“I really hadn’t expected it, but the computer science papers I did turned out to be most interesting. Solving otherwise insoluble problems using sophisticated technology is a real buzz.”

Dave Ferguson BSc(Hons) (Otago), PhD (Carnegie Mellon)
Co-founder, nuro.ai
Former Robotics Researcher, Google

Study Computer Science at Otago and take control of your future. Doors open to many areas – from machine learning, computer animation, computer games, software design, and robotics, through to legal, financial and business careers.

Computer science forms the basis for all information technology and it is a fast-changing and rapidly growing field. Computing is now central to the way our modern society works, and it will remain that way. Computer scientists analyse, design and implement computer algorithms and computer systems. Their skills are desperately needed in New Zealand and worldwide.

At Otago, we cover all core areas of computer science, and actively research at the cutting edge in areas as diverse as artificial intelligence, computer graphics and vision, distributed computing, databases, search, biological data science and theory.

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Why study Computer Science?

Computer scientists are in demand across the world and attract excellent salaries. Technologies change rapidly and there is always something new and exciting to learn – whether as a programmer, software engineer, systems architect or chief technical officer. A career as a computer scientist is challenging and rewarding. If you like solving problems, then a major in computer science is for you. It is hard to describe the joy involved in designing and implementing a complex system and then seeing it all work in front of your eyes.

A minor in computer science is an invaluable supplement to any degree, whether in science, health science, business or the humanities. Technical expertise in computing in addition to expertise in another field opens doors to many exciting careers. It will change the way you think about your chosen field and make you more effective in that field.

Choosing computer science papers as electives will open doors in your mind to the possibilities of computers, will make you much more effective at using computers, and will look great on your CV.

Background

There are no special requirements or prerequisites, but taking Digital Technology for NCEA is useful. For students wishing to major in Computer Science, NCEA Level 3 Mathematics (preferably calculus) would be helpful.

Career opportunities

There is currently a worldwide shortage of IT professionals and they are in high demand in New Zealand, Australia, USA and the UK. The Information and Communications Technology section of seek.co.nz consistently has more advertised vacancies than any other category.

You will find Otago Computer Science graduates at work worldwide in every aspect of commerce, government, education, research and media in a variety of interesting roles: programmers, software engineers, systems analysts, network managers, consultants and advisers, web programmers, interface designers, and database administrators.

Some of our recent graduates now have these exciting careers: making CGI movies, developing the software for driverless vehicles, writing the control software for Formula 1 racing cars, designing computer games, programming the latest high-performance computers, or working in medical informatics, as an entrepreneur, as a weapons engineering officer in the Navy, as a database analyst, or as a patent attorney.

Specialising in Computer Science

You can choose to study in an Arts or a Science environment. You would choose a BA (or BA Hons) if you want to include papers in subjects like Classics, Geography, History, various languages, Music, or Philosophy. You would choose a Bsc (or BSc Hons) if you want to study in areas such as Biology, Biochemistry, Chemistry, Electronics, Geology, Mathematics, Physics, or Psychology.

These are the papers required for a major in Computer Science – whether you pursue a BSc or a BA degree:

At 100-level

COMP 160 General Programming

plus COMP 101, ENGL 127 and one of MATH 151, 160, 170, COMO 101, STAT 110, 115, BSNS 112, FINC 102, or an approved alternative

( COMP 150 Practical Programming is recommended as good preparation for COMP 160)

COMP 150 Practical Programming

Have you ever wanted to learn how to program a computer without being thrown in at the deep end? This paper gives a gentle introduction to programming in a language called Python, which was designed to be easy to use. (The name comes from the humorous TV series Monty Python’s Flying Circus, so you can tell that using Python is meant to be fun.) Python is increasingly popular for scientific and business applications.

As a result, this paper is not only a good way to prepare for COMP 160 but also an ideal way to learn the basics of programming if you don’t plan to major in Computer Science.

Fan Zhang

Android Developer, Xero

Fan completed his BSc in Computer Science in 2015. Since then he has held the position of Android Developer at three companies: Mixbit, TouchTech Ltd., and currently, Xero.

Arriving at Otago at the end of 2011 to start an eight-week language course, Fan says, at the time, he wasn’t sure which major to start with.

“I had interests in the IT-related area but did not understand the whole picture of computer science.”

He says he received lots of help from both the International Office and from staff in Computer Science who “explained to me the difference between computer science and information science which helped me make the right choice”.

Several years on, some of the papers he completed during his degree still stand out in his memory.

“There were so many papers I enjoyed, but my favourites would be COSC 241 and COSC 301. COSC 241 focuses on data structures and algorithms, which would be one of the most important areas in Computer Science. This paper set up the foundation for my future study and career. COSC 301 helped me understand the fundamentals of networking and was also a contributing factor of my getting the Cisco certificate.”

Beyond coursework, Fan says the industry exposure he gained during his time at Otago equipped him with valuable real-world experience.

“I took part in extra-curricular activities, such as summer internships. My first internship opportunity was with a company called, at the time, Mixbit, where I learnt a lot about the local company culture and real-world industry experience. I also really enjoyed the industry introduction session which gave me a chance to talk with the employees from some of the biggest IT companies in New Zealand.”

In his current work, he continues to pursue his interest in the mobile development area and hopes to, one day, become a mobile expert.

“I really appreciate the knowledge and skills I gained in Otago University which setup the foundation for my career and also taught me the right habit of a developer – keep learning and never give up.”

For questions about

Computer Science

otago.ac.nz/computerscience

At 200-level

COSC 241  Programming and Problem Solving
COSC 242  Algorithms and Data Structures
COSC 243  Computer Architecture and Operating Systems
COSC 244  Data-communications, Networks and the Internet

At 300-level

COSC 326  Effective Programming and three of
COSC 301  Network Management
COSC 341  Theory of Computing
COSC 342  Computer Graphics
COSC 343  Artificial Intelligence
COSC 344  Database Theory and Applications
COSC 345  Software Engineering
COSC 349  Cloud Computing

The papers required for a minor in Computer Science are listed in the Guide to Enrolment.