



Estd. 1962
**Society of
Monash
University
Chemical
Engineers**

SMUCE

CAREERS GUIDE 2020

YOUR LINK WITH INDUSTRY

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Table of Contents

Acknowledgements

1. How to use this guide	4
2.About SMUCE	5
3.What is Chemical Engineering	6
4. Becoming a Chemical Engineering graduate	18
5.Professional Communities	27
6 Industry Profiles	34
7. Research Profiles	65
8.Industry Insider	79
9. Featured Student Clubs and teams	91

Acknowledgements

I hope this Guide proves to be useful for you in these unprecedented times



The Society of Monash University Chemical Engineers proudly present the SMUCE Careers Guide 2020. SMUCE fulfills its tradition of linking students with industry through the information in this Guide. The Careers Guide is not limited to industry profiles but also contains insight into the industry and opportunities in research.

This Guide is a result of collaboration with organisations and people from different fields, who share their insights, useful information and support SMUCE and our events. Therefore, I would like to acknowledge these contributors for their efforts and inclusion in this publication.

I would like to thank our Platinum sponsors, the Monash Chemical Engineering Department and Viva Energy for their extensive support. Your contribution has enabled us to achieve our goals and we also appreciate your constant participation in our events and publications.

I would also like to extend my thanks to our sponsors: IChemE, Carlton & United Breweries, Wood, Glencore and Career Connect. Your contribution empowers our committee to explore new ideas to link students with industry.

This guide would not have been possible without the support from Chemical Engineering Department staff, researchers, PhD students and the student clubs and teams. I would also like to thank Monash Industry Team Initiative, Monash Co-op Program and Monash Career and Employment Department for coordinating and sharing useful information all year around.

Finally, I would like to thank the 2020 SMUCE committee members who assisted and coordinated to create this Guide. It would not have been possible without your hard work in contacting organisations, proofreading and motivating me to finish this Guide during these difficult times.

- Garv Bhardwaj, Industry Vice President 2020

1 How to use this Guide?

Wondering how to use this Guide to your best?

Know more about how each section is catered to assist you. You will also find a few important legends that will be used in this Guide which will allow you to skim through your choice of company or research profile.

Company Profiles

These profiles will give a summary of what companies do, as well as opportunities available to students. This is intended to give you an exposure to the different industries where chemical engineers are hired.

Please keep in mind that these profiles are only limited to Australia and do not represent all companies. This is only a basis for you to start investigating your interest and preferences.

VAC	Vacation Opportunities
GRD	Graduate Opportunities
INT	Opportunities for International students

Industries



Food and Beverages



Consultancy



Energy



Chemical production



Manufacturing



Mining, Oil and Gas



Pharmaceuticals



Engineering solutions



Volunteering



Water

Researcher Profiles

Similar to Company profiles, these profiles give a summary of some of the researcher at Monash University. The profiles include research fields, significance and impacts made by the research team and opportunities available for students.

Please keep in mind that these profiles only represent a few researchers at Monash University. If you are interested in joining a research team, contact the Monash University Chemical Engineering Department.

SMR	Summer Research
MST	Masters Opportunities
PhD	PhD Opportunities
INT	Opportunities for International students

2 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.

SMUCE has a major focus on connecting students with industry for mutual benefit and we are proudly sponsored by various industry partners.

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.

Throughout the semester, we hold a weekly seminar where we invite representatives from various companies or organisations to present potential career pathways into employment to our members.

As the coursework gets stressful, SMUCE organizes various fun social events such as barbecues, trivia nights and balls annually to help alleviate the study stress and network with peers.

SMUCE helps facilitate peer learning through the GroupUp section. They are small academic support groups set up by students in preparation for the tests and exams.

SMUCE upholds its tradition of linking students with industry and we publish annual career guides to provide students with job and research opportunities that are relevant to Chemical Engineering.

Furthermore, we also organise weekly career seminars during the semester to facilitate networking between students and working engineers.

Occasionally, we also post job opportunities from our sponsors and organise site-tours to the various companies.

More Information

To hear more about SMUCE and our events like us on

Facebook at www.facebook.com

SocietyOfMonashUniversityChemicalEngineers

Connect with us on LinkedIn

<https://www.linkedin.com/in/smuce>

Visit our website

<https://www.smuce.org>

Feel free to ask us any questions via email at **smuce@monashclubs.org**

Students are also welcome to speak to us in person at our office, located on the ground floor of Engineering Building 37, room G03.

3 What is Chemical Engineering?

Chemical Engineering

A chemical engineer uses technical knowledge to convert an unusable primary resource into a usable and beneficial secondary resource in a sustainable and cost-efficient way. A chemical engineer is a key component in the large-scale production of any commodity; being able to effectively manage, troubleshoot and operate on a massive industrial manufacturing scale.

Chemical Engineering Specialisations

Pharmaceuticals

Working on the production of new pharmaceutical drugs and improving the efficiency of existing processes

Food and drinks

Improving the longevity, packaging, convenience and taste of food products

Chemical processes

Involving the production of fertilisers and pesticides, specialty chemicals as well as producing everyday chemicals used in households such as glass, cosmetics and cleaning chemicals

Combustion

Involving power generation from coal or gas powerplants.

Consulting

(See the company profile from Bain & Co, EY or Jacobs)

Designing, proposing and orchestrating the production of a project with contractors in an economic way.

Environmental and Sustainability

Involving the safe and sustainable treatment of waste and as well as maintaining water quality of cities and towns.

Mining

Involving the extraction and purification of major commodities such as aluminium, iron, copper, lead and gold.

Petrochemicals

Converting oil and gas into plastics, synthetic rubber and other things.

Engineering solution

Instrumentation and control systems which make a manufacturing process run smoothly, safely and efficiently.

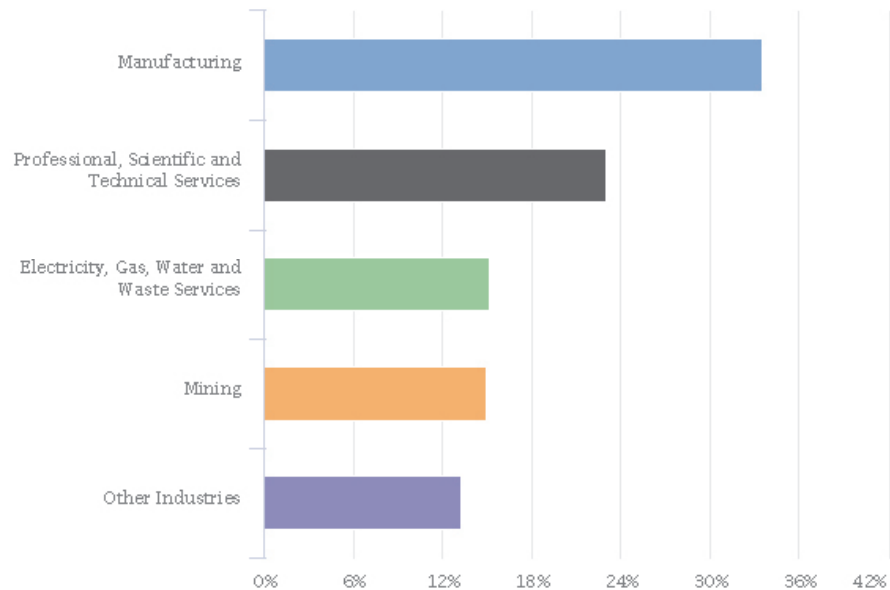
Petroleum

(See the company profile from Shell)

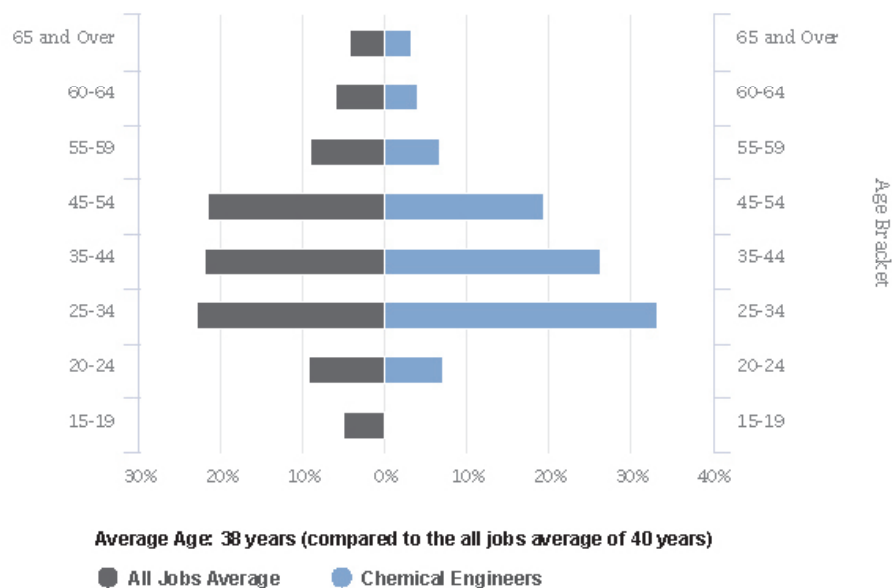
Producing oil, petrol and LPG.

Employee Statistics

Main Employing Industries



Age profile



Industries Statistics

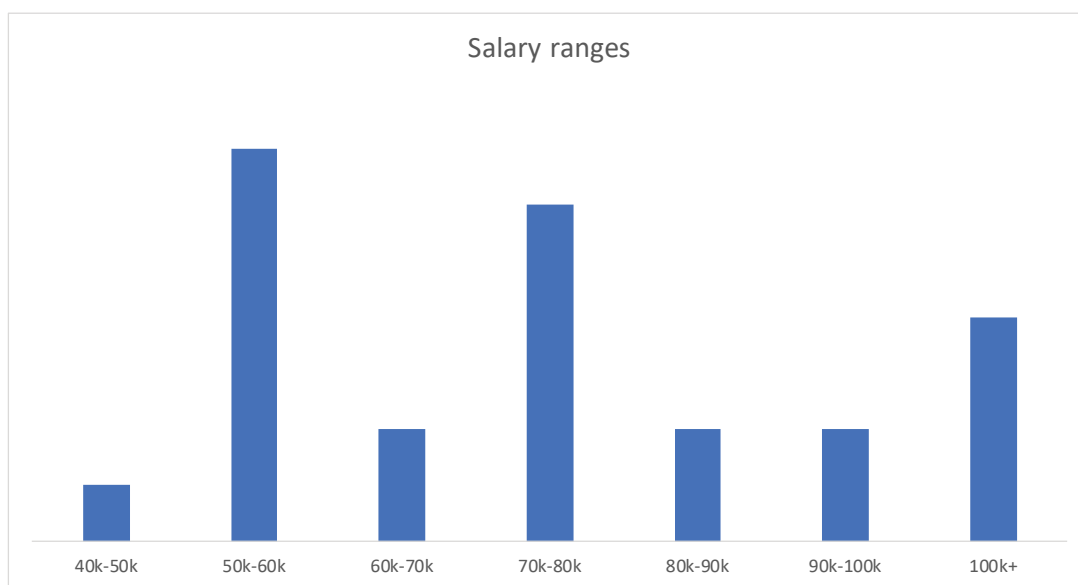
Engineering Solutions

Roles: Mechanical engineer, project engineer, operations engineer

Expected skill set: project management, engineering design project coordinating, microsoft office

Companies associated:

- Thyssenkrupp
- GHD
- Ford Australia
- Emerson Process
- Bluescope Steel
- Alcoa
- Nestle
- Unilever
- Siemens
- ABB Group



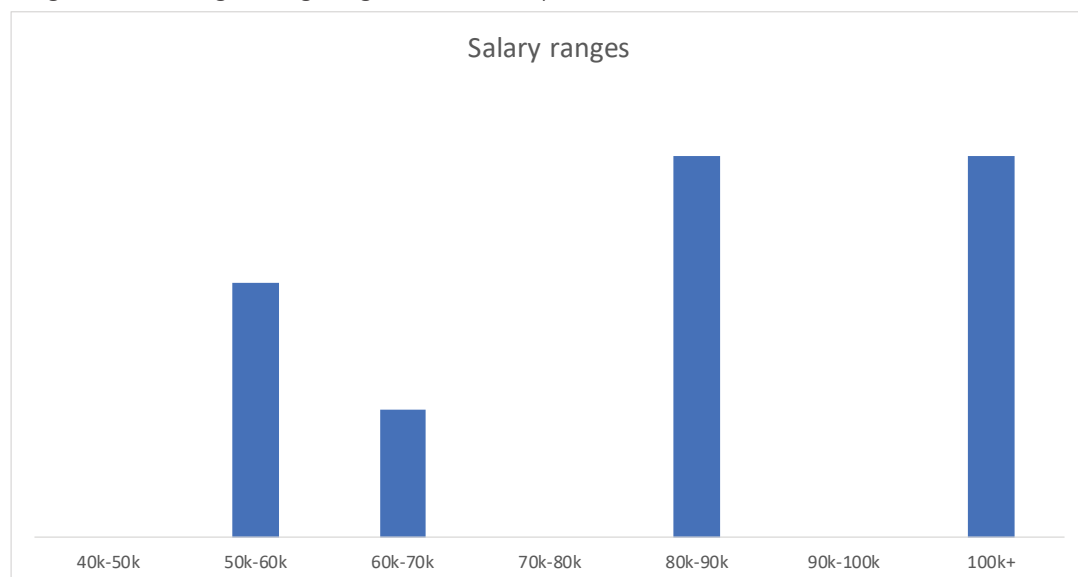
Consultancy

Roles: SAP consultant, Engineering consultant, ERP consultant

Expected skill set: SAP management, ERP, Engineering design, technical analysis

Companies associated:

- Deloitte
- Jacobs
- Bain&Company
- BCG
- EY
- Beca
- PwC



Industries Statistics

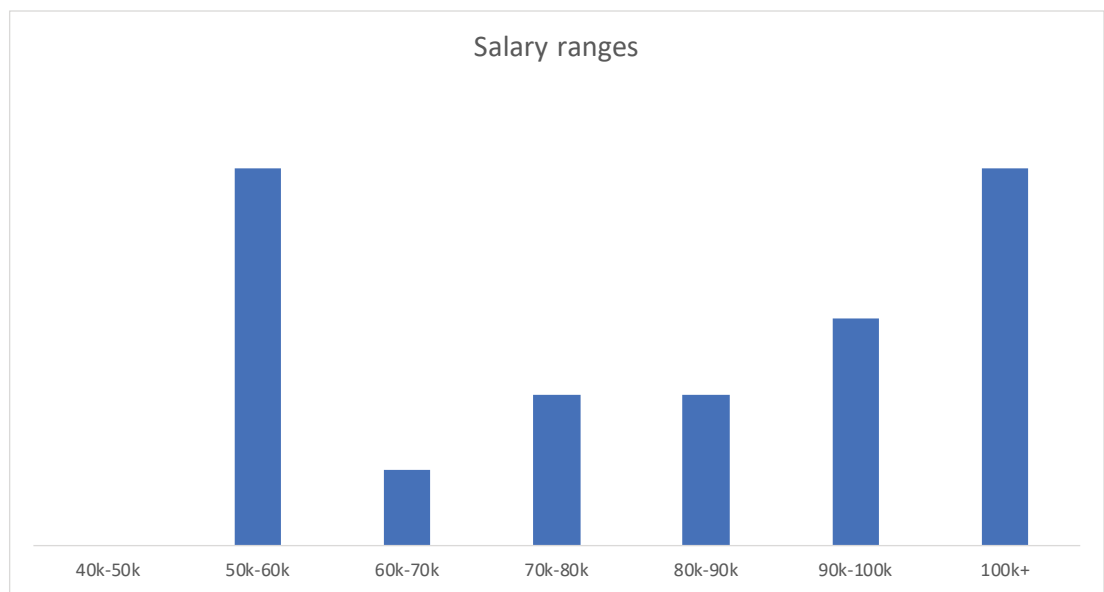
Manufacturing

Roles: Operations Manager, process engineer, production engineer, design engineer, project manager, plant manager

Expected skill set: Project and operations Management, Engineering Design, project coordinating, CAD, SolidWorks, Quality control,

Companies associated:

- Ford Australia
- Orora
- Agilent
- Bluescope Steel
- Boral



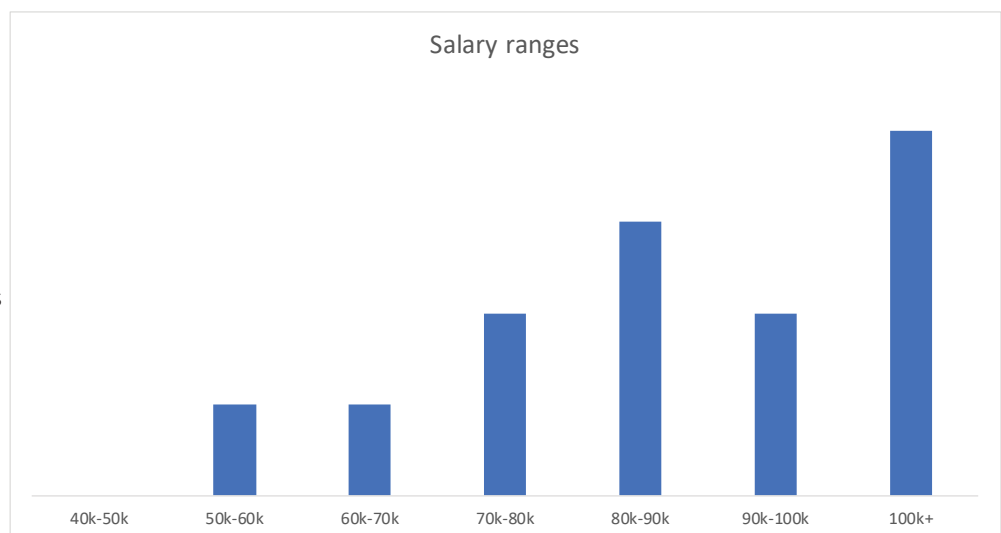
Mining

Roles: Mining engineer, Plant manager, operations manager,HAZOP consultant

Expected skill set: project management, engineering design project coordinating, Microsoft office, operation and control, critical thinking

Companies associated:

- BHP Australia
- Glencore
- MMG
- Newcrest Mining
- Rio Tinto
- Orica
- Arrium Mining and Materials
- Fortescue Metals Group
- UGM Australia
- Evolution Mining



Industries Statistics

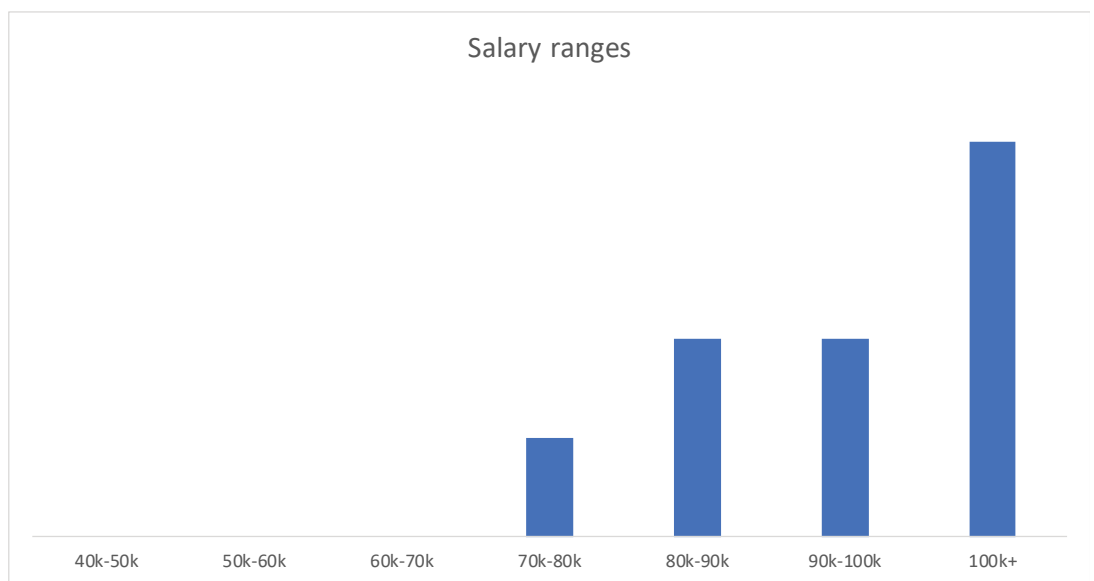
Chemical Production and processing

Roles: Mechanical engineer, project engineer, operations engineer

Expected skill set: Production and processing knowledge, Microsoft office, critical thinking, chemical reaction and thermodynamics, engineering technology, technical design

Companies associated:

- LyondellBasell
- Viva Energy
- Dulux
- BASF
- Orica
- Nufarm
- Worley
- Air Liquide



