ENGINEERING
2021 UNDERGRADUATE COURSE GUIDE
As a Monash Engineering student you’ll become part of a world-class team of engineers, driven by the passion and commitment to deliver sustainable solutions for society’s global challenges – including climate, energy, transportation, water, health and communications.
We offer ten engineering specialisations, double degree options and a range of programs and experiences for you to pursue your passions and set you on the path to future career success. Our graduates are dynamic, highly competent and in-demand leaders across the breadth of engineering disciplines and beyond.

You’ll have access to some of the world’s finest facilities and a learning environment that fosters your development as a collaborative and creative problem-solver. We’re here with you all the way with the tools, support and experiences to help you develop your strengths and passions, and become a well-rounded engineer.

PROFESSOR ELIZABETH CROFT
Dean, Faculty of Engineering
YOUR PATHWAY TO SUCCESS

Choose Monash Engineering and start engineering a successful future.

GET QUALIFIED

Our world class team of engineers will immerse you in engineering from day one. Become a fully accredited professional engineer in this four-year honours degree tailored to your future.

- Double degrees – earn two degrees with only one* extra year of study
- Common first year – giving you time to choose a specialisation
- 10 engineering specialisations
- Scholarships
- Professional accreditation

FEED YOUR KNOWLEDGE, FUEL YOUR PASSION

Find your voice, your squad, and your passion as you explore what’s possible through teams, clubs, global exchange and research programs.

- Study abroad at one of our 100+ partner universities
- Join one of the 30+ student teams and clubs
- Mentor programs
- Summer Research Program – get a taste for research
- Maker Spaces and Entrepreneurial programs – a place for innovation

SECURE YOUR FUTURE

Connect to our network of industry partners, alumni and leadership programs to secure your dream career.

- Co-op program – paid internships with industry partners
- Leadership programs
- Connections to our vast alumni network (27K+ across world)
- Career connect for support and training
- Monash Industry Team Initiative (MITI) – University wide industry sponsored projects

Be part of a global community, contribute to a better future.

change-it.monash.edu

* Additional 2.25 years for engineering and laws double degree.
ENGINEER YOUR FUTURE

WHY CHOOSE ENGINEERING AT MONASH
Engineering is a diverse profession with many options. That’s why we’ve created an engineering degree that gives you maximum choice and flexibility.

The common first year
The Bachelor of Engineering (Honours) kicks off with a common first year, where you’ll gain a better understanding of scientific and design fundamentals, and the interaction between engineering and society. You’ll also get a taste of the ten engineering specialisations on offer before deciding which to pursue from the second year.

Double degrees
Many of our students study a double degree, combining engineering with another discipline area for flexibility and diversity. Whether it’s architectural design, arts, biomedical science, commerce, computer science, design, information technology, law, pharmaceutical science or science, Monash allows you to study engineering while pursuing other passions and interests.

Scholarships
Monash celebrates academic excellence and supports students who are disadvantaged. We offer a range of scholarships and awards to help ensure money and circumstances aren’t barriers to you accessing a world leading engineering education. For details and a full list of scholarships, bursaries and awards available, visit monash.edu/scholarships

Research experience
You can experience Monash Engineering’s renowned research while studying your degree. Participate in innovative, interdisciplinary research through various student teams, such as Monash Motorsport, our undergraduate Summer Research Program, and in your final year project. You’ll learn the latest concepts in engineering from lecturers who are leading researchers in their field.

Diversity and inclusion
Engineering is for everyone. Monash Engineering supports diversity and inclusion and provides a safe and supported environment for all students to achieve their academic goals.

We actively support Indigenous students through mentoring, outreach programs and entry schemes, we are inspiring our students and breaking down the barriers to success. Equity and diversity week, women in engineering events, as well as a dedicated student team, Female Engineers at Monash (FEM) are just some of the initiatives in place to strive towards gender equity and empower girls to choose a career in engineering. Monash has successfully achieved an inaugural Athena SWAN Bronze award through the Science in Australia Gender Equity (SAGE) initiative.

Professional recognition
Monash Engineering degrees are accredited by various professional engineering bodies. Recognised by the Washington Accord, our graduates can work in any other signatory country, without the need to requalify.

• Engineers Australia
• The Institution of Chemical Engineers (Bachelor of Chemical Engineering (Honours) only)
• Engineering Accreditation Council Malaysia (Malaysian Engineering degrees only)
• Australian Computer Society (Bachelor of Software Engineering (Honours) only).

monash.edu/engineering/professional-accreditation
A CAREER IN ENGINEERING

Engineers are creative, imaginative, analytical and technical, with excellent teamwork skills. As an engineer, you’ll apply science and mathematics in a practical way to design and develop new technologies and improve existing ones.

What do engineers do?
Consider a career in engineering if you:
• are curious about how things work
• have an interest in improving the quality of human life
• enjoy designing and building things
• like analysing and solving problems
• are interested in maths and science
• enjoy challenges
• are goal-oriented
• like working with lots of different people in multidisciplinary teams.

Engineers solve problems, figure out how things work and create solutions. They’re key to the development of society and solving the challenges faced by our world, such as climate change, natural resource depletion, food shortages, supply of clean drinking water and increased demands on energy. Engineers possess a rare combination of skills and qualities that place them in demand in many industries. An engineer’s career is diverse, interesting and can be anywhere in the world.

As a qualified engineer, you’ll also be equipped to work in many areas outside of engineering, such as management, banking and consulting. 34 of the top 100 CEOs in the world are engineers. Problem-solving and planning skills, combined with a focus on the future and continuous improvement, make engineers excellent business leaders.

Secure your future
An engineering degree from Monash University gives you a competitive edge. As a Monash Engineering graduate, you’ll be a highly sought after industry professional when you first enter the workforce and throughout your career.

Career support
From day one, Monash sets you on the path to future career success. Access a range of programs, support and work-integrated learning experiences. Professional development and industry placements (internships) and multidisciplinary projects with leading companies means you’ll graduate better prepared and work-ready.

Our Career Connect program gives you access to experienced coaches and industry based professionals. Take part in employability workshops, small group career conversations and, in your final year, one-on-one coaching.

Unlimited career options
Engineers design, build and test everything we use to create a liveable and sustainable world. Their unique skills are needed in nearly every industry. With hundreds of different types of engineering jobs the possibilities are endless.

Some of our graduates have gone on to successful careers as a:
• Biomaterials or nanotechnology engineer in a medical development company
• Global development engineer for a non-governmental organisation (NGO)
• Chemical process engineer in the food and agriculture industry
• Project manager, consultant or industrial designer in building and construction
• Computer scientist or wireless network engineer in telecommunications
• Artificial Intelligence or software engineer in the defence force
• Capital works engineer in sustainability, water and energy field
• Executive Director of access and operations in a global mining company
• Robotics or avionics engineer for an international space agency
• Director of transport modelling and mapping for a government infrastructure authority
• Entrepreneur and business owner in a start-up tech company
• CEO or Chief Engineer in the automotive industry.

34 of the top 100 CEOs in the world are engineers.


81.4% engineering graduates are in full-time employment within four months.

2019 Graduate Outcomes Survey (GOS) report, Quality Indicators for Learning and Teaching (QILT).

$114K average Australian engineering salary.


34 of the top 100 CEOs in the world are engineers.

DELIVERING GRADUATE CAREER OUTCOMES

Michael Strauss completed a 12-week Co-op program internship at AMOG Consulting which led to being offered a part-time position at the company while finishing his degree. While at AMOG, Michael completed a business development project building an Internet of Things demonstrator device to show Industry 4.0 capabilities to prospective clients.

Studying a double degree in Bachelor of Electrical and Computer Systems Engineering (Honours) and Bachelor of Commerce and working as an undergraduate engineer at AMOG, Michael has also found the time to explore his entrepreneurial side. Selected for The Generator’s Accelerator program, Michael and his co-founder, a fellow engineering student, created Jeffrey AI, a successful virtual personal assistant on Facebook Messenger that helps university students stay on top of their workload.

“Taking students in before they’ve completed their undergraduate studies gives us and them the opportunity to work together and see whether there is a good fit between our business and their areas of study and interest.”

ANDREW THOMSON
General Manager, AMOG Consulting
WORLD-CLASS FACILITIES

The engineering precinct at Monash University provides facilities that will enhance your personal learning experience.

Monash Makerspace
The Monash Makerspace provides a facility for our students, staff, alumni and industry partners to come together to build, design and create, and encourage entrepreneurial activities.

Linked to The Generator, our entrepreneurial platform, students have access to this creative, collaborative makerspace, allowing them to turn ideas into reality.

Woodside Building for Technology and Design
The new Woodside Building for Technology and Design provides a world-class learning environment with the latest dynamic and interactive learning spaces, labs and technology. The five-storey, smart-technology enabled building is one of the world’s most efficient and innovative teaching spaces and will foster innovation and collaboration – allowing students to explore, design, construct and investigate new technologies required for a sustainable energy future.

