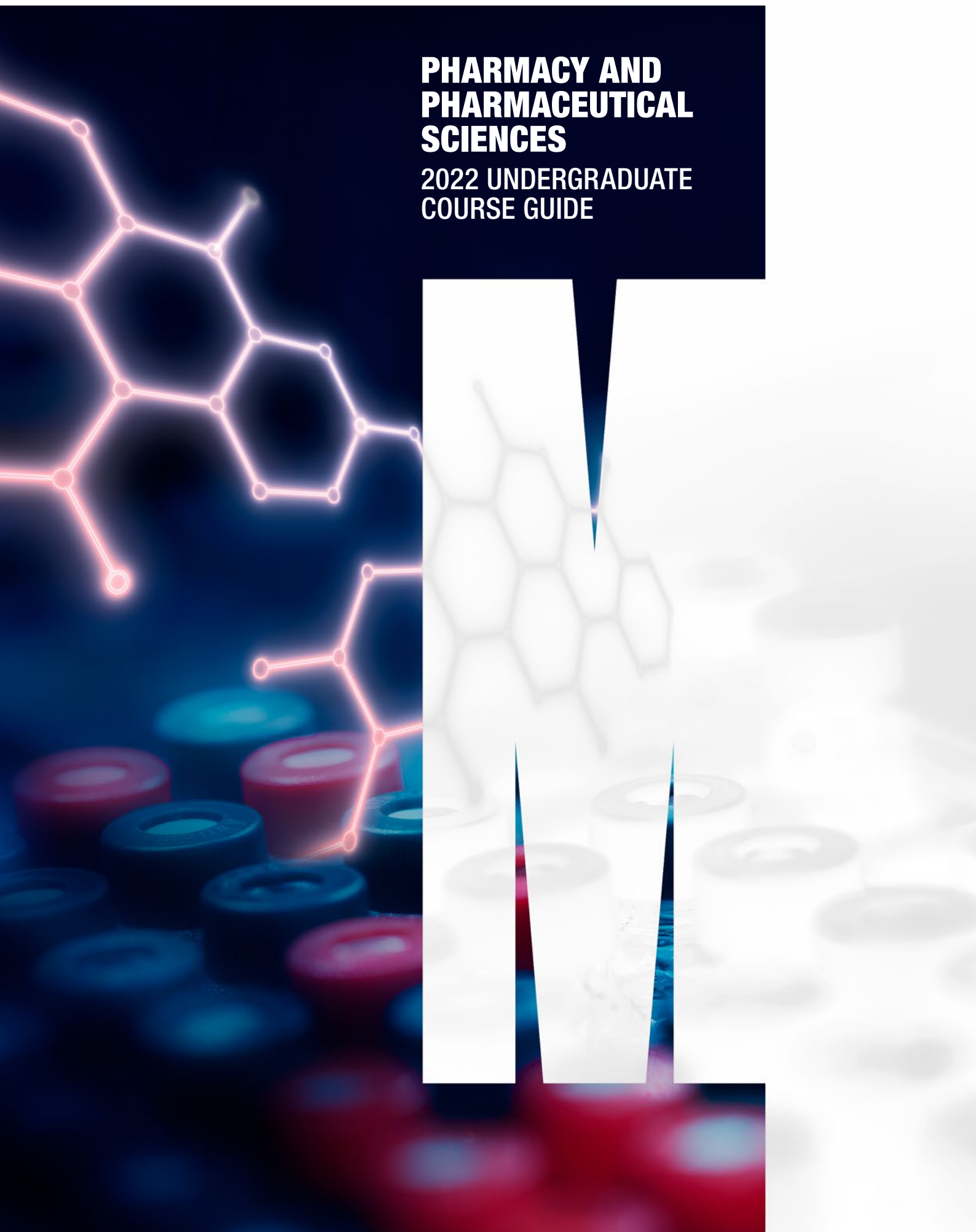


PHARMACY AND PHARMACEUTICAL SCIENCES

**2022 UNDERGRADUATE
COURSE GUIDE**



**AT MONASH PHARMACY AND
PHARMACEUTICAL SCIENCES
WE'RE ON A
MISSION TO MAKE
HEALTHCARE BETTER**



And our mission begins with what's most important: educating the next generation of pharmacists and pharmaceutical scientists.

It's why we focus on small group learning that allows you to receive individual attention from some of the world's leading educators.

It's why we focus on equipping you with not just the most up-to-date knowledge but also with the skills you need to put that knowledge into practice.

And it's why both of our undergraduate degrees offer extensive experiential opportunities, so you can integrate what you've learnt in the classroom with what goes on in the wider world.

It's the mission we've had since 1881, long before we became one of the world's most highly regarded institutions in our field, when we began serving Victoria as the Victorian College of Pharmacy.

Studying with us offers you a unique opportunity to become part of a tight knit community of people at the highest echelons of their professions, all utterly dedicated to improving the world around them.

Please, join us.

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MONASH PARKVILLE THE BEST OF BOTH WORLDS





IN ONE WAY, WE'RE SMALL.

We're a community of about 1500 people (researchers, educators, students, administrators) bound together by a shared passion for the transformative power of medicines.

We're fascinated by the biology, chemistry and biomedical science that underpin pharmaceuticals and are dedicated to making sure medicines are used safely, effectively and with maximum benefit for our communities.

Our small size means students get to know each other and their instructors well. At Monash Parkville, it's hard to slip through the cracks.

BUT IN ALL THE WAYS THAT MATTER, WE'RE BIG.

We're part of Monash, Australia's largest university and a highly regarded global brand.

This means you can enjoy the resources of Australia's largest university. Develop your skills through a student leadership program, relax with your friends at an on-campus festival, or join a student-run club suited to your interests.

LOCATION IS EVERYTHING

Located on the edge of Melbourne's central business district and easily accessible by tram and train, we're right next door to buzzing inner-city suburbs like Carlton and Brunswick.

We're also in the heart of Melbourne's world-renowned Biomedical Precinct, a global hub for research and healthcare talent. That comes in handy when it's time to go on placement.

WHAT WILL YOUR WEEK LOOK LIKE?