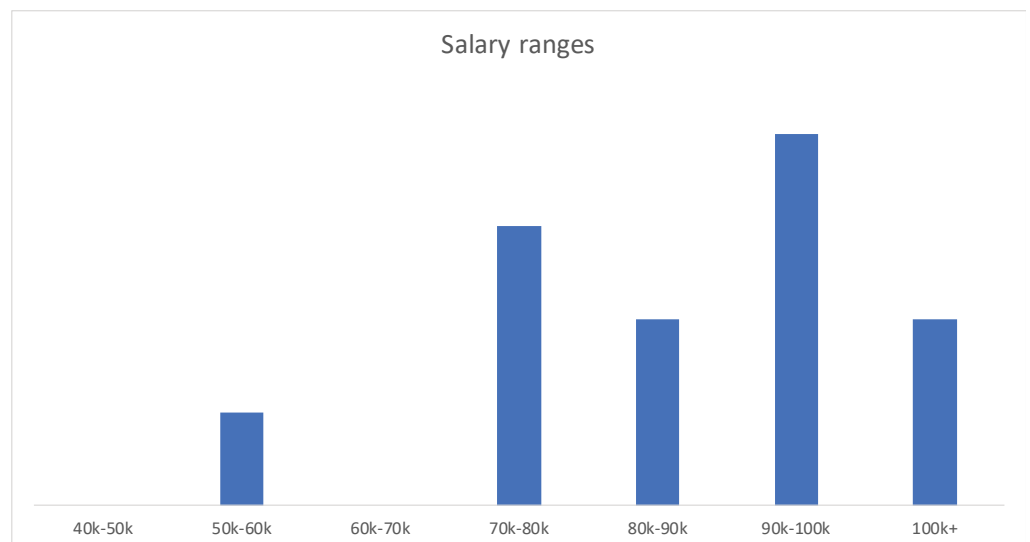
Oil and Gas

Roles: Gas and Petroleum engineer, drilling engineer, pipeline engineer, project manager, operations manager

Expected skill set: Reservoir engineer, drilling engineer, operation management

Companies associated:

- Viva Energy
- ExxonMobil Australia
- Santos Limited
- Woodside Energy Limited
- Rio Tinto
- Evolution Mining



Industries Statistics

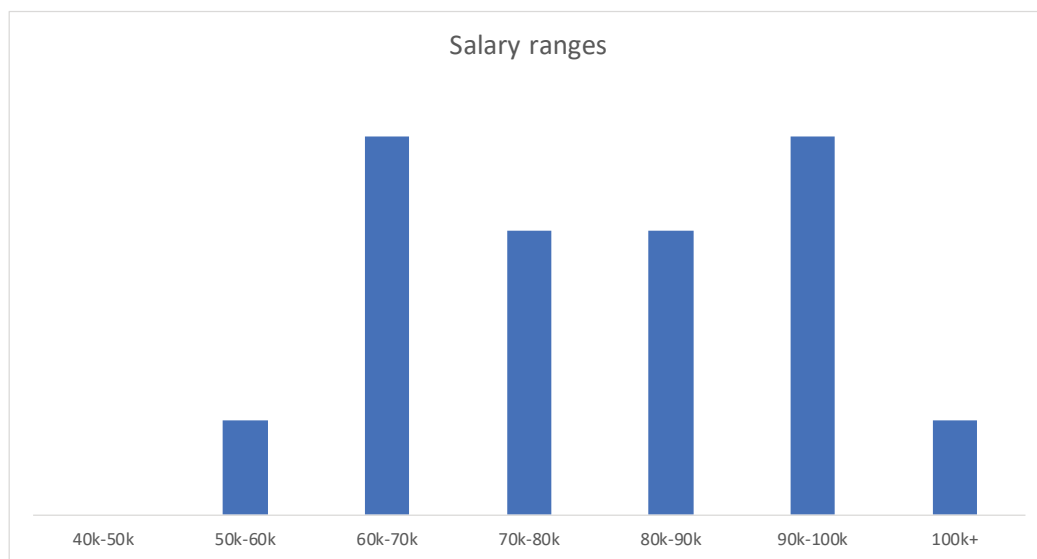
Food & Drinks

Roles: Food technologist, food process engineer, R&D engineer, Product development engineer

Expected skill set: Product development, product management, process improvement, quality assurance

Companies associated:

- Carlton United Breweries
- MARS
- Fonterra
- Bega
- Kraft Heinz
- Bulla Dairy



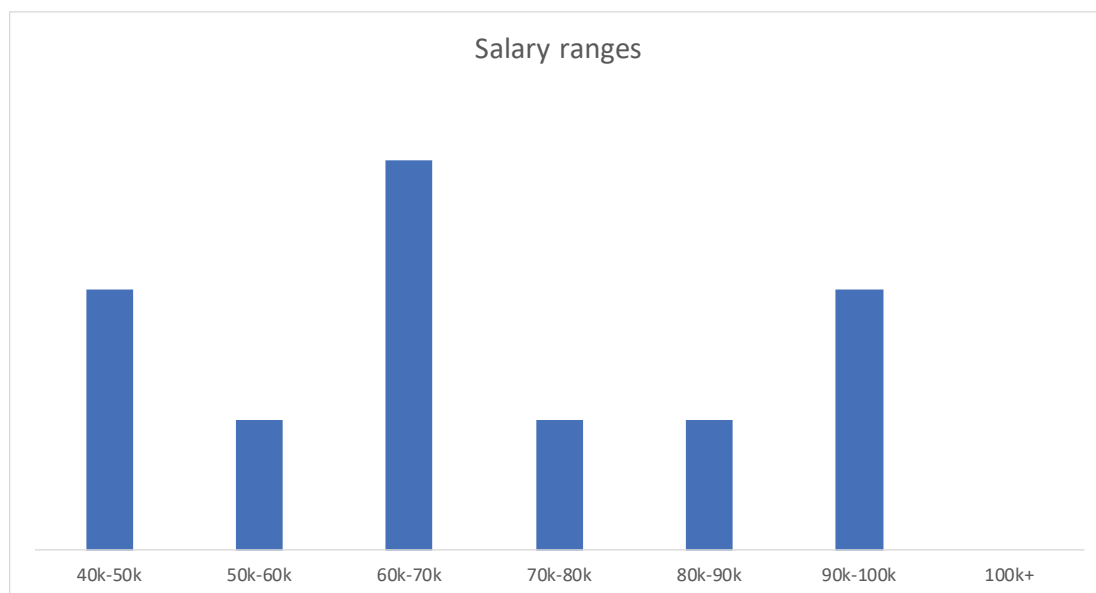
Water

Roles: Treatment operator, plant operator, water resources engineer, wastewater engineer

Expected skill set: Engineering design, project management, data handling, operation management, plant maintenance

Companies associated:

- Yarra Valley Water
- South East Water
- Melbourne Water
- Ixom



Industries Statistics

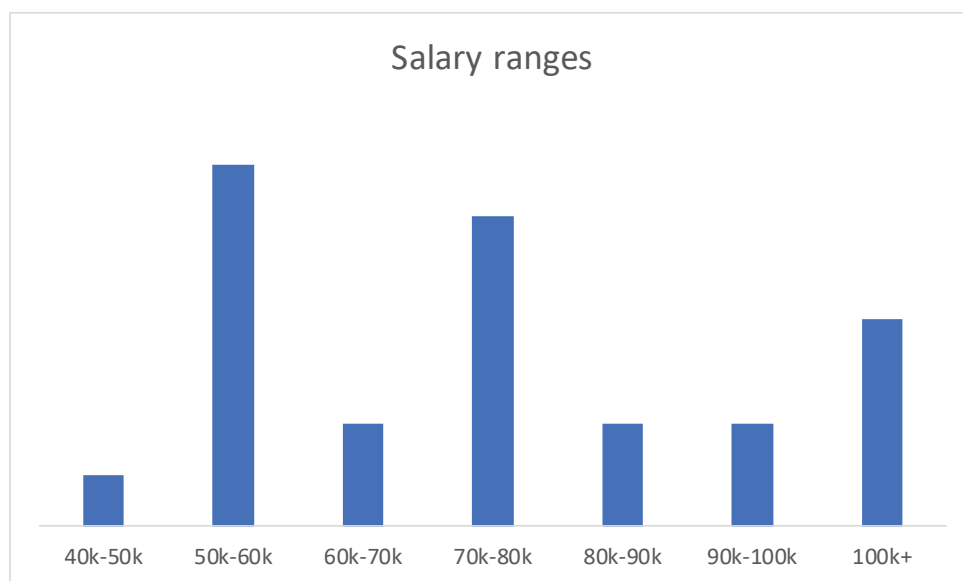
Energy and Utility

Roles: Mechanical engineer, project engineer, operations engineer, energy engineer, plant manager

Expected skill set: project management, engineering design project coordinating, microsoft office

Companies associated:

- Wood
- Viva Energy
- AGL
- Origin



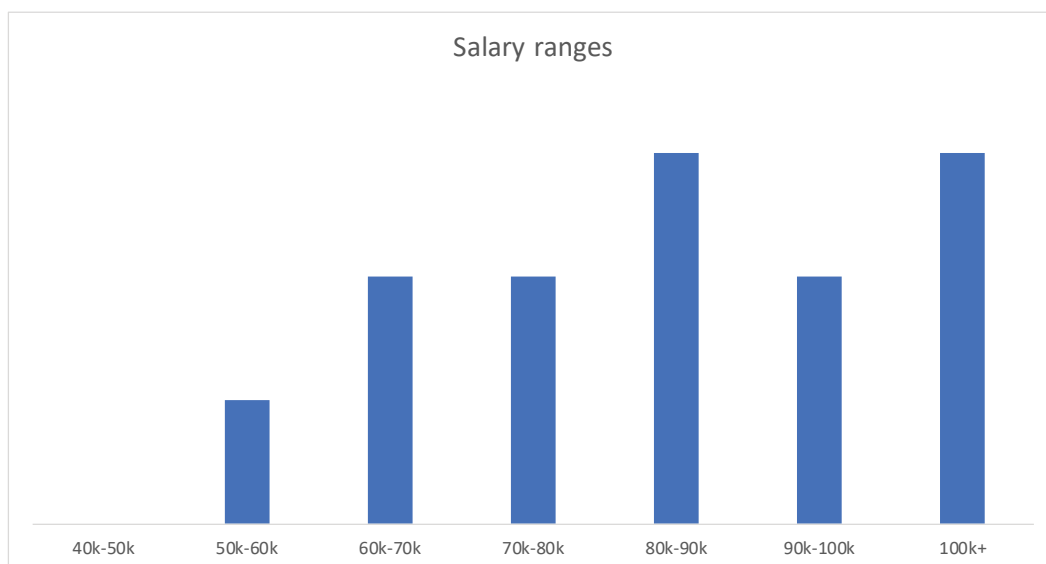
Pharmaceuticals

Roles: Process engineer, QA manager, QC chemist, analytical chemist, project engineer

Expected skill set: Chemical process engineer, engineering design, QA/QC, technical knowledge

Companies associated:

- CSL
- Pfizer
- GSK
- CSIRO
- Ego Pharmaceuticals



THE MONASH DIFFERENCE

Monash Engineering qualifications are professionally accredited and internationally recognised. We provide a total experience for our students. We want to teach highly skilled engineers, while developing well-rounded individuals, who are ready for professional life, leadership and success. That's the Monash difference.

Engineering – your way

At Monash, you can complete your engineering qualification in just four years, or study for five years and graduate with a double degree or a masters. Our engineering students complete a common first year to gain a broad understanding of engineering and the different specialisations. And there are plenty of options for you to branch out in your subsequent years of study.

Studying a double degree with Monash is a great choice for students who have a passion for two disciplines and would like to further their career options. Monash Engineering is aligned with nine degrees from other Monash faculties. More and more organisations seek engineering graduates with expertise in multiple areas and Monash Engineering caters for this with the opportunity to complete two degrees, in just five years.

A total learning experience

Great engineers are so much more than just their skills – they're planners, leaders, team players and communicators. At Monash, our engineering courses aim to produce highly skilled engineers who are ready for life, ready for work, ready for the world.

The Monash Engineering Leadership Program, the Work Ready Program, and the Monash Industry Team Initiative, are all designed to help our students become well-rounded engineers, and better develop their strengths and their passions as people. Monash Engineering students are able

to branch out by way of activities such as – studying abroad or joining a club such as the Monash Unmanned Aerial Systems Club (UAS Club).

Learn and do in world-class facilities

Engineering is a hands-on discipline. At Monash, you get the chance to develop your skills in some of the world's best engineering facilities, like the Cave2 immersive visualisation platform, the largest wind tunnel in the Southern Hemisphere, one of the world's most powerful electron microscopes, and the New Horizons Centre – a collaboration between Monash and the CSIRO.

Professionally accredited, globally recognised

Monash Engineering degrees are recognised by a range of professional engineering bodies (depending on the specific degree), including Engineers Australia, The Institution of Chemical Engineers, Engineering Accreditation Council Malaysia, and the Australian Computer Society.

Reading online?

[Find out more about the student experience at Monash](#)

[Find out more about our facilities](#)

STUDENT & INDUSTRY ENGAGEMENT



We believe there's more to great engineers than excellent technical skills alone. And that's why Monash Engineering provides a range of programs designed to give you the knowledge and skills you'll need to be confident and articulate professionals, and to be well and truly ready to take your excellent engineering skills to your chosen industry.

Reading online?

[Find out more about student & industry engagement](#)

Monash Industry Team Initiative (MITI)

What is MITI?

The Monash Industry Team Initiative (MITI) partners multidisciplinary student teams from Monash University with leading Australian and global industry partners. Students collaborate and design innovative solutions to real issues in today's business world.

The Monash Industry Team Initiative (MITI) program offers you a unique opportunity to gain professional experience in a unique learning environment. This team based initiative will partner you with a leading industry host where you will be tasked with solving a real-world business problem. Placed in a contemporary business environment the experience will expose you to a practical and very different way of learning with students that study in different disciplines.

How does it work?

Students are competitively selected from a range of study fields to form a multidisciplinary team, rather than participate as single interns. The teams range from 2-4 in size and are dynamic in their approach to working on the industry project.

What are the types of projects/opportunities available to students?

The projects generally run for 12 weeks over the summer break and are full time. Participating industry partners have a specific project that students will begin and complete within the 12 weeks.

Various MITI projects outcomes can be found here <https://miti.monash.edu/projects/outcomes>

What are the benefits of the programme?

Students are able to utilise skills learnt from their study and understand how they are transferred to real working situations. Organisations can range from not for profit to private companies, and students will be introduced to soft skills that are used in a working environment. This is also a platform for students to create professional networks in industry.

How can students get involved?

Applications for the MITI program are welcome from penultimate and subsequent year undergraduates, Masters and PhD students who meet the following criteria:

- Be an Australian or New Zealand citizen, holder of an Australian permanent resident or permanent humanitarian visa, or an international student

As a minimum requirement:

- Be enrolled as a full-time Monash student completing an undergraduate degree and has commenced their penultimate year of study, that is you must be currently studying in at least your second year of a three year undergraduate degree. If completing a four year undergraduate degree, then your third year is your penultimate year.

OR

- Be enrolled as a full-time Monash student completing a postgraduate qualification (coursework or research) at Masters or PhD level
- All applicants must have a credit average or above in their studies

For all graduate research (PhD) students, prior discussion with your current supervisor is advised to ensure there are no issues with workload and any existing scholarship arrangements are not affected.

As a MITI team member you will be offered a scholarship to assist with living expenses for the duration of the project. All scholarships are administered by the Coursework Scholarship Unit, Monash, Clayton campus.

The relevant information can be found at <https://miti.monash.edu/information/students>



MONASH
University

ENGINEERING CO-OP PROGRAM

Shaping engineering professionals of the future

Work in engineering for paid internships whilst studying.

The Co-op program is not just an internship, it promotes continuous learning by alternating study with meaningful work-based learning to provide an enriched experience and equip you for your future career as an engineer. You can explore different industry sectors, understand what it is to be a working engineer, and connect your experience to your studies in a more practical way.

You will develop relevant skills and experience that will hold you in good stead when applying for graduate programs. Studies show Co-op students find employment sooner post-graduation, have higher salaries, and are more likely to find a job relevant to their specific degree.

How it works

1. Entry to the co-op program is via a competitive selection process
2. Eligible students will invited to apply upon completion of the required engineering credit points
3. Once selected you attend a compulsory robust employability skills program to ensure you are significantly prepared to work with your Co-op employer
4. Complete one, two or more terms. The Co-op program will be listed on your academic transcript as 0 credit point units
5. Co-op is not for credit but you remain enrolled in your degree whilst completing each Co-op term
6. You can use your Co-op terms towards your required Continuous Professional Development (CPD) hours in order to graduate

For more information

E: eng.coop@monash.edu

W: monash.edu/engineering/coop

Student testimonial



Seii Chen

Bachelors of Material Science and Engineering

"I recently completed a 3 month internship with John Holland. Experiencing the working culture at John Holland has been a period of non-stop learning for me. The experience has taught me to value my time more and to make most of the moment I have to do things.

My Co-op program with John Holland has been a very enriching experience, and I found the work I did there very meaningful."



Industry Based Learning

The Department of Chemical Engineering offers CHE4164 Integrated Industrial Placement as a chance to work in industry on a project, be paid a scholarship and to receive credit.

This unit offers you the opportunity to work in-depth on a significant project, gain first-hand experience of professional practice in the industry, applying skills and knowledge gained to date to a real-life situation and study new topics in an industrial context. Projects are set up by the industrial partner and academic supervisor, and include tackling open-ended industrial problems, project management, process safety and process economics. A limited number of places are offered each year. Selection is based on academic merit and leadership potential and made by the department approximately 6 months in advance. We are looking for students who are work-ready for an industrial placement. This 18cp unit replaces CHE4180 and CHE4161 in the first semester of the final year of the Chemical Engineering degree. You must be enrolled in these two units to be eligible.

A call for applications will be released in August with interviews typically occurring in September. Placements must start at or before the beginning of semester and run until the end of the third week of June.

CAREER CONNECT

4

**Becoming a
successful Chemical
Engineering Graduate**

RESUME

Your resume is the first impression that you will give to a potential employer. So make it clear, concise and relevant. You should take the time to research the organisation and the position that you are applying for. This will enable you to link the skills and experiences from your time at Monash University as a Chemical Engineering student and any other employment, volunteer work, memberships and involvement in groups or bodies.

Try not to use the same resume for every job that you apply for- tailor it for each different position and company. Doing this will help you stand out for all the right reasons. Your resume is where you show that you have the required skills, knowledge and qualifications that are needed for the position.

The first page of your resume should reflect the most relevant information pertaining to the job. As you head towards completion of your Chemical Engineering degree, details of your education will most likely be of most interest to the potential employer unless, of course, you have any industry related experience.

List your education in reverse chronological order. If you received any outstanding marks, be sure to include these, if not, there is no need to list them as companies often request a copy of your academic transcript which will contain this information. If you did well in a particular subject and the position requires this, then make the potential employer aware of your mark.

Also be sure to list your work experience and employment history in reverse chronological order. For each position, describe your duties and any achievements, beginning each point with an action verb (e.g. formulated, identified, solved, accomplished, managed, assisted etc.) and remember to keep to the point and stress what you have achieved.

Any engineering related work experience you have could have a separate heading for example "Chemical engineering related experience". Keep in mind that most engineering work is project based, therefore you should give brief details of any projects that you were involved in and highlight your specific contribution to its' success.

Any engineering related work experience you have could have a separate heading for example "Chemical engineering related experience". Keep in mind that most engineering work is project based, therefore you should give brief details of any projects that you were involved in and highlight your specific contribution to its' success.

Over and above your Chemical Engineering degree and any engineering related experience, companies will look for employability skills that you have developed. These could include the following and should be addressed in a "Skills summary" section of your resume:

- Communication
- Creativity and Innovation
- Initiative and Enterprise
- Professionalism
- Planning and Organisation
- Problem Identification and Solution
- Intercultural Competence
- Teamwork
- Use of Tools and Technology

You should include evidence of how you possess and utilise some of these skills by using relevant examples. Merely listing skills with no evidence is meaningless for employers. Remember this is the section that should contain the skills that the employer has specifically identified as being important and should be different for each application.

Another heading to include in your resume if relevant is "Voluntary and community work". Employers value people who are worldly and culturally aware and willing to contribute to the greater community. If you are a member/student member of any professional associations for example Engineers Australia, mention this on your resume as it demonstrates your interest and commitment to the engineering field. You may or may not include a list of your "Interests and hobbies" – it's a personal choice. Employers are usually interested in you as a person and this section could add another dimension.

RESUME

Finally you need to include a section with details of potential referees. List their name, position title, organisation and contact details. Referees should have witnessed your capabilities in a working environment.

It is acceptable to write “Available upon request” if you don’t have up to date details but bare in mind you will need to provide the details if employers are serious about employing you. Always ensure you speak to your referees before listing their contact details. See some samples using the link below:

monash.edu.au/students/career-connect/applyfor-a-job/resume-samples.html

Quick tips:

- Use 10, 11 or 12 font- Arial, Calibri or Times New Roman are good choices
- Triple check your grammar and spelling
- Be consistent with formatting – use clear headings, bullet points (make sure they line up)
- Choose an easy to read layout and make sure there is plenty of ‘white space’ on the page
- Be concise and use relevant examples
- Write content in the third person – no ‘I’ or ‘we’

How can we help you?

Chat with the friendly staff at Career Connect about:

- Meeting with a Careers Education Consultant
- Getting your job application checked
- Interview tips, including Interview Stream
(**monash.interviewstream.com/signup**)
- Developing your employability and using Student Futures
(**student-futures.monash.edu**)
- Your work rights
- Career Gateway jobs board (**careergateway.monash.edu.au**)
- Jobs for Students program
- Student leadership development
- Volunteering at Monash (**monash.edu/volunteer**)
- Career seminars and events

Please visit our website for more information

monash.edu/students/career-connect/

COVER LETTER

Your cover letter could be the first thing that an employer will read about you.

