



WANGARATTA
HIGH SCHOOL

Science

Senior Subject Information for 2021
Year 11 & 12 Courses of Study

The Science Learning Area



- Undertaking a VCE science study is the opportunity for students to engage in a range of inquiry tasks that may be self-designed, develop key science skills and interrogate the links between theory, knowledge and practice.
- Students work collaboratively as well as independently on a range of tasks. They pose questions, formulate hypotheses and collect, analyse and critically interpret qualitative and quantitative data. They analyse the limitations of data, evaluate methodologies and results, justify conclusions, make recommendations and communicate their findings.
- Students investigate and evaluate issues, changes and alternative proposals by considering both shorter and longer term consequences for the individual, environment and society. Knowledge of the safety considerations and ethics is also a focus.
- As well as an increased understanding of scientific processes, students develop capacities that enable them to critically assess the strengths and limitations of science, respect evidence-based conclusions and gain an awareness of the ethical, social and political contexts of scientific endeavours.

Year 11 & 12 Subject Offerings in 2021



Biology

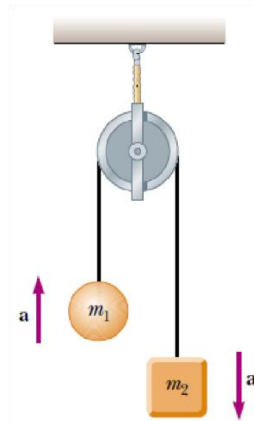
Chemistry

Physics

Psychology

Student requirements

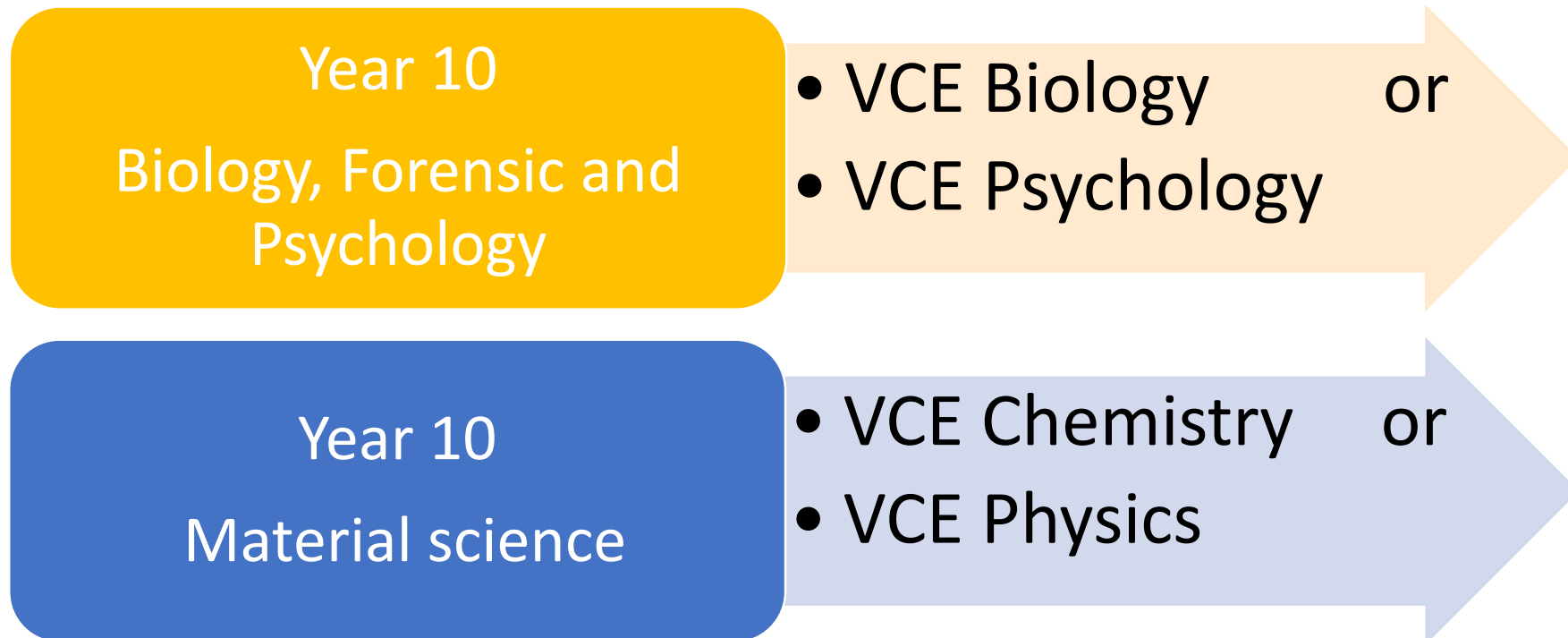
- All 4 of the Sciences offered at WHS follow the same basic structure in that they all requires students to acquire knowledge through course work in the classroom with the aid of the textbook and Edrolo.
- This scientific knowledge is then supported by students conducting practical activities and keeping a log book of these experiments.
- In addition students will be required to complete a research task.



