CSL is a combined study of

learn

Computer Science

learn the

Science of Language

learn

French

German

Irish
CSL is a combined study of

- Computer Science

- Learn
  - French
  - German
  - Irish

- Learn the Science of Language
CSL is a combined study of

- Computer Science
- a Language,
 CSL is a combined study of

- Computer Science
- a Language, one of {German, French, Irish}

**learn**

Computer Science

**learn the**

Science of Language

{French, German, Irish}
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linguistics the scientific study of language in general
CSL is a combined study of

- **Computer Science**
- a **Language**, one of: {German, French, Irish}
- **Science of Language**

  - **linguistics** the scientific study of language in general
  - **computational linguistics** the associated technologies concerning language
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2. while(more 'students') {
3.     s = next 'student';
4.     if (s is 'CSL') {
5.         vp_true = 0;
6.         while(more 'courses') {
7.             c = next 'course';
8.             if (c is 'syntax') {
9.                 if (s 'studies' c) {
10.                    vp_true++;
11.                }
12.            }
13.        }
14.        if(vp_true == 0) {
15.            sent_false++;
16.        }
17.    }
18. }
19. if(sent_false > 0) { return false }
20. else { return true }
```
master the techniques and technologies that lie behind what you see on the screen of one of today’s computers

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learn COMPUTER SCIENCE

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- become able to participate in the development of the applications of the future.

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learn COMPUTER SCIENCE

- master the techniques and technologies that lie behind what you see on the screen of one of today’s computers
- become 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.
- the degree requires a C3 or better in Higher Level maths

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master A LANGUAGE
master A LANGUAGE

- you will study either German, French or Irish
master A LANGUAGE

- you will study either German, French or Irish
- reach a sufficient competence to operate in that language in your professional career
master A LANGUAGE

- you will study either German, French or Irish
- reach a sufficient competence to operate in that language in your professional career
- your 3rd year is spent abroad as an Erasmus exchange student.
study the science of LANGUAGE

- Language can be *scientifically studied* – this is linguistics
study the science of LANGUAGE

- Language can be *scientifically studied* – this is **linguistics**
- Language requires its own *technologies* – this is **computational linguistics**
study the science of LANGUAGE

- Language can be *scientifically studied* – this is *linguistics*
- Language requires its own *technologies* – this is *computational linguistics*
- systems in the *sounds* of languages, the International Phonetic Alphabet

Where symbols appear in pairs, the one to the right represents a rounded vowel.
Language can be *scientifically studied* – this is *linguistics*

Language requires its own *technologies* – this is *computational linguistics*

 systems in the *sounds* of languages, the International Phonetic Alphabet

darwin −*ian−ism* good

darwin −*ism−ian* bad

 systems in the *words* of languages
Computer Science and Language

study the science of LANGUAGE

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- systems in the *words* of languages
- systems in the *grammars* of languages

![Syntax Tree]

```plaintext
S
  /   |
/    v
np   vp
   /   |
  det  must
\   /   |
  every  CSL student
            \   |
             study  np
                        det
\         /   |
at least  one  syntax
                \   |
                course
```
Computer Science and Language

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- systems in the *words* of languages
- systems in the *grammars* of languages
- systems relating *grammar* to meaning

```
S
  |__________
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<tr>
<td>det</td>
<td>at least</td>
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<tr>
<td>det</td>
<td>n</td>
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study

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Computer Science

learn French, German, Irish

learn the Science of Language
there are more links than you might think

- mastering a foreign language fosters a feel for grammar \(\Rightarrow\) a headstart in linguistics
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- mastering a foreign language fosters a feel for grammar ⇒ a headstart in linguistics
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Computer Science and Language

learn Computer Science

learn
French
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- linguistics and computer science are joined in computational linguistics
What is Computational Linguistics?


Sergei Brin is the founder of Google. When he founded the company in 2001.

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Finding Answers in Text

Translation

when was Google founded?

Finding Answers in Databases

Speech Synthesis
What is Computational Linguistics?

Answering questions using texts
- Speech synthesis
- Speech recognition
- Language generation
- Document categorisation
- Speaker identification
- Lie detection
- Sentiment analysis

Finding answers in text

Finding answers in databases

Translation

Speech synthesis

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Careers

CSL graduates have skills in

*Problem-solving* • *Programming* • *Analysis*

*Foreign-language* • *Self-reliance*
Careers

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*Problem-solving* • *Programming* • *Analysis*

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CSL graduates gone into a wide range of careers, for example

- IBM, Microsoft, Trados, *developing language technology*
- Google, Accenture, *general software engineering*
- BMW, Ingersoll Rand, *technological and organisation roles within IT or other sections of multinationals*
- Deutsche Bank, DEPFA, *Banking and finance*
- Irish Diplomatic Corps, *combining language with analytical skills*
- the European Patent Office, *combining language with technical knowledge*
- Transpiral, *direct use of language skills in translation consultancy*
- speech and language therapy
Year on Year

First Year
Computing
- Fundamentals
- Intro to Computer Programming (Java)
- Mathematics – logic linear algebra and calculus

Linguistics
- Language, Mind and Society
- Syntactic Analysis
- Phonetics and Phonology

Language (G/F/I)
- Fluency
- Culture

Second Year
Computing
- Data Structures and Algorithms
- C++ Programming & Computational Linguistics
- Discrete Mathematics

Linguistics
- Formal Syntax & Semantics
- Instrumental Phonetics and Speech Science
- Computational Morphology

Language (G/F/I)
- Fluency
- Translation (esp. Comp Sci area)
Year on Year

**Third Year**
spent as Erasmus exchange student at partner university with courses on
Computing
- A.I./Computational Linguistics
- Software Engineering
- Probability & Statistics and Formal Methods

Linguistics
- Lexicology
- Language learning

Language (G/F/I)
- Fluency
- Rhetoric

**Project**: applying linguistics or comp. ling to target language

**Fourth Year**
Computing
- Databases
- Artificial Intelligence

Linguistics
- Speech Science
- Computational Linguistics

Language (G/F/I)
- Fluency
- Translation

**Option course**: eg. advanced Comp. Ling.

**Project**: substantial research and dissertation supervised by an established researcher.
Some interesting features
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- interdisciplinary: has sometimes suited those **undecided between science and arts**
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- has tended to be **gender balanced**
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- CSL students attend a weekly research seminar, The Dublin Computational Linguistics Research Seminar
And finally

This is a challenging, useful and fascinating degree (and that's not just my opinion)
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the skills I learned as a result of this degree both in terms of personal development and technical and language skills have led me to a career that I find personally and professionally fulfilling. I have been shaped by my experiences in Trinity and I can certainly say that I couldn’t be happier with the result

Anne McCarvill
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for further opinions and many more details see the web site

www.scss.tcd.ie/undergraduate/