A cover letter should introduce you and describe your qualifications, it should demonstrate your motivation for wanting to work for that particular company and your passion for chemical engineering and it should show that you have the relevant skills for the position. A common mistake made with cover letters is to repeat the information that is in your resume— this is not the point of a cover letter! Also rewrite your cover letter for each application as it must be tailored specifically to each job you apply for.

Paragraph one

This should include the purpose of your letter. Include your qualifications, the position title and any reference number to the position (if applicable). If you're not writing in response to an advert and canvassing for potential employment, introduce yourself and your current career circumstances as concisely as possible, including any specialised professional interests and abilities.

Paragraphs two/three/four/five

These paragraphs should demonstrate why you want to work for this employer and why they should want you. It is essential that you demonstrate within these paragraphs your ability to gather the most relevant information from a range of sources to state your claim as a suitable candidate.

Highlight the skills, expertise, qualities and employment experience you have included in your resume that you believe are most relevant to the requirements of the position. Make sure that you can demonstrate how you meet the selection criteria, and how what you have to offer relates to both the current and future needs of the employer.

Include other factors that point to your possession of key general skills (e.g. communication, teamwork, initiative, self-management) through your experiences in voluntary or community activities, clubs and societies etc. If you have done a chemical engineering internship or vacation work include skills from this experience as evidence.

Show that you have researched the organisation and the position. Include this when you show your enthusiasm for that particular position with that particular employer but do not copy sentences from the employers website.

Final Paragraph

What do you want to happen next?

Confirm that you have attached your resume and any other documents requested. Finish on a positive note, thank the employer for their time and express interest in attending an interview. Have a look at the link below for examples, and for the correct way to address the letter, the salutation and how to close the letter.

Quick tips:

- ONE PAGE ONLY – never longer (unless specified by employer)
- Tailor it to the job for which you are applying
- Use a standard business style for your letter
- Use 10, 11 or 12 font- Arial, Calibri or Times New Roman are good choices
- Clear structure – one main idea per paragraph
- Plenty of white space (standard margins and space between paragraphs)
- 100% accurate spelling and grammar
- Short, well-constructed sentences, not unnecessarily long and wordy
- A positive tone (do not include your weaknesses)
- Plain English (avoid slang, SMS language or other abbreviations, jargon or terms which are too casual)

Please visit our website for more information and sample Cover Letters monash.edu/students/careerconnect/apply-for-a-job/cover-letters.html

COVER LETTER

How can we help you?

- Attend 10 minute drop-in sessions for a quick feedback on job application or career advise
- Provide you with tips on assessment centres
- Offer you half hour one-on-one career consultations
- Online resources including sample resumes and cover letters, and lots of other useful career planning tips and information regarding employment outcomes based on your degree program
- Brush up your interview skills
- Practice job interview using Monash Career Connect Interview Stream

For more information please visit

<https://monash.interviewstream.com/signup>

The Monash Employment, Careers and Development Centre is located in the Campus Centre, 21 Chancellors Walk.

NETWORKING

Networking is a great way to find jobs that aren't advertised through traditional channels. Up to 75% of jobs are found through word-of-mouth or referrals, so having a good network of contacts gives you access to this hidden job market.

Through networking, you can gain important career information and put yourself in the best position to acquire your preferred role. Networking helps with both research and finding employment.

Your network could include friends, lecturers, workmates, fellow students or club and society members, employers and sporting team mates. Some of these people may already work in your industry, or know someone who could help you.

By using a range of networking strategies, you can seek out opportunities, connect with people you know, make new connections, and learn more about your chosen industry as you pursue your dream job. Don't network in a one-way fashion – it must have a two-way benefit, even if that benefit is at some point in the future.

An essential part of networking involves taking the time to consider your image. What impression do you want to leave for potential colleagues and employers? The way you present and express yourself, both in person and in writing, is the most obvious way in which you make an impact.

Increase your contacts

- Remember, every person you meet is a possible contact
- Ask your contacts to suggest new contacts
- Go to career events run by Career Connect, your faculty or student groups
- Join professional or industry associations and attend their events
- Join professional social networking sites such as LinkedIn
- Join groups in your area of interest.

Use your contacts

- Focus on people you can call or speak to in person
- Only contact people when you have their name. If you haven't met them, mention up front your original contact or how you got their name
- Be aware that University alumni can provide discipline-specific connections and advice, while your fellow students will become part of your ongoing professional network
- When you get help from a contact, send them a thank-you message
- Keep in contact with people who have helped you

Reflect on what you've learnt

Keep track of who you spoke to, follow-up actions, and key points you may have discussed. Did you:

- make a good impression and leave your audience with a message?
- appear confident?
- keep the conversation flowing?
- show genuine interest in what others had to say?
- find the right people to speak with, or get referred to the right person?
- learn something new from each person you spoke with?

It's important to reflect on these questions each time you meet with someone so that you can improve your networking expertise.

How can we help you?

- complete the **Leap into Leadership (LiLO)** Personal Brand module
- attend a **LinkedIn 'How-to workshop'** or webinar
- attend a **Career Connect networking employability workshop**
- learn networking tips from industry experts through **Career Success Coaching**
- practise your 'elevator pitch' and interviewing skills online with **Interview Stream**
- practise your networking skills at **Career Connect events**.

JOB INTERVIEWS

Research the organisation

Employers expect you to be able to say why you want to work for their organisation and to know something about them. So, before you attend the interview, ensure that you are familiar with the employer's:

- history, mission, values and leadership team
- products, services and clients
- the industry and industry competitors.

You can find out about an organisation by:

- looking at their website, LinkedIn page, annual reports and other promotional material
- reading industry journals, the Australian Financial Review, and business sections of newspapers
- talking to contacts who work in the industry, people in similar organisations or members of relevant professional associations.

Research the job

Make sure you read the job advertisement or position description carefully so that you understand the main selection criteria and the responsibilities of the position.

Evaluate your suitability

You need to be able to speak with confidence in the interview. Spend time thinking about the experiences, skills and qualifications that you would like to highlight to show your suitability for the role:

- What strengths, skills and qualities will you bring to the role?
- What have you learned in your degree that might be relevant to this role?
- What have you learned from work or extra-curricular experiences that may help in this role?
- Why are you the right person for the job?
- Why is the role, and working in the industry, important to you?

Think about the questions you'll be asked

Using the selection criteria and position description, think about questions you might be asked. You'll need to demonstrate examples of your **employability skills**, and **sample interview questions** can help you do this.

To help prepare for interview questions, you can also:

- attend a **How to interview** well workshop
- once you complete a workshop, **request feedback** on your interview skills
- review our **interview skills** resources and complete the quiz.

Practise your responses

Choose a few of the key questions you expect to be asked and try answering them aloud, as if you were in an interview. You may find this hard at first, but gradually the right words and examples will come. The more familiar you are with the process, the more comfortable you are likely to be in the interview. You could practise:

- by using the **Interview Stream** tool
- by using the skill statements used for reflections in Student Futures (to write example responses to interview questions)
- by recording yourself
- with a friend or family member asking the questions
- in front of a mirror.

How can we help you?

Student Futures: an online platform that allows you to practise your interview questions, develop and better understand the skills you need, and listen to what Monash graduates have to say about the role of skills in the workplace. Visit our website for more resources on **Job Interviews**. Modules offered by our **Leap into Leadership Online** program:

- Communicate with Impact
- Personal Brand

STUDENT FUTURES & CPD

Unique to Monash, Student Futures is an 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 to have previous work experience!

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

Continuous Professional Development (CPD) is a compulsory professional practice requirement for all Bachelor of Engineering and Master of Professional Engineering students at Monash Clayton.

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 activities, build your employability skills and grow your professional networks and contacts

To pass the CPD unit you need to complete a minimum of 420 hours of professional practice activities outside the classroom during your Monash course, create a written record detailing the skills you develop and apply during those activities, and answer assessment questions reflecting on the key Engineers Australia Stage 1 competencies.

For more information, visit <https://www.monash.edu/engineering/current-students/professional-development/continuous-professional-development>

Student Futures has many features that support your preparation for employability.

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.

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**.

Apply for jobs

- Use Student Futures to help craft your resumes, cover letters, LinkedIn profiles, and answers to key selection criteria.
- Practise 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.

EVENTS BY CAREER CONNECT

Want to keep up to date with industry trends, develop your employability skills, connect with employers, and more? Check our range of career-related events and register to attend.

Attend an online workshop to get job-ready. And if you've finished your studies, you can use our workshops for 12 months after completion. Contact Career Connect for information on how to access these services at careerconnect@monash.edu

How to... Workshops

Our workshops provide you with expert information and professional feedback, covering the entire process from how to create the perfect resume, cover letter or LinkedIn profile to nailing the job interview. They're also available on Moodle for you to do at your own convenience and pace.

Career Success Coaching

This series of workshops and conversations cover employability skills, career planning and discipline-specific workshops.

Employability workshops

Get in-depth information on how to create a career plan, what skills employers look for, how graduate recruitment works, what happens in an assessment centre, and more.

Employer events

Held on and off campus, these events are a valuable opportunity for you to meet companies and organisations, as well as learn about and get access to recruitment processes.

Careers Expo

Held annually, this is the biggest event of the Career Connect calendar. It provides you with an opportunity to interact with organisations and employers and learn firsthand about employment prospects and what employers are looking for in potential employees.

5 Professional Communities

The Institution of Chemical Engineers (IChemE) is a not-for-profit, member-led qualifying body and learned society for chemical, biochemical and process engineers, and the only organisation permitted to award the widely-recognised Chartered Chemical Engineer title and Professional Process Safety Engineer registration. IChemE sets the standard for chemical engineering and process safety through a range of membership grades, registrations, publications and training for those seeking to improve their professional status, enhance their learning and network with peers.

We have around 37,000 members in over 100 countries who are supported by a team of professional staff based in Australia, Malaysia, New Zealand, Singapore and the UK.

As a graduate you'll benefit from IChemE membership whether you're going into postgraduate study, looking for a job or starting your career.

Finishing your degree is a great achievement, but when you start work you'll be expected to stay up-to-date with the latest knowledge in your field, learn new skills and make useful contacts – all of which will help your career. This is called 'continuing professional development' (CPD) and is the next stage of your education.

Starting your career

Many employers look for membership of a professional body when reviewing job applications. You can stand out by highlighting your membership grade and/or post-nominals on your CV and digital signature. Visit our website to find companies with an IChemE accredited company training scheme (ACTS) and browse the latest global employment opportunities at: jobs.thechemicalengineer.com

Why join?

We provide support to help you achieve your career goals, including study aids, access to the latest news, and job-hunting tips. IChemE membership signals a commitment to professionalism, knowledge, and connection with a powerful international network.

Our members value:

- free subscription to the latest news, technical articles and job opportunities in The Chemical Engineer magazine and website (www.thechemicalengineer.com)
- online access to the Knovel e-library containing hundreds of textbooks, databases and problem-solving tools
- networking, events and webinars via regional member groups and technical special interest groups
- free student resources including our Job-Hunters' Survival Kit and Student Pocketbook
- preferential rates on IChemE conferences, courses, journals and books
- special postgraduate student membership rate Send your course information to members@icheme.org for details.

Take advantage of your networks and utilise opportunities to learn from other peoples experiences and pathways they developed their careers.

Job-hunting

If you've finished your undergraduate degree and have started looking for a job, here are a few things that may help:

- Visit www.icheme.org/job-hunters and download our Job-hunters' survival kit for information and advice on looking for jobs, writing a CV or attending interviews
- If there's a regional member group in your area, get involved with the committee and get to know local engineers at all levels. This will help demonstrate your enthusiasm and organisational skills. Visit www.icheme.org for details.
- Join the lively IChemE social media community on LinkedIn, Facebook and Twitter.
- Become an Associate Member* and use the designatory letters AMIChemE on your CV and digital signature.
- Join a special interest group (SIG) that appeals to you. From particle technology to project management, learn from senior engineers who work in a wide variety of industries and roles. You'll receive a free subscription to one SIG as part of your membership subscription. Log in to the My IChemE members' area at www.icheme.org to choose or change your free special interest group.
- Discuss your employment options with a recruitment consultant – preferably one who works within the relevant industries as they'll be experts on what employers expect from potential graduate recruits.

After a few years' work experience you'll want recognition of your achievements, which is why hundreds of chemical, biochemical and process engineers across the globe get Chartered every year. This personal stamp of competence and commitment is a symbol of trustworthy professionalism recognised by peers, employers and clients. As a Student Member you have access to membership benefits such as www.thechemicalengineer.com, Knovel e-library, IChemE journals and networking with regional member groups and special interest groups.

Take the time you have at University to connect with industry through events and committees. Always enjoy what you do and take pride in your achievements.

Plan your next move with our Jobhunters' survival kit and Graduates' guide. Log your work experience, and track your training and development goals using the mycareerpath online tool. Visit our website to find companies with an IChemE Accredited Company Training Scheme (ACTS), and browse the latest global employment opportunities at: jobs.thechemicalengineer.com

Postgraduate study

If you're continuing your studies at university, perhaps to complete a master's or doctorate, you may find these useful:

- For the latest knowledge relating to your research area, join the relevant special interest group. Members receive a free SIG subscription as part of their membership. Visit the My IChemE members' area at www.icheme.org to choose, or change, your free SIG.
- Members get free online access to IChemE journals. Simply log in to My IChemE at www.icheme.org to get access to the latest research.
- Conferences are a great place to network with other people in your field of research, and submitting papers looks great on your academic record. Conferences such as the annual ChemEngDayUK conference is of particular relevance to research students. Visit www.icheme.org/events
- For quick queries don't forget Knovel, the online searchable database for science and engineering textbooks, formulas and interactive tools accessible through My IChemE.

Contact Fiona O'Connor on either austmembers@icheme.org or foconnor@icheme.org for more information



Discover IChemE student membership today:

- digital subscription to *The Chemical Engineer* magazine
- networking, events and webinars via regional member groups & special interest groups
- online access to the *Knovel* e-library, IChemE journals and the *Loss Prevention Bulletin*
- useful young member resources such as the *Job-hunters' survival kit* and *Graduates' guide*
- personalised IChemE email address to keep it professional when applying for placements
- special student membership rate and free upgrade to Associate Member after graduation*

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

IChemE ADVANCING
 CHEMICAL
 ENGINEERING
 WORLDWIDE

*for eligible students, see www.icheme.org/associate



Professionals Australia

We are a network of 25,000 Australian professionals working together for a better future for all our members.

For more than 60 years we have been advancing the workplace rights of professionals like you. We can help you at every stage of your career with expert advice on your pay, your conditions and your rights at work.

We advocate strongly for our members to help create a better future for your profession. We want to make sure Australian professionals like you get the respect, recognition and reward you deserve.

The Registered Professional Engineer of Professionals Australia (RPEng) title is a public demonstration that an engineer is qualified, competent and ethical – that you're actually a professional engineer. RPEng was established to give degree-qualified engineers a more affordable, and more practical alternative to other accreditation programs out there.

As an assessment entity for the Board of Professional Engineers of Queensland (BPEQ), APEA has the highest professional standards.

Learn More

Visit <http://www.professionalsaustralia.org.au> to learn more about us.

If you are interested to join, visit
<https://www.professionalengineers.org.au/join-now>

Respect, Recognition and Reward for every stage of your career.

Why join?

- **Work Insurance:** We know your career is more than a pay packet, but our work insurance gives you financial peace of mind.
- **Career advancement:** Market rates for your profession and a tailored individual market rates service let you know exactly what you're worth to give you the best leverage in negotiations.
- **Get the respect you deserve:** We work together to lift the standing of professionals and by doing so, get them the respect, recognition and reward they deserve for the vital roles they play in Australian society
- **Professional recognition:** Our Continuing Professional Development program allows our members to stay at the leading edge of industry practice.
- **Member savings:** We offer savings on professional indemnity insurance for self-employed members and we offer free financial planning seminars to help you plan your future.

Uni helps you do the job. We help you get it.

Even more reasons to become a member of Engineers Australia.

Being a member of Engineers Australia can now directly connect you to employment opportunities to build you into an engineering leader of tomorrow.

Powered by GradAustralia, the Engineers Australia jobs board has opportunities from a wide range of amazing employers across different disciplines, no matter what graduate stage you're at.

Whether you're looking for an engineering internship, vacation placement, first job or position up to four years' post your graduation, the Engineers Australia members-only jobs board is the place to go.

Check it out.

Head to: jobs.engineersaustralia.org.au

Got questions?

Contact us: careers@engineersaustralia.org.au
or head to frontier.engineersaustralia.org.au





Frontier

The Young Engineer's Guide to Getting Ahead



ENGINEERS
AUSTRALIA

Engineers Australia Student Membership



Be part of something special

By joining Engineers Australia you'll be part of a passionate community of over 100,000 members all working together to engineer a better world. As the largest multidisciplinary professional association for engineering in Australia, Engineers Australia is the leading voice of the profession and your professional home for life.

**Raise your professional profile
and get a head start in your career.
Become a student member of
Engineers Australia today!**



frontier.engineersaustralia.org.au/membership

Through joining Engineers Australia as a student member you will:

FIND YOUR EDGE

We offer everything you need to become the best engineer you can be, keep up to date with what's happening in your field and build your professional network. All you need to do is take a leap and invest in your career. It's worth it; trust us!

BUILD THE SKILLS EMPLOYERS NEED

Employers want more than just smart graduates; they want well rounded professionals. We know what employers want and work with you to develop these skills, so you can stand out and hit the ground running.

GET THE JOB YOU WANT

Career fairs only give you access to a small number of jobs, but more than 80% of roles never get advertised. Take advantage of our members-only jobs board – it will open up a whole new world of opportunities for you.

BUILD YOUR COMMUNITY

Building a professional network is critical. It might be a little about what you know, but it's definitely a lot about who you know. We connect you with other emerging engineers and senior leaders in your field.

START YOUR PATH TO CHARTERED

Engineers Australia membership is your only way to become a globally recognised Chartered Engineer. We support your journey and show you the path to get there.

BE RECOGNISED

Prove your skills without having to say anything at all. An Engineers Australia post nominal is your resume in one word!

6 Industry Profiles

This section features profiles of companies from different industries. The profiles include information about company background, employment opportunities and employee development.

Please keep in mind that these profiles only represent a fraction of companies applicable for chemical engineers. To know more about companies and industries, attend our Industry events or contact the Industry Team.

VAC Vacation Programs

GRD Graduate Programs

INT Opportunities for International students

**VAC****GRD**

Wood is a global leader in the delivery of project, engineering and technical services to energy and industrial markets.

We operate in more than 60 countries, employing around 60,000 people, with revenues of over \$10 billion. We provide performance-driven solutions throughout the asset life cycle, from concept to decommissioning across a broad range of markets, including upstream, midstream and downstream oil & gas, chemicals, environment and infrastructure, power & process, clean energy and mining .

We have our performance & development tool called My Success Plan. Employees agree with their managers on a range of performance & development objectives that they will strive for during the year. Graduates also attend a range of face-to-face training programs that lead to a Cert IV in project Management



Our Melbourne corporate office is in Collins Street Melbourne. Our work in Victoria is mainly in the Gippsland & Otway regions and offshore in Bass Strait. In Australia we operate in Victoria, Western Australia & Queensland as well as in more than 60 countries world-wide.

At Wood, we don't just look for degree classifications and marks. We believe enthusiasm, personality, commitment and creative thinking are just as important.

For Applicants

Apart from on-the-job training whilst working on real projects, you will also attend a series of lunch & learn sessions on various topics and you'll be joining a vibrant early careers community in the centre of the Melbourne CBD!

We only accept applications from Australian citizens or those that have PR. Applications are made online and will not be accepted via email. The next phase is a video interview, assessment centre and finally a face-to-face interview. The application process for vacation students does not include assessment centre.

Attend career fairs and talk to our employees. When approaching employers at events, DO NOT ASK "so what do you guys do?" This is an employer's most irritating question. Also follow us on Facebook, LinkedIn, Twitter and YouTube.

For more information, please visit:

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

<https://twitter.com/woodplc>

<https://www.linkedin.com/company/woodplc/>

Vacation Opportunities

Our vacation programs run from early December to late February and are usually available Australia wide. For these roles we only accept applications from Australian citizens or those that have PR. Applications for vacation roles open in late July of each year.

Graduate Opportunities

Applications for graduate roles will open on 2 March 2020 and we will have opportunities Australia wide. We do have requirements for graduate Chemical Engineers in Melbourne. What makes our grad program unique is that we offer graduates the ability to attain a Cert IV in Project Management.

wood.

Great minds
don't always
think alike.

The energy behind
graduate recruitment.



For further information please contact our early careers team:
earlycareersAU@woodplc.com



BAIN & COMPANY

Bain & Company is one of the world's leading management consulting firms. We support companies in important decisions on strategy, operations, technology, organisation, private equity and mergers and acquisitions – cross-industry and cross-border. We help the world's top leaders solve their toughest challenges. Our work fuels the growth of many industries; it creates change for some of the most influential organisations and notable brands around the world – and when those organisations are truly doing things right, they are positively impacting people's lives around the world.



The Bain Australia practice is made up of the Sydney, Melbourne and Perth offices. These three offices are all located in central CBD locations and contain all of the modern traits you would expect to see in a fast-paced, dynamic work environment. Globally, we have 58 offices around the world, and we work seamlessly together as one firm to serve our clients wherever they need us.