Prerequisites



- It is suggested that students complete Science electives in Year 10 that are in line with the subjects that they wish to complete in Year 11. However they are not required.



Acceleration



- Year 10 student have the option to accelerate into Unit 1&2 Biology or Psychology. This can give students a taste of VCE without the pressure of a full VCE load. Students will require permission to accelerate based on prior performance in Science and overall study habits. Acceleration also allows of addition VCE Units to be completed or room to focus on less subjects in Year 12.
- Unit 1&2 are not prerequisites for Unit 3&4 Biology or Psychology. However, some knowledge from Unit 1&2 is carried over to Unit 3&4 and in this case teachers will provide support and guidance to the prior knowledge.

Where Science might lead you?



- Here are some cross-disciplinary areas that can apply as well some possible pathways that student might take once they have completed each of the Science areas.
- **Biologists** could work in bushfire research, environmental management and conservation, forensic science, geology, medical research and sports science.
- **Chemists** is applied in many fields of endeavour including agriculture, bushfire research, dentistry, dietetics, education, engineering, environmental sciences, forensic science, forestry, horticulture, medicine, metallurgy, meteorology, pharmacy, sports science, toxicology, veterinary science and viticulture.

- **Physicists** could work with other scientists in bushfire research, climate science, forensic science, geology, materials science, neuroscience and sports science.
- **Psychologists** has a large scope of possibilities including medical research, educational, environmental, forensic, health, sport and organisational psychology or as part of on-going or emergency support services.

Top 9 industries for science graduates

Science will take you far beyond the lab – here's just a glimpse at today's biggest, brightest and best career outcomes. Go ahead, choose your future!

CODE, CREATE AND CONNECT

IT, communications and technology
Jobs: Computer scientist, information systems professional, systems analyst, web developer
Study: Science majoring in computer science, information systems, mathematics, statistics

Tech careers in industries like robotics, communications, gaming and security are set to explode. The Australian ICT workforce is expected to expand to 700,000 workers by 2020, with growth nearly 1.5 times greater than the rest of the job market (Deloitte Access Economics, 2015).

GET SMART ABOUT BUSINESS

Business, management and consultancy
Jobs: Entrepreneur, business owner, human resources manager, business/management consultant
Study: Science majoring in maths, statistics, economics, business, management

Entrepreneurs are making their mark in economics, finance, agriculture, healthcare and many more industries, while in 2017, 35,000 consultants will sell \$8 billion worth of advice in Australia alone (University of Sydney, 2017). Due to their high-level, complex reasoning skills, science graduates are highly valued in the consulting industry (University of Sydney, 2017).

GET FASTER, FITTER + BETTER

Health and sports sciences
Jobs: Dietitian/nutritionist, biomechanist, sports statistician, exercise physiologist, sports/exercise scientist, sports psychologist, sports dietitian
Study: Dietetics, nutrition, physiology, anatomy, psychology

As our global obsession with living a healthy lifestyle grows, so does the job market in the health sciences. Employment for dietitians has risen by a rate of 5.6% over the past five years and is expected to continue to grow (Open Universities, 2017). Sports scientists – who assist athletes with their training and rehab – are also in high demand.

