Careers for Science Graduates

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Part 1

Considering Science?

What is Science? Why Study It?

A precise definition of 'science' is hard to pin down, however broadly speaking, scientific activity can be characterised as 'the observation of natural phenomena, and the subsequent understanding about the ways in which they work'. Scientists test and contribute to an evolving body of human knowledge about the natural world, and do so from systematic observation which can be used to formulate laws and principles. Another popular definition of science is simply that 'it is what scientists do'.

Studying science both predicates and develops a number of important personal characteristics. Among these, a critical and inquiring mind is essential – science often involves the generation of new knowledge, and this requires individuals with the courage to challenge existing views.

Strong numeracy skills are essential in most fields. Creativity is also an important attribute, as is attention to detail. Good communication skills are vital for many aspects of scientific endeavour, such as describing complex scientific ideas in clear and simple terms.

There are many reasons why the study of science can be rewarding, both personally and for the wider community. Principal among these is that scientific thinking is an essential part of daily life, and is the best method to acquire accurate information about the world. A science degree develops your investigative skills, trains you in laboratory techniques and teaches you critical analysis – skills for lifelong learning. It is also an excellent foundation for further specialised study. Finally, using knowledge of technology or the natural environment to solve problems can be deeply rewarding.

On a grander scale, science has never been so important to the development of the modern world and Australia's global competitiveness, as it is in the early twenty-first century. The growth of investment in science and science-based industries, a greater social dependence on scientific research and heightening environmental pressures, mean that the need for skillful and innovative science graduates is greater than ever before. In this context, a degree in science can set you on the right path to an exciting, stimulating, challenging and immensely satisfying career.

Employers in government, industry and education need graduates who are trained to think, analyse and communicate. Science graduates have a unique blend of generic and discipline-related skills that give them the capacity to tackle problems with initiative and resourcefulness, to plan and execute projects and to work as part of a team.

Science Qualifications and Where to Get Them

Scientific qualifications come in all different shapes and sizes, from Bachelor degrees, Masters and PhDs, to Postgraduate Diplomas and the Honours year. The most common of these is the Bachelor of Science degree, usually a three-year, full-time course of study which can also be taken on an equivalent part-time basis. Some qualifications are purely science-based, while others can have a related focus with some scientific components.

Degrees can be specialised or generalist, and there are many areas of science to choose from. These include:

- Anatomy
- Astrophysics
- Behavioural Science (Psychology)
- Biochemistry
- Biomedical Science
- Biotechnology
- Botany
- Cell Biology
- Chemistry
- Ecology
- Environmental Science
- Genetics
- Geology
- Immunology
- Marine Biology
- Mathematics
- Meteorology
- Microbiology
- Molecular Biology
- Neuroscience
- Oceanography
- Pathology
- Pharmacology
- Physics
- Physiology
- Statistics
- Zoology

Other associated fields of study that may be available in science degrees include:

- Anthropology
- Computer Science
- Food Technology
- Geography
- Health/Sports Science
- History and Philosophy of Science
- Information Systems
- Science Communication
- Textile Technology.
- Vision Sciences

Science degrees can also be combined with other bachelor degrees such as Arts, Commerce, Law, Engineering and Computing.

Every university in Australia offers some kind of science-related course or degree, so it would be impossible to list them all here; try and find a particular field you are interested in or have an aptitude for, and then research the options available. University course information is readily available on the Internet – go to the Federal Government's Tenfields site at www.dest.gov.au/tenfields or check out The Good Guides Group course search function at www.thegoodguides.com.au/coursesearch.cfm. It may pay to do some research into the subjects being offered as part of the various courses you are interested in, and for further information don't be shy about ringing the university directly.

Career Outlook for Science Graduates

The outlook for science graduates in the labour market is competitive, but the employment secured is often quite rewarding. Graduates on the whole have a greater employment uptake rate than those in the 20 to 25-year-old age group without a university education, and science graduates have a higher average starting salary than those of their age group without degrees. According to the 2002 *Graduate Starting Salaries* report from the Graduate Careers Council of Australia (GCCA), science graduates (Bachelor of Science under 25 years of age) earn $36,000 per annum, while the 20 to 25-year-old age group earns an average of $29,600 each year.

Before explaining the various types of scientific employment, it is worth noting that science graduates are nearly as likely to pursue non-scientific professional roles as research or industrial roles in the scientific industries. Indeed, surveys have shown that around 40 per cent of science graduates use the skills and processes they learnt while studying science (rather than their knowledge of science) to undertake roles in a wide range of areas. Graduates pursue roles associated with science (science editors, journalists, patent attorneys, commercialisation agents, government policy analysts) or use their transferable skills (particularly mathematics) in business (for example management consulting, business analysis stockbroking, insurance, banking, risk analysis and utilities management).

