

CAREERS WITH STEM™

DEFENCE



AERONAUTICAL ENGINEER

SPACE SYSTEMS ENGINEER

Helping hands for health jobs
p20

Cutting-edge careers & practical paths
p6

Sky's no limit for Defence careers!

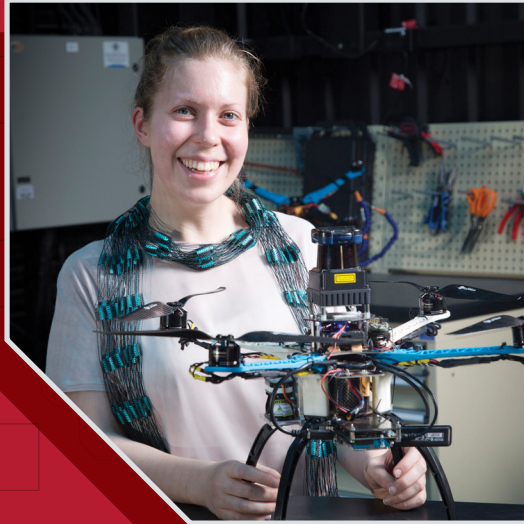
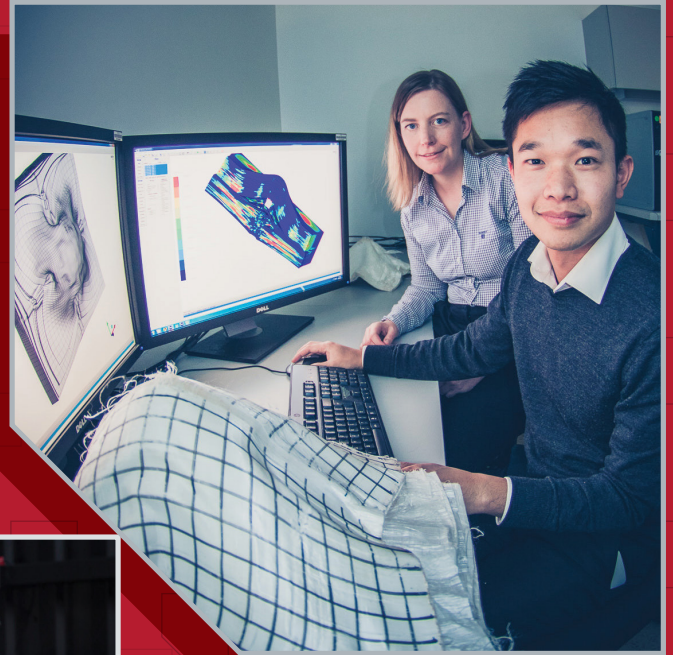
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Australian Government
Defence

CAREERSWITHSTEM.COM



Put your STEM skills to good use and apply for a STEM cadetship with Defence.

Work at the cutting edge of technology, earn a generous salary and enjoy an ongoing job upon successful completion of the program.

Apply online: www.defence.gov.au/jobs-careers/stem-cadetship
Email us: stem.cadetship@defence.gov.au



STEM CAREERS FOR YOUR COUNTRY

STEM jobs in Defence offer opportunities to make a difference



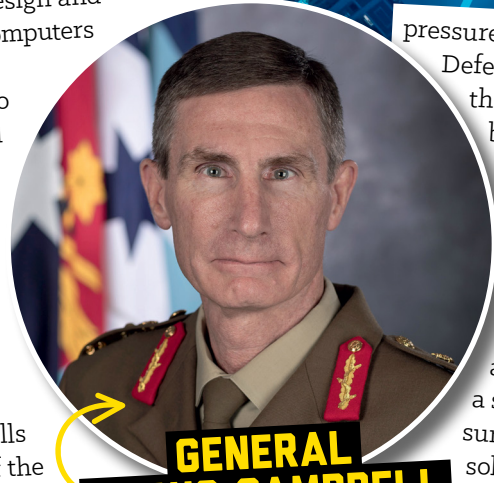
GREG MORIARTY
SECRETARY OF DEFENCE

A STEM career in Defence will challenge you to be at the top of your game. Whether you are in the military or part of our extensive civilian workforce, STEM jobs in Defence are varied and require a wide range of skills – intellectual curiosity, problem-solving, creativity and critical thinking.

By bringing your STEM skills to Defence, you will be exposed to a wide range of career options and opportunities. You could design and program satellites, create the computers of the future, work in exciting careers that make a difference to people's lives, maintain ground and aircraft systems, and protect Defence personnel from a range of physical and virtual threats.

STEM careers in Defence allow you to be part of something bigger – you have a role in helping to safeguard the country. Just as STEM skills are key to mitigating many of the biggest global issues of today – from climate change, poverty and inequity, to feeding a growing population sustainably – they are also critical to the defence and security of the nation.

Defence careers are at the cutting edge of STEM. As we confront an increasingly complex and challenging global environment, the ongoing



GENERAL ANGUS CAMPBELL
CHIEF OF DEFENCE FORCE

pressure to continually build on and enhance Defence capability is driving innovation that often has benefits for society more broadly. It could include designing advanced materials, contributing to our food security, creating better health outcomes, or developing new technologies for space or quantum computing.

If you choose to join Defence as a STEM specialist, you'll work in a stimulating and supportive environment surrounded by talented people who like solving problems, working collaboratively, learning new skills and are committed to delivering results for Defence.

Your STEM skills will give you the competitive edge you need to thrive in an exciting and rewarding job in Defence.

Secretary of Defence Greg Moriarty and Chief of Defence Force General Angus Campbell, AO, DSC

STEM CAREERS IN DEFENCE ALLOW YOU TO BE PART OF SOMETHING BIGGER"

FRONTLINE CAREER SKILLS

Looking for a career with purpose at the cutting edge of STEM? A career in Defence is a rewarding way to make an impact

More jobs today and into the future need skills in STEM – that's science, technology, engineering and maths. And Defence is where these skills can lead you to amazing places!

STEM skills include being a great communicator, excellent problem-solver and showing creativity. And they're useful in more than just science and engineering gigs. Having STEM skills is important for many of today's emerging careers. In fact, by 2030 it's predicted Australian workers will spend 77% more time using science and mathematics skills than they did in the 2010s.

A STEM education gives you the ability to make decisions using data and evidence, and that's why STEM really matters in Defence. In specialist agencies like the Defence Science and Technology Group (DSTG) more than 90% of its staff are highly qualified STEM professionals – that's a lot of knowledge!

STEM skills are also used in critical roles throughout the Navy, Army and Air Force. Looking for a career that can take you places? Think abseiling onto a ship's deck, flying in a helicopter at treetop level or responding with zero notice to a genuine emergency somewhere in the region... Sound exciting to you? These are all things that Defence people get trained, and paid, to do.



34% of Defence's public servants and 50.6% of the permanent Australian Defence Force work in STEM roles*

IT'S CHALLENGING WORK, BUT HUGELY REWARDING BECAUSE IT IS ABSOLUTELY CRITICAL TO THE SECURITY OF OUR NATION, NOW AND INTO THE FUTURE"

WHERE CAN STEM + DEFENCE TAKE YOU?

Studying STEM subjects can be the start of a career as a scientist or engineer but, in Defence, STEM-trained people also work as nutritionists, communications professionals, carpenters, meteorologists and oceanographers. They develop computer games and simulators, design and build ships and satellites, run pharmacies and warehouses, and work as electronic engineers, fighter pilots or submarine navigators.

If you enjoy STEM subjects at school, then Defence has a job for you! Across Defence, thousands of people work to 'futureproof' the Australian Defence Force (ADF). The best bit? Most of the STEM-related trades or professions in Defence are applied to real-world problems.

TANYA MONRO
PROFESSOR, CHIEF
DEFENCE SCIENTIST



REAL-WORLD STEM

If there's a flood, cyclone or earthquake in our region, the Defence workforce is almost always part of the early response. And they work across a range of other emergency situations, too. For example, scientists from Defence used their operations research and systems analysis skills to help prevent COVID-19 outbreaks, developing an automated software tool to help schedule visits by medical teams to aged-care facilities in Victoria.

"This software was used to optimise the allocation of resources, meaning the highest-risk facilities received assistance in order of priority," says Chief Defence Scientist, Professor Tanya Monro, AC.

"Working in Defence is challenging work, but hugely rewarding because it is absolutely critical to the security of our nation, now and into the future.

"The focus of their work could be anything from enabling our personnel to operate safely in a chemical warfare environment to improving undersea surveillance.

"Students with a grounding in STEM have a bright future; they will certainly be in demand if they develop these skills, which are critical to the future prosperity and security of our nation."

Equipped with STEM skills, you can take any road you choose. – Gregor Ferguson



5 Surprising Defence careers

Whether it's protecting smart tech from cyber attacks or creating fuels from algae, there's something for everyone in Defence

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Food technologist

Good nutrition is super-important for Defence members. They need food technologists to better understand and develop ways to improve nutrition for all of Defence to help pilots maintain concentration and soldiers endure demanding physical conditions.

PATH: Bachelor of Food Science (Nutrition)
CAREER: Work in the Services, or at research hubs like the Centre of Food Innovation
MORE INFO: DSTG Food and Nutrition bit.ly/DefenceFoodNut

Space systems engineer

The sky's not the limit for careers in Defence! Space systems engineers in the public service and the military can work with satellites (like the Buccaneer). Space is so critical to Defence that there's even a Space Division headquarters within the Royal Australian Air Force (RAAF).

PATH: Bachelor of Engineering (Aerospace Engineering)

CAREER: Work on helicopters for the Navy, within the new Air Force Space Division or with DSTG
MORE INFO: Defence Pathways in STEM bit.ly/DefenceSpace

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Psychologist

Interested in human behaviour and mental health? Defence psychologists work in so many different areas, from the Australian Army Psychology Corps to working as a clinical psychologist for DSTG. They provide advice to commanders and counselling for members.

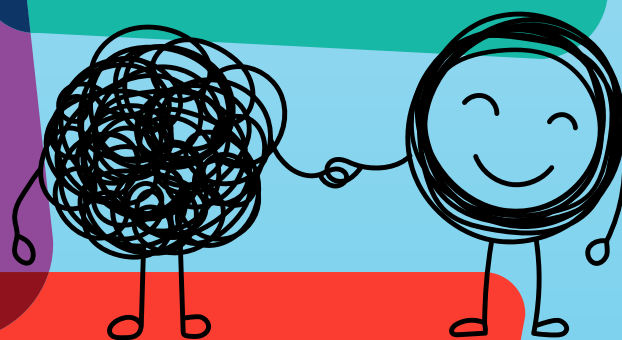
PATH: Bachelor of Psychology
CAREER: Clinical psychologist, research psychologist, military psychologist
MORE INFO: STEM Careers bit.ly/DefenceHumanSysSci

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Meteorologist and oceanographer

The perfect outdoorsy data STEM career does exist! Meteorologists and oceanographers give weather and sea forecasts, and provide advice on how to gain strategic, operational and tactical advantage above and below the water.