MAKE A BETTER WORLD

Sustainability and energy
Jobs: Environmental scientist, environmental consultant, environmental protection officer
Study: Environmental science, environmental systems

Job prospects are looking great for the next wave of 'green collar' workers. The global green economy is worth \$6 trillion and is the world's fastest growing market, whether in buildings, infrastructure, water or mining. In Australia, the green workforce will grow to 850,000 by 2030 (University of Sydney, 2017) – great news for the environmentally-minded science graduate.

TEACH THE NEXT GEN

Education and training
Jobs: Science teacher, school administrator, curriculum developer, science presenter, training content writer, training consultant, research officer
Study: Education, communication

Looking to inspire the next generation of scientists? There are a range of government incentives and scholarships to encourage young people to work in STEM education, particularly in rural areas. Always in demand, education and training jobs are projected to increase by 500,000 in 2025 (Federal Government Future Focus Report, 2013).

FIGHT DISEASE AND DISABILITY

Medicine and biotechnology
Jobs: Analytical chemist, biomedical scientist, health physicist, microbiologist, neuroscientist, laboratory technician, clinician, policy and business developer
Study: Biochemistry, microbiology, neuroscience, statistics

It's not just doctors who save lives – scientists are frequently at the origin of medical advances. There are currently more than 40,000 jobs in the biotechnology and pharmaceutical sectors (University of Sydney, 2017).

SEE THE BIG PICTURE

Data science
Jobs: Data scientist, data analyst, computer scientist, mathematician, bioinformatician
Study: Data science, computer science, mathematics, statistics, bioinformatics

The *Harvard Business Review* called data science "the sexiest job of the 21st century" for a reason! Industries such as medicine, life sciences, insurance, retail and security rely on data scientists and analysts. The big data global market will grow to more than \$200 billion in 2020 (IDC, 2015) and in Australia, demand for data scientists is far outstripping supply.

FARM THE FUTURE

Agriculture and food
Jobs: Agricultural/environmental scientist, agricultural advisor/manager/consultant, agronomist, food scientist, food microbiologist, food quality assurance officer
Study: Environmental studies, soil science, agribusiness, food science

From the farm to our plates: the complete agricultural supply chain provides more than 1.6 million jobs to Australians, and the food industry accounts for about 15 per cent of all jobs. There's currently a huge demand for agricultural science graduates, with six jobs available to every graduate (University of Sydney, 2017).

SCAN THE SKIES

Astronomy
Jobs: Astronomer (in observatories, universities, and research organisations such as CSIRO and CAASTRO), science presenter (in museums)
Study: Astronomy, physics, computer science, mathematics

The sky's the limit for Australian astronomers. We're at the forefront of the industry, playing a huge role in the construction of the next-generation radio telescope with the international Square Kilometre Array organisation, which will be used to make ground-breaking discoveries about the universe. Astronomers also gain skills that are translatable across climate science, data analytics, engineering and much more.

WANT MORE?

This *Careers with Science* poster is part of the *Careers with STEM* series – mags, online articles and videos on the hottest jobs in science, technology, maths and engineering (STEM). Go to CareerswithSTEM.com to find more career ideas and browse hundreds of cool study options.

