



# Bachelor of Mining Engineering

Never Stand Still

Engineering

Mining Engineering



# Bachelor of Mining Engineering

Mining Engineering is concerned with the planning, design, operation, management and sustainability of mines. Mining Engineers are responsible for the safe, economic and environmentally sound extraction of minerals and resources.

## What do Mining Engineers do?

A mining engineer will be involved in a project through all phases of mining operations - from exploration and discovery of the mineral resource, through feasibility studies, mine design, development of plans and production, scheduling operations, minerals processing and even marketing. They are still involved at the mine closure stages including final land restoration and rehabilitation.

## Project task list for mining engineers

- Investigate mineral deposits and work with geologists, other earth scientists and economists to evaluate them and determine whether they can be mined profitably.
- Look at the depth and characteristics of a mineral deposit and its surrounds to work out the most suitable mining method.
- Carry out the mine design using state-of-the-art mine planning, scheduling and visualisation software.
- Manage the employment of mining staff and selection of equipment with regard to efficiency, safety and environmental conditions.
- Develop and oversee mine construction plans including the design, selection, budgeting and provision of equipment, facilities and systems for mining, as well as infrastructure such as access roads, water and power supplies.
- Take on responsibility for operational mine performance, and lead production crews.
- Conduct ongoing research aimed at improving efficiency and safety in the mine.

## What does the degree involve?

A world-class Virtual Reality (VR) theatre is used as part of learning and teaching in the School of Mining Engineering, with field trips and industrial training also forming an important part of the curriculum.

The degree is based around the following six themes: mine design and planning; mining systems; geotechnical engineering; mining technologies (ventilation, rock breakage, etc.); mine management and sustainability; and a research project.

A number of electives are offered each semester in Year 3 and Year 4 allowing you to more deeply explore different areas such as surface and underground mining; advanced studies of core technical fields; or, you may opt for a broader professional perspective.

As part of the program you are also able to choose General Education subjects from a broad range of disciplines to complement the more specialised learning undertaken in the Mining degree. These contribute to the flexibility which graduates are increasingly required to demonstrate and are relevant to both your career and personal development.

## PROGRAM OUTLINE

### Length of study:

4 years full time (2 semesters per year)

### Units of Credit (UOC) per Semester:

24 UOC (average contact time of 20 hours per week)

### Units of Credit to Graduate:

192 UOC

I chose mining as it is a real hands on type of engineering. We get to go out to the mine sites and work on all aspects of the operation. It's not just digging holes but thinking about economics, minerals processing, physics and more. There are some great opportunities to work in mines around Australia and the world and after getting the degree and some experience on site the career possibilities are endless."

David Knespal

4th year Mining Engineering student







## EXAMPLE PROGRAM STRUCTURE

### YEAR 1

Mathematics x 2

Physics

Engineering Mechanics

Engineering Design & Innovation

Computing for Engineers

Plus 2 electives

### YEAR 2

Mechanics of Solids

Mining Services

Numerical Methods & Statistics

Introduction to Fluid Flow & Heat Transfer

Mining Project Development

Minerals and Processing

General Elective

### YEAR 3

Resource Estimation

Mine Planning

Mining Geomechanics

Mining Systems

Mine Ventilation

Rock Breakage

Socio-Environmental Aspects of Mining

Discipline Elective

### YEAR 4

Hardrock Mine Design and Feasibility Project

Coal Mine Design and Feasibility Project

Mine Geotechnical Engineering

Mining Research Project I

Mining Research Project II

Mine Management

Discipline Elective

## Degree Options

There are a range of degrees on offer if you are interested in studying Mining Engineering:

UAC CODE	COURSE	2016 CUT-OFF
425300	B Engineering (Mining)	91.00
425000	B Engineering (Flexible First Year)	91.00
425401	B Engineering (Civil/Mining)	91.00
426000	B Engineering/B Laws	99.70
425850	B Engineering/B Arts	91.00
425850	B Engineering/B Science	91.05
425850	B Engineering/B Science (Computer Science)	91.00
425900	B Engineering/B Commerce	96.50

Domestic students (Australian residents and citizens and New Zealand citizens) need to apply through the Universities Admissions Centre (UAC) at [uac.edu.au](http://uac.edu.au).

International Students should apply directly to UNSW by visiting [international.unsw.edu.au](http://international.unsw.edu.au).

## Assumed Knowledge

It is assumed you will have studied the equivalent of NSW HSC Mathematics Extension 1 and Physics. It is also recommended that you will have studied HSC Mathematics Extension 2 and/or Engineering Studies.

