

## Tis the season for...careers

With term two beginning, the careers season is looming. As students consider options and staff plan expos, speakers and events, Futureintech would like to alert teachers and careers advisors to the help we can provide, both practically and in the form of written materials.

What better way to demonstrate to students the advantages of a particular career than to enable them to meet a current practitioner? Futureintech Ambassadors are enthusiastic young professionals, who in most cases are in their first full time job. They are able therefore to provide up to date, empathetic advice to students just a few years behind them.

Ambassadors can explain the qualifications necessary for a career in their field and give a genuine sense of the day-to-day experience. They might be asked to give presentations in the context of a relevant subject, or to be available as part of a wider careers event to provide an insight into their industry.

We can also help by providing publications specifically catered to students and caregivers.

*Continues on next page*

*Below: Futureintech Technology, Science and Engineering Choices brochures profile careers within each field and the required qualifications.*

*Brochures for caregivers, available in English, Te Reo Maori & Samoan, provide information parents need to advise their children on careers. Brochures on technology areas are being developed along the lines of the Engineers brochure below.*

*Also available are Futureintech bookmarks – handy reminder of our website – and general brochures outlining what we are all about.*

2 Dee-lighted to join Futureintech

3 The Ambassador Effect

4 Futureintech news

**science choices...**

**SCIENCE AS A CAREER**  
Scientists help us understand the world and how it works. The work scientists do can help improve people's lives, and make money as well. To work in science you need to be interested in learning and discovering things, good at understanding information, and if you enjoy communicating with people. If you care about the environment and the things around you this could also be a good field for you. Science professions offer development in science and research facilities, working for local and central government, in business or doing research work for private companies.

**Agricultural science**  
Agriculture has been one of New Zealand's most important industries. Farmers rely upon agricultural scientists to help them with the health and condition of animals, environmental sustainability, and finding new ways to improve production.

**Biological science/Life science**  
Biological scientists study plants and/or animals, and can specialise in areas such as genetics, conservation, ecology, environmental biology, or taxonomy. The classification of plants, animals and their relationships.

**Forensic science**  
Forensic scientists use scientific knowledge and skills to investigate crimes. The police need this information to find and/or eliminate some suspects through things like DNA and blood testing, and then use the evidence to court if necessary. Chemistry, biology and genetics are all used in this field.

**Molecular biology**  
Molecular biologists study tiny micro-organisms so that they can understand human, plant, and animal health. The new field of biotechnology uses computers to process genome sequencing data.

**Biochemistry**  
Biochemistry is the study of the molecular basis of life. It concerns the chemical components, chemical reactions and physiological processes that occur in living organisms and which are

**engineering choices...**

**ENGINEERING AS A CAREER**  
There's a huge part of our lives that is affected by engineering. The food we eat, the cars we drive, the tools we use on the house we live in, right through to CD players, cell phones and pay-as-you-go systems have all been designed and built using things that engineers created for you. Being an engineer is an exciting, challenging and creative job where no two days are ever the same. You get to work with a wide range of people. You get to design and the opportunities in New Zealand are awesome as huge. Engineering is a highly valued profession with an increasing number of new areas, such as software, computing, environmental and biotechnology.

**Electronic engineering**  
Electronic engineering deals with devices and systems that can capture, store, analyse and transmit information. Electronic engineers develop the microcomputers that make the computers work, people in other careers, buildings, cities and countries through satellite, computer and telephone systems.

**Structural engineering**  
Structural engineering is about the strength and stability of structures. Structural engineers deal with the analysis, design, construction and maintenance of dams, bridges, large buildings, factories and transport.

**Civil engineering**  
Civil engineering involves the planning, design, construction, operation and maintenance of roads, bridges, buildings, dams, transportation, harbours, airports and railways. Civil engineers are also heavily involved in reducing the environmental impact of large-scale projects.

**Forestry engineering**  
Forestry engineering is concerned with the harvesting, transportation and processing of the products from our forest lands. It takes both engineering skills and knowledge of forestry systems.

**Natural resources engineering**  
Natural resources engineering works with the use of natural resources including agriculture, and activities in the natural environment such as irrigation, drainage, and soil and water conservation. Natural resources engineers also develop new farm machinery, help improve production and processes, and are involved in environmental protection.

**Food engineering**  
Food engineering involves developing efficient and reliable systems for the manufacture of food products, as well as the design of food itself.