Studying at Parkville involves a mix of interactive lectures, small-group classes, self-directed learning and hands-on practical skill-building in labs and workshops.

In a typical week, you'll follow our developed instructional model called 'DEAR' for 'Discover, Explore, Apply, Reflect.'

DISCOVERY involves spending time familiarising yourself with key concepts by reading, watching videos and completing exercises online.

You'll then EXPLORE the ideas further through interactive lectures with skilled teachers, and have the chance to APPLY your new-found knowledge in small group workshops with academics, practitioners and science facilitators.

Finally, you'll spend some time consolidating what you've learnt and ensuring it makes sense in the context of your overall course, by REFLECTING on your plans for continuing development.

The course you're undertaking will determine exactly how you'll learn. For example, our budding pharmaceutical scientists spend more time in the lab than our pharmacists in training, who focus more on developing their clinical skills.

You'll also have the valuable opportunity to meet regularly with a 'skills coach', an academic or practitioner from your course who will help you develop and implement a personalised learning plan and ensure you're ontrack.

PHARMACY

ESSENTIAL WORKERS, SUPPORTING HEALTHIER COMMUNITIES

Now, more than ever, the world needs pharmacists. As the experts in medicines and the way they interact with the body, pharmacists play a vital role in healthcare teams. Medication-related problems account for around 750,000 hospital admissions in Australia each year, and in 2019 medicine safety became a national health priority. In 2021, community pharmacists joined the nation-wide taskforce to vaccinate millions of Australians against COVID-19 and help protect our communities.

JOB PROSPECTS ARE BRIGHT

In Australia, an ageing population combined with more and more people living with chronic health conditions, means that health professionals are in constant demand. The number of job ads for pharmacists has grown exponentially in recent years, with a study led by Monash University concluding that Australia could in fact face a pharmacist shortage.

If you're looking to become a healthcare professional within a highly in-demand profession – and also love the idea of making a true difference to people's lives – then a career as a pharmacist might be for you.

COMBINED BACHELORS AND MASTERS

Four years ago, Monash launched Australia's first and only combined Bachelor of Pharmacy (Honours) / Master of Pharmacy program, offering a unique pathway for students to graduate with a higher level of learning in the same number of years it typically takes to become a pharmacist.

In Australia, it typically takes a minimum of five years to become a registered pharmacist. Traditionally this has taken the form of a four-year bachelor, followed by a year during which you complete a paid internship and an Intern Training Program. Our program takes the same amount of time and you still complete the paid internship and Intern Training Program. But instead of graduating with one degree, you'll graduate with two: a master as well as a bachelor.

Real world experience: placements and internship

As part of the program you'll undertake work placements in community pharmacies, hospitals and other environments, practicing your new skills while learning from some of Australia's best pharmacists about areas such as primary health care, medicines information, and patient-focused pharmacy services.

Earn while you learn: how does the intern year work?

During your intern year (fifth year), you'll combine supervised practice (for which you'll be paid), with intern studies (Intern Training Program and Intern Foundation Program). This intensive combination of learning and working will ensure you're well prepared for your final registration exams and, arguably more importantly, confident to qualify as a practicing pharmacist.

Whilst all your placements are organised for you by the faculty, you're required to secure your own internship yourself – just as you would your first job. But don't worry – historically, students rarely struggle to find internships, as intern pharmacists are in-demand. Further, you'll have developed a network of pharmacy practitioners through your placements in earlier years.

Flexibility to suit your needs

If you aim to register and work as a pharmacist in Australia, our Bachelor of Pharmacy (Hons) / Master of Pharmacy is a direct pathway to registration. However, we understand that everyone has different circumstances; you may not be willing to commit to five years of study quite yet, or you could be an international student aiming to work back in your home country. If this sounds like you, we have provision for students to enrol in our four-year Bachelor of Pharmacy (Honours) in the first instance, with the ability to automatically qualify for a place in the Masters upon completion.



In my first year of the program I was so pleasantly surprised by the flexibility and practicality of the program – I was given the opportunity to contribute to a journal, gain hands on experience through working in a community pharmacy and I even participated in a global competition which has led me to working with Australia's Immunisation Coalition to help educate Australian's on the flu vaccine. The educators really help you to find your own path."

YANNEE LIU

Yannee Liu always knew she wanted to work in healthcare and was drawn to pharmacy following an inspiring presentation about the important and rewarding role pharmacists play within the healthcare system. Now in her second year of the Bachelor of Pharmacy (Honours) / Master of Pharmacy, Yannee says that the flexibility and broad range of opportunities that have come her way is what she has loved the most about her time at Monash so far.

“

If you have a keen interest in chemistry, medicines and healthcare I would strongly consider studying pharmacy. It's a rewarding, stable career that's brimmed with opportunity.

