CHEMICAL ENGINEERING

2023 *Student Handbook*

CEUS
UNSW

INTRODUCTION

The Chemical Engineering Undergraduate Society (CEUS) Student Handbook has been developed by the 2021 CEUS Executive Team and reviewed by the 2023 CEUS Executive Team.

This book has been specially curated to give students studying Chemical Engineering or Chemical Product Degrees a collective guide on how to structure their degree as well as how to maximise the opportunities the faculty provides.

We recognise that information on a number of topics such as double degree structures and exchange subjects can be difficult and tedious to find so we have compiled it all to form a good starting point for your own digging.

In this book we have also collected also course reviews from students who have completed a variety of electives, general education and thesis topics. Advice on report writing, slide presentation and software locations can also be found in this handbook

This is a continuous document and will be updated yearly. For more careers related information, make sure to check out the Careers Handbook

Acknowledgements

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Disclaimer

Please note, whilst all due care has been taken in collecting this information and ensuring that the material is correct at the time of publishing, it is still based primarily on collective experiences and may be biased. Information obtained from public websites may change without notice. Course structures for future terms may change due to COVID or curriculum edits.

The Chemical Engineering Undergraduate Society of UNSW takes no responsibility for any errors and any such reliance upon them.

We suggest students planning their degree double check term availabilities and prerequisites on the UNSW website.

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CONTENTS

SECTION 1

ALL ABOUT OUR DEGREES

YOUR GUIDE TO CHEM ENG, CHEM PRODUCT, DOUBLE DEGREES AND THESIS.

SUGGESTED DEGREE STRUCTURES

IT'S HARD TO PLAN TRIMESTERS

Degree planning is painful, especially with trimesters.

To help navigate the UNSW website and plan your degree, CEUS put together information about Units of Credit (UOC) and example degree plans.

UNITS OF CREDIT CRAP:

Most courses are worth 6 Units of Credit (UOC)

- Thesis A/B/C are worth 12 UOC altogether (so 4 UOC each)
- CEIC4001 DP is worth 12 UOC

Full-time enrolment for one year is defined as 48 UOC with at least one enrolment in each term.

Full-Time domestic students need to enrol in a minimum of 12 UOC each term, or 36 UOC across three standard terms with at least one course enrolment in each term.

CHEMICAL ENGINEERING [CEICAH] (STARTING T1)

YEAR 1	YEAR 2	YEAR 3	YEAR 4
TERM 1			
CHEM1811 (T1)	CEIC2000 (T1)	CEIC3000 (T1)	CEIC4001 (DP T1) *12UOC
DESN1000 (T1/T3)	CEIC2001 (T1)	CEIC3004 (T1)	
MATH1131/1141 (all)	MATH2089 (T1/T2)	CEIC3005 (T1)	Thesis A
TERM 2			
CHEM1821 (T2)	CEIC2002 (T2/Summer)	CEIC3006 (T2)	Thesis B
MATH1231/1241 (all)	CEIC2005 (T2/Summer)	CEIC3007 (T2)	Chemical Engineering Depth Elective
ENGG1811 (all terms)	General Education	CEIC4000 (T2)	Chemical Engineering Breadth Elective
TERM 3			
PHYS1121/1131 (all)	CEIC2007 (T3)	Industrial Training ENGG4999	Thesis C
MATH2018 (all)	CEIC3001 (T3)		Breadth or Practice Elective
Level 1 Elective* (e.g CEIC1000 T3)	DESN2000 (T3)		General Education

- This is just an EXAMPLE course structure, you can move things around but be careful of pre-course requisites!
- Year 3 Term 3 is left empty for you to do your Industrial Training (see the Careers Handbook for more info).

NOTES:

- CEICAH students must take 6-12 UOC of depth electives, 6-12 UOC of breadth electives and up to 6 UOC of practice electives, plus 12 UOC of Gen Ed electives. These may be taken in any term.
- A small amount of these courses are available in the Summer Term which can help your degree progression and lighten the load in older years

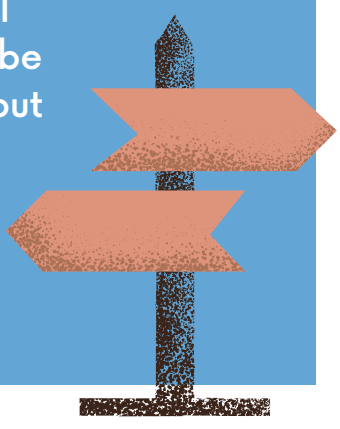
CHEMICAL ENGINEERING [CEICAH] (STARTING T3)

YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
TERM 1				
	CHEM1811 (T1)	CEIC2000 (T1)	CEIC3000 (T1)	CEIC4001 (DP T1) *12UOC
	ENG1811 (all)	CEIC2001 (T1)	CEIC3004 (T1)	
	MATH1231/1241 (all)		CEIC3005 (T1)	Thesis A
TERM 2				
	CHEM1821 (T2)	CEIC2002 (T2/Summer)	CEIC3006 (T2)	Thesis B
	MATH2089 (T1/T2)	CEIC2005 (T2/Summer)	CEIC3007 (T2)	Chemical Engineering Depth Elective
	General Education		CEIC4000 (T2)	Chemical Engineering Breadth Elective
TERM 3				
PHYS1121/1131 (all)	MATH2018 (all)	CEIC2007 (T3)	Industrial Training ENGG4999	Thesis C
DESN1000 (T1/T3)	Level 1 Elective* (e.g CEIC1000 T3)	CEIC3001 (T3)		Breadth or Practice Elective
MATH1131/1141 (all)	General Education	DESN2000 (T3)		

TIPS

- In First Year, we recommend taking MATH 1131, MATH1231, PHYS1121 instead of their Higher counterparts. There is no scaling! If you would like to learn the harder content, you can do so without it effecting your WAM.
- For Thesis, contact your desired supervisor in Year 3 Term 2/3! You are required to pick a supervisor and topic to do over 3 terms but some projects will require you to start earlier (during the summer term).
- We do not recommend doing Term 3 intake. Wait until Term 1 the next year. This will ensure cohort cohesion since you will be taking essentially the same courses with your grade throughout the 4 years in your degree.

Alternative course arrangements can be found here!



4TH YEAR THESIS

WHEN SHOULD I DO THESIS?

Final year if you are doing a single degree.
Thesis project is made up of 3 subjects - Thesis A, B and C.

Thesis A

- Typically started in the first term of 4th year
- Can do thesis A/B/C in the summer term, but consult your supervisor first (they might go on holiday)!
- Can be done with DP (CEIC 4001) but it NOT advised since they are both very time consuming. .

Thesis B & C

- Not recommended to do together unless you and your supervisor are confident

Note:

- Can do thesis during industrial training (must discuss with supervisors who allow this, check Thesis Moodle Page)
- A common alternative is to extend your degree by a term and complete CEIC4001 in Term 1 of 5th Year

CHOOSING A TOPIC AND SUPERVISOR

Pick a Thesis Topic that interests you the most. Think about...

What were your favourite courses, lab experiments or simulations ?

What are you passionate about? Water, environment, energy, polymers, health, food science, process control ?

Don't stress too much about picking a topic though!
All thesis topics will roughly follow the same techniques and methods. Plus, exploring a topic will give you insight into what you want and don't want to do in your career.

Look for a supervisor with shared interests and you have good chemistry with.
Talk to a variety of supervisors before you decide (they are all super friendly and keen to talk about their research topics). It is also good to discuss work style and expectations.

PSSST.. ANY THESIS HINTS?

The aim for Thesis A is to get all of your training done, so that you can start simulations/experiments in Thesis B.
Get a head start to lock in your supervisor!! Thesis is very self-guided, so
"make sure you are proactive not reactive"

FAQ WITH PAST THESIS STUDENTS!

CEUS has previously conducted interviews with students doing a variety of thesis projects. *Scan the QR code* to find out more about what challenges they faced and how to they got a head start!

TOMAS BEAK

My thesis topic is about designing catalysts for the methanation of CO2 in the Particles and Catalysis Research Unit at UNSW.

Find out more here:

SEAN PAUL

Find out more here:

My thesis topic was aimed at characterizing the effects bushfire and flooding have on water catchment systems, specifically in the Warragamba and Nepean Dams.

ADAM HALMY

My thesis topic is focused on investigating the speed that water molecules can flow over graphene sheets through molecular dynamics in energy storage applications

Find out more here:

SOHINI CHAKRABARTI

My thesis topic was about utilising nanoparticles for drug delivery, in particular, formulating sugar-based nanoparticles for the delivery of chemotherapeutic drugs as part of WichLab UNSW.

By the end of thesis, when everybody is sick of it, it's the supervisor who counts, not the topic.

Chemical Product Engineering

Chemical Product Engineering is a more chemistry-based version of chemical engineering. It eventually develops into product design and development (in 4th year). It is similar to chemical engineering in 1st year, however begins to diverge in 2nd year. It consists of 4 chemistry courses (whereas chem eng has one combined chemistry course), and core courses such as polymer chemistry and complex fluids and rheology, which very much focus on moresmall scale interactions (compared to process engineering which is larger scale). The honours year consists of a product design project thesis A and B, essentially a lovechild of chemical engineering's design project and thesis A and B, only from a product development standpoint.

Year 1	Year 2	Year 3	Year 4
Term 1			
CHEM1811 (T1)	CEIC2000 (T1)	MATH2019 (all)	CEIC6711 (T1)
DESN1000 (T1/T3)	CEIC2001 (T1)	CHEM3021 (T1)	CEIC4007 (T1)
MATH1131/1141 (all)	MATH2089 (all)	General Education	Chem Product Discipline Elective
Term 2			
CHEM1821 (T2)	CEIC2002 (T2/Summer)	POLY3000 (T2)	CEIC4008 (T2)
MATH1231/1241 (all)	CEIC2005 (T2/Summer)	CEIC4000 (T2)	CEIC8204 (T2)
ENGG1811 (all terms)	CHEM2021 (T2)	Chem Product Discipline Elective	Chem Product Discipline Elective
Term 3			
PHYS1121/1131 (all)	CHEM2031 (T3)	Industrial Training	Chem Product Discipline Elective
CHEM2041 (T1/T3)	DESN2000 (T3)		General Education
Level 1 Elective* (e.g CEIC1000 T3)	CEIC3001 (T1/T3)		

DOUBLE DEGREE COURSE STRUCTURE

EVERYTHING YOU NEED TO KNOW

As a student doing a double degree, it is often difficult to plan out your degree with all the prerequisites and limited term offerings for certain subjects. But don't worry because CEUS has got your back.
Below are the course structures for popular degrees that are done in conjunction with Chemical Engineering.

CHEMICAL ENG/BIOMED

Black: Courses associated with Chemical Engineering

Yellow: Courses associated with Biomedical Engineering. Note that the majority of the Biomedical courses are electives and the following have been chosen as a recommended guide. The full list of BIOM elective courses are available on the UNSW Handbook Website.

YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
TERM 1				
CHEM1811 (T1)	CEIC2000 (T1)	CEIC3004 (T1)	CEIC4001 (DP T1) *12UOC	Discipline Elective
DESN1000 (T1/T3)	CEIC2001 (T1)	CEIC3005 (T1)		Research Thesis A
MATH1131/1141 (all)	PHSL2121 (T1)	CEIC3000 (T1)	BIOM9410 (T1)	BIOM9711 (T1)
TERM 2				
CHEM1821 (T2)	CEIC2002 (T2/Summer)	CEIC3006 (T2)	CEIC3007 (T1/T2)	Research Thesis B
PHYS1121/1131 (all)	CEIC2005 (T2/Summer)	CEIC4000 (T2)	Breadth Elective	BIOM9332 (T2)
BIOM1010 (T2)	MATH2089 (T1/T2)		BIOM9420 (T2)	
TERM 3				
ENGG1811 (all)	CEIC2007 (T3)	DESN2000 (T3)	Discipline Elective	Research Thesis C
MATH1231/1241 (all)	CEIC3001 (T3)	BIOM9027 (T3)	BIOM9521 (T3)	BIOM9333 (T3)
	MATH2018 (all)		BIOM9311 (T3)	Free Elective

CHEMICAL ENG/COMP SCI

Black: Courses associated with Chemical Engineering

Yellow: Courses associated with Biomedical Engineering. Note that for the Computer Science degree, the default stream was used in creating this template. The five Computing electives that were chosen are only recommendations. The full list of Computing electives (any level 3, 4, 6 or 9 Computer Science course) is available on the UNSW Handbook Website.

YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
TERM 1				
CHEM1811 (T1)	CEIC2000 (T1)	CEIC3004 (T1)	CEIC4001 (DP T1) *12UOC	Thesis A
DESN1000 (T1/T3)	CEIC2001 (T1)	CEIC3005 (T1)		COMP3411 (T1/Summer)
COMP1511 (all)	COMP2521 (all)	CEIC3000 (T1)	Free Elective	COMP9417 (T1/T2)
TERM 2				
CHEM1821 (T2)	CEIC2002 (T2/Summer)	CEIC3006 (T2)	CEIC4000 (T2)	Thesis B
MATH1131/1141 (all)	CEIC2005 (T2/Summer)	CEIC3007 (T1/T2)	COMP3141 (T2)	COMP3900 (all)
COMP1521 (all)	MATH2089 (T1/T2)	COMP2511 (T2/T3)	Free Elective	
TERM 3				
PHYS1121/1131 (all)	CEIC2007 (T3)	DESN2000 (T3)	Discipline Elective	Thesis C
MATH1231/1241 (all)	CEIC3001 (T3)	COMP3421 (T3)	COMP3121 (T2/T3)	COMP3311 (T3)
COMP1531 (all)	MATH2018 (all)			

* COMP1521 is also used as the First-Year Engineering Elective
** MATH2018 is an online course. it can be replaced with MATH2019 which is offered in Term 1

CHEMICAL ENG/COMMERCE

This general outline created below is a degree plan for Chemical Engineering / Commerce students who have began in 2021. Note that the course codes and program structure of a Commerce degree was changed from 2020 to 2021 and students who commenced prior to 2021 will have different required courses.

Black: Courses associated with Chemical Engineering

Yellow: Courses associated with Commerce. Note that for the Commerce degree, this template follows a Finance major. For other Commerce majors, see the UNSW Handbook.
Note: the mandatory WIL component of the Commerce degree will be met through the 60 days of Industrial Training as part of the Chemical Engineering degree.

YEAR 1	YEAR 2
CHEM1811 (T1)	CEIC2000 (T1)
DESN1000 (T1/T3)	CEIC2001 (T1)
COMM1100 (all) [previously ECON1101]	MATH2019 (T1)
CHEM1821 (T2)	CEIC2002 (T2/Summer)
MATH1131/1141 (all)	CEIC2005 (T2/Summer)
COMM1120* (all)	MATH2089 (T1/T2)
PHYS1121/1131 (all)	CEIC2007 (T3)
ENGG1811 (all)	CEIC3001 (T3)
MATH1231/1241 (all)	COMM1140 (all) [previously ACCT1501]

YEAR 3	YEAR 4	YEAR 5	YEAR 6
TERM 1			
CEIC3004 (T1)	CEIC3000 (T1)	CEIC4001 (DP T1) *12UOC	Thesis A
CEIC3005 (T1)	FINS2624 (all)		Business Elective
FINS1612 (all)			
TERM 2			
COMM1150 (T2/T3l)	CEIC3006 (T2)	CEIC3007 (T1/T2)	Thesis B
COMM1170 (T2/T3)	CEIC4000 (T2)	Finance Elective	Business Elective
COMM1180 (T2/T3)			
TERM 3			
DESN2000 (T3)	FINS3616 (all)	Discipline Elective	Thesis C
COMM1190 (T2/T3)	Finance Elective	Finance Elective	Business Elective
FINS2613 (T3) [previously FINS1613]			

*COMM1120 is also used as the First-Year Engineering Elective

CHEMICAL ENG/SCIENCE

It is difficult to proactively structure a double degree with chemical engineering as it is entirely dependent on the specific science major. Some science majors (e.g. Bioinformatics, Biotechnology, Genetics) have much higher required UOC's (up to 96), whilst some science majors (e.g. Mathematics, Statistics, Pharmacology, Pathology, Physiology) have much lower required UOC's (down to 66).