**technology choices...**

**TECHNOLOGY AS A CAREER**  
Technology is all about using your knowledge, skills and resources to make new things and solve problems. Engineers and other technologists often work closely together to develop new ideas and solutions. The range of different areas a technologist can work in is huge. You could work for food and drink companies coming up with new products, or with computers and software, or in biotechnology, clothing, industrial design, aviation, electronics, or city planning – almost everything you can think of is affected by technology. Technology is all around us, and it's only going to become more important in the future. It's all about being creative and improving people's lives. Working as a technologist is a career that's challenging, rewarding and open to everyone.

**Biotechnology**  
Biotechnology is all about using living things like bacteria, plants, cells to create new products and solve problems. Things like medicines, food products, industrial chemicals, and new ways to treat waste and pollution are all created by biotechnologists. People have used biotechnology for thousands of years, from using yeast to make bread and beer through to cultures which make cheese and yogurt. These days though the technology is a lot more advanced. Biotechnologists now work on food science, medicine, agriculture, and more sophisticated projects like genetic modification and cloning.

**Food technology**  
Food technologists use science and engineering knowledge to create, produce and improve new food and drink products. This is an area for people passionate about food. It's not just a fancy name for being a chef or a cook - food technologists often see their work as an art, using their creative and technological skills to come up with exciting new products.

www.futureintech.com  
A career in technology, engineering and science

**he momo mahi i roto i...**

te hangarau, te pūkhatanga, te pūtaiao

he mea kōwhiri mā Futureintech mō ngā mātua me ngā kaitiaki!

**ENGINEERS...HELP SHAPE OUR WORLD!**

Over the years, engineers have steadily transformed our world. They design and build cars, bridges, buildings, dams, and power stations. They also design the systems that control our homes, offices, and factories. They are the people who make our lives easier and more comfortable.

Electrical engineers work on everything from a simple light bulb to a complex computer system. They design and build the systems that power our homes, offices, and factories. They are the people who make our lives easier and more comfortable.

Mechanical engineers work on everything from a simple machine to a complex engine. They design and build the systems that power our homes, offices, and factories. They are the people who make our lives easier and more comfortable.

Structural engineers work on everything from a simple building to a complex bridge. They design and build the systems that support our homes, offices, and factories. They are the people who make our lives easier and more comfortable.

Environmental engineers work on everything from a simple water treatment plant to a complex environmental system. They design and build the systems that protect our homes, offices, and factories. They are the people who make our lives easier and more comfortable.

Food engineers work on everything from a simple food product to a complex food system. They design and build the systems that produce our food. They are the people who make our lives easier and more comfortable.

Software engineers work on everything from a simple program to a complex system. They design and build the systems that control our homes, offices, and factories. They are the people who make our lives easier and more comfortable.

Biotechnologists work on everything from a simple product to a complex system. They design and build the systems that produce our food and medicine. They are the people who make our lives easier and more comfortable.

Food technologists work on everything from a simple food product to a complex food system. They design and build the systems that produce our food. They are the people who make our lives easier and more comfortable.

bookmark your future

Published by Futureintech, tel 04 473 2023, fax 04 474 8933, enquiries@futureintech.org.nz, www.futureintech.org.nz

Futureintech is an initiative of The Institution of Professional Engineers New Zealand Inc 158 The Terrace, PO Box 12 241 Wellington, New Zealand

... continued from previous page

Futureintech brochures provide overviews of the opportunities available in technology, engineering and science, including profiles of employees and advice on qualifications, and are an effective starting point to the consideration of a career in these areas.

New brochures on careers in the food industry and chemical engineering, produced in conjunction with the New Zealand Institute of Food Science and Technology (NZIFST) and the Society of Chemical Engineers New Zealand (SCENZ) are being completed, the first in our new careers season series of collaborative publications.

To order copies of any of the featured publications please email [admin@futureintech.org.nz](mailto:admin@futureintech.org.nz)

### What's on near you:

#### Wairarapa Careers Expo

Genesis Recreation Centre, Masterton  
29-30 April

[www.careers-expo.co.nz](http://www.careers-expo.co.nz)

#### Hawke's Bay Careers Expo

Pettigrew Green Arena, Taradale

[www.eventfinder.co.nz/2007/may/napier/hawkes-bay-today-careers-expo.html](http://www.eventfinder.co.nz/2007/may/napier/hawkes-bay-today-careers-expo.html)

