

Prof Emma Ryan-Weber

Discipline coordinator for the Bachelor of Science: Astronomy & Astrophysics Major



Lecturer/Convenor for

- Earth Moon Mars & Beyond
- From Stars to Black Holes
- Grand Challenges in Science

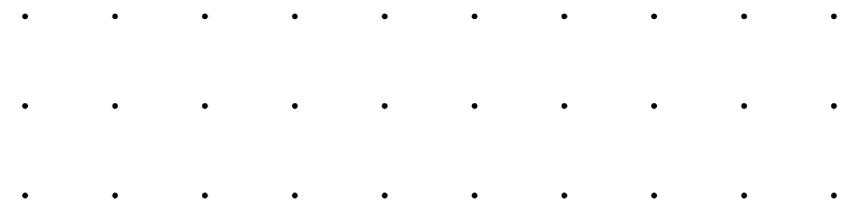
Research group leader 'Intergalactic Medium'

Former Director of Centre of Excellence ASTRO 3D

Fun Facts!

Emma discovered a galaxy called Leo T and detected the oldest carbon in the Universe.

Email **Emma** with any questions: eryanweber@swin.edu.au



Why Science at Swinburne?

- Research projects supervised by world-leading scientists
- Industry relevant skills
- Small, hands-on, in person classes



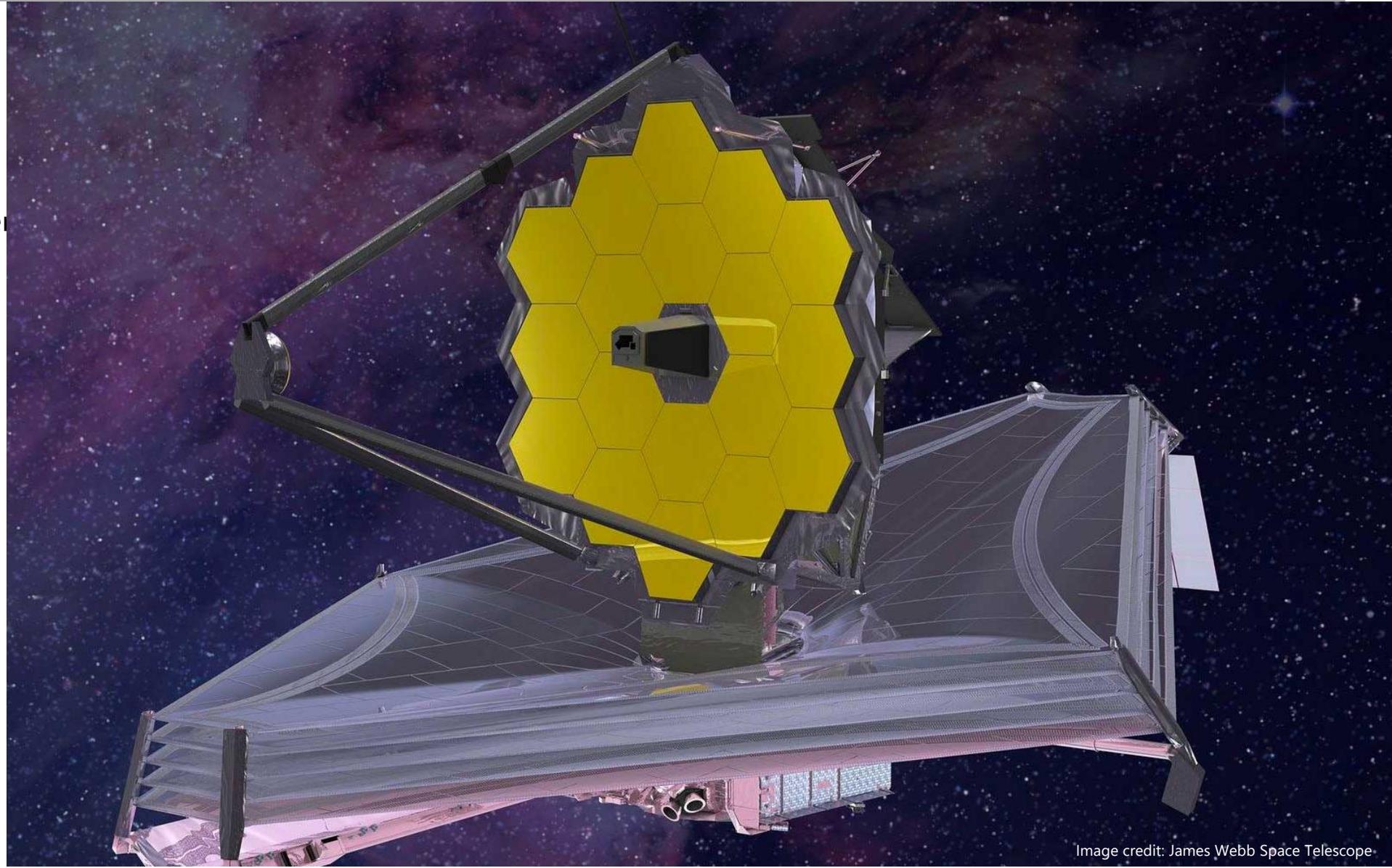
Why Astronomy & Astrophysics at Swinburne?