New Horizons Centre
The $175 million facility brings Monash and the Commonwealth Scientific and Industrial Research Organisation (CSIRO) together to research the future in renewable energy, biological engineering and so much more.

Some of Monash University’s engineering research facilities include:
- Monash Centre for Additive Manufacturing (MCAM)
- The Cave²™
- Woodside FutureLab
- The TITAN Microscope
- Monash Wind Tunnel
- Multi-modal Australian ScienceS Imaging and Visualisation Environment (MASSIVE)
- X-ray Analytical Platform
- Drone Discovery Platform
SECURE YOUR FUTURE

At Monash we open your eyes to a world outside the classroom. Whether you want to unlock your leadership potential or start thinking like an entrepreneur, you’ll have access to extra curricular programs that leave you prepared for leadership, success and—most importantly—life.

Whilst academic capability is essential, employer’s are looking for graduates who are highly-skilled, well-rounded individuals. Many place interpersonal and communication skills, critical reasoning and problem-solving, together with passion, at the top of their list. There are many different programs and activities that you can get involved in while studying that will give you practical skills and help you to become work-ready.

Co-operative Education Program
The new Co-operative Education Program provides relevant work experience opportunities through internships with our partner organisations. Undertake a three, six or 12 month paid internship and explore different industry sectors, understand what it is to be a working engineer and connect the experience to your studies in a practical way. You’ll enhance your technical and professional skills, build industry connections and gain skills to give you the edge in a competitive employment market.

monash.edu/engineering/coop

Engineering Leadership Program
The Monash Engineering Leadership Program is a development program that prepares you to be an engineering leader. It’s an opportunity to engage with industry professionals from the private sector, with seminars, interactive workshops and industry site visits. Through the program you’ll establish valuable networks and develop ‘soft skills’ such as communication, leadership and teamwork, that are highly regarded by employers and gives you a competitive edge. Students in the program may also be eligible to apply for a generous scholarship thanks to the support of industry partners and donors.

monash.edu/engineering/leadership-program

Monash Industry Team Initiative (MITI)
The MITI program provides an invaluable experience that’ll equip you for life’s challenges by offering insights into the business world, practical learning, leadership and teamwork opportunities. Students are competitively selected from a range of fields to form multidisciplinary teams. Working as part of a team, you’ll be placed alongside industry experts and given a challenging, well-defined real-world project to deliver, pushing you to use all of your problem-solving, innovation and design skills. This may even be in a company based overseas.

miti.monash.edu

MONASH HIGH POWERED ROCKETRY (HPR)
Linlin, Claire and Nicole are from Monash HPR, a student team dedicated to shooting for the stars, or at least 30,000 feet, with the design and construction of high-powered rockets. This year HPR are heading to SpacePort America Cup to compete in the international event.
Mentoring

Mentoring can offer support and encouragement to help you succeed, enjoy your studies and gain insights into a career in engineering. The Friends and Mentors in Engineering (FaME) group mentoring program helps new students settle into university, make friends and get the best out of study and life at Monash. The program also provides FaME peer mentors the opportunity to develop leadership and other valuable skills.

The alumni group mentoring program is available in your final years of study. Meet successful industry alumni who’ve had a similar student journey as you, seek career advice and learn from their experiences.

Continuous Professional Development

The Continuous Professional Development (CPD) Program is a compulsory requirement for all undergraduate Monash Engineering students. It’s an online collection of all work, volunteering, and personal and professional development opportunities you experience throughout your time studying your degree. There are numerous opportunities to help you develop these skills and experiences and build your CPD hours to complete the minimum of 420 hours required. When you graduate, your CPD Completion Certificate makes an impressive addition to your CV, by demonstrating highly sought-after attributes in the professional world. It also supports Engineers Australia certification.

Entrepreneurial programs

Creativity and entrepreneurialism are at the centre of engineering design education at Monash. You can access dedicated, collaborative design and build spaces to take an idea to reality. The university’s entrepreneurial initiative, The Generator, provides experiential education, mentors and seed funding to support you and your startup or social enterprise on your entrepreneurial journey.

Summer Research Program

At Monash, we undertake innovative, multidisciplinary research addressing national and international priorities. Monash Engineering has a highly-regarded research profile with extensive links to both industry and the research community worldwide. As an undergraduate engineering student, you’ll have the opportunity to complete 12 weeks of paid research training over the University’s summer break, which counts towards your Continuous Professional Development requirements. You’ll work closely with academic staff on a broad range of fascinating research projects.

Study abroad and exchange

Spending part of your engineering degree overseas on exchange will expose you to new ways of learning and living. You’ll also build an international network, develop independence and enjoy a cross-cultural experience. Monash has exchange agreements with more than 150 universities in over 30 countries. While you’re overseas your studies are credited towards your degree. As an engineering student, you’ll also have the chance to study at Monash Malaysia. Students from Monash Malaysia can also apply to spend a semester at Clayton.

monash.edu/engineering/summer-research-program
monash.edu/engineering/CPD
monash.edu/engineering/CPD
monash.edu/study-abroad/outbound
STUDENT TEAMS AND CLUBS

Student-led teams, clubs and societies give you the chance to get more out of your uni experience. Develop hands-on skills, solve real problems and compete on the world stage. Form lasting friendships and networks, develop your professional skills and pursue areas you’re passionate about.

In a student team you’ll get hands on with authentic, real-world projects and challenges. Work together in diverse, multi-disciplinary teams to deliver innovative products or drive change to make the world a better place.

Our student-run clubs and societies provide opportunities to connect with like-minded people, learn new skills and engage with industry to broaden your networks. Some of the groups available are:

**Female Engineers at Monash (FEM)**
FEM supports, inspires and connects female engineering students with women working in the faculty and the profession. The society delivers events and industry guides to give you easy access to information that helps you make the most of your uni experience, and make a smooth transition into the workplace.

**Monash Engineering Students’ Society (MESS)**
MESS is a not-for-profit organisation that’ll enrich your Monash experience through social and academic experiences that are engaging and fun. MESS also produces an annual engineering careers guide – a useful resource to help you secure post study employment.

**Monash Motorsport (MMS)**
Join the MMS team and help conceive, design, build and race a formula-style racing car. The MMS team, currently ranked 1st in the world, has a mission to create the most competitive and well-designed combustion, electric and driverless cars possible. Build strong links with the local engineering industry and make use of innovative facilities and leading research.
Monash Nova Rover
Monash Nova Rover was the first Australian student team to be selected to compete in The Mars Society University Rover Challenge. The annual robotics competition held at the Mars Desert Research Station in the United States, challenges teams to design and build a rover to be used by explorers on Mars. The team was made up of students from Engineering, Science, Law, Business and Medicine. They were placed top 10 in the world.

Precious Plastic Monash
Precious Plastic is a global community to encourage more plastic recycling. Their mission is to tackle plastic pollution by designing machines that recycle waste into valuable goods. The Monash chapter is a multidisciplinary team of students from Engineering, and Arts and Design. They build, design and modify machines that turn plastic into pellets and are integrating the machines into a single transportable unit that can be used for production and community education and engagement.

Robogals Monash
Robogals Monash is a not-for-profit organisation that aims to encourage more young women to pursue STEM career opportunities, with a focus on engineering. Robogals offers opportunities to strengthen your communication and leadership skills, and gives volunteers access to professional development opportunities within an international organisation.

Other engineering clubs, teams and societies you can be involved with are:
- Engineers Without Borders
- Gay and Lesbian Engineers at Monash
- Materials Engineering Society
- Mechatronics Engineering Clayton Club
- Monash Aerospace and Mechanical Engineering Club
- Monash Association of Civil Engineering Students
- Monash BrewLab
- Monash Connected Autonomous Vehicle
- Monash deepNeuron
- Monash Engineering and Pharmaceutical Science Society
- Monash Environmental Engineering Society
- Monash Forge
- Monash High Powered Rocketry
- Monash Human Power
- Monash Solar Decathlon Team
- Monash Unmanned Aerial Systems
- Monash Young MedTech Innovators
- Resources Engineering Student Society
- Society of Monash Electrical Engineers
- Society of Monash University Chemical Engineers
- Transport Engineers at Monash

For information on all of our student teams and clubs visit monash.edu/engineering/student-experience/teams-and-clubs
OUR COURSES

Bachelor of Engineering (Honours) Degree
At Monash you can become a fully qualified and accredited engineer in just four years. Your degree kicks off with a ‘common first year’ that allows you to explore the ten engineering disciplines before specialising from second year. We also offer you the opportunity to broaden your options with a double degree, which can be completed in just one additional year. See page 14.