Black: Courses associated with Chemical Engineering

Yellow: Courses associated with Science. Note that for the Science degree, this template follows a Microbiology major. For other Science majors, see the UNSW Handbook. If you have any questions specific to certain majors, please don't hesitate to contact us (See the student contact sections below).

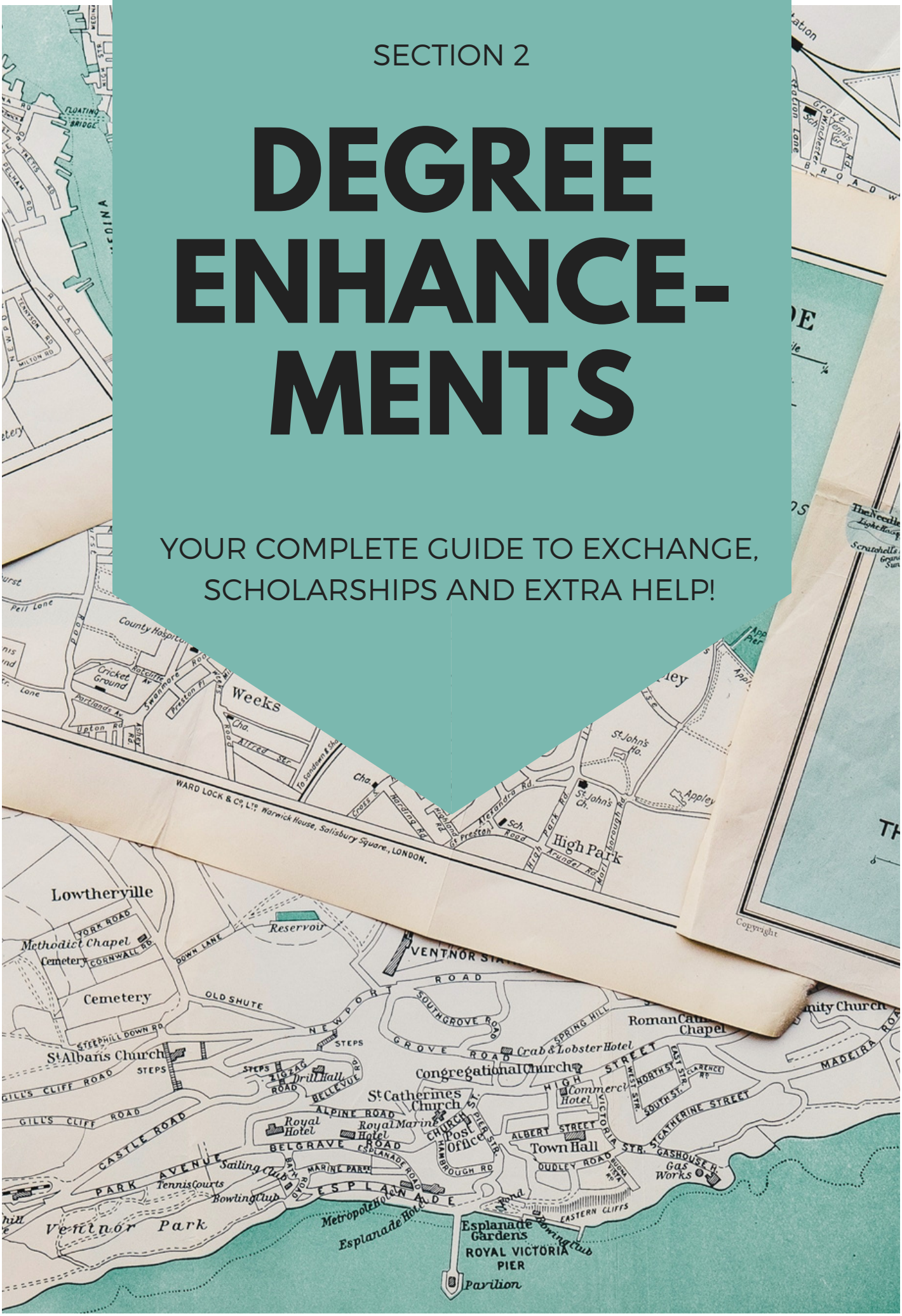
YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
TERM 1				
CHEM1811 (T1)	CEIC2000 (T1)	CEIC3004 (T1)	CEIC3000 (T1)	CEIC4001 (DP T1) *12UOC
DESN1000 (T1/T3)	CEIC2001 (T1)	CEIC3005 (T1)	Level 3 Elective (e.g BABS3041, MICR3071)	
Level 1 Elective (e.g BABS1201, BIOS1301)	MATH2019 (T1)	Science Course (MICR2011)	Free Science Elective	Thesis A
TERM 2				
CHEM1821 (T2)	CEIC2002 (T2/Summer)	CEIC3006 (T2)	CEIC4000 (T2)	Thesis B
MATH1131/1141 (all)	CEIC2005 (T2/Summer)	Science Course (BABS2202)	CEIC3007 (T1/T2)	Free Science Elective
Science Course (BABS1202)	MATH2089 (T1/T2)	Science Course (BIOC2101)		Level 3 Elective
TERM 3				
PHYS1121/1131 (all)	CEIC2007 (T3)	DESN2000 (T3)	Discipline Elective	Thesis C
ENGG1811 (all)	CEIC3001 (T3)	Level 3 Elective	Level 3 Elective	Free Science Elective
MATH1231/1241 (all)	Science Course (BIOC2201)	General Ed/4th year elective		

If you are doing Advanced Science, it's also worth sticking to this plan as your 6th year will be filled with three 16 UOC science honours courses, leaving no space to catch up on missed electives.

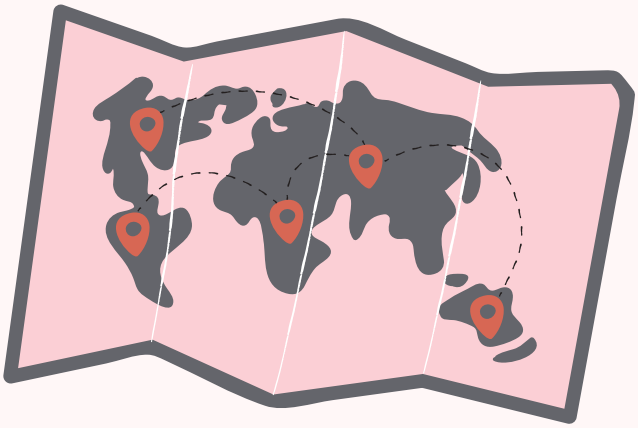
SECTION 2

DEGREE ENHANCE-MENTS

YOUR COMPLETE GUIDE TO EXCHANGE, SCHOLARSHIPS AND EXTRA HELP!



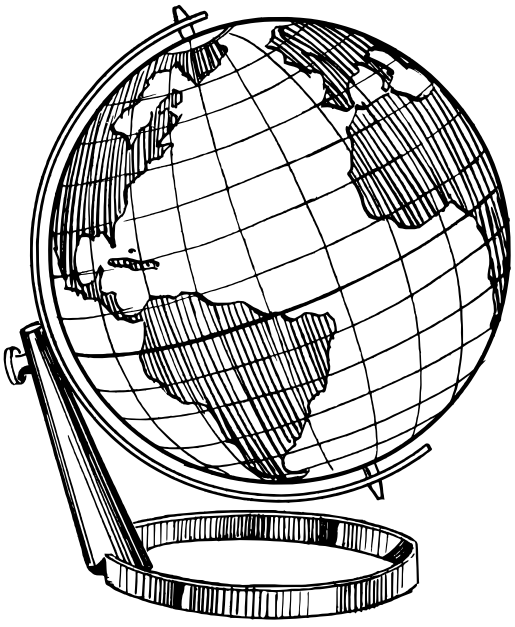
ALL ABOUT EXCHANGE



EVERYTHING YOU NEED TO KNOW ABOUT EXCHANGE

The general rule for exchange at UNSW is that undergraduate students are eligible to apply after completing at least 18 units of credit (ie. one full-time term of uni). This means the earliest you can go on exchange is from Term 3 of Year 1! The application process however is quite time consuming and lengthy and requires quite a bit of research. Hence, this section is a summary of everything you need to know about going on exchange as a Chemical Engineering student at UNSW!

For students studying a single chemical engineering degree, the best and most common time students go on exchange is during **Term 3 of Year 3** as there are no core subjects offered in this term, and you hence have more flexibility in the courses you can match with overseas universities. This is also a great chance to study a language or any other gen-ed or elective course. However, the best time to go on exchange is entirely up to the country and university you choose!



The following table lists all the successful course matches for chemical engineering courses from the last five years. However, these are just suggestions, and it definitely possible to course match other universities and countries, but more research and consultation with Chemical Engineering Faculty is required to do so.

Note that gen-ed courses have not been added to this table as there are a plethora of course matches for these.

Core Course

DENMARK

OVERSEAS COURSE / CODE NAME

Denmark Technical University

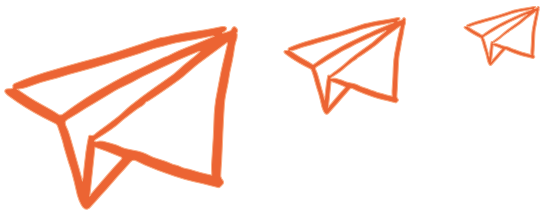
28221

USA

OVERSEAS COURSE / CODE NAME

Georgia Institute of Technology

ChBE 2100



USA

OVERSEAS COURSE / CODE NAME

Purdue University

ME58100 and STAT350001

USA

OVERSEAS COURSE / CODE NAME

Georgia Institute of Technology

MA2213 and ST2334

USA

OVERSEAS COURSE / CODE NAME

University of Conneticut

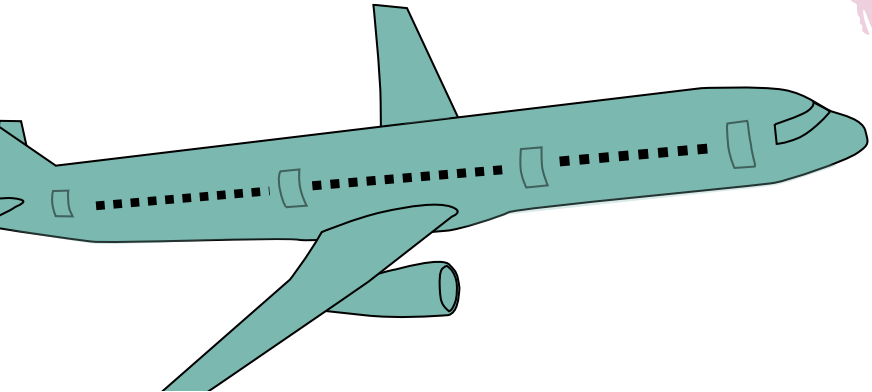
CE 2251

SINGAPORE

OVERSEAS COURSE / CODE NAME

National University of Singapore

CE 2251



Core Course

USA
OVERSEAS COURSE / CODE NAME
University of Florida
MAC2313 and MAP4341

USA
OVERSEAS COURSE / CODE NAME
Georgia Institute of Technology
MATH 2551 and MATH 2552

CANADA
OVERSEAS COURSE / CODE NAME
University of British Columbia
MATH256

USA
OVERSEAS COURSE / CODE NAME
University of California Berkeley
CHEM150A

DENMARK
OVERSEAS COURSE / CODE NAME
Denmark Technical University
41814: Heat Transfer

Core Course

DENMARK
OVERSEAS COURSE / CODE NAME
Denmark Technical University
26231: Physical Chemistry 3

HONG KONG
OVERSEAS COURSE / CODE NAME
Hong Kong University of Science and Technology
CENG 3220

JAPAN
OVERSEAS COURSE / CODE NAME
Kyoto University
26231: Physical Chemistry 3

Core Course

DENMARK Denmark Technical University

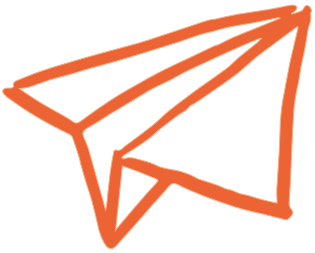
OVERSEAS COURSE / CODE NAME 28242: Chemical Kinetics and Catalysis

DENMARK Denmark Technical University

OVERSEAS COURSE / CODE NAME 28140: Introduction to Chemical Reaction Engineering

CANADA University of Alberta

OVERSEAS COURSE / CODE NAME CHE345



HONG KONG Hong Kong University of Science and Technology

OVERSEAS COURSE / CODE NAME CENG 3220

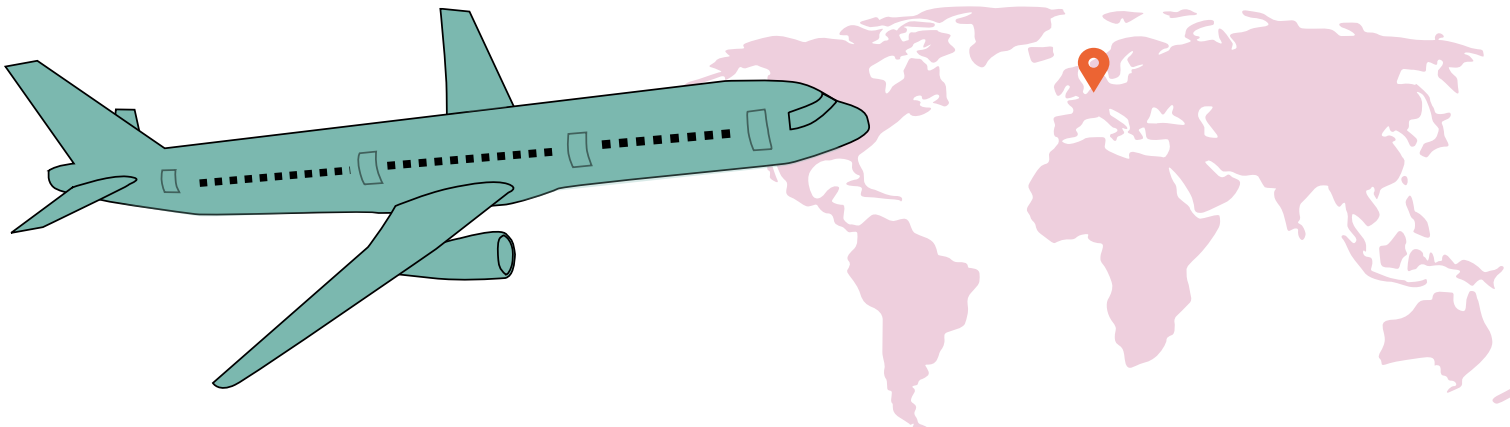
Core Course

DENMARK Denmark Technical University

OVERSEAS COURSE / CODE NAME 28242: Chemical Kinetics and Catalysis

DENMARK Denmark Technical University

OVERSEAS COURSE / CODE NAME 28140: Introduction to Chemical Reaction Engineering



Core Course

DENMARK Denmark Technical University

OVERSEAS COURSE / CODE NAME 28420: Separation Processes

UK University of Edinburgh

OVERSEAS COURSE / CODE NAME CHEE09009

HONG KONG Hong Kong University of Science and Technology

OVERSEAS COURSE / CODE NAME CENG 3210

Core Course

UK University of Edinburgh

OVERSEAS COURSE / CODE NAME CHEE09015 and CHEE10010

UK University of Edinburgh

OVERSEAS COURSE / CODE NAME CHEE09015 and CHEE10006

USA Purdue University

OVERSEAS COURSE / CODE NAME CHE46300

USA University of Maryland

OVERSEAS COURSE / CODE NAME CHBE444

Core Course

US Purdue University

OVERSEAS COURSE / CODE NAME CHE4200

US Georgia Institute of Technology

OVERSEAS COURSE / CODE NAME ChBE 4510 and ChBE 4515

US University of Wisconsin, Madison

OVERSEAS COURSE / CODE NAME CBE 450

DENMARK Denmark Technical University

OVERSEAS COURSE / CODE NAME 28157: Process Design

DENMARK Denmark Technical University

OVERSEAS COURSE / CODE NAME 28350: Process Design Principles and Methods

UK University of Edinburgh

OVERSEAS COURSE / CODE NAME CHEE09015 and CHEE10010

Core Course

US
OVERSEAS COURSE / CODE NAME
Purdue University
CHE45600

US
OVERSEAS COURSE / CODE NAME
Georgia Institute of Technology
ChBE 4411

US
OVERSEAS COURSE / CODE NAME
University of Wisconsin, Madison
CBE 470

UK
OVERSEAS COURSE / CODE NAME
University of Edinburgh
CHEE09014

CANADA
OVERSEAS COURSE / CODE NAME
University of British Columbia
CHBE356

CANADA
OVERSEAS COURSE / CODE NAME
University of British Columbia
CHBE474

HONG KONG
OVERSEAS COURSE / CODE NAME
Hong Kong University of Science and Technology
CENG 3210

