To Dream, To Believe, To Create
A to Z of Engineering Courses

- There are over two dozens of engineering courses offered at Australian universities and TAFEs.
- These slides give you an overview of each type of engineering course available and real profiles of women, who completed these courses.
- Links to each state’s education admission centre provides up to date information on all courses.
- Links to up to date scholarship programs offered.
Aeronautical Engineering

- **Available in**: Bachelor & Diploma degrees

- **Core Area of Learning**: Areodynamics, Aerospace engineering, mechanics (fluid, solid, structural and flight), Aerospace science and spacecraft, Aviation, Engineering design and Computer Modelling

- **Career Path**: Aircraft design and manufacturing companies; Defence forces & organisations; Passenger transport airlines; Airworthiness organisations; General aviation; aircraft sales and space agencies
Aeronautical Engineer Profile

• **Name:** Lauren Cameo
• **Age:** 27
• **Discipline:** Aerospace Engineering
• **Education:** Bachelor of Engineering (Aerospace)  
  Current enrolment: Graduate Certificate of Engineering (Energy Management), UniSA.
• **Current job:** Systems Engineer – Compliance Task Leader for Project Echidna 2A, at BAE Systems Australia; and Childrens Fitness Instructor – Dance & Circus Performing, self-employed and contracting to Fitnessworx Pty Ltd.
• **Career Highlights:**  
  Extensive operation of Seahawk Avionics on prototype aircraft and in lab/simulator environment during 2004.  
• **Career Goals:**  
  - Increased technical knowledge and platform exposure.  
  - Maintain a work-life balance that allows me to grow both personally and professionally.
Automotive Engineering

- **Available in:** Bachelor & Diploma degrees

- **Core Area of Learning:** Aerodynamics, Automotive design, Computer modelling, Computer-aided drafting (CAD), Design (product development), Electronics, Engine systems and instruments, Engineering (mechanical), Manufacturing, Materials technology, Mechanical design, Mechanics (fluid & Solid), Mechatronics, Robotics, Systems design and development, Thermodynamics, Vehicle handling and control

- **Career Path:** Car, bus and truck design and manufacturing companies; Racing teams (yes, including Formula 1 teams!)
Automotive Engineer Profile

- **Name:** Michelle Shi-Verdaasdonk
- **Age:** 28
- **Discipline:** Automotive Engineering
- **Education:** Bachelor of Engineering (Aerospace), Bachelor of Applied Science (Aviation), and Master of Engineering (Quality Management)
- **Current job:** Program Leader in Chassis Engineering – Ford Motor Company
  Lecturer of Bachelor of Automotive Engineering – RMIT University (Part time)
- **Career Highlights:** It’s a great feeling to see your designs being built on a car and to see it roll off the production line!
  Becoming a part time lecturer at RMIT university and teaching what I love doing is also one of the highlights
- **Career Goals:**
  - Work on challenging global projects
  - Using my skills to make a difference in our community
  - Promote women in engineering
Audio/Sound Engineering

• **Available in**: Bachelor, Diploma and Associate degrees

• **Core Area of Learning**: Audio engineering, Business practice, Digital technology, Editing, Electronics, Law (copyright), Management, Music, Music (publishing), Music production analysis, Music theory, Post-production and production management, Production planning, Production processes, Sound art, Sound recording and production.

• **Career Path**: Radio station, Film and Television production, Recording Studios and live sound theatres

Photo Source: JMC Academy Melbourne
http://www.jmcacademy.edu.au
Audio/Sound Engineer Profile

- **Name:** Elise Tasker
- **Age:** 22
- **Discipline:** Audio Engineering and Sound Production
- **Education:** Associate Degree of Audio Engineering and Sound Production
- **Current job:** Norwest Productions, a Audio Production Company mainly concentrating on large live events such as Commonwealth Games, ARIA Awards and Music Festivals
- **Career Highlights:** Elise played an instrumental role in the sound set-up at the recent MTV Awards at Australian Technology Park. Elise has also worked on productions for Keith Urban and other legendary performers
Biomedical Engineering

• **Available in:** Bachelor and Diploma degrees

• **Core Area of Learning:** Anatomy and physiology, Biological sciences, Biomechanics, Biomedical science, Biophysics, Electronics, Computer modeling, Digital systems, Digital technology, Engineering (biomedical), Exercise physiology, Human biology, Medical imaging, Neurophysiology, Neuroscience, Physics

• **Career Path:** Biomedical research organisation; Design and manufacturing new biomaterials organisation; Pharmaceuticals; Cosmetics and Diagnostic organisations.
Civil Engineering

• **Available in:** Bachelor, Diploma and Associate degrees

• **Core Area of Learning:** Civil engineering management, Computer modeling, Computer-aided design (CAD), Construction management, Civil engineering, Environmental engineering, Geoengineering, Structural analysis and design, Transport engineering, Irrigation and water management, Mechanics, Project management, Risk analysis and management, Roads and road design, Surveying, Water quality management, Water resources engineering