PATH: Bachelor of Science or Mathematics
CAREER: Work in the Navy as a Meteorology and Oceanography (METOC) Reserve Officer or with the DSTG in partnership with the Bureau of Meteorology
MORE INFO: Defence Jobs bit.ly/DefenceMetOcean



Cyber specialist

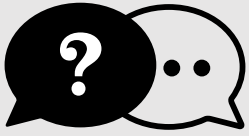

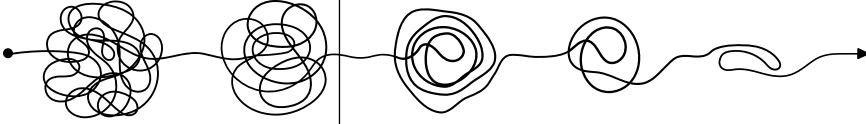

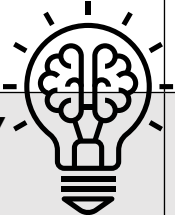






Into puzzles, word games and numbers? You might be just the person Defence is looking for. Cyber security specialists are needed to identify threats, defend against them and manage sensitive and classified information.

PATH: Bachelor of Computer Science or IT, or do a cyber bootcamp to quickly gain practical skills
CAREER: Cyber analyst in the Navy, Army or Air Force, or work in security within DSTG
MORE INFO: Australian Defence Force Cyber Gap Program bit.ly/DefenceCyberGap

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MATCH YOUR SKILLS TO A CAREER IN DEFENCE

Scan the table and choose which STEM skills you have that can take you into the Australian Defence sector – in either the public service or military roles!

STEM SKILL	WHAT IS IT?	DEFENCE CAREER EXAMPLES
INQUIRY 	Questioning conventional wisdom, asking relevant questions, formulating theories, proposing solutions, seeking data to support or disprove them	<ul style="list-style-type: none"> Defence scientist Design engineer Intelligence analyst Systems analyst Systems integrator 
PROBLEM-SOLVING 	Identifying a problem correctly, thinking it through, proposing ideas, testing solutions	<ul style="list-style-type: none"> Mechanical engineer Software engineer Civil engineer Electronics engineer Communications engineer/communications science Electrical engineer Mechanical and material engineer Systems engineering and integration
COLLABORATION 	Team building, working together, understanding complementary strengths and weaknesses	<ul style="list-style-type: none"> Human resources advisor Communications engineer/communications science Mechanical and material engineer Systems engineering and integration
COMMUNICATION 	Team building, leadership, sharing ideas, advocacy, speaking with colleagues, superiors, written comms	<ul style="list-style-type: none"> Project manager Public affairs and media relations officer Policy advisor High-ranking officer
CREATIVITY 	Lateral thinking: finding creative and 'out of the box' solutions, using your imagination to problem-solve, learning from mistakes	<ul style="list-style-type: none"> Research scientist Design engineer Intelligence analyst 
MATHS AND SCIENCE 	Problem-solving, proficiency with numbers and calculating risk, observations, research, analytical thinking	<ul style="list-style-type: none"> Mechanical engineer Communications engineer/communications science Electrical engineer Mechanical and material engineer Systems engineering and integration 
ENGINEERING AND DESIGN THINKING	Identifying correctly and then understanding the problems that need solving, understanding the needs of the end user, researching solutions, prototyping, testing, iterating	<ul style="list-style-type: none"> Communications network operator Systems engineer Mechanical engineer Civil engineer 
CRITICAL THINKING 	Independence of thought, analysing information, evaluating designs, reflecting on your own thinking, synthesising and testing new ideas, and proposing creative solutions	<ul style="list-style-type: none"> Warfare officer Weapons and sensor operator Fighter pilot Air battle manager Intelligence analyst

DIVERSITY MATTERS

Defence is committed to including people from all genders and different cultures and backgrounds. Greater diversity means more equity and better solutions

Diversity gives Defence access to a greater range of talent, ideas and processes, which in turn allows for the potential for increased productivity, greater creativity and innovation, and better employee performance.”

Emily, Captain, Nursing Officer, Army



Defence encourages diversity, which goes hand in hand with an inclusive work environment. Diversity promotes a well-rounded workforce that is capable and also motivated.”

Mark, Corporal, Fitter Armament, Army



Diversity allows for different modes of operation and world views, which, in STEM, leads to asking different questions, adopting different methodological approaches, and applying different contextual understanding to interpreting information. In short, better work can be produced with a diverse workforce, but only when that workforce works together collaboratively!”

Shahd, Health System Insights Manager, Joint Health Command

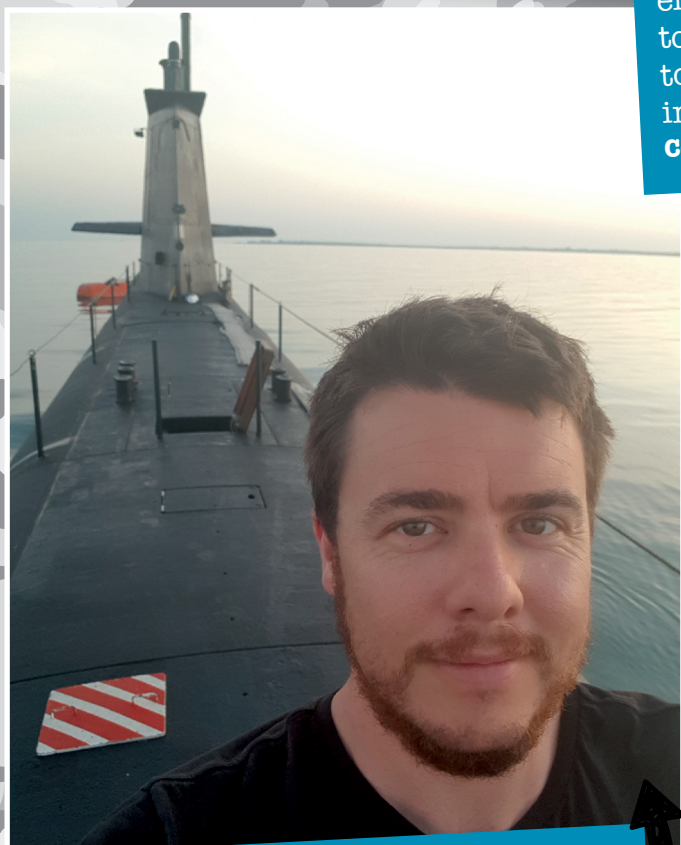


Defence should be a true reflection of Australian society, which in itself is a rich tapestry of unique experiences and backgrounds. Diversity enables our Defence people to bring those different world views and perspectives to the table.”

Rosemary, Flight Lieutenant, Air Force



Working in Defence is about ensuring Australia's future and, in order to do that, we must continually strive to improve. It is truly in everyone's best interest to foster a diverse workforce."
Coco, Microengineering Specialist, DSTG



Different cultures and nations see the world in a different way. Putting all these views and beliefs together makes the Australian Defence Force stronger."
Nicholas, Leading Seaman, Electronics Technician Submariner, Navy



Diversity can manifest itself in many forms, but it's not simply about gender or race or religion. It's the experiences and ideas we can bring to the table that can enrich, transform and disrupt the status quo. Diversity is also a willingness to be open-minded and to embrace differences. My STEM background and skills bring about a credibility that is valued by my peers and I can only think that the work we collectively produce is better for it."
Janna, Space and Intelligence, Strategic Policy and Industry Group

Engineering the outcome

Engineers are a critical part of the Defence Force team. But it's not all awesome aircraft and super subs – there are engineering roles across the whole of Defence and the careers will surprise you!

You might already know that Defence engineers work with exciting tech in the Navy, Army and Air Force. But they're also involved in cutting-edge research and multimillion-dollar projects to develop new products and acquire military equipment from submarines to aircraft. And there's more to the job than being smart with technology.

Military engineers

Whether you have a passion for radio waves, engines or ships, Defence has a place you can put it into action. Here are some operational roles for different engineering disciplines in the Navy, Army and Air Force:

- **Aeronautical, aerospace and avionics engineers** maintain helicopters and aircraft from the ground up – including their engines, aerodynamics, navigation and weapons systems.
- **Civil engineers** in the Army and Air Force design, construct and maintain land-based structures, including bridges, roads and airfields.
- **Electronics engineers** lead teams of technical specialists to keep navigation, communication and weapons systems combat-ready.
- **Mechanical engineers** work on power, propulsion and control systems for ships, submarines, tanks and air support vehicles.

DEFENCE INDUSTRY EXPERIENCE PLACEMENT STUDENT **MEAGHAN** GETS TO WORK WITH DRONES SPECIFICALLY DEVELOPED TO EXPLORE UNKNOWN INDOOR ENVIRONMENTS WITHOUT THE AID OF GPS. THE DRONES STABILISE THEMSELVES USING ONBOARD SENSING AND PROCESSING (SO THEY DON'T BANG INTO STUFF!) WHILE BUILDING A MAP OF THE ENVIRONMENT. VERY COOL!

Defence civilian engineers

Engineers play important roles out of uniform, too. For the high-stakes military environment, it's important that engineering decisions are backed by solid research. That's where engineers at DSTG and from the Capability Acquisition and Sustainment Group – part of Defence – come in.

Engineers supporting Defence research a wide range of areas. One study analysed data about the body structures of Defence serving members to make sure uniforms, equipment and working spaces were designed to fit! Another project looked at using the properties of water to better protect people and equipment from landmines and other explosive devices. The development of unique and novel products for Defence use is a significant part of research engineering.

GOT THE SKILLS?

Technical know-how is a must, but Defence engineers also manage people and projects. These skills will set you apart:

✓ VERSATILE COMMUNICATION

Explaining the pros and cons of technical systems to politicians and senior leaders with no engineering training is an important part of the job.

✓ PROBLEM-SOLVING

Whether it's an urgent fix to save lives or a tricky research question, solving engineering challenges is a daily task.

✓ SYSTEMS THINKING

Are you a big-picture person? Defence tech needs to communicate and work together across forces and geographic areas, so this is a must.

✓ LEADERSHIP AND PEOPLE SKILLS

As a people manager, you'll need to be a great listener, be able to make decisions, be organised and have top time-management skills.

✓ TEAMWORK AND COLLABORATION

Defence engineers tap into the knowledge and experience of multidisciplinary teams.

