

SMUCE

Your link with industry

CAREERS GUIDE

2023



This publication was supported by the Clubs & Societies Council, a division of the Monash Student Association (Clayton) Inc.



To the engineers and problem solvers of tomorrow

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A NOTE FROM THE AUTHORS

The Society of Monash University Chemical Engineers (SMUCE) proudly presents this year's 2023 Careers Guide.

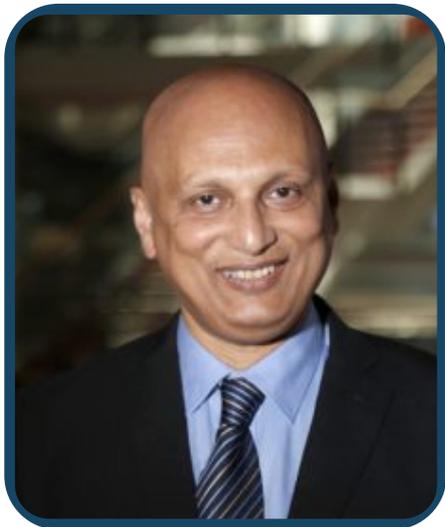
This guide comes as a result of many months of research, brainstorming and meetings from a very dedicated team. We would firstly like to thank Vanessa Flores for her dedication and extraordinary work towards designing this year's careers guide. This guide which is a fantastic resource to all current and aspiring Chemical Engineering students wouldn't have been achieved without her. We would also like to thank IChemE and Viva Energy for sponsoring this guide and to our Graduates who volunteered to share their stories as profiles in this guide.

SMUCE is a not-for-profit student society which endeavours to support Chemical Engineering students during their studies at Monash University. This guide aims to provide students with a wealth of knowledge about the profession of Chemical Engineering and has been used as a resource by individuals such as myself in the past to select an Engineering specialisation. This guide is an invaluable resource as it has been created by students for students and aims to answer the student cohorts questions about our future profession.

The committee, Wen Hui and myself have spent many hours sourcing information for this guide and we hope it has a positive impact on all our readers. This guide is a tool and is designed to get its readers to start thinking about their future careers as a Chemical Engineer.

Sincerely,
Zachary Busch & Wen Hui Chen

A NOTE FROM THE HEAD OF DEPARTMENT



SMUCE plays a key role in the Department of Chemical and Biological Engineering. They maintain a bridge between academics and students in this department with regular feedback on our teaching so we collectively benefit and ensure the desired learning outcomes for the students. As we emerge from COVID-induced disturbance and more face-to-face learning, SMUCE will continue to play an even more important role in fostering interaction among students, and between the students and academics.

SMUCE undertakes many activities, as anyone can glean from their website. Career Guide is one output from SMUCE, a significant publication that relates the students with opportunities that our industries and academics present. These opportunities are varied – work, internship, research and mentoring, to name a few. I congratulate the SMUCE team for producing this publication and look forward to continued collaboration with SMUCE for our shared positive future.

Best wishes for 2023!

Professor Sankar Bhattacharya

ALL ABOUT SMUCE

The Society of Monash University Chemical Engineers (SMUCE) is a student-run society aiming to bridge the gap between the classrooms and the world outside the university. It serves as a link between students, academics and industry.

Through our hugely popular Industry Seminar Series we strive to expose our fellow students to the chemical engineering world by regularly inviting industry members to visit. We also work closely with the Department of Chemical Engineering and Monash Employment and Careers Development to increase student awareness of the professional opportunities and to build upon the skills necessary to aid them in their professional undertakings.

Socially, SMUCE organises a number of events to facilitate networking opportunities between students, different year levels and academic staff. Such events include barbecues, game competition nights and our annual SMUCE Academic Dinner

let's get social



www.smuce.org



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[Society of Monash University Chemical Engineers \(SMUCE\)](#)



<https://www.facebook.com/SocietyOfMonUniChemEng>

OUR SPONSORS



At Monash Chemical Engineering, we see potential in everything. We thrive in that pivotal space where engineering, chemistry, physics, and mathematics intersect. And we're ranked number 1 in Australia for Chemical Engineering – so we're the perfect place to develop your potential, too.



At Viva Energy Australia we make, import, blend and deliver fuels, lubricants, solvents and bitumen through our extensive national and international supply chains. The Australian economy relies on the products we supply, our experience in operating supply chains safely and reliably, and our commitment to helping Australian motorists, businesses and industries.



The Institute of Chemical Engineering (IChemE) is a global professional community with head offices in the UK and Australia. IChemE focuses on building and supporting a network of Chemical Engineers in the world. IChemE aspires to be a peer-group leader with its vision to be recognized as a significantly valued organization with contributions in the chemical, processing and biochemical industries.



Reasons to join IChemE: Knowledge

As a learned society, the Institution of Chemical Engineers recognises the importance of continued learning and keeping up to date with industry news and technical knowledge. All members receive:

- the latest news, views, technical articles, and industry updates in *The Chemical Engineer* and www.thechemicalengineer.com
- access to the Knowledge Hub featuring thousands of articles, papers and resources created by IChemE and our members via a single searchable index
- online subscription to the *Loss Prevention Bulletin*, the leading source of process safety case studies
- free online access to the *Knovel* e-library containing over 300 chemical engineering titles, databases and problem-solving tools
- discounted rates on IChemE conferences and events, training courses, and books.

Join our professional community:
www.icheme.org/students

IChemE ADVANCING
CHEMICAL
ENGINEERING
WORLDWIDE

A close-up photograph of a person wearing white nitrile gloves. The person is holding a small, clear plastic vial containing a white, crystalline powder. Below the vial, a circular metal component with a central hole is visible. The background is a blurred laboratory setting with various pieces of equipment and a white lab coat. The overall scene suggests a chemical or materials science experiment.

ALL ABOUT CHEMICAL ENGINEERING

WHAT IS CHEMICAL ENGINEERING?

Chemical engineering is a broad profession that draws on expertise from various engineering disciplines to effectively develop and transform raw materials into a diverse range of useful products. These products range from plastics, cheese, paint, paper, oil and everything in between. Like most disciplines of engineering, chemical engineers play a role in nearly every industry as they are responsible for the development, design, implementation and maintenance of these goods producing processes.

Specifically, a chemical engineer can find themselves focusing on many aspects of plant design and operation, including safety and risk assessments, product development, process design and analysis, modelling, control engineering, chemical reaction engineering, nuclear engineering, biological engineering, construction specifications, and operating instructions. These tasks can range from working with nanotechnology in the laboratory to directing the large-scale industrial processes that convert raw materials into everyday products.

Modern day chemical engineering also plays a vital role in addressing our societies next big challenges as they are key leaders contributing to policy development and industry solutions. For accurate science-based policy and action the necessary transformation, chemical engineers provide practical science-based information and promote solutions – to achieve the SDGs, decarbonisation, energy transition, net zero targets, circular economy and other sustainability initiatives.

How is chemical engineering different from chemistry?

Don't worry, you're not the first person to feel confused about the differences between Chemical Engineering and Chemistry. It's a common misunderstanding that these two disciplines are the same. They do have many similarities but the two disciplines have many differences in their history and role in society. Some of these key differences are demonstrated in the chart on the next page over.

History

Chemistry and the study of it is an old profession. Records exist of the ancient civilisations amassing practical knowledge of chemistry involved in metallurgy, pottery and dyeing. The study of chemistry as a science began in the 1600s, with chemists like Robert Boyle working towards the formulation of Boyle's Law.

Chemical engineering emerged in its own right in the late 1800s with George E Davis coining the term 'chemical engineering'.



Workplace

Chemists tend to work in laboratories performing analysis or research and development, but can also be found in offices, classrooms and in the field. Chemical engineers tend to work at the plant end of research, but also work in laboratories, the field and the boardroom.

Careers

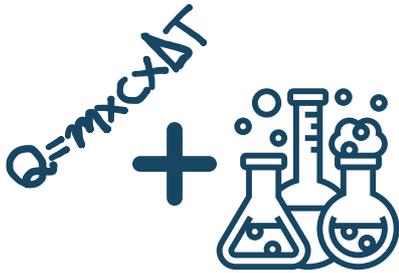
Both chemistry and chemical engineering are good subjects to study and the skills learnt can be applied to a variety of different jobs and roles. For chemists typical jobs within the field of chemistry include; analytical chemist, clinical biochemist, forensic scientist, pharmacologist, research scientist or toxicologist. The skills learnt in studying chemistry can also be applied to being an accountant, environmental consultant, patent law, teacher, or science writer. Chemists can even go on to become chemical engineers. Chemical engineers can fill a wide range of roles in a variety of disciplines including; Water Engineers in the water industry, bioproduct engineer, food processing engineer or process engineer in the energy industry.

Scale

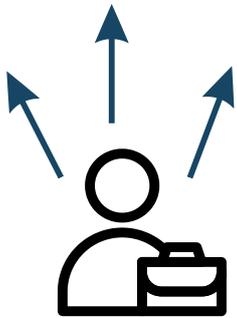


Chemists work with relatively small amounts of materials in glassware or on a laboratory bench; e.g. developing new drugs. Whereas chemical engineers work on industrial-scale reactions with factory-size equipment; e.g. scaling up drug production. Chemists are more likely to develop novel products; and then chemical engineers are likely to take these products and make them more efficient so they are widely available and cheap.

Areas of study



Chemistry investigates the background of the science encompassing aspects of; organic, inorganic, analytical, physical and bio-chemistry. Chemical engineering is more multidisciplinary in its approach and includes all of the previous topics, as well as aspects of physics and maths such as; heat transfer, fluid dynamics, equipment design etc.



Focus

Chemists tend to focus on developing novel materials and processes, analysing substances, measuring the physical properties of substances and testing theories. Chemical engineering focuses on turning these new ideas and discoveries into useful attainable products. Most work falls into the design, manufacture and operation of plants and machinery; and the development of new materials or substances. Chemical engineers focus on making products for profit and on a scale that is accessible to the many.



Salary

Chemical engineers generally get paid more than chemists. The starting salary of a chemical engineer is AUD \$69,000; the starting salary of an analytical chemist is \$51,000. This does not change with career progression; senior analytical chemists could earn over \$115,000 but chartered chemical engineers can earn \$150,000+.

Education and academic challenges

Responsible development, design, operation, and improvement of sustainable chemical processes presents significant challenges for practising chemical engineers, and for those who educate them. Undergraduate courses and postgraduate training need to address a wide range of learning outcomes, ensuring that fundamental knowledge and skills of the subject are solidly embedded, and that research and teaching are linked for mutual benefit. The discipline must adopt new concepts and integrate them into curricula and build more productive, multifaceted and effective relationships between researchers in academia and industry, to facilitate implementation of innovative and sustainable processes in industry.

Why is research funded for the future?

Some of the brightest and best chemical engineers pursue a career in academia, typically because they are passionate about their discipline area. There, their research can underpin the development, design, analysis, and optimisation of novel processes and products to support a sustainable future. Furthermore, their teaching shapes the learning of generations of future graduates who will contribute to a more sustainable future. However, especially in times of economic upheaval and multiple conflicting priorities, public and private funding for chemical engineering research can be in short supply. Nevertheless, it is vital to demonstrate impact and publicise and promote the profession and the difference that it can make, more consistently and more compellingly than ever before.



