speech recognition, and information retrieval.

This degree is one of the most interdisciplinary offered by the university, bridging both science and arts. Its prerequisites are curiosity, creativity, intelligence and diligence. Its rewards include a qualification that opens many subsequent employment avenues in an ever more multilingual and technological world: in the computer sector; using the foreign language; for language technology companies.

The mix amongst the streams making up CSL is roughly 50% computer science, 25% linguistics and 25% study of the language of choice. This holds in each of the 4 years.

Whilst the computer science stream involves mastering several programming languages (such as Java, C++ and Prolog), there are other important background theory and skills which are needed to produce effective software, and these are addressed in a range of mathematics courses, in courses on data a structure and algorithms, software engineering and databases. Artificial Intelligence – the techniques involved in creating ‘smart’ software – are emphasised throughout, and to a greater extent than in the other Trinity Computer Science programmes. Conversely, certain hardware-related topics are given less emphasis.

The linguistics stream covers all aspects of the scientific study of language: language, which is superficially familiar to everyone, is revealed on closer inspection to be governed by remarkably intricate structures and regularity. To some extent anyone studying a second language has the beginnings of an insight into this. Syntax is studied, but rather than emphasising proscriptions about what one should not write, its overwhelming concern is with the description of what is written (or said), analysing its structure to best predict what related things might be said, what it means, how it might be pronounced, the developmental stage at which a child might say it and so on. Phonetics, phonology and speech science are a similarly detailed study of word structure and of the relation of language to the medium of sound.

The language stream, which will be one of French, German or Irish, aims to give students competence to operate in that language in their future careers. The first two years concentrate in particular on preparing students for their third year, which is spent as an Erasmus exchange student at a university abroad. The CSL degree has an extensive network of exchange agreements with European universities that offer a similar combination of computer science and linguistics (see map for a sample), and during the year abroad education in the computer science and linguistics streams continues, via the relevant language.
What career opportunities are open afterwards?

In an increasingly technological and multilingual world, the computer science and language abilities of our graduates make them attractive to employers, as do their proven analytical skills and not least their self-sufficiency and maturity in having spent a year abroad.

Here is a sample of areas into which CSLL graduates have gone in Ireland and abroad:

- the language technology industry (e.g. IBM, Microsoft)
- general software engineering in Ireland and abroad (e.g. Accenture, Google)
- technological and organisation roles within IT or other sections of multinationals (BMW, Ingersoll Rand)
- direct use of language skills in translation consultancy (e.g. Transpiral), in the Irish Diplomatic Corps and the European Patent Office
- Banking and finance (e.g. Deutsche Bank, DEPFA)
- speech and language therapy
- further postgraduate study
- there are hundreds of representative opportunities listed at: http//www.scss.tcd.ie/clg/FYI/

What do the graduates say?

“[The course] provides an exceptional range of skills that allow you to pursue an enormous number of options after graduation. For me, it gave a fantastic background to pursue a career in software development. The distinctive combination of subjects encourages flexible thinking and an open minded approach to problem solving that will prove invaluable to graduates.”

James Gibbons, working as a software developer.

“[The course] opened up many opportunities for me. I was unsure which path to choose straight out of school. With this course I was not restricted to any one career, and yet it contained recognisable and concrete subjects. In fact, people are still fascinated when I tell them what I studied and are envious of the interesting subject combination.”

Joy O’Brien, has worked in software development, as an international conference organiser, and now in Speech and Language Therapy

“I very much believe that it was the multi-faceted aspect… that gave me not only the confidence to live and work abroad but also pursue a career in a very fast moving role.”

Deirdre Ni Dhea, has worked in abroad and in Ireland in Customer Relationship Management, Project Management and IT consultancy.

“[The course] offered me the opportunity to study both computers and Irish, two subjects which I greatly enjoyed at school. The course consisted of a mixture of arts and science modules which were exciting and challenging. Through the wide range of subjects studied there was an opportunity to meet a diversity of people. In my final year I felt adequately prepared to embark on a career within either the arts or science field. Currently I’m working for PricewaterhouseCoopers and studying for my professional accountancy exams.”

Claire Morris

“[This course] gave me the necessary skills to excel in Computer Science/IT, and the added edge of a language gave me the ability to stand out from the crowd. It has prepared me for the real world and I always take pride in explaining the synergy of this multi-disciplinary degree course.”

Sean Hegarty

CSLL was founded in 1985 and becomes CSL in 2012
Some features of CSL

- The programme tends to attract an even gender balance.
- The year abroad at a partner university is universally cherished.
- In the other years you will also run into exchange students who have come to Trinity to take some of the CSL courses.
- Some lectures are shared with other computer science students, some are shared with other students in the arts faculty and some courses are solely for CSL student (quota 15), giving a wide range of lecture experiences.

The Dublin Computational Linguistics Seminar series (DCLRS) invites internationally known speakers to present their research to the Dublin community of students (undergraduate and postgraduate) and the established researchers in academia and industry. The DCLRS is a joint venture between TCD, University College Dublin (UCD), Dublin City University (DCU) and Dublin Institute of Technology (DIT). Students from each of the partner institutions participate.

The seminar features talks on all topics within “computational linguistics”, such as pure translation theory, syntax, semantics, speech science, phonetics, psychology, psycholinguistics and artificial intelligence.

Access to leading researchers is assured in each area of the degree. This includes contact with lecturers, co-participation in seminars, supervision of projects and career mentoring.

Any questions? If you have any questions between now and the start of your degree programme, you are encouraged to contact the Course Director at: ccls@tcd.ie
## BA (Mod) in Computer Science and Language

CSLL (CSLF, CSLG, CSLI) becomes CSL from academic year 2012/2013

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<th>Second Year – Senior Freshman</th>
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<td><strong>Computer Science</strong></td>
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<td>Computer Programming</td>
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<td>Mathematics – logic linear algebra and calculus</td>
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<td>Language, Mind and Society</td>
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<td>Phonetics and Phonology</td>
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<tr>
<td><strong>Dublin Computational Linguistics Seminar</strong></td>
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<td><strong>Third Year – Junior Sophister</strong></td>
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<td><em>Students take comparable courses at partner institutions abroad</em></td>
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<tr>
<td><strong>Computer Science</strong></td>
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<td>Speech Science</td>
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<td>Language learning &amp; Sociolinguistics</td>
<td><strong>Language Fluency and Translation</strong></td>
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<td><strong>Language Fluency and Rhetoric</strong></td>
<td><strong>Option:</strong> chosen from the offerings from each of the contributing departments.</td>
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<td><strong>Project:</strong> research in the language of the degree focus, from the perspective of a subdiscipline of Linguistics</td>
<td><strong>Project:</strong> substantial research and dissertation supervised by an established researcher.</td>
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<td><strong>Seminar Series</strong></td>
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