For more information, please visit:

www.bain.com/careers

<https://www.facebook.com/bainandcompanyAUS/>
australia.recruiting@bain.com

Graduate Opportunities

Bain Australia recruits graduates between February and March for Associate Consultant (AC) positions starting in January, March and July the following year. Those currently completing an undergraduate, masters (non-MBA) or PhD degree, or with up to five years of industry experience are encouraged to apply.

When applying ensure you have a well-rounded application that demonstrates exceptional academic performance and strong analytical, interpersonal and leadership skills.

For Applicants

We are looking for all-rounders, independent thinkers who thrive as part of a team. We recognize that everyone is different and everyone will bring their own unique experiences and perspectives to the team. The essential skills we'll be looking for in an undergraduate candidate are: a demonstration of exceptional academic performance and strong analytical, interpersonal and leadership skills. To prepare for your application and case interviews we strongly advise that you read the 'Application information' and 'Interview preparation' sections of our www.bain.com/careers website.

The support you receive to help you thrive throughout your career at Bain is award winning. We have built the foundation of our supportive culture around our local offices—your home base. You will very quickly develop meaningful relationships with your peers, your managers, your mentors and your staffing manager—all of whom will have a deep interest in making you successful. Professional support starts from day one with our world-class global training where we teach you everything you need to be brilliant at what you do. From a professional development perspective, the firm provides a wide range of opportunities including: mentoring, global transfers (short & long term options available), externships and affiliation groups e.g., Women@Bain and BGLAD (Bain GLBT Association for Diversity).

Other Opportunities

We also offer the True North Scholarship for Women for eligible female, penultimate-year students, giving them a chance to win a \$15,000 scholarship, a Bain mentor and an Associate Consultant job offer. In addition, we welcome applications from experienced professionals with up to five years of industry experience who are looking to make a change in their careers.



The Boston Consulting Group (BCG) is a global management consulting firm and the world's leading advisor on business strategy. We partner with client in all sectors and regions, with particular strength locally in technology, media and telecommunications, health care, industrial goods, consumer, energy, financial institutions, insurance and public sector.

BCG is recruiting Associates to join any of our Australian offices in 2018 and 2019. Our Associates come from fields as diverse as music, philosophy and medicine, as well as traditional fields such as law, engineering and commerce. We are looking for students with outstanding academic records, strong analytical and interpersonal skills, intellectual curiosity, and great ambition.



Register via this link www.bcg.com/en-au/careers/events to be put on our mailing list to be kept up-to-date on upcoming BCG events

For more information, please visit:

www.facebook.com/TheBostonConsultingGroup

www.linkedin.com/company/the-boston-consulting-group

We are looking for students with outstanding academic records, strong analytical and interpersonal skills, intellectual curiosity, and great ambition.

For Applicants

With BCG you will learn how to navigate complexity, draw unique insights, facilitate change, and become a leader responsible for real and lasting impact. Coached by a personal mentor and supported by your team and individual trainings, you will join a diverse group of highly driven individuals from different backgrounds who respect and trust each other. Through this you will gain experience and exposure to:

- Diverse case teams
- International experiences
- Personal mentoring
- Individual training – on and off the job
- Opportunity for personal development

Vacation Opportunities

BCG offers a scholarship to students with at least one further year of study. Please refer to our website (www.bcg.com/en-au/careers/apply) for further information.

Graduate Opportunities

We are now recruiting engineering students to join BCG. Please refer to www.bcg.com/careers for recruitment information and details on how to apply.

**VAC****GRD****INT**

Bega Cheese Group is home to many trusted and wholesome food brands enjoyed in Australia and around the world. Our growth story of becoming a successful ASX listed company with a turnover in excess of \$1.5 billion, and over 2000 employees is made possible by our values and outward looking perspective. We produce a wide range of products including: Cheddar Cheese, Infant Formula and Nutritional Products, Mozzarella Cheese, Cream Cheese, Butter, Vegemite, Peanut Butter, Dips, and Peanuts. With a strong regional focus and dedication to community, we are proud of our heritage which continues to build outstanding opportunities for people to develop and thrive.



Bega has facilities around Australia, with our main hubs located in: Port Melbourne, VIC, Bega, NSW, Tatura VIC, and Strathmerton VIC. We also have manufacturing facilities in Koroit, VIC, Kingaroy, QLD, and Derrimut, VIC.

For more information, please visit:

<https://www.linkedin.com/company/bega-cheese-limited/>

[https://www.begacheese.com.au/
careers@bega.com.au](https://www.begacheese.com.au/careers@bega.com.au)

We look for potential, not only performance. To be successful you will be open about your strengths and weaknesses and prepared to challenge yourself.

For Applicants

We value diversity of thinking, experiences and perspectives and listening. Bega people support each other to achieve together. Strong candidates will have a willingness to learn and adapt to changes; have a reputation for producing quality work, and have excellent communication and teamwork skills.

We look for people who demonstrate behaviours and qualities aligned with our core values: Passion for the customer, Grow our people, Invest in our future, and Support each other.

One of our core values at Bega is "Grow our people". We do this by collaborating to share knowledge and experiences, rewarding and recognising the contributions of our people, and creating an environment where we learn and maximise our own potential. All Bega employees set personal development Objectives each year and we seek to create opportunities to support their growth and development, through on the job-learning, formal learning, and learning through others.

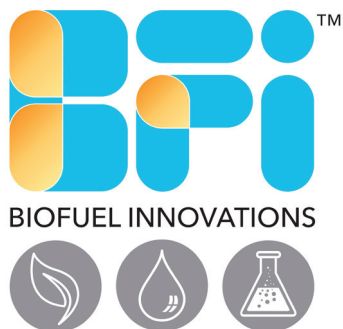
Bega have a number of programs to develop its employees, including formal training, mentoring, and other hands-on learning programs. Graduates also participate in a formal development program which further strengthens their graduate network and prepares them for the challenges and opportunities in our current world of work. Graduate positions will be available at our varying sites and we may provide relocation support to interested candidates.

Graduate Opportunities

We have positions available on our 2020 Program which commences in July. We also have positions available on our 2021 program, commencing February 2021. Further information on these programs, including how to apply, is available on our LinkedIn page

Vacation Opportunities

We are happy to take expressions of interest to conduct Industry based learning subjects. Bega is a participant in the Monash University Team Initiative (MITI) and we have previously hosted a number of Monash University students who have worked on a range of business challenges. Further information on the MITI program can be found here: <https://miti.monash.edu/>



VAC

**We look for self motivated, creative,
diligent open communicators who are
hungry to learn.**

Contact Director Dr Rebecca Yee at rebecca.yee@biofuelinnovations.com.au to express interest.

Biofuel Innovations is a Melbourne start-up founded in 2016. We research, design, and deliver cutting edge systems that close waste-to-energy loops. Biodiesel, bioethanol, biogases and seaweed are the future of fuels.

Our office is situated in Space Lab at the University of Melbourne.

For more information, please visit:

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

Vacation Opportunities

Our internship program provides tools, templates and productivity training for skills that will benefit you for a lifetime.

Graduate Opportunities

No opportunities available at the moment



Boral Australia is the largest integrated construction materials and building products manufacturer and supplier across the full range of building and construction markets.

At Boral, we are proud of our history but it's our purpose which is fundamental to ensuring our future success. We aim to create sustainable solutions for a worldwide building and construction industry. Our products, created by our people, have helped build the infrastructure and communities in all our major cities and regions around Australia.

Working in a safe, diverse and rewarding workplace our people, really do, Build Something Great™.

Boral is located all over Australia. Each state will advertise with their business requirements, so be sure to apply in the Capital City which suits you.

When you are on the program, you may also be required to work in both our Metropolitan and Regional areas, so an ability and willingness to relocate for periods of time is essential.

For more information, please visit:

<https://www.linkedin.com/company/boral/>

<https://www.boral.com.au>

Boral graduates will have the resilience to handle a complex operating environment, deal with rapid change, engage with employees at every level of the organisation and be open to

For Applicants

At Boral, we are open to considering graduates and cadets from all degrees. The Boral Graduate Program is aimed at developing our future leaders.

In return you will be rewarded with a competitive salary, a broad range of exciting experiences and the opportunity to develop important connections and networks along the way.

Our program focuses on providing graduates with real hands on experience across our business operations.

Working alongside some of the most experienced people in the business, our graduates will also have a seat at the table where they will get to actively contribute and engage with the business learning industry best practices from our key people.

Within this program you will be exposed to all facets of the business and be responsible for the delivery of real outcomes. We will also work with you to identify your strengths and potential to help tailor your career, your way!

Graduate Opportunities

Boral, Melbourne office is currently looking for Graduates and Cadets to join their 2020 and 2021 intake.

At time of application, candidates are required to hold Australian or New Zealand Citizenship or Permanent Residence. Relevant documentation will be required as part of your application.

Vacation Opportunities

No opportunities available at the moment.

Deloitte.

Biofuel Innovations is a Melbourne start-up founded in 2016. We research, design, and deliver cutting edge systems that close waste-to-energy loops. Biodiesel, bioethanol, biogases and seaweed are the future of fuels. As one of the largest professional services firms in the world, our services are as diverse as the graduates we hire. From cyber security and tech innovation through to accounting and advisory, we're looking ahead and building industries of the future. But we can't do that without our graduates.

We nurture our graduates from day one. From working with Fortune 500 companies, government agencies and not-for-profits, to participating in hackathons, mentorships, and our award-winning graduate development program, D.Academy – Deloitte grads are given an enviable start.

But the best part about Deloitte? Working on projects that matter. From building a voice-enabled hospital call bell solution and designing the Invictus Games communications roadmap, to valuating the Great Barrier Reef and responding to hacking incidents, we make an impact that matters.

And that's what truly sets us apart. The belief that we're only as good as the good we do, and the impact we make.

For more information, please visit:

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

<https://www.linkedin.com/company/deloitte-australia/graduate@deloitte.com.au>

When graduates ask us, 'What's different about Deloitte?' we like to keep the answer simple: the impact we make.

For Applicants

Deloitte looks for people that are motivated, dedicated and above all looking to make an impact that matters in their workplace and in their community. We look for people that demonstrate our Seven Signals: the desire to continuously grow and improve, have fun and celebrate, aim to be famous, play to win, talk straight, empower and trust and recruit and retain the best.

Deloitte aims to recruit and retain the best- that means we look to engage, retain and grow talent communities through a constant inflow of expert, innovative and creative people who make a positive impact in our firm and for our clients. In order to do this, we foster an environment where talent thrives; pro-actively seek opportunities to identify and attract

"Like minds"; encourage innovative learning experiences through the shared wisdom of our people; act as brand champions and invite others to do so; and, develop relationships and engage our alumni.

We provide the right kinds of tools and training to ensure all our graduates can achieve career success through mentoring, peer support and e-learning.

Vacation Opportunities

A 3-8 week paid internship that give students the chance to land a full-time role with us before they even graduate!

Graduate Opportunities

A full-time, 12-month program, which involves purpose-led projects, networking and learning opportunities, and the most innovative graduate training in Australia.

VAC

GRD



Worth doing, worth Dulux.

Dulux Australia develops and manufactures a range of paints and coatings for the Australia and New Zealand markets, which are sold into home DIY and trade markets under various brand names including Dulux, British Paints and Cabot's. We are headquartered in Clayton, Melbourne, where our Innovation Centre is also located and it is within this facility that we undertake the majority of the development work on new coatings products.

DuluxGroup is the Australian parent company and employees about 4,500 people. In 2019 DuluxGroup was acquired by Nippon Paint, the fourth largest paint company in the world. Within DuluxGroup around 130 employees work in a R&D function, with about half of these people located in our Clayton Innovation Centre.

Our head office and key R&D facility is located in Clayton, Melbourne. We also have manufacturing sites at Merrifield (new high volume waterborne paint factory on the northern edge of Melbourne) and Dandenong South (Woodcare, The website for Dulux Australia Protective Coating and Powder Coating).

For more information, please visit:

<https://www.duluxgroup.com.au>

Understand in yourself why you would want to work for that organisation, because by being sure yourself will mean that you can convince an interviewer that you really want to be there.

For Applicants

We look for people who are enthusiastic about working for Dulux, are good communicators and who work well in teams. A typical graduate chemist employed at Dulux will commence working on a project in conjunction with an experienced Dulux chemist, who will help the new starter learn all of the essential skills that they require. No prior knowledge of paint and polymer science is required (although such experience can be useful for standing out during the recruitment process).

All employees will have a development plan put in place by their managers which is reviewed on a regular basis. In addition DuluxGroup offers a graduate program for suitable employees who are seen as having leadership potential and new R&D graduates can enter this program following a competitive interview process.

Calls for the vacation opportunities are offered via the Pharmaceutical Sciences course coordinator, while the CHE4180 opportunities are offered to students who have elected to take that course. Graduate roles are advertised via our DuluxGroup careers page and via Seek.

Graduate Opportunities

We generally employ Chemical Engineering students into R&D roles at our Clayton Innovation Centre. These roles are advertised and filled as required, rather than via an annual graduate program intake. Entry to our three year graduate program is then offered to new and recently employed graduates as outlined above.

Vacation Opportunities

We currently offer vacation opportunities to students currently enrolled or who have just completed the Pharmaceutical Science course, which some students take in conjunction with a Chemical Engineering degree. To a limited degree we also offer such opportunities to Monash Chemistry students.

VAC

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ExxonMobil

ExxonMobil Australia is a subsidiary of Exxon Mobil Corporation, the world's leading petroleum and petrochemical company. Our business covers a wide range of petroleum related activities from oil and gas exploration and production (Upstream operations), to petroleum refining and supply of fuels and lubricants (Downstream operations).

ExxonMobil Australia's head office is located in Melbourne. Vacation Students and Graduates can be based in the office or at one of our main processing facilities or sites, including Altona Refinery in Melbourne's western suburbs, the Longford Gas Plant located near Sale, Long Island Point Fractionation Plant located near Hastings or YarraVile Terminal.

ExxonMobil is a global company and has affiliates located around the world.



For more information, please visit:

<https://gradaustralia.com.au/graduate-employers/exxon-mobil>

<https://corporate.exxonmobil.com/Company/Student-placement/Australia-graduate-and-vacation-student-program>

ExxonMobil is committed to fostering an environment of diversity and inclusion.

For Applicants

We engage in a wide range of education programs and recruiting activities that are intended to reach out to a diverse pool of highly qualified employment candidates who are dedicated to integrity, high-quality work and good corporate citizenship.

We consider our global workforce of more than 70,000 employees to be our greatest asset. Our career-oriented approach to developing an exceptional workforce includes recruiting outstanding talent and supporting long-term professional development.

Our graduate and mentoring program in the first 2 years provides support and guidance to young professionals. Each one of our employees is empowered to think independently, take initiative and be innovative.

ExxonMobil Award for Excellence. ExxonMobil is offering two \$5000 scholarships to Monash engineering students. Further details can be found on the Monash Engineering website.

When available, applications can be submitted through the ExxonMobil Careers page: <https://corporate.exxonmobil.com/Company/Student-placement/Australia-graduate-and-vacation-student-program>

Please note that there are currently no Vacation Student opportunities available.

Vacation Opportunities

ExxonMobil Australia's 12-week paid Summer Vacation Work Program is designed to provide opportunities to experience what it's like to work for ExxonMobil, a dynamic, global organisation that maintains its leadership position through its highly talented workforce and superior technology

Graduate Opportunities

There are currently no Graduate opportunities available.

**VAC****GRD**

Better defines the way we work and starts with asking questions like, what's next? You see, the biggest breakthroughs in the world happen by asking these two small but powerful words. With the world in the midst of a Transformative Age, we need to respond to rapidly changing circumstances. And that's what we're all about at EY.

Using the knowledge you've gained from your studies, you'll help all types of companies, from entrepreneurial start-ups to multinationals. We'll provide you with experiences that'll shape your career for years to come. Because when you grow, we do too. Discover the legacy EY is seeking to create at [ey.com/betterworkingworld](https://www.ey.com/betterworkingworld)

Will you wait for the future to happen, or take a hand in shaping it?

Take control of your career. Whether your future lies in Assurance, Tax, Transactions or Advisory, we'll provide the learning, experiences and coaching you need to become a successful professional.

At EY, there is no one path for everyone. You're encouraged to create a path that reflects your individual talents and aspirations. We'll work with you to help you succeed professionally and personally. With EY you can influence the future of your career, the businesses you work with and even the world you live in.

Graduate Opportunities

Our Graduate Program will put your knowledge to the test. Build your technical skills. Join us full-time as a graduate and you'll get early responsibility, support and training.

Vacation Opportunities

Our Vacationer Program is a great way to experience the working world during your summer (or winter) holidays. Show us what you're capable of and you may be invited to join us after graduation in a full-time position.



At PPG, we work every day to develop and deliver the paints, coatings and materials that our customers have trusted for more than 130 years. 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.

Through leadership in innovation, sustainability and colour, PPG provides added value to customers in construction, consumer products, industrial and transportation markets and aftermarkets to enhance more surfaces in more ways than does any other company.

With headquarters in Pittsburgh, US, PPG operate in more than 70 countries. Across Australia and New Zealand, PPG manufacture and distribute our products from three manufacturing sites, Auckland, Villawood and Clayton.

If you are interested in learning more about PPG, visit our website: <http://www.ppg.com.au/Home.aspx> or contact Tessa Nicolson at tnicolson@ppg.com for more information on our internship program.

PPG look for candidates who want to find meaning in their everyday work.

For Applicants

We look for people who want to use their personal strengths to succeed and make an impact from day one.

If you work for PPG, you will be inspired to learn and grow, and will have access to the support you need to identify and achieve your boldest career aspirations. Your contributions will not only meet the challenges of our global customers, but help them propel their industries forward. As a PPG employee, you will be welcomed into a culture where everyone's ideas and contributions are valued and encouraged. Just like you, we are driven to make a difference in our world.

At PPG we are committed to providing a fulfilling workplace for our employees. We take pride in providing an environment for continuous learning and embracing the ideas and diversity of others. We have a range of learning and development opportunities available to employees, including mentoring programs and internal and external courses.

Vacation Opportunities

Your interest in PPG's summer intern program will open doors for your future career and help you to realise your potential and develop new skills. In 2020, PPG ANZ will run our paid 12 week summer internship program, at our Clayton site, Villawood and Auckland sites.

Graduate Opportunities

We do have a graduate program but only Students whom have completed our Internship program are eligible therefore we do not externally promote,

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RioTinto

As pioneers in mining and metals, we produce materials essential to 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 home. Borates that help crops grow, titanium for paint – and diamonds that celebrate the best things in life.



We work in about 35 countries – in mines, smelters and refineries, as well as in sales offices, data centres, research and development labs and with artificial intelligence.

Please visit riotinto.com/graduates for more information and to apply.

We are looking for curious and creative minds who want to bring different perspectives into our company.

For Applicants

We're looking for exceptional graduates who want to learn and make an impact. Ambitious personalities with the gravitas to inspire colleagues and the curiosity and analytical mind to challenge the status quo. Graduates who are driven towards becoming the next pioneer at Rio Tinto and to be the progress.

Students must meet the necessary requirements and our recruitment process has four stages once you have successfully submitted your application: online gamified assessment; online cognitive and abilities testing, online pre-recorded video interview and a face-to-face interview or to partake in an assessment centre. All applicants must have the required rights to work in the country they are applying for a role in.

You can work in exploration, looking to discover the next mineral source, or use data analytics to improve productivity. You can work in cyber security and mine geology, or with our logistics team, helping to get products to our customers faster and more reliably. You can help plan our mine infrastructure, or with our HR team, to make sure the right people are in the right place at the right time. The possibilities are endless.

Graduate Opportunities

Our 2021 Australian Graduate Programme is now open, closing on 29th March 2019. We're seeking graduates with degrees in various engineering fields, computer and data science, information systems and technology, geosciences, hydrogeology and HSE (health, safety & environment). We will also be opening applications for our US, Canada, Mongolia, South Africa and New Zealand operations later in the year.

Vacation Opportunities

Our Australian vacation programme offers paid work experience for university students – typically in their penultimate year – over a 12-week period from early December to February. Roles can be based at any of our Rio Tinto locations and relocation and accommodation is provided. Applications for the programme open mid-2020.



Suez Oil & Gas Systems is part of the global Suez organisation that employs about 90,000 people across five continents. Suez' focus is the sustainable use of resources and its activities include delivering clean drinking water, treating waste water and collecting and recycling waste for millions of people worldwide. Suez Oil & Gas Systems (SOGS) has an established track record as a leading international supplier of modular process plants and complete process trains to a range of industries including the Oil & Gas and Petrochemical industries.

Our clients include many major Oil & Gas companies such as Shell, BP, ConocoPhillips, McDermott, Petronas, Chevron, ONGC, Exxon Mobil, Technip and Santos. SOGS is a strongly vertically integrated company providing services in project execution from front-end process engineering, through to detailed project engineering and management, and ultimately fabrication, commissioning and maintenance of the processing plant.

The SOGS product range includes:

- Oil & Gas production facilities
- Crude Oil stabilisation & treatment
- Refining & Petrochemical applications
- Produced Water treatment systems
- Solids handling & Wellhead Desander systems
- Energy & Power generation

SOGS has designed and fabricated processing packages for some of the major oil and gas developments that have occurred in recent years. These include gas processing packages for Jemena's Northern Gas Pipeline in the Northern Territory, INPEX's Ichthys LNG project off the Western Australian coast, Santo's GLNG project in Queensland, Exmar's floating LNG unit in Columbia and Oil Search's LNG project in the highlands of Papua New Guinea.

Suez employees embrace the challenges of working in a global environment, enjoy creating innovative solutions and are ready to “roll up their sleeves” to get the job done to the satisfaction of all parties.