CHEMICAL ENGINEERING AND WATER

Why water?

Water is fundamental to life, but it is a limited resource. Ensuring that people have access to clean water is a significant global challenge. There must be a balance between supply and demand. This requires behavioural change and technological innovation. One in four people globally do not have access to safe drinking water, according to Unicef, population growth, industrialisation and climate change continue to increase demand for potable, processed, and agricultural water supplies. This is putting increased pressure on water supplies. Water scarcity is being aggravated by interrelated environmental problems – eg desertification, salination, pollution and climate change – as well as over-extraction and large-scale national and international water diversion. Chemical engineers can provide advanced technologies and processes to improve the sustainability of municipal and industrial water supplies and the treatment of wastewater.

Recycling and Reusing Water

challenges

Chemical engineers have an essential role to play in resolving the challenges associated with recycling and reusing wastewater, in municipal and industrial settings. Technology challenges to treat or recycle water, remove contaminants (at macro and micro levels) and dispose of associated by-products, such as concentrated saline, are accompanied by social issues, such as a hesitancy to recycle wastewater to produce drinking water.

innovations

As well as being instrumental in providing people and industry with clean water, chemical engineers aim to improve the energy efficiency of water conservation and treatment. Producing clean, safe water, making it readily available, and improving sanitation and human waste management are significant global public health challenges. In some parts of the world, desalination is used to provide clean, safe water; however, it is energy intensive. Reuse of wastewater is more sustainable, so should be a priority.

CHEMICAL ENGINEERING AND ENERGY



Why Energy?

Modern society relies on energy for many aspects of daily life including heating, cooking, transport, and lighting. Energy also powers industry and commerce, operates equipment, and lights our lives. Global population increases, economic development and industrialisation continue to drive rapid increases in energy demand. The energy landscape is complex. Meeting energy requirements and providing security of supply while limiting greenhouse gas emissions is a difficult balancing act, even without price volatility driven by external events.



Climate Change and Energy

challenges

Widely available carbon-free or ultra-low carbon energy is considered a 'must have' to maintain and improve quality of life sustainably. Governments and industry are committing to decarbonise and meet net zero carbon emissions by 2050. Such commitments require investment, innovation, and action. Chemical engineers can help mitigate the resulting environmental impacts through carbon capture and storage (CCS) and groundwater remediation. Expanded energy storage can improve resilience to increased climate risk (eg extreme weather) and cyber attacks.

innovations

Renewable energy will increasingly power homes and industry. However, only in a few countries and energy scenarios is 100% renewable energy possible. Thus, the future will see a mix of energy sources including, for some regions, nuclear power. Hydrogen is being suggested as an alternative energy carrier in many industries. However, it is only as clean as the process used to generate it. Long-term sustainability will rely on massive scale-up of 'green hydrogen', where renewable power is used to electrolyse water. The safety implications of widespread use of hydrogen also need to be carefully considered, as hydrogen is highly flammable and volatile. Chemical engineers are working on processes across the hydrogen spectrum.

CHEMICAL ENGINEERING AND FOOD



Why Food?

Major improvements in agricultural production during the latter half of the 20th Century have ensured that, to date, global food production has kept pace with population growth. However, land and water are finite resources, with competing demands upon them. Growing populations and improving living standards in the developing world create demand for more food, especially protein-rich foods, where these are water-, land- and energy-intensive. Food production is an energy- and resource-intensive process: more than 20% of greenhouse gas emissions now come from agriculture, forestry and other land use. Climate change is already affecting crops and harvests due to changing weather and reduced availability of suitable land and water. Improving agricultural production techniques will not alone provide sufficient food and reduce climate impacts. A more holistic approach that uses science and engineering solutions is needed for food production to meet demand without increasing energy, water or land use, while minimising waste

Efficiency and Waste

challenges

The World Food Programme estimates that around a third of the food produced each year is lost or wasted. Smart packaging can reduce food waste by prolonging shelf life, but its use must be restricted to where it is most needed, and packaging must be fit for reuse and recycling. Food waste can be recycled through composting or landspreading. Where this is not feasible, energy recovery from food waste through incineration, anaerobic digestion, pyrolysis, gasification or production of fuels and chemicals through fermentation is preferable to sending food waste to landfill. Chemical engineers can achieve step-change improvements to reduce and valorise food waste.

innovations

There are many areas where agriculture can benefit from good science and engineering, novel technologies and process innovation. These might include more sustainable and alternative fertilisers, or the use of new measurement technologies and analytics to minimise resource use and pollution. High-intensity farming, such as urban and vertical farming, using renewable energy, and remediation processes for both land and water supplies, can also reduce environmental impact. The development of alternative proteins from fungi, plants, insects, algae and cultivated animal cells can reduce the greenhouse gas impact of agriculture, alongside improving the sustainability of traditional protein sources.

CHEMICAL ENGINEERING AND WELL-BEING



Why Well-being?

Social well-being comprises many elements, including living in an environment that is healthy, and promotes physical and mental harmony. Chemical engineering plays a fundamental role in facilitating health and social well-being to enable people to live healthy and fulfilled lives. Maintaining good health is not only about providing healthcare and material goods. It is also about having healthy and safe living environments. It is essential that chemical engineers communicate the concepts of process safety and its management, environmental responsibility and risk to wider groups, including the public, policy- and decision-makers, and non-governmental organisations (NGOs). Also, Biological and biochemical engineering offers great potential for health and well-being, including drug discovery and production of so-called advanced therapeutics. Chemical engineers are required to design and operate the manufacturing facilities for fermentation, fill/finish, and also to scale up processes rapidly from lab to commercial. The development of new formulations will avoid the need for cold-chain distribution and potentially move away from injected formulations.



Sustainable Industrial Design

challenges

People are living longer, thanks in no small part to developments in healthcare. In developed countries, longevity and the associated demographic shift bring new challenges, including how to ensure physical and mental well-being into old age. Moreover, it is important that developed nations lead the way by making fundamental shifts in consumption, recovery, and reuse or recycling. By applying the principles of green engineering from the outset, chemical engineers can help design processes and products that safeguard the environment and facilitate healthy lifestyles

innovations

The COVID-19 crisis has shown significant scope for improving the global preparedness for a pandemic. Chemical engineers played a significant role in developing and scaling up COVID-19 vaccines and treatments such as antibody and antiviral medicines that have saved countless lives. To manage future pandemics better, global capacity for rapid vaccine development and scale-up must be improved, as must distribution systems, to ensure equity. While the health of people in developing countries is improving, chemical engineers are still needed to support access to clean water and sanitation.

CHEMICAL ENGINEERING AND MANUFACTURING

Why Manufacturing?

Water, energy, food, and health all contribute to well-being. Their creation in turn relies on the availability of raw materials, including mined and biological resources, and on the manufacturing processes required to transform resources to end products. For the element indium, for example, the journey from ore to a fully-charged smartphone is long, and full of chemical engineering challenges. Chemical engineering is applied throughout the production chain, from extractive industries to manufacturers of bulk and specialty chemicals, industrial and medical gases, materials for manufacturing consumer products, and consumer products themselves. There has been substantial and ongoing growth in the metals and minerals (eg copper, lithium, cobalt, nickel, and graphite) needed to support the transition to renewable energy for power generation and transportation. The processing of most of these critical metals and minerals requires chemical engineering expertise.



Sustainable Industrial Design

challenges

There are many challenges in minerals extraction where chemical engineers can make a difference. These include water and energy efficiency, efficient resource recovery, and reducing the contribution to climate change. Around half the energy used in mining goes into crushing and grinding, accounting for 3% of global power use. Even small efficiency gains here can have a huge effect on global consumption of water and energy, with concomitant benefits of reducing waste, mitigating climate change and cutting costs.

innovations

Producers of raw materials and manufacturers must respond to the challenge of producing goods and operating global supply chains in a sustainable way, enabling ambitions to transition global emissions to net zero by 2050. As well as cutting emissions, the manufacturing industry will need to conserve resources and minimise waste by implementing a circular economy approach as far as is practicable. More recycling of waste metal can help to reduce those emissions, as can the move to cleaner, more efficient processes, including using hydrogen to decarbonise the steel production process.

TYPES OF CHEMICAL ENGINEERS

The career pathway of a chemical after graduation is a diverse and versatile pathway that contains opportunities in several different fields and roles.

Some of the roles that Chemical Engineers can find themselves filling are given below.

These role descriptions are given to provide a brief idea of the wide variety of opportunities that are available to chemical engineers working in the Industry .

Biochemical engineer

An engineer who works in a rapidly developing sector which takes exciting science discoveries and changes them into cost-effective and environmentally-friendly processes. They are responsible for designing processes to create products ranging from new medicines to renewable energy, as well as greener solutions to waste treatment.

Energy engineer

An engineer who works on energy infrastructure development projects and designs energy usage optimisation solutions.



Food engineer

An engineer who specialises in designing food and beverage-producing processes. These processes include everything from sourcing raw materials, pre-treatment, product production, product packaging and product storage and transportation.

Mining Engineer

An engineer who typically designs, develops and maintains mineral extraction processes. They are responsible for achieving the highest extraction efficiency while minimising the cost and waste that is produced from the process.





Nuclear Engineer

An engineer who uses their knowledge of nuclear physics and process design to produce designs for Nuclear material related equipment. This equipment encompasses everything from nuclear reactors, radiating shields and associated instrumentation. They are also responsible for the ongoing operation, maintenance and safety management.

Petroleum Engineer

An engineer who designs the extraction and refinement processes required to produce crude oil products. They are typically responsible for selecting appropriate extraction equipment, designing cost effective refinement equipment and ensuring minimal damage is caused to the environment.



Pharmaceutical Engineer

An engineer who specialises in the production of pharmaceutical products. They are responsible for designing the processes that convert chemicals and biological materials into drugs and medicines and for ensuring the quality, safety and purity of products produced.

Process Engineer

An engineer who is responsible for the design, configuration, operation and continuous optimisation of industrial processes. They are responsible for understanding the ins and outs of specific industrial processes.



A hand holding a pen over a document with the word 'RESUME' visible. The background is a blurred image of a hand holding a pen over a document with the word 'RESUME' visible. The text is centered and bold.

PROFESSIONAL DEVELOPMENT RESOURCES

HOW TO: RESUME

A resume (also known as curriculum vitae) is a marketing document summarising your qualifications, key skills and work history. The information you provide is used by the employer to decide whether you meet the job requirements and whether to select you for an interview.

To make a good first impression, a well-written resume needs to be clear, concise, and neatly organised. Its content also needs to be tailored to the position you're applying for.

STEP BY STEP GUIDE TO WRITING A GREAT RESUME

1. CONTACT INFORMATION

Start with the basics such as your name, phone number, email address (make sure the email address you use sounds professional) and LinkedIn profile. Use the phone number and email address that you use most often. You don't want to disappoint an employer by failing to respond to their invitation to an interview in a timely fashion.