- Swinburne is the **largest employer of research Astronomers in Victoria.**
- A **global reputation** for outstanding research in Astrophysics
- We have taught the Physics Major with Astronomy units since 2015
- Undergrad students use our **in-house Supercomputer**
- Undergrad projects using Keck and the James Webb Space Telescope (**JWST**)
- Swinburne graduates more Astrophysics PhDs than any other University in Australia



What kind of student may be interested in this major?

- Always been fascinated by Astronomy & Space
- Looking for a technical career that involves research and problem solving



Courses



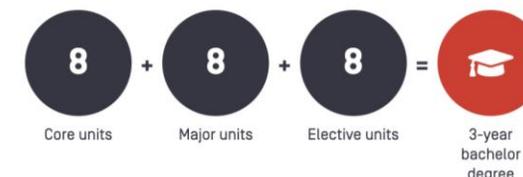
| Course | Guaranteed ATAR | Early Entry Program |
|---|-----------------|---------------------|
| Bachelor of Science | 65 | ✓ |
| Bachelor of Science (Professional) | 75 | ✗ |
| Bachelor of Engineering (Honours)/Bachelor of Science | 75 | ✓ |
| Bachelor of Science/ Bachelor of Applied Innovation | 65 | ✓ |
| Bachelor of Arts/Bachelor of Science | 65 | ✓ |
| Bachelor of Health Science/Bachelor of Science | 65 | ✓ |
| Bachelor of Laws/Bachelor of Science | 80 | ✗ |
| Diploma of Science (UniLink) pathway only | 40 | ✗ |

- VCE Units 3 and 4 – a minimum study score of 20+ in any English (except EAL) or 30 in English as an Additional Language (EAL) or equivalent.
- VCE Units 3 and 4 - a minimum study score of 20 in any Mathematics or equivalent
- Vice-Chancellor's Excellence Scholarship 2026 ATAR 95+ applied automatically \$5k per year + \$2k for study abroad.
- EARLY ENTRY: school recommendation + specific study score requirements

Bachelor of Science

3 Years Full Time – Hawthorn Campus

→ **Experiential** learning meets industry-relevant skills in the **Bachelor of Science**. With guaranteed industry experience, lab access in your first year and small, hands-on classes, you'll be using the tools of your field and building a tightknit cohort from day one.