10-11 May

#### Engineering Promotion, Career Expo, Rotorua

Rotorua Convention Centre  
13-15 May

[www.rotoruanz.com/events](http://www.rotoruanz.com/events)

#### Christchurch Coca-Cola Careers Expo

13-15 May (Teachers' Night 14 May)

[www.careers-expo.co.nz](http://www.careers-expo.co.nz)

#### Dunedin Coca-Cola Careers Expo

23-24 May

[www.careers-expo.co.nz](http://www.careers-expo.co.nz)

#### Career Paths, Waikato Expo

Claudlands Event Centre, Hamilton  
10-11 June

[www.claudlands.co.nz/news/pageid/2145834559/Career\\_Paths\\_Waikato\\_Expo\\_2007](http://www.claudlands.co.nz/news/pageid/2145834559/Career_Paths_Waikato_Expo_2007)

#### Northland Career & Education Expo

Forum North, Rust Ave, Whangarei  
24-25 June

[www.careers-expo.co.nz](http://www.careers-expo.co.nz)

#### Tauranga Careers Expo

29-30 July

[www.eventfinder.co.nz/2007/jul/tauranga/tauranga-careers-expo.html](http://www.eventfinder.co.nz/2007/jul/tauranga/tauranga-careers-expo.html)

#### Auckland Coca-Cola Careers Expo

8-10 August

[www.careers-expo.co.nz](http://www.careers-expo.co.nz)

#### Wellington Coca-Cola Careers Expo

15-16 August

[www.careers-expo.co.nz](http://www.careers-expo.co.nz)

## Dee-lighted to join Futureintech



After a year of enthusiastically supporting Futureintech from the vantage point of NZIFST's careers committee, Jenny Dee has taken on the additional role of part-time Facilitator for Hawke's Bay.

Jenny's association with Futureintech began with the special recruitment last year of four Ambassadors from Heinz Wattie's, the first in the area. She has since helped to promote Futureintech both locally and in the wider context of the food industry, and has worked with Futureintech and the Royal Society of New Zealand to pursue our shared goals of the promotion of careers in technology, engineering and science.

In her continuing NZIFST capacity Jenny is currently working with Futureintech in the joint creation of the first in our new series of careers brochures.

Her existing network of contacts in the world of food is enormously valuable in her new position, and she is enjoying the opportunity to expand on these and gain an insight into less familiar industries.

The decision to add further commitments to her already hectic schedule does not seem to have been a difficult one, as Jenny was delighted to be able to strengthen her association with Futureintech's work.

"I had heard from the four Ambassadors in Hawke's Bay about their work with schools last year, and seen some of the results of that work. It's impressive! I can see that they make a difference, explaining how what you study at school relates to the real world. I would have loved to have had a Futureintech Ambassador around when I was at school."

Jenny's first Ambassador training session took place on 12 April, and 11 new Futureintech Ambassadors are now available to volunteer in the classroom.

## The Ambassador Effect

Nine out of ten students in a Year 13 class have been seriously considering careers in ICT, thanks to the influence of one Futureintech Ambassador.

Wellington High School, a long-standing supporter of Futureintech, has noticed tangible effects on the choices made by Information Technology students since the involvement of Ambassador Scott Abernethy.

Scott, a software engineer at Harris Stratex, has worked with IT students in Years 12 and 13 over the past two years, assisting with projects and explaining his work. Information Technology teacher Vince Brannigan says that Scott inspired the students and "made software engineering a real option for them."

"When they meet someone who's working in the industry and talk to them they realise they are real people just like them, and maybe it's not that hard."

One student has been offered a scholarship to study engineering at Massey University, while others have come third and fourth in the New Zealand Programming Contest. In the case of one student this led to the International Olympiad in Informatics – the first time a New Zealand team has taken part – and yet another achieved a Silver CREST Award in ICT.

The fact that Ambassadors are only a few years further down the track than the students they mentor is a huge benefit, according to Vince.

"Lat year we had university student mentors as well, and students identified with them too, connecting with people who were on the pathway to an ICT career."



*Futureintech Ambassador and software engineer Scott Abernethy, with Information Technology teacher Vince Brannigan and students at Wellington High School.*

From Scott's point of view, the experience of working as an Ambassador has been "really rewarding – especially after hearing these results; that makes it all worthwhile."

"I'm surprised that it's had this much impact, but it really gives hope for the future. Hopefully this can happen again and again and again with future Ambassadors."

Scott described his own use of ICT at work, as well as discussing code structuring and Java programming with the students.