2. PROFESSIONAL SUMMARY

In 50 to 150 words, describe your applicable experience and skills. This summary should prove your value and help to differentiate you. Avoid describing what you'd like from your next job and instead focus on what you can offer. This is the place for your USP, or unique selling proposition. Tailor this section to each position that you're applying to. Use keywords from the job description so that an ATS can find a match.

3. SKILL SUMMARY

The reader of your resume may not have more than a minute to spend scanning each application, particularly if the volume of applications is very high, so including a skills section can capture their attention by making it immediately clear what you can offer. Compile a brief bulleted list of the systems, skills and competencies that are most relevant to the job you are applying for. Use keywords from the job description here too. For instance, if the ad specifies someone who has 'effective administrative abilities and excellent interpersonal skills', these should be addressed here with brief evidence as to where you gained those skills. Make sure to tailor your expertise to the individual position you are applying for, always.

4. ACHIEVEMENTS

A future employer will be interested in where you went above and beyond the job that you were paid to do and achieved something great. Next, list your key career achievements, supported by facts, statistics or links. For example, if you over-achieved on your sales targets, you need to say by what percentage and over what period.

Keep in mind, this is a summary to grab interest by demonstrating you can successfully add value to an organisation in the type of job you're applying for, so proof is essential.

5. WORK EXPERIENCE

Your work history should be the most detailed section of your resume, with positions listed in reverse order, beginning with the most recent. Include employer names, positions and primary responsibilities. If your job title is unconventional, it is perfectly acceptable to replace it with a recognisable equivalent.

It is important to quantify your accomplishments – the reader wants to see facts not fluff. Focus on the value you added in each role, rather than simply listing what your duties were. This section shouldn't read like a job description. Rather, it should tell the story of your unique strengths and accomplishments. Think of your biggest achievements for each role and provide concrete, quantifiable evidence of each. One way to help you do this is to use action verbs such as "managed" or "oversaw". Such verbs force you to focus on what you achieved and your results in each role, which proves the value of your experience.

Avoid overused clichés in your CV that can waste valuable space. Instead, include examples of your work to demonstrate your strengths. Remember that proof is in your results.

We also advise you not to leave gaps in your work history. If you took a year out, carried out an interim assignment, or travelled for six months, say so. Just make sure you illustrate whatever the experience was in a positive way, focusing on the fact that it gave you some great experience and knowledge. Stating just the years you started or finished a role can also send off alarm bells. Writing "2019 - 2021" could be interpreted as employment from December 2019 to January 2021 unless you say otherwise.

6. EDUCATION AND QUALIFICATIONS

Keep it concise by listing the academic qualification obtained, year of completion, the institution's name, and a one-sentence summary.

7. REFERENCES

The details of references are rarely included on resumes. It's common for candidates to simply write, "References are available upon request", in this section of your resume. Your recruiter will then reach out for the details of your referees at the appropriate point in the recruitment process.

Remember though, the referees recruiters and employers value the most are those people you reported to directly who can speak about how you used your skills and experience to add value to their organisation. If you are unsure who to provide as a referee, our guide to references may help.

TIPS

CHECK IT AND RECHECK IT

Proofread your resume and have someone else proofread it too. Hiring managers and recruiters receive incredibly high numbers of applications and spend less than 90 seconds screening each resume. If your resume has spelling and grammatical errors, it could lose you the job.



LENGTH AND FORMAT

Your resume should:

- Be no more than two or three pages
- Use 10 to 12 point standard fonts (e.g. Times New Roman Arial).
- Be written in plain business English (avoid SMS language, abbreviations, jargon and slang).
- Use Subheadings and bullet lists to draw attention to important information.
- Have plenty of white space between paragraphs and broad margins.
- Use a consistent layout (including indent alignments) throughout the resume.



HOW TO WRITE A COVER LETTER

The cover letter will generally be your first contact with a prospective employer. It needs to be engaging and show that you are motivated and have the skills to do the job. After all, a well-crafted cover letter can help secure that all-important job interview. It also provides a good opportunity to demonstrate your written communication skills.

UNDERSTANDING A COVER LETTER

HOW LONG SHOULD A COVER LETTER BE?

A cover letter should cover one half-a page minimum and it should never be more than one-page long. Aim to concisely express your points in about 250-500 words.

HOW DO YOU WRITE A COVER LETTER FOR A JOB APPLICATION ?

To write an effective cover letter, use a standard business letter format, include your contact details and the potential employers' contact information, address the hiring manager if possible, and in 250-500 words, explain how your achievements, skills, and work experience make you the best fit for the job. Introduce yourself and show enthusiasm for the job in the first paragraph, then in one or two paragraphs, detail exactly why you're the best fit for the position. Address any situations such as job gaps, a career change, or a move to a new location, and wrap it up in a compelling closing paragraph that reiterates your interest in the job and invites the hiring manager to contact you for an interview.

HOW TO ADDRESS A COVER LETTER WITHOUT A NAME?

It's always best practice to try to find the hiring manager's name when writing a cover letter because it personalises your letter and emphasises your interest in the position by showing you've done your homework. It also creates a connection with the hiring manager and conveys that you're willing to go the extra mile, which is a quality most hiring managers want to see in prospective employees. But if you don't have a name, it's acceptable to write "Dear hiring manager," "Dear [Title]," or "Dear [Department Name]" to address your cover letter.

CAN I SEND AN EMAIL COVER LETTER FOR A RESUME?

Yes, it's perfectly acceptable to send a cover letter in an email message, unless the job description states to attach it. Be sure to attach your resume to the email and let the hiring manager know it's attached.

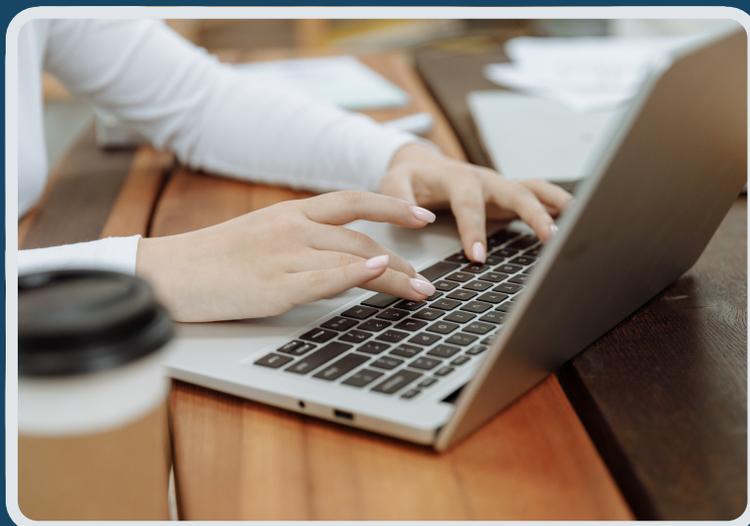
IS A COVER LETTER NECESSARY?

Yes! Unless a job posting specifically states not to send one, writing a cover letter for a job application is a must if you want to stand out from the competition. Sending a cover letter along with your resume shows recruiters that you are a professional who is sincerely interested in the job and willing to go the extra mile for it — traits employers look for in job candidates.

WHAT TO WRITE IN A COVER LETTER?

Generally, cover letters should tell employers why you're the best fit for your target job. Write about your background and how it fits the job, show your personality, and explain precisely what you can do for the employer and how. It's also a good idea to explain unique situations like job gaps and the reasons for a career change in a cover letter.

Of course, you should also include your name, contact information, links to professional profiles, the employer's address, addressee's name and title, a greeting, a job applicant's contact information, the employer's address, a compelling introduction, a strong closing inviting the hiring manager or recruiter to follow-up and a formal signoff.



HOW TO: CPD

CPD is part of meeting the Engineers Australia Stage 1 Competency Standard to be a Professional Engineer. It's also an opportunity to engage in business and engineering-related experiences, build your employability skills and grow your professional networks and contacts.

You are required to complete a minimum of 420 hours of professional and Engineering-related experiences outside the classroom throughout your degree. These experiences will allow you to integrate what you are learning in the classroom with real world practice.

There are 3 components to pass the ENG0001/ENG0003 CPD unit:

STEP 1

Build your CPD experience hours: complete a minimum of 420 hours of professional practice experiences outside the classroom

STEP 2

Submission 1 – Student Futures: create a written record detailing how your experiences have helped you develop your employability skills

STEP 3

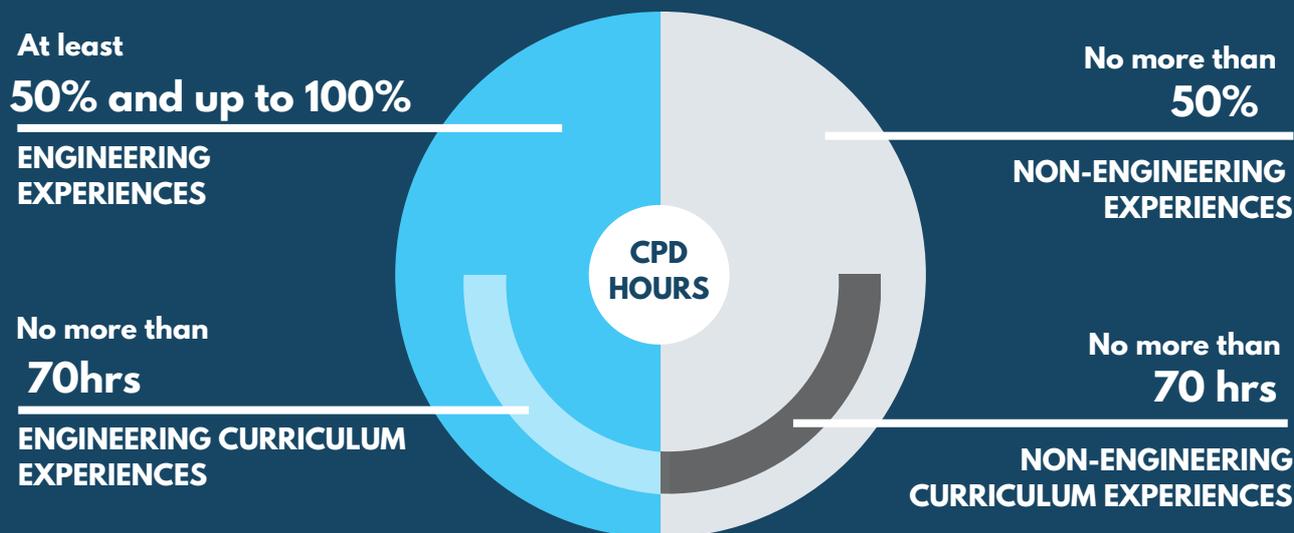
Submission 2 – CPD Assessment Questions: answer 6 assessment questions reflecting on the key Engineers Australia Stage 1 competencies

BUILD YOUR CPD EXPERIENCE HOURS

To pass your CPD you need to complete a minimum of 420 hours of professional practice experiences outside the classroom during your Monash course.