→ **Available Majors**

- Applied Mathematics
- Astronomy and Astrophysics
- Biochemistry
- Biotechnology
- Chemistry
- Environmental Science
- Physics
- Space Technology

65

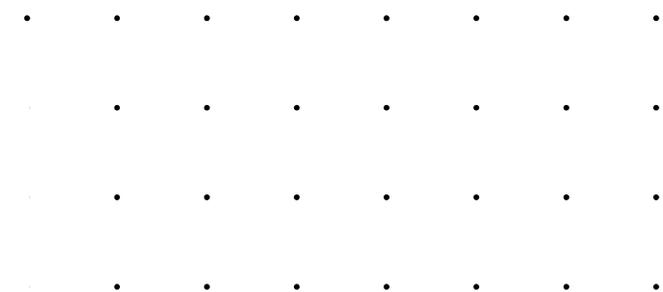
ATAR Guaranteed Entry Score for 2026

20

VCE English (Units 3 and 4)

20

VCE Maths (Units 3 and 4)



Bachelor of Science



Bachelor of Science with a major in *Astronomy & Astrophysics* - 2027 intake

| | | Semester 1 | | Semester 2 | |
|--------|---|---------------------------|--------------------------------------|---------------------------------|--|
| Year 1 | Earth, Moon, Mars and Beyond | Calculus and Applications | Concepts of Biology | Linear Algebra and Applications | |
| | Chemistry | Energy and Motion | Sustainability Challenges in Science | Discovering the Universe | |
| Year 2 | Astrobiology and the Origins of Life | elective | Societal Challenges in Science | Introduction to Supercomputing | |
| | Galaxies and their Place in the Universe | elective | elective | elective | |
| Year 3 | Cosmology and the Large-Scale Structure of the Universe | elective | Grand Challenges in Science | Research Skills in Astrophysics | |
| | elective | elective | From Stars to Black Holes | elective | |



Recommended major combinations

Bachelor of Science with a **double major** in Astronomy & Astrophysics and **Physics**

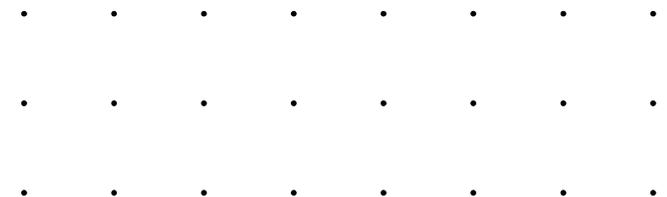
Bachelor of Science with a major in Astronomy & Astrophysics and **co-major in Space Technology**

Also available as minors:

- Astronomy
- Physics
- Space Technology

Also available as Advanced Minors:

- Astrophysics
- Space Technology



Bachelor of Science (Professional)

4 Years Full Time – Hawthorn Campus

→ **Discover** the expertise of leading teachers, state-of-the-art facilities and a broad selection of science majors to suit your ambition. Practically apply your knowledge and learn on the job as you work as a scientist for a whole year – and get paid for it – with a **12-month work placement**.



→ **Available Majors**

- Applied Mathematics
- Astronomy and Astrophysics
- Biochemistry
- Biotechnology
- Chemistry
- Environmental Science
- Physics
- Space Technology

75

25

25

ATAR Guaranteed Entry Score for 2026

VCE English (Units 3 and 4)

VCE Maths (Units 3 and 4)

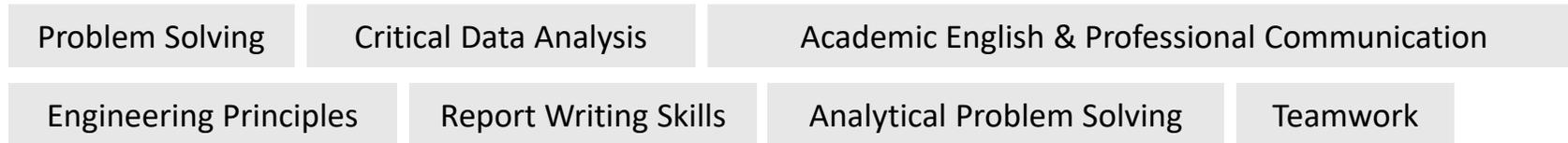


Diploma of Science (UniLink)



8 Months Full Time – Hawthorn Campus

- **Develop** research, problem-solving and teamwork skills while gaining practical experience in data modelling, computer-based analysis, and laboratory techniques aligned with industry needs.
- **Alternative pathway** into the Bachelor of Science.
- **Skills you'll learn**