CAREERS WITH STEM.COM

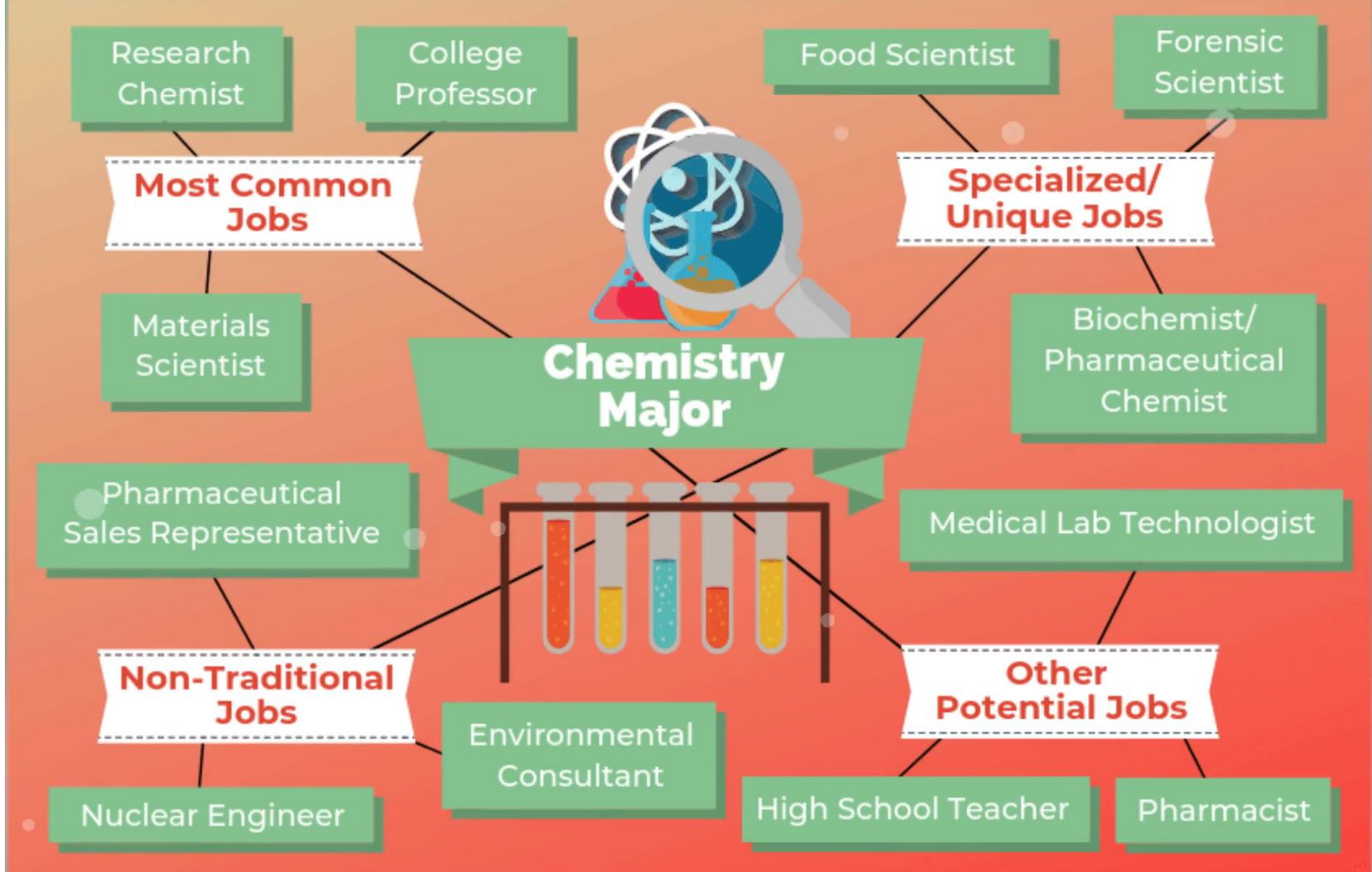
DISCOVER MORE CAREERS WITH SCIENCE! VISIT CAREERSWITHSTEM.COM FOR INSPIRING STORIES, AMAZING PEOPLE, INTERACTIVE QUIZZES AND MORE.