Technical pathway

A good way to get your foot in the door of engineering in Defence is the 18-month Defence Graduate Program Technical Pathway. You'll rotate through three roles, meet senior leaders and access career guidance and training. And you can apply for study leave and support if you decide to go on to postgrad studies. – Nadine Cranenburgh

DEFENCE + ENGINEERING + STUDY

Bachelor of **Mechanical Engineering** (Honours), University of NSW (ADFA)

Bachelor of **Engineering (Aeronautical)** (Honours), University of NSW (ADFA)

Bachelor of **Engineering (Civil)** (Honours), University of NSW (ADFA)

Bachelor of **Aerospace Engineering**

Bachelor of **Engineering** (Honours)

DEFENCE + ENGINEERING + JOBS

Navy Mechanical Engineer: Trainee salary starts at \$46,316, average salary \$97,908

Air Force Electronics Engineer: Trainee salary starts at \$46,316, average salary \$87,989

Army Aeronautical Engineer: Trainee salary starts at \$46,316, average salary \$87,989

APS Software Engineer: APS Level 3, \$59,237–\$65,270

APS Systems Engineer: APS Level 3, \$59,237–\$65,270*

*Source: see p35

Check it out: bit.ly/DefGradProg

THE MIGHTY MICROENGINEER

COCO USES HER MATERIAL SCIENCE SMARTS TO HELP DEVELOP INCREDIBLE NEW TECH FOR THE ADF

A STEM career in Defence was not on Coco's radar until she had a chat with a Defence rep at her uni's careers expo. After heading home to do some research, she realised it would be an awesome – and fulfilling – path to follow. Coco went on to score a spot in the Defence Graduate Program (Research and Innovation Pathway), which runs for a year and allows graduates to experience two rotations in different teams. "Joining through the grad program was such a great experience," she says.

Now working in micro- and nanoengineering at DSTG, Coco and her team perform device miniaturisation and materials research to develop emerging technologies for the ADF.

JOINING THROUGH A GRAD PROGRAM WAS SUCH A GREAT EXPERIENCE"

COCO
MICROENGINEERING
SPECIALIST



SMALL SCALE

As a microengineering specialist, Coco performs photolithography – a patterning technique that uses light-sensitive polymers.

"This must be done in a particle-controlled lab called a 'cleanroom' to preserve the integrity of the micro-scale features," she explains. Coco encourages anyone thinking about a STEM + Defence career to use internships to find out what they like (and don't like!).

"Defence offers cadetships to students who perform well in their first year of university, which can give you a guaranteed job when you graduate."

– Louise Meers

BACHELOR OF ADVANCED SCIENCE
(MATERIALS SCIENCE) (HONOURS)

DEFENCE RESEARCH AND
INNOVATION GRADUATE, DSTG

MICROENGINEERING
SPECIALIST, DSTG

NICHOLAS
LEADING SEAMAN,
ELECTRONIC TECHNICIAN
SUBMARINER



IMMERSED IN ENGINEERING

NICHOLAS IS AN EXTREME ENGINEER, MAINTAINING, FIXING AND BUILDING HI-TECH ELECTRONICS FOR AUSTRALIA'S NAVAL SUBMARINES

From a young age, we're told that water and electronics don't mix. At worst, electricity in water can be deadly. At best, water causes corrosion and short circuits in electronic equipment. It's no surprise then that electronics technicians on the Royal Australian Navy's six Collins Class submarines are extremely important. They keep submarines' high-tech systems running smoothly, ensuring this formidable element of Australia's Defence capability is always ready for action. "I maintain and repair electronics equipment such as communications equipment, underwater sensors and combat systems on our submarines," explains Nicholas. "It's an exciting and interesting career."

A DIFFERENT PATH

Nicholas took a winding path to his career, travelling and working in hospitality and retail management first. But he always had an interest in mechanics and electronics, and saw the electronic technician submariner role as an action-packed

opportunity to develop his skills and experience, and gain new qualifications. Now, he's working on a project to make surveying the outside of submarines safer.

Currently, divers have to get in the water to examine the hull. There they face a challenging environment, with heavy dangerous equipment bobbing around them and narrow openings hampering their work. The solution?

"We are building underwater drones to survey under our submarines instead," he says.

His advice to a young person considering STEM + Defence is simple: "Just do it! Where else will you get to see the world and have your training paid for?" – Ben Skuse

WE ARE BUILDING UNDERWATER DRONES TO SURVEY UNDER OUR SUBMARINES"

APPLICATION THROUGH DEFENCE FORCE
 RECRUITING AND INITIAL TRAINING



ELECTRONICS TECHNICIAN
 INITIAL TECHNICAL TRAINING



SPECIALISATION TRAINING

NATIONAL QUALIFICATIONS OF CERTIFICATE IV
 IN ELECTRONICS AND COMMUNICATIONS



ELECTRONIC TECHNICIAN SUBMARINER, ADF

BLUE-SKY THINKING

DISCOVERING AEROSPACE IN YEAR 11 HELPED AIR FORCE ENGINEER SARAH LAUNCH A SOARING CAREER

STEM IS A WORTHWHILE CAREER PATH FOR ANYONE WHO FEELS JOY AT DISCOVERY"

Many people join the Defence Force for the promise of adventure – and Air Force aeronautical engineer Sarah has had her share! She has flown dignitaries around the world and been deployed on operations. And when Cyclone Yasa hit Fiji in 2020, causing massive amounts of destruction, Sarah was part of Operation Fiji Assist, flying over with less than 24 hours' notice to survey the extensive damage.

Sarah didn't always have an engineering career in mind – in fact, she originally wanted to be a journalist. "I have never been the classic type of engineer who liked to take things apart or build cool projects, so sometimes I don't feel like a 'real' engineer."

STAYING POWER
Despite failing three subjects, Sarah finished her degree on time through sheer determination. "STEM is for everyone, even if you're not immediately talented at it," she says. "Hard work will get you where you want to be."
That hard work certainly paid off. Sarah says that STEM is a great choice for anyone who loves to explore: "I think STEM is a worthwhile career path for anyone who feels joy at discovery and wants to challenge the boundaries of what we know. As the saying goes, if you love what you do, you'll never work a day in your life." – *Chloe Walker*



SARAH
FLIGHT LIEUTENANT,
AERONAUTICAL ENGINEER

AERONAUTICAL ENGINEER, AIR FORCE

EMPLOYMENT TRAINING

MILITARY TRAINING

MASTER OF LOGISTICS MANAGEMENT (CURRENT)

BACHELOR OF AERONAUTICAL ENGINEERING

FITTING IN

MARK COMBINED HIS MECHANICAL SKILLS WITH A LIFELONG PASSION FOR DEFENCE AND NOW MAINTAINS SPECIALISED WEAPONS AND ENGINES FOR THE ARMY

Mark had been drawn to working in Defence since he was a kid and says he's always looked up to soldiers. He also liked the idea of working with military equipment and finding out how it works.

During high school, he enjoyed physics, even though he found it challenging, and loved woodwork and metalwork. From there, he got the idea to complete a mechanical trade. Soon after, he enlisted in the Army and was able to complete sponsored mechanical engineering training.

Now, as a member of the General Engineering Platoon, he maintains and repairs gear – like weapon systems, bulk fuel and water transfer pumps, and small engines.

ENGINEERING IN ACTION

Mark's time in the Army has been eventful. In 2018, he was selected for a seven-month deployment in the Middle East, where he saw some impressive equipment in action. "I was amazed at how these various systems were being used to keep soldiers safe," he says.



MARK
CORPORAL, FITTER
ARMAMENT

For those with trade skills, becoming a fitter in the Army is an exciting path that will keep you on your toes. "In Defence, especially the fitting and turning trade, there are processes, procedures or equipment you may not have been exposed to before," explains Mark. "It's important to keep current with new procedures and refresh your knowledge on processes to help keep the workplace safe." Mark says he would recommend a career in STEM + Defence to everybody! "It's an enjoyable time in the field and a career in Defence can be a great stepping stone for advancement in your vocation later on." – Kim Thomson



SHUTTERSTOCK

UP, UP AND AWAY

A LIFETIME FASCINATION WITH FLIGHT LED ROSEMARY TO AN ADVENTUROUS CAREER IN THE AIR FORCE

As a flight test engineer, Rosemary's job is to assess the handling, performance or systems of different aircraft to make sure they are up to the task. This involves planning the different manoeuvres that need to be tested, monitoring the test flight and analysing the data collected.

BEST JOB EVER

Rosemary studied aeronautical engineering and was appointed to the RAAF in 2016. In 2020, she was selected by the RAAF to attend the prestigious Empire Test Pilots' School in the United Kingdom, where she became a European Union Aviation Safety Agency: Category 1 Flight Test Engineer (Fixed Wing). She also completed a Postgraduate Certificate in Flight Test and Flight Dynamics while she was there.

"One of my favourite memories was at the start of my course in the UK, when one of my instructors took me 'cloud bashing'," she says. "I had to fly the aircraft and use its wings to gently graze the clouds around us. It was one of those unbelievable, awe-inspiring, 'How is this even my life?!' kind of moments.

"Since I was a child, I have wanted to be a part of the technology that enables giant metal beasts to seamlessly glide through the skies." – Chloe Walker



ROSEMARY
FLIGHT LIEUTENANT,
FLIGHT TEST ENGINEER



THE CYBER FRONTIER

Defence needs passionate people who are up for the challenge of cyber security to protect Australians everywhere

Information and data drives our society. Protecting it is critical and there's a wide variety of STEM careers if you want to use your tech know-how and problem-solving skills to help keep Australia's online systems and information safe. A data or cyber role with Defence is a winning combination – and an excellent place to start.

Defence needs people to become specialists skilled in collecting, analysing and engineering data. The bonus is you'll get to tackle tasks and problems that don't appear in other jobs, in a challenging and rewarding career with purpose.

Why cyber security?

Cyber security presents a massive threat to our national security – hospital systems, transport, financial assets, personal info – everything that is online is at risk from people looking to disrupt or damage Australia's infrastructure and people.

Cyber security is one of the fastest-growing sectors worldwide and Defence has plenty of cyber and data jobs classified as priority roles. Think communications and system operators, cyber analysts, intelligence analysts (signals) and cyber warfare analysts. All very cool careers.
– Danielle Lucas

Cyber security is one of the **fastest-growing** sectors **worldwide** and **Defence** has plenty of **cyber and data** jobs classified as **priority roles**

Did we mention the perks?

A career with Defence is full of great benefits. In addition to excellent pay and on-the-job training, you'll make friends for life, have awesome travel opportunities and enjoy other great perks like free medical and dental, great fitness facilities to keep you in tip-top shape and rental assistance. Defence is a champion of gender equality and multiculturalism, so you'll get equal opportunities. In fact, DSTG's STEM commitment has seen it win a prestigious Athena SWAN Bronze award for its work. More than anything, across the whole of Defence, you'll get to work on projects that really matter to all Australians.



