Integrated Computer Science

Junior Fresh Year

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Why study Computer Science?
Why study Computer Science?

From http://www.telepresenceoptions.com/images/Minority_Report.gif

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### Academic Year Calendar (2022-23)

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<th>Academic Year Calendar 2022-23</th>
<th>Term/Semester</th>
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<td>1</td>
<td>29 Aug</td>
<td><strong>Reassessment</strong> <em>(for Semesters 1 and 2 of 2021-22)</em></td>
<td>←Michaelmas Term begins/Semester 1 begins</td>
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<td>5 Sep</td>
<td><strong>Orientation</strong> <em>(Postgraduate, Visiting, Erasmus)</em> Marking/Results</td>
<td>←Michaelmas Teaching Term begins</td>
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<td>12 Sep</td>
<td>Teaching and Learning</td>
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<td>19 Sep</td>
<td>Teaching and Learning</td>
<td><strong>Orientation</strong> <em>(Junior Freshman undergraduate)</em></td>
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<td>Teaching and Learning (Monday, Public Holiday)</td>
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<td>14</td>
<td>28 Nov</td>
<td>Teaching and Learning</td>
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For more information, visit: [https://www.tcd.ie/calendar/academic-year-structure/](https://www.tcd.ie/calendar/academic-year-structure/)
Integrated Computer Science

Welcome from Course Director

Welcome to the pure Computer Science degree in the School of Computer Science and Statistics in Trinity College Dublin. We are the highest ranked Computer Science school in the country in the highest ranked University in the country, and you are just starting on a path to join the many well-regarded computer science professionals who have studied with us over the years. Computer science is a great discipline to be in as skills in this field prepare you to work in a huge variety of fields. Computers have applications in virtually every walk in life and hence we, as computer scientists, can apply ourselves in almost any field we want to. For example, over my years working with industry I've got to apply my computer science skills in diverse areas such as trading currencies in international banks, diagnosing medical conditions using ultrasound and even automatically detecting buried landmines! You never know where YOUR computer science skills will take YOU.

This programme is sometimes referred to as the Integrated Computer Science programme or ICS for short. This is because you can study with us for 4 years leading to a BA(Prof) in Computer Science or stay for a fifth year to obtain an

Year 1 (Junior Freshman)
Year 2 (Senior Freshman)
Year 3 (Junior Sophister)
Year 4 (Senior Sophister)
Year 5 (Master in Computer Science)

Handbooks
SCSS Undergraduate Handbook 2021-2022

https://teaching.scss.tcd.ie/integrated-computer-science/
Full Year Modules

CSU1010 – Introduction to Programming
(Semester 1 & 2, 10 ECTS) This module provides an introductory course in computer programming.

CSU1026 – Digital Logic Design
(Semester 1 & 2, 10 ECTS) Starting with the theoretical foundations of logic, the students learn about combinatorial logic and synchronous logic, and how it can be used to construct logic functions that are useful in computing systems.

Semester One Modules

CSU11001 – Mathematics I
(Semester 1, 5 ECTS) The module aims to provide students with an introduction to the mathematics, both continuous and discrete, which lies at the foundation of many real-world applications in Computer Science, Engineering and the Social Sciences.

CSU11021 – Introduction to Computing I
(Semester 1, 5 ECTS) An introduction to the basic structure and operation of a computer system, focussing on the processor (CPU), memory and the execution of programs.

CSU11031 – Electronics and Information Technology
(Semester 1, 5 ECTS) The first aim of the first part of this module is to give students a grounding in electronics.

CSU11081 – Computers and Society
(Semester 1, 5 ECTS) IT and its "impact" on society; models for assessing technological "impact"; history of IT; ethics; writing, presenting and argumentation; other topics.

Semester Two Modules

CSU11013 – Programming Project
(Semester 2, 5 ECTS) This module concentrates on the development of practical programming ability through example-based lecturing coupled with intensive laboratory sessions. The emphasis throughout is on producing working programs, starting with interactive graphical applications and moving on to construction of a larger group project involving a data visualisation task.

CSU11022 – Introduction to Computing II
(Semester 2, 5 ECTS) This module continues directly from CSU11021 and examines the structure and behavior of computer systems in greater depth. In particular, this module introduces students to the implementation of simple data structures (stacks, multi dimensional arrays, composite data types), subroutines (including parameter passing conventions), exceptions, interrupts and basic I/O at the machine level.