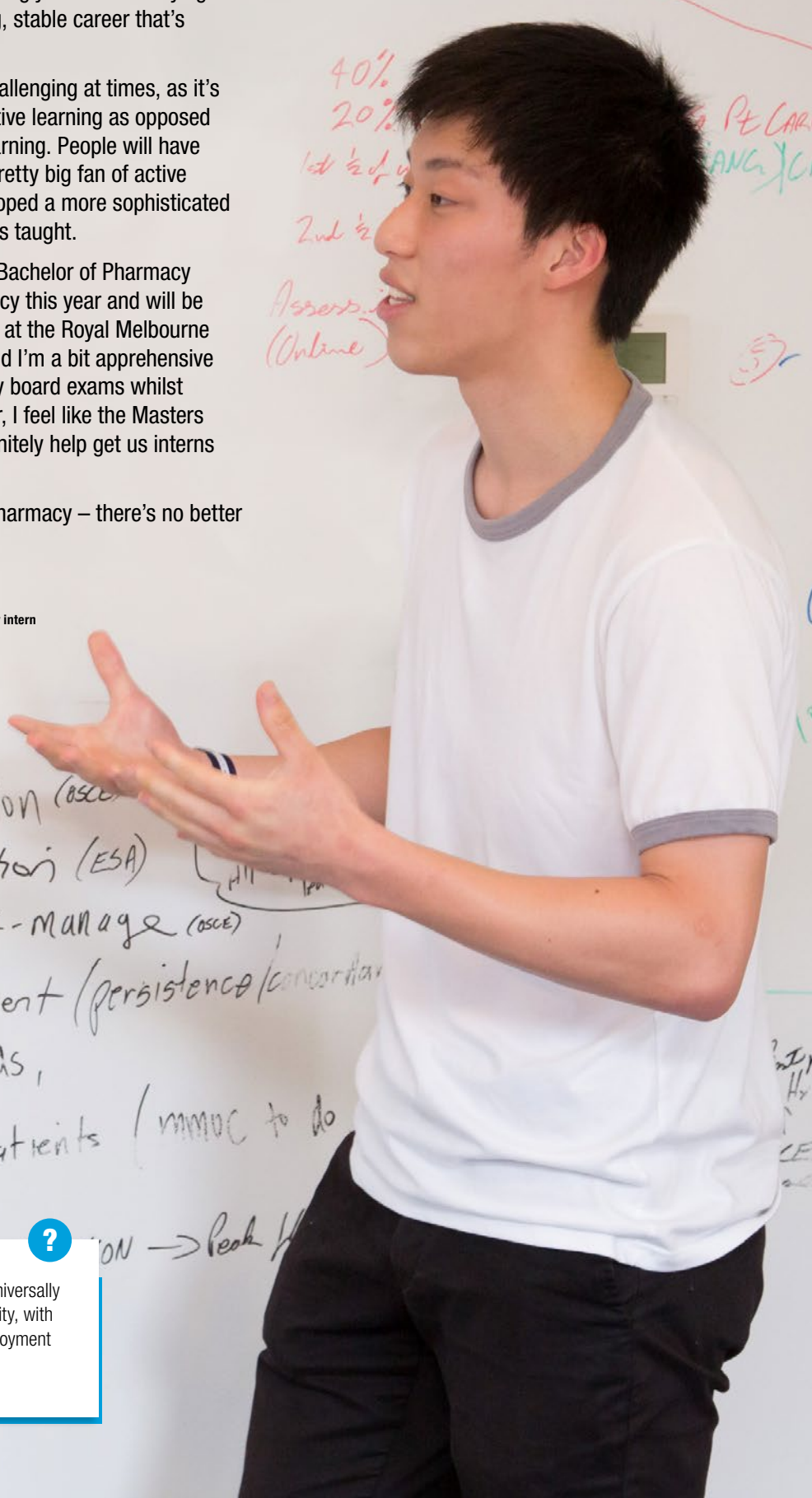
The course is definitely challenging at times, as it's almost entirely built on active learning as opposed to didactic lecture type learning. People will have preferences, but I was a pretty big fan of active learning, and I felt it developed a more sophisticated understanding of the topics taught.

I'm in my fifth year of the Bachelor of Pharmacy (Hons) / Master of Pharmacy this year and will be undertaking my internship at the Royal Melbourne Hospital. It's a big year, and I'm a bit apprehensive about sitting the pharmacy board exams whilst working full time. However, I feel like the Masters intern component will definitely help get us interns up to speed.

If you're set on studying pharmacy – there's no better place than at Monash!”

KEVIN WU

Bachelor of Pharmacy (Honours) /
Master of Pharmacy student and Pharmacy intern
at The Royal Melbourne Hospital



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DID YOU KNOW?
Pharmacy graduates almost universally get jobs straight out of university, with 95.7 per cent in full-time employment shortly after graduating.*
*Source: Graduate Outcomes Survey 2020

GRADUATE ENTRY PATHWAY BECOME A PHARMACIST FASTER

Graduate Entry Pharmacy is for students who choose to study a more general science-based degree after high school, or didn't meet our pharmacy course requirements at the end of Year 12. You'll commence into third year of our Bachelor of Pharmacy/Master of Pharmacy program, eligible for registration as a pharmacist in just three years, including a paid internship.

Who's eligible?

It's important you know our eligibility requirements for Graduate Entry Pharmacy and build them into your course progression if necessary. To be eligible for the program, you need to have completed a relevant degree in the last ten years with a minimum average of 70% (or equivalent) across your whole degree.

Relevant degrees include:

- Bachelor of Biomedical Science/Bachelor of Biomedicine
- Bachelor of Health Sciences
- Bachelor of Pharmaceutical Sciences
- Bachelor of Science

In assessing your eligibility, we'll take into account the number of relevant subjects you've completed. The units completed in your degree should be appropriate and science based.

For more information about Graduate Entry Pharmacy, including eligibility and application information:

monash.edu/graduate-pharmacy

Summer school: Bridge to practice I

Once you're accepted into the program, you'll need to complete a 6.5 week intensive summer school, commencing in early January. This program helps you start to transition your science knowledge to a pharmacy context.

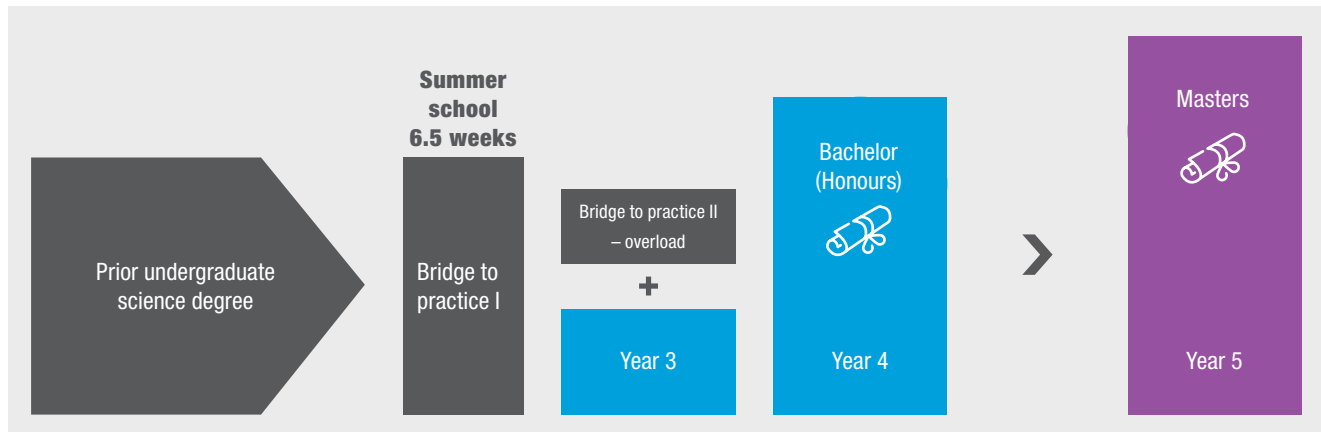
Upon successful completion of summer school, you'll commence into Year Three of the program, essentially being awarded two years of credit. You'll need to complete one additional overload unit, Bridge to practice II, which continues to further the application of your science knowledge to pharmacy.