40

ATAR Guaranteed Entry Score for 2026

20

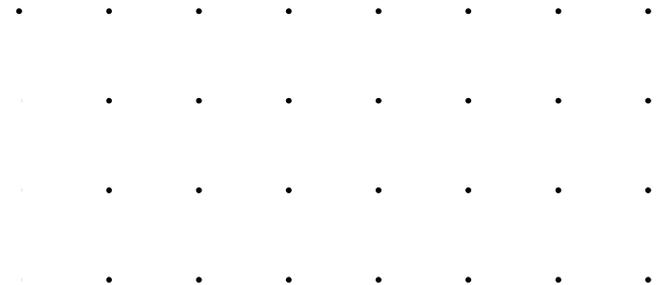
VCE English (Units 3 and 4)

20

Any VCE Maths (Units 3 and 4)

VCE

Successful completion of Victorian Certificate of Education (VCE)



Professional Placement

12-month work placement paid

[Defence Science and Technology Group](#)

Gain valuable work experience in our Industry Experience Placement Program

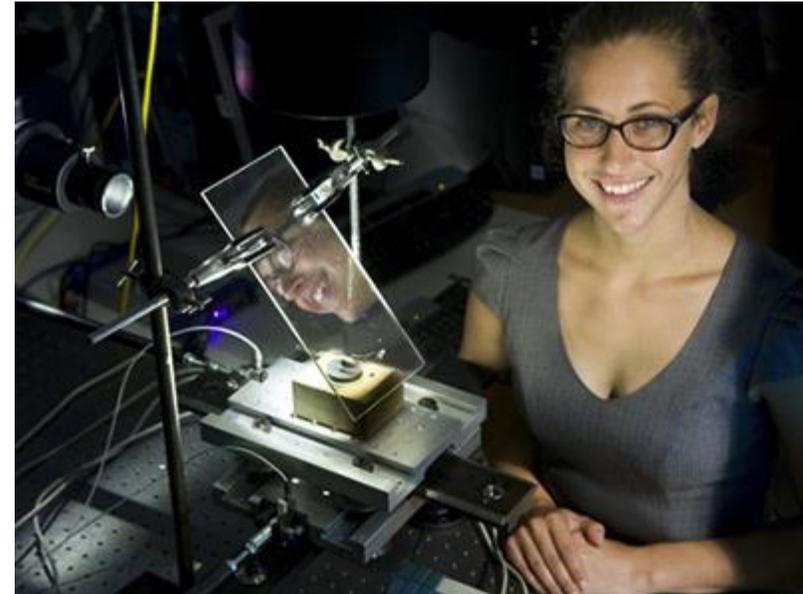
Industry Experience Placements (IEP) provide university students enrolled in a Science, Technology, Engineering and Mathematics (STEM) degree the opportunity to complete their Work Integrated Learning (WIL) programs.

These paid placements are for periods of 12 months and students will get hands on experience with real Defence research projects, work to solve problems and support Australia's national security.

Placement opportunities are at DSTG Edinburgh (South Australia), and DSTG Fishermans Bend (Victoria).