TAKE YOUR STUDIES FURTHER
Whether you want to gain a professional edge, or are looking to explore your specialisation at an advanced level or pursue research interests, graduate study will take your qualification to the next level.

Engineering (Honours) and Masters Degree Package
This is pathway program for high-achieving students to be on track to earn, in just five years, both a Bachelor of Engineering (Honours) and an expert master’s degree in advanced engineering. The Masters Accelerated Pathway program allows you to gain practical and theoretical skills for a career in engineering. There’s a rich selection of specialist electives to choose from, and the course offers strong links to industry and a focus on leadership skills to strengthen your critical reasoning and strategic thinking skills.

monash.edu/engineering/masters-accelerated-pathway

Master of Advanced Engineering
The Master of Advanced Engineering is an inspiring study experience, designed to take everything you’ve achieved in your undergraduate degree to the next level. The expert master’s program explores your chosen specialisation at an advanced technical level and is designed to foster innovative thinking, entrepreneurship and leadership. The masters also offers a competitive advantage that positions you to lead innovation and drive industry change in your field of engineering.

monash.edu/engineering/masters

Other graduate study options
• Graduate Research Degree
• Master of Professional Engineering

Online programs:
• Master of Transport and Traffic
• Master of Infrastructure Engineering and Management
• Master of Bioproduct Manufacturing Engineering

For more information on all the graduate study options available visit:
monash.edu/engineering/postgraduate-study

10 SPECIALISATIONS
Aerospace engineering
Chemical engineering
Civil engineering
Woodside Building for Technology and Design
DOUBLE YOUR CAREER OPTIONS

Earn two degrees with only one* extra year of study and broaden your career opportunities. Combining engineering with another degree gives you a distinct set of skills and helps you stand out in today’s competitive job market.

Employers often seek engineering graduates with expertise in other disciplines and are impressed by the breadth of knowledge and insight in double-degree graduates. Combine your engineering degree with commerce, information technology, science and more to pursue a career in either area, or to take up one of the many opportunities emerging at the intersection of disciplines. An engineering double degree offers diversity, more career choices and flexibility.

Architectural Design
The building industry needs engineering professionals with strong architectural knowledge. The combination of architectural design with civil engineering is an exploration of creative solutions to a wide variety of engineering and social problems.

You’ll graduate with valuable skills for transforming the built environment, from the design of buildings or bridges to renovating existing structures to work more efficiently. The ability to provide solutions through creative thinking and realistic applications will make you attractive to architectural and engineering firms in Australia and overseas.

Arts
Combining an engineering degree with an arts degree provides complementary skills in technology and communications. You’ll develop the transferable skills employers are looking for: communication, teamwork, research and critical thinking.

Arts at Monash provides your comprehensive gateway to about 40 areas of study across the arts, humanities and social sciences. With this dual degree you’ll have a portfolio uniquely tailored to meet your interests and aspirations.

Biomedical Science
If you’re eager to explore a career in biological/biomedical engineering, consider a double degree in engineering and biomedical science. Advances in biological sciences and demand for technological solutions are creating opportunities for engineers. In the coming years engineering will be transformed, as it parallels and fuses with developments in biomedical science.

Commerce
Do you dream of making it big in the business world? If so, engineering and commerce is a powerful combination. Many CEOs of major corporations have engineering qualifications. People with sound business skills and a strong technological background are consistently in demand across many industries and organisations.

Computer Science
Computer science provides solutions to the ever-increasing information challenges in the modern world. Industry needs people who can extract and analyse information from the massive datasets generated by engineering processes and devices. Big data is the new challenge and opportunity in engineering practice across industries from construction and manufacturing, to transport and the energy sector. This double degree integrates theoretical and practical skills to solve engineering problems and create innovative solutions across the IT spectrum, from hardware to software.

Design
Have an eye for form and function? Like to build things? Consider combining mechanical engineering with design to become a product design engineer. Product design engineers design and develop manufactured products that are functional, ergonomic, beautiful and well-engineered.

This double degree integrates the technical and project management skills of an engineer with the creativity and manufacturing know-how of an industrial designer.

Information Technology
In an age of increasing technological advancements, the synergy between engineering and information technology (IT) will only become stronger. IT underpins engineering practice in all disciplines, and industry needs graduates with skills and expertise spanning both. You could do anything from designing a stunning visualisation of engineering data, to building an app for data collection, to setting up the business IT processes to deliver an engineering product via the internet. This double degree combines creative and problem-solving skills to use IT in engineering applications.

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* Additional 2.25 years for engineering and laws double degree.
^ Industrial design only.
† Formulation science only.
‡ No double degrees are available with the resources engineering specialisation.
Laws (Honours)*
An engineering and laws double degree bridges the gap between technological and legal issues. This double degree combination produces engineers who are sensitive to the legal, corporate and political implications of technology and its applications. As an engineering and law graduate, you’re eligible to practise as a solicitor; alternatively, you might join the legal team of an engineering, manufacturing or technology firm.

Pharmaceutical Science†
There’s an increasing demand for pharmaceutical scientists with the expertise to take products from the design and formulation stage through to manufacturing. Chemical engineers can design, run and troubleshoot production facilities, but their training typically excludes the skills to develop pharmaceutical and related products. Similarly, formulation scientists can invent and test products such as pharmaceuticals, food and cosmetics, but they lack the know-how to manage the product process beyond the laboratory stage. This double degree combines chemical engineering and pharmaceutical science to produce professionals capable of covering the full spectrum of the pharmaceutical product design and development processes.

Science
Engineering is concerned with the application of science, however many engineers are fascinated by scientific investigation and eager to enhance their understanding of the pure sciences. You may choose to combine engineering with food science or technology, or explore the fundamentals of the cosmos through astrophysics. Or you may be interested in the most fascinating machine of all – the human body.

For more information, visit monash.edu/engineering/double-degrees

DOUBLE DEGREE COMBINATIONS
The following table shows double degree combinations and the Engineering specialisations with which they’re available:

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<th>Computer Science Design</th>
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Priya chose to study Environmental Engineering and Commerce. She thought this would give her the best of both worlds, enabling her to view crucial issues from environmental, technical and commercial perspectives. She also knew the double degree would offer her a range of career opportunities.

“I was attracted to Environmental Engineering in particular because sustainability is one of the key issues facing the world. I think we all have a responsibility to try and make a difference in areas we’re passionate about.”

PRIYA AGARWAL
Consultant, Risk Advisory, EY
Bachelor of Environmental Engineering (Honours) and Bachelor of Commerce

Scan me or visit monash.edu/engineering/change-makers/priya
AEROSPACE ENGINEERING

Aerospace engineering is concerned with the design, airworthiness, development and maintenance of flight vehicles. It’s a multidisciplinary combination of aerodynamics, aero-structures, avionics, propulsion, materials engineering and computational simulation.

As an aerospace engineer, you’ll have the skills to tackle many of tomorrow’s global challenges. You may be involved in the creation of a more environmentally-friendly aircraft, or even help build a vehicle capable of exploring our solar system and beyond. Project work includes the use of wind tunnels for aerodynamic testing, computational modelling for predicting structural behaviour, advanced manufacturing, and materials and structural testing.

Career options
When you graduate you could work in aircraft design and maintenance, aerospace control systems, aerodynamics, sustainable energy and conservation, lightweight materials, big data analytics, or new manufacturing techniques. You could join a large aerospace company or a manufacturer that contracts to the aerospace industry. Or work at an airline, a government aerospace laboratory or research centre. Formula One teams also employ aerospace engineers. You could also have a career in management, consulting or finance. Join a thrilling profession in the midst of developing the next generation of flight vehicles.

The Airbus A350, A400M and the Boeing 787 Dreamliner are just some of the advances led by aerospace engineers. Career specialisations include:
- aircraft design and testing
- avionics and control systems
- airport operations and management
- aircraft fleet management
- manufacturing
- research and development
- defence industries
- renewable energy
- transportation aerodynamics
- building and structure design and testing.

Clayton
4 years full-time
8 years part-time
February and July

ATAR: 92.3*
IB: 35*
MG: 86

Specialist
DEGREE AWARDED
Bachelor of Aerospace Engineering (Honours)

DOUBLE DEGREES
- Arts
- Commerce
- Laws (Honours)
- Science

CRICOS: 00722B
* The scores provided are to be used as a guide only, and are either the lowest selection rank to which an offer was made in 2020 or an estimate (E).
MG: Monash Guarantee.

I am passionate about space exploration and engineering is the closest I can get to working with cutting-edge technology to pioneer new ways to discover the universe.

Being part of Monash Nova Rover I have met other students who share a similar passion for space. There are many benefits to being in a student team, you hear about work-related opportunities or internships and you can further apply the skills from your studies in a real-life team environment. It’s also a great way to grow your network.”