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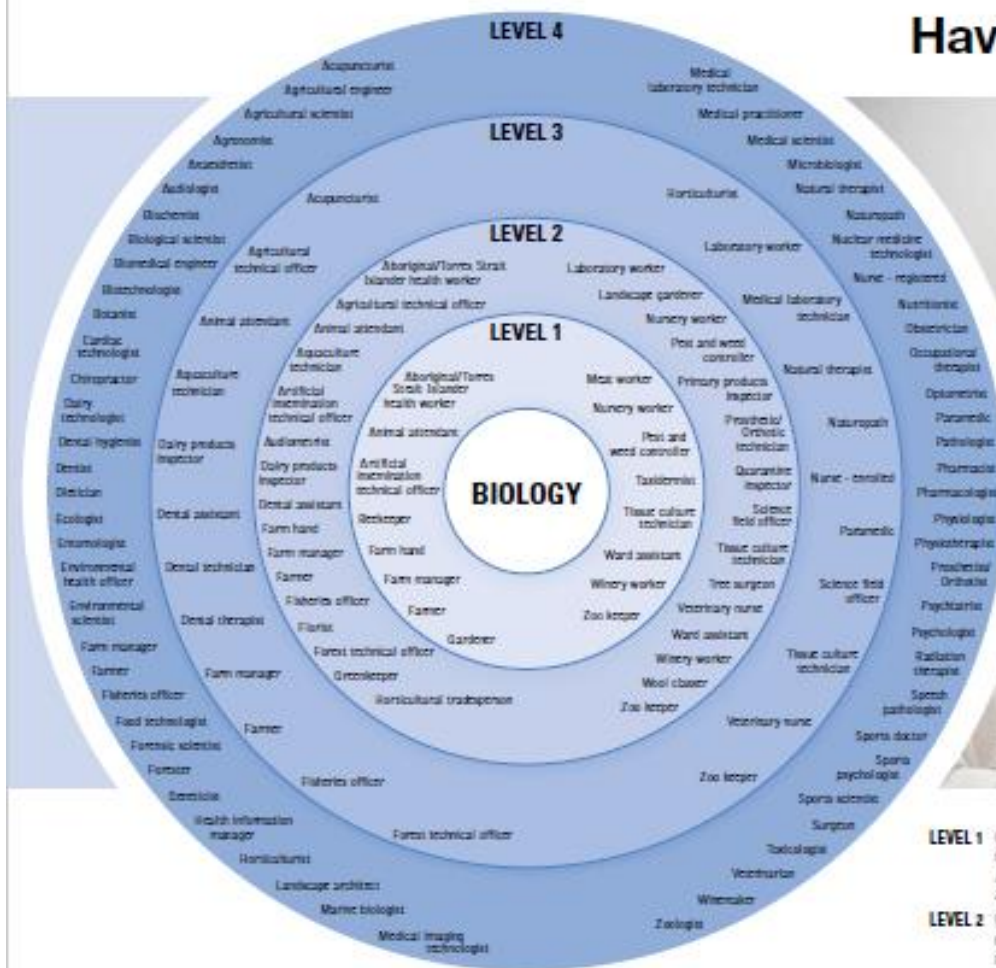
DIGITAL TECHNOLOGIES HUB

Educator Services Australia

REFRACTION



Have you considered the occupations below?



LAURA - Studying Neuroscience

I'm currently at university, studying for a career in neuroscience. At school I enjoyed studying human biology, and was always fascinated by the human mind. I was particularly interested in the psychological and philosophical aspects of how the mind works. This fascination drew me to studying a double degree at university, combining psychology and physiology from the sciences, with philosophy and politics from the arts. This combination of disciplines has given me a strong foundation of knowledge upon which to build in my upcoming postgraduate study.



JONATHAN - Medical scientist

At school I was very interested in science, particularly biology. I didn't really have the opportunity to study biology as a distinct subject in my final years at high school, but the interest always remained. When it came time to apply for university, I examined science degrees with a focus on biology, deciding on a Bachelor of Science, with a major in medical science. The first year of this degree gave me the opportunity to sample a range of disciplines, before selecting specialisations for later study. I'm now a medical scientist in a hospital laboratory, specialising in microbiology. Every day is like solving a puzzle as I help diagnose what is causing an illness, so that patients get the right treatment.