How do I apply?

Applications for 2022 entry will open on our website from 2 August, 2021 and closes on 10 December, 2021.

Apply at:

applicant.connect.monash.edu.au/connect/webconnect



The Graduate Entry Pharmacy program was challenging at times, but it was also rewarding to see how far we all came in a short period. Although the course was structured quite differently to my previous Commerce/Science degree, it was designed to allow us to learn new information in lectures, and then further consolidate our knowledge and understanding.

This year I am undertaking my internship in a hospital setting at Monash Health. The process of applying for hospital internships is streamlined, and the exposure Monash gave us through placements, as well as the experience gained gave me the confidence to apply to these organisations. I would highly recommend the Graduate Entry program at Monash!"

MADELEINE LACK

Graduate Entry Pharmacy student and
Pharmacy intern at Monash Health



Bachelor of PHARMACY (Honours) + Master of PHARMACY

COURSE MAP

YEAR 1

UNITS

Semester 1 24 credit points	PHR1011 Professional practice I 6 credit points	PHR1021 How medicines work I 6 credit points	PHR1031 How the body works 12 credit points
Semester 2 24 credit points	PHR1012 Professional practice II 6 credit points	PHR1022 How medicines work II 18 credit points	

YEAR 2

Semester 1 24 credit points	PHR2011 Professional practice III 6 credit points	PHR2021 How medicines work III 6 credit points	PHR2041 Respiratory and gastrointestinal disorders 6 credit points	PHR2141 Dermatology and pain 6 credit points
Semester 2 24 credit points	PHR2012 Professional practice IV 12 credit points		PHR2042 Endocrinology and renal 6 credit points	PHR2142 Cardiovascular 6 credit points

YEAR 3

Summer semester 12 credit points	PHR1001 Bridge to practice I (Graduate Entry Pharmacy students only) 12 credit points			
Semester 1 30 credit points	PHR1101 Bridge to practice II (Bridge to practice students only) 6 credit points	PHR3041 Blood, brain and cancers 12 credit points		PHR3141 Pathogens, host defence and treatment 12 credit points
Semester 2 24 credit points	PHR3042 Acute care 12 credit points		PHR3062 Student experiential placements 6 credit points	PHR5052 Inquiry and innovation I 6 credit points

YEAR 4

Semester 1 24 credit points	PHR4061 Student experiential placements 12 credit points		PHR5051 Inquiry and innovation II 12 credit points
Semester 2 24 credit points	PHR4012 Professional Practice V 6 credit points	PHR4042 Integrated care 12 credit points	PHR5152 Inquiry and innovation III 6 credit points

YEAR 5

Semester 1 12 credit points	PHR5061 Applied pharmacy practice I 6 credit points	PHR5161 Foundation practice I 6 credit points	48-week paid internship*
Semester 2 12 credit points	PHR5062 Applied pharmacy practice II 6 credit points	PHR5162 Foundation practice II 6 credit points	

■ Professional Practice units
 ■ Comprehensive Care units
 ■ How the Body Works unit
 ■ How the Body Works unit
 ■ Inquiry units
 ■ Placement units
 ■ Bridge to Practice units
 ■ Paid internship

*Note that in order to enrol in the intern training program and intern foundation program, you must have arranged to undertake your internship under the supervision of a preceptor approved by the Pharmacy Board of Australia.

Themed, integrated units

Like many primary healthcare courses, your units are taught thematically, ensuring you'll gain knowledge in an applied and engaging way. They also integrate with each other, meaning your knowledge will consolidate and build as you progress through the course.

If you want details about what you'll specifically be learning in your units, you'll find them in our online handbook: handbook.monash.edu

Earlier and enhanced placements

You'll be exposed to real-life practice environments as early as possible. Right from first year, you'll spend time in experiential placement sites working with some of the best pharmacists in Australia.

To ensure you're ready for placement, we credential you to provide appropriate patient services, allowing you to assist in contributing to patient care throughout your degree.

CAREERS IN PHARMACY

A DEGREE OF OPPORTUNITY

If you've ever had a prescription filled at your local community pharmacy, you probably think you know what pharmacists do. The fact is, community pharmacy represents only one of dozens of career paths our graduates pursue, and many others are listed below.

AGED CARE PHARMACIST

Older people often have complex needs when it comes to medications. They are frequently taking a number of different medications and can be more susceptible to side effects. They may also need adjustments to their medications to accommodate difficulties with vision, hearing, memory or cognitive function.

CLINICAL TRIALS PHARMACIST

Pharmacists in this area support the management and delivery of clinical trials of new medicines. The role involves coordinating studies from a medicinal perspective, ensuring that drugs used in the trials are imported, stored, accounted for, compounded, dispensed and used in accordance to strict protocols. It may involve liaising with hospital staff, counselling participants and carers, and educating medical and nursing staff.

COMPLEX CARE COORDINATOR

A relatively new career path, complex care coordination involves working with a hospital healthcare team and is often combined with consultant pharmacy work. The role involves providing early post-discharge medication review and follow-up plans for patients identified as being 'high risk' by hospital clinicians.

CONSULTANT PHARMACIST

Accredited consultant pharmacists conduct home medicines reviews and residential medication management reviews. As with many roles, consultant pharmacists often work part time undertaking medication reviews, while also working in other healthcare settings such as working at a community health centre, working with chronic disease management groups, or providing nurse education.