CSU12002 – Mathematics II
(Semester 2, 5 ECTS) Mathematics is of interest to computer scientists due to the fact that it is both practical and theoretical in nature.

STU11002 – Statistical Analysis I
(Semester 2, 5 credits) An introduction to basic statistical concepts. Students will learn how to explain basic statistical theory, apply the techniques to data and describe and interpret the results of their analyses in a detailed fashion. R studio will be used to analyse data.
• Timetable for the next 4 weeks only (until Reading Week) – Look out for changes.

• Get your individual timetable from SITS (my.tcd.ie) and keep an eye on it for changes.

  • The week number on SITS take a bit of getting used to. What SITS refers to as week 5 is next week (i.e. starting September 26th).

  • Your allocated times for labs (and even lecture times) may well change.

  • There will almost definitely be big changes after reading week.
• This is Goldsmith Hall. 🌟

• School office is in the O’Reilly Institute. 🌟

• In person classes are in Trinity Central. 🌟
  
  * (and possibly in LG35/36/37 in the basement of the O’Reilly).
  
  * The SCSS Trinity Central lab is on the 2nd floor of this building.

• Your College ID card needs to be enabled by the attendant in this building. Do this as soon as you can and before your first lab next week

• Get your card enabled THIS WEEK or early next week. If not you’ll need to arrive 20-30 minutes before your first scheduled class.

• If you have any difficulty gaining access to the lab, please email help@rt.scss.tcd.ie with “Trinity Central ID card” in the subject line. Include your name, degree programme, year and student ID in your email.
ICS Learning Outcomes

• Our programme’s outcomes conform to those required by Engineers Ireland to satisfy the education standard for the professional title of Chartered Engineer. For BA(Mod) graduates those outcomes are:

1. Advanced knowledge and understanding of the **mathematics, sciences, engineering sciences and technologies** underpinning their branch of engineering
Our programme’s outcomes conform to those required by Engineers Ireland to satisfy the education standard for the professional title of Chartered Engineer. For BA(Mod) graduates those outcomes are:

2. The ability to **identify, formulate, analyse and solve** complex engineering problems
Learning Outcomes

- Our programme’s outcomes conform to those required by Engineers Ireland to satisfy the education standard for the professional title of Chartered Engineer. For BA(Mod) graduates those outcomes are:

3. The ability to perform the **detailed design** of a novel system, component process using the analysis and interpretation of relevant data
• Our programme’s outcomes conform to those required by Engineers Ireland to satisfy the education standard for the professional title of Chartered Engineer. For BA(Mod) graduates those outcomes are:

4. The ability to **design and conduct experiments** and to apply a range of standard and specialised **research** (or equivalent) tools and techniques of enquiry
• Our programme’s outcomes conform to those required by Engineers Ireland to satisfy the education standard for the professional title of Chartered Engineer. For BA(Mod) graduates those outcomes are:

5. An understanding of the need for **high ethical standards** in the practice of engineering, including the responsibilities of the engineering profession towards people and the environment
Our programme’s outcomes conform to those required by Engineers Ireland to satisfy the education standard for the professional title of Chartered Engineer. For BA(Mod) graduates those outcomes are:

6. The ability to **work effectively as an individual, in teams and in multi-disciplinary settings together** with the capacity to undertake lifelong learning
Our programme’s outcomes conform to those required by Engineers Ireland to satisfy the education standard for the professional title of Chartered Engineer. For BA(Mod) graduates those outcomes are:

7. The ability to **communicate effectively** on complex engineering activities with the engineering community and with society at large
General Support Services

- Tutor – Go and see him or her... [http://www.tcd.ie/Senior_Tutor/](http://www.tcd.ie/Senior_Tutor/)
- College Health Service [http://www.tcd.ie/collegehealth/](http://www.tcd.ie/collegehealth/)
- Student Counselling Service [http://www.tcd.ie/Student_Counselling/](http://www.tcd.ie/Student_Counselling/)
- Student to Student [https://student2student.tcd.ie](https://student2student.tcd.ie)
- Students’ Union [https://www.tcdsu.org](https://www.tcdsu.org)
How you can succeed.