• **Career Path:** Civil, infrastructure and environmental consulting firms; Construction firms; Government and Project management
Civil Engineer Profile

• **Name:** Michelle McCormack
• **Age:** 32
• **Discipline:** Civil Engineering
• **Education:** Bachelor of Engineering (Hons), Master of Engineering / Science
• **Current job:** Project Manager, Department of Defence (Army)
• **Career Highlights:** Working in third world countries and remote communities in Australia that are in dire need of infrastructure in order to improve health and wellbeing
• **Career goals:** Continue to have exciting and challenging roles that also allow me to have quality family time.
Computer/Software Engineering

- **Available in**: Bachelor & Diploma degrees

- **Core Area of Learning**: Computer and network security, Computer animation, Computer architecture, Computer engineering, Hardware, Networks, Programming, Computer science, Database systems, Digital and microprocessor systems, Computer systems engineering, Java and C++ software development, LANS, Microprocessors, Programming (Java), Project management

- **Career Path**: Design and/or research companies in software and hardware; Microprocessor related industries
Computer/Software Engineer Profile

- **Name:** Catherine Colman
- **Age:** 26
- **Discipline:** Software Engineering
- **Education:** BE (Software), Dip. Project Management
- **Current job:** Applications Development Manager, Australia Defense Force Tactical Data Link Authority
- **Career Highlights:** Representing Australia at international working group in 2006. Spending a day at sea on a Mine Hunter Coastal.
- **Career goals:** Take over the world!
Chemical Engineering

• **Available in:** Bachelor & Diploma degrees

• **Core Area of Learning:** Biotechnology, Chemical engineering management, Chemistry, Computer modeling, Computer-aided design (CAD), Produce design, Chemical engineering, Environmental engineering, Metallurgical engineering, Polymers engineering, Environmental management, Mathematics, Project management, Software applications, Waste management and Pollution control

• **Career Path:** Manufacturing; Pharmaceuticals; Biotechnology; Advanced materials; Pulp and paper; Petrochemicals; Energy production; Food and drink processing; Specialty chemicals; Water treatment; Plastics; Ceramics; Extractive industries and even in space exploration.

Photo Source: Tupperware www.tupperware.com
Chemical Engineer Profile

• **Name:** Georgie Wright
• **Age:** 28
• **Discipline:** Chemical
• **Education:** Bachelor of Engineering (Chemical) / Diploma of Modern Languages (Indonesian), University of Melbourne
• **Current job:** Process Engineer, ExxonMobil Altona Refinery
• **Career Highlights:** Being involved in the 2008 FCC Shutdown involving process equipment inspections, some of it via rope access!
• **Career goals:**
  – To learn as much as I can about the work and myself from each role I carry out.
  – To promote the Chemical Engineering profession through my involvement in Engineers Australia.
Electronics/Electrical Engineering

- **Available in**: Bachelor & Diploma degrees

- **Core Area of Learning**: Communication systems, Control systems, Data networks, Digital and analogue electronics, Digital and microprocessor systems, Electrical engineering, Electrical engineering management, Electronics, Embedded controllers, Electrical distribution, Electrical generation, Electronics, Telecommunications, Microcomputers, Microprocessor control systems, Microprocessors

- **Career Path**: Robotics; Power generation; Industrial and power electronics; Telecommunications; Computer programming; Automation systems; Defence; Medical imaging systems and Automotive

Photo Source: www.powercor.com.au
Electrical Engineer Profile

• **Name:** Benita Husband
• **Age:** 29
• **Discipline:** Electrical engineering
• **Education:** BE (Hons) Tasmania University, Lighting Engineering RMIT
• **Current job:** Associate - Buildings, Connell Wagner.
• **Career Highlights:** working on the Melbourne Cricket Ground Northern stand redevelopment (going to the top of one of the light towers, and inside the scoreboard!), TEDA soccer stadium Tianjin China and King Hamad General Hospital Bahrain (including some site visits to the Kingdom of Bahrain!)
• **Career goals:** To balance my time between management activities (which have their own challenges and rewards) whilst still being actively involved in Engineering design work (I love seeing the tangible outcomes of the projects I’ve been involved in!)
Environmental Engineering

- **Available in**: Bachelor and Diploma degrees

- **Core Area of Learning**: Earth sciences, Ecological studies, Chemical Engineering, Civil Engineering, Environmental Engineering, Environmental chemistry, Environmental geology, Environmental impact assessments, Environmental management, Environmental science, Environmental testing, Hydraulics and hydrology, Industrial waste handling, Land and measurement science, Land resource management, Resource/environmental management, Surveying, Systems design and development, Waste management and pollution control, Water quality management, Water resources engineering