DRUG SAFETY OFFICER

Pharmacovigilance is an area focusing on monitoring drug safety. A pharmacist working as a drug safety officer liaises regularly with government and industry bodies, consumers and other healthcare professionals. Their responsibilities include receiving and processing reports of adverse drug events and conducting regular conciliation with health authorities. They use their skills and qualifications to ensure the public has access to safe and reliable medications.

HOSPITAL PHARMACIST

Hospital pharmacy involves a lot of collaboration as you find yourself working closely with a team of other healthcare professionals, including doctors and nurses, to provide the best care for patients.

According to the Society of Hospital Pharmacists of Australia (SHPA), "...it offers variety, both in the roles you can have, such as clinical [i.e. direct patient care] or management, and in the types of hospitals you can work in – city or country, small or large, general or specialist."

Working as a hospital pharmacist helps you develop valuable skills that are highly sought after in other pharmacy settings. Many pharmacists will spend some part of their career in a hospital environment.

PRIMARY CARE PHARMACIST

A practice pharmacist doesn't dispense medicines. Instead, they work within a general medical practice to deliver direct support to general

practitioners, practice nurses, and patients. They can often give more time and attention to individual cases, providing quality care and specialised services such as smoking cessation.

PUBLIC HEALTH ADVISOR

Pharmacists have knowledge, skills and experience that can contribute to advisory roles, both for the government as well as non-government institutions, such as health funds and private hospitals. The range of possible roles in this area is extensive, including medicines access, public health, developing eHealth services and more.

REGULATORY AFFAIRS ASSOCIATE

Working in regulation involves ensuring the appropriate licensing of and legal compliance by pharmaceutical and medical products. Following this career path, you're involved in ensuring that a company's products comply with regulations and legislation.

RESEARCHER / ACADEMIC

Many students find their passion for research while studying, and go on to make a career of exploring and developing ideas in pharmacy. Through research and evaluation, pharmacists can make a huge practical difference to health policy and services. Common research areas for pharmacy graduates include pharmacy practice, pharmacotherapy, drug discovery, toxicology, clinical sciences, public health and much more.

SPECIALTY PRACTICE PHARMACISTS

There are many different types of specialty practice pharmacists, below are just a few of the most common.

Mental health pharmacist

Mental health pharmacists in hospitals are responsible for providing clinical pharmacy services to the adult mental health in-patient wards, and psychiatric assessment and planning units. It's a highly specialised career path that includes managing the supply of anti-psychotic medications to mental health patients in government units, outpatient clinics, community centres and specialist hospitals.

Women's and newborns' pharmacist


Providing safe and effective dosing and administration of medications during pregnancy and for infants is the focus of the role. One of the biggest challenges can be assisting in the care of babies born prematurely. But it's also a highly rewarding area to work in; a skilled pharmacist can play a crucial role in giving a baby a better chance at a healthy life.

Antimicrobial steward

Antimicrobial stewardship is a vital role in any hospital and health facility, with responsibilities that include promoting the appropriate use of antimicrobials (including antibiotics), reducing microbial resistance, and decreasing the spread of drug resistant infections.

Pain educator and consultant

Chronic and acute pain are fascinating areas to work in. Pain management is a constantly evolving field that encompasses many areas of treatment, not just pharmacy and pain medications. Pharmacists work with patients to manage their medications and coordinate other forms of treatment.



Pharmacy roles are evolving to better meet healthcare and community needs, as well as adapt to advances in technology. By the time you graduate, your job could look more like what is detailed in the Pharmaceutical Society of Australia's recent report: **Pharmacists in 2023: Roles and Remuneration.**

Read the report at:

www.psa.org.au/advocacy/working-for-ourprofession/pharmacists-in-2023-roles-and-remuneration



Moving to Melbourne from Queensland to peruse Monash's Bachelor of Pharmacy / Master of Pharmacy was a challenge, but I wouldn't change it for anything! The team at Parkville made me feel welcome from my first day, and I've enjoyed every second of my time at Monash. During my studies, I've been involved with student groups like the National Australian Pharmacy Students' Association, and the Victorian Pharmacy Students' Association. Through these groups, I've had the chance to travel around the country, and meet pharmacy students from many other universities. From these interactions, it's clear that Monash's combined Bachelor / Master program is unique. The enhanced clinical placements, excellent lecturers and life-long friendships formed at Parkville make it clear how Monash earned their world class reputation - and why I moved to study here!

Thanks to the education I received at Monash, I was able to secure my first internship preference with Alfred Health. It's been an amazing experience so far, and working here has made me appreciate how effectively Monash prepared me to practice as a pharmacist. I'm able to work in the hospital, and study for my internship exams with confidence that I've been given the skills and support to succeed. When thinking about my future career as a pharmacist, I'm excited at the thought of improving my patients' health, and making a tangible difference in their lives. I hope to do this through research and continuing my hospital pharmacy journey."

AISLING MCENVOY

Bachelor of Pharmacy (Hons) / Master of Pharmacy student
and Pharmacy intern at Alfred Health

HAVE AN INTERNATIONAL EXPERIENCE WHILST YOU STUDY



An international career

Margaret Louey currently works as a Senior Technical Manager, Product Development and Regulatory Affairs at Clinton Health Access Initiative (CHAI). CHAI is a non-profit organisation founded by US President Clinton in 2002 with the aim of helping save the lives of millions of people living with HIV/AIDS in the developing world. CHAI has now expanded its goals to include access to critical medicines and diagnostics for HIV/AIDS, TB, malaria and other diseases in low- and middle-income countries.

After completing her Bachelor of Pharmacy degree at Monash University, Margaret worked in community and hospital pharmacies in London. She returned to Melbourne a couple of years later to do her honours and PhD at Monash.

To read more about Margaret's journey:

monash.edu/pharm/alchemy-33/special-feature-pharmacy-gone-global/our-international-alumni/margaret-louey





Pharmacy is a global profession and we want you to experience that in your degree.

As part of our program, you can apply for exchange opportunities at our Malaysia campus. You can also apply to complete projects and elective placements in the US, the UK and a number of developing countries. We work closely with preferred partners at the University of North Carolina, University College London, and Work the World to ensure that our international activities are interesting and ethical.

All eligible Monash students who are accepted into an international program will receive some financial aid towards the cost of their experience.