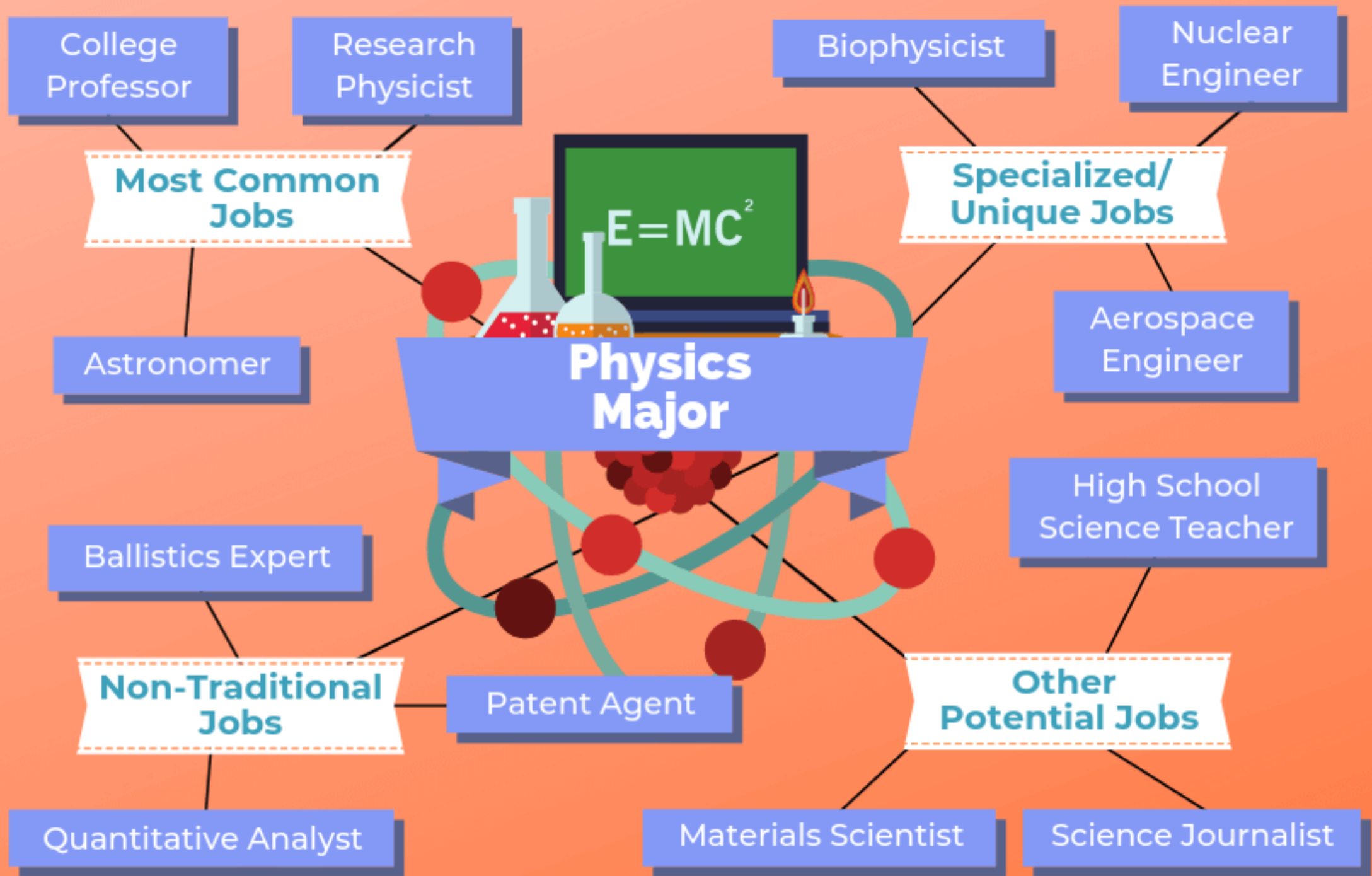
LEVEL 1 Completion of Year 10, Senior Secondary Certificate of Education, Certificate I or II. Australian Apprenticeships may be offered at this level.

LEVEL 2 Certificate III or IV or at least three years relevant experience. Australian Apprenticeships may be offered at this level.