SOGS is based in Rowville, Melbourne and also has offices in Singapore, Abu Dhabi and Houston. Our engineers regularly travel around the globe to visit clients and suppliers based in countries such as Oman, UAE, Turkmenistan, USA, Brazil, India, UK, Australia, New Zealand, China, Thailand, Indonesia and Malaysia. The offices of our parent company Suez are located around the globe with headquarters based in Paris, France.

For Applicants

SOGS employs a wide range of engineers, including chemical, mechanical and electrical, as well as technical specialists. We offer extensive on-the-job training, development and mentoring tailored to the position and the interests and skills of the individual. Most training will tap into our extensive worldwide online resources managed by Suez and may also include internally or externally run courses. Specialisations include process design, mechanical design, detailed engineering, procurement, fabrication, commissioning and site services.

Refer to the SUEZ Water Technologies website Careers page for details of current available positions. Melbourne positions may also be advertised directly via the Monash University Chemical Engineering Department.

Refer to <https://www.suezwatertechnologies.com/industries/upstream-oil-and-gas> for information about Suez Oil & Gas Systems and www.suez.com for information about the global Suez organisation.

There are currently no Vacation opportunities available.

Graduate Opportunities

Due to an upturn in the Oil & Gas market SOGS anticipates that we will hire some graduate process and/or project engineers during 2020.



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The GREEN Program (TGP) is an award-winning, experiential education program for young leaders in sustainable development. Our mission is to educate and empower future sustainability leaders through innovative models of experiential education, travel, and adventure.

Created for students, by students, TGP was introduced in 2009 as a new model for education abroad— driven by a desire to provide purposeful, hands-on industry exposure at a fraction of the time and cost. Inspired by the United Nations’ Sustainable Development Goals, our short-term, accredited, career focused approach creates transformative experiences for students around the world. We unlock doors to governmental, public, and private facility access, exclusive tours, and unique bucket-list experiences.

Our team is happy to connect with any interested student to discuss our programs and their professional goals. Feel free to get in touch by emailing us at info@thegreenprogram.com!

Awards and Recognition

2019 Rad Awards “Educator of The Year”
2018 “Company of the Year”
The Stevie Awards Women in Business
2018 Forbes 30Under30- Education
2017 “Best Education Abroad Provider”
Global Youth Travel Awards 2015
“#1 Summer Study Abroad Program”
StudyAbroad101 2014 “Green Innovator of the Year”
Clean Air Council, GreenFest Philly Top 50 Social Impact Ventures in the World
New York Stock Exchange Top 10 Young Company Driving Social Change
United Nations Social Innovation Summit Top 3 Student-Founded Companies in the World- New York Stock Exchange

For Applicants

We don’t want students to choose between a job, internship, or a study abroad experience. We want them to do it all. We allow students to maximize their winter, spring, and summer breaks by providing them with a fulfilling educational abroad experience within just 10 days. In fact, 99% of GREEN Alumni say that TGP has refined their purpose professionally, personally, or academically. Alumni often credit TGP for helping them attain careers at companies such as General Electric, SpaceX, Tesla, Boeing, NASA, NREL, and more.

Now Enrolling | Summer and Winter Break 2020

– Japan: Disaster Mitigation & Nuclear to Renewable Transitions – Peru: Water Resource Management & Sustainable Practices – Iceland; Renewable Energy Innovation & Sustainability – Nepal: Microgrid Systems for Rural Development

We have traveled with more than 3,000 interdisciplinary student leaders and young professionals from 400+ universities and 70 countries around the world, with 58% of our alumni from an engineering discipline or major!

Learn more and apply here: www.thegreenprogram.com

LEARN GLOBAL, ACT LOCAL

SHORT-TERM, EXPERIENTIAL EDUCATION
FOR OUR WORLD'S MOST PRESSING ISSUES
IN SUSTAINABLE DEVELOPMENT

The IGP logo consists of the letters 'IGP' in a bold, white, sans-serif font, centered within a solid black square.

EXPLORE THE GREEN PROGRAM

2020 SUMMER & WINTER BREAK
NOW ENROLLING

»» CUSCO, PERU

WATER RESOURCE
MANAGEMENT &
SUSTAINABLE PRACTICES

»» REYKJAVIK, ICELAND

RENEWABLE ENERGY &
SUSTAINABILITY

»» FUKUSHIMA, JAPAN

DISASTER MITIGATION &
NUCLEAR TO RENEWABLE
TRANSITIONS

»» KATHMANDU, NEPAL

MICROGRID SYSTEMS FOR
RURAL DEVELOPMENT



JOIN THE ADVENTURE &
APPLY TODAY:

WWW.THEGREENPROGRAM.COM



As it stands, not every child in Australia has access to the education they deserve: children from the lowest income households are on average three years behind in school. Teach For Australia seeks to break the cycle of educational inequity, to level the playing field for young people across Australia.

Teaching is not an easy profession – and the nature of the program is even more challenging. We provide Associates with a comprehensive network to support their professional development and successful completion of the program, and to maintain their health and wellbeing.

As an Associate in our award-winning Leadership Development Program, you'll teach subject areas directly related to your previous studies – and you'll become part of a dedicated community committed to tackling educational inequity.

As a leader in the classroom, you'll share your passions with young people and act as a role model and mentor. You'll develop the skills and experience to enable you to lead effectively, with the opportunity to make a tangible positive impact on students, schools and communities – every single day. Following the program, whether you continue teaching or aspire to a career in business, policy, innovation or elsewhere, Teach For Australia will continue to inspire, connect and empower you to lead change.

We offer school placements in Victoria, Tasmania, the Northern Territory and Western Australia- in metro, regional and remote locations. Apply here <https://teachforaustralia.org/join-tfa/leadership-development-program/apply/>

Lead and teach from day one through the Teach For Australia Leadership Development Program. Push yourself to break the cycle of educational inequity, all while earning your Master's.

For Applicants

Over two years, you will:

- Teach at a school serving a low socioeconomic community, with full salary and benefits;
- Earn a Master of Teaching (Secondary) (Professional Practice) through ACU on an assisted scholarship;
- Receive one-on-one coaching and mentoring to accelerate personal, professional and academic growth.

Your Teaching and Leadership Adviser (TLA) is an experienced teacher who will provide rigorous one-on-one coaching, regular classroom observations and pastoral care to guide your development as a teacher and leader throughout the program.

Your Academic Mentor will support and supervise your progress throughout the degree and guide your achievement of the Australian Professional Standards for Teachers.

Your School Mentor will be an experienced teacher at your placement school who will provide day-to-day practical support and assists with integration into life at the school and within the local community. We offer opportunities for penultimate university students to make an impact and develop skills before applying for the program. Contact us for more information.

Graduate Opportunities

The Leadership Development Program commences in mid November 2020 and you will enter the classroom when the new school year commences in 2021.

There is a shortage of STEM teachers in Australia and with an Engineering undergrad you will likely find you are able to teach Maths and Science.

We offer opportunities for penultimate university students to make an impact and develop skills before applying for the program. Contact us for more information.



thyssenkrupp

thyssenkrupp Industrial Solutions are a market leading provider of engineering and construction services for industrial plants and systems. thyssenkrupp Industrial Solutions are also one of the leading technology providers in the chemicals field. We have built more than 2,500 chemical plants across the globe using our proven and patented technologies in the electrolytic production of hydrogen from water, ammonia synthesis, methanol synthesis and more.

Our Australian team specialises in green hydrogen and derivatives. As society transitions towards a green and sustainable future, industrial plants will need to reduce their reliance on coal and natural gas as a feedstock to generate hydrogen and as a source for power generation. Our green hydrogen experts are therefore developing innovative solutions, which will use hydrogen produced from our own water electrolysis technology to replace or supplement coal or natural gas based processes in new and existing plants. Power for the water electrolysis process will be supplied by renewable sources such as wind turbines and solar panels.

Our expertise is in delivering integrated solutions for our clients, where we develop and design optimised concepts for the entire hydrogen value chain from power generation to hydrogen generation and finally to the downstream user of hydrogen (e.g. chemicals, steel production, mobility).

Our Australian team is based at our office in Melbourne's CBD. We also have international offices in many locations across the globe with our global headquarters located in Germany.

Applicants can apply for the vacation program by sending through their CVs to the email addresses below by July 2020.

Karan.bagga@thyssenkrupp.com

Garen.altinkaya@thyssenkrupp.com

Students can find out more about thyssenkrupp Industrial Solutions by visiting our websites

<https://www.thyssenkrupp-industrial-solutions.com/en>

<https://www.thyssenkrupp-australia.com/en/>

Graduate Opportunities

Unfortunately, thyssenkrupp Industrial Solutions are not offering graduate opportunities at this point in time.

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thyssenkrupp Industrial Solutions are strong believers in innovation. As we are one of few companies leading the industry in green hydrogen solutions, we are required to think analytically to develop creative solutions for new problems.

For Applicants

Much of the work we do is "first of its kind", therefore a willingness to learn, desire for self-improvement and interest in being involved in new types of work are traits we look for in employees. Teamwork and communication are also vital to our day to day roles as regular collaboration internally and with clients are adamant to the successful complete of projects. The professional development of our employees often takes place in the form of being involved in a wide range of projects in order to gain experience and knowledge. Our wide range of clients allows our team to work in different streams within the hydrogen derivatives division, ranging from chemicals to steel production to hydrogen as fuel for cars.

thyssenkrupp Industrial Solutions also support their chemical engineers in obtaining charterhip with The Institution of Chemical Engineers (IChemE) by providing assistance in preparation of reports and preparing for interviews.

International students are encourage to apply. Please note that conditions may apply, such as requiring a working permit.

thyssenkrupp Industrial Solutions employees are regularly required to model processes and systems using Aspen HYSYS, Aspen Plus, MATLAB and VBA (excel). We therefore recommend students develop their modelling capabilities.

We however look for more than just an applicant's technical capabilities, therefore involvement in extra-curricular activities and volunteer work are good ways to develop the soft skills that we look for in an employee.

Vacation Opportunities

thyssenkrupp Industrial Solutions will be looking to hire a vacation student to work from August 2020 onwards in our Melbourne CBD office. The program will run for a few months and working hours will depend on the availability of the student. The program will allow the student to gain insight on the type of work that we do and introduce them to the chemicals industry. The tasks that vacation students typically undertake during these programs vary with the projects available at the time.



With 14,000 people across 18 countries, BlueScope is a leading international supplier of steel products and solutions for building and construction markets. As Australia's largest manufacturer, BlueScope has a portfolio of brands that includes COLORBOND®, ZINCALUME® and TRUECORE® steels and the LYSAGHT® range of building products.

Steel plays a critical role in sustainable development. To BlueScope, sustainability means developing, manufacturing and selling steel products and solutions in a way that provides for a sustainable future, with a focus on continuous improvement, adopting new operating methods and anticipating new products for the future.

BlueScope's long-term growth is underscored by the sustainability of steel and the critical role it will play in supporting a sustainable society. We take a life-cycle approach, looking at the impact of a product over its entire life and focusing on the four principles of a circular economy: reduce, reuse, remanufacture and recycle. To deliver long-lasting value and meet the expectations of all of our stakeholders, our business must transform on all fronts. Read BlueScope's latest Sustainability Report at bluescope.com/sustainable-steel.

We're proud to have been named an Inclusive Employer for 2019–2020 by the Diversity Council of Australia. We believe that our people are our strength. Having a diverse and inclusive workplace enables us to improve our capability and ensure continued, sustainable success.

In Australia, BlueScope's head office is in Melbourne and there are numerous facilities around the country and the globe. Our largest Australian facilities are located in Port Kembla, NSW and Western Port (Hastings), VIC.

At BlueScope, we welcome applications from recent graduates who are looking to kick-start their career.

For Applicants

With diverse roles across the Australian business, we are always looking for enthusiastic applicants with a relevant qualifications in science, the arts, business/commerce and engineering, along with a thirst for learning and taking on new challenges!

Working at BlueScope will give you invaluable, extensive exposure to multiple business streams and stakeholders throughout our business. We believe our people are our strength and we value our employees' ability to learn and attain new skills, with options for learning and development. Our people are our strength. The opportunities at BlueScope are diverse, with teams in engineering, operations, chemistry, IT, finance, supply chain and sales and marketing. We do not just rely on attractive pay and benefits to reward our people—recognition programs also reward business success. Here are some of the other benefits of working with BlueScope:

- flexible work arrangements;
- study assistance;
- options for salary sacrifice;
- career-development opportunities; and
- Employee Assistance Program.

Be part of the team that creates some of the world's most advanced steel products. Find out more at bluescope.com/life-at-bluescope or send an email to asprecruitment@bluescopesteel.com.

**VAC****GRD****INT**

Woodside is the pioneer of the LNG industry in Australia and the largest Australian natural gas producer.

We have outstanding base business of world-class assets and strong growth prospects – plus the experience, capability and vision to make things happen.

We will play our part in the global response to climate change by continuing to provide reliable and sustainable energy in a lower-carbon future.

We're committed to increasing opportunities for Indigenous Australians throughout our business, and are recognised for our leading role in the Australian oil and gas industry.

As part of our Reconciliation Action Plan (RAP), we have a dedicated Indigenous employment team overseeing a range of pathway programs and support options including:

- Our Summer Vacation Program for penultimate year students and consideration for our Graduate Development Program.
- Additional vacation work placements throughout your degree.
- Support while completing your degree, including opportunities to meet potential mentors and colleagues.
- Non-tertiary pathways.

Graduate Opportunities

Woodside's Graduate Development Program plays an important role in building our long-term technical and leadership capabilities. We've refined our approach to graduate development over more than 30 years to ensure Woodside graduates reach professional independence in an industry-leading timeframe. We're proud to be recognised as one of Australia's top Graduate employers.

We know developing and growing our people is key to achieving our company growth plans. Our size and pace means more opportunities, earlier in your career.

Our success is driven by our people, and we aim to attract, develop and retain a diverse, high-performing workforce.

For Applicants

Woodside's three-year, competency-based program offers experiences and opportunities to develop both your technical and leadership skills, including:

- Rotational assignments – both within and outside your discipline.
- Site visits to our plants in Karratha, Western Australia.
- Extensive on-the-job training.
- Structured business and technical development.
- Individual technical mentors and graduate buddies.
- A proactive and dynamic graduate community, as well as active employee community groups for gender equality, reconciliation between Indigenous and non-Indigenous Australians, and LGBTI+ staff and allies.
- Community volunteering opportunities.
- Heavily subsidised gym membership.
- A competitive remuneration package, featuring performance-based incentives, share plans, above-industry superannuation contributions, and a generous health insurance allowance.

Vacation Opportunities

We offer a 12-week structured internship program to university students nearing the end of their degrees.

The Summer Vacation Program is a change for us to get to know you, and for you to apply your growing knowledge to our business. From here, you could be considered for the Graduate Development Program.



A career at FM Global is the beginning of something big, a journey to make the world a more resilient place and to discover your true potential. From researching potential threats to building client relationships and helping maintain FM Global's centuries-old reputation for excellence, a career here offers excitement, room for growth and opportunity. We're what we call an "uncommon" insurance company. At FM Global, we offer a variety of opportunities to current students and recent graduates all over the globe.

Resilience can only thrive when people are supported and treated with respect. This deep-seated belief has guided us from the very beginning. Put simply, we believe in treating people like people and valuing what makes each of us unique. We encourage all students, like every one of our employees, to reach his or her full potential, regardless of race, age, ethnic background, gender, religion, disability or sexual orientation.

Applications can only be accepted from applicants who are Australian or New Zealand citizen, or those who have Australian permanent residency (PR) status at time of application.

Learn more about FM Global through our website:
<https://www.fmglobal.com.au>

To connect with us, follow us on our social media channels:
Linkedin: @FMGlobal
Facebook: @FMGlobalcareers
Youtube: @FMGlobal
Instagram: @fmglobal

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Whether you're a recent graduate or an accomplished engineer, researcher or scientist, you'll discover a supportive and inclusive culture at FM Global.

For Applicants

We are looking for all who can appreciate the uncommon career that they will have at FM Global because even though we're in the business of research-based prediction, you'll never know where your next project or your career will lead you to. Employees working at FM Global will typically tell you about the camaraderie with colleagues and clients, the challenging work and the excitement of being part of a successful organisation. They will also talk about the supportive culture and work/life environment that FM Global provides. We are looking for people who share a solid set of values, based on teamwork, trust and flexibility.

Every employee has access to relevant tools and training, and professional development is based on individual merit.

An engineering career at FM Global opens a world of exciting opportunities, including training at our state-of-the-art SimZone. Our world-class engineering department inspects facilities, assesses exposures, and helps our clients take active steps to reduce their risk. Blending innovation and history, data and technology, research and engineering, at FM Global, you'll be empowered to mitigate loss for our clients by providing proven, scientifically based solutions.

We provide equal employment opportunities and our human resources policies and programmes support fair dealings with employees. We are also proud Corporate Partner of the Society for Women Engineers (SWE), an association that provides valuable recruitment and networking opportunities for women engineers.

Vacation Opportunities

An internship at FM Global gives you a real-world experience, and a competitive edge when you enter the work force upon graduation. We recruit at top colleges and universities and offer a variety of internships and other career-building opportunities. Available opportunities and our application process can be found at <https://jobs.fmglobalcareers.com/>

Graduate Opportunities

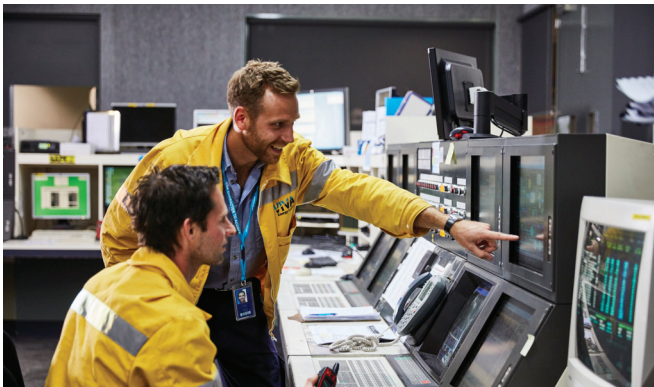
We are seeking for graduates with degrees in various engineering fields and interested applicants will be able to apply for available roles through our website at <https://jobs.fmglobalcareers.com/>



VAC

GRD

We are Viva Energy, one of Australia's leading energy companies. Every day we help Australians reach their destinations by making, importing and delivering the fuels, lubricants, chemicals and bitumen they need to get there. We are the exclusive Shell licensee in Australia, and supply around a quarter of Australia's fuel through our extensive network of over 1,250 service stations and through our commercial partnerships with some of Australia's biggest companies in the aviation, marine, transport, resources, construction and manufacturing industries – we help industries reach their destinations too. The diversity of our business creates real opportunities for our people. Our people are known for achieving results, working together and outstanding customer service. As a company, we also have a deep commitment to safety, care for the environment and passionate support for our local communities. Together we are committed to building Australia's energy future.



Australia wide with our Refinery located in Geelong. We have terminal and corporate offices across Australia with our head office being located in Docklands, Melbourne. When we are taking applications, they will be via our careers site; <https://www.vivaenergy.com.au/about-us/careers-and-opportunities> LinkedIn; <https://www.linkedin.com/company/viva-energy-australia>, and University Careers portals. Connect with us and follow us on our LinkedIn page, <https://www.linkedin.com/company/viva-energy-australia> and come along to SMUCE Industry Seminars where you can hear directly from our team.

Viva Energy Australia is driven by people, To continue to be successful and to grow our business as our customer expectations evolve and our industry changes we have introduced our new seven strategic themes.

For Applicants

Fundamental to delivering on these themes will be our individual and team behaviours. That is how we work with each other, how we think about our challenges and how we deliver our plans. Like our strategy, our behaviours also need to evolve to help us meet new and complex challenges and opportunities. Recently, we asked a broad cross-section of our people about what they believed was important for how we work in order to deliver to our new strategic pillars and our ongoing success. Thank you to those who were involved in defining these behaviours. The senior leadership group has taken your feedback and ideas and we have created three new behaviours that we believe will help everyone at Viva Energy deliver new and exciting results for our customers. We seek individuals who can demonstrate the ability to work Better Together, who Deliver Amazing Results and are Customer Obsessed.



Our Guiding Principles

Driven by People and supported by passionate line manager/coaches

Individuals are empowered to own and drive their development supported by line managers who genuinely care about their development and support individuals to achieve their career development goals.

Honest, regular individual conversations

Development conversations will be tailored and personalised to the individual and will be open and honest about future development opportunities.

Values People

Individuals should feel they have been heard by their Line Manager who genuinely supports their development plan which focuses on their interests and what they want to achieve for their career.

Provides Challenge

Development should be challenging, taking the individual out of their “comfort zone” with support from their Line Manager who can provide continuous coaching and feedback.



Provides new skills and knowledge

Acquiring new skills, knowledge and responsibility potentially leading to new opportunities internally or externally.

70/20/10

Maximising on the job development (70%), learning from people within our business or external networks (20%) and structured training and development programs (10%).

Inspires people to be the best they can be

Personalised development, focused on the individual, helping them to achieve the outcome they want to fulfil their career aspirations.



Vacation Opportunities

We offer Summer internships for Chemical Engineers working on a variety of business related project and activities. Candidates must have residency and full working rights.

Graduate Opportunities

Our Graduate program for 2021 will be advertised in April 2020. Chemical Engineering graduates work from our oil Refinery in Geelong. Candidates must have residency and full working rights.