If you haven't studied and excelled at these subjects, we would advise you to consider enrolling in a UNSW bridging course, in mathematics, and/or physics before starting your engineering degree. For more details, visit [science.unsw.edu.au/bridging](http://science.unsw.edu.au/bridging)

## Industrial Training

Industrial training is a great way for mining engineering students to prepare for what it's like in the real world of mining. It gives you the chance to put what you have learned in lectures - the theory and engineering design principles - into a practical context. Students also gain valuable industry knowledge and networks, with many of our students securing graduate positions with contacts made during their industrial experience - enabling you to hit the ground running when you graduate.

To qualify for graduation, students must complete a minimum of 60 days of industrial training in the mining industry. This can be done during one or more of the long vacation periods. Part of this requirement includes the submission of a formal written report about your industrial training experience.

## MEA Partner University

The School of Mining Engineering at UNSW is a member of Mining Education Australia (MEA), a national education joint venture between UNSW, Curtin University of Technology, the University of Queensland and the University of Adelaide. It provides a common curriculum for 3rd and 4th year students, giving graduates a world-class degree from an industry-supported national program. It also facilitates peer learning and exchange opportunities amongst MEA partner universities.

## Local & International Field Trips

As a mining engineering student, you will be given the opportunity to dig deep into the industry and explore mine sites and operations in places such as the NSW Hunter Valley and the Central West regions, during our annual field trips and other special site tours.

Organised by students, an international field trip for 3rd and 4th years provides a valuable organisational experience, as well as the chance to delve into the global mining industry. Under the guidance of an experienced academic, students gain a greater understanding of the technical aspects of mining and the challenges facing mining operations internationally. Past destinations have included Canada, South Africa and the USA.

## Student Exchange Opportunities

As a student at UNSW, you will have the chance to participate in our student exchange program, giving you the opportunity to study overseas, experience different cultures, learn new languages and establish lifelong friendships and global professional networks. [international.unsw.edu.au/exchange](http://international.unsw.edu.au/exchange)

## UNSW Mining Society (MINESOC)

The UNSW Mining Society (MINESOC) is a student-run society set up to provide professional development opportunities and social events for mining engineering undergraduate and postgraduate students.

MINESOC is well connected with the mining industry and hosts an annual lecture and various networking events throughout the year, providing our students with an opportunity to hear from some of the most influential senior staff from Australia's mining companies. These events also allow students to discuss and organise vacation employment, industrial training placements and graduate employment positions. [www.facebook.com/MINESOC-UNSW-1482331568745144/](https://www.facebook.com/MINESOC-UNSW-1482331568745144/)

## AusIMM Sydney Student Chapter

The AusIMM Sydney Student Chapter based at UNSW aims to aid the professional development of undergraduates in the minerals industry by increasing student knowledge and maximizing exposure to the industry. The Student Chapter runs numerous professional development events throughout the year including two annual primary events, The Students Meet Industry Night (SMI) which is a networking and presentation night for students that attracts Human Resources

representatives from all major mining companies (BHP Billiton, Glencore, Evolution Mining and Orica in 2016) and The Young Professionals Dinner (YPD) which is a formal sit down dinner with themed presentations and major representation from mining related professionals who work in Sydney. The Sydney Student Chapter also has strong connections with the Sydney Branch and the Sydney Mining Club. The Sydney Student Chapter draws its membership base of 245 (2016) from mainly UNSW as well as the University of Sydney and Macquarie University. The Sydney Student Chapter annually sends delegates and teams to the AusIMM New Leaders Conference and National/International Mining Games. [facebook.com/AusImmSydneyStudentChapter](https://facebook.com/AusImmSydneyStudentChapter)

## Career Opportunities

There are a wide variety of career paths open to you as a Mining Engineer. These could include:

- Mine Manager
- Mine Planner & Designer
- Consultant
- Operations Manager
- Technical Specialist (e.g. rock mechanics, drilling and blasting, mine machinery or ventilation)
- Investment Analyst and Advisor
- Researcher
- General Manager

## Starting Salary Range

Graduates with Mining Engineering degrees are consistently ranked in the top ten percentile of salaries for new graduates. The average starting salary for graduate mining engineers is \$95,000.

## Professional Recognition

The Bachelor of Mining Engineering is fully accredited by Engineers Australia, which is the professional body for engineering in Australia.