- **Career Path**: Environmental consultancies; Manufacturing organisations; Recycling and treatment companies; Forestry, and Mining and service industries
Environmental Engineer Profile

- **Name:** Jamie Tainton
- **Age:** 29
- **Discipline:** Civil
- **Education:** Bachelor of Engineering (hons) and Bachelor of Science
- **Current job:** Civil/Environmental Engineer of STORM CONSULTING
- **Career Highlights:** Constructing a multi-million dollar wetland project for Melbourne Water from project inception through to supervising construction. The local community has really embraced the project with regular visitors utilising the walking paths and seating areas. Local wildlife have permanently moved in with many birds seen throughout the area and the most important sound of frogs.
- **Career goals:** To have a strong name in the industry for getting the job done and to balance my success as an engineer with the success of a family
Geotechnical Engineering

• **Available in:** Bachelor degree

• **Core Area of Learning:** Cartography, Computing, Ecology (sustainability), Environmental studies, Geographic information systems, Geography, Geomatics, Land and measurement science, Mapping systems, Photogrammetry, Remote sensing, Spatial information and analysis, Spatial information systems, Surveying

• **Career Path:** Private consulting firms and government authorities; Mining, telecommunication and utility companies.
Geotechnical Engineer Profile

- **Name:** Lucie Iseli
- **Age:** 35
- **Discipline:** Geotechnical Engineer
- **Education:** Bachelor of Engineering (Civil), MBA, Master of Construction Law
- **Current job:** Geotechnical Manager Victoria at WorleyParsons
- **Career Highlights:** Winning $1M+ projects, designing for Bolte Bridge and East Link, and managing 70 people (mostly men)
- **Career goals:** Work hard on challenging projects. Work on projects that improve the community. Balanced time between work, family, friends and personal time (have it all)
Mechanical Engineering

• **Available in:** Bachelor and Diploma degrees

• **Core Area of Learning:** Aerodynamics, Air-conditioning, Computer graphics, Computer modelling, Computer-aided design (CAD), Design (product development), Electronics, Engine systems and instruments, Mechanical Engineering, Mechanical engineering management, Fluid Mechanics, Solids Mechanics, Mechatronics, Renewable energy studies, Robotics, Sustainable energy systems, Systems design and development, Thermodynamics

• **Career Path:** Automotive; Commercial air conditioning industry; Packaging industry; Power generation; Construction and maintenance in the petrochemical industry
Mechatronics Engineering

• **Available in:** Bachelor degree

• **Core Area of Learning:** Computer programming, Computer-aided engineering (CAE), Computing, Control systems, Digital and microprocessor systems, Electronic systems, Electronics, Engineering, Mechatronic Engineering, Ergonomics and human sciences, Machine design, Mechanical design, Mechatronics, Mechatronics design, Robotics, Software engineering, Systems design and development

• **Career Path:** Automotive; Aerospace; Marine; Mining; and large consulting firms
Marine/Offshore Engineering

- **Available in**: Bachelor degree

- **Core Area of Learning**: Design, Electrical engineering, Engineering, Marine engineering, Process engineering, Hydrodynamics (offshore structures), Instrumentation, Marine thermodynamics, Maritime engineering, Naval architecture, Offshore operation, Offshore systems design, Project management

- **Career Path**: Oil and gas industry; Mining; Defence; Consulting firms; and Renewable energy industry
Mining Engineering

- **Available in:** Bachelor degree

- **Core Area of Learning:** Excavation systems and computer applications, mine design and planning, mine economics and feasibility studies, mining geomechanics, mine management, mining systems, mine ventilation and safety

- **Career Path:** Mining and large consulting firms
Manufacturing Engineering

- **Available in:** Bachelor and Diploma degrees

- **Core Area of Learning:** Computer-aided engineering (CAE), Engineering, Manufacturing Engineering, Industrial engineering, Logistics, Manufacturing management, Mechanical design, Mechanics, Production processes, Project management, Quality control, Robotics

- **Career Path:** Automotive; Aerospace; Marine; Mining; and any other manufacturing industries
Material Engineering

- **Available in**: Bachelor and Diploma degrees

- **Core Area of Learning**: Sustainable materials — ceramics, plastics and metals; properties of engineering materials; process control and improvement; management and presentation skills; technical investigation and research skills; social and environmental aspects of materials

- **Career Path**: Materials process engineering industry; Primary material producers and refining industry; Utility providers; Transport industry; Defence; Research institutions and multinational technical consultancy firms.
Naval Architecture

- **Available in**: Bachelor degree

- **Core Area of Learning**: Design, Engineering, Marine engineering (ship construction), Maritime engineering, Maritime engineering (ship structures), Maritime engineering management, Naval architecture, Project management, Shipping (hydrodynamics)