I've done so many great things in this course. Last year I made an anti-epileptic drug from scratch. And the lecturers are so approachable. When you're struggling with something, it's amazing to be able to walk along the hall and knock on the door of someone who is one of the world-leading researchers in the area."

JOMO KIGOTHO

Bachelor of Pharmaceutical Science student

PHARMACEUTICAL SCIENCE

MAKE A GLOBAL IMPACT TO HEALTHCARE

A degree in pharmaceutical science will equip you for an exciting and diverse career, enabling you to make a genuine impact to human health and well-being. Your understanding of the powerful interplay between chemistry and biology will set you apart from the crowd.

You'll be taught by internationally renowned scientists at the forefront of tackling global health challenges. From them you'll learn what it takes to invent, develop and approve a new medicine to improve health outcomes around the world.

Hands-on experience

You'll get lots of time in the lab, working with industry-standard research instrumentation. When you accept your first job offer after graduation, you'll hit the ground running. And because the faculty has long standing relationships with employers in the sector, you'll emerge armed with the skills employers are looking for.

Use industry-standard instrumentation

As well as gaining a deep understanding of the fundamental concepts in chemistry, biology and product formulation, you'll learn how to design and conduct experiments using sophisticated instrumentation and, most importantly, how to interpret and effectively communicate your data.

A future-proofed sector brimming with opportunity

As the world continues to face a number of urgent health challenges, pharmaceutical scientists will play an important and central role in helping to solve these problems over the next decade and beyond. Victoria is the heart of Australia's pharmaceutical sector, with its highly skilled and innovative workforce employing around 31,000 people. In 2016, Victoria exported about 47 per cent of Australia's total pharmaceutical products worth just over \$1.5 billion.

The upshot is that it's a great time to be studying in this field. Globally, pharmaceuticals is a growth sector and – with many industries being majorly disrupted by technology – this future-proofed career path means that your skills will still be relevant in 20 years' time.

Victoria is a global hub for biomedical research, medical technology and pharmaceutical manufacturing

With one of the world's largest life science clusters, Victoria's pharmaceutical industry is highly sought after on a global scale. According to the governments' 2017 State of the Sector Medical Technologies and Pharmaceuticals report, Melbourne-based companies currently make up over 40% of all ASX-listed medtech and pharmaceutical firms in Australia. There's a strong demand for graduates in Victoria, which will only increase as the sector grows.

Course and career options

A career in pharmaceutical sciences can take you in a number of exciting directions.

During the course, you'll have the opportunity to align your interests with particular aspects of the drug discovery pipeline.

You might be attracted to drug discovery biology, which is about gaining an understanding of what causes different types of diseases and how current medicines work at a molecular level to treat them. You'll get hands-on experience designing experiments to identify and test new biological targets for the development of novel drugs.

Or you might be drawn to medicinal chemistry, which represents the intersection of biology and chemistry, and involves the development of potential pharmaceutical compounds from conception through to their clinical use. You'll study how drugs work, and how they're designed and made. By applying the principles and techniques of organic chemistry, medicinal chemists discover and develop compounds that prevent, treat or cure disease.

There's also formulation science, which enables you to understand the principles of designing pharmaceutical products and how medicines are absorbed and travel around the body to the site of action.

Drawing on techniques used in the pharmaceutical industry, you'll also learn how to formulate chemical products in a wide range of applications, such as consumer products, cosmetics, paints and food.

Three-year BPharmSci vs four-year BPharmSciAdvHons: what's the difference?

Some of our students want to complete their degree, get out there and start working.

For them, the three-year Bachelor of Pharmaceutical Science is the perfect pathway into a career in the pharmaceutical sector or any of its allied industries such as skincare, cosmetics, chemicals or even food manufacturing, just to name a few.

Other students find that their natural curiosity and passion to work on innovative research attracts them to a degree with a significant research component. For those students, the Bachelor of Pharmaceutical Science Advanced (Honours) is ideal. The third year of the degree includes an extended placement in either research or industry, which will give you the skills and independence to conduct a substantial research project in your fourth (honours) year.

Upon completion of an honours year, students are eligible to apply for a PhD.

Bachelor of PHARMACEUTICAL SCIENCE



Bachelor of PHARMACEUTICAL SCIENCE ADVANCED (Honours)

BACHELOR OF PHARMACEUTICAL SCIENCE COURSE MAP (3 YEARS)

YEAR 1	UNITS			
Semester 1	BPS1011 Human physiology I: Cells to systems	BPS1021 Medicinal chemistry I: Structure	BPS1031 Physical chemistry I: Equilibria and change	BPS1041 Scientific Inquiry
Semester 2	BPS1012 Human physiology II: Body systems	BPS1022 Medicinal chemistry II: Reactivity and biomolecules	BPS1032 Physical chemistry II: Solutions, surfaces and solids	BPS1042 Pharmaceutical science in context

YEAR 2	UNITS			
Semester 1	BPS2011 Pharmacology I: Biochemical signalling <i>BPS1011</i>	BPS2021 Synthetic chemistry I: Structure and reactivity <i>BPS1021</i>	BPS2031 Analytical methods I: Principles and applications <i>BPS1031</i>	BPS2041 Drug delivery: Absorption pathways <i>BPS1011</i>
Semester 2	BPS2012 Pharmacology II: Drug action <i>BPS1012</i>	BPS2022 Drug discovery and design <i>BPS1022</i>	BPS2032 Analytical methods II: Investigation design <i>BPS1032</i>	BPS2042 Drug development <i>BPS1032</i>

YEAR 3	UNITS		
Semester 1	Elective unit – Choose four units from the following six: <ul style="list-style-type: none"> • BPS3011 Disease-focused pharmacology <i>BPS2011</i> • BPS3021 Biotechnology <i>BPS2011</i> • BPS3031 Computational drug design <i>BPS2022</i> • BPS3041 Synthetic chemistry II: Advanced methods <i>BPS2021</i> • BPS3051 Pharmaceutical product development <i>BPS2042</i> • BPS3061 Industrial formulation – co-req <i>BPS3051</i> 		
Semester 2	BPS3012 Applied pharmaceutical science: from concept to market	Elective unit – Choose two units from the following four: <ul style="list-style-type: none"> • BPS3022 Microbiology and immunology <i>BPS2012</i> • BPS3032 Toxicology and advanced pharmacology <i>BPS2012</i> • BPS3042 Advanced experimental spectroscopy <i>BPS2021</i> • BPS3052 Applied pharmacokinetics/dynamics and nanotechnology <i>BPS2041</i> 	BPS3062 Professional experience

BACHELOR OF PHARMACEUTICAL SCIENCE ADVANCED HONOURS YEAR

An Honours year gives you a taste of a research career and enhances your job prospects upon graduation. The Bachelor of Pharmaceutical Science Advanced (Honours) contains a Year 4, shown below.