SHEFIN MARIYA JOJU
Bachelor of Aerospace Engineering (Honours) and Bachelor of Science (Astrophysics)
Operations Team, Nova Rover
CHEMICAL ENGINEERING

Chemical engineering blends chemistry with engineering and other fields including biological science, environmental science, nanotechnology, pharmaceutical science, mathematical modelling, mineral processing, management and economics. Many everyday items involve chemical engineering during some stage of their production: pharmaceuticals, computer chips, mobile phones, catalysts, food and water, and our fossil fuel and renewable energy sources, to name just a few.

Chemical engineers invent, develop, design and improve the sustainability of processes that convert raw materials into useful products, with minimal environmental impact. They’re also involved with pollution control, energy generation and conservation, recovering energy from waste and renewable resources, and protection of the environment.

A selection of high-achieving students are given the opportunity to undertake integrated industrial training in their final year. You’ll have the benefit of expert industry lecturers teaching several units in third and fourth year, in addition to frequent industry guest lecturers in all year levels.

Career options
As a chemical engineer, you can:
• develop alternative fuels and renewable sources for chemicals, pharmaceuticals and power production
• design, develop or improve industrial processes and equipment for large-scale chemical and biochemical manufacturing
• plan and test methods of manufacturing
• improve energy efficiency or reduce water and resource consumption at manufacturing sites
• develop sustainable methods for the treatment of byproducts and waste from manufacturing processes
• devise green production processes that are safe, efficient, profitable and environmentally sound
• research naturally-occurring chemical reactions so that these processes can be copied for human benefit
• conduct environmental impact studies
• develop and implement lower emission production technologies
• research and develop new processes and products including mathematical modelling
• design, develop and use advanced and renewable materials.

Sustainable development is at the heart of what Daniel does at Tesla, where he’s designing robust interventions to create better ways of manufacturing for vehicle painting.

“Working for Tesla has made me excited for the future, because you really see how each individual can have an impact on a greater goal. Global impact requires direction towards a common goal, aligning the resources and knowledge needed to reach it, and commitment to making positive change stick.”

DANIEL WIELECHOWSKI
Manufacturing Engineer, TESLA
Bachelor of Chemical Engineering (Honours) and Bachelor of Chemistry Master of Environment and Sustainability.

Sustainable development is at the heart of what Daniel does at Tesla, where he’s designing robust interventions to create better ways of manufacturing for vehicle painting.

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DANIEL WIELECHOWSKI
Manufacturing Engineer, TESLA
Bachelor of Chemical Engineering (Honours) and Bachelor of Chemistry Master of Environment and Sustainability.
As part of my degree I went on exchange to study engineering in Sweden. Expanding my knowledge and understanding of different cultures, the exchange program increased my future employability by advancing my knowledge of different regions, transport systems and engineering practices.

Finishing university was nerve racking but an exciting new adventure. I secured a graduate engineers position at a firm in the city, where I am now working as a design engineer. My 5-year plan is to learn as much as I can and gain experience in as many different areas as I can and work my way to a project lead engineer.”

THOMAS BARBOUR
Design Engineer, Watsons Land Development Consultants
Bachelor of Civil Engineering (Honours) and Bachelor of Commerce
ELECTRICAL AND COMPUTER SYSTEMS ENGINEERING

Electrical and computer systems engineering is an extremely diverse field, encompassing biomedical, computer systems, electronics, electrical power, AI, robotics and telecommunications. Electrical and computer systems engineers investigate, plan, design, develop, construct, test, market and maintain a wide range of products and systems. Monash will give you the hands-on training and theoretical insight you need for an exciting future as an electrical and computer systems engineer. You’ll experience industry-standard reprogrammable chips in the laboratories from first year onwards. By third year you’ll be building minaturised machines with very powerful processing on board. In fourth year you may apply this knowledge to a ‘product’ of your own.

Career options
As an electrical and computer systems engineer, you can design and develop digital products such as smartphones, virtual reality systems or computer games, or maybe robotic medical devices to assist in surgery and rehabilitation. You could work locally or internationally in a wide range of industries, including:
- power generation
- industrial and power electronics
- wireless communications
- artificial intelligence
- optical communications
- the ‘Internet of Things’
- embedded systems
- computer programming
- robotics
- healthcare.

Many Monash graduates work in large public and private telecommunications, manufacturing and electrical-power companies. Others work for defence and intelligence organisations. You could also work in banking and finance, or with any organisation that creates, stores, encodes and transmits big data or manages complex systems.

As a future electrical engineer, I want to develop solutions related to computer systems and robotics industries. I hope to run my own engineering start-up that focuses on developing creative solutions to tackle real-world problems.

I participated in Monash Engineering’s Leadership Program which has led me to further career development opportunities. This included the Telstra Engineering Leadership Scholarship at Monash University and a 12 week summer internship opportunity in the Telstra Summer Vacation Program. Doing engineering has been such a rewarding and enjoyable experience.”

EMILY QIAO
Bachelor of Electrical and Computer Science Engineering (Honours) and Bachelor of Commerce
President, Robogals Monash
Former National Finance Officer, UN Youth Australia

Scan me or visit monash.edu/engineering/change-makers/emily
ENVIRONMENTAL ENGINEERING

Few branches of engineering have such a profound impact on our health, quality of life and the future wellbeing of the planet as environmental engineering. It’s all about the implementation and management of solutions and programs in keeping with the principles of sustainable development. It involves reducing energy and resource use and both minimising and managing waste and pollution, while providing the community with the development opportunities it needs to grow.

Environmental engineering encompasses water and air-pollution control, recycling, water supply, waste disposal, land management, transport and the built environment, process engineering, and public health issues.

Career options

Environmental problems exist in all countries and industries, so your opportunities are broad and far-reaching. You could work in air-pollution control, water supply, land management, impact assessment, hazardous-waste management, energy production, stormwater and wastewater management, environmental management systems and much more.

Organisations employing environmental engineers include:

- power generation
- engineering consulting firms
- industries that need cleaner production systems
- private and municipal agencies that supply drinking water and treat wastewater
- companies treating and disposing of hazardous waste
- environmental agencies and companies responsible for mine-site rehabilitation
- organisations helping to account for carbon and implementing low-carbon solutions
- government agencies monitoring and regulating environmental issues
- universities that teach and conduct sustainability research
- international agencies that aid developing nations.

Simone Pianko is the founder of BorrowCup, a social impact venture to reduce waste and make the campus more sustainable by providing free reusable cups to borrow at nine cafes on campus.

“I’d love to see other students inspired by this project. The university is a living laboratory for testing ideas to make our society more sustainable. If you’re like me and you like solving problems, or want to make the world a better place, or think about society and how you could change it, then engineering could be for you.”

SIMONE PIANKO
Bachelor of Environmental Engineering (Honours) and Bachelor of Commerce
Founder of BorrowCup
Sustainability and Resilience Intern, AECOM

Scan me or visit monash.edu/engineering/change-makers/simone
MATERIALS ENGINEERING

Materials engineering is all about making new materials and improving existing ones. It’s about making things stronger, lighter and more functional, sustainable and cost-effective. It underpins much of engineering – if we want to make things, we need to have materials with the right properties. Whether it’s a next-generation jet engine, a biodegradable tissue scaffold to grow organs from stem cells, or new types of solar cells and batteries, the structure, properties and processing of materials are crucial to the final product.

Materials engineers work with everything from the thermal protection of space shuttles to high-tech artificial hip and cochlear implants, and nanoparticles that seek and destroy cancer. Materials engineering is truly interdisciplinary. It involves physics, mathematics, biology and chemistry, culminating in a groundbreaking research field and a thriving job market.

As a materials engineer, your expertise will be sought after in the emerging fields of additive manufacturing, nanotechnology, biomedical materials, electronic materials, recycling and energy generation, the development of lightweight metal alloys and in traditional industries such as metallurgy and mining.

Career options

Demand for materials engineers continues to outstrip supply, with Monash graduates receiving an exceptional response in the employment market. Working across a range of exciting industries including aerospace, biomedical, mining, future manufacturing, 3D printing and recycling, materials engineers become:

- biomedical engineers
- consultants
- technology managers
- metallurgists
- materials designers
- energy scientists and future renewable energy engineers
- forensic engineers, aircraft forensics and defence scientists
- failure analysts
- materials selection specialists (aero, auto, structural)
- process engineers
- corrosion or durability engineers
- research engineers.

As part of the Co-operative Education Program, I participated in a summer internship with John Holland Building Team, working on the Flinders Gate Project. At the end of the three-month term, I was invited to continue working part-time while I continued my studies. Through these opportunities I have gained insight into what is involved in project management of a large commercial office building in the construction industry.

It has been a very enriching experience. You get a sense of pride when you walk past the building knowing you’ve helped build it in your own small way.”