**VAC****GRD**

A leader in Australia's FMCG industry, Carlton & United Breweries are known for their diverse portfolio of brands, ranging from Victoria Bitter to 4 Pines; Strongbow Cider to Great Northern. Beyond the brands, CUB is built on a foundation of pushing the boundaries with innovative ideas that transform dreams into results. Informality is at the core of how CUB operates; collaboration and candour are how its people come together to own their work and make an impact.

GRADUATE PROGRAMS

DREAMERS
INNOVATORS
LEADERS



Our head office is in Southbank, Melbourne, and most of our graduates will be based here, or in our brewery in Abbotsford. However, our Supply Management Trainees may be required to relocate to one of our breweries in Queensland (Yatala) or Tasmania (Cascade). Beyond the program you may end up having a career throughout Australia!

Applications are open now and close strictly on April 12th: <https://cub.com.au/careers/talent-programs/>
<https://cub.com.au/careers/graduate-programs/>

As part of AB InBev, CUB employs world leading people management practices through a structured People Development program.

For Applicants

We are looking for our next generation of leaders. For CUB that means our graduates and interns are:

- Able to lead with confidence and collaborate with others
- They dream as big as we do
- They are resilient and love an environment where change is the norm,
- They can keep pace with our fast pace business and industry
- They will seek out new ideas in order to be the best

The People Development cycle is supported by one-on-one manager monthly coaching and underpinned with formal learning experiences delivered through AB InBev University programs.

If you think you're right for one of our programs, respond to our job advertisement and complete the application form available at our website. You will need to provide:

- Your CV
- Your most recent academic transcript
- Evidence of your Australian Working rights (passport, visa, etc.)

We assess applications on a rolling basis, so get in as early as possible for the best chance!

Vacation Opportunities

we have a variety of summer intern programs available, for penultimate students of any discipline. You will complete a project in one function for two months, with a mentor and an opportunity to present your outcomes.

Graduate Opportunities

We have several graduate programs starting in early 2021: Graduate Management Trainee, Supply Management Trainee, Analytics Management Trainee, and Technology Management Trainee. Visit our careers site to find out more about these programs on offer.



**Carlton & United
Breweries**

**DREAMERS
INNOVATORS
LEADERS**

At Carlton & United Breweries, it's not about what you studied,
or where you worked – **it's about what you can do.**

Discover more about a career with CUB at www.cub.com.au



VAC**GRD**

GLENCORE

Glencore is one of the world's largest diversified natural resource companies and leading integrated producer and marketer of commodities. Glencore's customers include industrial consumers, such as those in the automotive, steel power generation, oil and food processing sectors. Glencore also provide financing and logistics to producers and consumers of commodities and sugar.

We are Australia's largest coal producer with 11 mining complexes across NSW and Qld. We manage 20 Operating Sites and we are a Port Operator and a Rail Operator. Our geographic region spans North to South 2052 km. We produce quality thermal and coking coal for export via five key coal chains and ports. We have a strong safety and environmental performance and play an active role in the development of low emission coal technology.

Glencore has copper and zinc operations across NSW, the Northern Territory and Queensland. In Queensland, Mt Isa Mines operate two separate mining and processing streams. They mine the largest zinc resource base and the biggest underground network of copper mines in the world. Mt Isa Mines provide work for almost 5,000 employees and contractors.

In NSW, Glencore CSA Mine is operated by Cobar Management. The CSA Mine is an underground copper mine located in Cobar, Central Western NSW. CSA Mine employs over 300 people. Glencore's McArthur River Zinc Mine is one of the world's largest providers of zinc, providing approximately 3% of the world's total zinc resources. McArthur River employs over 400 people.

For Applicants

Ongoing training and education.

- Support for approved external training courses.
- Structured performance development program.
- Graduates complete a Leadership Development Program.

Students can apply for either the graduate or vacation program via our career's website:

<https://www.glencore.com/careers/graduates>

To ensure students are alerted to any relevant Graduate or Vacation Programme opportunities in their local region, as they are advertised, we encourage them to register for a 'Job Alert Profile'

When submitting an application, it is imperative that the students address all of the selection criteria; which includes a cover letter, resume and academic transcripts.

Other Information:

Students can contact the Glencore Human Resources Team at Graduates@glencore.com.au.

Graduate Opportunities

All Glencore Graduate program opportunities will be advertised on our careers website **here**.

The Glencore Graduate Program is a 2 year program where graduates are assigned to mine sites across the business.

Vacation Opportunities

All Glencore vacation program opportunities will be advertised on our careers website **here**.

The Glencore Vacation Program is a 12 week paid program where the students are assigned to one of our mine sites.



MMG was founded in 2009 to become the world's most respected diversified base metals company. We mine to build wealth through the development of our people; the investments we make in improving local capability; and the value we deliver to our shareholders. We operate and develop copper, zinc and other base metals projects across Australia, the Democratic Republic of the Congo, and Peru. We also have significant exploration projects and partnerships across Australia, Africa and the Americas. Headquartered in Melbourne, Australia, we are listed on the Hong Kong Stock Exchange (Hex 1208) and Australian Securities Exchange (MMG).

Chemical Engineers are likely to join us in our Research and Development business functions which are located at our regional hubs in Ballarat, VIC, Wodonga, VIC and Wyong, NSW. Full relocation support is available for those looking to make the move to join us.

For more information, please refer to <https://www.mmg.com/careers/>

At MMG, we assess candidates against the essential and inherent requirements of the role by looking at their skills, knowledge, experience, qualifications, values and behaviours.

For Applicants

We have formal annual personal development programmes for every employee and a focus on internal promotions, mobility and secondment opportunities. We also have other sponsorship opportunities including Monash MMG Scholarship

Vacation Opportunities

We typically offer summer vacation employment to undergraduate students.

Our Vacation Employment Program provides an opportunity to gain practical experience and obtain an internal view of possible career options as well as supporting local universities close to our mining operations.

Graduate Opportunities

We typically advertise all Graduate positions the year before the intake.



GHD is one of the world's leading professional services companies operating in the global market sectors of water, energy and resources, environment, property and buildings, and transportation.

GHD is committed to sustainable development. It aspires to improve the physical, natural and social environments of the communities in which it operates. The firm's Corporate Social Responsibility program, GHD in the Community, is designed to produce positive social and environmental impacts. These program sponsors or otherwise supports organisations including Engineers Without Borders around the world.

GHD is able to provide a process-led response to clients' projects, and utilise a broad range of services to minimise interfaces. Where possible, the focus is on project execution and delivery, and GHD can tailor the engineering requirements to suit the execution strategy, to optimise value.

We work across a number of industries including commodity chemicals, fertilisers, explosives, petrochemicals, nuclear residue processing, chemical processing, the home and personal care industry, the timber treatment industry and energy from the waste industry. GHD can provide safety in design and risk assessment services such as HAZID, HAZOP, HAZCON and HAZCOM study facilitation, LOPA and SIL studies along with hazardous area classification, design and compliance.

At GHD, employee ownership is at the core of our culture.

For Applicants

Our people are empowered to share knowledge, collaborate, and create lasting community benefit in partnership with our clients. Mobility opportunities across countries, disciplines, and markets provide career advancement and job enrichment, as well as a multi-cultural, diverse experience in our globally connected network.

GHD's employee owned status is a powerful point of differentiation and helps drive our passion and accountability in how we serve our clients, deliver projects, and pursue new opportunities.

We invest in the growth and development of our people as the next generation of owner leaders. GHD is the place for aspiring people to thrive, achieve their career goals, and make a lasting impact.

For more information, visit <https://www.ghd.com/en-au/careers/graduates.aspx#grad>

More Information:

Website: <https://www.ghd.com/en-au/index.aspx>

Graduate Opportunities

The GHD Graduate Development Program is an integrated, holistic approach to developing future leaders and technical specialists. Over the two-year program, you will learn about our business and our values, your team and most importantly, yourself. You will develop your decision-making, communication, technical and critical leadership skills, access personal mentoring, and participate in a variety of development activities.

There are no vacation opportunities being provided currently.



Fonterra is a global dairy nutrition company owned by 10,000 farmers. We're a world leading dairy exporter – shaping the industry in quality and innovation. We share the goodness of dairy nutrition with the world through our brands, farming and processing operations across four continents.

Our portfolio of well-known brands includes Anchor, Anmum, Anlene, NZMP and Farm Source. Made using trusted processes and the highest quality natural dairy, our brands are loved by consumers in New Zealand, and around the world.

In Australia, we employ over 1,500 people across the country. Our headquarters are in Richmond, Melbourne, but we also have six manufacturing sites across Victoria and Tasmania and sales offices in Sydney, Adelaide, Perth and Brisbane.

For more information, please visit:

<https://www.fonterra.com/au/en.html>

<https://www.fonterra.com/au/en/careers/graduate-careers.html>

We are looking for students with outstanding academic records, strong analytical and interpersonal skills, intellectual curiosity, and great ambition.

For Applicants

At Fonterra we truly believe we can develop future thought leaders by providing them the best experience at the beginning of their careers. To support this, we're offering a graduate program here in Australia – a unique, challenging and exciting experience in an environment where your contribution and ideas are welcomed.

When it comes to our graduate program we aim to attract, recruit and select a diverse group of graduates. Embedding diversity and inclusion in our culture is crucial to our long-term success, as well as being the right thing to do to support our people and our communities.

Vacation Opportunities

For more information, please visit <https://www.fonterra.com/au/en/careers/fonterra-careers.html>

Graduate Opportunities

The 2-year Fonterra Graduate Program is a constant focus on innovation and improvement. We are always challenging boundaries and finding new ways of working. With and access to a tailored development plan and mentored by senior management and coached by your rotation supervisors.

MARS

Tomorrow starts today

Mars is behind some of the best loved brands in the world across multiple segments including Mars Petcare, Mars Wrigley Confectionary, Mars Food and Mars Edge. We're a family business that's been making products for people (and the pets that people love) for more than 100 years.

We're 100,000 self-proclaimed Martians—we're pet obsessed, confectionery lovers, foodies, dream chasers and community builders— working across 76 different countries. Here in Australia, we're a family of over 2,200 associates spread across 9 locations across New South Wales, Queensland and Victoria. Our seven factories produce 44 well-loved brands. We're also proud to announce we've been recognised as the Best Places to Work in Australia by Great Place to Work!

Chemical Engineers are likely to join us in our Research and Development business functions which are located at our regional hubs in Ballarat, VIC, Wodonga, VIC and Wyong, NSW. Full relocation support is available for those looking to make the move to join us.

**What do M&M's®, Pedigree®, Extra®, Royal Canin®, MasterFoods®, Skittles®, Schmackos®, and Snickers® have in common?
They're all made by Mars!**

For Applicants

Our ideal candidates will be naturally collaborative and curious. You'll know how to get things done, through formal and informal channels. You will also have examples of how you demonstrate accountability and delivery of consistent results. We want candidates who have learned from their mistakes and seek continuous improvement for self-development and growth.

Whether you're just starting a career or an expert in your field, a career at Mars means you'll have access to many exciting and challenging jobs across our diverse businesses. Learning is done on-the-job and we value both deep and broad experiences. It means you'll have the freedom to explore, discover and pursue the passions that get you going every morning.

Because here, you'll grow beyond your current aspirations and develop the whole you. Joining our Graduate program, which is known as The Mars Leadership Experience, will kick off 3 rewarding years packed with great experiences, opportunities and learning. Our program is designed to build both your functional/technical skills, as well as providing you with stretching leadership opportunities to prepare you for an exciting career.

Graduate Opportunities

Applications to join the Mars Leadership Experience graduate program are due to open later in the year. Check out our website <https://careers.mars.com/au/en/students-graduates> to learn more and pre-register your interest.

There are no vacation opportunities being provided currently.

7

Researcher Profiles

Similar to Company profiles, these profiles give a summary of some of the researcher at Monash University. The profiles include research fields, significance and impacts made by the research team and opportunities available for students.

Please keep in mind that these profiles only represent a few researchers at Monash University. If you are interested in joining a research team, contact the Monash University Chemical Engineering Department.

SMR

Summer
Research

MST

Masters
Opportunities

PhD

PhD
Opportunities

INT

Opportunities for
International students

PROFESSOR MARK M. BANASZAK HOLL HEAD OF DEPARTMENT



Research Interests

My research interests include:

1. Biomedical applications including bone and ligament failure and drug delivery
2. The circular economy of polymers and other materials and membranes for bio separations.

Current Projects and Impacts

My team is currently working on anterior Cruciate Ligament failure; bone structure and failure; circular economy of paint; membranes for bio separations; drug delivery for anticancer applications

The significant impacts made by my research are new mechanisms of ligament failures and design criteria for nanomaterials for drug delivery

Student Attributes

Masters students, PhD students and International students are eligible to join my research team.

PhD and Masters Research Attributes

Eligible PhD and Masters students are invited to discuss future research opportunities.

Vacation Work Opportunities

Undergraduates are invited to discuss vacation and term research work opportunities.

International Student Work Opportunities

Undergraduates are invited to discuss vacation and term research work opportunities.

Application Process

Interested students should discuss research opportunities with Prof. Banaszak Holl and/or discuss opportunities with the post-docs and PhD students in his laboratory.

For more information, please visit:

<https://bhgroup.eng.monash.edu/>

PROFESSOR XIWANG ZHANG



Research Interests

My research interests lie in developing high-performance membranes and catalysts for energy-efficient separation, the production of clean water from alternative sources, resource recovery from waste and, solar energy utilisation.

Current Projects and Impacts

Two-dimensional (2D) membranes for ion separation; High-performance virus filter for plasma processing; High permeable mixed matrix membranes for water processing; Solar-thermal desalination technology for energy-passive freshwater production; Solar-driven low-pressure membrane filtration system for fit-for-purpose applications; Dairy farm manure management and nutrients recovery. Some new projects are expected to come later.

Our research projects focus on the challenge of increasing energy consumption and resource depletion in existing industrial processes. By reducing energy consumption, utilising renewable energy and recovering resources, the technologies developed in our projects make key industries more energy-efficient and environmentally friendly, which underpins the sustainable development required in many countries.

Our research achievements were covered by more than 50 media outlets from more than 10 countries, including The Australian (the most circulated newspaper in Australia), ABC radio (West Australia and South Australia), Global Times, Science Daily, etc.

Student Attributes

Masters students, PhD students and International students are eligible to join my research team.

PhD and Masters Research Attributes

Only PhD positions are available although Masters students could be involved in some projects. Students with a solid background in Chemical Engineering, Environmental Engineering, Chemistry, Materials Science and Engineering are welcome to apply. We collaborate with industry partners on most of the research projects, which help students to gain first-hand industry exposure while working on scientific breakthrough technologies.

Vacation Work Opportunities

As mentioned above.

International Student Work Opportunities

Not available at this stage.

Application Process

The students who are interested in these projects need to send their CVs and one referee report to

xiwang.zhang@monash.edu. If shortlisted, an informal interview will be arranged for further discussion.

A/PROF. AKSHAT TANKSALE



Research Interests

My research group is broadly categorised into three platforms – (1) Carbon Conversion Platform, (2) Biorefinery Platform and (3) NanoCatalyst Platform.

In (1) we are focusing on developing pathways for the conversion of (a) CO₂ into chemicals and fuels, (b) biomass into syngas via catalytic reactive flash volatilisation and further conversion of syngas into fuels and chemicals via catalytic pathways. This research spans from fundamental to applied catalysis where we are investigating the role of catalysts and solvents at molecular level on the reaction mechanism and energetics. Some of the breakthroughs in this area include first report of direct hydrogenation of CO and CO₂ into formaldehyde and its derivative (poly)oxymethylene ethers (a diesel substitute) using water and methanol as solvent; and first report of tar-free gasification of lignocellulose and microalgae into synthesis gas in a single millisecond reactor.

In (2) we are developing pathways for the utilisation of biomass at low temperature and high-pressure liquid phase catalytic reactions to produce functional molecules. This is an applied catalysis research including green and sustainable chemistry. (2) also includes research on waste valorisation via hydrothermal and microwave assisted methods.

Our latest results in this field include reactive fractionation of lignocellulose into cellulose, hemicellulose and lignin; conversion of cellulose and hemicellulose into value added chemicals like 5-HMF and furfural.

In (3) we are working on synthesis of nano-, sub nano- and single site- heterogeneous catalyst development and their characterisation. This research spans from fundamental to applied nature. Here we are working on developing fundamental understanding of the catalytic properties. We have recently developed mono-dispersed Ru nanoparticles encapsulated in metal organic frameworks which are highly active for low temperature reactions.

To underpin the catalytic science and engineering, the effects of catalysts and solvents on the reaction mechanism and kinetics are investigated using state of the art X-ray techniques (XAS, RXES, wet-RIXS, SAXS, and WAXS) and small angle neutron scattering (SANS) methods.

Current Projects and Impacts

One of the most prominent projects that we are currently working on is the conversion of CO and CO₂ into formaldehyde and its derivatives. There are many serious global challenges that can be addressed by this method since formaldehyde can be used as an intermediate in about 50 industries. Conversion of CO₂ into formaldehyde may be a way to reduce the impact of global warming as well since formaldehyde is a large volume chemical. Source of hydrogen for this process must be sustainable though as currently over 95% of hydrogen comes from natural gas.

We would like to explore more opportunities for CO₂ conversion into other valuable chemicals and fuels, in addition to continuing the conversion of biomass derived molecules into chemicals.

A/PROF. AKSHAT TANKSALE

Student Attributes

I am looking for students with strong background in reaction engineering, catalysis, organic chemistry, physical chemistry or chemical physics. I am happy to recruit students with qualification at all levels – BEng, Masters by Coursework or Masters by Research. I am also interested in summer research students who have keen interest in catalysis and reaction engineering.

PhD and Masters Research Attributes

Both PhD and Master by Research projects are available, but the candidate must be competitive for securing Monash central or Faculty scholarship. Top-up scholarships may be available for students working on select projects.

Vacation Work Opportunities

Both summer research and HDR projects are available

International Student Work Opportunities

Both international and domestic students are welcome, but the candidate must be competitive for securing Monash central or Faculty scholarship.

Application Process

To apply for a project please contact me on **Akshat.Tanksale@monash.edu** or come and see me in my office.

DR JOANNE TANNER



Research Interests

I have an industry background in process control, pilot scale process development, thermochemistry and reaction engineering. My current research sits in the general area of sustainability and biorefinery; replacing traditional fossil fuel-based fuel and chemical production processes with analogous processes using sustainable biomass as the primary feedstock. I am interested in reaction and process design and development, with a focus on sustainability. Most of my projects are applied research, and I try to involve industry partners as much as possible to make sure that my research is addressing real-world problems.

Current Projects and Impacts

BioPRIA: I am part of the Bioresource Processing Research Institute of Australia (BioPRIA) where I am building a research group focused on Green Chemistry and Sustainable Production. BioPRIA is the offspring of the Australian Pulp and Paper Institute, and we work closely with our consortium of pulp and paper industry partners to develop advanced technologies and new products that build on their existing capabilities to transform them from traditional paper mills to the sustainable, integrated bio-refineries of the future.

PALS: I am one of the Chief Investigators in the ARC Transformation Hub for Processing Advanced Lignocellulosics (PALS), which is run by BioPRIA. PALS aims to convert renewable and readily available biomass material and waste streams from the Australian pulp, paper and forest industry into new, high-value products that are in high demand in existing and developing markets. PALS includes 11 PhD students, three domestic and international universities, six industry partners, and \$6.8 million in funding. Two of my PhD students are part of this Hub.

Food and Dairy GRIP: My other two current PhD students are part of the FDGRIP program. Monash GRIP programs support direct industry collaboration and includes technical and business training above and beyond the research training usually provided in a PhD program. For example, students benefit from internships and industry-run workshops on topics such as IP, commercialisation and management.

My current projects include:

In-pack freshness sensors for fresh meat products (GRIP project, industry partner: Meat and Livestock Australia). We are developing a novel compound to detecting gaseous analytes from meat and integrating this compound into current fresh meat packaging solutions. Our aim is to replace arbitrary and wasteful 'use by' dates with factual freshness information direct to the consumer.

Sustainable packaging solutions for fresh meat products (GRIP project, industry partner: Meat and Livestock Australia). This project will invent a new cross-linked cellulose-based superabsorbent polymer using green chemistry and green engineering principles for the absorption of drip loss from packaged fresh meat. Our aim is to increase shelf-life and reduce waste by replacing the current fossil resource-derived in-pack absorbents with sustainable, biodegradable super-absorbent alternatives.

DR JOANNE TANNER

Energy efficient production of nanocellulose (PALS project, pulp and paper consortium contacts). Nanocellulose is a natural, sustainable feedstock that can be used in various forms for a wide range of applications including thermoformed packaging for foods and beverages, gels for pharmaceutical and agricultural use, and membranes for separation and purification. The major impediment to its widespread use is the high energy, and therefore high cost, associated with its production via traditional chemical and mechanical processes. We are performing a comprehensive assessment of nanocellulose production options, including novel technologies, to significantly reduce the cost of nanocellulose production.

Closed loop water systems in biorefineries (PALS project, industry partner: Visy). Pulp mills, which are the basis for biorefineries, are extremely high-water users, and most of the water is not recovered due to high energy costs associated with treatment. Less total water could be used, but recycling it costs energy. This project will quantify the water-energy trade off and investigate potential technology solutions to close the water loop in modern biorefineries.