JAPAN
OVERSEAS COURSE / CODE NAME
Kyoto University
26231: Physical Chemistry 3

JAPAN
OVERSEAS COURSE / CODE NAME
Kyoto University
26231: Physical Chemistry 3

DENMARK
OVERSEAS COURSE / CODE NAME
Denmark Technical University
28420: Separation Processes

Core Course

DENMARK
OVERSEAS COURSE / CODE NAME
Denmark Technical University
28121: Chemical Unit Operations Laboratory

UK
OVERSEAS COURSE / CODE NAME
University of Edinburgh
CHEE09016

HONG KONG
OVERSEAS COURSE / CODE NAME
Hong Kong University of Science and Technology
CENG 3910

CANADA
OVERSEAS COURSE / CODE NAME
University of British Columbia
CHBE262

USA
OVERSEAS COURSE / CODE NAME
Purdue University
CHE43500

DENMARK
OVERSEAS COURSE / CODE NAME
Denmark Technical University
28870: Energy and Sustainability

HONG KONG
OVERSEAS COURSE / CODE NAME
Hong Kong University of Science and Technology
CENG 4710

CANADA
OVERSEAS COURSE / CODE NAME
University of Ottawa
CHG4307

CANADA
OVERSEAS COURSE / CODE NAME
University of British Columbia
GEOG 310

Core Course

USA
OVERSEAS COURSE / CODE NAME
Georgia Institute of Technology
CEE 2300

SPAIN
OVERSEAS COURSE / CODE NAME
Universidad Politecnica de Valencia
13755: Life Cycle Assessment

First-Year Elective/
Gen-Ed

US Purdue University
OVERSEAS COURSE / CODE NAME PSY 12000

US Georgia Institute of Technology
OVERSEAS COURSE / CODE NAME PSYC 1101

USA University of Colorado, Boulder
OVERSEAS COURSE / CODE NAME PSYC1001

CANADA University of British Columbia
OVERSEAS COURSE / CODE NAME PSYC 102

DENMARK Denmark Technical University
OVERSEAS COURSE / CODE NAME 02454: Introduction to Cognitive Science

DENMARK Denmark Technical University
OVERSEAS COURSE / CODE NAME 28515: Pharmaceutical Process Development

Breadth Elective (4th Year)

Breadth Elective (4th Year)

US

OVERSEAS COURSE / CODE NAME

Michigan State University

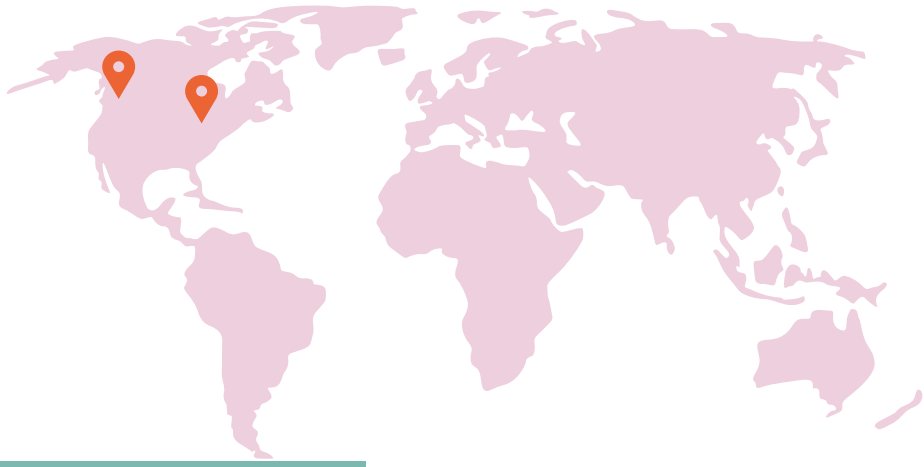
PSY 12000

CANADA

OVERSEAS COURSE / CODE NAME

University of Colorado, Boulder

PSYC1001



There are a few scholarships on offer for Exchange, which you can apply for during the application process. Any engineering student who applies for exchange is automatically considered for the Engineering Exchange Scholarship, valued at $2,000, as well as the Student Exchange Achievement Scholarship, valued at $5,000. These are mainly awarded based on Academic Merit (WAM). Additionally, there is a Student Exchange Equity Scholarship valued at $12,000, which has a separate application through the UNSW Scholarship website.

TASTE OF RESEARCH SCHOLARSHIP

The Taste of Research Scholarship is a program that allows second and third year undergraduate engineering students to work with an engineering research group for a 60-day period. It is particularly useful for gaining experience in a non-industrial field, and the research project undertaken can typically lead into a fourth-year thesis courses. Students receive AUD 6,000 for the scholarship, and if their project involves industry engagement, it can count towards 30 days of non-traditional industrial training. It is offered annually in two sessions, one over Term 2 and 3 and another over the summer holiday.

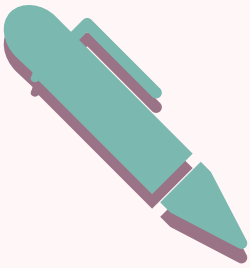
More details regarding administration and selection can be found here: https://www.unsw.edu.au/engineering/student-life/undergraduate-research-opportunities/taste-research

HOW TO APPLY

Available projects for chemical engineering in 2021 can be found below. The year in the URL can be changed to look at projects available in other years.
https://www3.eng.unsw.edu.au/scholarships/tr2021/projects/school.cfm?id=2

A research project plan must be submitted as part of your application, so it is imperative that you understand the problem your project addresses and why it is an important area of study.

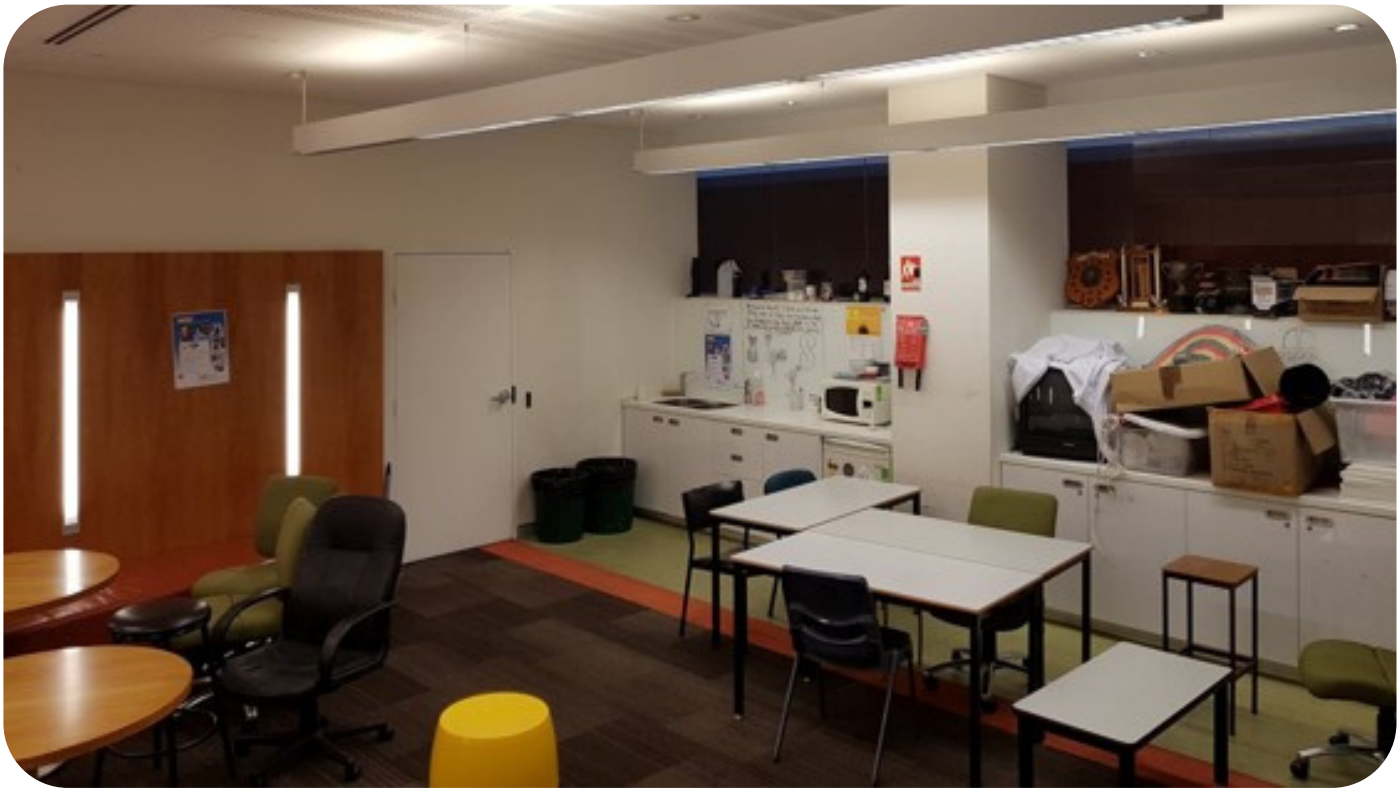
As each candidate can only select a single project preference, to apply you must reach out to the supervisors responsible for the project you are most interested in. This allows you to introduce yourself to them, express your interest in the project and perhaps find out other details associated with the program. They will also be required to approve your project plan prior to application submission.



HOW TO FIT IT INTO YOUR DEGREE

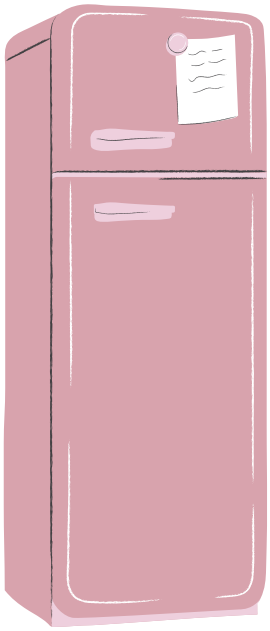
The scholarship is typically undertaken by students over the summer break – this is because this allows for more time to complete all 60 days without the added pressure of university assignments. However, 60 days of industrial training is also required for students to graduate, which is more difficult to complete during the year. Most internships are offered preferentially to penultimate students; thus, it is ideal to complete this scholarship during the summer after second year.

If this isn't an option for you, another suitable time might be during Term 2 and 3 of third year. This is because the degree structure allows for students to take all of Term 3 off during their third year, and only CEIC3006 and CEIC3007 must be taken during Term 2. Comparatively, MATH2089, CEIC2005 and CEIC2002 which are taken in Term 2 of second year are more content heavy, which may make it more difficult to make time to work on your project.



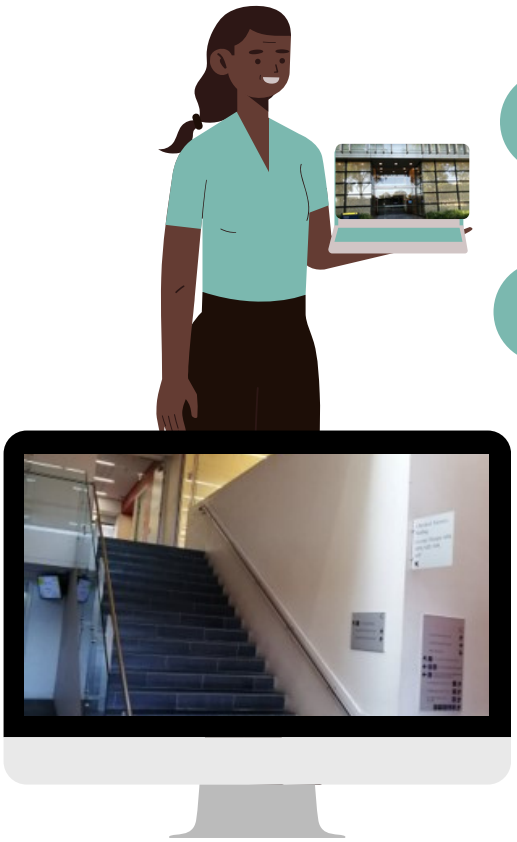
Common room

The CEUS Common Room is the place to go for any Undergraduate Chemical Engineering students seeking a comfortable and well-resourced haven to study or socialise. It is located on the Mezzanine level, straight up the stairs from the Central Wing on the right. (NOTE: if the door is hard to open and close, sometimes it takes a small jiggle of the door handle).



The common room is stocked with useful equipment such as a fridge, microwave, toaster, sandwich press and a hot and cold drinking water tap. It also has many kitchen utensils, cutlery, food storage items and cleaning products, not to mention the mammoth box of free chocolates (BEWARE the expiration date).

House Keeping Rules



1. **Clean up**

   Clean up any spills, crumbs or dirty dishes with cleaning products located on the sink

2. **Fridge**

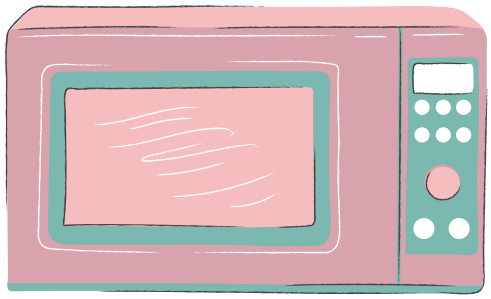
   Do not keep your feed in the fridge for more than 3 days or it will be thrown out.