SEII CHEN
Bachelor of Materials Engineering (Honours)
Undergraduate Engineer, John Holland
President of Material Science and Engineering Student Society,
Section Leader, Monash Forge and Materials Engineer, Monash Human Power

Clayton
4 years full-time
8 years part-time
February and July
ATAR: 92.3*
IB: 35*
MG: 86
Specialist

DEGREE AWARDED
Bachelor of Materials Engineering (Honours)

DOUBLE DEGREES
- Arts
- Biomedical Science
- Commerce
- Laws (Honours)
- Science

CRICOS: 001722B

* The scores provided are to be used as a guide only, and are either the lowest selection rank to which an offer was made in 2020 or an estimate (E).

MG: Monash Guarantee.
MECHANICAL ENGINEERING

Mechanical engineering is about the efficient use of energy in the design and function of all types of mechanisms, from the simplest to the most complex. It builds on physics, chemistry, materials, mathematics and biology to achieve this goal. Growth industries include advanced manufacturing, smart buildings, renewable energy, medical engineering and consulting practice.

Mechanical engineers are increasingly engaged in the design and operation of devices that require skills that cross traditional discipline boundaries. As a mechanical engineer, you could design automatic control systems, or create efficiently heated and cooled buildings. You could manage the water supply for a whole state, take charge of the operation of a smart building, design wind turbines or highly efficient, low-cost products for the developing world.

Optimise the aerodynamics of trucks and trains, work with the medical profession to create robots that can operate with greater precision than a human, or be at the cutting edge of advanced manufacturing using 3D printers to create aircraft parts with elegance and function.

Career options

As a mechanical engineer you will discover countless opportunities in a wide range of industries in Australia and overseas. You could pursue one or more of these specialist areas:
- building systems engineering
- advanced manufacturing
- product process and design
- consulting and project management
- research and development
- aerospace field and test engineering
- mechanical design automation
- robotics prosthetic limb and joint design
- renewable energy systems.

My passion for car racing made mechanical engineering the obvious choice. Joining the Monash Motorsport team has increased my engineering knowledge in vehicle dynamics, and helped me develop my engineering hands on skills. Being able to design, build and race formula cars as part of my degree has brought me so much enjoyment as well as allowing me to work with my best mates through the team.”

JACK BELL
Bachelor of Mechanical Engineering (Honours)
Driver, Monash Motorsport
Australian National Karting Champion

Scan me or visit monash.edu/engineering/change-makers/jack
RESOURCES ENGINEERING

Resources engineering includes two streams, mining and renewable energy, that meet the ever-changing global challenges and future demands of industry and society. From third year you’ll develop expertise in your stream of choice and be provided with the opportunities to enhance your skills in leadership and management. Expand your knowledge and explore different fields through a comprehensive range of electives from civil, environmental and resources engineering, opening up a wide range of exciting career opportunities to choose from.

Resources engineers take a leading role in solving complex and multidisciplinary engineering problems. They find innovative, and sustainable ways to make the extraction of natural resources cleaner and safer, and create advancements in new renewable technologies to meet the energy needs for generations to come.

Resources engineering streams

Mining
Mining engineering aims to provide sustainable solutions for the safe extraction and processing of minerals with a minimal environmental and energy footprint. As a practical discipline with strong industry engagement, it covers exploration, resource estimation, mine design, mineral processing, financial, economic and risk assessment, and management. Mining companies often provide career opportunities to fill their managerial positions with mining engineers experienced in the life cycle of mining projects and day-to-day operations.

Renewable energy
Renewable energy engineering focuses on the fundamental conversion of solar radiation, wind, hydro, and bioenergy resources into electricity by designing, building and operating energy plants such as wind farms, solar farms and hydro power facilities. These engineers run the large-scale energy system incorporating renewables, and they provide expert advice in the development of energy policy to facilitate the transformation of the energy system, both domestically and internationally.

Career options
Resources engineers are in high demand and there is a diverse range of potential career paths available, in Australia or overseas. You could work in a wide range of areas including:
- environmental protection
- mining and exploration
- tunnelling, road and railway construction
- consulting and technical specialists
- numerical modelling
- government policy
- conventional energy generation
- hydropower design and operation
- wind and solar farm design and operation
- emerging technology research and design.

Keely completed internships at BHP Billiton’s Olympic Dam mine and ExxonMobil whilst studying her degree.

“Working at ExxonMobil in the production team allowed me to really work on my critical thinking skills, to help improve production efficiency. During this internship, I was able to live on an oil platform in the Bass Strait for a week, which was incredible.

I wanted to work in a field which has such huge site operations and to be able to physically see the difference that your work makes to the operation. I have accepted a graduate position at Rio Tinto, where I will move to Perth and work FIFO from the Pilbara. I can’t wait to have a career which lets you have something different to look forward to every day.”

KEELY SIMPSON-BULL
Graduate Mining Engineer, Rio Tinto
Bachelor of Mining Engineering (Honours)
Past Vice-President, Resources Engineering Student Society

* The scores provided are to be used as a guide only, and are either the lowest selection rank to which an offer was made in 2020 or an estimate (E). MG: Monash Guarantee.
ROBOTICS AND MECHATRONICS ENGINEERING

Robotics and mechatronics is where mechanical and electrical engineering meet, employing computer control systems to make devices smarter and more efficient.

As a robotics and mechatronics engineer you could create planetary exploration rovers or robots for precision manufacturing or to assist the elderly. Alternatively, you might take a household product and turn it into a truly clever device, or design the programs that control those devices.

You’ll learn how to handle vast amounts of data and creating systems that make sense of data in real time so that a fully automated manufacturing facility can operate safely and efficiently, or a car can drive completely autonomously.

Robotics and mechatronics engineers are in high demand as the need for professionals in this space is increasing. They’re needed in the advanced manufacturing and aerospace industries as well as by the manufacturers of robots and in data analysis.

There are two streams available to choose from artificial intelligence (AI) and automation.

- **Artificial intelligence** covers neural networks and deep learning, advanced engineering design, computer vision systems, and intelligent robotics
- **Automation** allows you to develop an understanding of manufacturing operations, power systems, and changing technologies.

Career options

You’ll be equipped with the knowledge and skills to design, develop, manufacture and operate the intelligent products and complex systems of today and tomorrow.

Opportunities exist in:
- robotics and automation
- aerospace systems and flight control
- artificial intelligence
- bioengineering
- intelligent systems for motor vehicles
- manufacturing systems and processes
- telecommunications
- medical systems
- software engineering
- mining systems and processes
- nanotechnology.

There are also opportunities in consulting, management and finance. You may also pursue a career in research and development, in academia, research institutions or advanced industry sectors.

It’s been an exciting and rewarding experience leading the build of Monash Motorsport’s Driverless race car, the M19-D. I’ve been part of the team since 2017. I’ve not only gained hands-on engineering experience, but also the strong leadership skills required to excel in my career and lead a team effectively. I’ve also created strong industry connections through networking with Monash alumni, partners and sponsors that will best prepare me for today’s workforce.”

ARYAMAN PANDAV
Bachelor of Mechatronics Engineering (Honours) and Bachelor of Science Driverless Chief Engineer, Monash Motorsport
SOFTWARE ENGINEERING

Software engineering is a field that's constantly evolving as new technologies emerge. As an engineer in this area, your skills will be critical across many functions – from dispensing life-saving medicine to controlling flight paths. As a software engineer you’ll use your expertise in computer science, engineering principles and programming languages to build software products, develop games and run network control systems. You could design systems and applications tailored to specific users and their needs, and build the underlying systems that run the technology and control networks. Solve business challenges by delivering technical solutions and assess organisation’s current systems and needs to create strategies for improvement.

You’ll learn about core areas such as software processes and life-cycles, the mathematical foundations of software engineering, requirements analysis and software development. Work with modern, industry-strength programming languages, technologies and systems. Through collaborative learning, you’ll hone your teamwork, problem solving, resource management, project coordination and communication skills.

You can choose from a wide range of IT electives from cyber security to games development to business information systems. You can apply for the highly-regarded IT Industry-Based Learning (IBL) program to do a half-year placement with a leading organisation. Placements count towards your course and are supported by $18,000 scholarships.

The Bachelor of Software Engineering (Honours) is also accredited by the Australian Computer Society.

Career options
In the age of digital transformation, new roles are constantly emerging and software engineering graduates are highly sought-after around the world. You could pursue a career as:
- Software engineer or developer building products, games and network systems
- Software architect or data engineer designing specific systems and databases
- Block chain developer or engineer building software for digital identity, workforce management and data storage
- Front end engineer writing the code for a website or app
- Machine learning engineer writing personalised and predictive software
- Network administrator or security engineer making systems secure and protect from threats.

My experiences at uni were immensely valuable in getting my career started on the right track. The Industry-Based Learning program allowed me to work with an amazing team at startup REALas within ANZ and by the end of my placement I was a significantly more capable developer and team member.