For Vince, having the advice he gives reinforced by an outside professional is extremely valuable. "Lots of the kids don't plan code, or break it down into manageable chunks. They just sit down and write. Scott gets them to break it down. We teach them that, but when you get someone from industry telling them how it works in real life it really sinks in."

### FUTUREINTECH AMBASSADORS

So far in 2007 Futureintech Ambassadors have made 131 visits to schools, in the process of which they have interacted with 2253 students, 23 careers advisors and 442 teachers in 94 schools.

If your school could benefit from this fantastic resource, please contact your local Futureintech Facilitator.

### FACILITATORS

#### North Auckland

Rod Hare  
021 714 359  
[rhare@futureintech.org.nz](mailto:rhare@futureintech.org.nz)

#### Central Auckland

Angela Hart  
021 479 892  
[ahart@futureintech.org.nz](mailto:ahart@futureintech.org.nz)

#### South Auckland

Gay Watson  
021 479 802  
[gwatson@futureintech.org.nz](mailto:gwatson@futureintech.org.nz)

#### Central North Island

Margaret Brunton  
021 479 803  
[mbrunton@futureintech.org.nz](mailto:mbrunton@futureintech.org.nz)

#### Hawke's Bay

Jenny Dee  
027 2907 937  
[jdee@futureintech.org.nz](mailto:jdee@futureintech.org.nz)

#### Wellington

Phil Sadgrove  
04 473 2025  
[psadgrove@futureintech.org.nz](mailto:psadgrove@futureintech.org.nz)

#### Canterbury

Neil Potter  
03 365 4120  
[npotter@futureintech.org.nz](mailto:npotter@futureintech.org.nz)

#### Otago

Contact Wellington office  
04 473 2023  
[dbuchanan@futureintech.org.nz](mailto:dbuchanan@futureintech.org.nz)

## Futureintechnews

### Freeze factor

Who needs freezers when you've got a supply of salt? Year 7 and 8 students at Tawa School discovered that salt isn't just for chips – it makes seriously good ice cream too.

Dr Sarah Kenworthy, a scientist at ESR and a Futureintech Ambassador, took part in the school's technology week. With Sarah's guidance the students discovered how adding salt can lower the temperature of water below its normal freezing point without turning to ice.

By adding varying amounts of salt to an ice solution, students managed to create a cold enough environment to freeze cream mixed with fruit, making delicious ice cream, with one achieving a temperature of -16 degrees.

The project combined science with technology to give the students a broad understanding of the processes involved in food production.

### Waterworld

Designing a watercraft may sound ambitious, but Year 11 technology students at Orewa College have some useful friends. Futureintech Ambassador Dima Ivanov is a designer at the Marine Industry Association of New Zealand.



"I find out what the client wants, design and draw it, develop models for testing and then present the final concepts to the client using computer graphics and animation."

### [www.futureintech.co.nz](http://www.futureintech.co.nz)

Futureintech's website contains a wealth of information for students, parents, teachers and careers advisors. It has profiles of young people working in technology, engineering and science, and the companies they work for, along with information on different courses, careers and scholarships available.

While schools may not have the budget to build the full scale prototypes which Dima enjoys testing, the students will be going through an identical procedure of designing to specified requirements.

Over the course of a year they will each design a personal watercraft, with Dima on hand to assist with the design process.

Teacher Karl Pearce says: "Dima has brought both design knowledge and hands-on model testing methods to our project. He has greatly assisted the transition from "sketched up" ideas to physical, observable scale watercraft."

### IPENZ Scholarships

Five winners have been chosen for the 2007 IPENZ Foundation Scholarships, awarded each year to school leavers with a place to study engineering at university.

The foundation received nearly 100 applications, more than double the number in any previous year, and the standard was exceptionally high.

This year's recipients of the \$5,000 award are:

- Qi-Shan Lin, Palmerston North Boy's High School, Bachelor of Engineering, Auckland University
- Matthew Sinclair, Auckland Grammar School, Bachelor of Biomedical Engineering, Auckland University
- Amy McLeod, Spotswood College, New Plymouth, Bachelor of Engineering (Hons), Canterbury University
- Claire Shukur, Hastings Girls' High School, Bachelor of Engineering (Natural Resources)/ Bachelor of Arts (French)
- Lucy Clinton-Baker, Nayland College, Nelson, Bachelor of Chemical and Process Engineering (Hons)/ Bachelor of Mechanical Engineering (Hons)