Those graduates wishing to pursue scientific roles are likely to have to undertake more research in order to identify their preferred employment options, as compared to graduates with more vocationally-oriented degrees such as business and accounting. This is due not only to the nature of the skills developed, but importantly also because employers requiring these kinds of skills are scattered throughout various sectors. While jobseekers in areas such as accounting have very definite career progressions, usually beginning with the graduate program intake of higher profile employers, those employers seeking pure science graduates will in many cases not even advertise these positions, instead depending on the initiative of potential employees to track them down (more about networking, work experience and vacation work later on).

However, this diversity of opportunity is exciting to many graduates, enabling them to adapt their careers as their interests and experience develop rather than being locked into a specific vocational pathway. This is particularly relevant for the future employment market where graduates are expected to undertake between three and five career changes – not just job changes – during their working lives.

Scientific careers also command a certain level of prestige and Australia is a centre of development for many new scientific fields. Pursuing your area of interest or specialisation can yield great results, particularly if you challenge established notions and aim to work in a less publicised area. However, it is also important to keep your options open when you start looking for work. Science-related industries are dynamic and you need to be up-to-date in your understanding, as well as flexible enough to consider areas of research and work which might not be your first preference. Read newspapers and journals, network, keep in contact with your lecturers and supervisors, and undertake further study if necessary.

Science-Related Growth Areas

In most fields of science, the development of new knowledge and skills has increased markedly in recent years, helped along by technological innovations and the higher performance of Research and Development (R&D)-driven economies. Biotechnology, in particular, seems poised to enter a new era, with the human genome project leading to a strong increase in technological and knowledge development – and consequently, to increased employment in the field. Other growth areas in science are likely to arise in the chemical, pharmaceutical and food processing industries, where the demand is for chemists, biochemists, geneticists, molecular biologists and microbiologists. Another area of employment growth has been in environmental protection and resource management.

Part 2

Studying Science and Planning Your Next Step?

Looking for Work

Your job search preparation should begin early and at least a year before the end of your course. While you may be concentrating on the demands of your coursework – assignments, deadlines and examinations – you should begin networking and taking an interest in the science sector and job market well before you begin to search in earnest.

When you do begin to look for a full-time position, you should employ every avenue open to you – it has been estimated that as many as two thirds of the jobs suited to science graduates are not advertised. Use the networks you have built up during your study and in any vacation or volunteer work you have done to 'spread the net' as widely as possible.

Here your university careers service is a vital first point of contact – they have access to a network of employers, opportunities and job-seeking information, and can help you prepare résumés and applications and be ready for interviews, in some cases up to several years after you graduate. At the same time, a quick and painless method of trawling job advertisements is to visit some of the larger Internet job boards, such as SEEK Campus, where you can upload your résumé, sign up for job notification services and practice interview techniques. A list of Internet sites with information on science careers is given at the end of this booklet.

As well as these job boards and the vacancies published in the daily newspapers and academic journals such as *Campus Review* and *The New Scientist*, you can also use recruitment agencies to maximise your chances – contact details for these can be found in the *Yellow Pages* directory. A directory of recruiters who are approved by the Recruitment and Consulting Services Association can also be found at www.rcsa.com.au.

Some tips to help you get started on the job-seeking path:

- Talk to someone who is currently in a position which interests you – this will help you learn more about the role and build up your network of contacts
- Keep up-to-date with the latest scientific developments – both generally and in your particular area of interest
- Be realistic about what jobs you look for and about the time it takes to find work. Remember also that one position can be a stepping stone to another, more appropriate role – work and institutional experience count for much once you are out in the labour market
- Research organisations in which you are interested before applying – try and find a work environment you will be comfortable with
- 'Business skills' such as budgeting, project management and presenting or 'selling' ideas are becoming increasingly important in many organisations and industries – try to develop these skills wherever possible
- Make sure your résumé is tailored to the job for which you are applying, highlighting relevant experience and transferable skills in particular

For more information about jobseeking visit the 'How To Find A Job' section of *gradlink* – www.gradlink.edu.au – which features information about how to apply, attending interviews and links to both online and physical job search resources.

Postgraduate and Further Study Can Make All the Difference

The Honours Year

One of the most accessible and rewarding ways to significantly increase and refine your skills base is to take an extra Honours year at the end of your bachelor degree. The Honours year generally involves larger research projects which you will undertake under the auspices of a supervisor, most likely from your department.

This year can be very important, as many of the raw skills you developed throughout your degree will be refined and their relevance to the workplace therefore dramatically increased. In fact, many employers will now prefer or even stipulate that candidates have at least an Honours degree when recruiting.