Although academic endeavours must have a focus on scientific details and fundamentals, I always aim to make sure my research is industrially applicable. Also, whether it be a new solution to a specific process problem, a new process that is not yet fully understood, or a new take on an old process, I strive to make sure that my research promotes sustainability.

Some of my potential upcoming projects may include:

Continuous flow, autothermal, mini – and micro-reactor technologies for reaction engineering applications, including process design and scale-up

Any and all things biorefinery. That is the production of fuels and chemicals using non-food, bio-based feedstocks. If this area is of interest to you, or you have an idea you'd like to turn into a research project, please let me know!

Student Attributes

HD averages and high GPAs are laudable, but my philosophy is that all you need to take on the challenging pursuit of research is an open and enquiring mind, an enthusiastic approach, and a persevering attitude. The most important trait in a PhD student is dedication to the project, everything else can be learned! Therefore, I do not require any technical skills in my commencing PhD students. I firmly believe in learning by doing and am happy to provide this opportunity. My projects tend to be hands-on, lab-based research, but don't let that discourage you! Bring along your enthusiasm and initiative, and we will get along just fine. Masters students, PhD students and International students are eligible to join my research team.

PhD and Masters Research Attributes

From time to time, I will advertise new PhD and research Masters projects on my BioPRIA webpage: www.biopria.com.au/ourpeople/dr-joanne-tanner/

I also invite anyone who has an interest in sustainability and biorefinery to contact me with their ideas. The project doesn't have to come from the supervisor – everyone is an inventor at heart!

Vacation Work Opportunities

I will most likely have summer 2020-21 research positions available. These will be advertised through the Faculty summer research scholarships program.

International Student Work Opportunities

I'm happy to offer positions to international students who have a scholarship (at Monash or home country).

Application Process

Please send an email to joanne.tanner@monash.edu

PROFESSOR RAMAN SINGH



Research Interests

My research interests include graphene coating as an approach to corrosion mitigation, stress corrosion cracking and corrosion fatigue, corrosion of Magnesium alloys (in bioimplant and aerospace applications), the role of Nano-/Microstructure in corrosion/ oxidation and the degradation of Fibre Reinforced Polymers (FRPs) in sea water sea sand concrete.

Current Projects and Impacts

My team is currently working on the below mentioned projects

- Graphene Coating: A Disruptive Approach to Corrosion Mitigation
- Corrosion of Magnesium Alloys (in Bioimplant and Aerospace Applications), and
- Degradation of Fibre Reinforced Polymers (FRPs) in Sea Water Sea Sand Concrete

A few of my publications have been cited very often, here are a few of them.

- 1) In vitro degradation and mechanical integrity of calcium-containing magnesium alloys in modified-simulated body fluid, MB Kannan, RKS Raman, Biomaterials 29 (2008) 2306-2314 (>450 citations)
- 2) Protecting copper from electrochemical degradation by graphene coating, RKS Raman, PC Banerjee, DE Lobo, H Gullapalli, M Sumandasa,... Carbon 50 (2012), 4040-4045 (>350 citations)

3) The role of microstructure in localized corrosion of magnesium alloys, RKS Raman, Metallurgical and Materials Transactions A 35 (2004), 2525-2531 (111 citations)

4) Magnesium alloys as body implants: fracture mechanism under dynamic and static loadings in a physiological environment, Choudhary, RKS Raman, Acta Biomaterialia, 8 (2012) 916-923 (110 citations)

Student Attributes

Masters students, PhD students and International students are eligible to join my research team.

PhD and Masters Research Attributes

My group is only able to accommodate PhD students who have succeeded in securing Monash University scholarships. For scholarship applications, they are welcome to discuss a project of mutual interest on any of the topics listed above.

Vacation Work Opportunities

Not available at this stage.

International Student Work Opportunities

Not available at this stage.

Application Process

The interested students are encouraged to first discuss their interest with me via

raman.singh@monash.edu

<https://www.monash.edu/engineering/ramansingh>

A/PROF. WARREN BATCHELOR



Research Interests

My research interests are cellulose macrofibre and nanofibre materials. I am also interested in replacing petroleum-derived plastic materials with renewable, recyclable, biodegradable materials based on cellulose.

Current Projects and Impacts

My team is currently working on the following research projects. New methods of making and characterising cellulose nanofibres. New methods of film production and forming composites with inorganic nanoparticles. New products, including active packaging with antimicrobial performance, cellulose nanofibre barriers to replace petroleum derived plastic and cellulose nanofibre-nanoparticle composites for environmental remediation.

The significant impacts we made are as mentioned below. We developed a method to characterise cellulose nanofibre quality using sedimentation. This is widely used. We have developed a spray coating method to make cellulose nanofibre sheets. We are pushing to have this as a replacement for conventional sheet forming using filtration, which is very slow.

Student Attributes

Masters students, PhD students and International students are eligible to join my research team.

PhD and Masters Research Attributes

PhD and Masters positions with scholarships for eligible students.

Vacation Work Opportunities

Available through Faculty Summer vacation program.

International Student Work Opportunities

International students are welcome to apply.

Application Process

Please send an email to warren.batchelor@monash.edu, <https://research.monash.edu/en/persons/warren-batchelor>

DR. PARAMA CHAKRABORTY BANERJEE



Research Interests

Analysis of multi-scale electrochemical processes and design of new materials for next generation energy storage, energy conversion and corrosion. Energy storage systems comes in various length scales and are essential in most electronic systems (from wearable sensors to electric vehicles to off grid storage of renewable energy). The challenge is to develop cost efficient environmentally friendly energy storage systems.

I collaborate with various industry partners and government organisation (like CSIRO) to mitigate this challenge. My research team also has immense interest in understanding electrochemical corrosion and designing anti-corrosion coatings for various metallic systems used in aerospace and automotive industries.

Current Projects and Impacts

I am leading the Multi-Scale Electro Materials group. This is a new, dynamic and collaborative research group supported by Australian Research Council, Ionic Industries Pty Ltd and CSIRO. Energy storage technologies have attracted significant academic and industry attention. In fact, we have been funded by Ionic Industries Pty. Ltd. since our inception on various projects related to the development of different energy storage systems.

Recently, the miniaturisation of energy storage systems have become one of the hottest research areas with growing interests in (i) further miniaturisation, (ii) tailored performance of the devices and (iii) identification of an easy, cost-effective, scalable, one-step fabrication method. However, till date the miniaturized energy storage systems reported in the literature are fabricated by complex multistep processes. We are currently designing and fabricating energy storage systems (batteries and supercapacitors) with significantly reduced feature sizes (in micrometer length scale) using a simple one-step printing process (Prov. Patent AU2018050379).

Our team is also engaged in identifying the impact of pulsed current on Li battery performance and cycle life. This work has direct relevance in electric vehicles and off-grid energy storage systems. In this project, we collaborate with CSIRO and Relectrify Pty Ltd to understand the effect of pulsed current on the battery electrode kinetics. We also heavily work on various anti-corrosion coatings for different metal and alloy systems used in automotive and aerospace industry (Prov. Patent 2019900664).

Some of these works are published in high impact international journals including, Advanced Energy Materials, ACS Nano, Nature Communications, Journal of Materials Chemistry A, Corrosion Science, Carbon etc. My efforts in the field of electrochemistry and materials engineering has been recognised by various awards including, an early career research award by Cooperative Research Council of Australia and the prestigious “Brian Cherry Forum award” for the best PhD thesis in Corrosion.

Student Attributes

Students with excellent academic records and healthy attitudes towards solving open-ended problems, proactive, and with excellent communication skills and time management (crucial attributes to develop as an independent researcher). Prior qualifications could include: Honours Class 1 or a good Master degree from respectable institutions. Refereed publications in scientific journals and / or industry experience will help boost the chance of success of the application.

DR. PARAMA CHAKRABORTY BANERJEE

PhD and Masters Research Attributes

PhD opportunities are usually advertised via the Department's or the University's website or at seek.com.au. Feel free to drop me an email at parama.banerjee@monash.edu or come by my office if you want to explore project opportunities. Currently we have two such scholarships (with top-ups) available in our team (which have been advertised in Monash job Website and in Seek.com.au).

Vacation Work Opportunities

Yes if students are eligible / qualify through the faculty's summer research program

International Student Work Opportunities

International students require fee and living allowance scholarships, which are highly competitive. That also means that international students that can obtain these scholarships usually have very good record, and so I am happy to consider accepting them in my group.

Please see: <https://www.monash.edu/graduate-research/future-students/international-students> for more

Application Process

There are two rounds of scholarship in the middle and end of the year. Students who are interested to apply are advised to prepare their documents (CVs etc) and talk to potential supervisors around March / April or September/October.

PROFESSOR RAVI JAGADEESHAN



Research Interests

Several systems such as granular materials, colloidal suspensions, polymeric liquids, and biological matter, are classified as complex fluids because their microstructure crucially influences their material properties. These systems are inspiring several new technologies. The molecular rheology group, which I lead, uses molecular models and a continuum level description to advance the microscopic and macroscopic description of polymer solution dynamics. Small amounts of polymer are known to reduce the drag experienced by bodies in turbulent flows, and significantly change the distribution of drop sizes in spraying and atomisation operations.

There are also several contexts involving polymer solutions, such as in the spinning of nanofibers or in ink jet printing. It is vitally important to unravel the fundamental physics that governs the behaviour of polymer solutions across the range of concentrations in the presence of a flow field.

In work carried out in my group, we investigate the dynamics of polymer solutions through theory, computer simulations and experimental characterization, using non-equilibrium statistical mechanics, novel computational algorithms and experimental techniques.

These studies provide an understanding of the linear and non-linear viscoelastic behaviour of polymer solutions, spanning a range of concentrations and molecular weights. The correlation of molecular simulations with rheology measurements enable a much clearer understanding of the connection between microscopic physical mechanisms and macroscopic flow properties.

In the last few decades, there has been a surge of interest in applying the methods of physical sciences to the problems of biology. The goal of research in my group is to carry out interdisciplinary research in which the techniques of experimental and theoretical rheology, and advances in single molecule techniques, are brought to bear on several physical problems that are relevant in a biological context.

Current Projects and Impacts

Students in my group are currently working on the following projects:

The rheology of sticky polymer solutions

Associative (sticky) polymers are macromolecules with attractive groups, which are used in a wide variety of applications because the interactions between the attractive groups can be “tuned” by varying their number, strength and location on the polymer. This provides a means of exquisitely controlling the physical properties of associative polymer solutions.

The aim of this project is to understand how microscopic topology and the strength/number of intermolecular interactions control the flow behaviour of associative polymer solutions.

Computing the dynamics of chromatic folding

Chromatin is a packaged form of DNA, which in humans has a contour length of approximately two meters. The packaging of chromatin in the cell is achieved with many proteins that bend and fold DNA to induce local curvature. For life processes to go on, chromatin needs to be unfolded and refolded dynamically so that it can be read, repaired and replicated repeatedly. Nearly nothing is known about how the unfolding and folding happens, and the precise sequence of events during folding and unfolding. The aim of this project is to develop a multi-scale computational model that can predict the dynamics of chromatin packaging on the scale of many genes.

PROFESSOR RAVI JAGADEESHAN

Influence of wet and dry friction on polymer dynamics

Experimental and theoretical studies have shown that the presence of internal friction in biological molecules modulates their conformational changes in several different contexts. This includes slowing down the process of protein folding, influencing stretching transitions in single biomolecule force spectroscopy, and effecting the dynamics of intermolecular interactions in intrinsically disordered proteins. In all these situations, internal friction arises from configurational rearrangements of biomolecules on an underlying energy landscape.

In parallel, recent advances in modelling polymer solution rheology has revealed the crucial role played by fluctuating hydrodynamic interactions in determining the dynamics of polymers. Models that include both internal friction and hydrodynamic interactions are rare. In this project, molecular simulations are used to carefully differentiate the influence of solvent-mediated friction on conformational dynamics, from the influence of a dissipative mechanism that is independent of solvent viscosity.

Using a multidisciplinary approach combining molecular simulations with single molecule fluorescence microscopy and flow oriented spectroscopy, this project aims to extract the maximum level of dynamic structural binding information from linear dichroism spectra, so it can serve as a quantitative screen of drug binding to molecular targets in bacteria.

Student Attributes

I am looking for students with an aptitude for mathematics and computations, and who can demonstrate exceptional performance in quantitative subjects. A background in engineering or physics would be appropriate. I am happy to recruit students with qualification at all levels – double degree BEng and Science (Physics or Mathematics), Masters by Coursework or Masters by Research in the relevant fields.

Vacation Work Opportunities

Summer research projects are available for exceptional students.

PhD and Masters Research Attributes

PhD projects are available but the candidate must be competitive for securing Monash central or Faculty scholarship.

International Student Work

Both international and domestic students are welcome but the candidate must be competitive for securing Monash central or Faculty scholarship.

Application Process

To apply for a project please contact me on **ravi.jagadeeshan@monash.edu** or come and see me in my office.

8 Industry Insider

MR. JOHN WESTOVER



John Westover began work as a chemical process engineer in the natural gas fields of Oklahoma (Central United States) in 1981. His company responded to the skill shortage at the time by giving him more responsibility than he should have had. John used his responsibility as the surveillance engineer for several small natural gas processing facilities and wellhead facilities to get involved in as many aspects of the operations as possible. For example, he read the gas sales contracts, found some loopholes, and exploited them to increase production. He found ways to use surplus equipment to generate extra profit. He conceived projects; then he executed them. It gave him a good grounding for the rest of his engineering career.

“He read the gas sales contracts, found some loopholes, and exploited them to increase production. He found ways to use surplus equipment to generate extra profit.”

One day John walked into his foreman’s office and announced that the thermocouples on the main distillation column were not working. The foreman chuckled, gave John a voltmeter, a radio, a harness, and a second voltmeter to the control room and told him to go check for himself. After the first few readings showed John was correct, the company electrician came to watch. Satisfied that John was doing the check correctly (by the way – John was now 2/3 of the way up a 30-metre tall distillation column, outside the ladder cage, on a windy day), he let John continue to collect his data. Once completed, the group was able to determine the thermocouple wiring was actually unshielded. Replacing the wire with shielded wire allowed profits to be increased by about \$30000 / year (1984). That was the moment John “arrived” as an engineer.

“Replacing the wire with shielded wire allowed profits to be increased by about \$30000 / year (1984). That was the moment John “arrived” as an engineer.”

He was then transferred to the Rocky Mountains (Wyoming), where he was a process/project engineer on a tertiary oilfield project. It was here that John first learned about the impact of ambient pressure, working at altitude (2200 metres above sea level) and low ambient temperatures (often dropping to -25 deg C in winter). This was also John’s first exposure to toxic gases. Here John learned the issues of remote operations, the need for proper project planning (to manage outdoor construction weather windows) and the plusses/minuses of using buildings for weatherproofing from winter. John also learned how to work with environmental and cultural (archaeological) teams while doing pipeline construction.

A corporate restructure allowed John to take a voluntary redundancy package and join an EPCM company in Anchorage, Alaska. Everything he learned in Wyoming was applicable but intensified. John worked supporting the Arctic oilfields, and on the 21st of December 1989, it was -45 °C. John says it was so cold it changed his perception of reality. It was here that John was first introduced to offshore oil operations and the unique issues with offshore operations and projects. While in Alaska, John started to take on more responsibility for training and risk assessment/management.

“John says it was so cold it changed his perception of reality.”

In 1993, John accepted a 2-year assignment in Melbourne, Australia (which became permanent). His first assignment was to investigate a small incident, and then he was involved in risk assessments for three years. During that time, he was introduced to different industries within Australia (water treatment, pulp and paper, and mining). He became a lead process engineer on numerous small projects before joining a design team for FEED on a large offshore gas processing facility. John was responsible for the cold systems and process safety compliance.

MR. JOHN WESTOVER

In 1998, John was involved in a restoration project after an explosion in a gas processing facility, and he eventually joined the non-operating joint venture partner as part of the asset monitoring team. In this role, John continued to gain breadth to his experience, this time working with all aspects of the asset (maintenance, integrity, security of supply, marketing, shutdown planning, product marketing planning, project approval, etc.) but from a non-operating perspective. As the non-operator, the group was responsible for understanding the needs of the asset from a high-level perspective – giving John “access to all areas”.

In 2006, John started working for himself. He started by being a contract engineer for a new gas plant start-up in Pakistan, but he also worked one day per week at one of the local Melbourne universities in the Spring semester. In late 2006 a small training company approached John, looking for a last minute replacement for the facilitator (illness).

“Since that modest beginning, John has now delivered over 180 training courses in the Middle East, SE Asia, Turkey, Australia, and New Zealand, and over 280 live one-hour webcasts which have been broadcast into all seven continents (including an Antarctic island).”

Trish Kerin

Director IChemE Safety Centre



Can you tell us about your education and any previous employment experience?

I graduated from RMIT in Mechanical Engineering and started working in the oil industry where I did a range of roles from design engineer to project manager to operations roles, and safety. I then moved into the chemical industry in a safety management role, and transitioned into the gas production and distribution industries in executive safety roles. I took on a number of government committees roles representing industry in the drafting of Victoria's and Australia's major hazard facility legislation. I sat on the Victoria Major Hazards Advisory Committee for a number of years.

Can you tell us about your current position and role?

I currently sit on the board of the Australian National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) as the process safety expert. Along the way I achieved Chartered Engineer status with IChemE, am a registered Professional Process Safety Engineer, Fellow of IChemE and Fellow of Engineers Australia. I am also a graduate of the Australian Institute of Company Directors and have a Diploma of OHS.

Engineering is a fantastically diverse and rewarding career choice. It is more important than ever as we now face the challenge with climate change, and engineers need to lead the way, because we are trained to solve problems.

I lead an industry consortium focused on advancing process safety worldwide for the benefit of society. Companies join to participate in the various activities we do and contribute to the work we develop. My team and I facilitate working groups with companies to solve common process safety challenges and then publish the results for all to learn.

I research current practices in process safety and regularly speak at international conferences on various process safety topics. I am also invited to speak at different member company internal events each year. I also run a leadership and culture training program for senior managers and directors around the world.

Can you tell us a few important skills needed for your role?

The most important skill in my role and in every role I have done is effective communication. Whether you need to give someone instructions, receive feedback, or lead them to change, you need to be able to effectively communicate. This means both sharing and receiving information. In my experience, no matter how well communication is done, it can always be done better.



What is your advice for future graduates?

Always be open to a new challenge or opportunity, you may never know where it will take you until years later. So try that unusual job, the worst outcome might be that you don't like it, but you don't have to do it forever. Even when you are not sure about a role, embrace the challenge and opportunity. Learn from the experiences and use that to shape how you move forward. Experience is so valuable.

How would you describe the importance of your role in the community?

Community's expectations of business and industry have risen and will continue to rise. If we don't conduct ourselves safely and with regard to environmental impacts, we will not be able to continue to operate due to community pressure. So improving process safety in industry is not only important for acceptance by the community, but also because every worker has the right to not get hurt. That is what drives me to push organisations to improve their process safety outcomes.

Sandra Lau

Alternative Fuels Manager



Can you tell us about your education and any previous employment experience?

After completing an undergraduate Bachelor Engineering (Mechanical) and Commerce at University of Melbourne, I started work as a mechanical engineer in mining with WMC (which became BHP), at Olympic Dam in South Australia. I was fortunate enough to have the opportunity to work in Chile and Western Australia with BHP, and then with Shell/Viva Energy in Melbourne, Sydney and Cairns. For around 11 years,

I worked predominantly in a variety of engineering roles (maintenance, reliability, projects, team lead) before working in a PMO role (project management) for a circa 200m AUD refinery conversion in Sydney, when I also completed my MBA. My current role as Alternatives Fuel Manager is responsible for developing new business opportunities that will assist the organization in the transition to a lower carbon emission economy.

Can you tell us about your current position and role?

My current role is very broad and therefore I don't have too many typical work weeks. Overall, I am in an external facing role, so I work equally if not more with external stakeholders as internal stakeholders. develop business cases.

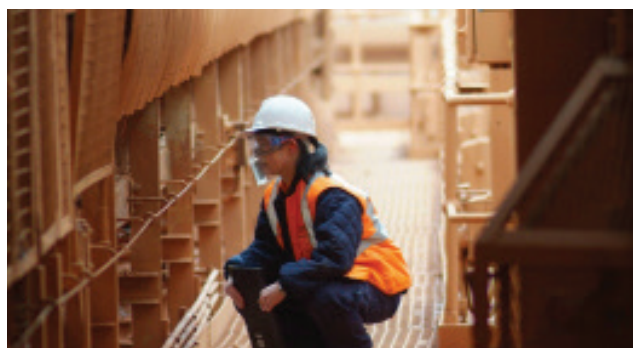
While in the last two weeks I have presented at two conferences and on panel discussions, I normally author government policy submissions, project manage pilot initiatives, determine strategic direction and

In the community of technical or STEM females, I feel that my role is important as a role model of one path where a STEM career can take you, and also to support other females in industry to achieve their career goals.

Can you tell us a few important skills needed for your role?

Some key skills I have used and develop are:

1. Analytical skills and applying this to many different scenarios (i.e. not just process or equipment, but also people and culture)
2. Decision making – understanding risks (risks can be safety, commercial, strategic positioning etc.), while overlaying various perspectives of what's important
3. Communication – working with trades through to executive managers and external stakeholders
4. Dealing with ambiguity, uncertainty and change – working in a number of different work environments, cultures, and languages has helped me adapt from a somewhat typical student that sees the world in black and white, to someone that can see the different shades



Don't compare yourself to other grads – everyone develops at their own pace.

