



**Trinity College Dublin**  
 Coláiste na Tríonóide, Baile Átha Cliath  
 The University of Dublin



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**Computer Science and Geography**  
**TR240**

Balanced  
 solutions for a  
 better world

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# Computer Science and Geography

## Honors Bachelor's Joint Honours Degree (NFQ Level 8)

Course Code	TR240
CAO Points 2019	N/A
Duration	4 years

## Special Entry Requirements

Leaving Certificate	H4/O2	Mathematics
Advanced GCE (A Level)	Grade C	Mathematics

### OR

GCSE	Grade A	Mathematics
International Baccalaureate	HL Grade 5	Mathematics
	SL Grade 7	

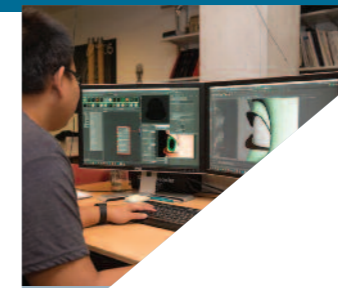
## Why study Computer Science and Geography?

Geographical knowledge and experience are more important than ever, giving us the skills to understand a dynamic and rapidly changing world. Geography is an integrative subject with an international outlook and openness to interdisciplinary collaboration. The focus in geography is on understanding spatial and temporal change on and of our planet.

Computer Science is concerned with the study of everything to do with computers and our relationship with them. Computer scientists are critical to the efficient running of modern societies, dealing with health, security, finance, transportation, and now increasingly our interaction through social networks. Computing professionals deal with theoretical issues, solve complex problems, deal with matters of ethics and with society at large.

The combination of Computer Science and Geography allows students to combine computational skills and geographical knowledge to address important global issues. Examples of this include *Geographical Information systems (GIS)* which is used to underpin decision making

in: urban planning; land use planning and energy distribution or *Remote Sensing/Earth Observation* which can be used to monitor the impact of global change. Graduates of this programme will be well placed to develop the next generation of GIS; these may, for example, incorporate large volumes of IOT (Internet of Things), remote sensing data, integrate diverse forms of data, and present advanced visualisations. These developments which would be driven by computer scientists who understand geoscience. Graduates of the programme might apply "big data" techniques to geographic data, for example to predict flooding, to model urban traffic, to explain demographic changes or monitor long-term environmental change. Graduates with these skills will be at the heart of the design of future smart and sustainable cities and societies.



class research and teaching in a supportive and collegial atmosphere. Trinity is ranked in the world top 100 universities for Geography (QS World University Rankings by Subject 2020).

In recent years, third and fourth year geography students have been involved in academic staff-led fieldwork from Clare Island to Mallorca, undertaken summer research projects in Kenya, and made digital video documentaries and blogposts as part of their assessed work.

## Why study Computer Science and Geography at Trinity?

This programme at Trinity College Dublin is delivered through the expertise of the School of Computer Science and Statistics and the Department of Geography.

The School of Computer Science and Statistics at Trinity is recognised for establishing computer science as an academic discipline in Ireland. The School has earned a strong international reputation and has partnerships in education, research and industry across the globe. Computer Science at Trinity is ranked number 1 in Ireland, top 25 in Europe and top 100 worldwide (QS subject rankings, 2020). The School hosts three National Research Centres and continues to evolve and lead ground breaking research programmes. The School collaborates with leading employers and fosters innovation through its many successful start-up companies.

Geography at Trinity is a place of intensive and extensive geographical scholarship in Ireland. The School carries out teaching and research across the discipline, from development theory to coastal modelling, and from climate change to the social economy, all within different contexts, from Nigeria to New Zealand. The School aims to challenge students intellectually to foster and maintain world-

## WHAT OUR GRADUATES SAY

Sarah McDonagh

“It might be cheesy to say that ‘geography rocks’ but it’s true! Studying Geography at Trinity has left me with more than just an education. Through the wide range of modules offered within the course I have learnt a diverse range of skills which are really relevant in today’s society. Not only that, but the chance to partake in field-trips both at home and abroad makes this course an excellent place for forming lasting friendships while learning lots along the way.”