YEAR 4	UNITS
Full year subjects	BPS4001 - Advanced Pharmaceutical Science (coursework) — 12 points
	BPS4002 - Research in Pharmaceutical Science — 36 points

If you want details about what you'll be specifically learning in each of your units, you'll find them in our online handbook: handbook.monash.edu

Bachelor of **PHARMACEUTICAL SCIENCE** +

Bachelor of **ENGINEERING** (Honours)

Combining chemical engineering with pharmaceutical science, this double degree is unique in Australia and rare worldwide.

Not only will you learn how to invent and test new products such as pharmaceuticals, food and cosmetics, but you will have the know-how to manage the product process beyond the laboratory stage.

This double degree allows you to graduate as a qualified engineer capable of covering the full spectrum of the pharmaceutical product design and production process.

Pharmaceutical engineers work in all aspects of the design and production process, from experimenting with innovative formulations to manufacturing commercialised products. A pharmaceutical engineer might:

- design, develop and improve industrial processes and equipment for large scale chemical and pharmaceutical manufacturing
- plan and test methods of manufacturing
- devise production processes that are safe, efficient, profitable and environmentally sound
- develop and implement cleaner production technologies.



DID YOU KNOW?

Bachelor of Pharmaceutical Science/Bachelor of Engineering (Honours) is taught between two Monash campuses – Parkville and Clayton. You'll study Year 1 and 3 at Parkville, and Years 2, 4 and 5 at Clayton.

CAREERS IN PHARMACEUTICAL SCIENCE

The course material sounds fascinating, all that time using high-tech lab equipment seems really fun, and the internship opportunities mean you'll graduate ready for the workforce. So what exactly does a pharmaceutical scientist do?

That's a trickier question to answer than you might think. Although the course is primarily focused on understanding medicines, the skills you learn will translate to a range of chemistry-related or biomedical research opportunities. Our graduates can be found in industries from paint and coatings to cosmetics to food manufacturing.

Here are some of our more common graduate destinations.

BIOMEDICAL RESEARCHER

Biomedical researchers investigate how the human body works with the aim of finding new ways to improve health. Usually based in a laboratory, you'll conduct experiments and clinical tests to record and report on the findings.

In general, biomedical researchers within a university focus on improving tools and techniques, studying biological processes and the causes and progression of diseases. Private sector labs develop high value products that generate considerable income for the company.

CLINICAL RESEARCH ASSOCIATE

As a clinical research associate you'll use your experience in running experiments, gathering data and documenting the results during clinical trials. Typical employers for this role include clinical research organisations, pharmaceutical and biotechnology companies and even hospitals and universities. There is growing demand for this role in Australia, as we are one of the leading countries for phase one clinical trials.

FORENSIC SCIENTIST

Forensic science is the application of scientific techniques to help investigate crimes, accidents and other incidents. It's not always like what you see on your favourite crime investigation TV shows, but can entail tasks such as analysing illicit drugs or suspect situations.



Ensuring quality medicines

Jeremy Shonberg works for the Therapeutic Goods Administration as a pharmaceutical evaluator. He was originally drawn to medicinal chemistry as it involves a lot of problem solving and can deliver interesting results and great benefits in terms of drug design.

With both a bachelor's and a PhD from Monash, Jeremy's current role involves evaluating the chemistry, manufacture, quality controls and bioavailability data supplied by pharmaceutical companies to support the products they submit for government approval.



INTERNATIONAL DEVELOPMENT OFFICER

For graduates with a desire to work in the social advancement field, one career path is to work with an International Non-Governmental Organization (INGO), like the World Health Organization (WHO).

With a goal to build a better, healthier future for people all over the world, WHO staff work side by side with governments and other partners to ensure the highest attainable level of health for all people.

MEDICINAL CHEMIST

Medicinal chemistry is an interdisciplinary science, drawing graduates from a range of different fields. A career in this area usually involves working on the development and testing of potentially therapeutic compounds. This might be within a company that is developing new products, for a research facility exploring new compounds, or at a regulatory agency testing pharmaceuticals for compliance.

PAINTS AND PROTECTIVE COATINGS SCIENTIST

Not all pharmaceutical science graduates go on to work with products for human consumption. Graduates can find a role working on the development of many of the products we come into daily contact with, such as paints, pigments and protective coatings.

These compounds are present in our living and working spaces, our clothing, our food packaging and many, many other products and environments. We're exposed to them on a regular basis, so manufacturers must study them and be sure that they are safe.

PATENT ATTORNEY

To be successfully taken to market, new discoveries need to be commercialised and a company's intellectual property protected. That's where a patent attorney comes in.

A patent attorney will typically work for a specialist consultancy, advising a range of clients. A law degree is not required, but patent attorneys do need a deep understanding of relevant legislation, potentially across a number of different countries and regions.

PHARMACEUTICAL SALESPERSON

The best people for selling the benefits of a product are often those with the deepest understanding of how it works. For complex products developed and manufactured using pharmaceutical or chemical science, there is often a need for sales and marketing representatives able to talk with authority about the science behind the product.

This is a skill many graduates have and for some, sales and marketing can be their next step beyond the lab after working in research and development.

PRODUCT DEVELOPER/FORMULATION SCIENTIST

Product development scientists work in a variety of industries, including food, biotechnology, pharmaceutical science, and medical device manufacturing. They are typically based in the lab, developing new foods, drugs, and medical technologies or researching and developing ways to enhance existing products.