3. **Appliances**

   Do not remove the microwave or fridge power cord

4. **Leave everything as is**

   Do not take from the merchandise boxes or eskis. (NOTE: if you would like to buy any merchandise, message the CEUS UNSW FaceBook Page)



STUDENT CONTACTS

Below are a bunch of student contacts with their name and unique degree listed, so if you are doing the same degree or similar degree, you can contact them for help, advice or just a good ol' chat

3RD YEAR CALLUM WAINWRIGHT | PRESIDENT

EMAIL	DEGREE/MAJOR
z5358914@ad.unsw.edu.au	Chemical Engineering / Computer Science

JARROD KHAW | SOCIALS VICE PRESIDENT 3RD YEAR

EMAIL	DEGREE/MAJOR
z5363774@ad.unsw.edu.au	Chemical Engineering/ Commerce

4TH YEAR CAMERON SUEN | INDUSTRY VICE PRESIDENT

EMAIL	DEGREE/MAJOR
z5312968@ad.unsw.edu.au	Chemical Engineering

EDWARD JOSEPH | SECRETARY 3RD YEAR

EMAIL	DEGREE/MAJOR
z5363657@ad.unsw.edu.au	Chemical Engineering/ Biomedical Engineering

3RD YEAR FERGUSON SMYTH | TREASURER

EMAIL	DEGREE/MAJOR
z5367628@ad.unsw.edu.au	Chemical Engineering

3RD YEAR WILLIAM BOOTH | ARC DELEGATE

EMAIL	DEGREE/MAJOR
z5362486@ad.unsw.edu.au	Chemical Product Engineering/ Chemistry

CARLEY SO | MARKETING COORDINATOR 3RD YEAR

EMAIL	DEGREE/MAJOR
z5363755@ad.unsw.edu.au	Chemical Engineering/ Commerce

2ND YEAR AMELIA FERGUSON | INTERSOCIETY REPRESENTATIVE

EMAIL	DEGREE/MAJOR
z5360986@ad.unsw.edu.au	Chemical Engineering

JUNIAS TJARNIA | 4TH YEAR REPRESENTATIVE 4TH YEAR

EMAIL	DEGREE/MAJOR
z5308303@ad.unsw.edu.au	Chemical Engineering

4TH YEAR GABI BURGE | 4TH YEAR REPRESENTATIVE

EMAIL	DEGREE/MAJOR
z5255972@ad.unsw.edu.au	Chemical Engineering

3RD YEAR JAMES ZOUROUDIS | 3RD YEAR REPRESENTATIVE

EMAIL	DEGREE/MAJOR
z5362926@ad.unsw.edu.au	Chemical Engineering

CHERYL LAM | 3RD YEAR REPRESENTATIVE 3RD YEAR

EMAIL	DEGREE/MAJOR
z5360828@ad.unsw.edu.au	Chemical Engineering/ Commerce

2ND YEAR MING-LOK SUN | 2ND YEAR REPRESENTATIVE

EMAIL	DEGREE/MAJOR
z5416498@ad.unsw.edu.au	Chemical Engineering

HAMZA SOHAIL | 2ND YEAR REPRESENTATIVE 2ND YEAR

EMAIL	DEGREE/MAJOR
z5360986@ad.unsw.edu.au	Chemical Engineering

1ST YEAR NINA TEERASUPHASET | 1ST YEAR REPRESENTATIVE

EMAIL	DEGREE/MAJOR
z5396186@ad.unsw.edu.au	Chemical Engineering

VERONICA PELIPOS | 1ST YEAR REPRESENTATIVE 1ST YEAR

EMAIL	DEGREE/MAJOR
z5444498@ad.unsw.edu.au	Chemical Engineering

1ST YEAR JONATHAN CAO | 1ST YEAR REPRESENTATIVE

EMAIL	DEGREE/MAJOR
z5492258@ad.unsw.edu.au	Flexi first year

LUNA PANDIELLA-MCLEOD | INDUSTRY LIAISON 1ST YEAR

EMAIL	DEGREE/MAJOR
z5480881@ad.unsw.edu.au	Chemical Engineering

1ST YEAR KERRI WAINSTEIN | MARKETING ASSISTANT

EMAIL	DEGREE/MAJOR
z5481246@ad.unsw.edu.au	Flexi first year

FIZA FARUQUE | SOCIAL MEDIA ASSISTANT 1ST YEAR

EMAIL	DEGREE/MAJOR
z5481640@ad.unsw.edu.au	Chemical Engineering

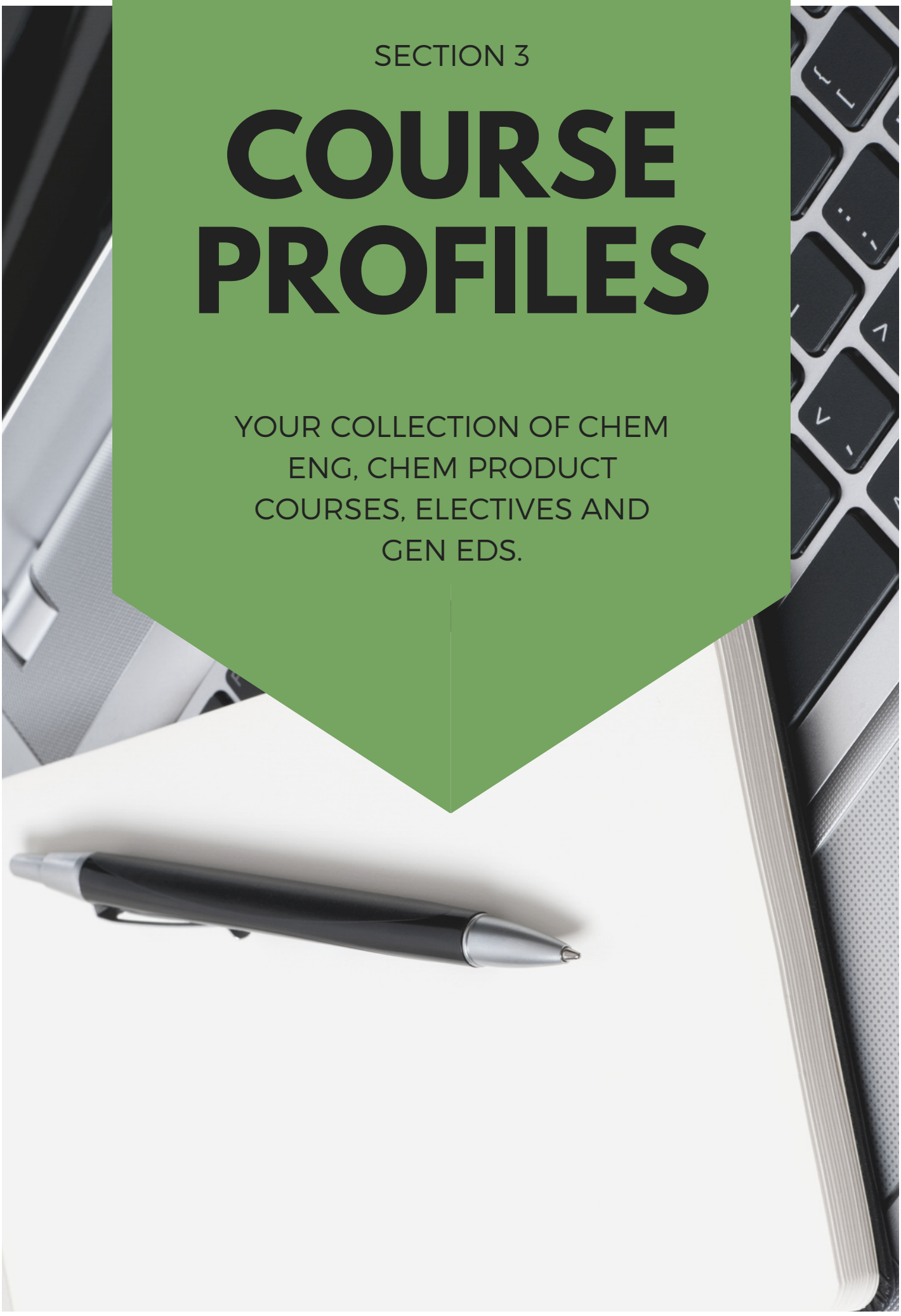
1ST YEAR LILI THEODOR | SPONSORSHIP DIRECTOR

EMAIL	DEGREE/MAJOR
z5469030@ad.unsw.edu.au	Chemical Engineering

SECTION 3

COURSE PROFILES

YOUR COLLECTION OF CHEM ENG, CHEM PRODUCT COURSES, ELECTIVES AND GEN EDS.



CORE COURSE PROFILES

Core courses are the foundation of UNSW's Chemical Engineering program and include everything from foundational knowledge in Maths and Physics through to Process Control and Engineering design courses. Keep an eye out on this as you plan your degree!

- Pre-requisites - must be taken before
- Co-requisites - can be taken at the same time
- Exclusions - Courses that can't be taken if you've already taken others
- Some courses are only offered in certain terms

To see what courses you have remaining, check out the UNSW Nucleus website and request a **Progression Check.**
https://portal.insight.unsw.edu.au/web-forms/

CHEM1811

Engineering Chemistry 1A

PRE/COREQUISITES	EXCLUSIONS
NIL	CHEM1011 CHEM1031 CHEM1051 DPST1031

Terms Available: T1

COURSE OVERVIEW AND AIMS:

Fundamental chemistry concepts, in atoms and molecules, chemical properties, energy and thermodynamic functions, and broad chemical reactions.

STYLE:

- Online lessens to teach “threshold” basic content with accompanying online quiz per weekly basis.
- Threshold lecture to reinforce fundamental content. Online lessen and quiz to be attempted before lecture participation.
- “Mastery” lectures to cover further mastery content throughout the week.
- Weekly small group tutorials.
- Laboratory classes to build “core” and “non-core” laboratory skills.

ASSESSMENTS:

- Supervised Laboratory Work: 20%
  - Tests practical lab skills
  - Required “Core” Skills (10%) and Additional “Mastery” Skills (10%)
  - Failure of Core skills sections require a make-up lab session as a last chance
  - Core Skills must be obtained to pass the course
  - Must attend 80% of all lab sessions
- Weekly Online Quizzes: 9%
  - 1% each, required for Validation Test attempts
  - Tests threshold content
  - Multiple attempts allowed
  - Requires 100% for successful completion
- Validation Tests 31%
  - Two tests throughout the term, worth 15.5% each, based on threshold content
  - Required “hurdle” mark of 75% to pass each test
  - Make up tests are offered, but marks are capped at 75% after the first attempt
  - Successful completion provides the full 31%
- Final Exam: 40%
  - Written answer question only test
  - Tests mastery content
  - Attendance not an essential requirement for passing the course; no minimum mark required

CHEM1821

Engineering Chemistry 1B

Pre/Corequisites	Exclusions
CHEM1811	CHEM1021 MATS1101 DPST1032 CHEM1041 CHEM1061 CEIC1001

Terms Available: T2

COURSE OVERVIEW AND AIMS:

Build on chemistry concepts, in organic and inorganic aspects. Learn reaction kinetics and control, stereochemistry, and main group and transition metal chemistry.

STYLE:

- Online lessens to teach “threshold” basic content with accompanying online quiz per weekly basis.
- Threshold lecture to reinforce fundamental content. Online lessen and quiz to be attempted before lecture participation.
- “Mastery” lectures to cover further mastery content throughout the week.
- Weekly small group tutorials.
- Laboratory classes to build “core” and “non-core” laboratory skills.

ASSESSMENTS:

- Supervised Laboratory Work: 20%
  - Tests practical lab skills
  - Required “Core” Skills (10%) and Additional “Mastery” Skills (10%)
  - Failure of Core skills sections require a make-up lab session as a last chance
  - Must attend 80% of all lab sessions
- ·Weekly Online Quizzes: 10%
  - Ten quizzes, required for Validation Test attempts
  - Tests threshold content
  - Multiple attempts allowed
  - Requires 100% for successful completion
- Validation Tests 40%
  - Two tests throughout the term, worth 15% each, based on threshold content
  - Required “hurdle” mark of 75% to pass each test
  - o Make up tests are offered, but marks are capped at 75% after the first attempt
  - Successful completion provides the full 30%
- Final Exam: 40%
  - Written answer question only test
  - Tests mastery content
  - Attendance not an essential requirement for passing the course; no minimum mark required

DESN1000

Introduction to Engineering Design and Innovation

Pre/Corequisites	Exclusions
NIL	DPST1071

Terms Available: T2, T3

COURSE OVERVIEW AND AIMS:

Development of skills in documentation, design and collaboration, as well as engineering design skills through a term long group project.

STYLE:

- Selection of a project, and placement into a group
- Possible lectures pertaining to project based concepts
- Variable between different projects
- Production of design documentation (reports, presentations...)

ASSESSMENTS:

- Variable between different projects

ENGG1811

Computing for Engineers

Pre/Corequisites	Exclusions
NIL	COMP1010

Terms Available: T1, T2, T3

COURSE OVERVIEW AND AIMS:

Squire computing skills in a high level programming language (primary Python) to solve engineering problems.

STYLE:

- Lectures teaching coding concepts and principles, with example problems and code
- Weekly lab work, to practice problem solving and develop coding skills, in style, understanding, and efficiency of code

ASSESSMENTS:

- Weekly Labs: 20%
  - 8 labs, marked out of 3 marks
  - Based on Python
  - 1 mark from a one attempt multiple choice question, two for lab work
  - Coding question provided at the beginning of the week, must explain and show working code to tutors
  - 2 self-directed labs (virtual) marked out of 2 marks
  - Based on MATLAB and Excel
- Assignments: 40%
  - Two assignments, each 20%
- Final Exam: 40%

MATH1131/1141

Mathematics/Higher Mathematics 1A

Pre/Corequisites	Exclusions
	DPST1013, ECON1202, ECON2291, MATH1151

Terms Available: T1,T2,T3 (T1,T3 for 1141)

COURSE OVERVIEW AND AIMS:

Development of fundamental calculus and linear algebra. Definitions, concepts, and techniques to solve problems and cases. Increase proficiency at problem solving with formal explanations to solutions.

STYLE:

- Two streams of lectures, for calculus and algebra
- Option for pre-recorded lectures
- Online, Maple TA tutorials, self-paced, with deadlines
- Classroom tutorials, alternating calculus and algebra every week

ASSESSMENTS:

- Lab Tests: 30%
  - 2 lab tests, 15% each
  - First test will only require “pen and paper” calculations, no required use of Maple numerical software for calculations
  - Second test will require Maple for certain questions
  - Open book
- Weekly Online Tests: 10%
  - Best 6 out of 9 will contribute to final 10% mark
- Assignment: 10%
  - Produce and explain solutions to a set of questions
  - Majority of marks from explanation of solutions
  - Use of mathematical nomenclature-based software, such as equation writer in Microsoft Word or Latex
- Final Exam: 50%

MATH1231/1241

Mathematics/Higher Mathematics 1B

Pre/Corequisites	Exclusions
MATH1131 or DPST1013 or MATH1141 (CR for MATH1141)	DPST1014, MATH1021, MATH1251

Terms Available: T1,T2,T3 (T1,T2 for 1141)

COURSE OVERVIEW AND AIMS:

Further concepts of calculus and linear algebra. More emphasis on application of content to unfamiliar situations and the production of formal mathematical arguments.

STYLE:

- Two streams of lectures, for calculus and algebra
- Option for pre-recorded lectures
- Online, Maple TA tutorials, self-paced, with deadlines
- Classroom tutorials, alternating calculus and algebra every week

ASSESSMENTS:

- Lab Tests: 30%
  - 2 lab tests, 15% each
  - First test will only require “pen and paper” calculations, no required use of Maple numerical software for calculations
  - Second test will require Maple for certain questions
  - Open book
- Weekly Online Tests: 10%
  - Best 6 out of 9 will contribute to final 10% mark
- Assignment: 10%
  - Produce and explain solutions to a set of questions
  - Majority of marks from explanation of solutions
  - Use of mathematical nomenclature-based software, such as equation writer in Microsoft Word or Latex
- Final Exam: 50%

PHYS1121/1131

Physics/Higher Physics 1A

PRE/COREQUISITES	EXCLUSIONS
MATH1131 or DPST1013 or MATH1141 or MATH1151 or MATH1011	DPST1023, PHYS9120

Terms Available: T1,T2,T3

COURSE OVERVIEW AND AIMS:

Introductory physics, in general mechanics, of motion, in collisions, and particle dynamics, basic thermodynamics, and waves and oscillations.

STYLE:

- Pass/fail
- Weekly optional workshop, with more advanced questions and solutions with tutors to completely explain work and concepts
- Weekly laboratory sessions with prelab work

ASSESSMENTS:

- Laboratory Experiments: 20%
  - Weekly experiments with pre-lab work and written answer questions, to be marked after completion of the practical lab section
- Online Quizzes: 10%
  - Weekly online quizzes to examine physics-based problem-solving skills from per week content
- Invigilated Quizzes: 20%
  - 2 lab tests, 10% each
  - Examines topic sections
  - Questions drawn from weekly online quiz question bank
- Final Exam: 50%

CEIC2000
Material and Energy Systems

Pre/Corequisites	Exclusions
PHYS1121 or PHYS1131	NIL

Terms Available: T1

COURSE OVERVIEW AND AIMS:

Learn thermodynamics and problem solution strategies to be able to apply thermodynamic concepts with material and energy balances to chemical process problems involving several unit operations and involving chemical reactions.