It’s been an amazing start to my career having just finished my degree a little over a year ago and I’ve just moved interstate to work at one of Australia’s biggest tech companies. I’m looking forward to the opportunity to have an impact on products which are used by hundreds of thousands of businesses.”

CALEB JOSEPH
Software Developer, Atlassian
Bachelor of Software Engineering

Scan me or visit monash.edu/engineering/change-makers/caleb
DOMESTIC ADMISSIONS AND ENTRY REQUIREMENTS

ATARS AND PREREQUISITES FOR SINGLE AND DOUBLE DEGREES

Academic prerequisite subjects
The table below outlines the requirements, and the course listing tells you which categories apply to each course. Make sure you check if this applies to your course of choice in this guide.

<table>
<thead>
<tr>
<th>VCE</th>
<th>English</th>
<th>Mathematics</th>
<th>Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units 3 and 4: a study score of at least 30 in English (EAL) or 25 in English other than EAL.</td>
<td>Units 3 and 4: a study score of at least 35 in English (EAL) or 30 in English other than EAL.</td>
<td>Units 3 and 4: a study score of at least 25 in one of Mathematical Methods (any) or Specialist Mathematics.</td>
<td>Units 3 and 4: a study score of at least 25 in Chemistry or Physics.</td>
</tr>
<tr>
<td>IB</td>
<td>At least 4 in one of the following SL subjects: * English A: Literature, or * English A: Language and Literature, or * Literature and Performance, OR</td>
<td>At least 5 in one of the following SL subjects: * English A: Literature, or * English A: Language and Literature, or * Literature and Performance, OR</td>
<td>At least 4 in one of the following SL subjects: * Mathematics, or * Mathematics: Analysis and Approaches, OR</td>
</tr>
<tr>
<td></td>
<td>At least 3 in one of the following HL subjects: * English A: Literature, or * English A: Language and Literature, OR</td>
<td>At least 4 in one of the following HL subjects: * English A: Literature, or * English A: Language and Literature, OR</td>
<td>At least 3 in one of the following HL subjects: * Mathematics: Applications and Interpretations, or * Mathematics, or * Further Mathematics, or * Mathematics: Analysis and Approaches.</td>
</tr>
<tr>
<td></td>
<td>At least 5 in one of the following SL subjects: * English AB, or * English B, OR</td>
<td>At least 6 in one of the following SL subjects: * English AB, or * English B, OR</td>
<td>At least 5 in the following HL subject: * English B.</td>
</tr>
<tr>
<td></td>
<td>At least 4 in the following HL subject: * English B.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Undergraduate courses at a glance

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration (years)</th>
<th>Prerequisites (Refer to table above)</th>
<th>Degree awarded</th>
<th>Location</th>
<th>Indicative ATAR</th>
<th>Indicative IB score</th>
<th>Monash Guarantee</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>English</td>
<td>Mathematics</td>
<td>Science</td>
<td>Bachelor of Aerospace Engineering (Honours)</td>
<td>Bachelor of Chemical Engineering (Honours)</td>
<td>Bachelor of Civil Engineering (Honours)</td>
<td>Bachelor of Electrical and Computer Systems Engineering (Honours)</td>
</tr>
<tr>
<td></td>
<td>Level 1</td>
<td>Level 2</td>
<td>Specified</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering M</td>
<td>4</td>
<td></td>
<td>Chemistry or Physics</td>
<td>Bachelor of Aerospace Engineering (Honours)</td>
<td>Bachelor of Chemical Engineering (Honours)</td>
<td>Bachelor of Civil Engineering (Honours)</td>
<td>Bachelor of Electrical and Computer Systems Engineering (Honours)</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>Chemistry or Physics</td>
<td>Bachelor’s Honours / Master’s Pathway¹</td>
<td>Bachelor’s Honours / Master’s Pathway¹</td>
<td>Bachelor’s Honours / Master’s Pathway¹</td>
<td>Bachelor’s Honours / Master’s Pathway¹</td>
</tr>
</tbody>
</table>
## Double degree courses at a glance

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration (years)</th>
<th>Prerequisites</th>
<th>Degree awarded</th>
<th>Location</th>
<th>Indicative ATAR</th>
<th>Indicative IB score</th>
<th>Monash Guarantee</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ENGINEERING AND</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architectural Design</td>
<td>5</td>
<td>Chemistry</td>
<td>Bachelor of Civil Engineering (Honours) and Bachelor of Architectural Design</td>
<td>CL, CA</td>
<td>93.75</td>
<td>36</td>
<td>86</td>
</tr>
<tr>
<td>Arts¹</td>
<td>5</td>
<td>Chemistry</td>
<td>Bachelor of Aerospace Engineering (Honours) and Bachelor of Arts</td>
<td>CL</td>
<td>93.60</td>
<td>36</td>
<td>86</td>
</tr>
<tr>
<td>Biomedical Science</td>
<td>5</td>
<td>Chemistry</td>
<td>Bachelor of Chemical Engineering (Honours) and Bachelor of Biomedical Science</td>
<td>CL</td>
<td>95.40</td>
<td>37</td>
<td>88</td>
</tr>
<tr>
<td>Commerce</td>
<td>5</td>
<td>Chemistry</td>
<td>Bachelor of Aerospace Engineering (Honours) and Bachelor of Commerce</td>
<td>CL</td>
<td>94.05</td>
<td>37</td>
<td>88</td>
</tr>
<tr>
<td>Computer Science</td>
<td>5</td>
<td>Chemistry</td>
<td>Bachelor of Electrical and Computer Systems Engineering (Honours)</td>
<td>CL</td>
<td>94</td>
<td>37</td>
<td>88</td>
</tr>
<tr>
<td>Design</td>
<td>5</td>
<td>Chemistry</td>
<td>Bachelor of Mechanical Engineering (Honours) and Bachelor of Industrial Design</td>
<td>CL, CA</td>
<td>93.60</td>
<td>36</td>
<td>86</td>
</tr>
<tr>
<td>Information Technology</td>
<td>5</td>
<td>Chemistry</td>
<td>Bachelor of Electrical and Computer Systems Engineering (Honours)</td>
<td>CL</td>
<td>93.60</td>
<td>36</td>
<td>86</td>
</tr>
<tr>
<td>Laws (Honours)</td>
<td>6.25¹</td>
<td>Chemistry</td>
<td>Bachelor of Engineering (Honours) and Bachelor of Aerospace Engineering (Honours)</td>
<td>CL</td>
<td>98</td>
<td>40</td>
<td>94</td>
</tr>
<tr>
<td>Pharmaceutical Science</td>
<td>5</td>
<td>Chemistry</td>
<td>Bachelor of Chemical Engineering (Honours) and Bachelor of Pharmaceutical Science</td>
<td>CL, PA</td>
<td>93.75</td>
<td>36</td>
<td>86</td>
</tr>
<tr>
<td>Science</td>
<td>5</td>
<td>Chemistry</td>
<td>Bachelor of Chemical Engineering (Honours) and Bachelor of Science</td>
<td></td>
<td>93.60</td>
<td>36</td>
<td>86</td>
</tr>
</tbody>
</table>

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1 Duration is based on a standard full-time load of 48 credit points per annum.
2 Indicative – the provided score is the 2020 lowest ATAR to which an offer was made or an estimate (E), and is to be used as a guide only.
3 Master’s Accelerated Pathway is only available to school leavers and is not offered with environmental, resources or software engineering specialisations.
4 Depending on your Arts major, you may take the Arts component at Clayton or Caulfield.
5 This course is an accelerated course where you’ll be required to undertake more than the standard annual load of 48 credit points in year two and/or year three in order to complete the course in six years.

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Master’s Accelerated Pathway | CL – Clayton | CA – Caulfield | PA – Parkville
INTERNATIONAL ENTRY REQUIREMENTS

All Monash undergraduate courses require you to have successfully completed a minimum of an Australian Year 12 qualification (or equivalent) and achieve the required academic entry score.

The table above outlines the academic entry scores (for the listed qualifications) that apply to each undergraduate course.

How to calculate your entry score for the listed qualifications in this guide are calculated as follows:

Australian Year 12 (listed under the ‘2021 ATAR for international students’ column): Final ATAR as awarded by the relevant Australian state Year 12 authority.

GCE A Level: Total score of a maximum of the best three A Level subject examinations taken within two years7. Two AS Level subjects can be counted in place of one A Level subject, provided that the subject has not been taken at A Level, and there’s at least one A Level subject included in the calculation. AS Level results cannot be used to replace a poor performance in an A Level subject. Score A Level grades as follows:

A*(a*)=5, A(a)=5, B(b)=4, C(c)=3, D(d)=2, E(e)=1, U=0. Score AS Level grades as follows: a(a)=2.5, b(b)=2, c(c)=1.5, d(d)=1, e(e)=0.5, U=0. N (Narrow failure) and U (Unclassified) are not to be included in the calculation. A maximum of 1 bonus point is offered when achieving A* in an A Level subject.