SGT MATTHEW BICKERON

DEFENCE + DATA AND CYBER + STUDY

Bachelor of **Computing & Cyber Security**, University of NSW (ADFA)

Bachelor of **Computer Science (Cyber Security)**

Bachelor of **Computer Science in Data Science**

Bachelor of **Data Science and Decisions**

Bachelor of **Science (Cyber Security)**

Bachelor of **Software Engineering (Cyber Security)**

Certificate IV in **Cyber Security**

DEFENCE + DATA AND CYBER + JOBS

Navy Cyber Operator: Trainee salary starts at \$51,277, average salary \$77,138

Air Force Cyberspace Warfare Analyst: Trainee salary starts at \$51,277, average salary \$77,238

APS Applied AI Researcher: APS Level 3 \$59,237–\$65,270

APS Data Scientist: APS Level 3 \$59,237–\$65,270

More info: Check out APS Graduate entry digital stream bit.ly/37CkOud



LSIS LEO BAUMGARTNER

ADF CYBER GAP PROGRAM – SCHOLARSHIP

Keen to study a cyber-related qualification at uni? Or interested in turning your tech skills into a career supporting the ADF? Then check this out. You'll get generous financial support – up to \$15,000 towards your course fees plus more than \$3000 towards textbooks and Information and Communication Technology (ICT) costs – while you take part in a 12-month online cyber-exposure experience program. It includes mentoring sessions and networking opportunities, and may just set you on the path of a promising cyber security career.

DEFENCE-WORTHY CYBER SECURITY CAREERS!

ADF
Military roles in Artificial Intelligence (AI) and data science exist across all of the Services. Navy cyber operators are crucial to the Navy's cyberspace operations and protecting networks. Army electronic warfare operators use advanced military technology to search for enemy signals and analyse data. It's a highly classified role that requires logical thinking and problem-solving. You can even learn a foreign language as part of your training!

Air Force intelligence analysts (signals) are trained to gather information from electronic emissions and radar signals, and interpret it using advanced analysis skills. Air Force cyberspace warfare officers are in charge of a team of technical experts, planning and leading missions to safeguard the skies. Now that's making a real difference!

AUSTRALIAN PUBLIC SERVICE (APS)
Keen to protect our national security and contribute to Defence tech, but don't want to join the military? DSTG has career options in research and innovation, signals intelligence, electronic warfare, cyber research, software engineering, IT and more. With great salaries and a supportive work environment, it's a fantastic and rewarding pathway.

You could work as a geospatial intelligence analyst, using geospatial and data analysis techniques to answer intelligence questions in simple and effective ways. Or join one of the most rapidly growing career areas as a data scientist. With AI + Data skills, you'll be on a fast track to an exciting APS career. Or you could work with the Chief Information Officer Group to help secure Defence's information environment. More info: bit.ly/DefenceCIOGroup

ASHLEIGH
CYBER SECURITY
SPECIALIST

**I WOULD SAY MY
CURIOSITY AND LOVE FOR
CYBER SECURITY IS WHAT LED
ME TO APPLY FOR THE DEFENCE
GRADUATE PROGRAM"**

CYBER LEADER

THE DEFENCE GRADUATE PROGRAM LED ASHLEIGH INTO AN AMAZING CYBER SECURITY GIG WITH ASD

Ashleigh's interest in STEM and Defence blossomed at uni. After realising a tech path was for her, she learnt how to program and swapped majors to Business Information Systems and Technology. Then, after speaking to Australian Signals Directorate employees at a careers fair, Defence was suddenly on her radar. She applied for the Defence Graduate Program Intelligence Pathway and the rest is history!

"I would say my curiosity and love for cyber security is what led me to apply for the Defence Graduate Program," Ashleigh explains.

After kicking goals in the graduate program, Ashleigh is now a cyber security specialist with ASD. One of her favourite projects while working with ASD has been the Girls' Programming Network (GPN).

"At the start of 2021, I took on the role of head coordinator for my local GPN, which is sponsored by ASD. GPN's main goal is to encourage more women in various STEM fields. It's something I am very passionate about."

In March 2021, they ran the largest ever local GPN event with more than 100 registered students and 30 volunteers. When it comes to working in STEM + Defence, Ashleigh's biggest piece of advice is to be open to change and to learning new things. – Louise Meers

BACHELOR OF COMMERCE, DOUBLE MAJOR IN
BUSINESS INFORMATION SYSTEMS AND TECHNOLOGY

CYBER SECURITY SPECIALIST, ASD

MASTER OF
CYBER SECURITY

PENETRATION TESTING PROFESSIONAL
CERTIFICATION, ELEARNSecurity

HEAD COORDINATOR, CANBERRA
GIRLS' PROGRAMMING NETWORK

RESEARCH TO THE RESCUE

**STEM REALLY IS THE ULTIMATE DEFENCE! NICHOLAS INVESTIGATES
HOW EMERGING TECH CAN BE USED TO STOP CYBER ATTACKS ON ADF SYSTEMS**

Inspired by his grandfather, who served as an officer in the Army (and wanting an exciting, high-impact place to work!), Nicholas knew Defence was the place for him. He started his journey with the Defence Graduate Program (Research and Innovation Pathway) and is now a cyber security researcher at DSTG.

In this gig, Nicholas explores how the latest advancements in AI and machine learning can be used to help defend ADF systems from cyber attacks.

"The ADF relies on information technology as much as any other organisation, perhaps even more so, given they help to run our military systems, such as our fighter jets and warships," he explains. "It is incredibly important that these systems are protected."

One of the coolest opportunities Nicholas has had while working for Defence was the chance to be embedded as a civilian in the RAAF, working with their cyber security experts: "Working as a researcher involves lots of reading and learning, but this opportunity gave me a chance to do some hands-on cyber security work, getting up close to some really cool RAAF systems in the process." – Louise Meers

NICHOLAS
CYBER SECURITY RESEARCHER

**MY JOB GIVES ME A
CHANCE TO DO SOME HANDS-ON
CYBER SECURITY WORK"**

BACHELOR OF ELECTRICAL AND COMPUTER
SYSTEMS ENGINEERING (HONOURS)

DEFENCE GRADUATE PROGRAM
(RESEARCH AND INNOVATION PATHWAY), DSTG

BACHELOR OF SCIENCE
(COMPUTER SCIENCE) (MATHEMATICS)

POSTGRADUATE CERTIFICATE IN CYBER
SECURITY (PURPLE TEAM OPERATIONS)

MASTER OF ADVANCED
ELECTRICAL ENGINEERING

CYBER SECURITY
RESEARCHER, DSTG

ALL THE OPTIONS

There are loads of options to find your pathway to a Defence cyber role – in the Navy, Army, Air Force and APS. Here's the lowdown...

ADF GENERAL ENTRY for other ranks

- You need to be 17 to enter the ADF, but can apply from 16 years and six months.
- After initial recruit training, you'll complete specialist training within your service, earning nationally recognised qualifications.

ADF OFFICER ENTRY

- Entry into leadership roles, such as the Air Force Cyberspace Warfare Officer, can be done via two pathways: completing your university degree and military training through the Australian Defence Force Academy (ADFA), or by direct entry as a graduate with a relevant degree.

AUSTRALIAN PUBLIC SERVICE (APS)

- As a civilian, you can study at TAFE or university to gain your qualifications, then score a job at DSTG, ASD, Australian Geospatial-Intelligence Organisation or the Chief Information Officer Group.



'CJ'
SERGEANT.
ELECTRONIC WARFARE
OPERATOR

SIGNAL DISRUPTOR

'CJ' INTERCEPTS A RANGE OF ENEMY SIGNALS FOR THE AUSTRALIAN ARMY

Electronic warfare operators play a vital role in the ADF – however, their work is often invisible. Operators use communications technology to intercept and disrupt complex enemy transmissions within the electromagnetic battle space. For CJ, working as an operator is a challenging but satisfying career.

CJ handles highly classified information and needs to solve problems quickly. She works within a team of signallers, referred to as 'Bears', who provide signals intelligence support to the Army and wider ADF.

"Electronic warfare is a high-paying role within Defence with many financial benefits like medical care and subsidised housing," she says.

TEAM GOALS

CJ also manages a course for operators at Defence Force School of Signals who are undergoing their Electronic Warfare training. This is a particular source of pride.

"Seeing them advance through their training, developing baseline skills, attributes and confidence, is very rewarding," CJ explains.

While being away from family for extended periods can be a tough part of the job, CJ says the rewards outweigh the negatives. Making lifelong friendships with colleagues is a big plus. As CJ puts it: "If you are part of Defence, you are part of an amazing team." – Kim Thomson

IF YOU ARE PART OF
DEFENCE. YOU ARE PART
OF AN AMAZING TEAM

ELECTRONIC WARFARE
OPERATOR. ADF

DEPLOYMENT
TO IRAQ 2016-2017

LANGUAGE TRAINING.
DEFENCE FORCE SCHOOL OF SIGNALS

EMPLOYMENT
TRAINING

APPLICATION THROUGH DEFENCE FORCE
RECRUITING AND INITIAL TRAINING

The wellbeing workforce

Defence serves up a whole menu of healthy career options, all with a hearty helping of STEM

If you're after a career that cares, hopping on a Defence + Health path could be the right move for you. A health gig in Defence comes with stacks of exciting opportunities – from sorting nutritional needs to supporting mental health!

You can also be involved in important research through DSTG. They're currently looking at how human factors (like decision-making, nutrition, sensory processing and stress) can impact on the effectiveness of soldiers in the military and conducting research on how gut health affects the performance of ADF members.

In the ADF, you could travel overseas as a nurse or doctor to care for ADF members on deployment, as well as to help communities in need. For example, as an

environmental health assistant for the Army, you'll receive military training and work to prevent disease and non-battle injuries in the field and in barracks. Want to be a radiographer for the Air Force? You could get the chance to complete postgraduate ultrasound training through Defence-sponsored studies. And there's perks for Navy medics too. They can take on further medical training in underwater medicine and clinical management.

– Louise Meers

You'll love a health career in Defence if you want to...

- ✓ Make a difference by keeping ADF members fighting fit
- ✓ Have lots of opportunities to grow your skill set through training and development programs
- ✓ Contribute to humanitarian, combat and disaster-relief operations
- ✓ Work in an exciting and challenging environment

MAKING A DIFFERENCE

Here are 5 health jobs where using STEM can help our Defence orgs!

1. Nutrition scientist

These STEM professionals are specialists in meeting the nutritional needs of serving ADF members.

2. Nurse

Nurses usually work in deployable health units and/or field hospitals, providing immediate healthcare.

3. Ophthalmologist

Preventing, treating and helping with injuries and disease is all in a day's work for these eye experts.

4. Radiographer

They produce X-rays and other medical imaging services during ADF exercises and deployments.

5. Human performance scientist

The Human Performance Research network (HPRnet), works to enhance the physical and mental performance of Defence personnel.

DEFENCE HAS PROVIDED ME WITH AN OPPORTUNITY TO USE MY RESEARCH AND ACADEMIC SKILLS TO HELP SHAPE DEFENCE HEALTHCARE SERVICE DELIVERY" SHAHD, HEALTH SYSTEMS INSIGHT MANAGER



GOOD NEWS

If you've applied for a job in the Navy, Army or Air Force and are studying to become one of the following, you can apply for a Defence University Sponsorship.