STYLE:

- Lectures to cover content
- Weekly tutorials

ASSESSMENTS:

- Online Quizzes: 20%
  - Weekly online quizzes to assess your knowledge on lecture content
- Design Assignment: 20%
  - Divided into 4 part from Week 7-10, form groups to complete weekly assignments
- Final Exam: 60%

CEIC2001
Fluid and Particle Mechanics

Pre/Corequisites	Exclusions
PHYS1121 or PHYS1131	NIL

Terms Available: T1

COURSE OVERVIEW AND AIMS:

The purpose is to develop the students' knowledge and conceptual understanding of fluid and particles properties and behaviours.

STYLE:

- Lectures to cover content
- Weekly tutorials

ASSESSMENTS:

- Examination 1: 10%
  - Covering first two topics (LM01A, LM01B)
- Examination 2: 20%
  - Covering two topics (LM02, LM03)
- Examination 3: 30%
  - Covering four topics (LM04A, LM04B, LM05A, LM05B)
- Examination 4: 40%
  - Covering seven topics (LM06, LM07A, LM07B, LM07C, LM08, LM09A, LM09B)

CEIC2002

Heat and Mass Transfer

Pre/Corequisites	Exclusions
CEIC2001	NIL

Terms Available: T2

COURSE OVERVIEW AND AIMS:

The aim of this course is to develop your understanding of the various modes of heat transfer and mass transfer phenomena.

STYLE:

- Lectures to cover content
- Weekly tutorials

ASSESSMENTS:

- Quiz 1: 10%
  - Split into weeks 1-4, content on Heat Transfer
- Mid-Sem Examination: 40%
  - Content on Heat Transfer
- Quiz 2: 10%
  - Split into weeks 7-10, content on Mass Transfer
- Final Exam: 40%
  - Content on Mass Transfer

CEIC2005

Chemical Reaction Engineering

Pre/Corequisites	Exclusions
CEIC2000, Coreq MATH2089 or MATH2301	NIL

Terms Available: T2

COURSE OVERVIEW AND AIMS:

Chemical Reaction Engineering is one of the core subjects that differentiate chemical engineers from other engineering disciplines. The majority of chemical processes involve at least one chemical reaction. In this subject students will learn how to use thermodynamics to determine if a given reaction is possible.

STYLE:

- Lectures to cover content
- Problem solving workshops
- Weekly tutorials

ASSESSMENTS:

- Online Quizzes: 10%
  - Weeks 3, 5, 8, 10
- Assignments: 20%
  - Weeks 7 & 9, divided into two parts both worth 10%
- Team Project: 20%
  - Assessed weeks 4 & 10, with weekly tasks due
- Final Exam: 50%

CEIC2007

Chemical Engineering Lab A

Pre/Corequisites	Exclusions
CEIC2000, CEIC2001, CEIC2002	NIL

Terms Available: T3

COURSE OVERVIEW AND AIMS:

A collaborative lab and report styled course. Development of collaboration skills, critical thinking, and report writing.

STYLE:

- Weekly Online Pre-labs
- Weekly in class Labs

ASSESSMENTS:

- Individual Pre-lab Interview: 42%
  - 7 Interviews, 6% each
  - Short questions to assess understanding of each lab
- Short Reports: 15%
  - 3 Team Technical Reports
- Short Individual Presentation: 7%
- Long Reports: 24%
  - 2 Team Reports
- Long Individual Presentation: 12%

DESN2000

Engineering Design and Professional Practice

Pre/Corequisites	Exclusions
ENGG1000 or DPST1071, CEIC2000, CHEM1821 or CHEM1021 or CHEM1041	NIL

Terms Available: T3

COURSE OVERVIEW AND AIMS:

Design is one of the critical foundations of engineering and a main component in creating value. A good engineer has complex technical skills, but also creative skills, project management and teamworking skills, and knowledge of professional ethical standards in design.

STYLE:

- Lectures to cover content
- Problem solving workshops
- Weekly tutorials

ASSESSMENTS:

- Design Journal: 20%
  - Week 5
- Design Presentation Pitch: 20%
  - Week 10
- Lab Exercises: 20%
  - Weekly Weeks 3-10
- Code Implementation: 10%
  - Week 10
- Final Exam: 30%
  - During exam block

MATH2089

Numerical Methods and Statistics

Pre/Corequisites	Exclusions
MATH1231 or DPST1014 or MATH1241 or MATH1251	CVEN2002, CVEN2025, CVEN2702, ECON3209, MATH2049, MATH2829, MATH2839, MATH2899, MINE2700, BEES2041, BIOS2041, MATH2099, MATH2859, MATH2901 Terms Available: Terms 1 and 2

Terms Available: T3

COURSE OVERVIEW AND AIMS:

Numerical Methods and Statistics has important applications for engineers. Across the two topics, the course teaches valuable computational methods and data analysis skills.

STYLE:

- Numerical Methods
  - Lectures to cover content
  - Alternating weekly tutorials and labs
- Statistics:
  - Lectures to cover content
  - Maple Tutorials

ASSESSMENTS:

- Numerical Methods
  - Online Quizzes: 10%
  - Online Tests: 10%
    - Weeks 5 & 9
  - Final Exam: 30%
- Statistics
  - Online Lectures and Quizzes: 10%
  - Mid-Term Exam: 10%
    - Week 7
  - Final Exam: 30%

MATH2018/2019

Engineering Mathematics 2D/2E

Pre/Corequisites	Exclusions
MATH1231 or DPST1014 or MATH1241 or MATH1251	MATH2020, MATH2029, MATH2059, MATH2120, MATH2121, MATH2130, MATH2221

Terms Available: T1, T2, T3

COURSE OVERVIEW AND AIMS:

An extension of calculus and algebraic concepts. A focus on applied mathematics exploring a range of core ideas for Engineering students.

STYLE:

- Online lectures
- Problem-solving classes

ASSESSMENTS:

- Weekly online quizzes: 10%
  - Best 8 out of 9 quizzes
- Written midterm test: 20%
  - Week 5
- Online test: 10%
  - Week 9
- Final exam: 60%

CEIC3000

Process Modelling and Analysis

PRE/COREQUISITES	EXCLUSIONS
CEIC2002, CEIC2005, MATH2089, MATH2018 or MATH2019	NIL

Terms Available: T1

COURSE OVERVIEW AND AIMS:

Numerical modelling and analysis, in dynamic/transient and steady state situations. Use of mathematics in ODE's and computational programming in Python and/or MATLAB.

STYLE:

- Two Halves: Mathematical model development and analytical solving, and Programming models and states
- Lectures
- Tutorial/Workshop

ASSESSMENTS:

- Assignments: 30%
  - Two assignments, each 15%
  - First Assignment on developing models without the use of programming
  - Second Assignment on model analysis, using Python or MATLAB
- Midterm Exam: 25%
- Examined material from the first 7 weeks of the course
- Final Exam: 45%

CEIC3001

Advanced Thermodynamics and Separation

Pre/Corequisites	Exclusions
CEIC2000, CEIC2001, CEIC2002, CEIC2005	NIL

Terms Available: T3

COURSE OVERVIEW AND AIMS:

Use of prior thermodynamics knowledge for application to common separation processes used in industrial practice. Development of design research and documentation in a collaborative environment.

STYLE:

- Two Halves: Non-ideal phase thermodynamics and separation processes
- Weekly content and lectures, content to be reviewed before lectures
- Weekly tutorials, for questions and group collaboration
- Choice of Group early on
  - Choose a relatively modern separation of a mixture in industry
  - Reports are to focus on said separation
  - Analysis report to cover thermodynamics and equilibria of the process
  - Final report to cover design guidelines of implementation of process into an industrial situation

ASSESSMENTS:

- Quizzes: 10%
  - Two summative quizzes, 4% and 6% to examine content
- Midterm Exam: 15%
  - Covers Thermodynamics content only
- Group Design Reports Components: 35%
  - Separation Analysis Report: 20%
  - Separation Report Presentation: 5%
  - Final Design Report: 10%
- Individual Reports Components: 15%
  - Separation Report Presentation: 5%
  - Final Reflection: 10%
- Final Exam: 25%

CEIC3004

Process Equipment Design

Pre/Corequisites	Exclusions
CEIC2000, CEIC2001, CEIC2002, CEIC3001	NIL

Terms Available: T1

COURSE OVERVIEW AND AIMS:

Selection and design of chemical processing equipment for industrial application. Further development of collaboration and design documentation skills.

STYLE:
- Lectures for equipment selection
- Online, self-paced lessons for equipment specification
- Tutorials for collaboration and report development, and milestone deadlines

ASSESSMENTS:

- Group Design Assignment: 30%
  - Multiple milestones and peer review activities
- Online Quizzes: 20%
  - Weekly equipment selection pre lecture quizzes
  - Equipment specification lessons
  - 3 Equipment specification quizzes
- Individual Design Portfolio: 50%
  - Four Submissions
  - Final Design Report
  - Marked Up Design Report
- Marks and explains changes made to the final design report, using previous peer review critique
  - Evidence of Research
- Evidence of ongoing research, in sources, use, and usefulness
  - Reflection
- Final reflection of the course and submissions

CEIC3005

Process Plant Design

Pre/Corequisites	Exclusions
CEIC2000, CEIC2001, CEIC2002	NIL:

Terms Available: T1

COURSE OVERVIEW AND AIMS:
Develop competencies in design, documentation, and evaluation of chemical processes on a plant level. Covers design documentation, process risk and safety, process simulation, and process economics. Collaborative and individual components.

STYLE:
- Lectures for each section
- Design Studios for collaboration, for design portfolio milestones and guidance
- Fortnightly Tut-Labs for process simulation using the ASPEN simulation program

ASSESSMENTS:

- Weekly Quizzes: 20%
  - Quizzes on design documentation, process risk and safety, process simulation, and process economics
- Design Portfolio: 45%
  - 3 Report deliverables, in process viability, risk and safety, and economics
  - Peer review materials for each deliverable
- Final Exam: 35%

CEIC3006

Process Dynamics and Control

Pre/Corequisites	Exclusions
CEIC2000, MATH2018 or MATH2019, MATH2089	NIL

Terms Available: T2

COURSE OVERVIEW AND AIMS:

The objective of this course is to provide students with the fundamental background of process control theory and working knowledge of automatic control systems for chemical processes. This course is focused on (1) analysis of process dynamics; (2) control system design.

STYLE:

- Weekly online lectures (online 2 hour + 3 hours)
- Weekly tutorials (online 1 hour)

ASSESSMENTS:

- 2 Online Quizzes: 15% each
  - Simple questions similar to tutorial questions
- 3 Assignments: 10% each
  - Homework assignments similar to tutorial questions (on the longer side)
- Final Exam: 40%
  - Similar to assignments but quite a bit harder

CEIC3007

Chemical Engineering Lab B

Pre/Corequisites	Exclusions
CEIC2007 Co-req 3006	NIL

Terms Available: T2

COURSE OVERVIEW AND AIMS:

Development of analysis and critical thinking within a collaborative experimental investigation.

STYLE:

- Proposal session (presentation) on Teams with supervisor at the beginning of the week before you start a new experiment (for labs that go over two weeks, the proposal session will be replaced with a catch up session where you can ask questions and go over your progress)
- Experiments in the lab overseen by supervisor (3 hours)

ASSESSMENTS:

- Introductory Quiz: 5%
  - Basic workplace health and safety, and academic and research integrity
- Experimental Proposals: 30%
  - Presentation and oral defence for 3 experiments, each worth 10%. Team mark moderated by peer assessment.
- Technical Reports: 45%
  - Report documenting the results of the experimental investigation.
  - 3 Reports, 15% each
  - Experiment A and C are individual, Experiment B is a team submission
- Seminar: 20%
  - 20 minute presentation, and 10 minutes for questions
  - Present results from all 3 lab experiments
- Reflection of the term

CEIC4000

Environment and Sustainability

PRE/COREQUISITES	EXCLUSIONS
NIL	NIL

Terms Available: T2, T3

COURSE OVERVIEW AND AIMS:

Investigations into the sustainability and ethical issues surrounding human activities and the impact engineering can have on them.

STYLE:

- Weekly lectures going through concepts, principles and case studies.
- Weekly tutorials in discussion format about the lecture of the week. Participation in discussion marked.
- Weekly readings of relevant articles and textbook sections. Essential and optional options.

ASSESSMENTS:

- Participation marks 15%
  - 4 tutorials with discussion to participate in
  - 2 questionnaires (one at beginning and one at end)
  - Option to present for some marks
- Evaluation 25%
  - Evaluation of past assignments, peer report drafts and peer presentations
- Assignment drafts 10%
- Drafts of final assignment for you to gauge how well you are doing and to ensure you are on the right track
- Final assignment submission 50% (individual)
- No final exam, just the assignment of the topic you wish to investigate

CEIC4001
Design Project

Pre/Corequisites	Exclusions
CEIC3004 CEIC3005 CEIC3006	NIL

Terms Available: T1

COURSE OVERVIEW AND AIMS:
Capstone project, culmination of everything learnt so far in the degree, basically a giant group project reminiscent of CEIC3005 and CEIC3004's group assignment's combined.

STYLE:
- Weekly seminars to discuss any upcoming assessments and provide some guidance and answer some questions
- Weekly meetings scheduled with your assigned mentor to catch up on your progress and give advice (a lecturer or post-doc)
  - The same person will be marking your reports and presentations
- In groups of 5 that you can pick (regular peer evaluation), work on a design to fit the brief

ASSESSMENTS:
- Group Interview 1: Individual 10%
  - Present the different design options and explanation of your final choice
- Group Report 1: Group 20%
  - Report on the final design option with PFD & MEB & Risk Register
- Individual Report: Individual 20%
  - Report on individual design with mechanical drawing & simulation
- Group Report 2: Group 15% Report on HAZOP & site-layout & Environmental Impact Assessment (EIA) & Economics
- Group Interview 2 (with industry reps): Group + Individual totalling 20%
  - Present all of your hard work to industry representatives
- Rejoinder for final report: Group 5%
  - Reflect on feedback frm industry reps

CEIC4951
Research Thesis A

Pre/Corequisites	Exclusions
126 UOC 3rd Year Core Subjects	NIL

Terms Available: T1, T2, T3, Summer

COURSE OVERVIEW AND AIMS:
Investigating a complex, open-ended design or research problem with multiple possible solutions or conclusions that requires creativity, and the acquisition, analysis and interpretation of results AKA find a gap in research, testing options, report on the results, rinse and repeat.

STYLE:

- Regular meetings with your supervisor (or a co-supervisor)
  - Usually weekly or fortnightly
- You have to be pro-active, your supervisor won't chase you
  - Minimum 10 hours per week working on your project
- Thesis A: Finalise research topic, review literature, prepare a project plan, complete safety and research skills training

ASSESSMENTS:

- Literature Review 10%
- Project Plan 5%

CEIC4952

Research Thesis B

Pre/Corequisites	Exclusions
CEIC4951	NIL

Terms Available: T1, T2, T3, Summer

STYLE:

- Thesis B: Start executing your research plan and report on progress

ASSESSMENTS:

- Progress Report 5%
- Seminar 5%
- Supervisor's Report 5%

CEIC4953

Research Thesis C

Pre/Corequisites	Exclusions
126 UOC CEIC4952	NIL

Terms Available: T1, T2, T3, Summer

COURSE OVERVIEW AND AIMS:

Investigating a complex, open-ended design or research problem with multiple possible solutions or conclusions that requires creativity, and the acquisition, analysis and interpretation of results AKA find a gap in research, testing options, report on the results, rinse and repeat.

