

DEPARTMENT OF PHYSICS AND ASTRONOMY

PHY404	Star Formation and Evolution
Autumn	10 Credits
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Outline Description	The module will cover advanced astrophysics topics involving observations and theory of star and planet formation, plus the evolution of low, intermediate and high mass single stars, close binary evolution including their end states (white dwarfs, neutron stars, black holes), supernovae and gamma ray bursts.
Restrictions	
Prerequisites	A minimum of 20 credits from PHY213, PHY229, PHY232, PHY305 and PHY320
Co requisites	
Approx Time allocation (hours)	Examination 2 hours, 20 hours lectures, 78% independent learning
Assessment (%)	Examination 80%, coursework 20%
Aims	This unit aims to... 1. present an overview of various aspects of research-level astrophysics, involving star and planet formation, star clusters, single star evolution, binary evolution, supernovae and gamma ray bursts. 2. develop students appreciation of how different contemporary astrophysics topics are intimately related, such as how the products of stellar evolution affect the chemical composition of galaxies, itself impacting upon subsequent stellar evolution, 3. strengthen and reinforce material delivered during formal lectures via research into aspects of star formation/evolution.
Outcomes	By the end of the unit, a student will be able to demonstrate the ability to, the capability for... 1. describing a basic understanding of star formation, with an focus upon both low and high mass stars, and the observed form of the initial mass function; 2. demonstrate an understanding of the formation of planets and brown dwarfs; 3. describing the evolutionary phases of low, intermediate and high mass stars, including the role played by close binary evolution.
Recommended Books	Introduction to Star Formation (Ward-Thompson & Whitworth, CUP) http://www.cambridge.org/us/academic/subjects/astronomy/astrophysics/introduction-star-formation?format=PB Introduction to the Sun and Stars (Green & Jones, CUP) http://www.cambridge.org/us/academic/subjects/astronomy/astrophysics/introduction-sun-and-stars-2nd-edition?format=PB
Syllabus	
Academic Notes	Core for PHYU11 and PHYU25 Physics & Astrophysics

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	Optional for PHYU02, PHYU16, PHYU19, PHYU23 and PHYU24
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