Postgraduate Study

Postgraduate study is considered to be particularly valuable for science graduates – not only for personal development reasons, but also in terms of increasing employability. The advantages are also demonstrated in the higher median starting salaries which postgraduates enjoy, compared to bachelor degree graduates. The most recent *Graduate Destination Survey*, a survey of university graduates from every higher education institution in the country, shows the median starting salary of a science PhD postgraduate is $49,500 per annum, while those with a graduate certificate or diploma enjoy an even higher starting salary of $57,000. By contrast, degree graduates have an average starting salary of $36,000. Similarly, while 83 per cent of postgraduates found employment within four months of completing their study, 78.8 per cent of graduates were employed at the same time after graduation.

You can find the latest Australian information about the starting salaries and employment outcomes of science graduates, by performing a search on the *gradsonline* website - www.gradsonline.edu.au.

There are many courses of postgraduate study available in Australia, all with differing lengths and prerequisites. Masters and PhD courses generally run for two years, and require that the student have previously completed an Honours degree

(sometimes a first-class result is specified). A Graduate Certificate or Diploma is available directly on completion of a bachelor degree, usually running for six months to one year of full-time study.

Postgraduate degrees can consist of coursework, research or a combination of both. As with undergraduate study, for more information check out Tenfields www.dest.gov.au/tenfields, The Good Guides Group course search function www.thegoodguides.com.au/coursesearch.cfm or browse university websites and then contact the faculty directly.

Skills Developed in Research

The opportunities for specialisation in further study can provide a 'toolbox' of skills which greatly enhance your value in the marketplace – you can become an expert in your chosen field. The research student's CV will often include specific scientific techniques and computing skills, as well as other general skills which may be of great interest to employers. Students tend to underestimate the value of these skills, which can include:

- Communication skills – completing a thesis and any accompanying documentation develops the ability to write succinctly to a high degree. Teaching practicals and tutorials develops oral communication skills; presentation skills are developed in seminars and explaining research to the layperson is particularly valuable
- Capacity for self-direction – time management skills and evaluating the efficiency of a project and a particular approach are also developed. The originality of research necessitates the ability to self-direct
- Analytical skills – quantitative analytical skills are developed in the analysis of data and computer modelling techniques, and problem solving/qualitative analysis are vital to research
- Accepting and providing supervision – research fosters a willingness to learn, as well as the ability to supervise others and articulate goals clearly, developing work schedules to meet them
- Capacity for team work – similarly, teamwork experience garnered through collaboration is very important
- Cross-cultural skills – some research students can develop an understanding of other languages and cultures through overseas placements/fieldwork
- Dealing with information – analysis and presentation of information learned during postgraduate research is a skill essential to fields such as information science, administration, systems analysis and production planning
- Perseverance – finishing a long term project demonstrates the capacity to see a project through, to be committed and organised.

Funding Postgraduate study

- HECS (Higher Education Contribution Scheme) funding exists for some postgraduate courses – check with the relevant university or visit www.hecs.gov.au
- The Postgraduate Education Loans Scheme (PELS), operating in a similar fashion to HECS, also exists to fund some coursework-based postgraduate degrees. At the time of writing, PELS is set to be replaced by the Higher Education Loan Programme (HELP) in 2005; for more information on PELS go to www.hecs.gov.au/pels.htm and HELP information is available from www.dest.gov.au
- The Joint Academic Scholarship Online Network (JASON) is a searchable database of scholarship opportunities for postgraduate students of Australian universities
- The Cooperative Research Centres Association also offers scholarships for postgraduate study, for subjects relevant to current research requirements: www.crca.asn.au/about_crcs/scholarships.htm.

Cooperative Research Centres

Cooperative Research Centres (CRCs) are the result of a nationwide program introduced by the Australian government in 1990, to generate important national economic and social outcomes through scientific research. This research is conducted on a contractual basis (partly funded by the government). Each CRC project consists of a combination of government research facilities, university departments, and the research and development divisions of larger companies.

Collaborative links between the private sector, higher education and government mean these multidisciplinary research environments have the resources to address the needs of industry and the community, in a particularly efficient and comprehensive manner. On average, these facilities have more than thirty full-time staff and an operating budget of approximately A$30 million per year. A new round of CRCs are announced every two years and given contracts to perform specific research; employment opportunities are generally available to postgraduate students and to graduates as full-time research staff for the duration of the contract and its funding.

For more information, visit the Federal Department of Education, Science and Training (DEST's) official Cooperative Research Centre information website at www.crc.gov.au, where you can find out about the selection process, current contracts and other developments. CRCs also have their own representative organisation, the Cooperative Research Centres Association (CRCA), whose website at www.crca.asn.au has details of CRCA scholarships for postgraduate scientific study.

Professional Skills/ Development

The career choices available after completing a science degree are so exceptionally varied that it is almost impossible to discuss a 'typical' career path in science. Tertiary science studies equip graduates with strong analytical and critical thinking skills, numeracy skills, research ability, and technical communication skills. Employers in many industry sectors prize these abilities, thus science graduates find themselves working in all sorts of roles.