An Engineering-related internship is a great way to get your CPD hours, however there are a multitude of other professional development activities that can also count towards the total hours required.

Of these 420 hours, at least 50% must be from Engineering-related experiences, a maximum of 70 hours of Engineering Curriculum experiences can count, and a maximum of 70 hours of Non-Engineering Curriculum experiences can count.



As soon as you complete an experience you should record it on Student futures and write one or more skill reflections explaining how it helped you develop one of the employability skills. Recording your experiences and reflections while they are fresh in your mind is much easier than waiting until your final semester to record everything.

It's also easier to find supporting documentation for your experiences right after you complete them – if you leave it until your final semester sometimes the business you worked for has shut down and it can be difficult to get supporting documentation.

SUBMISSION 1: STUDENT FUTURES REFLECTIONS

Student Futures is the platform you will use to create your written record detailing the skills you develop and apply during your CPD experiences. Once complete you will download this record and it will make up 1 of the 2 documents you need to submit for your CPD.

Your Student Futures record will be made up of a number of entries where you log:

- Your experience (including provider contact details and Supporting Documents if > 35 hours)
- Number of hours spent
- Which Experience type (CPD Category) your experience belongs to
- Employability skill(s) gained or demonstrated in that experience
- A written reflection for each skill identified

SUBMISSION 2: CPD ASSESSMENT QUESTIONS

Your CPD is due by 10:00 am on the Monday of Week 5 of your final semester of units.

Your answers to the CPD Assessment Questions are 1 of the 2 documents you need to submit for your CPD (the other is the Engineering CPD Summary Report you get from Student Futures). There are 6 CPD Assessment Questions you will need to answer, and you are asked to address the key **Engineers Australia Stage 1 Competencies** in your answers.

The CPD assessors look at your answers to these questions carefully, and it takes time to answer them properly, so you shouldn't leave it to the last minute. At the end of the CPD Assessment Questions document you are also asked to list all of your CPD experiences **greater than 35 hours**, and **link through to the supporting documentation** for each experience. Instructions on how to do this can be found on the CPD Moodle site.

CPD ENG0001/ENG0003 Moodle site

The CPD Moodle site is where you will find the template document for the CPD Assessment Questions.

Once completed, this document and your Engineering CPD Summary Report from Student Futures need to be submitted on Moodle in order for them to be assessed. There is a new moodle site for CPD created each semester, and you will automatically be added to the correct site just prior to your final semester of units.

If you are in your final semester of units and you haven't been enrolled in an ENG0001/ENG0003 CPD Moodle site yet, then please self-enrol: Navigate to this Moodle page, type CPD into the search bar, and look for the ENG0001/ENG0003 CPD unit for the current semester.

Once your 2 CPD documents have been successfully submitted on Moodle, an academic from your department will assess your submission (including verifying your claims with the people whose contact details you provided as part of your submissions and reviewing your supporting documentation links). Note that the assessment process only begins after the submission deadline each semester, so if you have submitted early you will not receive feedback on your submission until after the submission deadline.

CPD is assessed on a pass/fail basis. If you don't pass your CPD on your first attempt you can re-submit your work until it's satisfactory, as long as you meet the initial due date. Your assessing academic will let you know what needs attention. When you pass CPD you will receive an SFR (Satisfies Faculty Requirements) for that unit, and you will have completed your CPD.

HOW TO: LINKEDIN PROFILE

LinkedIn is the world's largest professional network, with millions of members looking to connect with others in their field. It has become a key recruitment tool for many organisations, and enables people to locate key players in their industry.

You can use LinkedIn to join professional associations, participate in group discussions, keep up with industry news and search for jobs.



1. UPLOAD A PROFESSIONAL PHOTO

Photo gives out the first impression. Have a photo with good lighting and keep in mind your audience as well as the brand you are conveying.

2. ADD YOUR INDUSTRY AND LOCATION

It is important to specify your industry and location as these two are the most important filters recruiters use.



3. CUSTOMISE YOUR LINKEDIN URL



URL is what browsers use to find you on the internet. Your address is unique to you and it will most likely consist of your first and last name followed by numbers, letters, and dashes if you have not customized it. You can customize your own URL which does not consist of the numbers, letters and dashes by clicking on "Edit your public profile". In the upper right hand corner, you can personalize your own URL.

4. WRITE A SUMMARY

a) Describe what makes you tick

Opening up about your passion adds context to your career. Think about what excites you most professionally.

b) Explain your present role

Put your job title aside and describe what you do in simplest terms. Sharing the problems you solve, for whom, and how is a great way to demonstrate your skills, industry knowledge, and/or work style.

c) Frame your past

Explain how your previous or current role sets you apart from others.

d) Highlight your success

Cite the biggest takeaway from your experience section. Look across roles and combine accomplishments if you can.

e) Reveal your character

Choose stories and words that show who you are as a person, not just a professional. Great summaries hint at traits such as gratitude, humility, and humor. Authenticity is key, so be honest with yourself. Think of the one trait you're most known for and weave it in.

f) Show life outside of work

Round out your identity by sharing a hobby, interest, or volunteer role. Relate your outside passions to your work if you can. If you share a personal story, be sure it serves to reinforce your professional strengths.

g) Tell stories

Stories make the summary memorable.

h) Ask for what you want

Think about what you want your audience to do after reading your summary. An invitation to connect is a great way to end, but depending on your goal, you may ask for something else. Be specific and you'll be more likely to get what you want.

i) Add rich media

Sometimes it is easier to explain your impact or achievement using an image, video or an article. Do not be afraid to add media to your profile and tee it up in your summary.

j) Make your first sentence count

Every word matters in your summary, but your first words really matter. If you do not hook your audience right away, you'll lose them. Do not waste precious characters on filler. Cut right to the good stuff to pull your audience in.

k) Pump the keywords

To improve your search rank on LinkedIn and Google, include keywords that highlight your top skills. Listing 'Specialties' at the end of your summary is one way to pack them in.

l) Cut the jargon

Avoid overused words that have lost meaning, like 'strategic', 'motivated', and 'creative.' Tap a thesaurus for alternatives, or better yet, show you have those traits with an example or quick story. At a minimum, cross-check your summary with the most overused buzzwords on LinkedIn Profiles.

m) Write how you speak

Think about how you would speak to new contact at a conference and write that way. Read your summary out loud so you can check your voice. If you wouldn't say it, don't write it.

n) Create white space

People will skim your summary, so help by breaking up the text. Steer clear of long paragraphs. Don't use a five-syllable word when a one-syllable word is just as good. Use bullet points or numbered lists, but make sure they flow - lists aren't an excuse for sloppy thinking.

5. DESCRIBE YOUR EXPERIENCE



Job seekers want to be found for their skills and abilities. Recruiters can sift through hundreds, sometimes thousands, of potential candidates to find a couple of top contenders so the key is to make your writing interesting and worth their time. They want to get a complete picture of who you are and what you are capable of. To satisfy recruiters, it is important that you cover 3 areas: Context, Actions and Results. Ideally, your experience section starts with the context. In terms of Actions, detail what you did. The last piece you can add to spice things up is to describe the results you achieved.

6. WRITE A SUMMARY

It is important to specify your industry and location as these two are the most important filters recruiters use.



7. LIST YOUR EDUCATION



As you start to write out your school's name, look at the drop down menu and click on your university to get the logo beside the name. Logos add visual appeal and credibility. This tip applies equally to your Experience section assuming your current or past company has a company page on LinkedIn. List specializations that help you feature (repeat) your keywords.

8. CONNECT WITH 50+ CONTACTS

It is important to specify your industry and location as these two are the most important filters recruiters use.



9. TURN ON "LET RECRUITERS KNOW YOU'RE OPEN"



As you start to write out your school's name, look at the drop down menu and click on your university to get the logo beside the name. Logos add visual appeal and credibility. This tip applies equally to your Experience section assuming your current or past company has a company page on LinkedIn. List specializations that help you feature (repeat) your keywords.

STUDENT FUTURES

Unique to Monash, this award-winning online platform helps you identify, record and present the employability skills you acquire during the course of your study. You don't even need previous work experience

Student Futures helps you prepare for interviews, craft a comprehensive resume, and assist you in refining your overall career readiness. You will enjoy continued access to the platform for up to twelve months after you complete your studies. It's a great guide to help you on your career path.

For more information visit:

<https://www.monash.edu/engineering/currentstudents/professional-development/continuousprofessional-development/student-futures>

EXPLORE YOUR CAREER OPTIONS

- Learn about the nine key employability skills that employers look for.
- Find out from graduates how they gained their employability skills at Monash.
- Conduct a regular skills evaluation to monitor the progress of your employability skills.

APPLY FOR JOBS

- Use Student Futures to help craft your resumes, cover letters, LinkedIn profiles, and answers to key selection criteria.
- Practice answering interview questions using over 65 pre-defined scenarios or create your own scenarios.
- Generate your own Student Futures certificate, which summarises your completed Monash activities to potential employers.

BUILD YOUR EMPLOYABILITY SKILLS

- Search for opportunities to develop specific employability skills.
- Record and reflect on the skills you are building through your experiences, across your studies, Monash activities and activities outside of Monash.

A group of graduates in black gowns are celebrating, with confetti falling around them. The scene is festive and joyful, with many graduates raising their hands and smiling. The background is slightly blurred, focusing attention on the graduates and the falling confetti.

POST GRADUATION INDUSTRY OPPORTUNITIES

OIL AND GAS

The Australian oil and gas industry has held a critical place in the economy for many years and the produce from this industry has now become intertwined into nearly every corner of our modern day lives. Currently, Oil and Gas is undergoing a huge transformation process as new alternative energy sources are being investigated to decarbonise the sector. Chemical engineers play a pivotal role in this transition towards a net zero carbon future through the development of carbon-free, low-carbon and renewable energy systems, including electric and fuel cells, biofuels, nuclear power, and hydrogen technologies.

Chemical engineers are also involved in the improvements of existing processes through sustainable design, including better utilisation of waste heat, process integration, and integrated supply chains. Chemical engineers bring overall systems thinking and life cycle analysis to meet these and future energy challenges and are well placed to consider safety and environment in the design, development, operation and decommissioning of energy systems and infrastructure.

BP PLC

BP in Australia is focused on advancing the role of Australian resources in meeting the region's demand for significantly more energy with fewer emissions. Being part of the bp group enables bp in Australia to share global expertise, research and development with

Australian business partners, customers and community stakeholders. We employ around 5,200 employees and long-term contractors across Australia. Our operations are in every state and territory in Australia, including main offices in Perth and Melbourne.



Company size large



CHEVRON CORP.

For 70 years, Chevron Australia has played an important role in delivering oil, natural gas and other products to power human progress. We aim to grow our traditional energy business, which will continue to be a significant source of greenhouse gas emissions. To help advance a lower carbon future, we are striving to reduce the carbon emissions intensity of our traditional operations and seeking to grow lower carbon businesses; while proudly continuing to deliver the reliable, affordable energy the world needs.



Company size large



EXXON MOBIL CORP.