- **Dentist**
- **Doctor**
- **Environmental Health Manager**
- **Medical Scientist (Pathology)**
- **Nurse**
- **Psychologist**
- **Radiographer**
- **Pharmacist**
- **Physiotherapist**

Score a scholarship and the ADF will pay you to complete your degree AND pay your remaining fees! Find out more: bit.ly/DUS-jobs

DEFENCE + HEALTH + NUTRITION + STUDY

Bachelor of **Medical Science** and **Doctor of Medicine**

Bachelor of **Nutrition Science**

Dental Assistants Course, Australian Defence Force Dental School

Graduate **Certificate in Critical Care Nursing**

Preventive Medicine Basic Course, Army Logistics Training Centre

DEFENCE + HEALTH + NUTRITION + JOBS

Psychologist:
Average salary \$95,166

Nurse:
Average salary \$87,989

Health Scientist:
APS Level 3, \$59,237-\$65,270

Biotechnologist:
APS Level 3, \$59,237-\$65,270



GAINING INSIGHTS

SHAHD STARTED IN PSYCHOLOGY AND THEN SWITCHED INTO AN AMAZING CAREER IN DEFENCE

Shahd decided on STEM in the last hour of uni preference selection! She chose a psychology degree on a whim, scored a spot in the course, but realised it wasn't for her. So, after taking broader classes and testing out different fields, she worked as a research assistant in a cognitive science lab. She joined DSTG as a cognitive and behavioural scientist and now works with Joint Health Command as a Health System Insights Manager.

One of her favourite projects was studying the impact of augmented reality (AR) interfaces on soldiers that move on foot. "Our team used human factors to inform the way in which AR displays could be designed for the Army," Shahd says. "Defence has provided me with an opportunity to use my research and academic skills to help shape Defence healthcare service delivery."

SHAHD
HEALTH SYSTEMS
INSIGHT MANAGER



POSTDOCTORAL RESEARCHER
HEALTH SYSTEM INSIGHTS MANAGER, JHC
PHD IN COGNITIVE SCIENCE
COGNITIVE AND BEHAVIOURAL SCIENTIST, DSTG
BACHELOR OF PSYCHOLOGY (HONOURS)

ABOUT JOINT HEALTH COMMAND:
BIT.LY/ADFJOINTHEALTHCOMMAND

FIGHTING FIT

ALEXANDER IS CONTRIBUTING TO ENSURING THAT, IN PEACE AND WAR, MILITARY PERSONNEL ARE ALWAYS GIVEN THE BEST HEALTH SUPPORT POSSIBLE

Though Alexander has been a registered General and Mental Health Nurse since 1986, he joined the Royal Australian Navy in 2009. As part of the Maritime Operational Health Unit, his main goal was to make a difference.

“I saw it as more than just a job,” he says. “I wanted to do something meaningful, not just for myself but for my community and nation.”

Today, Alexander is applying this dedication at the Joint Health Command (JHC). JHC provides healthcare to the ADF and makes sure personnel are physically and mentally prepared for operations. He is part of a team at JHC’s Directorate of Future Health Capability.

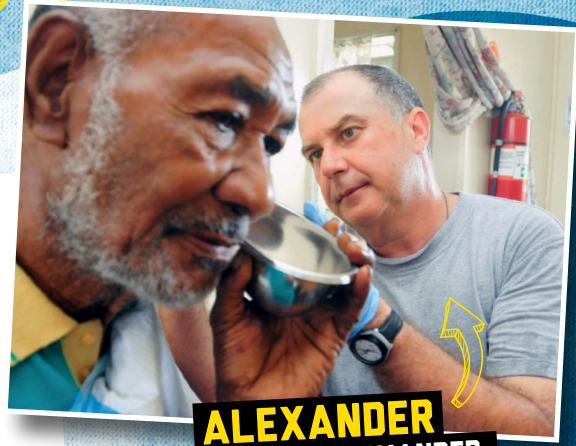
“We are tasked with delivering future joint health capability services in the areas of health doctrine, capability development, science and technology research, and international collaboration,” he explains.

REWARDING GROWTH

So what does Alexander think it takes to have a successful career in STEM + Defence? Stick with it.

“My career pathways have improved significantly since I joined, providing a broad range of clinical, management and charge opportunities within my organisation,” he says.

“It is not always easy, but the rewards and opportunities to grow, develop and visit places that few see are awesome.” – Ben Skuse



ALEXANDER
LIEUTENANT COMMANDER,
GENERAL AND MENTAL
HEALTH NURSE

I WANTED TO DO SOMETHING MEANINGFUL, NOT JUST FOR MYSELF BUT FOR MY COMMUNITY AND NATION

REGISTERED GENERAL AND MENTAL HEALTH NURSE, ROYAL NORTH SHORE HOSPITAL

MARITIME OPERATIONAL HEALTH UNIT MEMBER, ROYAL AUSTRALIAN NAVY

INSTRUCTOR / PLATOON COMMANDER, ARMY SCHOOL OF HEALTH

DIRECTORATE OF FUTURE HEALTH CAPABILITY STAFF OFFICER LEVEL 2, JHC

GIVING BACK

EMILY LOVES THE OPPORTUNITY TO HELP PEOPLE IN NEED

Emily didn’t plan on becoming a nurse – she set out to be a General Service Officer in the Army. However, halfway through her training, she became sick with meningococcal. A short stay in hospital helped her realise she wanted to give back to others. This set her on the path to becoming a Registered Nurse in the Australian Army.

“I chose to work in Defence as I believed the lifestyle, opportunities, fitness, community engagement and friendships that I would make through the Army would not compare to those I would experience going to a regular university,” she says. “Being sponsored to complete a degree was also a big motivator.”

After completing the first two years of a Bachelor of Nursing, ADF sponsored the final year of Emily’s degree and two years of training in a civilian hospital.

COMBATING COVID-19

In emergencies, nursing officers can be deployed to support the community.

“I was given 24 hours’ notice to pack my belongings before I was flown from Brisbane to Melbourne. Upon arrival, I was tasked to support a COVID-19 swabbing site.”

“Nursing opened my eyes to a range of opportunities to help and care for people in my local community. Joining Defence as a nursing officer allowed me to expand that care to our nation.” – Kim Thomson



EMILY
CAPTAIN,
NURSING OFFICER

BACHELOR OF NURSING

EMPLOYMENT TRAINING

MILITARY RECRUITMENT

GRADUATE CERTIFICATE AND GRADUATE DIPLOMA IN NURSING (PERIOPERATIVE)

CIVILIAN HOSPITAL EXPERIENCE

LIEUTENANT NURSING OFFICER

CAPTAIN / NURSING OFFICER, AUSTRALIAN ARMY

MAKING WAVES IN MEDICINE

JOINING THE NAVY HELPED **ALEXANDRA** REALISE HER DREAM OF BECOMING A DOCTOR



ALEXANDRA
LIEUTENANT COMMANDER,
MEDICAL OFFICER

As the clinical lead aboard the HMAS Canberra, Navy medical officer Alexandra is responsible for the health of up to 1000 personnel on the ship. But she didn't always want to be a doctor.

It wasn't until her third year of a biomedical science degree that the thought of becoming a doctor crossed her mind. "All I knew was study and I'd never really experienced much outside of that. My choice was to apply for medicine or join the Navy and expand my horizons. I decided on the Navy," she says.

Alexandra spent a year with the Navy as a Maritime Warfare Officer. But while she loved the Navy lifestyle, she couldn't shake her doctor dream. Fortunately, a senior officer helped her apply for the ADF's Graduate Medical Scheme, which sponsored her to finally study medicine.

After obtaining her medical degree, Alexandra returned to the Navy as a ship's doctor, where her role is also a strategic one. When the ship visits a foreign area, it's her job to make sure the team is prepared for what might be in store.

"Working for Defence is a challenging career," she says. "But there are lots of opportunities to pursue your passion."

— Chloe Walker



UNDERSTANDING NUTRITION

A FASCINATION WITH THE SCIENCE BEHIND OPTIMISING HUMAN CAPABILITIES LED **ROSA** INTO A CAREER AS A MILITARY DIETITIAN-NUTRITIONIST

Becoming a dietitian was a no-brainer for Rosa – in school she enjoyed health science, biology and maths, and was always keen on health, the body and nutrition. After Year 12, she headed to university to study a Bachelor of Science (Nutritional Therapy) and then a Master of Dietetics.

Now in her current role as a Military Nutritionist-Dietitian, Rosa undertakes nutrition science research and provides advice to Defence for their members.

CHALLENGE ACCEPTED

Working for our nation is pretty cool, but Rosa has had a few hurdles to overcome, like adapting to different environments.

"I didn't have any previous experience with working with the military," she explains. "I had to learn lots of Defence language quite quickly and understand how to best communicate with Defence members." But Rosa says you get there in the end: "It might just take a bit of planning and hard work." — Louise Meers



ROSA
DIETITIAN-
NUTRITIONIST

I HAD TO LEARN LOTS OF DEFENCE LANGUAGE QUITE QUICKLY"



A UNIVERSE OF OPPORTUNITIES

Defence careers are helping to secure Australia's place at the front of the space race

Did you know the space industry is booming? With the Australian Space Agency aiming to triple the size of the sector and create up to 20,000 new jobs by 2030, there's never been a better time to launch your space study and career path.

Defence is an incredible place to land a job in space technologies – they're spending a massive \$7 billion over the next decade to expand their space skills in areas like satellite communications, space domain awareness, positioning, navigation and timing, and Earth observation capabilities. This means they'll need plenty of fresh STEM professionals to create, operate and maintain new space tech, which is where you come in!

You could work on cool projects like the Buccaneer program, which involves building CubeSats (mini satellites) that help scientists and engineers learn more about the space environment, or assist with research in space surveillance. Want a hands-on gig? Defence also needs technicians to maintain satellite systems and contribute to space operations. The galaxy is the limit here. Are you ready to explore? – Louise Meers

Calling all cadets

You can apply for a STEM cadetship with Defence! Land a cadetship and you'll work across a wide variety of Defence projects within the APS, including developing, researching and procuring space and satellite communication systems.

Check out all the deets:
bit.ly/STEM-cadetship

OUT-OF-THIS-WORLD CAREERS

Want to help Defence blast their space operations to the next level? Take one of these roles for a test flight:

AIR FORCE AIR SURVEILLANCE OPERATOR

Use electronic equipment to find, classify and identify aircraft, surface vessels and space objects to create a complete picture of activity for national security purposes.

ARMY TELECOMMUNICATIONS TECHNICIAN

Keep the army connected by managing and maintaining advanced military satellite systems. Technicians also have to keep these connections protected.

AEROSPACE SOFTWARE ENGINEER

Coders in this area need to have a solid understanding of how systems on the ground and in space interact so they can develop, test and maintain tools and apps.

