

ASTR1001

Astrophysics

This course is designed for students who learn about modern astrophysics. It covers:

- 1) The greatest unsolved mysteries of the universe, including dark matter, dark energy, quasars and life in space.
- 2) Exoplanets – how they are discovered, their properties and how they are challenging our understanding of solar systems.
- 3) The Violent universe – white dwarfs, neutron stars, special relativity and black holes.
- 4) Cosmology – the Big Bang, nature of space and time, observational cosmology, Inflation, entropy of the universe and ultimate fate of the universe.

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| Mode of Delivery | <p>This course is delivered through four MOOCs on edX that comprise the XSeries certificate 'Astrophysics':</p> <p>ANU-ASTRO1x Greatest Unsolved Mysteries of the Universe https://studio.edx.org/course/course-v1:ANUx+ANU-ASTRO1x+2T2017</p> <p>ANU-ASTRO2x Exploring Exoplanets https://studio.edx.org/course/course-v1:ANUx+ANU-ASTRO2x+2T2017</p> <p>ANU-ASTRO3x The Violent Universe https://studio.edx.org/course/course-v1:ANUx+ANU-ASTRO3x+2T2017</p> <p>ANU-ASTRO4x Cosmology https://studio.edx.org/course/course-v1:ANUx+ANU-ASTRO4x+2T2017</p> |
| Prerequisites | <p>High school maths and physics</p> <p>This course is only available to students enrolled in a degree at a MOOC for Credit Alliance partner.</p> |
| Course Convener | Dr Paul Francis |
| Contact | inbound.global@anu.edu.au |
| Course Level | Introductory |
| Course Value | 6 units (7.5 ECTS, 130 hours workload including self-study time) |
| Maximum Number of Students | 40 |

COURSE OVERVIEW

Learning Outcomes

- 1) Describe and explain the key issues in modern astrophysics.
- 2) Be able to analyse and interpret astronomical data, including images, spectra, data tables and charts.
- 3) Use physics and maths, including energy balance and circular motion, to estimate and explain a wide variety of astronomical phenomena
- 4) Be able to apply the techniques in this course to solve problem in unfamiliar contexts.

Assessment Summary

| Assessment Task | Value | Date | Permitted Material or Equipment | Notes |
|---------------------------------------------------------------|-------|---------|---------------------------------------------------------------------------------------------------------------------------|-----------------------|
| 1. Online quizzes | 50% | | All materials permitted; open book. | Completed through edX |
| 2. Final, in person proctored examination at home institution | 50% | TB C | Calculator (programmable OK), Dictionary, One A4/US Letter page of notes (handwritten or printed) on both sides of paper. | Hurdle Assessment |

The final examination will be **3** hours and proctored at a student's home institution. The final examination is a hurdle assessment which means students must pass this assessment to pass the course.

If students are unable to sit a final examination due to extenuating and unanticipated circumstances they may be able to sit a deferred examination. Information on the criteria and application process is available from <http://www.anu.edu.au/students/program-administration/assessments-exams/deferred-examinations>

Policies

ANU has educational policies, procedures and guidelines, which are designed to ensure that staff and students are aware of the University's academic standards, and implement them. You can find the University's education policies and an explanatory glossary at: <http://policies.anu.edu.au/>

Students are expected to have read the [Academic Misconduct Rule](#) before the commencement of their course. You may wish to familiarise yourself with our Student Assessment (Coursework) policy and procedure.

Additional course costs

There are no additional course costs.

ANU GRADING SCALE

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|-----------------|--------|-------------------------------------|
| HD | 80-100 | High Distinction |
| D | 70-79 | Distinction |
| CR | 60-69 | Credit |
| P | 50-59 | Pass |
| PS | 50 | Pass at a supplementary examination |
| N | 0-49 | Fail |
| NC N | | Not completed/Fail |
| WD | | Withdrawn without failure |
| WN | | Withdrawn with failure |

SUPPORT FOR STUDENTS

The University offers a number of support services for students. Information on these is available online from <http://students.anu.edu.au/studentlife/>

OTHER INFORMATION

To enrich the portfolio of students ANU and other leading universities started the Credits for MOOCs project. Students are able to benefit from the available MOOCs offered by experts in the field by incorporating these MOOCs in their study programme.