STYLE:

- Regular meetings with your supervisor (or a co-supervisor)
  - Usually weekly or fortnightly
- You have to be pro-active, your supervisor won't chase you
  - Minimum 10 hours per week working on your project
- Thesis A: Finalise research topic, review literature, prepare a project plan, complete safety and research skills training

ASSESSMENTS:

- Literature Review 10%
- Project Plan 5%

GENERAL EDUCATION

In your chemical engineering degree, you will have to undertake and complete at least 12 units of credit in General Education courses. (This may be different for those completing double degrees, you can do a progression check at https://portal.insight.unsw.edu.au/web-forms/

Seeing that there are 464 pages worth of general education courses in the UNSW online handbook, it may be difficult to narrow down what would best suit your needs as a chemical engineer from a simple course outline.

Introduction to Astronomy

PHYS1160

Broad overview of Astronomy and our place in the Cosmos. This includes the solar system and its exploration, stars, galaxies and cosmology, the Earth as a habitable planet and the search for life elsewhere.

FULLY ONLINE COURSE through Moodle
Exclusion: GENS4001 & GENS4003

Microeconomics 1

ECON1101

The course provides you with the ability to “think like an economist”. You will learn to use basic economic principles to explain how people make decisions and how the world around us works.

Exclusion: COMM1100

The Psychology of Addiction

PSYC1022

This course focuses on the understanding and treatment of drug addiction. You will further develop your understanding of drug use and the systems in place to counteract it.

Clinical Perspectives on Anxiety, Mood & Stress

PSYC1024

A comprehensive overview of some of the most common mental disorders including the mood disorders (i.e., depression) and anxiety disorders.

Marketing Fundamentals

MARK1012

This course centralises on how a business becomes successful through marketing strategy. It will allow you to develop an understanding of customers and sustainable growth.

Brave New World: Science Fiction, Science Fact and the Future

GENS4015

Aiming to give the bigger picture of the physical sciences, students are challenged through science fiction to examine the interactions between science and society. This provides students with the necessary knowledge to take part in scientific debate.

FULLY ONLINE COURSE through Moodle
Students enrolled in a Faculty of Science program should not take this course.

Law in the Digital Age

GENL0231

This course will provide you with an overview of the operation of new media and communications under Australian law. You will examine how media, data, telecommunications and communications are regulated.

FULLY ONLINE COURSE through Moodle

Personal Finance

GENC3004

The course aims to equip you with the knowledge and skills to make wise, lifelong financial decisions. You will be introduced to the principles of accumulating, managing and protecting wealth.

FULLY ONLINE COURSE through Moodle

Getting into Business

GENC7002

By enhancing your knowledge, research and analytical and leadership skills, this course will enable you to take the initiative necessary to establish a business and manage the risks and interests of the business.

The Use of Language

ARTS1691

You will examine how contemporary linguists address issues of language use through the exploration of topics such as the nature of human communication and the historical development of languages.

Managing Organisations and People

MGMT1001

You will be introduced to the knowledge and skills required to successfully manage yourself as well as teams. Through the study of concepts and theories, you will develop strong foundations to assist your growth into future organisational leaders and managers.

Creating Your Career: Employability for the Future

CDEV1112

The course aims to empower you with the knowledge, skills, and capabilities to plan, engage in, and critically reflect on career opportunities. You also gain insight into employability skills needed to succeed in today's workforce.

FULLY ONLINE COURSE through Moodle

FIRST YEAR ELECTIVE

Chemical engineering students are required to take 1 depth elective (6 UOC) and 1 breadth elective (6 UOC). You are also given 12 extra UOC for free electives (literally any course you want without pre-requisites that you haven't already done). Practise electives such as VIP and Maker Games can substitute either depth or breadth electives.

Note: *This is accurate for people starting chemical engineering in 2023*

CEIC1000

This is the **recommended**, and most popular first year elective taken by Chemical Engineering and Chemical Product Engineering students.

It's the first real taste of what chemical engineering is really about, something you otherwise wouldn't get until second year. It's also a great course to get to know your chemical engineering cohort a little better.

FOURTH YEAR ELECTIVES

Depth Elective

- Depth electives are your way to find a ‘speciality’ in the broad, exciting fields of Chemical Engineering!
- You must take at least one of these courses, but you can take 2 if you would like to broaden your horizons!

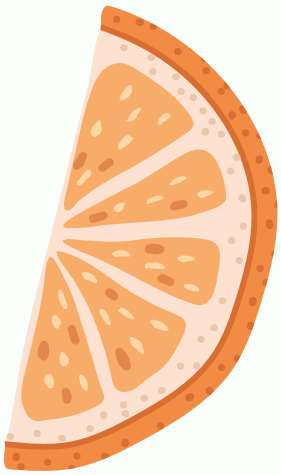
Breadth Elective

- You can take up to 2 of these to fill out your elective requirements.
- These courses are a great way to experience some of the adjacent fields where many chemical engineers work, so don’t be afraid to take 1 or 2 and learn about an area you’re interested in!

Note: Not all electives are listed below. For more information visit the HANDBOOK

BREADTH ELECTIVES

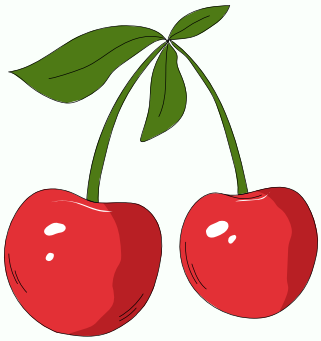
FOOD3010 Food Preservation - Term 1



About

FOOD3010 covered the composition of a variety of food groups, such as cereals, dairy and meat and detailed the **causes of spoilage** and **methods of preservation** on a chemical level.

It is closely linked to the **FST lab**, where the concepts taught were demonstrated. The course explains techniques used widely in the food industry.



Course Delivery

- **Lectures** were engaging and course is well structured
- **Exams** quite content heavy
- **Assignment** not too difficult to follow as the information is quite clear, is also a great learning tool.

Recommended for someone

- Interest in food
- If possible great to take with the FST lab

ELEC4445 Entrepreneurial Engineering - Term 2

About

ELEC4445 covers the basics of entrepreneurship such as basic finance principles, finance in entrepreneurial context, disruption, the role of the internet, intellectual property and how to make a deal to investors. Since the course is from the School of Electrical Engineering, the content is covered with a technology context, so major tech companies such as Apple, Google, Amazon and Microsoft were discussed.

Course Delivery

- **Lectures** - cover the course content
- **Tutorials** - mix of pre-recorded interviews and live discussions.
  - The **pre-recorded interviews** were with entrepreneurs or other professionals such as lawyers and venture capitalists, who work with entrepreneurs.
  - The live sessions happen in the 2nd half of class, where students were able to ask entrepreneurs and professionals questions about their experience.
- **Lecturers and guest speaker** - Approachable, informative, explains concepts well
- **Assessments** were straight forward, but they do require you to complete all readings, watched the pre-recorded interviews and study to complete them

Recommended for someone

wanting to learn about business/finance principles and entrepreneurship in a technological context

CEIC8341 MEMBRANE PROCESSES - TERM 3

About

CEIC8341 covered different types of membranes and filtration, their applications, and some theory on cleaning and pressure. Some of the topics covered were membrane bioreactors, fouling, gas separation, membrane characterisation, and bio separation. There was not too much calculation involved as it was mainly theory.

Course Delivery

- Lectures: 2 hours x 2 times a week
- Lab demonstrations
- Tutorials

Assessments

- There is 40% worth of **online quizzes**, one of which involves simulation software (Q+). These were mostly MCQ and some short answer
- There is a 30% **individual assignment** (with allocated topic), where you research into an industry/use of membranes which wasn't too difficult
- 30% **final exam** (similar to online quizzes).

Recommended for someone

If you're interesting in getting an introduction and exposure to water treatment and membranes

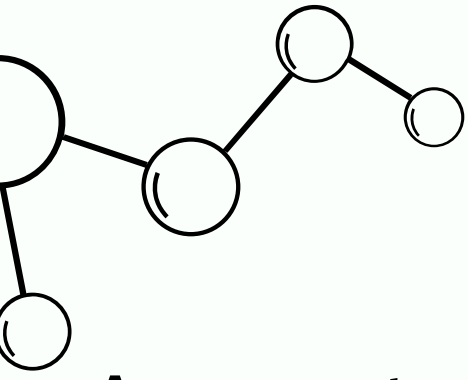
CHEM8104 Topics in Polymer Technology T2

About

- CEIC8104 is a core course for chemical product engineering, recently replaced POLY3000
- Breadth elective for chemical engineering.

It focuses on the various methods that exist regarding **polymerisation** and the chemical reactions, mechanisms and industrial techniques used to synthesis polymeric materials, particularly those more prevalent in the industry. It also touches on some **polymer physics** and **chromatography** methods for polymer analysis.

The course is great for those interested in basic polymer chemistry and polymer related areas such as material science, nanotechnology, biomaterials and separation science (membranes etc.).

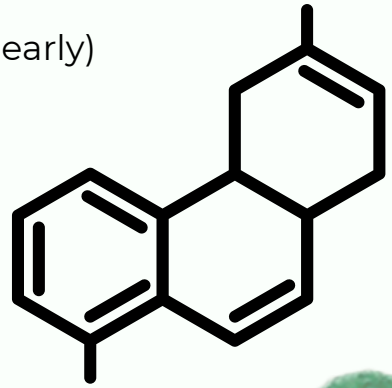


Course Delivery

- ·3 x 4-hour **labs**, can finish in 2 hours if you're efficient – lab demonstrators are nice and extremely helpful.
- ·2 x 2-hour **lectures** per week, with a relaxed but informative lecturer.
- ·1 x 1-hour **tutorial**, run by the lecturer, to review practice questions.

Assessments

- A radical and stepwise polymerisation assignment (easy)
- Additional polymerisation methods assignment (easy)
- One lab report - for three labs (easy but make sure to start early)
- Final Exam (a little bit on the harder side)



Recommended for

- If you enjoyed the polymer content from CEIC2005
- If interested in **how everyday items are made** and the chemistry involved

CEIC8204

ENTREPRENEURSHIP AND THE INNOVATION CYCLE

About

CEIC8204 covered topics including innovation and entrepreneurship, risk and project management, some microeconomics, intellectual property, and commercialisation.

- An overlap between CEIC1000 and CEIC3005

Course Delivery

Lecturer quite thorough and set out the lecture plan very well and gives consistent breaks throughout the 3 hour slot.

Assessments

- Individual assignments, there is a personal brand statement (10%)
- Group assignment, lean canvas (25%)
- Project management plan (25%)
- Risk management (15%)
- Business case video pitch (25%).

The assignment felt very applicable to a lot of different types of work, and it gives you good content to talk about in job interviews.

Recommended for someone

Helpful if you are considering a career in consulting or entrepreneurship

CHEM2041

ANALYTICAL CHEMISTRY AND ESSENTIAL METHODS - TERM 1 AND 3

About

CHEM2041 is a **core course for chemical product engineering**, and a **breadth elective for chemical engineering**.

It focuses on the different instrumentation and methods by which chemical compounds are analysed and characterised. Some of the instrumentation covered was NMR, gas chromatography, and IR.

In addition to learning the theory behind the instrumentation, we learnt a bit of statistics, number crunching, and excel coding for quantitative extrapolation of data.

Course Delivery

- **4 hour labs** each week, where a method was covered. These labs were organised well. Despite their length, a lot of the time you can head out for a while until your instrument does its thing.
- The lecturers were pretty chill and taught well, and the lab demonstrators are usually nice!

Assessments

- A spectroscopy assignment (easy)
- Online stats quiz (easy)
- One full lab report
- Final exam (straightforward as long as you study)

Recommended for someone

If you enjoy lab work and analysis, this would be a good course to take

CEIC6712

Pharmaceutical Design and Engineering

About

CEIC6712 covered topics including drug design and development, manufacturing, new technology and the process of making and testing tablets.

Course Delivery

The lecturer was clear and thorough in her delivery of the content. There is a singular 3 hour lecture every week.

Assessments

- Mini quiz: 10%
- Quiz: 20%
- Group oral presentation: 30%
- Written report: 40%

Reccomended for someone:

- Interested in pursuing a career in the pharmaceutical industry
- WAM booster

DEPTH ELECTIVES

CEIC6711 — Complex Fluids and Rheology - Term 1

About

CEIC6711 is about complex fluids, their microstructure and rheology. The topics covered were mostly the flow properties, microstructures, and performance of complex fluids and why they occur, as well as different ways to test and measure these.

Course Delivery

- 1 x 2-hour lecture
- 1 x 1-hour tutorial a week,

Lecturers themselves are also very lovely and made the course extra fun

Assessments

- Quiz element (3 quizzes in total)
- Group assignment element (3 submissions across the term).

The assessments in general were not too difficult (although the quizzes can be hard to study for) and the assignment is pretty fun to do since it was researching/experimenting with a chosen complex fluid in groups.

CEIC6789

Data-Driven Decision Making in Chemical Engineering and Food Science

Term 2 and Summer

About

In CEIC6789, you will learn several basic data analytical techniques using python, which helps giving insights about the dataset and develop preliminary recommendations according to the analysis result. The techniques include outlier identification, dataset completeness examination, variables weighting analysis, correlation analysis, multiple regression model development, etc, which are helpful for preliminary data analysis and decision-making. You get the chance to pick your own dataset, making the course more motivating.

Course Delivery

Pre recorded video lectures
2 hours workshops
2 hours of office hours Dr. Priyank Kumar and Prof. Stuart Prescott provide quality teaching. Dr. Kumar provides explanations patiently

Assessments

- 2 x individual quizzes
- 2 x group presentations. It would not be a problem if you follow every lecture and tutorial. However, finding a proper dataset at the start is very important, as it decides what you can observe or analyse later.

Recommended for someone

If you enjoy Python coding and want to learn more about data analysis, this course will be a great WAM booster for you. 8/10

CHEM6703

ADVANCED PARTICLE SYSTEMS ENGINEERING (TERM 2)

About

CHEM6703 centred on various different types of particle systems (e.g. nanoparticles) and covered elements including their structure, synthesis, observation techniques and applications in industry.

Course Delivery

- Guest lecturers cover their respective particle systems
- Lecturer-in-charge was quite good in terms of making the concepts easy to understand.

Assessments

The three major assignments were:

- A report for a chosen particle system used in industry (from a provided list),
- A corresponding video presentation on the same topic given to the class and
- A mid-term exam. The first two are in groups (self-allocated) and so the course overall is largely group dependant. The tasks themselves were average difficulty.

CHEM6701

Advanced Reaction Engineering
Term 3

About

CHEM6701 explores a variety of topics, including reaction kinetics, catalysts, ideal reactors, reactors in series, recycle reactions, and non-isothermal systems.

Course Delivery

- Content delivered through lectures and tutorials
- Guest lecturers present on reaction chemistry in their respective industries.

Assessments

The three major assignments were:

- A group assignment written about any topic related to reaction engineering; including a group presentation and group report, with peer marking involved.
- Midterm/final exam similar to tutorial/textbook questions.
- Online quizzes throughout the term.

CEIC8102 Advanced Process Control (Term 3)

About

CEIC8102 is an advanced version of CEIC3006, covering topics like Multi-Input Multi-Output (MIMO) systems, robust control, and model predictive control.

Reccomended for someone:

- Interested in becoming a control engineer.
- Enjoyed CEIC3006

Not all electives have been covered in this handbook, other courses include:

- CEIC6004 Advanced Polymers ()
- CHEN6706 Advanced Transport Phenomena (T3)
- CEIC8330 Proess Engineering in the Petroleum Industry (T3)
- ENGG3001 Fundamentals of Humanitarian Engineering (T2)
- GSOE9111 Energy Storage (T3)

Specifically for Chem Product Engineering

- CEIC8105 Advanced Polymer Science and Research (T1)

VERTICALLY INTEGRATED PROJECTS (VIP)

OTHER WAYS OF RECEIVING UOC....