SPACE SYSTEMS ENGINEER

Designing mission plans, checking the health and performance of satellites, and maintaining ground stations are just some of the things space systems engineers do.

THE MATHS IN SPACE

Hey, maths experts – Defence needs you to work on exciting space projects! Once you have a Bachelor's degree under your belt, you can apply for the Defence Graduate Program and preference an intelligence pathway. This could lead to roles at the Australian Geospatial-Intelligence Organisation, where your maths skills will be needed to help develop Australia's sovereign satellite capability and whip up cutting-edge IT systems. Maths grads can also access the Research and Innovation Pathway at DSTG, and work on a huge range of STEM roles!

Find out more here:
bit.ly/defence-graduate-program

DEFENCE + SPACE + STUDY

Air Force Air Surveillance Operator: Air Surveillance Operator initial entry training, Surveillance and Control Training Unit

Air Force Network Technician: Network Technician initial entry training, Defence Force School of Signals

Air Force Air Intelligence Analyst: Air Intelligence Analyst initial entry training, Air Intelligence Training Flight

Bachelor of **Engineering (Aeronautical)** (Honours), University of NSW (ADFA)

Bachelor of **Science**

Bachelor of **Mathematics**

DEFENCE + SPACE + JOBS

Air Surveillance Operator: Average salary \$73,253

Communication Systems Operator: Average salary \$73,253

Space Systems Engineer: APS Level 3, \$59,237–\$65,270

Satellite Communications Engineer: APS Level 3, \$59,237–\$65,270



Essential space viewing

What happens when the Air Force teams up with UTS Animal Logic Academy to inspire the next gen to get into STEM?

You get Jarli! She's a proud Indigenous girl who has a knack for building and dreams of heading into space.

Scan the QR code to watch the animation!



Defence scientists can enhance Australia's space situational awareness through the integration of sensors and assets across ground, sea and space!

ALL SYSTEMS GO

AN INTERNSHIP HELPED **FRANKE** LAUNCH HER SPACE CAREER AND NOW SHE'S BUILDING SATELLITE SYSTEMS FOR DEFENCE

FRANKE
SPACE SYSTEMS
ENGINEER

Do you have a strong desire to design spacecraft? You should study electrical and mechatronic engineering! It was this study path that led Franke into an Industry Experience Placement with DSTG, then an internship within the Space Operations Group while she was in her second year of uni. After working with the team for a year, she received an offer for the STEM Cadetship Program, securing a full-time position as a Space Systems Engineer.

MISSION: GO

Fast-forward and Franke's now in that full-time dream gig 9-5, which involves designing, programming, building and testing an imaging system for the Buccaneer Main Mission CubeSat.

This system uses liquid lens technology, which will allow it to overcome depth-of-field limitations by electronically adjusting the focus without requiring any mechanical movement. It will be the first of its kind to be launched on a CubeSat.

Franke says it's unbelievable to her that she worked on a satellite that will soon be launched into space: "I think I will look up to the night sky for the rest of my life in absolute awe that I contributed to something so magical."

Working for Defence is a big reward in itself for Franke. "I have always been very grateful to call Australia home, having moved here from South Africa in 2007. By working for Defence, I am able to give back to the country which has provided me with endless opportunities," she says.

An advocate for diversity in STEM, Franke admits being a woman in the industry was daunting at first.

"I remember going to my first engineering class and being the only girl," she says. "I decided to embrace it and used the opportunity to prove myself and my ability."

— Louise Meers

BACHELOR OF ENGINEERING
(ELECTRICAL AND MECHATRONIC)

FIRST CLASS
ENGINEERING HONOURS

INDUSTRY EXPERIENCE
PLACEMENT, DSTG

DEFENCE STEM CADETSHIP

SPACE SYSTEMS
ENGINEER, DSTG

**BY WORKING IN DEFENCE,
I AM ABLE TO GIVE BACK TO THE
COUNTRY THAT HAS PROVIDED ME
WITH ENDLESS OPPORTUNITIES"**

SKY'S NO LIMIT

AS AN OFFICER IN THE AIR FORCE, MELISSA HAS FLOWN MISSIONS ALL OVER THE WORLD. NOW, SHE'S LOOKING OUT TO SPACE

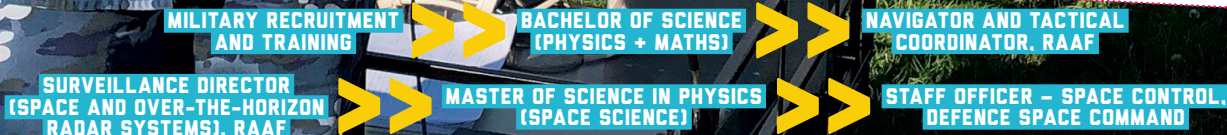
Melissa has always loved flying. So when it came to university, it made sense to join the Air Force and study at ADFA.

After several years working and flying, post-uni she had the opportunity to pursue a career in space operations. Melissa joined a space operations unit and was subsequently selected to go to Canada to study a Master's degree in space physics.

"I designed a CubeSat mission to conduct specialist observations of the sun for space weather analysis. Knowing that they plan to launch this satellite in the future is incredibly exciting," she says.

Now Melissa is back home and part of the new Defence Space Command, which was established in January 2022. The Defence Space Command brings together the Navy, Army and Air Force and APS to explore Australia's use of space and defend our space assets. "Defence is a great way to get involved in leading-edge technology," she says. — Chloe Walker

MELISSA
SQUADRON LEADER, STAFF OFFICER +
SPACE PHYSICIST



FLYING HIGH

COMING FROM AN EXCITING AND VARIED STEM CAREER, JANNA IS NOW ADVISING GOVERNMENT ON HOW TO PROTECT AND BOOST AUSTRALIA'S SPACE CAPABILITIES

From an early age, Janna knew she loved STEM. "Both of my parents had careers in STEM and I liked science subjects at school," she says. "By my mid-teens, I had begun thinking about going into a STEM field, ultimately as an engineer!"

Describing herself as an 'opportunity seeker', this passion for STEM took Janna on a whirlwind career journey. She studied mechatronics and computer science before landing a graduate engineer role working on the super-fuel-efficient 787 Dreamliner. She then moved to Canada and took on a PhD to learn about composite materials and manufacturing.

Moving back to Australia, Janna now works in space policy for Defence. "Why policy?," she asks. "Well, I love space and my ability to think critically is a useful skill in policy development."

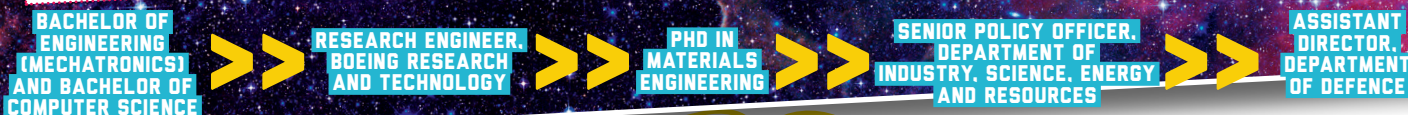
Janna gives advice to the government about enhancing Defence space capabilities. Her team ensures that Australia has the plans, skills and abilities to protect and defend its space assets and interests.

"Working for Defence enables you to explore many pathways while working on awesome projects with amazingly talented people."

— Ben Skuse

JANNA
ENGINEER AND
ASSISTANT DIRECTOR

I LOVE SPACE AND MY ABILITY TO THINK CRITICALLY IS A USEFUL SKILL IN POLICY DEVELOPMENT



QUANTUM SHIELD

Australian Defence scientists are on the frontline of quantum research, uncovering new materials and applications to keep the country safe

Quantum technologies have already changed the way we live. Without them, we wouldn't have the solid-state transistors found in smartphones, solar panels and satellites, for example. Researchers at Defence are leading the second wave of the quantum revolution. They're working closely with universities and industry to build prototypes for new capabilities, and finding ways to use scientific discoveries to solve Defence challenges.

Quantum materials research is an ever-evolving field that bridges fields from materials science to physics and optoelectronics. It even touches on chemical engineering for applications in water and food sterilisation.

In Defence, quantum materials have some pretty cool applications, including high-frequency radio communication for radars and precision timing for navigation systems. But it doesn't stop there. Quantum materials can also be put to work in directed laser systems, and secure communications to

combat the growing threat of cyber attacks. And there's no problem too small (or large) to tackle. Researchers are launching into projects ranging from protective casing for ultra-sensitive submarine equipment to a wireless, unspooftable timing system that could one day be sent into space.

Quantum tech is a priority area of DSTG's Next Generation Technologies Fund, which will spend \$1.2 billion in the next decade to develop technologies for the 'future Defence Force after next'.

Quantum pathways

If you're interested in a Defence quantum research career, an Honours degree in maths and physics, electronic engineering or materials science is a good place to start.

PEER SUPPORT

FOR NICOLE, BEING A QUANTUM TECHNOLOGIES RESEARCHER AT DSTG IS THE BEST JOB IN THE WORLD

NICOLE
QUANTUM TECH
RESEARCHER

QUANTUM TECHNOLOGIES
RESEARCHER, ANU AND DSTG



BACHELOR OF SCIENCE (ADVANCED)
(HONOURS) (PHYSICS AND MATHEMATICS)

Nicole came to Australia from Hong Kong after high school to pursue her dream of becoming a physicist.

“Physics wasn’t my best subject, but it was my absolute favourite,” she says.

After completing a Bachelor of Advanced Science with a double physics and maths major, Nicole won a place in the Research and Innovation Pathway of the Defence Graduate Program, which led to her current role.

She’s now working with the University of Adelaide and Quant-X Labs on a very ‘cool and strange’ project to develop an entangled photon (light particle) source for a wireless, secure, time-transfer project that could one day be launched into space.

“This work contributes to a long-term goal of building a distributed quantum timing network that is sovereign, accurate and resilient. What adds to the excitement of this project is the fact that we have researchers from Defence, the University of Adelaide (academia) and Quant-X Labs (industry) all aboard this journey, contributing their expertise to the wider goal,” says Nicole.

“The impact of this project has the potential to go beyond Defence.”

THE IMPACT HAS THE POTENTIAL TO GO BEYOND DEFENCE

Overcoming obstacles

During her degree, Nicole battled mental health issues. But she held onto her dream and built a support network that got her through her studies and into her dream job.

Now, she’s looking into starting a Defence-supported PhD.

“I always loved the concepts in physics and learning about why things are the way they are. Somehow, it’s taken me here to the best job in the world.” – *Nadine Cranenburgh*

Defence perks

As well as the chance to protect national security, working as a Defence researcher has other benefits. DSTG offers flexible working hours, a great superannuation scheme, sporting activities and social clubs. And you’ll have access to training, mentorship and support to grow your research and interpersonal skills throughout your career. – *Nadine Cranenburgh*

DSTG also works with the top universities in the field to sponsor quantum researchers to hone their expertise through PhD and postgrad projects.