Can you tell us a few important skills needed for your role?

If you wish to start in an engineering career, spend a few years out in the field and on site.

There is no wrong choice in what you choose to do – it's what you make of the opportunity.

Use vacation work to try out different industries to see what type of work you like – engineering can be different depending on industry.

Networking can be seen in a bad light, but it depends how you do it, and this skill will be important as your career develops. The world is a small place, and industry even smaller, you will bump into someone from ten years earlier at some point- play nice and develop positive relationships.

Shivank Vijayakumar

Experience at LyondellBasell



I worked as an undergraduate process engineer for LyondellBasell Geelong for about 1 year and 4 months. I was fortunate to be thrown in the deep end and experience things like as-built, root cause analysis, troubleshooting, operator training, business review meetings, safety assessments and many more.

I started with LyondellBasell on a 12-week vacation program which involved optimising their dryer regeneration system. The dryer regeneration system was successfully optimised to reduce heating cost by 90%.

Moreover, I had the opportunity to get picked for Industry Based Learning (CHE4164) and I decided to do it with LyondellBasell. The industry project was to implement a control system for the reactor recycle system within 16 weeks. I implemented a control system that increased the recycle rates and produced savings of \$150,000 approx.

Currently, I am working as a Graduate Process Engineer with Glencore Coal Assets Australia in a 2-year graduate program.

I don't think the projects would have been completed in a timely manner if I didn't have the support of the operators, engineers and my manager. Finally, I understood the importance of planning for inefficiencies since things don't always go to plan especially in operations.

I am a big believer in working with people and taking people with you through the journey. My experience emphasised the importance of communication skills and the ability to persuade stakeholders.

Below are a few pieces of advice I have for current undergraduates:

- 1) Your resume or personal brand is not built overnight nor is it created when you fill out a job application. It starts from Day 1 at university. So start early!
- 2) Try to understand your 'gaps' and what you need to improve since university is the best place to work on it. At the same time, know your strengths.
- 3) Also, take the opportunities that come your way since you never know what it might lead to.
- 4) Finally, be the person who lifts others and be willing to learn from people around you.

Nicola Malysiak

Experience at BHP



Vacation programs and internships can really help to drive your future careers, especially starting out as a graduate. Having twelve weeks fully immersed in an industry and its lifestyle, is the best way to see if that job is for you. These programs also help you learn about yourself and where you see yourself five years from now. I was fortunate enough to work for BHP for 12 weeks at their Olympic Dam mine site, where they extract and process copper, uranium, silver and gold. It is located almost in the middle of South Australia and is accessible by a 7-hour bus ride from Adelaide or a 2-hour plane trip, in a small 50 seater plane with propellers.

Arriving there was really nerve racking, being surrounded by red sand as far as the eye can see. I had never experienced working in the mining industry before, and had never really been told about what living at a mine-site was like, which made it all really new. There were about thirty interns and six chemical engineers who lived on site. While we had our own accommodation, it wasn't long until social sports such as basketball and soccer were organised as activities to do after work and regular meal time schedules were made so that we could eat together.



The work itself was extremely interesting. I was fortunate enough to be working with the gold room team, processing sludge to pure gold and silver bars. I was tasked with process-mapping a multi-stage refining process to determine the hold-ups and potential justifications for new work to be done. I was also undertaking experiments to determine the operating efficiency of a specific unit. While there was a lot of information I had learnt at university incorporated into what I was doing, there was also a lot of learning on the job and interacting with other engineers and operators. I was also challenged with other smaller tasks throughout my time at Olympic Dam, such as running safety team meetings. All the work the interns had completed was summarised in presentations in our last week, which we could all sit in and watch.

Working at a mine site, you would expect it to be mostly men, but I was pleasantly surprised by how many empowering women I was able to meet and work alongside.



My line-manager was one of the most welcoming and helpful people I have ever met. To ensure all the chemical engineering interns gained the most out of their experience, she helped organise tours of the underground mine, the smelter and the uranium processing area; areas which we would have never been able to explore by ourselves. The twelve weeks were an amazing experience and really pushed me to try and obtain a job in the mining industry as a graduate. I really appreciate all the help and support I was given throughout my experience.

If you have any questions about working in the mining industry, apply for vacation or graduate positions or if you just want to chat, feel free to reach out to Dennis or myself.

Fahad Mubashshir

Experience at Bega



During the 12-week internship, I was part of a multidisciplinary team developing the infrastructure for Bega's loss monitoring system to identify challenges faced by the dairy sites. I was also able to gain laboratory experience during my time at Bega and conducted experiments relevant to checking reliability of data sources in the system. Some of my activities included standardising the testing procedure, automation of the manual data collection and implementing data visualisation tools to analyse data and provide new insights.

During my time as a Product Development Graduate role, I worked on a new method of producing enzyme modified cheese (EMC) and the design of cooling bath for analogue mozzarella cheese blocks. EMC process design included designing the process line, replicating the process in process flow diagrams, sizing equipment and working on formulation of EMC recipe.

My experience at Bega made me realise the role of chemical engineers in the food industry and how it can be quite sophisticated in terms of technicality. The best part about working for Bega is that the business is evolving towards innovative solutions for producing Fast Moving Consumer Goods (FMCG) every day.

"I found the most challenging aspect as an intern was gathering information efficiently. As opposed to university assignments, where all the information required could be collected from the lecturer, the Bega work assignments involved contacting several departments to obtain the information I needed to complete my project at Bega."

My internship project involved a steep learning curve and I had the opportunity to learn more about data analysis and interpretation. It complimented my knowledge from university quite well as I was able to relate the physical process performances with millions of data through data visualisation. I believe, expanding my skill set in sectors made me more competent as an engineer.

My experiences in these development projects were slightly different than what I had in mind for real-life engineering. It made me realise that chemical engineering work is not only limited to process design. A process engineer has the opportunity to revolutionise the manufacturing process and the business.

Anthea Martin

Experience at BHP



Over the summer period, I was fortunate enough to complete twelve weeks as an Undergraduate Process Engineer with BHP Billiton Mitsubishi Alliance Coal (BMA) at Goonyella Riverside Mine in Queensland. Goonyella Riverside Mine is an open cut metallurgical (black) coal mine with two Coal Handling and Preparation Plants (CHPP's).

My aims going into the internship were to gain "hands on" process engineering experience in the mining industry and be able to deliver a project over the summer that would add value to the company.

Some day-to-day tasks on the plant involved completing the 24-hour reports, daily performance analysis and rectification, sampling for various projects, equipment inspections as well as helping with long term projects and improvements. I also had two projects of my own to deliver by the end of the internship, which was a great opportunity to give back.



One of the other highlights of my vacation experience was being able to meet so many other interns and graduates from all around Australia who were working in the Bowen Basin. Every weekend we travelled around Queensland- snorkelling on the Great Barrier Reef, swimming in the gorges of Eungella National Park and visiting Mackay, things I would never have experienced while living in Melbourne.

It was a steep learning curve, but it was satisfying to be always busy and able to contribute in a meaningful way to the day-to-day operation of such a large processing plant.

For any student looking at applying for vacation or graduate programs, I would highly recommend BHP or any company where you can gain experience on site as a process engineer. There are so many opportunities out there for process engineers, particularly in the mining industry, to make significant improvements on site and be given large amounts of responsibility very early in their careers. It may require relocation and living residentially in small towns, but the upside is that there are a lot of young people working in regional Australia, and it is easier to make new friends in such small communities.

Liam Giezen

Experience at Viva Energy



This summer, I was lucky enough to undertake an internship with Viva Energy Australia at an oil refinery based in Corio, just north of Geelong. There are only four refineries in Australia with two of them being based in Victoria. The plant itself is capable of meeting 10% of Australia's fuel demand and supplies 50% of all the fuel used in Victoria. It also manufactures bitumen and other useful lubricants and solvents.

The refinery is quite large, spanning an area greater than a few square kilometres and in order to minimise the number of potential ignition sources (and general hazards) on site, most personnel use bicycles to get around the refinery. This is an excellent company to work for and even as an intern you will be given real responsibilities from the get-go where you can make a real difference in work you would be involved in.

It may come as no surprise that a number of the chemical engineering lecturers at Monash University have a background in the Oil and Gas Industry. In my experience at the refinery I found that almost everything I'd learned so far in my degree was useful in some way shape or form, or at the very least university lecture content helped me learn new information more efficiently by relating similar topics to one-another.

In my time at the refinery I was tasked with a major project and three minor projects to work on Time management and planning were skills I quite honestly did not develop much at university. However, in the workplace these are critical skills and I highly recommend practicing them as much as possible whilst you are still at university.

The Major Project

Victorian free-market electricity prices occasionally spike up to 150x normal prices on hot days when electricity demand peaks (capped at \$15,000/MWh). I was tasked with developing a procedure which Operations can refer to during these peak electricity price events to help mitigate economic losses incurred. This involved changing normal refinery-wide operation in an effort to maximise internal power generation and reduce net electricity consumption.

Thermodynamic theory was very useful in this project when optimising the electricity generation system and quantifying the economic value of any identified energy opportunities. However, majority of this project involved communicating with people from almost every area of the refinery to:

- Learn about how the refinery and majority of the segregated plant areas normally operate at a high level.
- Scope out potential energy opportunities based on historic operating conditions.
- Gain 'buy-in' and general interest in the development of the procedure so that it would be a useful tool in the future.

The Minor Projects

These three minor projects involved the refinery-wide steam system and I was very open-endedly asked to optimise the three variables below and to integrate my findings in an open control loop (not completely automated) in the form of indicators which operators could use as a reference to help maximise plant profitability in real-time.

Since finishing my internship at the refinery I'm now entering my final semester at university undertaking a final year research project with Boral to analyse oil samples taken from Caterpillar machinery. The project involves developing wear patterns based on the properties and composition of the oil samples to primitively predict machine failure and avoid costs associated with unexpected failure.

The biggest piece of advice I have for up and coming Monash University Chemical Engineering students is to not focus exclusively on your university studies. There are opportunities out in industry and you don't need to begin your career by working at your dream company. Apply, gain experience, develop your skills as an engineer and from there begin shaping your career.

Jiasheng Yuan

Experience at CSIRO



Being passionate about learning cutting-edge technology, I was able to land myself in the vacation program offered by CSIRO, running an experiment that investigated the mixing phenomenon in a static mixer. During my placement, I was fortunate to work with some finest researchers on a pilot-scale mixing rig, which was designed to improve the gravity thickening process during mineral recovery.

I was involved in designing and assembling the experiment rigs. Once we had the data, I developed methods and programmed codes to analyse the results. I was continually learning new things each step through the process, and all these broaden my horizon on chemical engineering.

The undergraduate vacation scholarship offered by CSIRO is run over the Australian summer holidays, ranges from 8-12 weeks. The placements typically begin in late November or early December.

More information regarding the available projects and the selection criteria could be found on their website: <https://www.csiro.au/en/Careers/Studentships/Vacation-scholarships>

Apart from all these, communication is also essential to deliver your results. Good teamwork skill is also beneficial in many ways, especially given that lots of researches are done in teams these days. But above all, one of the most critical attributes that get you into the job is the initiative, and you could often impress your supervisors by showing some preliminary research that you did on the project before the interview.

Pursuing a career in the research field needs an open mind and genuine curiosity, and most of the time, it requires you to be self-motivated and ready to tackle problems that you have never met.

Gabriel Huynh

PhD Experience



My name is Gabriel Huynh, a final year PhD student working with Dr. Simon Corrie. My project focuses on developing novel nanoparticle-based biosensors to detect and monitor fluctuations of different key biomolecules present in mammalian cell cultures. Being able to see and understand what occurs spatially and temporally within these cultures can help facilitate future design for improved diagnostics for various diseases, and improved design and considerations in tissue engineering and regenerative medicine.

Why did I decide to do a PhD? The short answer: Industry did not appeal to me when I did my Bachelors. Learning to become a chemical engineer was always focused on oil and gas- which was not my cup of tea. I realised that research was the path for me. I had always had an interest in nanomedicine.

Throughout my PhD, I have had the privilege of working in a team of multidisciplinary team of chemists, chemical and materials engineers, and biologists – each with their own personal expertise. Simon's Group – Nanosensor Engineering Lab (<http://nanosensor-eng.net>) features people from different backgrounds working on the same research theme.

Surprisingly, we challenge the notion of the stereotypical idea of PhD students of having 'no social lives' by occasionally going on group outings and trips.

My advice for students interested in doing a PhD are:

1) Find and speak to potential supervisors. A lot of academics will get a lot of applications, but rarely you will get to meet them before starting. If you have an opportunity to meet them, go for it. Not only will you have the opportunity to see if you can get along with them, but you will show them that you are passionate about doing a PhD.

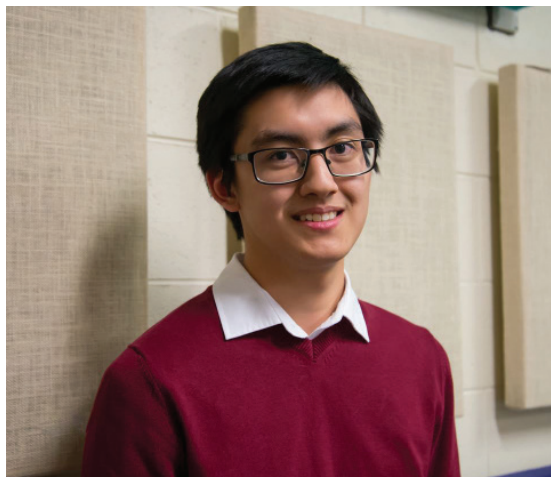
2) Find a project you like. Finding a good supervisor is one thing, but finding a project you are passionate about is another thing. You will have to stick to that project for three years. If you have a project in mind, bring it up. There is a good chance that a supervisor will be happy to support your ideas.

3) Ask yourself: Industry or Research. If the answer is research, then maybe a PhD is for you. Do not do a PhD if you did not have an industry role lined up after undergrad. Supervisors can tell whether you are committed or not.

4) Finding research positions beforehand. This is more for second/third year students who are interested in research. Speak to academics about if they are looking for research assistants. Not only will you have an opportunity to see whether research is for you, but you will also get an opportunity to see what the research group like.

Nathan Eden

PhD Experience



Hi I'm Nathan. I moved over to Monash after completing an Honours Degree in Chemistry and B.Sc in Chemistry and Experimental Physics at The University of Adelaide. I am part of the Hill Advanced Porous Materials team that includes CSIRO researchers and Monash PhD students. Our group covers a broad range of research in batteries, gas separation, ion separation and membrane technologies underpinned by advanced porous materials. My research on lithium separation from brines is using one type of nanoporous sponge called a Metal-Organic Frameworks.

As I'm still early on in my PhD it is difficult to relate my research outputs to outcomes and impact. Fundamentally there are challenges in recording adsorption measurements in water and the time-intensive analysis prevents broad understanding of phenomena.

I am attempting to partially address this as well as develop new materials for aqueous lithium capture. Lithium containing brines comprise 70 % of total non-ocean lithium and supplies around 50 % of global demand. The commercial process of solar evaporation yields around 40 % recovery and a processing period of between 12 to 24 months. To transition towards a net-negative CO₂ emission economy and electrify transportation necessitates a massive increase in this lithium supply. To do so quickly, cost-effectively, and with a small land footprint requires such advanced materials. Ideally, I'd like my impact to include the implementation of these advanced materials to industrial processes and contribute to reversing the effects of climate change.

For people starting out on the PhD journey, here are my pieces of advice. You're going to produce vast amounts of data, so organising both your lab book and digital files is paramount. Nothing is worse than trying to look for the data you produced 5 minutes before a meeting with your supervisor (never happened to me I swear). Research is sometimes slow; it's possible that you can spend your first year getting equipment and protocols to work so you can get consistent, reliable results. It can also be fast; surprise, the abstract you could write for a conference is due tomorrow.

"And we now find, that it is not only right to strike while the iron is hot, but that it may be very practicable to heat it by continually striking." - Benjamin Franklin

As days blend into weeks and months, it's important to keep track of what you've achieved and all the null results you've gathered to understand how your research is shaping and where you want to go. Even though you've picked a project there's no requirement to stay. If you're not enjoying your current project, talk to other researchers, be frank with your supervisors and ask other PhD students and candidates what they're working on. Find out what your passion is in research and choose a project where you'd want to wake up everyday and be excited to do lab work. There will be ups and downs. At different times, I have worked excitedly longer than 40 hours a week and seriously considered quitting. Just keep swimming.

9 Featured Clubs and Student teams

Clubs and Student Teams



CHEMICAL ENGINEERING
POSTGRADUATE ASSOCIATION

The Chemical Engineering Postgraduate Association (CEPA) is a social and academic student club representing graduate research students in the Department of Chemical Engineering at Monash University. We run regular social events for PhD and masters by research students throughout the year.

In addition, we run several academic and career events, such as Life After PhD presentations by previous PhD graduates who have gone onto careers in industry, as well as our annual CEPA conference, where research students can present their findings to others in the department.

If you're considering a PhD and want to chat to some current students, or if you have other questions we would be able to help with, please get in touch! Our email is cepa@monash.edu

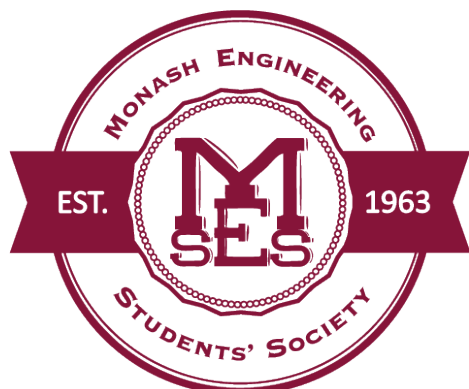
Monash BrewLab is Australia's first student run and led brewery! The BrewLab is a student team run out of the Faculty of Engineering, focusing on educating students, furthering brewing research and building a community of enthusiastic brewers at Monash. Started at the end of 2018, the BrewLab is just over one year old and has already received multiple awards for its beers, which it brews in its nano-brewery in a food safe laboratory on campus.

Made up of over 40 students including undergraduate, Masters and PhD's from multiple faculties, the BrewLab aims to develop its beer range in 2020 and begin producing beers for the Monash community. If you are interested in brewing, want to put into practice your process/control/mechanical engineering knowledge, and willing to put in time and effort to being part of this exciting start-up, then the BrewLab is for you! We will be recruiting this year for capable 1st, 2nd and 3rd year students, so like us on Facebook to stay updated.



**MONASH
BREWLAB**

If you have a question or would like to know more, feel free to email us on brewlab@monash.edu



The Monash Engineering Students' Society is a student run society, comprised of volunteer committee members who work hard to bring you the best possible opportunities. Throughout the year, MESS will offer a range of industry events designed to prepare you for all the aspects required to get your future job. These events are not possible without the support of our student members and sponsoring firms.

Clubs and Student Teams

Monash Solar Desal Team



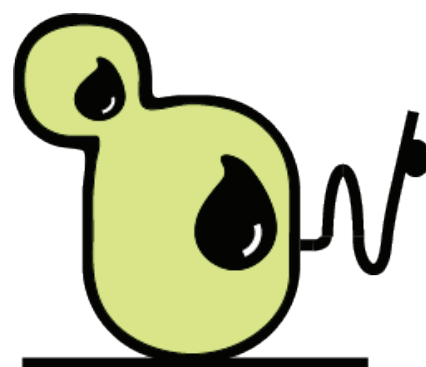
Professor Xiwang Zhang and his research team asked themselves “What solutions can be offered to combat this issue?” Partnering with Oxfarm, Prof. Zhang and his research team have developed the OMP Water Purification Prototype which is solar driven, compact, portable and low cost. This compact prototype uses reverse osmosis powered with solar energy to produce clean water.

We are a student team similar to Monash Brewlab to further design, manufacture and test this prototype, aiming to support the introduction of our water purification system for use in the most affected areas of remote off-grid indigenous communities. Our ultimate goal is to enhance health and livelihood among people affected by contaminated water.

The Monash Biodiesel Team is a new initiative formed within the Department of Chemical Engineering. The team is a group of undergraduate and postgraduate students from Monash who have come together to promote ideas of sustainability, renewable energy and biotechnology.

The main objective of the team is to collect food waste and convert it to something useful. The team will repurpose the food waste from vendors around the university, fruit waste from Boost and fried food waste from the fast food shops, and convert it into functional biodiesel. Collected waste will undergo various processes to be converted: pre-treatment of the food waste, biological digestion of the organic matter to produce lipids and finally transesterification of the lipids to produce biodiesel. The team will work to redirect waste that would have otherwise entered landfills and decomposed into greenhouse gases, into the production of a beneficial and useful product.

Operation of the team will encompass various aspects. From tasks involving design and research, to administration and marketing. If you are interested in bioenergy, biotechnology being a member of the team is a great way to get a hands on look at these areas. If you have any questions or are interested in the team please send an email to brian.jong1@monash.edu



The SMUCE Careers Guide aims to provide both undergraduate and postgraduate students with useful information, hints, and advice on career and research opportunities relevant to Chemical Engineering.

This Guide is not intended to be comprehensive. The information in this Guide was compiled by contacting each company/employee/researcher/club/alumni and asking them to complete a short survey about their company/themselves/research/club information, and providing details of their graduate and vacation employment offerings, where relevant. The information in this Guide is the compiled information from the companies/employees/researchers/clubs and does not represent the opinion of SMUCE or Monash University.

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