Traditionally science graduates are perceived to be strong in the above areas but not in some other important skill areas. These can include communicating with laypeople as well as some of the more traditional 'business-related' skills which are becoming increasingly important in the workplace. It is up to you to overcome these stereotypes – work on those skills important to employability and be prepared to provide examples when you are applying for work. Present yourself as a well-rounded candidate or employee who is interested in your industry, up-to-date with recent developments and involved in professional associations and activities.

It should also be noted that larger employers are often just interested in a completed degree rather than the specific subjects you've covered, as new recruits can be given further, on-the-job training to ensure their knowledge matches the specific needs of the organisation. However, this is not often the case with small-to-medium employers who may not have the funds available for extensive retraining.

Pursuing Research Funding and Scholarships

Communication and presentation skills are also important in pursuing research grants, presenting written work for publication and applying for scholarships. If you are interested in further research work, it would be very useful to begin writing during your study, even if this writing is not specifically science-related (for instance contributing to a university or community newspaper, or maintaining a website). This will help you develop your ability to write for specific audiences and to communicate scientific ideas in a concise, substantiated manner.

Employment Opportunities and Types of Occupations

There are a huge number of science-related occupations today, with new varieties constantly appearing. More common occupations include technical officer, analyst, consultant, laboratory assistant, aide, field scientist, supervisor, manager, designer and technical author, and these can usually be found in any branch of scientific endeavour.

The *Graduate Destination Survey*, published by the Graduate Careers Council of Australia each year, shows that the main industries where science graduates end up working in specifically scientific roles include agriculture, forestry and fishing, manufacturing, state government and defence. Alternatively, some of the more popular non-scientific employment destinations for science graduates include finance, insurance, property and business, higher education and wholesale and retail trade.

Popular occupational destinations for science graduates, according to the latest *Graduate Destination Survey*, include computing positions, clericals sales and service roles and management/administration positions for males, whereas females tend more towards science and health professional positions, clerical and computing roles, with a higher number going into teaching compared to males.

For a full, searchable listing of science-related occupations, check out the Australian Government's myfuture career development website – www.myfuture.edu.au – or the Department of Education, Science and Training's Job Guide site at http://jobguide.dest.gov.au. Many of these have been reproduced below in the section entitled 'More Typical Job Titles for Science Graduates'.

Some Specific Job Descriptions for Science Jobs

The CSIRO is one of the largest employers of science graduates in the country. Here are the main occupations which it offers:

Research Scientist

A Research Scientist works toward agreed research objectives producing original ideas, planning the broad lines of attack on a research problem, and taking overall responsibility for solving it. This includes directing the work and interpreting the results.

Research Scientists need to be aware of the commercial potential of their work so that new scientific knowledge, understanding and applications can be of maximum value to Australian industry and the community. By the same token, patents and intellectual property rights exist to protect the individual(s) who create or conceptualise new scientific ideas.

In recent years there has been a sustained move towards greater recognition of intellectual property rights for academic research; however, 'proprietary knowledge' as it is often known in the business world, is something which has been carefully guarded by research and development divisions in commercial organisations for many decades. In Australia, patents also exist to protect an idea, process or product which is new, inventive and capable of being industrially or commercially exploited, and require that another person needs to purchase a licence to produce, import, sell or distribute the patented product. For more on Intellectual Property, see the Australian Government's IP Access website – www.ipaccess.gov.au

Entry Requirement: PhD degree or equivalent, and proven research ability in your field.

Professional Scientists

Professional Scientists provide scientific and engineering support to Research Scientists. Their role is to apply scientific methods and develop sophisticated techniques to solve problems.

Working as part of a research or development team, the professional scientist might also provide consulting services or manage a scientific facility. An added attraction is the opportunity for paid travel, sometimes overseas, to collaborate with other scientists and industrial partners.

Entry Requirement: A degree in science or engineering.

Other Professional Staff

Other professional staff include science professionals who support research by assisting with science management, science writing, editorial work and disseminating technical information.

Librarians

Librarians maintain collections of reference materials to meet the changing needs of scientific and support staff, and are required to understand the impact of new technologies on information science.

Entry Requirement: A degree or diploma together with professional librarianship qualifications or a degree in librarianship or information science

Administrative Staff

Administrative staff provide support for research in business units and corporate services, working in financial or human resources administration and using administrative computing systems. More senior positions can involve business management, revenue raising, resources management, staff supervision and/or policy development.

Entry Requirement: A degree or diploma in human resource administration, social sciences, financial management, business studies or computing is generally expected.

Para-Professional Staff

Technical staff provide research support in a range of laboratory and field situations. Technicians apply a range of technical practices, develop new techniques or design and construct new equipment, and need a good knowledge of scientific principles.

Craft workers are highly skilled trades staff trained as scientific instrument makers, electricians, fitters, toolmakers, sheet metal workers, carpenters or plumbers, who help professional staff by designing and constructing specialised instruments, apparatus or pilot equipment.