ExxonMobil manages an industry-leading portfolio of resources, and is one of the largest integrated fuels, lubricants and chemical companies in the world. We've evolved our operating model and global organization to better leverage the scale of our increasingly integrated company and global brands.

ExxonMobil

Company size large



JOHN WOOD GROUP PLC

At Wood, we recognise that achieving a sustainable future is one of the biggest challenges facing our generation. It is what unites us and what makes us unique. We are led by our purpose to unlock solutions to the world's most critical challenges, in energy and materials markets. With 35,000 professionals, across 60 countries, we are one of the world's leading consulting and engineering companies operating across Energy and Materials markets.

wood.

Company size large



SHELL PLC

Shell businesses in Australia are part of the Shell Group, a global group of energy and petrochemical companies. Shell has operated in Australia for over 120 years. Today, we are a leading natural gas producer and are playing our part in the transition to a low-carbon future by investing in the power sector, renewable energy sources and carbon abatement activities.



Company size large



WOODSIDE ENERGY GROUP LTD

We are a global energy company, founded in Australia with a spirit of innovation and determination. We provide energy that the world needs to heat and cool homes, keep lights on and support industry.

 **Woodside Energy**

Company size large



WORLEY PARSONS LTD

We are a worldwide team of consultants, engineers, construction workers and data scientists all with one thing in common: we love to be challenged. Every day, we come to work to solve the complexity of the energy, chemicals and resources sectors. We deliver projects and provide engineering, procurement and construction expertise to the upstream, midstream, chemicals, power, and mining and minerals sectors.



Company size large



VIVA ENERGY AUSTRALIA

At Viva Energy Australia we make, import, blend and deliver fuels, lubricants, solvents and bitumen through our extensive national and international supply chains. The Australian economy relies on the products we supply, our experience in operating supply chains safely and reliably, and our commitment to helping Australian motorists, businesses and industries.



Company size large



PHARMACEUTICALS

The pharmaceutical industry is at the forefront of innovation as it discovers, develops, produces, and markets medications to be administered to patients, with the aim to cure them, vaccinate them, or alleviate symptoms. With the ageing global population, the growing demand for improvements in quality life and the elevated demand for vaccines post COVID-19, the pharmaceutical industry has never been as exciting as now to be a part of.

Chemical engineers play a significant role in the developing and scaling up of drug, medication and vaccine production. Through innovation in drug formulation development, chemical engineers are improving cold-chain transport to enable medicines to be used in parts of the world without highly developed refrigeration systems. Chemical engineering principles can be applied successfully to scale pharmaceutical processes (up or down), resulting in reduced manufacturing complexity, improved cost, and equipment effectiveness.

CSL LTD



Company size large



Since day one our intense passion to relentlessly innovate has never been stronger. From developing treatments that save and improve lives to developing vaccines that protect them, we are a global presence. Daring and caring and never stopping in our pursuit, we know every frontier conquered leads to a new range to be climbed. For us there are no boundaries, only moving forward. Always. We are CSL and we are driven by our promise.

GSK PLC



Company size large



We are a global biopharma company with a purpose to unite science, technology and talent to get ahead of disease together. We aim to positively impact the health of 2.5 billion people by the end of 2030.

Our bold ambitions for patients are reflected in commitments to growth and a step-change in performance. We are a company where outstanding people can thrive.

PFIZER INC.



Company size large



Pfizer is one of the world's leading biopharmaceutical companies, with a portfolio of some of the world's most well known medicines, vaccines, and therapeutics. Every colleague who works at Pfizer plays an essential role in helping us fulfil our purpose of Breakthroughs that change patients' lives™. Our purpose underpins everything that we do and reflects our passion for science and our commitment to patients.

FOOD AND BEVERAGE

The Australian food and beverage industry is the country's most vital manufacturing sectors as the sector feeds millions every year. Chemical engineers can play a significant role in this area by applying systems thinking and advanced engineering principles through initiatives such as minimising energy and water use, and application of novel technologies and innovation. New approaches and solutions could include sustainable fertilisers, high-intensity farming, land and water supply management, pest control chemicals, smart packaging, energy recovery technologies, and improved food processing and supply chains.

ASAHI BEVERAGES

Asahi Beverages is one of the leading beverage companies in Australia and New Zealand. We're proud of our high quality, great tasting beverages, and strong performing brands. We're passionate about what we do – making great products that people love.



Company size large



BEGA GROUP

Bega cheese manufacturers, produces and exports various cheese and other food and dairy products for both retails and foodservice industries; from world-famous Bega Tasty Cheese, spreads like vegemite and Bega Peanut Butter as well as a significant number of products in the emerging bio-nutrient sector. Considering a strong focus on the Australian dairy industry, Bega prides itself on community dedication and building strong relationships within the region. Bega has manufacturing and packaging facilities Australia-wide from Port Melbourne, Stretthmetron and Tatura.



Company size medium



FONTERRA CO-OPERATIVE GROUP LTD

With a long history in dairy, we harness our global dairy expertise and local knowledge to support our people, our farmers, and our community. In Australia, we collect milk from our farmers which goes to our eight manufacturing sites across Victoria and Tasmania where it is turned into great dairy foods that people love. We also sell dairy ingredients to many of the world's leading food companies and operate a dedicated sales channel for the foodservice industry, providing a full range of dairy products specifically designed for commercial kitchens.



Dairy for life

Company size medium



THE KRAFT HEINZ COMPANY

We are writing the next chapter of our history at Kraft Heinz. Just as a compass provides guidance and clarity, together our Purpose, Vision, Values, and Leadership Principles chart our collective course. They set and establish our new direction, serving as a "north star" for the Company. Consumers are at the centre of everything we do – from the quality of our world-class iconic brands to our commitment to the communities where we live, work, and do business. They remind our employees, individually and as a team, why the work we do each day matters.

KraftHeinz

Company size medium



MARS, INC.

As a global company with the footprint of a small country, we have the responsibility - and the opportunity - to leave a lasting impact on the world. As a family-owned business, we have the ability to think in generations, rather than just business quarters and have our Purpose to guide us on our way. What we do is only as good as how we do it, a goal reflected in our Purpose. We challenge our Associates, partners and suppliers to join us in transforming the way we do business every day.

MARS

Company size medium



MONDELEZ INTERNATIONAL, INC.

Mondelēz International is one of the largest food manufacturers in Australia, with more than 100 years of tradition and a portfolio of iconic brands including Cadbury, The Natural Confectionery Co., Pascall, Philadelphia and OREO. Our ambition is to provide consumers with the right snack, for the right moment, made in the right way. Approximately 2,000 local employees support this ambition by researching, developing, manufacturing, financing, resourcing, marketing and selling our snacks to consumers across Australia.



Company size large



NESTLÉ SA

We are the Good food, Good life company. We believe in the power of food to enhance lives. Good food brings us together. Good food also respects our planet and protects resources for future generations. At Nestlé, we constantly explore and push the boundaries of what is possible with foods, beverages, and nutritional health solutions to enhance quality of life and contribute to a healthier future. We focus our energy and resources where unlocking the power of food can make the greatest difference to the lives of people and pets, protect and enhance the environment, and generate significant value for our shareholders.



Company size large



IRVIN & JOHNSON AUSTRALIA LTD

We have been contributing to feeding our world for generations. Producing quality and nutritious food that fuels Australians and New Zealanders, while focusing on sustainably bringing earth's resources to life. We support our farmers and help our communities to grow. We are committed to Australian manufacturing, leveraging technologies and improving our processes. Growing brands that our customers and consumers love and trust. We are all about developing and growing careers. Nurturing a supportive and inclusive workplace culture. We are cultivating a future where innovation, inspiration and unlimited potential flourish.



Company size medium



MINING

The Australian mining industry plays a major role in the Australian economy and is responsible for 58% of all Australian exports. This industry is responsible for employing over 240,000 people in high paying positions and is a major revenue source for the federal government. Chemical engineers play an important role in identifying and exploiting renewable resources, optimising supply chains, and implementing lean processes. They can design multi-purpose production lines accommodating different products through employing digital tools such as artificial intelligence and machine learning. Improved product formulations, recycling and recovery of materials reduce the environmental impact of the industry, along with better regulation and long-term planning.

BHP GROUP LTD

BHP

Company size large



As a world-leading resources company headquartered in Melbourne, Australia, our products are sold worldwide, with sales and marketing led through our Singapore location. We're focused on the resources the world needs to grow and decarbonise. Copper for renewable energy. Nickel for electric vehicles. Potash for sustainable farming. Iron ore and metallurgical coal for the steel needed for global infrastructure and the energy transition. A resource mix for today and for the future.

FORTESCUE METALS GROUP LTD



Company size large



Established in 2003, Fortescue is a proud West Australian company, recognised for our culture, Values, innovation and industry leading development of infrastructure and mining assets. As one of the world's lowest cost iron ore producers, Fortescue is now shipping at an annual rate of over 180 million tonnes with more than 1.7 billion tonnes of iron ore delivered to our customers since 2008.

GLENCORE PLC

GLENCORE

Company size large



We are Glencore, one of the world's largest global diversified natural resource companies and a major producer and marketer of more than 60 commodities that advance everyday life. Founded in the 1970s as a trading company, we have grown to become a major producer and marketer of commodities with around 140,000 employees and contractors and a strong footprint in over 35 countries in both established and emerging regions for natural resources.

MMG LTD



Company size medium



Founded in 2009, MMG's vision is to create a leading international mining company for a low carbon future. We mine to create wealth for our people, host communities and shareholders with an ambition to grow and diversify our resource, production and value, by leveraging Chinese and International expertise.

NEWCREST MINING LTD



Company size large



At Newcrest we're known for our strong technical capabilities in exploration, deep underground block caving and metallurgical processing skills. We're committed to creating a work environment where everyone can go home safe and healthy every day, and where everyone actively contributes to this outcome; operating and developing mines in line with strong environmental, social and governance practices; developing a diverse workforce; and developing and maintaining strong relationships with our communities and governments.

PILBARA MINERALS



Company size medium



Pilbara Minerals is a leading ASX listed lithium company, owning 100% of the world's largest, independent hard-rock lithium operation. Located in Western Australia's resource-rich Pilbara region, our Pilgangoora Project produces a spodumene and tantalite concentrate. While our operation continues to deliver a quality spodumene concentrate to market, we are pursuing a growth and diversification strategy to become a sustainable, low-cost lithium producer and fully integrated lithium raw materials and chemicals supplier in the years to come.

RIO TINTO GROUP

Company size large



As pioneers in mining and metals, at Rio Tinto, we produce material essential for human progress. Iron ore for steel. Aluminium for cars and smartphones. Copper for wind turbines, electric cars and the pipes that bring water to our homes. At Rio Tinto, we are moving a step forward to experience the technology world by introducing our most intelligent mine with the help of artificial intelligence and the theory of working smarter.

WAVE INTERNATIONAL



Company size medium



We offer services to greenfield and operating sites in the resources, heavy industrial, energy and infrastructure sectors and have built a solid, industry-wide reputation in providing innovative, flexible, and value-add solutions. With over ten years in the battery minerals sector, Wave also have an established reputation for enabling successful commercialisation for junior and mid-tier battery mineral companies. Coining the phrase 'Commercial Engineering' to describe our approach, we empower our clients and drive the successful development of battery minerals projects.