• Take ownership of your own learning.
• Attend all your classes & keep up.
  • Make sure you understand everything... find the book that’s right for you.
• Do all your coursework
• If you have problems
  • Talk to someone
Societies and Student Representation

- DUCSS — Dublin University Computer Science Society
- NETSOC — TCD Internet Society
- Student Union — Class Representatives
Help!! What to do

Problem with Module

1. Lecturer

2. Tutor

3. Course Director (me or Stephen Barrett)

4. Teaching and Learning Director (Goetz Botterweck)
IT Support Services

• Computer Science Systems Support: help@rt.scss.tcd.ie

• IS Services (for email and issues relating to college machines): help@tcd.ie http://www.tcd.ie/itservices/

• Undergraduate Programming Centre https://www.scss.tcd.ie/misc/ugpc/
Be Prepared for Labs

• Lab work is such an important part of Computer Science – labs start next week – make sure to have SCSS username and password; you need to go to Trinity Central and register your ID card minimum 1 hour before lab starts; just go there as soon as you can

• Programming can be challenging for those with little experience

• Attend all labs

  • Don’t panic and give up – it can be hard but please ask demonstrators for help

  • Many students will need to put in significant extra time to master programming – find a book in the library that explains the material the way you understand it – books with exercises and solutions are an amazing resource – master the craft – you can do it if you put in the time!!
Year 1 — Junior Freshman

- In transition into the world of university education.
- Material covered at a faster pace.
- We give you the framework or the concepts
  - you fill in the gaps with coursework and study.
- Workload:
  - 1 year = 60 ECTS = 1,500-1,800 hours of study/work = 45-55 hours per week.
  - During teaching term: 6 subjects X 3-4 contact hours per week = 18-24 hours per week
  - You need to do 23-31 hours per week outside class.
- Coursework much more important than marks awarded.
- If you need help, ask someone. Do it right away. Don’t wait.
Programming Analogy 1
Programming Analogy 2
Programming Analogy 3
Additional Help Available

- Programming Support Centre
- Math Support Centre
Some Rules & Regulations

1st year
- Annual Examinations: Fail -> Repeat 1st year
  - Pass or Pass by Compensation
- Supplemental Examinations: Fail
  - Repeat 1st year

2nd year
- Annual Examinations: Fail
  - Pass or Pass by Compensation
- Supplemental Examinations: Fail
  - Repeat 2nd year

3rd year
- Annual Examinations: Fail
  - Pass or Pass by Compensation
- Supplemental Examinations: Fail
  - Repeat 3rd year

Choose 5 year programme and
3rd year results >= 60% at first attempt
- Choose 4 year programme
- or 3rd year results < 60%
  - at first attempt

4th year
- 5 year programme (including internship in 4th year)
  - Annual Examinations: Fail
    - Pass or Pass by Compensation
  - Supplemental Examinations: Fail
    - Year 4 < 60% at first attempt + or
    - Choose to exit

4 year programme
- Annual Examinations: Fail
  - Pass or Pass by Compensation
- Supplemental Examinations: Fail
  - Repeat 4th year

Choose to exit
- Exit with BA(Mod) degree++

5th year
- Annual Examinations: Fail
  - Pass or Pass by Compensation
- Supplemental Examinations: Fail
  - Exit with BA(Mod) degree++

Exit with ordinary BA degree

+ You must achieve a mark of 60% [in your first attempt]
  in both the taught component of year 4 and in the
  overall average mark.

++ The BA(Mod) degree result is a weighted
combination the 3rd year result (20%) and the 4th year
result (80%). These weights will change to 30% and 70%
from academic year 2022-23 onwards. Students with an
overall BA(Mod) degree result >= 80% are recommended
for a Gold Medal.

+++ Students who achieve both an overall mark >= 70%
and a dissertation mark >= 70% are awarded an MCS
with distinction.
Help!! What to do

Problem with Module

1. Lecturer

2. Tutor

3. Course Director (me or Stephen Barrett)

4. Teaching and Learning Director (Goetz Botterweck)
Any questions?

- Ask now or
- Send me an email: scss-cd-ics@tcd.ie
- Visit me in my office: O’Reilly Institute, G.38