Entry Requirement: An associate diploma from a TAFE college (or a qualification of equivalent standard), a trade certificate, or successful completion of four years secondary schooling variously.

Other Staff

Other groups of staff provide general services essential to research, such as field work, animal care, computing, photography and stores work.

Entry Requirement: No specific requirements.

More Typical Job Titles for Science Graduates

As you can see, science graduates work in a vast array of industries and roles, some directly science-related, some less so, and some not specifically scientific in nature at all. All however utilise at least some of the skills which are nurtured and developed during a course of study which has a science focus or component.

This sizeable range of employment can include:

Actuary
Air Force Officer
Air Traffic Controller
Analyst
Army Officer
Army Soldier - Technician
Astronomer
Audiologist
Audiometrist
Biologist
Business Analyst
Child Support Worker
Chiropractor
Clinical Research Associate
Collection Preparation Officer
Computer System Administrator
Consultant
Development Chemist
Earth Science Technical Officer
Environmental Health Officer
Field Hydrologist
Forensic Scientist
Forest Technical Officer
Geographic Information Systems Officer
Geological Technician
Geophysical Technician
Geoscience Technician
Health and Physical Education Teacher
Health Physicist
Health Surveyor
Helpdesk Manager
Human Factors Researcher
Hydrographer
Hydrologist
Instrument Fitter
Instrumentation Tradesperson
Information Technology Consultant
Information Technology Management Consultant
Laboratory Assistant
Laboratory Technician
Land Economist
Management Consultant
Mapping Scientist
Marine Surveyor
Medical Diagnostic Radiographer
Medical Imaging Technologist
Medical Laboratory Scientist
Medical Practitioner
Metallurgical Technician
Meteorologist
Microbiologist
Nuclear Medicine Technologist
Occupational Health and Safety Coordinator
Orientation and Mobility Instructor
Patent Examiner
Pathology Technical Officer
Personal Development Teacher
Petroleum and Gas Plant Operator
Physicist
Pilot
Post-doctoral Fellow and Lecturer
Post-doctoral Research Assistant
Power Generation Plant Operator
Precision Instrument Maker and Repairer
Process Engineer
Product Designer
Product Planner
Project Builder
Project Forester/Environmental Officer
Radiation Therapist
Refrigeration and Airconditioning Technical Officer
Regimental HQ Lieutenant
Regulatory Analyst
Research Analyst
Research Assistant
Research Officer
Research Scientist
Research Technician
Reservoir Surveillance Engineer
Senior Scientist
Systems Administrator
Teacher
Technical Officer
Technical Sales Representative
Textile Technician
Toxicology Consultant
University Lecturer
Water Treatment Consultant

Some Examples of Career Pathways

The following are some examples of science graduates who are successfully employed. While they have diverse education and employment backgrounds, their experiences in finding work are common to many science graduates.

1. Name: Travis Grant

Current Position: Management Consultant with Accenture Australia

Where did you study and what course/degree did you do?

I originally studied a Bachelor of Science at the University of Melbourne between 1991 – 1993 before going on to do Honours in 1994. Wanting to become an expert in microbiology, I weathered the demands of a PhD, including the long term (4 yrs) and poor income (surviving on a scholarship and income from tutoring), as I felt this qualification would significantly increase my options for employment.

Why were you attracted to science?

I was initially attracted to a career in medicine, but after learning more about the biological sciences, particularly microbiology and biochemistry, I became attracted to these areas of science. The underlying reason was probably a curiosity as to how anything biological works, for example, how bacteria invade the body and cause infection, and how our immune system works to beat these infections. After learning more about this area, I soon found that there were many diverse job opportunities in these areas and that the future job market appeared to be strong.

What has your work history been, both during and after education?

During my PhD, I worked as a practical demonstrator, which provided a good source of money, but also good experience at supervising others. After finishing my PhD, and then two years working as a post-doctoral research scientist, I decided that a career change was in order. Although I still enjoyed microbiology, I wanted some new and diverse experiences and to gain some new skills. I was particularly interested in complementing my science skills, to position me well for long-term career objectives. The intention was to gain some business and management skills, and after a series of challenging interviews, I was accepted as a strategy consultant at Accenture, specialising in helping companies with their strategic direction.

What does your current position involve?

Strategy consulting involves solving diverse business problems and challenges, and then effectively communicating this to a client. Activities include building business cases and financial models, researching and analysing different consumer markets, understanding competitors, and using IT to improve the way a company operates. Projects culminate with a presentation making the information understandable to the layperson.

What major skills does this require, particularly scientific ones?

The position requires a number of important skills, such as problem solving, structured thinking, investigative and analytical skills, and communication skills. Many of these I gained during the course of my studies in science, and are built up by intensive on-the-job training.

Which industries do graduates from your background tend to end up in?