CONSULTANCY

Engineers in consultancy work to design, develop and produce innovative and profitable solutions that meet a client's needs. Consultancy companies often provide advisory services, feasibility studies, preparation of initial and final designs and technical services during project constructions to companies in all industries. Specifically, Chemical Engineers leverage a strong analytical capability and a unique drive to solve problems. As such, Chemical Engineers are highly sought after in this industry for their drive to optimise and innovate new solutions that can put a company ahead of others in their relevant industry.

AURECON GROUP PTY. LTD

Aurecon is a design, engineering and advisory company. Our purpose is bringing ideas to life, to imagine and co-create with our clients a better future for people and the planet.

The Aurecon logo features the word "aurecon" in a bold, lowercase, sans-serif font. A small green dot is positioned above the letter "a".

Company size large



BOSTON CONSULTING GROUP, INC.

Boston Consulting Group partners with leaders in business and society to tackle their most important challenges and capture their greatest opportunities. BCG was the pioneer in business strategy when it was founded in 1963. Today, we work closely with clients to embrace a transformational approach aimed at benefiting all stakeholders—empowering organizations to grow, build sustainable competitive advantage, and drive positive societal impact.

The BCG logo consists of the letters "BCG" in a bold, green, sans-serif font.

Company size large



DELOITTE TOUCHE TOHMATSU LTD

Deloitte is a consultancy-based company that is driven to create an impact that matters at every opportunity. We nurture our graduates from day one. From working with Fortune 500 companies, government agencies and not-for-profit, to participating in hackathons, mentorships and our award-winning graduate development program, we work on projects that matter.

The Deloitte logo features the word "Deloitte" in a bold, black, sans-serif font, with a small green dot at the end of the word.

Company size large



ERNST & YOUNG GLOBAL LIMITED

At EY, our purpose is Building a better working world. The insights and quality services we provide help build trust and confidence in the capital markets and in economies the world over. We develop outstanding leaders who aim to deliver on our promises to all our stakeholders. In so doing, we play a critical role in building a better working world for our people, for our clients and for our communities.



Company size large



KPMG INTERNATIONAL LIMITED

Our experience includes many of the biggest infrastructure projects in Australia and we draw on our deep sector expertise to meet challenges at any stage of the asset lifecycle. Whether planning, procuring, delivering, operating or transitioning – we help clients to deliver projects that are environmentally sustainable, socially impactful and drive lasting economic growth. A global group of infrastructure specialists, we are passionate about continuous innovation, technology, engineering, performance and efficiency – and how together we can make a difference and build a better future for all Australians.



Company size large



MOTT MACDONALD GROUP

We're a global engineering, management and development consultancy. Everywhere around the world, people's needs and aspirations are changing, fast. That brings increasing challenges for our clients, as you seek to satisfy your stakeholders, tackle societal issues and deliver your business strategy. Our network of experts looks at problems from fresh angles and finds opportunities in complexity. They bring together diverse skills, experience and insight, to turn obstacles into sustainable solutions. Our aim: to add value at every stage, for you and the lives you touch every day.



Company size large



PLASTIC & CHEMICALS

The plastic and chemicals industry produces a wide range of products that have applications in nearly every industry. The plastics industry is responsible for producing plastic for food & beverage packing, general household goods, building materials and many other products. The chemicals industry is also responsible for a range of products such as detergents, rubber, lubricants, fertilisers and many other products. Like all industries Chemical Engineers play a vital role in maintaining, optimising and delivering new processes to produce these many products.

LYONDELLBASELL INDUSTRIES N.V.

lyondellbasell
Advancing Possible

Company size medium



As a leader in the global chemical industry, LyondellBasell strives every day to be the safest, best operated and most valued company in our industry. The company's products, materials and technologies are advancing sustainable solutions for food safety, access to clean water, healthcare and fuel efficiency in more than 100 international markets. Our materials and technologies are advancing solutions in food safety and access, clean water, cleaner air and fuel efficiency, quality healthcare and sustainable and modern living.

QENOS HOLDINGS PTY LTD

Qenos 

Company size medium



From pouring out a glass of milk in the morning to wheeling out the recyclables on bin night, Qenos creates the building blocks that become a vital part of the things Australians do every day whether it's at home, at work or on the land. Qenos is the only company in Australia with the know-how and capability to convert lower value gases into high quality polyethylene and resins. Through this process we multiply the worth of our nation's natural resources many times over.

MANUFACTURING

The manufacturing industry is a far-reaching industry and category which can be given to any business/sector that involves the production of a finalised product. Engineers are involved in nearly every stage of the manufacturing industry from the initial feasibility study, the process design, maintenance, health and safety, quality control, R&D and process optimisation. Chemical Engineers are in constant demand in the sector for their ability to understand process flows and drive to optimise process efficiencies.

AXALTA COATING SYSTEMS LTD

Because when done right, smarter surfaces have the power to extend the life of the things that matter most and change the way we live. At Axalta, we continuously innovate to help protect, improve, and advance everything we see and touch. Across our businesses — refinish, mobility, and industrial — we use technologies and processes to develop innovative products that help accelerate our customers' businesses, improve the lives of the people they serve, and safeguard our planet. We make smarter surfaces for a better world.



Company size large



BLUESCOPE STEEL LTD

BlueScope is a provider of innovative steel materials, products, systems and technologies, headquartered in Australia with operations spread across North America, Australia, New Zealand, Pacific Islands and throughout Asia. We are one of the world's leading manufacturers of painted and coated steel products, and with our strong expertise in steel we provide vital components for houses, buildings, structures, automotive and more.



Company size medium



BORAL LTD

Boral is the largest vertically-integrated construction materials company in Australia. Our network includes prized quarry and cement infrastructure, bitumen, construction materials recycling, asphalt and concrete batching operations.



Company size medium



DULUX

Dulux is a global leading brand of premium quality paint, and the guiding principles for any Dulux product are to ensure they consistently live up to the Dulux reputation for verifiable, total product performance that is both recognised and expected by our customers.



Company size medium



GREAT WRAP

We believe true innovation happens on a molecular level, and any real solution to our plastic pollution problem involves a complete rethink and redesign. As a team of bio-designers, engineers and scientists, we have developed a new paradigm in packaging technology. This technology has enabled us to manufacture a compostable stretch wrap that breaks down completely, benefits our natural environment and leaves no microplastics behind. We don't support half-truths or greenwashing and are committed to transparency as we continue to innovate and find ways to eliminate harmful materials from our planet.

GREAT WRAP

Company size small



JAMES HARDIE INDUSTRIES PLC

James Hardie Industries PLC is the world's #1 producer and marketer of high-performance fiber cement siding and backerboard and a market leader in Europe for fiber gypsum products. Our company culture is built on providing a foundation of "Zero Harm", creating a positive impact in communities, and delivering environmentally-responsible innovative solutions to customers. Our durable, low maintenance and innovative products are made from natural and sustainable raw materials, delivering endless possibilities of design and aesthetics to consumers. We manufacture a variety of patterned profiles and surface finishes for a range of applications, including external siding, trim, soffit lining, internal linings, walls, facades, floors and tile underlay for use in residential, commercial and industrial applications.



Company size large



OPAL PACKAGING AUSTRALIA PTY. LTD.

Opal is an innovative and solutions led paper and packaging group striving for excellence in everything we do. A member of NIPPON PAPER GROUP, Opal has operations in Australia and New Zealand, making us one of Australasia's leading packaging companies. We offer sustainable fibre packaging and paper solutions to suit every customer. With more than 60 sites in Australia and New Zealand including export offices in Europe, North America and Asia, we have the coverage to ensure our products are available when and where they are needed.



Company size medium



ORORA LTD

We are a global manufacturer, distributor and visual communication solutions company with more than 4.8k team members located across 7 countries. At Orora, we're proud that sustainability is fundamental to everything we do. We believe that when it comes to sustainability, if you talk the talk, you've got to walk the walk. Our ambition is to become the leading provider of sustainable packaging solutions.



Company size medium



PPG INDUSTRIES, INC

PPG is a global manufacturer of paints, coatings, and specialty materials and a Fortune 200 company with headquarters in Pittsburgh and operations in nearly 70 countries around the world. Our vision is to be the world's leading coatings company by consistently delivering high-quality, innovative and sustainable solutions that customers trust to protect and beautify their products and surroundings. This vision will guide us on our journey toward our common goals and principles.



Company size large



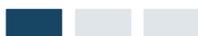
WATER

The water industry is an essential service which is responsible for providing clean drinking water, managing stormwater and cleaning waste water. This industry is largely operated by publicly owned companies who work to provide essential water services to people and industries. The industry also contains a number of specialised private companies who provide tailored solutions to water demands from various industries.

AEROFLOAT



Company size small

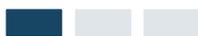


Aerofloat is an Australian-owned and family-run wastewater treatment company that designs, manufactures and installs wastewater treatment systems for a range of markets.

CLEAN TEQ WATER



Company size small



We provide innovative metals recovery and water treatment solutions for governments and companies. Our technology solutions include desalination, nutrient removal, zero liquid discharge and hardness removal. Our sectors of focus include municipal wastewater, surface water, industrial wastewater and mining process water. Clean TeQ Water has offices and laboratories in Melbourne, Beijing and Tianjin, and a partner office in Africa. We provide turnkey metals recovery and water treatment plants everywhere in the world.

GREATER WESTERN WATER



Company size medium



Our purpose is to provide trusted water services for our communities and future generations. As a water corporation, we play a vital role supplying drinking water, treating wastewater and providing alternative water to communities and industry. Our customers can trust that the water services we deliver are affordable, reliable and at a quality that meets their needs. We are part of the water cycle and we plan and operate in ways that ensure natural and built water systems provide for future generations.

MELBOURNE WATER



Company size medium



Melbourne Water touches all parts of the water cycle that are essential to our way of life: from providing clean drinking water, treating sewage, planning to manage flooding, and keeping Melbourne's rivers, creeks and catchments healthy.

SOUTH EAST WATER



Company size medium



Our role is to bring you high quality water and take wastewater away every day – and we're working 24/7 to make that happen. It means fixing problems quickly. It means providing efficient and reliable sewerage and trade waste services. It means finding better ways for us to use water, and helping you understand how you can save water, too – so we can make sure there'll be enough for everyone in the future. We manage and maintain the water and sewerage networks – the pipes, pumping stations, valves and some water recycling plants that bring water to you and take waste away. We buy our fresh drinking water from the government's water wholesaler, Melbourne Water, that manages the water catchments (the dams) and treats the water to a high standard.

SUEZ SA



Company size large



Our experts are creating new models, technologies and smart solutions to reinvent the way to manage water resources. We're enabling cities and communities to become more climate resilient in preparation for a future which is becoming increasingly difficult to predict.