QUALITY ASSURANCE (QA) AND QUALITY CONTROL (QC) CHEMIST

These two areas in manufacturing are closely related, but they have important differences. Where QA is about ensuring that development and maintenance processes are adequate in order for a system to meet its objectives, QC is a set of activities designed to evaluate the developed products.

QA is a systems-based career, often focused on designing, implementing and managing new systems for the manufacturing process to ensure their quality.

A QC chemist is responsible for testing the products themselves. They prepare and test samples from all phases of a manufacturing or other handling process, with the goal of determining if the substance meets particular standards or requirements.

REGULATORY AFFAIRS ASSOCIATE

Regulatory affairs involves ensuring a company and its products meet government regulations. For companies producing new products, it's a crucial discipline. A skilled regulatory affairs associate can be the difference an effective product reaching the market or not. Regulatory professionals are expected to know the ins and outs of the medical regulation, and to understand how changing regulations will impact their industry.

SKINCARE AND COSMETICS DEVELOPER

Youthful, clear skin is big business, with skin care and cosmetic companies around the world spending millions on researching and developing new products. There are plenty of opportunities in this fast-moving industry, with competing companies striving for the next breakthrough that will give them the edge.

It's not just big name international cosmetic brands that offer employment though. Many smaller companies exist in the field and it's ripe for entrepreneurs.

The beauty of pharmaceutical sciences

At the end of 2020 Georgie graduated from the Bachelor of Pharmaceutical Sciences, an area she chose to pursue after watching the movie Contagion.

In the end, Georgie chose not to tackle the spread of a deadly virus and is now immersed in the wonderful world of cosmetics, whilst lapping up the warm weather on the Sunshine Coast where the company she works for is based. Skincare and cosmetics are a booming business, and for pharmaceutical science graduates interested in this field there are plenty of opportunities.



When I was a student I loved being in the lab because it's so hands on and satisfying when it leads to a result. That's why I enjoy cosmetics – it's all about working towards a final product and getting that product out into the world within a set timeframe."

GEORGIE PERCIVAL

Production and New Product Development Scientist, Milkman Grooming Co

ENTRY REQUIREMENTS

COURSE	Years of study	ATAR*	IB*	Monash Guarantee	Prerequisites
Bachelor of Pharmacy (Honours)/ Master of Pharmacy	5	88.25	32	84	VCE English: Units 3 and 4: a study score of at least 27 in English (EAL) or 25 in English other than EAL. Maths: Units 3 and 4: a study score of at least 25 in one of Mathematical Methods (any) or Specialist Mathematics. Science: Units 3 and 4: a study score of at least 25 in Chemistry
Bachelor of Pharmacy (Honours)/ Master of Pharmacy Scholars Program	5	98.15	40	NA	IB English: At least 4 in English SL or 3 in English HL or 5 in English B SL or 4 in English B HL. Maths: At least 4 in Mathematics SL or 3 in Mathematics HL or 3 in Further Mathematics HL. Science: At least 4 in Chemistry SL or 3 in Chemistry HL.
Bachelor of Pharmacy (Honours)	4	88.55	32	84	
Bachelor of Pharmaceutical Science	3	82.05	29	75	VCE English: Units 3 and 4: a study score of at least 27 in English (EAL) or 25 in English other than EAL. Maths: Units 3 and 4: a study score of at least 25 in one of Mathematical Methods (any) or Specialist Mathematics. Science: Units 3 and 4: a study score of at least 25 in Chemistry
Bachelor of Pharmaceutical Science Advanced (Honours)	4	86.35	30	84	IB English: At least 4 in English SL or 3 in English HL or 5 in English B SL or 4 in English B HL. Maths: At least 4 in Mathematics SL or 3 in Mathematics HL or 3 in Further Mathematics HL. Science: At least 4 in Chemistry SL or 3 in Chemistry HL.
Bachelor of Pharmaceutical Science Advanced (Honours) Scholars Program	4	98.30	40	N/A	
Bachelor of Pharmaceutical Science/ Bachelor of Engineering (Honours)	5	90.50	33	86	

* 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 2021 or an estimate (E).

ADMISSIONS INFORMATION

PATHWAYS

If you didn't meet our course requirements at the end of Year 12, we offer a number of pathway options. You may be able to transfer into either Pharmacy or Pharmaceutical Science after completing first year in another degree and meeting a required minimum average. Course prerequisites can be met through the study of tertiary units, or at high school level.

Note that transfers into the BPharm (Hons)/MPharm will receive no credit, even if you have studied pharmacy at another university.

For more information about transferring from another degree:

🔗 monash.edu/pharm/future/courses/pharmacy/course-variations-and-pathways/pathways-transfers

Graduate Entry Pharmacy is another pathway to consider, further information about the program and eligibility can be found on pages 8-9.

THE MONASH GUARANTEE

The Monash Guarantee recognises that your potential to succeed at university is about more than just your ATAR. It ensures fair entry for students to Monash, so that even if your achieved ATAR is below the lowest selection rank to which an offer was made in 2021, you could still be offered a place.

You may be eligible if you:

- have experienced financial disadvantage;
- live in a low socio-economic area;
- are an Indigenous Australian; or
- attend a school under-represented at Monash.

For more information on the Monash Guarantee:

🔗 monash.edu/study/how-to-apply/entry-schemes/the-monash-guarantee

Monash Guarantee scores can be found on page 21.

SCHOLARSHIPS

We want as many bright minds as possible to benefit from a Monash education. That's why we offer one of the most generous scholarship programs in the country. There are too many scholarships available to list here.

To find out how you can achieve your full potential and make your mark on the world: monash.edu/scholarships and hit "Pharmacy and Pharmaceutical Science" under "Browse by Faculty".

GET TO KNOW US

Interested in finding out more? The faculty offers a number of opportunities for prospective students to engage with us.

Register for a one-on-one chat or campus tour, watch a course presentation or attend an upcoming event.

For more information:

monash.edu/pharm/future/outreach/tours



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Pharmaceutical Sciences**

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monash.edu/study/international

FUTURE STUDENT ENQUIRIES

**Australian citizens, permanent residents
and New Zealand citizens**

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