ChallEng is a collection of projects from student led projects like UNSW Rocketry, to humanitarian projects and 'Vertically Integrated Projects'. These 'VIP's can count towards your **elective requirements** and **run over the course of a whole year** –

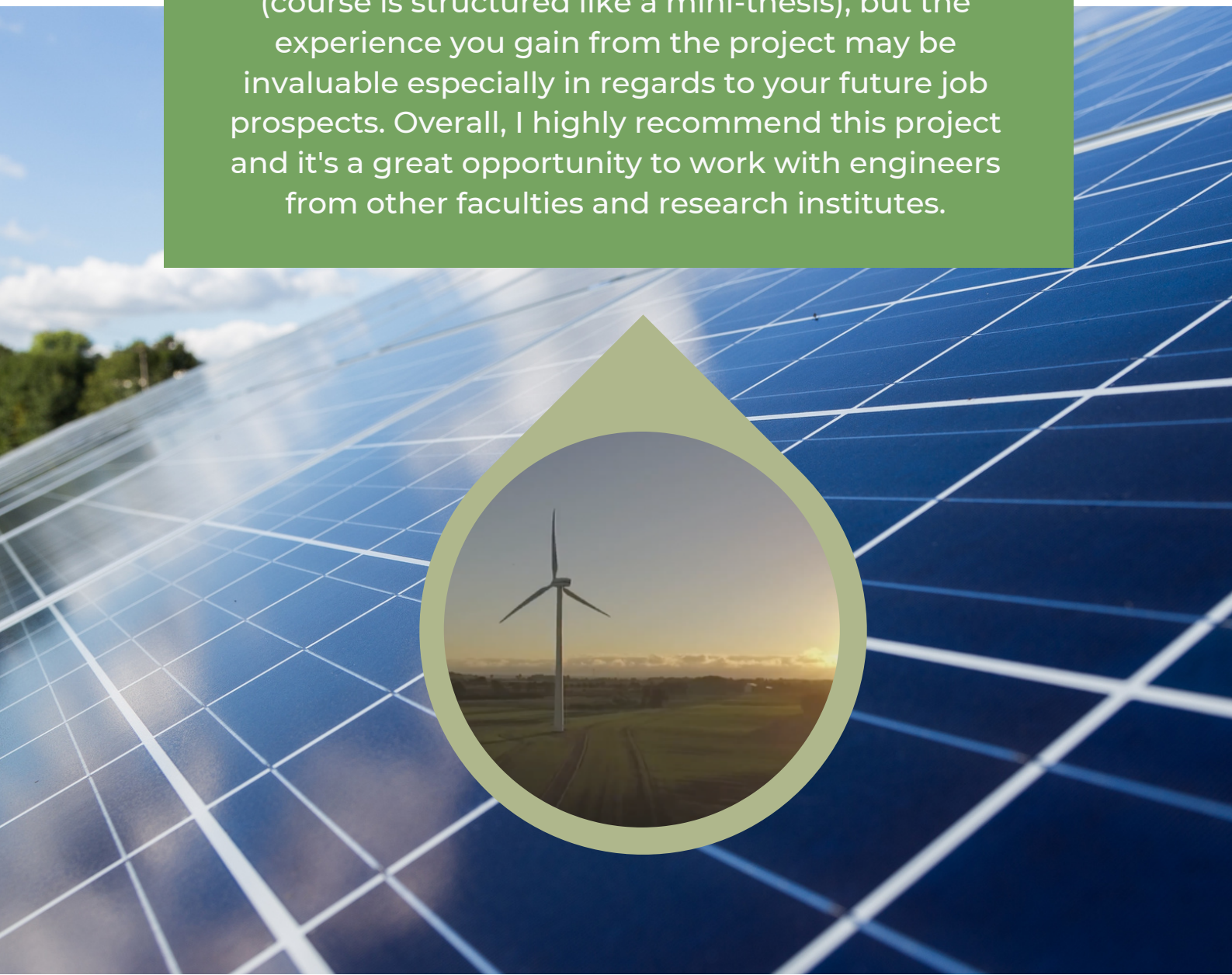
- No final exams
- Flexible 2 UOC per term timetable.
- Some also count towards your IT requirements as **non-traditional IT**.

There are a variety of exciting projects related to Chemical Engineering, such as 'What's Brewing', 'Sun to H2O' and 'Biotic-H2'.

Find a project which captures your interest at **https://www.challeng.unsw.edu.au/vertically-integrated-projects/explore-vertically-integrated-projects**, and don't be afraid to investigate a non-Chemical engineering aligned project – many, such as MiniSolar, have chemical engineering-related components where you'll be able to bring a unique perspective and learn what makes chemical engineering so special!

Mini Solar

Each ChallEng project has it's own structure and I would say the Mini Solar project is one of the best run projects to choose from. The project is essentially about utilising solar energy to power an IoT sensor that can be used for medical implants or bushfire detection. As a chemical engineer, you would probably fit into the Battery group (designing micro thin batteries) or Photovoltaic (PV) group. There is quite a heavy workload for a course with only 2 UOC per term (course is structured like a mini-thesis), but the experience you gain from the project may be invaluable especially in regards to your future job prospects. Overall, I highly recommend this project and it's a great opportunity to work with engineers from other faculties and research institutes.



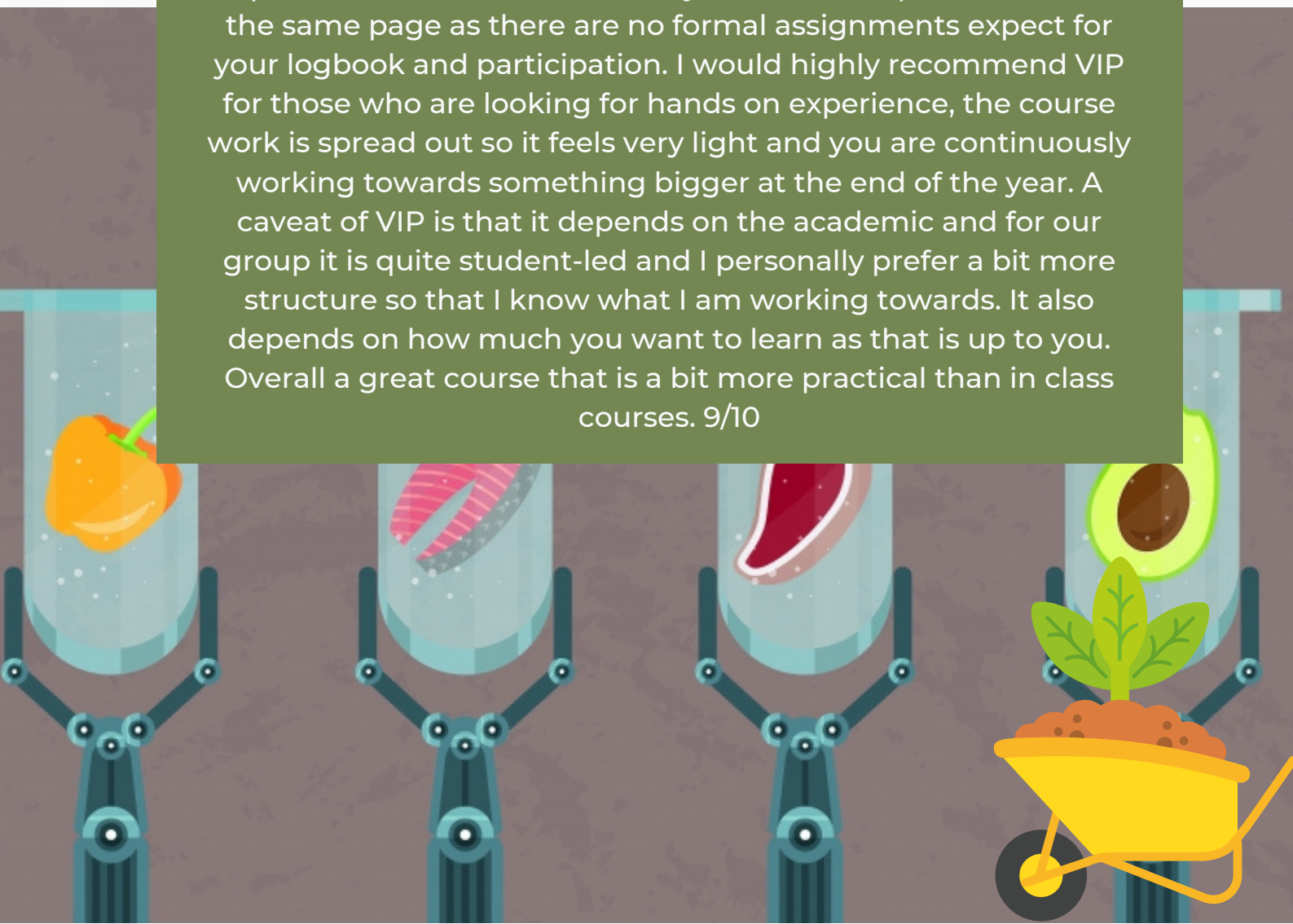
WHATS BREWING?

In the Engineering Vertically Integrated Project (VIP) course, I was able to choose to work in a project team led by a UNSW academic designing a product or solving an engineering solution relevant to their area of expertise. I'm currently working as part of the What's Brewing project team with Patrick Spicer, designing and producing novel brewed drinks, and have had an amazing time. The course is very interesting, and gives you the latitude to explore an area of interest to yourself whilst benefitting from the expertise of the academic supervisor. It also gives you ample opportunity to build valuable teamwork skills. The course content includes brewing and flavouring processes for a variety of alcoholic drinks, this year focusing on beer, and allows students to gain practical experience brewing and flavouring these drinks at UNSW's own micro-brewery. I was also able to engage with industrial partners and even drink my own experiments!

However, due to the degree of independence and latitude afforded to students in this project-based course, you have to be comfortable driving your own project some of the time. The course does require a high degree of engagement, drive, and teamwork, which may be a challenge for some students – it was for me initially! Additionally, as the course scope is relatively open, students have to be comfortable helping define their own projects and direction for the rest of the year. This will prepare chemical engineering students well for their thesis and design project. 8/10

CELLULAR AGRICULTURE

VIP is a 3 term project where you look into a research topic lead by an academic, I have completed only the first term of VIP with Johannes le Coutre looking at cellular agriculture. Your experience of VIP would depend on the supervisor, Johannes is new to the program so the structure is quite flexible. We have team meetings to set up expectations. Communication is really important for VIP to ensure that you and the supervisors are on the same page as there are no formal assignments expect for your logbook and participation. I would highly recommend VIP for those who are looking for hands on experience, the course work is spread out so it feels very light and you are continuously working towards something bigger at the end of the year. A caveat of VIP is that it depends on the academic and for our group it is quite student-led and I personally prefer a bit more structure so that I know what I am working towards. It also depends on how much you want to learn as that is up to you. Overall a great course that is a bit more practical than in class courses. 9/10



LECTURER PROFILES

Throughout your degree, you are going to meet a lot of lecturers. Here is everything you need to know about your future lecturers

Associate Professor Stuart Prescott

COURSES	CONTACT
• CHEM1811 • CEIC3000	• Office: Complex Fluids Group Room 316A Hilmer Science and Engineering Building

- Fun Fact: He's good, but cannot change the fact that ΔS of the universe is always increasing.

Stuart's principal research area is in colloid and surface chemistry as well as polymers. He uses various analytical techniques such as solvent relaxation NMR to understand the relationships between the structures adopted by molecules at interfaces and the physical properties of these interfaces

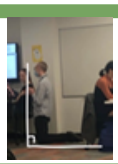
Associate Professor Pierre Le Clech

COURSES	CONTACT
• CEIC2007 • CEIC4001	• Office: Hilmer Building, Level 5, Room 521

- Fun Fact: Owns chickens and an owl who is upset they didn't make it into Hogwarts

Pierre's principal research area is in water and wastewater treatments by membrane processes. He aims to develop the current applications of membrane technologies by optimising operating conditions and researching the rejection and fouling mechanisms used in the chemical plants.

DR GRAEME CRAIG BUSHELL

COURSES	CONTACT
• CEIC2000 • CEIC2007 • CEIC3007 • CEIC4000	• Office: School of Chemical Engineering, Hilmer Building room 219
• Fun Fact: can make a perfect 90 degree angle with his body 	

Graeme's principal research area is in sustainability through developing renewable power and energy systems. He is interested in conversion and storage engineering, energy generation and promoting a lower intensity society.

DR MAY LIM

COURSES	CONTACT
• CEIC2001 • DESN2000 • CEIC3004	• Office: Room 520 Hilmer Building, School of Chemical Engineering
• Fun Fact: When referring to fluid flow she once said "Bigger is better". Also uses food to demonstrate concepts- throwing chocolate to imitate fluid flow.	

May specialises in the design and fabrication of magnetic, electromagnetic and photo responsive nanomaterials. She examines the application of these materials and how they can be incorporated into new engineering processes such as cancer drug delivery, water treatment, and high performance electrochemical sensing.

DR EMMA LOVELL

COURSES	CONTACT
• DESN2000 • CEIC3004 • CEIC3005 • CEIC4001	• Office: Tyree Energy Technologies Building, Room 349
• Fun Fact: Likes singing OCEAN ALLEY – CONFIDENCE to her DP students	

Emma's research focuses on developing novel catalysts for a range of applications including energy and environmental catalysis.

DR SARAH GRUNDY

COURSES	CONTACT
• CEIC3001 • CEIC3004 • CEIC3005 • CEIC4001 • CEIC1000	• Office: Level 4 , room 433, Science and Engineering Building (SEB)
• Uses MCDA's to make everyday life decisions	

Dr Sarah Grundy's expertise area is in sustainable materials development, process development and implementation in manufacturing plants. Her current research is in process optimisation of industry projects such as advanced material development on nanoparticles and surface treatment.

DR PETER NEAL

COURSES	CONTACT
• CEIC3005 • CEIC3007 • CEIC4001	• Office: Room 216, Level 2 Hilmer Building, enter via E8, Level 2

- Fun Fact: He has a Maltese x Poodle cross (Moodle ironically) that he adopted from the RSPCA. Also a chatGPT enthusiast

Peter's primary research area is economics of low emission including improving CO2 injectivity, defining CO2 storage capacity, as well as the design and development of CO2 pipeline networks.

DR NICHOLAS BEDFORD

COURSES	CONTACT
• CEIC2005 • CEIC3001	• Office: Room 422 Hilmer Building

- Fun Fact: Is American

Nicholas's principal research area is in the design of bio-inspired nano-materials, multi-metallic catalysts and polymer derived ceramics.

PROFESSOR JIE BAO

COURSES	CONTACT
• CEIC3006	• Office: Room 301, Science and Engineering Building
• Fun Fact: Was the acting Head of School for a period of time before Guangzhao came to UNSW	

Jie's research interests include dissipativity theory-based process control, networked and distributed control systems, system behavioural theory and control applications in membrane separation, flow batteries, coal preparation and Aluminium smelting.

DR PRIYANK KUMAR

COURSES	CONTACT
• CEIC3000	• Office: Room 334, Science and Engineering Building
• Fun Fact: He is stuck in Italy	

Priyank's research interests involve photocatalysis, photodetection, photovoltaics, photon upconversion and sensing. He focuses on the application of atomistic methods such as molecular dynamics (MD) and density functional theory (DFT) to model and design two-dimensional materials such as graphene and nanotubes.

PROFESSOR PER ZETTERLUND

COURSES	CONTACT
• CHEM1821	• Office: Cluster for Advanced Macromolecular Design (CAMD) School of Chem. Engineering
• Fun Fact: He's actually a cat, purrrrr. He loves KISS.	

Zetterlund's research is concerned with the synthesis of polymer and polymeric nanoparticles for industries such as materials chemistry, nanotechnology and nanomedicine

ASSOCIATE PROFESSOR YANSONG SHEN

COURSES	CONTACT
• CEIC2000 • CEIC2002	• Office: Room 401, Science and Engineering Building
• Fun Fact: He's got very aesthetically pleasing handwriting.	

Yansong is the director of ProMO Lab (Process Modelling and Optimisation of Reaction and Separation) which aims to research process metallurgy, solid fuel preparation/utilization, water treatment and recycling processes.