GCE A Levels must be awarded by the following bodies:

• Cambridge Assessment International Examinations (CAIE) (previously known as CIE)
• Pearson Edexcel (previously known as Edexcel)
• Council for the Curriculum, Examinations and Assessment (CCEA)
• Oxford, Cambridge and RSA Examinations (OCR)
• Welsh Joint Education Committee (WJEC)
• Assessment and Qualifications Alliance (AQA).

All India Senior School Certificate: Overall average of the best four academic subjects (excluding Physical Education) and results indicated as ‘PASS’.

American Admission Tests:

• Advanced Placement: Total of the best two Advanced Placement (AP) examinations undertaken during Grades 9 to 12 of the American High School Diploma. If more than two AP examinations have been completed, only the best two AP examinations will be used in the calculation. Minimum accepted score in each AP examination is 3.

The following documents must also be submitted:

− Official final Advanced Placement examination issued by the College Board
− Official final academic transcript and Diploma Certificate for the American High School Diploma (or equivalent Australian Year 12 qualification)7.

• Scholastic Aptitude Test (SAT) – total score out of 2400: Total score obtained by adding the highest section scores8 (by adding the best scores achieved for ‘Critical Reading’, ‘Mathematics’ and ‘Writing’) across all SAT examinations submitted to Monash University.

The following documents must also be submitted:

− Official final SAT examination issued by The College Board
− Official final academic transcript and Diploma Certificate for the American High School Diploma (or equivalent Australian Year 12 qualification)8.

• Scholastic Aptitude Test (SAT) – total score out of 1600: Total score obtained by adding the highest section scores8 (by adding the best scores achieved for ‘Evidence Based Reading and Writing’ and ‘Math’) across all SAT examinations submitted to Monash University.

The following documents must also be submitted:

− Official final SAT examination issued by The College Board
− Official final academic transcript and Diploma Certificate for the American High School Diploma (or equivalent Australian Year 12 qualification)8.

Additional Requirements for American Admission Tests (SAT and AP):

• The American High School Diploma cannot be accepted independently for admission into Monash University.
• Schools that offer the American High School Diploma in the United States of America must be listed as accredited on the National Center for Education Statistics at nces.ed.gov/globallocator
• Schools that offer the American High School Diploma outside the United States of America must be accredited by the Advanced Ed or an equivalent regional accrediting agency in the United States of America as follows:
  − Middle States Association of Colleges and Schools
  − New England Association of Schools and Colleges
  − North Central Association of Colleges and Schools
  − Northwest Commission on Colleges and Universities
  − Northwest Accreditation Commission
  − Western Association of Schools and Colleges
  − Southern Association of Colleges and Schools.
• If a student has undertaken multiple American Admission Tests (i.e. SAT, AP or ACT), the test with the highest achieved scores will be considered as meeting Monash University undergraduate entry requirements.

High School Diploma (Bằng Tốt Nghiệp Trung Học Phổ Thông), Vietnam: Overall average of all Grade 12 subjects.
**Engineering**

**COURSE DEGREE AWARDED**
- Bachelor of Engineering (Honours) / Master's Accelerated Pathway 3 5
- Bachelor of Robotics and Mechatronics Engineering (Honours)
- Bachelor of Mechanical Engineering (Honours)
- Bachelor of Materials Engineering (Honours)
- Bachelor of Environmental Engineering (Honours)
- Bachelor of Civil Engineering (Honours)

**2021 ATAR for International Students**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>87.50</td>
<td>11</td>
<td>81%</td>
<td>76%</td>
<td>7</td>
<td>1770</td>
<td>1270</td>
<td>8.49</td>
<td>20</td>
<td>31</td>
<td>86.30%</td>
<td>8.75 or 87.50%</td>
</tr>
<tr>
<td>76.25%</td>
<td>9</td>
<td>84%</td>
<td>90%</td>
<td>9</td>
<td>1920</td>
<td>1360</td>
<td>8.7</td>
<td>23</td>
<td>36</td>
<td>91%</td>
<td>9 or 90%</td>
</tr>
<tr>
<td>76%</td>
<td>8</td>
<td>80%</td>
<td>90%</td>
<td>8</td>
<td>2021</td>
<td>2021</td>
<td>8.25</td>
<td>10.30</td>
<td>1.8</td>
<td>88.75%</td>
<td>Not applicable</td>
</tr>
<tr>
<td>83%</td>
<td>9</td>
<td>80%</td>
<td>90%</td>
<td>7</td>
<td>30</td>
<td>30</td>
<td>60%</td>
<td>86%</td>
<td>60%</td>
<td>60%</td>
<td>60%</td>
</tr>
</tbody>
</table>

**Hong Kong Diploma of Secondary Education**: Total score of the best five subjects (Category A and C only). Score graded as follows: Level 1=1, Level 2=2, Level 3=3, Level 4=4, Level 5=5 or A=5, B=4, C=3, D=2, E=1.

A maximum of 1 bonus point is offered when achieving Level 5** or Level 5* in a HKDSE Category A subject.

**Indian School Certificate Examination**: Overall average of the best four academic subjects (excluding Physical Education) and results indicated as ‘PASS CERTIFICATE AWARDED’.

**International Baccalaureate (IB) Diploma**: Total final score as awarded on the final official transcript.

**Ontario Secondary School Diploma – Grade 12**: Overall average of the best six academic subjects (excluding workplace preparation courses and open courses). Students must achieve a minimum total of 30 credits and complete Community Involvement.

**SMA3, Indonesia – 100% scale (60% pass)**: Overall average of all Semester 1 and Semester 2 Grade 12 results.

Note: Monash University undergraduate entry scores vary for SMA3 qualifications that are marked on differing grading scales.

**STPM, Malaysia**: Total of the best three subjects, excluding Pengajian Am (General Studies).

**UCE, Malaysia**: Overall average of the best five subjects. Only grades A1, A2, B3, B4, B5 and B6 to be included in calculation. C7, C8 and F9 cannot be included in the calculation.

Five subjects must be included in the calculation with a score of B6 grade or higher in each subject. Score grades as follows: A1=1, A2=2, B3=3, B4=4, B5=5, B6=6.

It should be noted that a score of A1 is the highest score.

**Monash University Foundation Year (MUFY)**: To calculate the average mark required for the Monash University destination degree, refer to the ‘How to calculate your Foundation Year score’ information available at: monashcollege.edu.au/courses/foundation-year/destination-degrees

The undergraduate entry requirements published in this brochure are for students who commence the MUFY program in 2021.

**UNSW Foundation Studies**: Final grade point average.

The University of Melbourne Trinity College Foundation Studies: Overall average of the best four subjects (excluding English for Academic Purposes).

**Monash College Diploma**: To calculate the average mark required for the Monash University destination degree, refer to the relevant diploma program information available at monashcollege.edu.au/courses/diplomas/destination-degrees

The Monash College Diploma Part 1 and Part 2 entry requirements published in this guide are for students commencing their undergraduate destination degree in 2022.

**Other international qualifications entry requirements can be found at monash.edu/prior-study**

**PREREQUISITES AND ADDITIONAL REQUIREMENTS**

Students need to meet course prerequisites (including English) and additional requirements. It should be noted that required prerequisite subject scores are not listed in this course guide.

**ENGLISH ENTRY REQUIREMENTS**

When you apply for a Monash University undergraduate course you must satisfy English entry requirements.

<table>
<thead>
<tr>
<th>English</th>
<th>Academic IELTS</th>
<th>Internet Based TOEFL</th>
<th>Pearson Test of English (Academic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>6.5</td>
<td>6.0</td>
<td>58</td>
</tr>
<tr>
<td>B</td>
<td>6.0</td>
<td>6.0</td>
<td>50</td>
</tr>
<tr>
<td>C</td>
<td>5.5</td>
<td>5.0</td>
<td>50</td>
</tr>
<tr>
<td>D</td>
<td>5.0</td>
<td>5.0</td>
<td>50</td>
</tr>
</tbody>
</table>

1 Duration is based on a standard full-time load of 48 credit points per annum.
2 Fees are quoted in Australian dollars; each is the annual average fee per 48 credit points of study in this course for 2020. Fees are adjusted annually. Please see monash.edu/fees/course-fee-types/international-full-fee for updates.
3 Masters Accelerated Pathway is only available to school leavers and is not offered with environmental, resources or software engineering specialisations.
4 Subject examinations taken within two years may include more than one sitting. For example, subject examinations in June 2019 until June 2021 are acceptable.
5 In order for the final score to be calculated all SAT scores must be marked out of 1600.
6 In order for the final score to be calculated all SAT scores must be marked out of 2400.
7 Students who have undertaken an American Admissions Test (i.e. SAT, AP or ACT) with another international qualification (equivalent to an Australian Year 12) will be considered for Monash University undergraduate admission, however the qualification or American Admission Test with the highest achieved score will be used to determine whether the student has met the entry requirements. Students who have undertaken an accredited final secondary school leaving award that is not equivalent to an Australian Year 12 may be considered for Monash University undergraduate admission only with an approved American Admissions Test, however higher entry scores will apply.
8 The highest grade will be used in the calculation in the event where individual subject examinations have been sat in multiple settings.
9 The grade 12 subjects must be taken from the most recent completed Ontario Student Transcript issued by the Ontario Ministry of Education.
10 The Monash College Diploma Part 1 and Part 2 entry requirements are for students commencing their undergraduate degree in 2022.
**SAMPLE COURSE MAP**

Here’s an example of what your studies could look like if you selected Mechanical Engineering.