- **Career Path**: Ship building; Shipping industry; Oil and gas industry; Defence; Consulting firms; and Renewable energy industry

Photo Source: HMAS Anzacs, RAN; Benchijigua Express, Austal
Photonics Engineering

• **Available in:** Bachelor degree

• **Core Area of Learning:** Optical fibres, (optical) signal processing, data communications, optical instrumentation, real-time and embedded computer systems, electronics and VLSI design

• **Career Path:** Digital communication industry; Optical, microwave and satellite communications industries and data/network industry
Photovoltaics & Solar Energy Engineering

- **Available in**: Bachelor degree

- **Core Area of Learning**: PV devices, technologies and manufacturing, PV systems engineering, RE technologies, PV applications and system design, policy, analysis and modelling, financing and marketing

- **Career Path**: Solar research and development institutions; Solar power industry and other sustainable industry

Renewable Energy Engineering

- **Available in**: Bachelor degree

- **Core Area of Learning**: RE technologies, systems and applications including: biomass; complementary technologies; environmental and policy issues; photovoltaics; solar architecture; solar thermal systems; wind generators

- **Career Path**: Solar power; wind power; Hydro power; Thermal power industries; and other renewable energy industries
Renewable Energy Engineering Profile

- **Name:** Nyssa Muir
- **Age:** 26
- **Discipline:** Electrical Power Engineer (hydro generation)
- **Education:** Bachelor of Electronic & Electrical Engineering
- **Current job:** Employed by HydroTasmania as a project engineer working on large projects modernising existing hydro-generators
- **Career Highlights:** Working on modernising a 60MW hydro-generator at Poatina. It was a 5 month project and I was able to get hands-on experience refurbishing all parts of the machine such as; excitation, stator, rotor and all the new PLC installation.
- **Career Goals:** By modernising hydro-generators, we can improve their efficiency and get more power out of less water which is a diminishing resource. I hope to build my knowledge of hydro-generators and improve the energy efficiency and reliability of the HydroTas machines. And to become a chartered engineer!
Telecommunication Engineering

- **Available in**: Bachelor and Diploma degrees

- **Core Area of Learning**: Broadband networks, Communication systems, Computing (networks), Data communications, Data networks, Electronics, Communication Engineering, Telecommunication Engineering, Internet telecommunications, LANS, Network engineering, Networks and data communications, Software engineering, Telecommunications, Wireless technologies

- **Career Path**: Telecommunication industry; Defence; and Satellite industry
**Alternative Path**

- If you feel that you are not ready for a four year degree in engineering at university, there are alternative pathways to the engineering profession:
  - You can become an Engineering Technologist by completing a three-year Australian Bachelor of Engineering Technology degree, or
  - You can become an Engineering Associate (Officer) by completing a recognised two-year Australian (AQF6) Advanced Diploma or Associate Degree
  - Once you have gained some work experience you can transfer from Associate to technologist and/or from Technologist to Engineer with additional study. In practice you may find that the distinction does not matter and many Associates and Technologists work alongside engineers doing challenging and fulfilling work
Engineering Technologist Profile

• **Name:** Helen Imhoff

• **Education:**
  – Tertiary subjects previously studied: Geographical Science, Forensic Science & Criminology
  – Tertiary subject currently studying: Associated Degree in Civil Engineering

• **Current Job:** Cadet Technologist, Dept Main Roads QLD

• **Career Highlight:** Being a part of an interactive, cooperative & considerate team at Main Roads. The opportunity to visit large construction projects

**Advice for women who are considering engineering as a career:**

Enjoy it – don’t be frightened to show excitement about projects.
Be vocal – speak up, ask questions, make suggestions.
Be proactive – don’t take a back seat, only you can build the career you desire.
Be a self-learner – go out and seek knowledge and don’t always accept the first answer provided.
Don’t be too serious – engineers have a sense of humour too
Take advantage of social events – they are a way to build and maintain life-long networks
Important Links

• Education Admission Centres provide most up to date admission, course and scholarship information. A must visit website!
  – VIC: www.vtac.edu.au
  – NSW & ACT: www.uac.edu.au
  – QLD: www.qtac.edu.au
  – WA: www.tisc.edu.au
  – SA & NT: www.satac.edu.au
Bonus!

• Study engineering not only provide you a bright career future, it also gives you these opportunities during your study:
  
  – Scholarships are available for engineering study at most of institutions
  – Have paid work experience during your engineering study
  – Overseas working opportunities, yes, all around the world!
  – Participate in humanitarian support/relief projects as an engineer
  – Meet great and fun people, of course!
Want More Information?

• To find out more about women in the engineering profession, career profiles and other information, you can also visit Engineers Australia Women in Engineering National Committee:

www.engineersaustralia.org.au/wie
Engineering – Your Pathway
To Dream, To Believe, To Create