Science degrees can foster a range of different skill sets, with the result that graduates end up in a wide range of industries. A background in health science can result in a job with biotechnology companies, pharmaceutical companies, in hospitals, in medical research, in health-related sales, and in other health related industries. However, the skills learnt by a science student are also useful in various non-health areas, including those of the business/corporate world.

Is employment in your industry readily available, and was finding work difficult for you?

Employment in the health sciences is generally good (however, research funding was not particularly easy to come by) and over the coming years will be an attractive industry to be involved in (particularly within scientific companies/organisations).

Employment opportunities as a consultant can vary greatly, as they depend heavily on the economic climate. But (as is the case for most jobs), opportunities can be found for the proactive job seeker. I found a number of activities served me well:

1. Researching the area of career interest and mailing CV's directly to relevant companies
2. Speaking to a number of different people about career options and strategies, including the University of Melbourne's Careers and Employment Centre
3. Preparing thoroughly for job interviews, as they turned out to be quite demanding.

What advice do you have for current science students concerning employment?

I have a number of specific recommendations for current science students including:

- Seriously consider completing an Honours year, as this is very valuable not only to your own understanding of science and ability to think constructively, but is also valued highly by employers
- Choose your supervisor carefully, and get to know them well. They may help you find work when you have finished your studies as a lab assistant, or in an overseas placement, and they tend to have strong networks and good contacts!
- Choose your research project carefully – question what skills will be learned and if they will be useful in the long term
- Join clubs and associations such as sporting and science organisations, as this will improve networking skills and opportunities and impress employers
- Think about your long term careers goals while you are at the undergraduate level
- Take a year off from university to travel. It's a great opportunity, and employers often see this as a good step in personal development.

How does a science degree prepare someone for the world of work?

Problem solving, analytical skills and communications skills are very attractive to employers, and these are developed while studying science, particularly during an Honours year, and postgraduate studies. Skills nurtured during science can be readily built upon, so a science degree can be a great stepping stone to many other careers.

2. Name: Cathy Oke

Currently Employed As: Environmental Information Consultant with Earth Systems Pty Ltd

Where did you study and what course/degree did you do?

Bachelor of Science (Marine Biology and Zoology) James Cook University Townsville Qld. BSc Honours and PhD (Genetics) La Trobe University, Melbourne, Victoria.

Why were you attracted to science?

Because I wanted to be a marine biologist, thus I needed to do science at both high school and university.

What has been your work history, both during and after education?

During Honours I worked as a first-year Genetics Practical Demonstrator. During my PhD I worked as a second-year Conservation Genetics Practical Demonstrator and had a scholarship. Before I completed my PhD I worked full time in London at a Fisheries conservation organisation for two years as their Communications Officer and then Supply Chain Manager. I have recently finished my PhD and now work at an Environmental Consultancy in Melbourne.

What does your current position involve?

Earth Systems Pty Ltd is a Melbourne-based environmental consulting company – I help in the side of the business that gives clients the best possible research and presentation of environmental data.

What major skills does this require, particularly scientific ones?

Excellent research skills are required to ensure that the information being used is accurate and current. These skills are acquired throughout a science degree. Also as a major component of my work is the presentation of environmental data, knowledge of report writing and technical language helps when producing work for a wide range of clients, from those with little scientific understanding to those with vast amounts.

Which industries do graduates from your background tend to end up in?

There is a huge range of industries that people with a marine science, genetics and conservation background can work in. Scientific research can be continued in many fields, in the lab or in the field, within the fishing industry, the government, private industry, within universities, non-profit/non-government organisations etc. The skills acquired can also lead to jobs within communications, media, park rangers, wildlife officers, zoos, management and administration.

Is employment in your industry readily available, and was finding work difficult for you?

More and more jobs in the environmental science area are being created…but at the same time more and more graduates are leaving with environmental science degrees. While there is greater competition, there are jobs out there – nothing that a bit of hard work, good grades and a bit of volunteer work and networking won't fix!

What advice do you have for current science students concerning employment?

If you are really passionate about the course you are studying and have a good idea of the field you wish to follow as a career, then start to do some extracurricular activities such as volunteer work, summer vacation work, going to external seminars/conferences and networking with people in your chosen field. The more experience you can gain without necessarily being employed means your CV will have more items to impress future employers.

How does a science degree prepare someone for the world of work?

In many ways! A science degree teaches critical thinking, practical approaches to solutions, it allows you to interact with people from different fields, it will teach you to work in a team or by yourself, as well as report writing, presentation skills and communication skills. All of these skills are essential in the workplace.

3. Name: Melissa Beecroft

Currently Employed As: Laboratory Research Technician at the Australian Genome Research Facility (AGRF)

Where did you study and what course/degree did you do?

I studied a Bachelor of Science at The University of Melbourne (1997 – 2000). I undertook subjects such as botany, cell biology and biochemistry.