### Year 1*

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering design: lighter, faster, stronger</td>
<td>Engineering design: cleaner, safer, smarter</td>
</tr>
<tr>
<td>Engineering Mathematics</td>
<td>Engineering mobile apps</td>
</tr>
<tr>
<td>Computing for engineers</td>
<td>Level one engineering elective unit</td>
</tr>
<tr>
<td>Elective unit</td>
<td>Elective unit</td>
</tr>
</tbody>
</table>

### Year 2

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanics of materials</td>
<td>Advanced engineering mathematics</td>
</tr>
<tr>
<td>Dynamics 1</td>
<td>Mechanics of fluids</td>
</tr>
<tr>
<td>Engineering design 1</td>
<td>Thermodynamics</td>
</tr>
<tr>
<td>Elective or technical elective unit</td>
<td>Elective or technical elective unit</td>
</tr>
</tbody>
</table>

### Year 3

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid mechanics</td>
<td>Dynamics 2</td>
</tr>
<tr>
<td>Fluid mechanics 2</td>
<td>Engineering design 2</td>
</tr>
<tr>
<td>Engineering computational mechanics</td>
<td>Systems and control</td>
</tr>
<tr>
<td>Level 3 or 4 technical elective unit</td>
<td>Level 3 or 4 technical elective unit</td>
</tr>
</tbody>
</table>

### Year 3

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Final year project</td>
<td>Final year project – Thesis</td>
</tr>
<tr>
<td>Professional practice</td>
<td>Engineering design 3</td>
</tr>
<tr>
<td>Thermodynamics and heat transfer</td>
<td>Computer-aided design</td>
</tr>
<tr>
<td>Level 3 or 4 technical elective unit</td>
<td>Level 3 or 4 technical elective unit</td>
</tr>
</tbody>
</table>

*If no foundation units are required
* Clayton campus students
^ Malaysia campus students

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**MONASH BREWLAB**

Australia’s first student led brewing team focuses on the chemical engineering and science of brewing, providing students an opportunity to learn, design, and operate a nano-scale brewery on campus.
LIVING IN MELBOURNE

Melbourne is a vibrant, multicultural city that offers an abundance of cultural festivities, international sporting events, cafés and restaurants with cuisines from around the world, beautiful parks and beaches, and an eclectic mix of music and arts. As one of the world’s most liveable cities*, you can expect excellence in public transport and healthcare, as well as opportunities for casual work while studying.

Cost of living
Living in Melbourne is affordable if you plan ahead and know what your needs will be. Your tuition and study fees do not include personal costs such as accommodation, food and miscellaneous items. These costs can add up to approximately A$22,900+ per year. For information on budgeting for your lifestyle, visit monash.edu/cost-of-living

Student accommodation
Living on-campus is a great way to experience university life and make connections while you study. On-campus accommodation is available at the Clayton campus and our Residential Services support team is available to help you through the application and transition process. If you prefer a little more independence, there is plenty of off-campus accommodation available. For more information on accommodation, visit monash.edu/accommodation

* Economist Intelligence Unit 2011-2018.

STUDENT LIFE AT MONASH

Clayton campus
Twenty kilometres from the centre of Melbourne, Monash’s Clayton campus combines a vibrant research, technology, and manufacturing precinct with first-rate sporting facilities, shops, a student centre, libraries, a post office, banks, medical services, and religious centres.

Support services
Monash helps students settle into university life by providing an extensive range of support programs and services including:

- Academic support
- Campus security
- Careers counselling
- Disability support services
- e-Research services
- Family support
- Monash Connect
- Skills Essentials seminars
- Wellbeing

Orientation
Our orientation service incorporates a series of programs to help students adjust to a new country and the Monash University environment.

monash.edu/orientation

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* Melbourne Cricket Ground
* Southbank
* Australian native wildlife at the Great Ocean Road
HOW TO APPLY

DOMESTIC STUDENTS

Apply through VTAC
If you’re an Australian or New Zealand citizen or an Australian permanent resident, apply through the Victorian Tertiary Admissions Centre (VTAC).
vtac.edu.au

Prerequisites
Please check that you meet the prerequisites for your chosen course before submitting your application. Prerequisite details for each course can be found in the admissions table beginning on page 26.

Scholarships
For more information, and to apply for scholarships, visit monash.edu/scholarships

Fees
To estimate your course fees, visit monash.edu/study

Commonwealth Supported Places
Australian citizens, New Zealand citizens, Australian permanent residents and permanent humanitarian visa holders are eligible to apply for a Commonwealth Supported Place (CSP). Visit monash.edu/enrolments/government-loans/commonwealth-supported-place

HECS-HELP/FEE-HELP
Loan options for eligible applicants. Visit monash.edu/enrolments/government-loans/domestic-full-fee

INTERNATIONAL STUDENTS

All international students must apply for a Monash University course online or through an accredited Monash agent. Visit monash.edu/study/how-to-apply for details.

Note: International students who are undertaking an Australian Year 12 qualification (for example, VCE or equivalent) in Australia or overseas, International Baccalaureate (IB) Diploma in Australia or New Zealand, or National Certificate of Educational Achievement (NCEA) Level 3 in New Zealand must apply through the Victorian Tertiary Admissions Centre (VTAC). Visit vtac.edu.au

Fees
$46,000, annual average fee per 48 credit points of study in this course for 2020 (A$). Further information on fees for each course can be found at monash.edu/study

Monash College
Monash College is the preferred pathway for students who aspire to study engineering at Monash University but who narrowly miss the academic requirements for direct entry. The course you choose depends on your current level of study and future career plans.
For more information on Monash College academic pathways, visit monashcollege.edu.au/courses

THE STEAM ENGINE CO.
This is an education technologies startup founded by Marissa Thomas, a Monash chemical engineering graduate. They deliver a range of coding, robotics and engineering workshops and toolkits to teach and empower children to realise their potential to change the world through engineering.
There’s a range of events held throughout the year for you to visit campus and experience Monash Engineering first-hand. Meet our lecturers, talk to current students, see our innovative facilities and explore the various fields of engineering.

Event dates may be subject to change. Please check the website for the latest details on these events and more, visit monash.edu/engineering/events

**Inside Monash**

**Online webinar 14 May and 26 August 2020**

Join us for an interactive online stream to hear from our incredibly talented graduates and students.

**Engineering campus tours**

**Tours held throughout the year**

If you would like to take a closer look and see where you could be studying next year, this is a great chance to visit our fantastic engineering facilities and student spaces. Get a feel for campus life, have chat with engineering staff and we can help you with course advice as well. The tour is free and registration is essential. See the website for details.

**Engineering Stories**

**20 June 2020**

Considering studying Engineering? Gain insights into what it’s really like to be an engineer. Our panel will discuss their personal journeys and the vast array of career opportunities available in engineering.

**Open Day**

**2 August 2020**

Discover what it’s like to be a Monash student. Open Day is a chance to talk with current students, meet academics and speak with our student services team about your future. Watch live demonstrations, tour our engineering facilities and soak up the campus atmosphere.

**Monash Engineering Girls (MEG)**

Join MEG, our girls program and gain access to exclusive events and discover the possibilities a career in engineering can offer. The program is open to girls in Year 9, 10 and 11.

**Engineering 101 – 5 September 2020**

Experience what it’s like to be an engineering uni student for a day. With lectures and hands-on workshops to challenge your creativity, you can explore how things work and learn about the different fields of engineering.

**ClubFest – 29 September 2020**

Meet our student-run clubs and project teams and discover what you can achieve as a Monash Engineering student.

For more information, visit monash.edu/engineering/meg
Philanthropic donors: Clive and Helen Weeks, Dr Chang Mong Tay, Dubsky family, Dr Jerry and Ann Ellis, Jenkins family, Nick Apostolidis, Female Leaders Alumni Monash Engineering Scholarship (FLAMES).