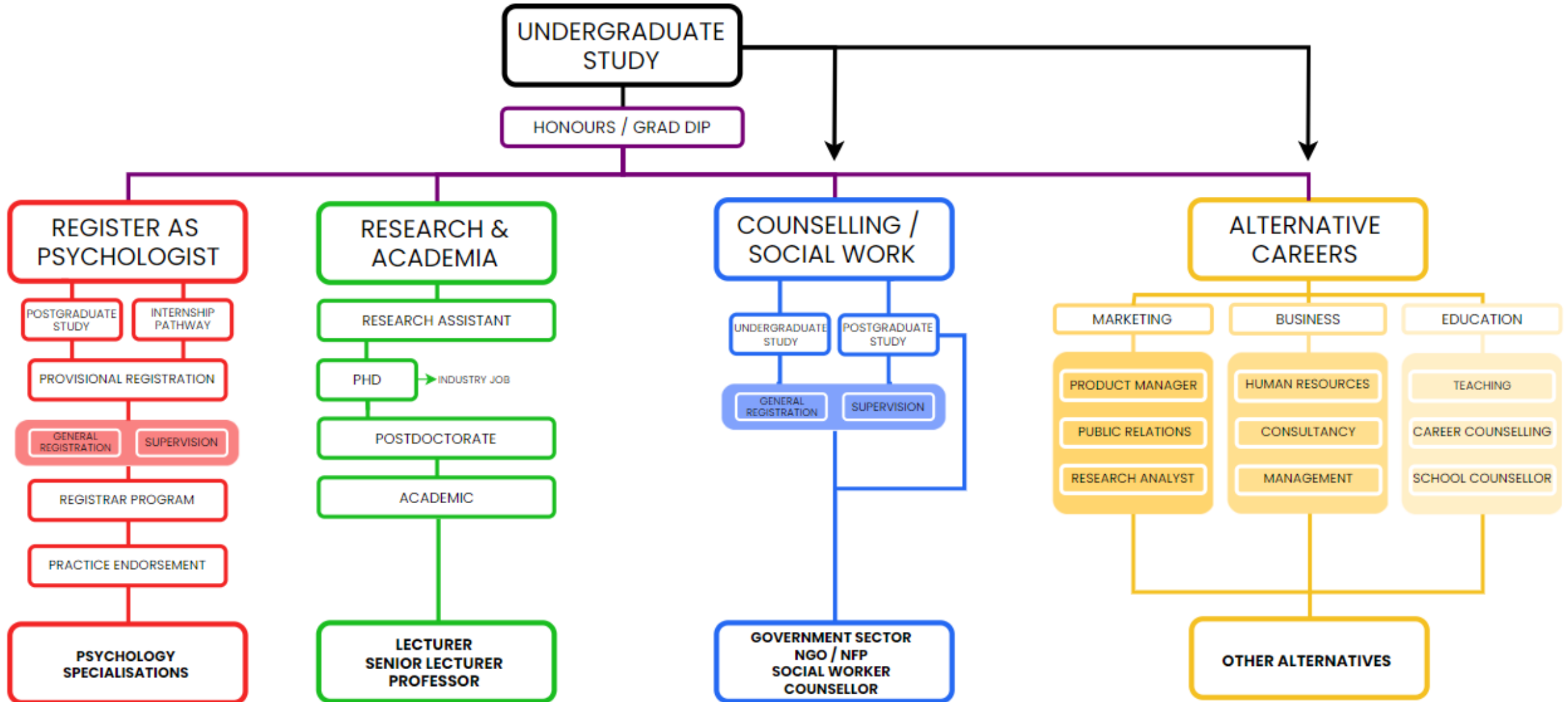
LEVEL 3 Diploma or Advanced Diploma. Study is often undertaken through TAFEs or Registered Training Organisations. Some universities offer studies at this level.

LEVEL 4 Usually requires the completion of a Bachelor Degree or higher qualification. Study is often undertaken at university.





POSSIBLE PATHWAYS INVOLVING PSYCHOLOGY



Further Questions



If you have any questions please contact *Rheanna Lang* - Science Learning Area Leader
Rheanna.lang@education.vic.gov.au

Other resources:

VCAA Study Designs

- Biology <https://www.vcaa.vic.edu.au/curriculum/vce/vce-study-designs/biology/Pages/Index.aspx>
- Chemistry <https://www.vcaa.vic.edu.au/curriculum/vce/vce-study-designs/chemistry/Pages/Index.aspx>
- Physics <https://www.vcaa.vic.edu.au/curriculum/vce/vce-study-designs/physics/Pages/Index.aspx>
- Psychology <https://www.vcaa.vic.edu.au/curriculum/vce/vce-study-designs/psychology/Pages/Index.aspx>

VTAC Guides

- Year 11 - <http://vtac.edu.au/y11guide.html>
- Year 12 - <http://vtac.edu.au/y12guide.html>

