

^ Supernova 1987A in different wavelengths. Credit: Toby Potter

## WHY STUDY ASTRONOMY & ASTROPHYSICS IN WA?

Western Australia offers pristine environments for radio astronomy and the study of the sky. National and international astronomy projects are currently under construction in WA, including the Murchison Widefield Array (MWA) and the Australian Square Kilometre Array Pathfinder (ASKAP). WA is also the future joint host of the world's largest science experiment, the Square Kilometre Array (SKA) radio telescope.

By studying Astronomy and Astrophysics or related Computer Science or Engineering in Western Australia you will become part of the fast growing, internationally recognised, community of astronomers, computer scientists and engineers at ICRAR who are working with the world on these and many other projects. You will have the opportunity to work with researchers who are helping shape the future of astronomy and conducting research on a wide variety of areas in both optical and radio astronomy, as well as astronomy engineering and information and communication technologies (ICT) or computer science.

You can study Astronomy and Astrophysics with ICRAR at either Curtin University or The University of Western Australia.

## STUDY AT CURTIN

### DEGREE

Bachelor of Science with a major in Physics

### FACULTY/ DEPARTMENT

Science and Engineering/Imaging and Applied Physics

### DURATION

3 years/4 years with honours

### PREREQUISITES

Mathematics, Physics and English

### STRUCTURE

Each year you will study Astronomy and Physics units, along with Computer Science and Mathematics courses in 1st and 2nd year. In 3rd year you will choose optional units in addition to Maths and Physics. Once you have completed three years, you can choose to further your study with an honours research project.

### FURTHER INFORMATION

Refer to the course handbook online at:  
[futurestudents.curtin.edu.au](http://futurestudents.curtin.edu.au)

## STUDY AT UWA

### DEGREE

Bachelor of Science with a major in Physics

### FACULTY/DEPARTMENT

Life and Physical Sciences/Physics

### DURATION

3 years/4 years with honours/5 years with masters

### PREREQUISITES

Mathematics/Mathematics Specialist, Physics and English

### STRUCTURE

You will gain a thorough grounding in Physics and Mathematics, as well as basic Astronomy and Astrophysics in the early years of your degree. In third year the focus shifts strongly to courses in Astronomy and Astrophysics. Once you've completed the three year degree, you can choose to further your study with an honours research project or a Masters of Science.

### FURTHER INFORMATION

Refer to the course handbook online at:  
[www.studyat.uwa.edu.au](http://www.studyat.uwa.edu.au)



ICRAR's research is grouped into three overall themes: radio astronomy, radio astronomy engineering and data intensive science. These themes are further broken down into specific areas of research, such as designing computing systems for next-generation radio telescopes, prototyping new radio antenna designs and investigating the neutral hydrogen Universe.

## ADVANCED STUDY

Students at the honours and postgraduate level at either Curtin University or The University of Western Australia have the opportunity to study combined courses over both nodes on advanced topics in astronomy and astrophysics. The unique nature of these combined courses allows you to meet and learn from more of ICRAR's international researchers.

## STUDENTSHIPS

ICRAR offers a summer studentship program which provides an excellent opportunity for later year undergraduate students to experience current research in astronomy, astrophysics, engineering and ICT. Students work on a project with an ICRAR researcher over 10 weeks. For further details and past projects see:

[www.icrar.org/studentships](http://www.icrar.org/studentships)



## WHY STUDY RADIO ASTRONOMY ENGINEERING IN WA?

Radio astronomy engineering develops high levels of system engineering, problem solving and advanced design skills. With a high demand for graduates, you could end up working in the fields of radio astronomy, wireless networks, satellite communications, high speed data transport and high performance computing.

ICRAR offers students unique opportunities to pursue their interest in radio astronomy engineering. You can either study Electronics and Communications Engineering at Curtin University, with optional subjects and project work oriented towards radio astronomy or a double degree incorporating a variety of Engineering options (including Electronics and Communications Engineering), and Physics (with an Astronomy major).

## STUDY AT CURTIN UNIVERSITY

### DEGREE

Bachelor of Engineering (Electronics and Communications Engineering) alone or combined with Bachelor of Science (Physics)

### FACULTY/ DEPARTMENT

Science and Engineering /Electrical and Computer Engineering

### DURATION

4 years (with or without honours) for B. Eng. or 5 years when combined with a B.Sc.

### PREREQUISITES

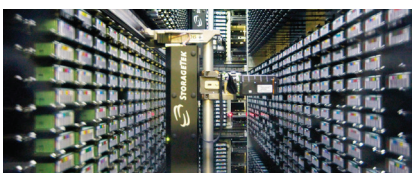
English and 3 from: Mathematics, Mathematics Specialist, Physics or Chemistry.

### STRUCTURE

This accredited B.Eng. course offers a strong grounding in Computer and Electrical Engineering, specialising in Electronic and Communication Engineering from the third year. You also complete at least 12 weeks of engineering work experience, which can be in radio astronomy engineering. Throughout your course you can also incorporate radio astronomy projects and astronomy-related course options with ICRAR. Double-degree students add a variety of physics/astronomy options similar to the B.Sc. (Astronomy) (see reverse).

### FURTHER INFORMATION

Refer to the course handbook online at: [futurestudents.curtin.edu.au](http://futurestudents.curtin.edu.au)



ICRAR and Australia's commitment to radio astronomy, radio astronomy engineering and ICT is stronger than ever.

Three of the WA Premier's Research Fellows are based in radio astronomy at ICRAR and we also have the only Professor of Radio Astronomy Engineering in Australia, as well as a professorship in radio astronomy ICT.

## HAVE A PASSION FOR COMPUTING?

Astronomy, and radio astronomy in particular, is fast becoming an ICT centric science. Astronomers with technical ICT skills, or ICT researchers with an astronomy background, are in increasing demand to work on the challenges facing large-scale astronomy projects.

Both Curtin and UWA offer courses in ICT and Computer Science which can be combined with astronomy at ICRAR through undergraduate research projects and summer studentships. ICRAR also offers ICT based honours and postgraduate study opportunities with our researchers. Areas include high performance computing, data visualisation, astronomical simulations and GPU programming.

## WANT TO START A CAREER IN ASTRONOMY OR RELATED FIELDS?

If you complete an honours thesis as part of your undergraduate program, you would normally start your research training with a PhD. Students without honours can transition to a PhD through study at the Masters level. ICRAR offers study in Astronomy and Astrophysics (Curtin and UWA), Radio Astronomy Engineering (Curtin) and ICT Astronomy (UWA) at the Masters and PhD levels.