



Bachelor of Science (BSc) Applied Computing



What is Applied Computing?

Applied Computing has a strong practical focus: this programme emphasises hands-on opportunities to gain competence with a range of technologies including databases, website development tools, and visual software development environments. You will learn to use these tools to solve real problems, focussing on business applications. Since Computing is a fast-changing field, you will also learn how to learn about new technologies – how to quickly develop skills in new software technology by building on what you know about how software-based systems work.

Applied Computing is the point where computing, science, design, and society meet. You will learn how technologies are integrated to build systems, how to find out what your users need their software to do, and how to design useful and usable software.

Why should I study Applied Computing?

The information technology industry needs a wide range of skills. Applied computing gives you a practical technological edge that enables you to create useful systems to provide business solutions. Applied computing is the route to working with the latest industry technologies, supported by the expertise only a computer science department can provide.

It helps to be...

- ✔ *able to think logically and abstractly to solve problems.* You use your creativity and imagination to plan solutions to problems, and logical and precise thinking to make sure that the fine details of these plans are workable.
- ✔ *a 'people person'.* With many jobs in IT, you'll be interacting with potential users of your software, to find out what they need.
- ✔ *good at working in a team.* Some computing courses include group projects – and most IT jobs involve working with other system developers to solve problems.
- ✔ *interested in another area beyond computing.* Do papers in both, so that you can apply your computing skills to another field. For example, it is a plus for an interface designer to have expertise in both Psychology (understanding people and how people think) and Computer Science (to actually construct the interfaces).
- ✔ *determined and persistent.* Sometimes, with the best planning you can manage, things just don't work out on the first attempt. You need to be willing to keep trying.

Career opportunities

There is an ongoing demand for new business IT systems, to address the fast-changing commercial environment. Graduates will be ready to work face-to-face with business professionals, to create tailored solutions for commercial organisations. This may involve working within a single company, or through an IT consultancy firm. Overseas travel is a possibility – you could fund your Overseas Experience with well-paid IT contract work.

Applied Computing careers include:

(Salary ranges are taken from the 2005 Absolute IT survey of IT salaries in New Zealand.)

- ✔ *Web/.NET developer:* use a visual, interactive programming environment to create standalone software. Work closely with end-users to help them understand their software requirements. \$40K – 90K per year.
- ✔ *Database administrator:* decide what data is to be stored for an organization, and how to store it. A database administrator helps people to find the data that they need, while also protecting data privacy and security. \$45K – 95K per year.
- ✔ *Software usability analyst and tester:* Software testers: these are the unsung, but well paid, heroes of the software development world. Testers locate those irritating software glitches before the software is released to users; they work with programmers to ensure that software bugs are caught and fixed, and that data is processed correctly. \$40K – 80K per year.
- ✔ *System administrator / Help Desk:* provide "first aid" support for baffled, frustrated, and sometimes clueless computer users. Help Desk representatives interpret and resolve problems, troubleshoot, and provide technical training. \$35K – 70K per year.



Background required

Our first year papers do not require any previous experience with programming, although prior familiarity with computers is helpful. Since you will study Intro to Statistics, you should study mathematics to NCEA Level 3 (or its equivalent).

If you wish to earn the BSc in Applied Computing, you must study:

First year:

COMP103 Introduction to Computer Science 1

COMP126 Computing Media

STAT111 Statistics for Science or STAT121 Introduction to Statistical Methods

In the first year, you'll learn the basics of programming in the highly visual, interactive .NET environment (COMP103) and you'll learn how to create the interactive Flash 'movies' that liven up websites (COMP126). The Statistics paper you will provide fundamental skills in data analysis that will be used later in the program, in particular in usability studies and computer performance analysis.

Second year and beyond:

You will extend your programming skills and develop competence with database management systems and Internet applications development – the core technologies for modern commercial computing environments.

The Computer Science department at Waikato University offers an excellent range of courses to choose for your electives, allowing you to tailor your programme of study to your own interests. To help you choose your second and third year papers, we suggest paper combinations that follow along these suggested themes:

- **Databases & Data Mining:** Learn how to organize and store large amounts of data, and how to find answers to your organization's problems in that data. A third year paper on Data Mining gives you hands-on experience with state-of-the-art data mining software – a course that is unique in New Zealand.
- **Internet Applications:** Understand the theory behind the software technologies that support the World Wide Web, learn to apply that theory in practical design situations, and develop the skills to implement components of an electronic business application design.
- **Human-Computer Interfaces & Usability:** Learn how to create and evaluate user-friendly interfaces – software that does what users want it to do, and that users can easily learn how to use.
- **Graphics & Games:** Learn the basics of graphic design in the context of designing for the computer screen and for the World Wide Web; learn to use game development and animation toolkits; and explore the features that make a game fun to play.

Your programme of study includes enough space to take courses in other subjects besides Computer Science. This is your chance to explore other disciplines – to learn Chinese, for example, or study Earth Sciences. Many Applied Computing students complement their computing studies with Management papers to extend their understanding of the business world, E-Commerce papers to provide a context for their Internet applications work, or with Psychology papers to support their understanding of how to create usable software interfaces.



Capstone Project

In your third year you will work with other students in a small group, to create a prototype software solution for a local organization. You choose the organization – a sports club, a non-profit, or a business. Then you analyze their information requirements, create a database tailored to their data storage requirements, and design a user interface that will support them in managing their organization. The project brings together skills learned in earlier courses – database, interface and interaction design, web development, and programming – in a real world context.



Applied Computing is highly practical. You'll begin working in our excellent computing labs at the beginning of your first semester with us. We know the importance of having the right tools for the work, so we have invested in our labs – they are full of powerful modern PCs and Macintoshes, and run the latest versions of the software you'll be using. We believe in giving you effective learning support in the labs: scheduled lab times ensure that you have enough access to complete your work, and tutors and demonstrators are available to help you when you're stuck.

Since Computer Science was first taught at Waikato in the 1970's computing has come a long way. In the early days most people who used computers wrote their own programs. Now there is a huge range of software available 'off the shelf'. The challenge is to assemble, tune and script computer systems to provide services for people and businesses: making use of existing facilities, building small components to bridge the gaps, and above all ensuring that finished systems are easy and pleasant to use. This is the focus of our new Applied Computing Program. A graduate of Applied Computing will take the 'system view': how can I make use of all the computing technology that now exists to make businesses more profitable and peoples' lives better?

Contact Details

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