ASSOCIATE PROFESSOR RITA HENDERSON

COURSES	CONTACT
• CEIC4001	• Office: Room 522, Hilmer Building • School of Chemical Engineering
• Fun Fact: Email us for fun facts!	

Rita's interests are in water supply and biotechnology including the design, optimisation and monitoring of solid-liquid separation processes to improve water treatment and quality.

DR PETER RICHARD WICH

COURSES	CONTACT
• CEIC1000	• Office: Hilmer Building, Level 5, Room 521
• Fun Fact: His German accent is quite peaceful to listen to, not aggressive at all	

Peter leads the UNSW Research Lab for Functional Biopolymers which researches macromolecular and polymer chemistry at the interface between nanotechnology and bioorganic chemistry. This has real world applications in nanomedicine, drug delivery and catalysis.

DR HELEN RUTLIDGE

COURSES	CONTACT
• CEIC3004	• Office: Room 501, Level 5 SEB

- Fun Fact: Says ground-water work is stinky (rotton egg smell)

Helen's research focusses on informing the assessment of ecohydrological responses to coal seam gas extraction and coal mining'

PROFESSOR GREG LESLIE

COURSES	CONTACT
• CEIC2002	• Phone: +61 2 9385 6092

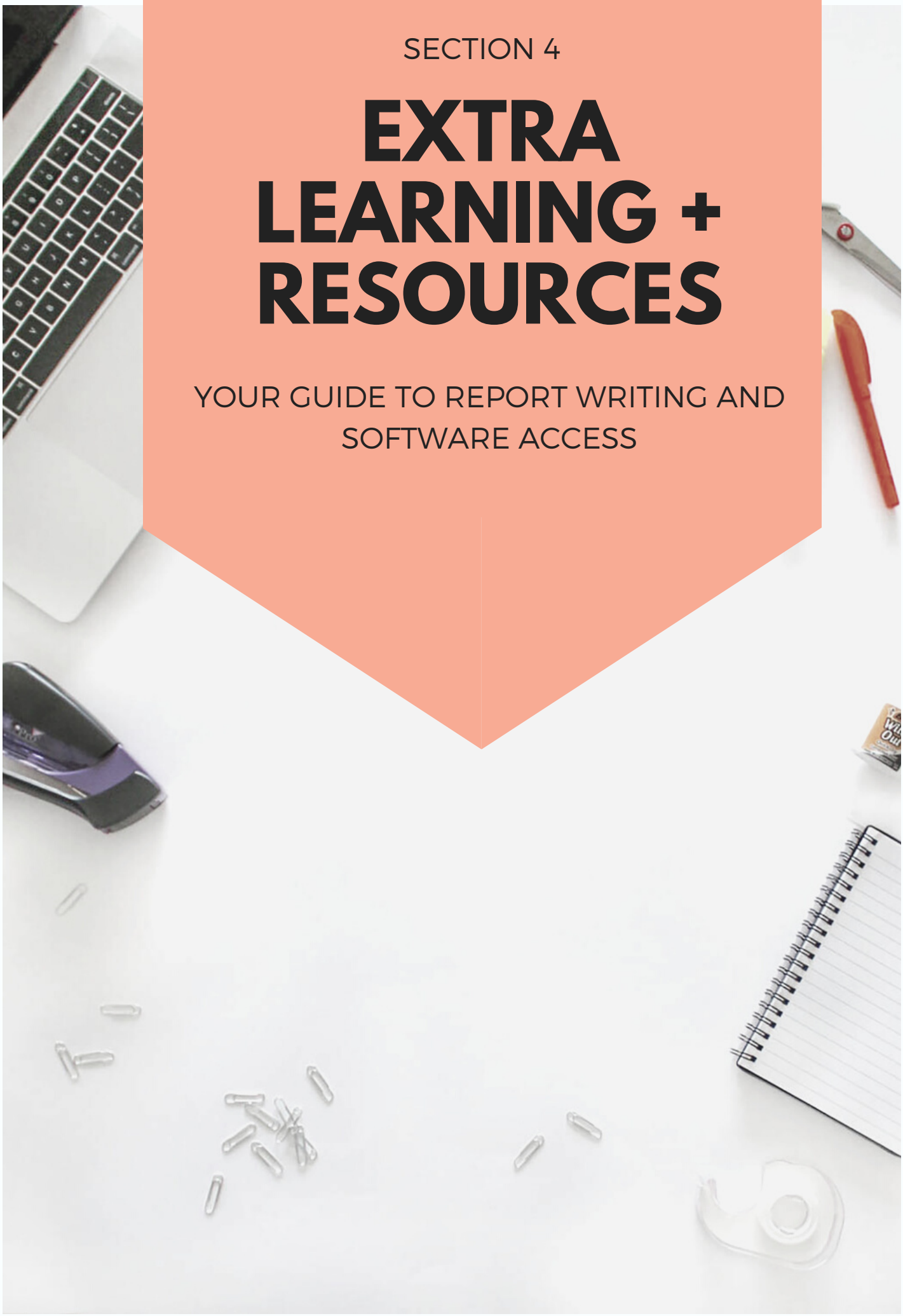
- Fun Fact: Loves his tea mass transfer experiment.

Greg's research focus lies in water and nutrient recycling by using experimental and numerical modelling techniques to improve the performance of membrane processes to recycle water and nutrients from municipal and industrial waste.

SECTION 4

EXTRA LEARNING + RESOURCES

YOUR GUIDE TO REPORT WRITING AND SOFTWARE ACCESS



REPORT WRITING AND SOFTWARE

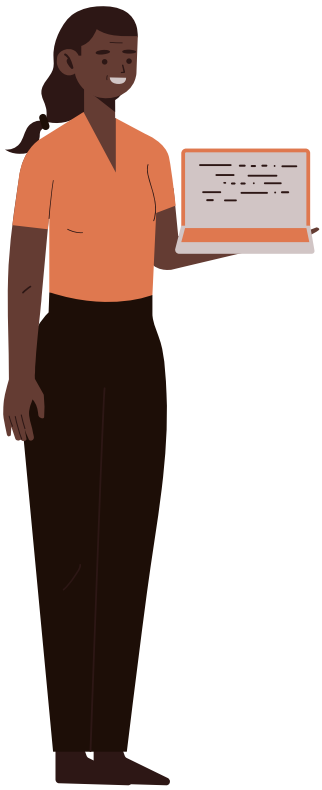
IMPORTANCE OF ENGINEERING REPORTS AND THEIR GENERAL STRUCTURE

Writing reports within an engineering degree follow a similar structure to a lot of other formal academic report writing but using knowledge in scientific disciplines they rely heavily on referenced data and numerical results. Engineering reports generally split between technical reports and lab reports, but each have the common purpose of conveying a message to other engineers, clients and managers about a given topic. Usually to persuade, inform about a given topic or convince the reader of something.

FUN FACT:

You will write lot of reports during your uni years....

Report Structure



Remember:
Help is always available.

1. **Title**
2. **Abstract or Executive Summary**

   Think of it as the 'elevator pitch' for your report. The abstract is what you use to generate readers' interest in your report and make them want to read more about your work. It usually includes a one liner of what you do, very general mention of the method used and what was achieved and the major conclusion.
3. **Introduction**

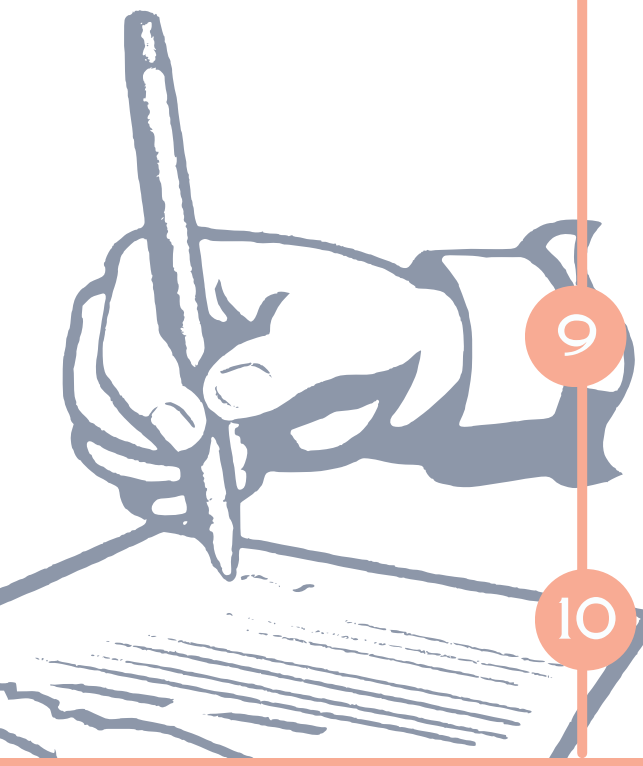
   Motivation of this work (why is it important?), hypothesis, background on what others have done and maybe what is different about your work?
4. **Literature Review/ Theory**

   Refer to Next Page
5. **Experimental Procedures**

   What to write: Materials and equipment used (including their specifications, manufacturer etc.), study participants/animals/database, experimental protocols, data analysis techniques.
6. **Results**

   What to include: Present your results in the form of Tables/Graphs. Link them back to the procedure you mentioned in methods and describe what was observed. DO NOT DISCUSS the results here (leave that for the next section).
7. **Discussion**

   Discuss your important results. Based on what you observed, critically and objectively analyse/interpret what the observations imply. Here is where your creative writing skills may help (not in fabricating stories) but in arranging your discussion such that it flows in a logical order so your readers can understand easily.



8 **Conclusion and Recommendations**

A mediocre conclusion just summarises the entire report. A good report uses this the last chance to leave a strong impression on the reader (make sure it's a good impression). Slightly different from the abstract, here you put more emphasis on the importance/significance/implications of your findings.

9 **References**

Details of the resources you cited in the previous sections. Refer to any instructions (if available) to check if there is a specific referencing style you have to adhere to.

10 **Appendix**

ROLE OF LITERATURE

Using literature refers to using information deeper than what is provided to you in lecture material and class briefings. These vary from scholarly sources such as textbooks, handbooks, journal articles and reviews to official publications such as engineering standards and government reports.
The type of literature sourced will also depend heavily on the type of assignment being done. Engineering design assignments require a background briefing, local knowledge, theory surrounding the design of equipment and process plants and information from the environment under case study as well as findings from studies with assumptions to plug in incomplete data. These can be found in textbooks, journal articles, government, and industry websites and in official international and Australian standards.

FURTHER READING

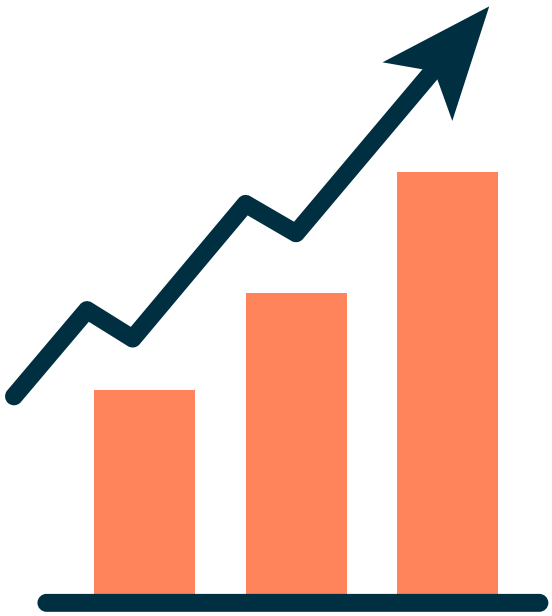
Most of the information from this section was sourced from the Monash University Research and Learning Online web article Writing an Engineering technical report. This is the report writing info recommended by several Chem Eng Courses

GUIDELINES FOR SLIDE PRESENTATIONS

The art to slide presentations is getting most of the information across with your own words and actions, then using findings, facts and figures/results in the background. A slide should usually have only about five statements maximum, and the reader should not have to decipher your slide for longer than about 20-30 seconds at most.

Much of your research and lab investigations will inevitably yield complex graphs at some point because sometimes results on a given topic have not been simplified very far or they cannot be. If that is the case, the true measure of your presentation will be your ability to take out the important parts and explain them to the audience.

Presentations should be structured in sections like a short engineering report but with visuals and key information snippets. If the audience needs more information, they will always ask, and you can and should respond then. Furthermore, remember to label important images, graphs and figures you use for the sake of reference; attach inline referencing and bibliography section at the end in the final slide with APA for reports and technical information, or just even a link for images and stock photos you have sourced. This will communicate honesty about the information you have sourced to your marker and the audience.



My Access

UNSW

To access a variety of software virtually, go to https://www.myaccess.unsw.edu.au/

Install the Citrix Receiver (log in with your uni credentials), and then ‘Access your applications’. If you are having issues with stability, you can access some software with the ‘Desktop’ option (top middle). MyAccess is most useful for Maple (first-year Math courses) and Aspen – most other software it is better to download it (see below) and run it locally.

Microsoft Suite (Visio, non-Office 365 apps)

To access MS Visio (which you will need for CEIC3004 and beyond!) you should go to https://azureforeducation.microsoft.com/devtools, sign in with your uni Microsoft account and then go to 'Software' on the left sidebar. Visio Professional 2019 (under 'Productivity Tools') is available here. You can also install a variety of other software including Windows 10, Visual Studio (this helps with CEIC3000, to avoid needing to use CoCalc), and a variety of other useful software bits and lessons (under 'Learning').

EndNote X9

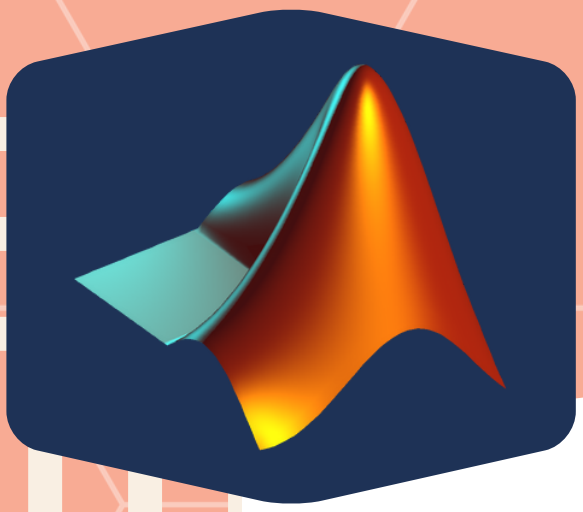
EndNote is a useful (if a bit old now) way to manage your references and 'cite as you write'. It is an alternative to other options such as Mendeley which is a 'freemium' service. EndNote can sync between devices and be used to collaborate but is weaker than alternatives in this respect.
It's a good way to introduce yourself to reference managers with some powerful tools to learn. To download it, simply go to https://www.myit.unsw.edu.au/software-students and click on the icon. You can make an account online if you wish to use syncing functionality.

Aspen

Aspen can be accessed through MyAccess (see above). You can use 'Aspen Plus User Interface' (yellow icon) for most general work. It can also be accessed from the MO8 computer lab in the Chemical Sciences building (from main walkway – up the stairs, past the common room and turn right). You will need your uni ID card to enter.

Autodesk Fusion

This can be accessed from https://www.myit.unsw.edu.au/software-students. It's a neat tool especially if you are doing more 'hands on' design projects (e.g. later DESN course) or vertically integrated projects involving design (see https://www.challeng.unsw.edu.au/vertically-integrated-projects-0).



MATLAB

To download Matlab, simply go to https://www.myit.unsw.edu.au/software-students, log in, click on the Matlab icon, and follow the download instructions. This requires you to create a MathWorks account – make sure you do it on your student email (@student.unsw.edu.au). Matlab will set up automatic updates for you and if you need to install packages, you can do this through the desktop software.

Microsoft Suite (Office 365)

To install the full Office 365 suite for free, go to https://www.myit.unsw.edu.au/software-students as above and click on the Office 365 icon. You can then follow the instructions to download Office. This will also install MS Teams for you (you'll need this for classes!)