Why were you attracted to science?

Originally I wanted to be a veterinarian, but after speaking to my university careers advisor decided that a broader-based degree such as science suited my needs better and was more to my liking.

What has your work history been, both during and after education?

I worked 20 hours per week in hospitality while studying part-time, and found that this work gave me valuable experience working in teams and taking responsibility for various tasks, as well as in applying for jobs and keeping them. At the suggestion of a family friend, I applied to and was accepted at the Australian Genome Research Facility (AGRF), a major national research centre, which is closely associated with the Walter & Eliza Hall Institute.

What does your current position involve?

The Australian Genome Research Facility is a not-for-profit organisation established and supported under the Australian Government's major research facility program. My position is in the laboratory and involves assisting with research into cancer and endometriosis at a genetics level.

What major skills does this require particularly scientific ones?

I work with a TECAN robot on DNA amplification projects. The lab in which I work is a NATA-accredited laboratory (National Association of Testing Authorities), and it is a relaxed environment in which I am given the independence to work on my own projects using state-of-the-art technology. My position also involves attending conferences and offers other opportunities for professional development.

Which industries do graduates from your background tend to end up in?

There are a wide variety of positions available, including IT, genetic counselling, sales representatives, laboratory assistants and patent advisors. Salaries for science graduates start at more than $30,000 p.a. and employment is typically 9am to 5pm with breaks and flexible hours.

Is employment in your industry readily available, and was finding work difficult for you?

I had letters of reference from two university lecturers that impressed my employer, but I also recognise that serendipity can play a significant role in science graduates gaining employment. I believe science skills are transferable to other areas of scientific endeavour and that 'anyone with a science degree can work in a lab'.

What advice do you have for current science students concerning employment?

It is very important to research a company through their website or other sources before attending an interview. Also networking through people in the industry or professional associations is very important, as many jobs are never advertised. Doing an Honours year as part of the degree is also highly recommended – although not essential. When seeking work, I also learned to deal with job agencies, how to develop an effective résumé and to use online job-seeking resources such as job boards.

How does a science degree prepare someone for the world of work?

Everything you learn as part of a science degree is relevant to a certain extent and science graduates develop many transferable skills during their study.

Work Experience – How and Why

As you can see, science graduates come from and end up in a variety of study and work environments. While studying or when seeking full-time work, you should add to your study with valuable 'real-life' experience, either through paid employment, work experience or volunteering. Employers not only value the skills you develop as part of work experience, but also the motivation you display through undertaking extracurricular activity.

Work Experience and Vacation Work

To find vacation work, you should look at online vacancy services such as www.seek.com.au or www.graduateopportunities.com and do a search under casual/vacation work, as well as more specialised science websites such as the Melbourne Environmental Jobs Network: www.environmentaljobs.com.au and the APESMA Vacation Work Handbook - www.apesma.asn.au/students/

Additionally, you should check the job notice boards at your university careers service and, if necessary, make an appointment there to speak to someone about upcoming vacancies. Many work experience opportunities are offered through your department or faculty – keep an eye on physical noticeboards and the website for any opportunities. Finally, you can approach employers directly yourself; find contact details on company websites or through the *Yellow Pages* directory – www.yellowpages.com.au

Industry-Based Learning

Industry-based learning is an optional part of a course of study where paid work experience is undertaken during a degree, usually for a period of between six months and one year. These are real employment positions with hands-on experience in the application of scientific and business principles and are offered by the faculty in conjunction with employers.

Both students and employers benefit from these programs, as students get real work experience and employers are able to preselect proactive and highly capable students who can offer significant contributions to their organisation.

While these places are usually made available to IT and business students, science students doing double degrees may be able to undertake a placement, and these courses are also offered by the IT and business faculties at Victoria University (www.business.vu.edu.au/coopeducation), Monash University (www.monash.edu.au), La Trobe University (www.latrobe.edu.au) and The University of Technology, Sydney (www.uts.edu.au). In Victoria, Swinburne University (www.swin.edu.au/corporate/ili/ibl) offers industry-based learning placements specifically for science students.

Volunteering

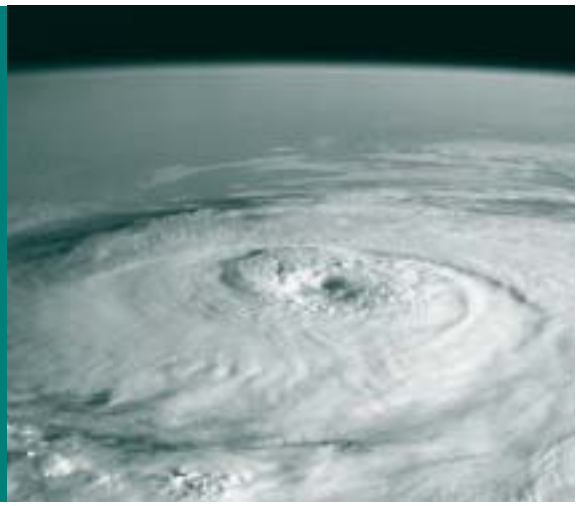
Volunteering is very highly regarded by employers, and there are a number of websites which exist to help you find volunteer work to suit your needs. Remember that all experience is useful, even if it is not specifically science-related.