## Bonus Points & Alternative Entry Pathways

### Faculty of Engineering Admissions Scheme (FEAS)

If you think your ATAR might be lower than our cut-off, you may still be eligible for admission through the Faculty of Engineering Admission Scheme (FEAS), which is an interview scheme for students who are likely to achieve an ATAR above 82.00 and less than the ATAR cut-off, and who have demonstrated an aptitude and interest in engineering. Further details can be obtained at [eng.unsw.edu.au/feas](http://eng.unsw.edu.au/feas).

### Newcastle Transfer Program

The Bachelor of Engineering (Mining) Transfer Program (UAC Code: 480540) gives you the opportunity to apply to begin your studies at the University of Newcastle (with a 2016 ATAR of 80), then transfer to UNSW after two years, to graduate with a Bachelor of Engineering (Mining). You must have a WAM (Weighted Average Mark) of at least 50, and have passed all your subjects in Years 1 and 2. More information at [unsw.to/transferprogram](http://unsw.to/transferprogram)

### Other pathways for entry

The following programs may also assist students with entry. For more details visit the links below.

- Elite Athletes and Performers Program  
[futurestudents.unsw.edu.au/bonus-points](http://futurestudents.unsw.edu.au/bonus-points)
- UNSW HSC Plus Scheme  
[futurestudents.unsw.edu.au/bonus-points-0](http://futurestudents.unsw.edu.au/bonus-points-0)
- UNSW Preparation Program (UPP17-19) [futurestudents.unsw.edu.au/unswprep17-19](http://futurestudents.unsw.edu.au/unswprep17-19)
- UNSW Access Scheme  
[unsw.edu.au/access-scheme](http://unsw.edu.au/access-scheme)

### Flexible First Year Program

Choosing what kind of engineer you would like to be can be a difficult decision. UNSW can help by providing you with the option of enrolling in a Flexible First Year program. This gives you the chance to find out more about which type of engineering appeals to you, before transferring to a specific discipline at the end of your first year. To help you make a decision, we host a range of activities and events designed to answer any questions you may have. Further information can be found at [unsw.to/ffyp](http://unsw.to/ffyp)

"It was always going to be Engineering but when I came across Mining Engineering, I couldn't go past it! To find a degree that incorporates so many disciplines and promises a dynamic career with constant challenges is so exciting! I hold the NSWMC Scholarship. It has been helpful in maintaining my financial security so that I can focus more time on my studies. It helps me sustain a balanced lifestyle which is invaluable in busy university life."

Olivia Gall, 2nd year Bachelor of Mining Engineering student

## Want to learn more about mining and what's on at UNSW?

### UNSW Mining Summer School (UMSS)

The UNSW Mining Summer School is a 3-day residential camp held each January, available to Year 10 and 11 students who are interested in studying Engineering, and who want to find out more about working in the minerals industry. You will participate in lectures and laboratory sessions on campus, before travelling to the NSW Hunter Valley and/or Central West, where you will visit surface and underground mining operations and important environmental, rehabilitation and geological sites along the way.

Places on the camp are limited and applications open in August. For more information, visit [unsw.to/summer-school](http://unsw.to/summer-school)

### What's on for Future Students?

Want to find out more about studying at UNSW? There are a range of events throughout the year, such as Subject Selection and Information Evenings, UNSW Open Day and Campus Tours. Visit [whatson.unsw.edu.au](http://whatson.unsw.edu.au) for more details.







## Learn and Earn!

A few of the major scholarships include:

SCHOLARSHIP NAME	VALUE
The UNSW Co-Op Program (Engineering)	\$18,200 over 4 years
NSWMC Mining Engineering Scholarship	\$12,000 up to 4 years
Mitsubishi Rural Scholarship in Mining Engineering	\$11,000 p.a. over 4 years
Glencore Coal Mining Engineering Scholarship for 1st Year Students	\$10,000 p.a. up to 4 years
BHP Billiton Mitsubishi Alliance (BMA) Rural Scholarship in Mining Engineering	\$11,000 up to 4 years
NSWMC Newcastle Mining Engineering Transfer Program Scholarship	\$12,000 up to 2 years

Further information on conditions and entry requirements plus a list of all available scholarships can be found at [scholarships.unsw.edu.au](http://scholarships.unsw.edu.au).



## Overview of the School

The School of Mining Engineering at UNSW is Australia's leading mining engineering educational institution. One of the founding schools at UNSW, we boast the largest team of mining academics at any university in Australia, many of whom have worked in the mining industry and share this experience in their lectures. Our students benefit from our strong school culture with accessible and helpful support staff and academics, an active student society and connected student cohort.

## Contact Us

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