YARRA VALLEY WATER



Company size medium



Yarra Valley Water is the largest of Melbourne's three water corporations, based in Melbourne's east. Our service area covers 4000 square kilometres and our network consists of around 20,000 kilometres of water and sewer mains. We manage over \$5 billion worth of infrastructure and assets.

RECYCLING & WASTE MANAGEMENT

The recycling and waste management industry is another essential industry which is rapidly growing and innovating as the demand for circular economy solutions continues to grow. This industry is becoming more connected to the manufacturing sector as the demand for recycled material made goods continues to grow in feasibility and demand.

BINGO INDUSTRIES

BINGO is one of Australia's leading recycling and waste management companies with operations in the building & demolition and commercial & industrial sectors across the east coast of Australia. Our vision is for a waste-free Australia. With a focus on transforming the recycling and waste industry, particularly in innovating to increase recycling rates and the diversion of valuable waste materials from landfill. Our state-of-the-art processing facilities across NSW, Victoria and Queensland accept mixed waste that would otherwise be sent to landfill and achieves industry-leading recovery rates in excess of 80%, creating a range of recycled materials. By diverting waste from landfill to our resource recovery and recycling centres, we are helping to drive Australia towards a circular economy.



Company size medium



CLEANAWAY WASTE MANAGEMENT LTD

Cleanaway Waste Management Limited is Australia's leading total waste management solutions provider. We have served Australia for over 50 years, delivering solutions that offer extraordinary benefits not just for our customers, but for the communities and environment we live in. Cleanaway is a market leader, delivering integrated total waste management solutions. We leverage our cleanaway way to consistently deliver on our promise to customers. We are an employer of choice, generating superior value and sustainable solutions for our customers, investors, community and the planet.



Company size medium



VISY INDUSTRIES

Visy is a global leader in packaging and resource recovery, and has been a pioneer in sustainability since our inception. Our innovation, manufacturing and logistic capabilities are organised around an integrated closed loop. Together, they give life to tailored solutions that deliver enduring value for our customers, partners and communities. In business for over 70 years, we operate in more than 140 sites throughout Australasia and have trading offices across Asia and Europe. With over 7,000 employees, our innovative approach provides end-to-end solutions for our customers' needs across paper, primary packaging, fibre packaging, packaging supplies and consumables, point of sale displays, automation, materials handling, logistics and recycling.



FOR A BETTER WORLD

Company size medium





POST-GRADUATION OPPORTUNITIES AT MONASH

POSTGRADUATE STUDY (MASTERS)

Take your engineering qualification to the next level with a Monash Engineering postgraduate program. We offer a range of postgraduate coursework programs, provided both on and off campus.

Why postgraduate study?

Graduate study can be the foundation to a great career, it can turn an existing career into something brilliant, help you change careers, or aid in pursuing your passion.

What's involved?

Engineering coursework programs offer a balance of theory and practice, with an emphasis on industry-driven projects. Engineering programs, particularly at a Masters level, may include the option of a minor or major thesis component.

Monash offers two post graduate courses.

1. MASTER OF PROFESSIONAL ENGINEERING

This course is for students who want to change careers and become an engineer, move into a different field of engineering or are seeking an internationally recognised engineering qualification to build on their undergraduate engineering studies.

The masters is a two or three year program, depending on your undergraduate degree, that provides you the technical knowledge and hands-on experience to practice as a professional engineer in Australia and other Washington Accord countries. You'll specialise in engineering technical, research and professional units and undertake design and research projects, blending theory and practice.

Monash is one of Australia's leading universities for engineering and technology, and our world-class facilities create a vibrant backdrop for meaningful graduate study. By pursuing a Master of Professional Engineering, you join a talented and diverse community of ambitious engineering graduates.

<https://www.monash.edu/engineering/professional-masters>

2. MASTER OF ENGINEERING

The Master of Engineering will extend your technical knowledge in your chosen specialisation area and advance your leadership and complex problem-solving skills. There are six engineering specialisations to choose from: biological, civil, electrical, engineering management, materials and mechanical.

The masters program will develop the core skills needed to act professionally, confidently and independently to be an effective leader and engineer. You'll learn how to become a strategic and critical thinker, ready to step straight into practice and solve complex problems.

Explore contemporary and complex global issues affecting organisations and master the critical professional skills needed for success. Develop a consciousness of ethics and risk management, understand the language of customer centric co-design and co-creation and practice mindfulness techniques to enhance your critical thinking skills. Learn how to apply sophisticated data analysis methods to analyse industrial scenarios and make recommendations that support business growth and development. Explore how to build professional relationships and work as part of a team to lead projects and influence decision-making.

<https://www.monash.edu/engineering/professional-masters>

POST-GRADUATE RESEARCH

Monash Engineering's graduate research degrees give you an opportunity to conduct research that is transforming the future. Take this opportunity to make an impact and solve real world issues in a stimulating, supportive environment in areas such as climate change, transport congestion, water supply security, sustainable energy, artificial intelligence, robotics and more.

We are committed to training the next generation of research leaders and have over 1,000 graduate research students engaged in our areas of expertise.

PhD and Masters by Research scholarship opportunities are currently available with leading engineering researchers who are involved in pioneering research across 32 different research themes.

<https://www.monash.edu/engineering/future-students/graduate-research/phd>

The Department of Chemical and Biological Engineering has 6 available research themes:

- Biotechnology
- Food
- Modelling
- Nanomaterials
- Fuel and Energy
- Membrane

1. DOCTOR OF PHILOSOPHY (PHD)

3-4 years full-time The Monash Doctoral Program offers you a stimulating, supportive and professional environment in which to explore engineering challenges and develop solutions for the future.

2. DOCTOR OF PHILOSOPHY (INDUSTRY)

3-4 years full-time The Industry Doctoral Program (IDP) is an industry-led PhD of which the scope, project and research focus are determined by the organisation sponsor. You'll be immersed in industry: working to solve real problems and design highly commercial solutions.

3. MASTER OF ENGINEERING SCIENCE (RESEARCH)

2 years full-time A truly global qualification that provides students with the grounding to delve deeply into engineering challenges and develop solutions for the future. Interested? Applying for a position can be completed in five simple steps:

1. Check eligibility
2. Find a supervisor
3. Submit an expression of interest
4. Obtain an invitation to apply
5. Apply



ENGINEERING & PHD GRADUATE PROFILES

EMILY EASTMAN



1. WHAT UNDERGRADUATE COURSES HAVE YOU COMPLETED AND WHEN DID YOU GRADUATE?

I completed a bachelors degree in chemical engineering and pharmaceutical science in 2020

2. WHAT COMPANY DO YOU CURRENTLY WORK FOR AND WHAT IS YOUR JOB TITLE?

I am currently working for Glencore as a Process and Logistics Engineer

3. WHAT RESPONSIBILITIES DO YOU HOLD IN THIS POSITION?

I am responsible for the continuous review of Coal Handling and Preparation Plant (CHPP) performance, identification of improvement opportunities and actively participate in implementing them. I provide direction, leadership and technical support to all CHPP personnel.

I also manage the site's coal quality and supply chain logistics, advising coal quality issues to management, mining and marketing departments. I coordinate the clean coal stockpile movements and strategic movements to meet shipping and product quality requirements

4. WHAT HAVE BEEN SOME OF YOUR HIGHLIGHT EXPERIENCES SO FAR IN INDUSTRY?

Owning and managing site projects and filling crucial functions at site from week one of my graduate program, seeing regions of NSW and QLD I would have never visited otherwise

5. WHAT RECOMMENDATIONS DO YOU HAVE FOR CURRENT STUDENTS?

Take advantage of student societies and professional networks to build an understanding of different avenues you can take your career and get experience. Don't be afraid to step out of your comfort zone or place yourself in situations with steep learning curves. It is the best way to challenge yourself, learn and develop your skills

NICHOLAS FARRUGIA



1. WHAT UNDERGRADUATE COURSES HAVE YOU COMPLETED AND WHEN DID YOU GRADUATE?

I graduated in 2021 after completing a Bachelor of Engineering (Chemical) (Honours) / Bachelor of Commerce (Finance)

2. WHAT COMPANY DO YOU CURRENTLY WORK FOR AND WHAT IS YOUR JOB TITLE?

I currently work for Viva Energy Australia as a process engineer at the Geelong refinery.

3. WHAT RESPONSIBILITIES DO YOU HOLD IN THIS POSITION?

My responsibilities include the safe operation, daily monitoring, troubleshooting and optimisation of the three main 'light ends' units at the refinery, responsible for processing the lighter crude oil fractions out of the main distillers. I am the process engineer responsible for the Continuous Catalytic Reformer (CCR) unit, a 40m tall structure comprising of 4 reactors stacked on top of each with a continuously moving Platinum catalyst bed. I am also responsible for the Benzene saturation (BenSat) and hydrogen isomerisation (Hysomer) units. The Bensat uses hydrogen produced from the CCR in a reactor to help lower the benzene levels in certain petroleum blending streams to help meet government regulations for benzene concentrations in fuels. Similar to the CCR, the Hysomer takes smaller n-pentane (paraffins) molecules and converts them into i-pentane (isomers) molecules with a higher octane.

4. WHAT HAVE BEEN SOME OF YOUR HIGHLIGHT EXPERIENCES SO FAR IN INDUSTRY?

A highlight of my career so far was working with the Viva refinery energy manager to develop a tool for measuring refinery emissions and energy consumption. A tool which has helped set out tangible energy saving targets and has already offset thousands of metric tonnes of CO₂ emissions.

5. WHAT RECOMMENDATIONS DO YOU HAVE FOR CURRENT STUDENTS?

I would emphasise just how important industry experience and internships are and recommend that all students who are interested in a career as an operational process engineer begin applying for opportunities early. I applied for an internship at the end of my third year and fortunately got accepted to work interstate on a mining site for 12 weeks; which then enabled me to go back and intern again the next year. This meant that by the end of my degree I already had 24 weeks of industry experience, which made getting through graduate job applications much easier. Industry experience is invaluable and is what hiring companies look for.

NITHIYA PATHMASIRI



1. WHAT UNDERGRADUATE COURSES HAVE YOU COMPLETED AND WHEN DID YOU GRADUATE?

I did a Bachelor of Engineering (Honours), specialising in Chemical Engineering which I completed in 2021

I chose to do a Masters Accelerated Pathway so did a Master of Engineering specialising in Biological Engineering which I finished in 2022.

2. WHAT COMPANY DO YOU CURRENTLY WORK FOR AND WHAT IS YOUR JOB TITLE?

I'm currently working for Nestle as a Technical and Production Graduate, starting off at their Uncle Toby's site for my first rotation.

3. WHAT RESPONSIBILITIES DO YOU HOLD IN THIS POSITION?

Being in a graduate position, my responsibilities vary. I've started with their Manufacturing Excellence team which is essentially continuous improvement and optimisation. As a result, I have some projects which look at reducing the waste produced and ensuring that all relevant stakeholders and parties involved understand the changes that will arise from the projects. Another major part of this role is learning. I am learning about the processes behind each product and the role each equipment plays as well. This factory is quite large with processes that we didn't cover in our units such as Extrusion. Shadowing the engineers here and asking lots of questions and taking notes is a key part in this role.