# Computer Science and Geography



## Programme overview

This is a Joint Honours Programme. Students on the programme begin studying both subjects equally, and then may specialise more in one subject than the other, and may exit with a Joint Honours Degree or a Major with Minor Degree.

Drawing on the expertise of both Schools, the programme focuses on delivering a research inspired, outcome-based educational experience to students. In first year students spend equal time on Computer Science and Geography. In the first three years of the Computer Science programme, you will develop key skills in designing and implementing computer programmes and systems, solving problems, using mathematics, statistics and data analytics and communicating both orally and in writing. The student will learn how to use a range of programming languages and how to tackle large software engineering projects. Students will also learn about computer networks and telecommunications, information management and the relationship between computers and society. The first year Geography course aims to provide a solid grounding in human, physical and environmental geography,

focusing on materials that are dealt with in greater depth in later years. Second and third year geography modules cover issues relating to cultural, economic and historical geography, and to natural and human-modified environmental processes and systems. Research skills are developed further through e.g., Remote Sensing and GIS modules and modules that include fieldwork components.

For their fourth year, students undertake a capstone project or research dissertation in either Computer Science or Geography depending on their pathway. In addition students choose from Computer Science topics such as Group Programming Project, Machine Learning, Strategic Information Systems, Technology Entrepreneurship, Data Analytics, Fuzzy Logic, Formal Verification, Functional Programming, Internet Applications, Human Factors, Computer Graphics, Computer Vision; and from Geography choose from modules such as Living on the Edge (coastal Geography), Globalisation and African Development, Historical Geography, Geomorphology, GIS and Remote Sensing Applications in Geography, Environmental Governance, Remote Sensing of the Environment, Spatial Analysis Using GIS, Stormy Geomorphology, Urban Geography: Cities, Space and Culture.

## The Course for you?

This new course will suit you if you are interested in the world around you, in understanding the significant challenges that face our world, and would like to tackle those challenges with computer and related technologies.

Computer Science is best suited to those who are comfortable applying logical thinking to situations.

No prior knowledge of Computer Science or Geography is assumed.

## Study abroad and language options

You may apply to spend your third year studying at a university abroad as part of an exchange programme.

## Graduate Opportunities

Graduates from this new course will be highly skilled and employable in both industrial and governmental organisations both here in Ireland as well as overseas. Both geography and computer science offer a wide-array of career opportunities for graduates. The combination of these disciplines train you to analyse challenges in a broad range of areas and to provide solutions to them.

Careers taken up by graduating geography students in recent years include urban and regional planning, environmental consultancy and research, and teaching as well as positions in such areas as financial services, foreign affairs, leisure and tourism and overseas development.

Graduates from computer science find employment in almost every sector from communications and entertainment to manufacturing and transportation, government, healthcare, education and many more. Positions can be found within: design, testing, manufacturing, support and implementation, information systems, research and development, operations and management. Some graduates of this course can be expected to pursue careers in research to Ph.D. and beyond; others will found their own companies.

## WHAT OUR GRADUATES SAY

**Katharine Burton**

"What I really enjoyed about the [Computer Science] course was the exposure to software, hardware and telecommunications which gives you the entire view of a system rather than the separate components. I found the lecturers to be knowledgeable and approachable. Being a male dominated science, I think we need more girls to think seriously about studying computer science at university. During my summers at Trinity, I undertook a number of internships both in Ireland and abroad. One of these internships resulted in a full-time graduate job offer in London."



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# Computer Science and Geography

Meeting the demands of the UN Sustainable Development Goals

## Contact Us

If you have any questions about studying this new integrated degree, please get in touch with us!- and contact us at [e3.team@tcd.ie](mailto:e3.team@tcd.ie)

If you have further questions about the application process you can contact the Applications and Admissions Team in Trinity's

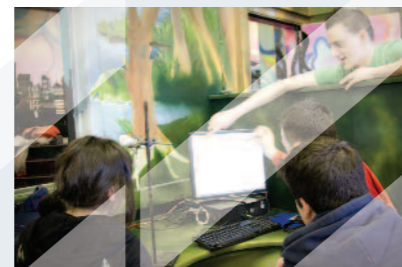
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## Get in touch!

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Above: Artist impressions of the new E3 Martin Naughton Learning Foundry (which is due for completion in 2023)



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