GoVolunteer
www.govolunteer.com.au is an initiative of Volunteering Australia) and was Australia's first volunteer recruitment website.

SEEK Volunteer
www.volunteer.com.au offers positions in Australia and abroad.

Australian Volunteers International
www.osb.org.au provides opportunities for Australians to volunteer to live, work and learn in partnership with people of other cultures. Volunteers contribute to developing communities and bring a reciprocal benefit to Australia.

FIDO (Friends In Deed Organisation)
www.fido.com.au, matches professional volunteer skills with not-for-profit organisations' requirements. Volunteers are chosen for their specific ability to aid the business activities of not-for-profit concerns.



Professional Associations

Most of the major scientific disciplines will have a professional association, and these can be national and state-based, often with links to the corresponding association in other countries. Some of the major professional bodies in Australia include:

APESMA (Association of Professional Engineers, Scientists and Managers Australia)
www.apesma.asn.au

Australian Biotechnology Association
www.ausbiotech.org

Australian Institute of Physics
www.aip.org.au

Australian Marine Sciences Association
www.amsa.asn.au

Australian Mathematical Society
www.austms.org.au

Australian Society for Biochemistry and Molecular Biology
www.asbmb.org.au

Australian Society for Medical Research
www.asmr.org.au

Defence Science and Technology Organisation
www.dsto.defence.gov.au

Federation of Australian Scientific & Technological Societies (FASTS)
www.fasts.org

Minerals Council of Australia
www.minerals.org.au

Statistical Society of Australia
www.statsoc.org.au

For more professional associations and other relevant organisations to contact, check out 'the facts', the information section of the government careers resource myfuture: www.myfuture.edu.au, or perform a keyword search on www.google.com.au

Internet Resources

A huge array of useful Internet sites exist to help you make choices about your career in science. A useful, though by no means exhaustive list is included below:

Science Job Sites

Job Search function on *gradlink* www.gradlink.edu.au. This function enables you to search both the SEEK Campus and Graduate Opportunities databases at once for graduate career opportunities

CSIRO Careers Section
http://recruitment.csiro.au

Government Jobs
http://jobsearch.gov.au/government

International Job Opportunities
http://recruit.sciencemag.org

Melbourne Environmental Jobs Network
www.environmentaljobs.com.au
The Melbourne Environmental Jobs Network is a free website for job seekers and employers to share and find valuable information on environmental jobs across Australia.

New Scientist Jobs
www.newscientistjobs.com

Science People (commercial science placement agency)
www.sciencepeople.com.au

University of Adelaide Physics Department
www.physics.adelaide.edu.au/jobs/jobs.html

Science Information Sites

Australian Council of Deans of Science
www.acds.edu.au

Biotech Resource Centre (Canada)
www.bhrc.ca/biotecareers/Career_Paths/index.html

Department of Education, Science and Training (DEST)
www.dest.gov.au/directory/science.htm

Federation of Australian Scientific and Technological Societies
www.fasts.org

Real Science (career exploration site)
www.realscience.org

Society for Integrative and Comparative Biology (SICB – USA)
www.sicb.org/careers/index.php3

Nova Magazine (topical events in science)
www.science.org.au/nova/index.htm

Science Next Wave (international science careers resource centre paysite)
http://nextwave.sciencemag.org

The Australian Academy of Science
www.science.org.au

The Australian Government's Science and Industry portal
www.scienceandindustry.gov.au

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Sources

Commonwealth Scientific & Industrial Research Organisation (CSIRO)
www.csiro.gov.au

King's College London Careers Centre
www.kcl.ac.uk/kis/college/careers

The University of Melbourne's Careers & Employment Centre
www.services.unimelb.edu.au/careers

University of Western Australia's Science Department
www.science.uwa.edu.au

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Additional Reading

gradlink, the publishing arm of the Graduate Careers Council of Australia (GCCA), produces a range of publications including the *Graduate Destination Survey, Graduate Starting Salaries*, the *Course Experience Questionnaire* and *Your Career and You*. These publications can be sourced from your university careers service and the GCCA, or can in many cases be downloaded for free from the *gradlink* website: www.gradlink.edu.au.

This booklet is one of a series intended for use by careers services in Higher Education in Australia. The booklets will also be of use to secondary school students and others considering further study. A full list of titles is available under 'What Job For You/Industry Career Profiles' on www.gradlink.edu.au, or on request from the *gradlink* Helpdesk on 03 9349 4300.