4. WHAT HAVE BEEN SOME OF YOUR HIGHLIGHT EXPERIENCES SO FAR IN INDUSTRY?

There is plenty on the list, but I'll choose my top three:

- I've always enjoyed hands-on learning so getting on the floor, talking to operators, seeing everything made in real-time is really fun.
- Going on "business trips" is another highlight. We got to go to Sydney for our inductions and have another trip coming up too. It's nice to meet the other grads you don't work it and share your experiences with each other.
- Nestle and Uncle Toby's are household names for me and I think it would be the same case for most people. So learning about the brand name, how it operates and seeing everything behind the scenes is quite cool.

5. WHAT RECOMMENDATIONS DO YOU HAVE FOR CURRENT STUDENTS?

My biggest tip for students looking for internships or grad roles is to start looking early. Create an Excel list of the companies you've applied for, the stage at where you are with the recruitment process (phone call, video interview, assessment panel etc.) and maybe a brief about what the company does. Being organised or doing everything well in advance makes you stress less,.

PRAVINASH PUNNIYAMOORTHY



1. WHAT UNDERGRADUATE COURSES HAVE YOU COMPLETED AND WHEN DID YOU GRADUATE?

I completed bachelor's in chemical and Biological Engineering at Monash University Clayton Campus. And I graduated in December 2022.

2. WHAT COMPANY DO YOU CURRENTLY WORK FOR AND WHAT IS YOUR JOB TITLE?

I am currently working at Lactalis Australia at the Rowville site as the Production Inventory Controller-Engineering.

3. WHAT RESPONSIBILITIES DO YOU HOLD IN THIS POSITION?

So I look after both processing and production including FRESH, UHT and PET lines in confirming Work orders and performing mass balance for all the mixes produced daily basis. I'm also responsible for managing raw materials and exports to other sites, whilst parallelly working with the national team in optimising the data. Additionally, I perform investigations on any losses and gains and conduct research on it to detect equipment failures and any leakages for different mixes individually. Then, I would flag any uprising issue to the management for final decisions and approval. I am involved in performing hold notices for finished level goods in verifying the quality checks and approving or rejecting the reverse goods.

4. WHAT HAVE BEEN SOME OF YOUR HIGHLIGHT EXPERIENCES SO FAR IN INDUSTRY?

It's been 5 months now since I joined, I was involved in national optimisation in working closely with my manager to consecutively improve the mass balance at Rowville site and uprise it as the best performing site among the 25 sites in Australia. I managed improvising and organising milk processing to produce various mixes and taking over the control of the raw material management to establish more reliable data. I investigated critical equipment failures and implemented calibrations and flagged regular maintenance to minimize milk and cream loss.

5. WHAT RECOMMENDATIONS DO YOU HAVE FOR CURRENT STUDENTS?

I would say, stick with what you are doing now, and try to perform best in the pathway you like and more importantly choose your interested career and make your mind either towards academics or industry. Another important aspect is to build connections between your peers and industry personnel to extend your opportunities.

TOM STEVENSON

1. WHAT UNDERGRADUATE COURSES HAVE YOU COMPLETED AND WHEN DID YOU GRADUATE?

I completed a double bachelor's degree of engineering (honours) and biomedical science in 2021



2. WHAT COMPANY DO YOU CURRENTLY WORK FOR AND WHAT IS YOUR JOB TITLE?

Since graduating I have been working as a graduate chemical engineer for Cleanaway, an Australian waste management company.

3. WHAT RESPONSIBILITIES DO YOU HOLD IN THIS POSITION?

As part of a graduate program, my responsibilities have changed throughout my placements in different teams. In the engineering team I was involved in the design phase of projects and provided technical assistance for a major incident investigation. During the rollout of a national maintenance program, I was responsible for collecting and validating equipment data across multiple sites, as well as systems training for users. Currently, I am assisting with the commissioning of a new processing plant in an operations role.

4. WHAT HAVE BEEN SOME OF YOUR HIGHLIGHT EXPERIENCES SO FAR IN INDUSTRY?

My first major highlight was forming part of a multidisciplinary team to conduct the investigation, learning from a range of subject matter experts in different fields. I saw how a complex problem could be systematically broken down to find root causes. The investigation also consolidated concepts such as control hierarchy, systems thinking and bow-tie diagrams. I've also gained an appreciation of how intricate Australia's waste management system is. I've been lucky enough to see landfill gas generators, small scale oil refineries, material recovery centres and waste incinerators, each with their own challenges.

5. WHAT RECOMMENDATIONS DO YOU HAVE FOR CURRENT STUDENTS?

My advice for current students is to get involved with as much as possible while at Uni such as student societies and clubs, summer internships like those offered by Monash Industry Team Initiative (MITI) and industry placements. This was invaluable for visualising what I was learning in the classroom, expanding my network, and letting me explore and consolidate my interests. Lecturers are also a fantastic resource and were nowhere near as scary as I initially thought. They are usually more than happy to share their wealth of knowledge and experience with any student that shows interest!

WARREN TSE



1. WHAT UNDERGRADUATE COURSES HAVE YOU COMPLETED AND WHEN DID YOU GRADUATE?

Bachelor of Chemical Engineering 2022

2. WHAT COMPANY DO YOU CURRENTLY WORK FOR AND WHAT IS YOUR JOB TITLE?

I Work for Nestle as a NextGen Graduate and am currently completing my engineering rotation at the KitKat factory.

3. WHAT RESPONSIBILITIES DO YOU HOLD IN THIS POSITION?

Scoping, raising capex and commissioning several continuous improvement projects throughout the factory. Also involved with some services and maintenance projects.

4. WHAT HAVE BEEN SOME OF YOUR HIGHLIGHT EXPERIENCES SO FAR IN INDUSTRY?

- Getting to eat different chocolates at work.
- Getting exposure to different processes, products and different teams in a fast paced environment.

5. WHAT RECOMMENDATIONS DO YOU HAVE FOR CURRENT STUDENTS?

Focus on soft transferable skills as this will come a long way. It would also be good to have some previous working experience under your belt.

A blue-tinted photograph of three students (two men and one woman) sitting at a long table, focused on their work. They are using laptops and tablets. The background is a blurred office or study environment.

PHD STUDENT PROFILES

ALICE TIONG

1. WHAT UNDERGRADUATE COURSES HAVE YOU COMPLETED AND WHEN DID YOU GRADUATE?

I completed the Bachelor of Chemical Engineering (Honours) in 2017.



2. WHAT IS YOUR CURRENT RESEARCH TOPIC?

My current research topic is "Pea Protein Isolate Properties and the Implications for Meat Analogue Productions". In my research topic, I work with different commercial plant protein sources with a main focus on pea proteins. I investigate how different sources of commercial proteins and different commercial extraction methods could affect the protein properties and composition, and how all of this can affect the ability of these proteins to form texturised products such as plant-based meat analogues. I also investigate the effects on these properties on the extrusion process to see how this can affect texture formation.

3. WHAT GOT YOU INTERESTED IN DOING RESEARCH?

I was really lucky during my undergraduate as I got opportunities to work on different research projects such as spray-drying of lactose powder, creating membranes for selective gas-permeation, and formulation of flavoured cheese products. The wide range of research areas allowed me to be exposed to different research techniques and let me really explore my interests. This really helped me in realising my passion for research and how much I enjoyed learning the different aspects of food production, which is how I ended up in my current research topic.



Pea Protein
CC Alice Tiong

4. WHAT HAVE BEEN SOME OF YOUR HIGHLIGHT EXPERIENCES SO FAR?

One of the most enjoyable parts of my research would be all of the collaboration opportunities I've had so far. With the help and guidance of my PhD supervisors, I was able to work in many different areas of research, including neutron and x-ray scattering. The opportunity to learn all the different research techniques and to collaborate with the scientists have been an invaluable experience during my PhD.

PAUL MICHALSKI

1. WHAT UNDERGRADUATE COURSES HAVE YOU COMPLETED AND WHEN DID YOU GRADUATE?

I completed my Bachelors Degree in Chemical Engineering (Hons) from Monash in 2021



2. WHAT IS YOUR CURRENT RESEARCH TOPIC?

My current research project is entitled 'Australian Fruits and their Products and Preservation'. In it, and with close stakeholder consultations, we optimise the processing of fruits Indigenous to Australia (e.g. finger limes, Kakadu plums) for better quality and nutrient retention to support the growth of this new industry and make these foods more accessible.

3. WHAT GOT YOU INTERESTED IN DOING RESEARCH?

Food processing excited me after I began working as a process engineer in the dairy industry, but after a short while and following chats with researchers in the space, I learned that reorienting towards a more fundamental approach to improve food processing through research which would let me dig deeper into the science and technology that had been my favourite part of working in the field.



4. WHAT HAVE BEEN SOME OF YOUR HIGHLIGHT EXPERIENCES SO FAR?

Highlights of my experience so far have included: the MITI program while I was an undergraduate, which first exposed me to the world of food engineering and process improvement; investigating and troubleshooting the root causes of process issues in a large production plant in my process engineering role; seeing students get excited learning about engineering concepts and how the world works as a teaching associate; and the thrill of measuring things in the lab that no one has ever known about before that very moment as a PhD student.

ROMAYLA RANASINGHE

1. WHAT UNDERGRADUATE COURSES HAVE YOU COMPLETED AND WHEN DID YOU GRADUATE?

2021: Completed my Bachelor of Engineering (Honours), specialising in Chemical Engineering.



2. WHAT IS YOUR CURRENT RESEARCH TOPIC?

My research theme is focused on carbon capture, namely, the direct air capture of carbon dioxide. The main focus of the research is to investigate the efficiency of up-scaling a direct air capture process based on adsorption technologies. This includes investigating reasons for any inhibited adsorption of carbon dioxide and minimizing these factors.

3. WHAT GOT YOU INTERESTED IN DOING RESEARCH?

Research has always interested me as a career path but what validated my interest was an internship I completed as a research student at Monash University. In 2020 I commenced a summer internship under the supervision of A/Prof Akshat Tanksale that was based on Carbon Capture and Utilisation. This internship was also completed as a part of the Engineering Co-operative Education Program and I had the opportunity to work with many researchers in the Department of Chemical Engineering. I had a very positive experience during my internship due to the expert guidance I received from my supervisory team and I learned to appreciate the research industry even more. I found the particular topic of carbon capture and utilization very intriguing as it had direct benefits for the environment and after my internship, this encouraged me to take up a Ph.D. position in the same theme. Further to this, my final year research project in Prof Sankar Bhattacharya's team also positively influenced my decision to pursue research as a career. This project was focused on adding value to a process that produces biochar as a waste product and was very insightful as well.

4. WHAT HAVE BEEN SOME OF YOUR HIGHLIGHT EXPERIENCES SO FAR?

During my time as an undergraduate student, I was awarded the Jenkins Family (Follow Your Dreams) Bursary Award in 2021 which I'm extremely grateful for. I was also heavily involved with SMUCE from 2019-2021. I was appointed as a Year Level Representative in 2019 and as the Academic Vice President in 2020.