After graduation, you can apply for the Research and Innovation Pathway of the Defence Graduate Program, where you’ll spend 12 months rotating through two roles across Defence, Defence industry or elsewhere, and which could include a quantum project.

FIND OUT MORE: [BIT.LY/DFCAREERBENEFITS](https://bit.ly/dfcareerbenefits)

DEFENCE + QUANTUM + STUDY

Bachelor of Science (Honours)

Bachelor of Philosophy (Honours)

Bachelor of Engineering (Materials Science) (Honours)

Bachelor of Engineering (Electrical and Computer Systems) (Honours)

DEFENCE + QUANTUM + JOBS

Defence Graduate Researcher:
APS Level 3,
\$59,237–\$65,270

Quantum Technologies Researcher:
APS Level 3,
\$59,237–\$65,270*

* See p35

FINDING BALANCE

BEING A QUANTUM RESEARCHER WITH DSTG HAS GIVEN **BEN** JOB SECURITY WHILE WORKING ON THE SCIENCE THAT HE LOVES

BEN
QUANTUM RESEARCHER

QUANTUM TECHNOLOGY
RESEARCHER, DSTG

DISCOVERY EARLY CAREER
RESEARCHER AWARD FELLOW

MCKENZIE
FELLOW

PHD IN
PHYSICS

BACHELOR OF PHILOSOPHY
/ SCIENCE (PHYSICS) (HONOURS)

Ben's passion for science was born watching David Attenborough's nature documentaries as a child. Later, he was drawn to physics.

"I enjoyed maths and found it fascinating that it could describe the secrets of the universe," he says.

Ben went on to major in physics at university and then complete a PhD in optical data storage and postdoctoral fellowships. He even flew to Silicon Valley and explained the workings of gravitational waves to a company's founders! Then, when Ben saw an ad for DSTG quantum researchers, he jumped at it.

From the lab to field

At DSTG, Ben has worked on projects including a portable optical atomic clock and packaging an ultra-sensitive magnetometer to be deployed underwater. Ben says his career has been incredibly rewarding and stimulating – he's constantly working on new and exciting topics and solutions. His advice to students is to move beyond the textbooks, seek hands-on opportunities and chat to scientists.

"We love talking about our work to anyone who'll listen!" he says.

— *Nadine Cranenburgh*

WHAT ARE RECRUITERS LOOKING FOR?

As well as great research ability, Defence is on the lookout for grads with a range of other skills:

Creative problem-solving

Apply your STEM know-how to unpick and solve complex challenges in the lab, or field trials in the air, land or sea.

Communication and teamwork

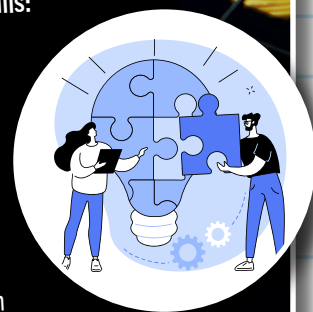
Working closely with unis and industry, other areas of Defence and the scientific community, your writing and presentation skills will need to be topnotch.

Self-starting innovators

Quantum research is at the cutting edge, so innovation and drive are a big plus.

Flexibility

Expand your expertise and adapt to changes in the fast-moving Defence environment.



TRADES THAT MATTER

Want a hands-on STEM role where you'll develop specialised skills and make a difference to the world? Read on...

APPRENTICE CAREER PATHS IN THE MILITARY

There's never a dull moment as a tradie in Defence!

Navy electronics technicians

Love tinkering with electronic circuits and systems? The Navy's electronics technicians work with advanced weapons systems and state-of-the-art surveillance equipment every day.

Army fitter armaments

The Army has some awesome hardware and someone has to maintain it – that's the job of a fitter armament. This hands-on STEM role will have you repairing and maintaining engines, armoured tanks, helicopters and watercraft. Not your average workshop role!

Aircraft fabricators

In this exciting role, you'll be manufacturing repairs on structural components and fitting them to world-class military aircraft like the F-35A Lightning II, P-8A Poseidon long-range surveillance aircraft and C-130J Hercules transport aircraft.

Mechanical engineers

Through an apprenticeship with DSTG, you can learn to fabricate components for use on Defence aircraft and tanks.

As a tradie in Defence, you'll get to carry out roles critical to Australia's safety and develop skills that will set you up for life. You'll also get hands-on with leading technologies on projects that help the ADF perform at its best.

With a truckload of careers in STEM-related areas like electronics, mechanics and IT, an apprenticeship with Defence means on-the-job training, job security and being part of a skilled workforce.

STUDY HARD AND FAST

If you see yourself in a uniform, there is a vast range of STEM-based trades you can pursue in the Navy, Army and Air Force, plus you'll get nationally recognised qualifications in half the time of a regular apprenticeship – seriously!

As an apprentice in Defence APS, you could train in electronics, mechanics, cyber security, spatial information services, drafting, software development, shipbuilding and more. You'll get paid while you train and develop your skills, as well as complete trade qualifications as you get exposed to projects in the Defence sectors.

SOMETHING FOR EVERYONE

Not only will you make friends for life doing a trade with Defence, you'll be part of an inclusive and respectful workplace that provides equal salaries and career progression for women. Whatever your gender, cultural background or ethnicity, you'll fit right in. – Danielle Lucas

MARINE TECHNICIAN CORBIN, ABLE SEAMAN, CONDUCTS WELDING ABOARD HMAS BRISBANE AS THE SHIP TRANSITS THROUGH THE PHILIPPINE SEA DURING A REGIONAL PRESENCE DEPLOYMENT.

FOURTH YEAR APPRENTICE MACHINIST,
DEPARTMENT OF DEFENCECOMPLETING DIPLOMA
OF ENGINEERING (TECHNICAL)COMPLETING CERTIFICATE III OF
ENGINEERING (MECHANICAL TRADE)
ROBERT
APPRENTICE
MACHINIST
SKYE, ABLE SEAMAN, ELECTRONICS
TECHNICIAN, MAINTAINS A RADIO SYSTEM
ABOARD HMAS PARRAMATTA

ENGINEER YOUR OWN PATH

**ROBERT'S CAREER JOURNEY
PROVES THERE'S MORE THAN ONE
WAY TO GET INTO STEM!**

Although STEM subjects weren't really his thing at school, Robert found his way into engineering through a passion for hands-on work.

He completed a pre-vocational course at TAFE where he was introduced to a range of engineering pathways. Robert realised he liked machining best and took up an apprenticeship, which includes completing a Certificate III of Engineering (Mechanical Trade). Now he's an apprentice machinist with Defence.

In this job, Robert is given drawings and computer model files, interprets them, then uses machining processes to make models from specified materials. Another part of his gig involves always looking for ways to refine processes and techniques.

Wide ranging projects

Robert is excited about the awesome opportunities working in Defence has to offer: "I like the corporate job structure that promotes ongoing study and the diverse range of projects to work on."

If you can see yourself flexing your STEM skills in Defence in the near future, Robert says you should be proactive: "Absorb as much information as you can. And if you are uncertain, just ask a question." – Louise Meers

GET PAID TO TRAIN PLUS GAIN WORK EXPERIENCE IN DEFENCE

Digital Apprenticeship Program

With the ability to enter straight from Year 12, this program provides opportunities across the APS, including in Defence. Get industry experience and training in cyber security, big data, web development, interactive media and so much more. bit.ly/DFdigitalapp

Defence TAFE Employment Scheme

Get paid work experience and vocational training support in a pathway that helps protect Australia's national interests. In the Defence TAFE Employment Scheme, you will have opportunities in awesome STEM areas like cyber security and vehicle survivability. bit.ly/DFTAFE

FIND YOUR PATH

There are loads of options to find the right Defence apprenticeship for you. Here's the lowdown...

General entry into the ADF for other ranks (technical)

You need to be 17 to enter the ADF, but can initiate the application process from 16 years and six months. Many of these roles don't require you to have completed Year 12, but it's best to check each job page for specific entry conditions. Passes in maths, science and English at Year 10 or Year 11 level are common requirements.

APS and ASD

ASD participates in the Australian Government Digital Apprenticeship Program, a program for students who are currently completing or have finished their Year 12 Certificate, or are studying at TAFE.

DSTG

Mechanical and electronics apprenticeships are some of the opportunities available through DSTG – there is also an Indigenous Apprenticeship Program. These roles include on-the-job training, while studying part-time at TAFE for a Certificate III or Diploma.

LOCATION, LOCATION!

Where will you learn your skills? The world-class training and course work takes place at specialist facilities throughout Australia, however each apprenticeship starts out with the general recruit course. See where you could be headed...

ARMY: General recruit course at Kapooka, Wagga Wagga, NSW, followed by specialist training.

NAVY: New entry sailor course at HMAS *Cerberus*, Victoria, followed by employment training.

AIR FORCE: Recruit training at RAAF Base Wagga Wagga, NSW, followed by technical training.

ASD + DSTG: Check out the website for opportunities at locations across Australia defence.gov.au/jobs-careers/pathways-apply

POSITION YOURSELF AHEAD OF THE CURVE TO MAINTAIN YOUR OWN VOCATIONAL RELEVANCE"

MACHINING FOR THE MILITARY

MICHAEL LANDED AN AWESOME CAREER AS A FITTER ARMAMENT IN THE ARMY

From a young age, Michael had his sights set on joining the Army. STEM had also been on his radar since high school, where he was involved in a tech pathways program.

"The Army job of Fitter Armament neatly meshed my two interests,"

Michael says.

Michael is now Platoon Sergeant for the Armaments and Construction Wing at the Army School of Electrical and Mechanical Engineering. In this role, he manages, administers and mentors

trainee soldiers through their initial employment training with the ADF. If you want to work in STEM and Defence, he believes you always need to be looking to the future: "Predict and position yourself ahead of the curve to maintain your own vocational relevance."

Michael's work is impressive and he's now in a position to mentor the next generation of soldier tradespeople entering the Army – something he's looking forward to. – Louise Meers



MICHAEL SERGEANT, FITTER ARMAMENT

MILITARY RECRUITMENT AND INITIAL TRAINING

CERTIFICATE III IN MECHANICAL TRADE, ARMY SCHOOL OF ELECTRICAL AND MECHANICAL ENGINEERING

CERTIFICATE IV IN ENGINEERING, ACCRUED THROUGH CAREER PROMOTION COURSES AND RECOGNITION OF WORKPLACE LEARNING

CERTIFICATE IV IN LEADERSHIP AND MANAGEMENT, ACCRUED THROUGH RECOGNITION OF WORKPLACE LEARNING

PLATOON SERGEANT, ARMAMENTS AND CONSTRUCTION WING, ARMY SCHOOL OF ELECTRICAL AND MECHANICAL ENGINEERING

DEFENCE + APPRENTICE SHIPS + STUDY

Certificate IV in **Cyber Security**, Australian Government Digital Apprenticeship Program

Certificate III in **Electronics and Communication**, ADF

Army Technical Trade Fitter Armament Course, ADF

Certificate IV in **Aeroskills (Structures)**

Certificate IV in **Spatial Information Services**, Australian Geospatial-Intelligence Organisation

DEFENCE + APPRENTICE SHIPS + JOBS

Electronics Technician: Trainee salary starts at \$51,277, average salary \$73,253

Fitter Armament: Trainee salary starts at \$51,277, average salary \$73,253

Aircraft Fabricator: Trainee salary starts at \$51,277, average salary \$73,253

Mechanical Engineer: APS Level 3, \$59,237–\$65,270

YOUR DEFENCE CAREER STARTS HERE!

