

Forensic science tertiary education in Australia

Chemistry is under immense pressure as a discipline in the tertiary sector in Australia. This is ironic considering the importance of chemistry as an enabling discipline in a number of high profile areas of study, including forensic science. This article overviews university forensic education in Australia and discusses the future directions for this field.

Forensic education in the tertiary sector in Australia has a relatively recent history. The first institution to open its doors to forensic science students was the University of Technology Sydney, which has just celebrated the 10th anniversary of the first intake into its Bachelor of Applied Chemistry in Forensic Science (Honours) in 1994. In 1995 Griffith University launched its Masters of Science, and almost 20 institutions across the country now provide forensic qualifications at all levels from certificate to PhD (Table 1). The discipline areas range from forensic investigation to forensic accounting; however, many of these courses are only available to practising forensic scientists or qualified medical staff. In terms of undergraduate courses there are currently only a relatively small number of Bachelor degrees providing genuine research experience, i.e. leading to Honours. It should be noted that for laboratory-based forensic scientists an Honours degree is essentially the entry level into the profession.

The courses on offer can be classified into three broad groupings.

Generic degree courses

These are courses that lead up to the Bachelor level. Forensic science in these cases is typically used as a vehicle to enrich the content of the course and engage the students. This

may be limited to a single module or unit; typically the courses do not result in an Honours degree in a forensic discipline.

Industry-based courses

These courses, which are available at Certificate, Graduate Diploma and Masters levels, are generally offered in close collaboration with law enforcement agencies and have entry restricted to serving police officers or forensic scientists. Examples are the Masters courses at Griffith University, the Certificate/Diploma courses at Swinburne University and the specialist courses offered at the Victorian Institute of Forensic Medicine. Canberra Institute of Technology (CIT) has long been involved in forensic education and training and was instrumental in development and provision of the National Diploma of Forensic Investigation. CIT offers a degree in forensic investigation, which, while not restricted in entry, is targeted at police officers and those wishing to enter the police services in forensic capacities.

Bachelor degree courses with Honours in forensic science

Examples of this kind of course include those at UTS, Deakin and Flinders. While there is variation in course structure and content these

courses have certain broad similarities:

- *A double-degree design:* These courses combine a solid core of science with a strong forensic science component. For example several of the chemistry-oriented courses are accredited as chemistry degrees by the RACI.
- *A significant research component:* Forensic employers see research skills as essential for graduates seeking employment in forensic science. In addition, as will be discussed below, the Honours and postgraduate students represent an important resource for forensic science providers.
- *Modules dealing with core forensic science:* Examples are the presentation of evidence and courtroom procedure. Again, such skills are seen as essential for forensic scientists.
- *Links with local forensic science providers:* For a forensic science course to have validity it must have close links with forensic science in order to ensure that the course content is relevant and up to date. In addition, in research there is a rich vein of projects to be mined. In this way forensic science providers can smoothly implement many research and development outcomes.
- *A small number of places:* Considering the size of the

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Table 1. Forensic-related programs currently offered by Australian universities and TAFE colleges*