Benefits

Salary of \$61,363 +15.4% superannuation



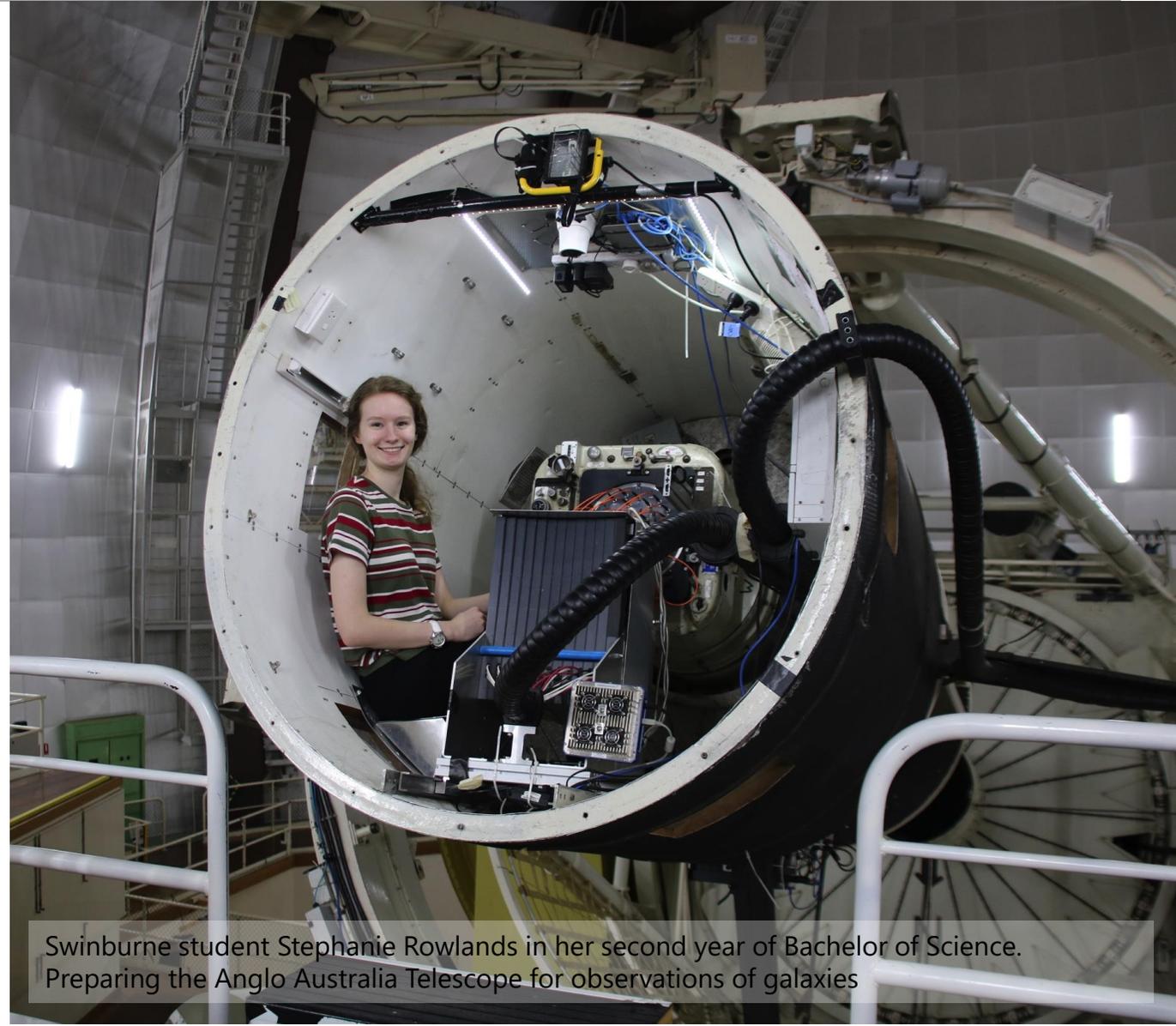
Work Integrated Learning

Internships

- Part-time over one semester (1-2 days per week up to approximately 140 hours total).
- Paid & unpaid
- Counts towards your degree

Research Student Scholarships

- Summer/Winter Vacation Research Scholarship
- Paid research experience
- Great for your CV!



Swinburne student Stephanie Rowlands in her second year of Bachelor of Science. Preparing the Anglo Australia Telescope for observations of galaxies

Career opportunities & some examples of employers

Two main career outcomes

- Astrophysics graduates are highly sought after in **data science**, climate, biomedical, energy, technology, finance and space **industries**.

Employers:

Government (BOM, ATO)
Consulting (Deloitte, EY Space Lab)
Energy (Bluevision)
Medical (CSL)

- Research Astrophysicist

Honours (1 yr)

PhD (3-4 yr paid stipend)

Employers:

CSIRO
Square Kilometre Array Observatory
University researcher
NASA

Student Panel



Jack

Bachelor of Science – major in Physics and Space Technology
University High School

Tahlia

PhD in Astrophysics
Bachelor of Science (Honours) – major in Chemistry, advanced minor in Astrophysics
Catholic College Sale

Rudra

Bachelor of Science – major in Physics
Alphington Grammar