From gap years and internships to apprenticeships and grad programs, there are plenty of ways to kick off your Defence STEM journey

CHOOSE YOUR ADVENTURE

Do you see yourself in uniform? Or is a lab coat or dress more your speed? Whatever your preference and current year level, there's a Defence career to suit.

OPTION 1

Take a gap year with the ADF

Finished Year 12 and ready to try something new? The Navy, Army and Air Force offer a paid gap year where you can choose a Defence role to try on for size. STEM subjects are a bonus if you're looking to try on an Officer's hat. Added perks are travel, training and work experience.

More info here: bit.ly/ADFGapYear

OPTION 2

Heading for uni?

If you've completed Year 12, here are a few ways to get a degree while working towards a career in Defence.

- **ADFA:** Dive into STEM degree studies at UNSW while learning to be an Officer in the Navy, Army or Air Force.
- **Defence University Sponsorship:** Score a salary and leadership training while you finish your engineering, science or healthcare degree (or a bunch of others!). You could have a job waiting for you when you graduate!
- **Defence STEM Cadetship:** Get supported while you study a STEM degree with stipends and paid placements in Defence.

More info here: bit.ly/DefEntry

Find out more about STEM careers at DSTG: dst.defence.gov.au/careers/stem-careers

OPTION 3

Snap up an apprenticeship

- **Navy, Army and Air Force:** Defence apprenticeships range from mechanics and electronics to carpentry, aviation and telecommunications. bit.ly/ADFTrades
- **Cyber specialists:** The Australian Government Digital Apprenticeship Program can lead to a Defence cyber role. bit.ly/ASDCyberApprenticeProg
- **STEM apprenticeship options into DSTG:** bit.ly/DSTGSTEMapp

OPTION 4

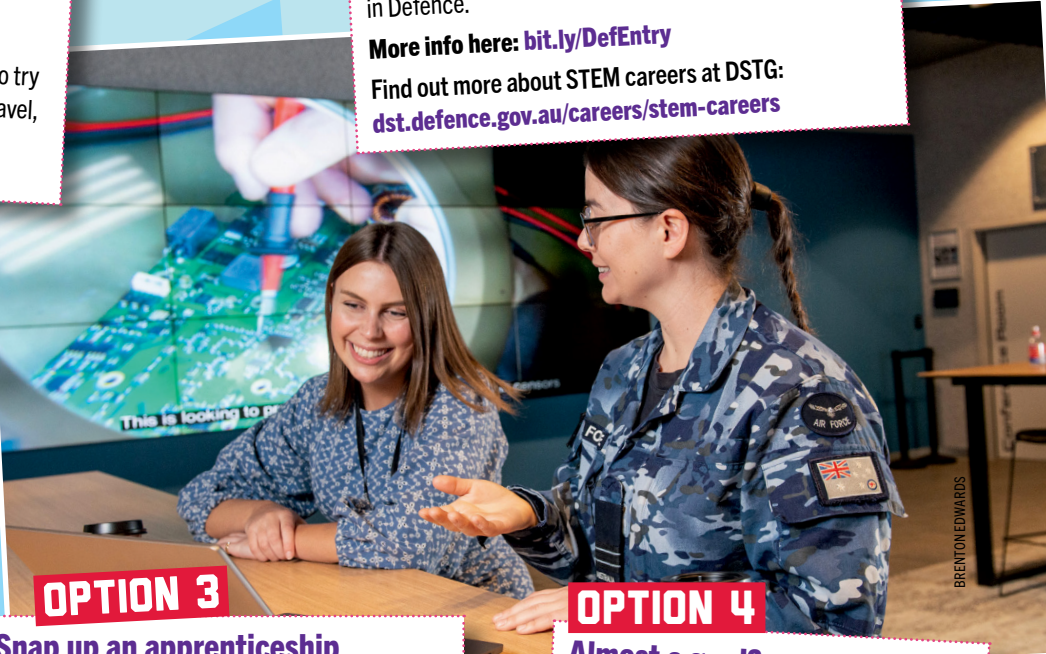
Almost a grad?

Defence recruits grads from a multitude of degree areas, including but not limited to engineering, healthcare and science for a range of challenging and exciting roles:

If you're interested in cutting-edge research, check out the **Defence Science and Technology Grad Program**.

bit.ly/DefSciTechGrad

And the **Defence Graduate Program** has technical and intelligence pathways that could open doors to engineering, project or cyber roles. bit.ly/DefCareersGrads



BRENTON EDWARDS



LISA TARA BYRNE

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SGT BILL SOLOMONOU

**LOOKING FOR INSPO?
GET SOCIAL**



Follow **@defencejobsaustralia** to keep up-to-date with career news and stories for the Navy, Army and Air Force.

Or if you're more into research, **@defencescience** is the feed to tap into.



Defence Jobs Australia has video interviews with technicians and officers, virtual tours of **ADFA** and more.



Follow **@ASDGovAu** for news on Defence cyber info sessions and opportunities.

IN DEMAND RN

Defence careers are so hot and totally in demand, so suss the right one for you and plan your pathway now...

- **Defence cyber specialists** use software, IT and engineering skills to defend Australian networks from cyber threats and build our capability to keep hackers at bay.
- **Electronics engineers** tap into engineering know-how to solve challenges and keep communications, weapons and navigations systems in working order.
- **Defence scientists** use their innovative minds, curiosity and research skills to develop the tech Defence needs – from bullet-proof plastic to mini satellites.



BRENTON EDWARDS

CYBER FOCUS

Want to combine your passion for code and computers with keeping the country safe? Check out these opportunities at the ASD:

- Spend a week honing your hacker-blocking skills in a work experience placement at the **Australian Cyber Security Centre**.
- **ASD CyberEXP** is an interactive online program that gives uni and high school students a taste of life on the frontline of Defence cyber security.
- **The ASD Internship Program** is a paid opportunity for uni students to dive into Defence cyber operations during their summer holidays.

More info here: bit.ly/DEFENCEStudentOps

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We acknowledge the Traditional Owners of country throughout Australia and recognise their continuing connection to land, waters and culture. We pay our respects to their Elders past, present and emerging.

This issue went to press on 27 July 2022. Printed in Australia by IVE.

Cover image: Brenton Edwards

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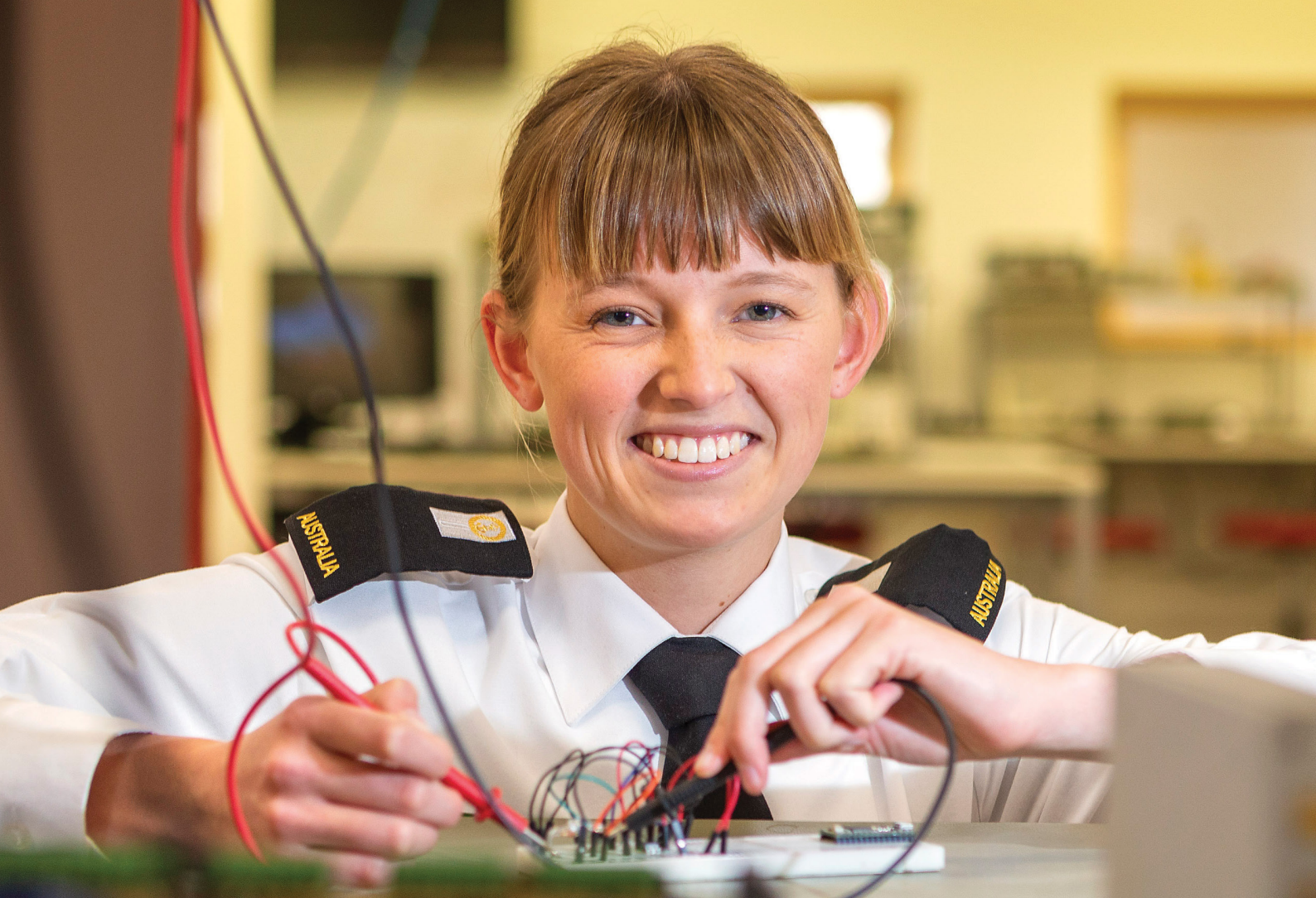
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POSTAL ADDRESS: PO Box 154, Oyster Bay NSW 2225 Sydney, Australia

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ISSN 2209-1076





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