Provider, program and date commenced (or to commence)	
Canberra Institute of Technology	Monash University, Melbourne (in conjunction with VIFM)
Advanced Diploma in Computer Crime, 2005 (new)	Post Grad Certificate in Forensic Medicine, 1999
Bachelor of Forensic Science – Forensic Investigation, 1999	Post Grad Diploma in Forensic Medicine, 1999
Certificate IV in Crime Scene Investigation, 2003	Master of Forensic Medicine, 2001
Certificate IV in Scene of Crime Officer, 2002	Murdoch University, Perth
Certificate IV in Tenprint, 2005 (new)	Bachelor of Science in Forensic Biology and Toxicology (Pass or Honours), 2004
Diploma of Forensic Investigation (Crime Scene Investigation) – now replaced by Diploma of Public Safety: Forensic Investigation, 1994	Post Grad Diploma in Environmental Forensics, 2003
Diploma of Forensic Investigation (Document Examination), 2005 (New)	Queensland University of Technology, Brisbane
Diploma of Forensic Investigation (Fingerprint ID) – now replaced by Diploma of Public Safety: Forensic Investigation, 1994	Bachelor of Forensic Science (comajor), 1998
Diploma of Public Safety – Forensic Investigation, 2000	Bachelor of Forensic Science (major), 2004
Graduate Diploma in Forensic Investigation, 2005 (new)	Swinburne University (TAFE), Melbourne
Charles Sturt University, Wagga Wagga	Certificate IV in Forensic Science, 1996
Bachelor of Biotechnology (Medical-Forensic), 2005 (new)	Diploma of Public Safety – Forensic Investigation, 2000
Bachelor of Science (Forensic Chemistry), 2005/2006 (new)	University of Canberra, Canberra
Curtin University, Perth	Bachelor of Applied Science, 1998
Bachelor of Science (Honours), 1999	Bachelor of Forensic Studies, 2003
Bachelor of Science (Honours) (Forensic Science), 2001	Bachelor of Forensic Studies/LLB, 2003
Bachelor of Science (Forensic and Analytical Chemistry), 2005	University of Technology, Sydney
Deakin University, Geelong	Bachelor of Science (Honours) in Applied Chemistry – Forensic Science, 1994; Doctor of Philosophy, 1997; Masters of Science, 1998
Bachelor of Forensic Science (Honours), 2000	Bachelor of Science in Biomedical Science in Forensic Biology, 2002
Doctor of Philosophy, 2002	Bachelor of Science in Environmental Forensics, 2005
Edith Cowan University, WA	University of Western Australia
Bachelor of Environmental Science (Environmental Forensics), 2005 (new)	Graduate Diploma in Forensic Science, 1998
Flinders University, Adelaide	Masters in Forensic Science, 1998
Bachelor of Technology (Forensic and Analytical Chemistry), 1997	Doctor of Forensic Science, 2000
Griffith University, Brisbane	University of Western Sydney
Master of Science in Forensic Science, 1995	Bachelor of Science (Forensic Science), 2004
Master of Science in Forensic Science (Queensland Police Service), 1995	Victoria University
Bachelor of Forensic Science, 2004	Bachelor of Science in Medical, Forensic and Analytical Chemistry, 2000
Bachelor of Forensic Science/Bachelor of Arts in Criminology and Criminal Justice, 2004	Victorian Institute of Forensic Medicine, Melbourne (in conjunction with Monash University)
La Trobe University, Melbourne	Post Grad Diploma in Clinical Forensic Medicine, 1991
Post Grad Diploma in Forensic Science, 1996	Elements of Forensic Medicine, 1991
	Post Grad Diploma in Forensic Pathology, 2005

* Modified from NIFS Education Survey, August 2004

Table 2. Useful websites

National Institute of Forensic Science (NIFS)	www.nifs.com.au
Science, Engineering Manufacturing Technologies Alliance (SEMTA)	www.semta.org.uk
Australian and New Zealand Forensic Science Society	www.nifs.com.au/ANZFSS/ANZFSS.html
17th International Symposium on the Forensic Sciences	www.anzfss2004.org.nz/main_page.htm
American Academy of Forensic Science	www.aafs.org
UTS Centre for Forensic Science	www.forensics.edu.au
Deakin forensic science	www.deakin.edu.au/forensic

forensic science community in Australia, there is no point in producing vast numbers of students qualified in this area. Graduates from the UTS program have been extensively employed within the forensic sector within NSW and the Australian Federal Police. The students who complete these courses also have the scientific (and generic) skills suiting them to a wide range of potential careers. Recent graduates from Deakin have gone onto careers in the pharmaceutical industry, occupational health and safety, environmental science, science education and PhD research (in chemistry as well as forensic science).

