PHYC30019 Astrophysics

Credit Points:	12.5
Level:	3 (Undergraduate)
Dates & Locations:	2016, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.
Time Commitment:	Contact Hours: 2 to 4 hours per week, 36 in total, lectures and problem-solving classes Total Time Commitment: Estimated total time commitment of 170 hours
Prerequisites:	Physics One of **Subject** / **Study Period Commencement:** / **Credit Points:** PHYC20010 Quantum Mechanics and Special Relativity — Semester 1 — 12.50 PHYC20011 Electromagnetism and Optics — Semester 2 — 12.50 PHYC20009 Thermal and Classical Physics — Semester 1 — 12.50 PHYC20005 Quantum Mechanics & Thermal Physics — Not offered 2016 — 12.50 **And Mathematics** **Subject** / **Study Period Commencement:** / **Credit Points:** MAST20009 Vector Calculus — Semester 1, Semester 2 — 12.50 And at least one of **Subject** / **Study Period Commencement:** / **Credit Points:** MAST10009 Accelerated Mathematics 2 — Semester 2 — 12.50 MAST20026 Real Analysis — Semester 1, Semester 2 — 12.50 MAST20030 Differential Equations — Semester 2 — 12.50
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry. It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: http://services.unimelb.edu.au/disability
Coordinator:	Prof Rachel Webster

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Subject Overview:	This subject provides an introduction to astrophysics discussing the basic structure of stars, our galaxy, and the universe and introducing the most recent research questions. Topics covered include: # structure and evolution of stars, degenerate stars, black holes, the structure of the Milky Way and other cosmic objects, emission processes in astrophysics, high energy astrophysics, relativistic cosmology and cosmological models
Learning Outcomes:	To challenge students to expand their knowledge of fundamental astrophysical principles and develop their capacity to: # explain the structure and evolution of stars, the Milky Way and other cosmic objects and cosmological models; # explain the physics underlying emission processes in astrophysics, high energy astrophysics and cosmology, and # demonstrate an understanding of emission processes, degenerate stars, black holes, accretion processes and relativistic cosmology; # solve problems relevant to these topics.
Assessment:	3 x 1500 word equivalent written assignments, written in groups of 2-3; due in Weeks 4, 8 and 11 (each assignment will be the outcome of 4 x1-hour problem workshops in each of these weeks)(30%) 3 hour examination; held in examination period (70%) Attendance of at least 9 of the problem workshops held in Weeks 4, 8 and 11 (hurdle requirement)
Prescribed Texts:	Dan Maoz, Astrophysics in a Nutshell, Princeton University Press, 2007
Breadth Options:	This subject potentially can be taken as a breadth subject component for the following courses: # **Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2016/B-COM)** # **Bachelor of Environments (https://handbook.unimelb.edu.au/view/2016/B-ENVS)** # **Bachelor of Music (https://handbook.unimelb.edu.au/view/2016/B-MUS)** You should visit **learn more about breadth subjects (http://breadth.unimelb.edu.au/breadth/info/index.html)** and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	A student who completes this subject should be able to: # analyse how to solve a problem by applying simple fundamental laws to more complicated situations; # apply abstract concepts to real-world situations; # solve relatively complicated problems using approximations; # participate as an effective member of a group in tutorial discussions; # manage time effectively in order to be prepared for tutorial classes, undertake written assignments and the examination, and prepare and give a group presentation.
Notes:	This subject is available for science credit to students enrolled in the BSc (both pre-2008 and new degrees), BASc or a combined BSc course.
Related Majors/Minors/ Specialisations:	Physics Physics Physics Physics Physics (specialisation of Physics major) Science-credited subjects - new generation B-SCI and B-ENG.