As previously stated, research is an essential component of these degrees, and over the last 10 years Honours and postgraduate students from these courses have carried out a wide range of projects in collaboration with the forensic science providers. To get a feel for the areas of research interest, see the website of the recent Australian and New Zealand Forensic Science Society 17th International Symposium on the Forensic Sciences (Table 2). Students, the participation of whom is highly valued by the forensic practitioner community, gave a significant number of the presentations.

Forensic education review

This growth in forensic courses in Australia has been matched by similar trends overseas. This has been seen most dramatically in the UK where there are now over 50 BSc degree programs and over 350 possible course combinations with a forensic aspect to them. These

courses have all been developed since 1990. Prior to that date the Masters course at the University of Strathclyde had been the only forensic science offering in the UK. This has led in the UK to a disparity in supply and demand of forensic science graduates, with the main motive for offering these courses being student enrolment. There has also been criticism from potential employers of a lack of consistency and clarity in the vast range of forensic courses on offer, thus leading to difficulties in determining what skills a graduate might have (see the table 'Forensic Science Degrees: The Higher Education Perspective', available at www.semta.org.uk)

These concerns have led to a number of reviews in the US, UK and also in Australia (see Table 2 for the abovementioned SEMTA report and the American Academy of Forensic Science website for the Technical Working Group Education (TWGED) Report). In 1999 the National Institute of Forensic Science (NIFS) convened a meeting in Adelaide on forensic education in Australia. NIFS was established in 1992 following the Chamberlain Royal Commission, although it had been mooted several years earlier. The aim of NIFS is to promote excellence in all aspects of forensic science, and to achieve this it works closely with the forensic science community and key organisations, such as the Australian and New Zealand Forensic Science Society. As a government-appointed umbrella organisation it assists in the development and coordination of forensic science services across the country. Projects that it has been involved

closely with include CrimTrac, a national police intelligence system, including DNA and fingerprint databases, and FIREBALL, a forensic ballistics imaging system. A key role for NIFS is in the support, coordination and running of training and quality assurance programs in forensic science, and it was this goal that led to the meeting in Adelaide.

One immediate result of that meeting was the establishment of the Australian and New Zealand Association of Forensic Science Educators. The aims of the Association are to:

- provide the broad forensic science community with a forum where education institutions offering forensic programs can discuss common issues between them and with representatives of the relevant industry
- facilitate association of, and collaboration and interchange of information between persons who are, or have been, occupationally involved in the teaching of forensic science or scientific investigation, or have a legitimate and bona fide interest in forensic science education.

One of the means to achieve these aims has been the creation of an email list hosted on the NIFS server. Interested readers can contact Professor Claude Roux, President of the Association, for more information.

More recently, NIFS has commissioned an options paper outlining where the Australian forensic science community needs to be in terms of contemporary training, education, science and policing into the future. It includes information, discussion, analysis and options across

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the breadth of forensic science disciplines, current and future policing initiatives, academic providers and Australian and overseas initiatives. The paper covers a range of topics including:

- entry level into forensic science
- benchmarking of skills
- reviewing the National Diploma
- articulation of qualifications
- consideration of postgraduate qualifications
- accreditation of academic providers
- setting of standards for tertiary qualifications (for the use of tertiary providers and students when assessing the relevance of courses)
- developing training programs for laboratory-based personnel, and for management, induction and technical training
- the National Forensic Training Centre model
- Internet delivery of programs including the possibility of linking with other providers.

In mid-March forensic educators, forensic employers and other interested parties met for a Summit on Future Directions in Forensic

Education and Training under the auspices of NIFS. The directions arising from this meeting will be described in a future article.

As can be seen from Table 1 the field is developing rapidly and this article can only give a brief survey of forensic science education in Australia. For more detail interested readers are directed to the NIFS Education Survey Report on the NIFS website (Table 2). The future of forensic science education is exciting, with a wide range of challenges and opportunities. The crucial requirement for sustained high-quality tertiary education in forensic science is a strong collaboration with the forensic science industry. Failure to do so will only result in a short-term success – the famous bubble that will burst sooner rather than later.

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