Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

From Planets to the Cosmos

Module Coordinator	**Dr Neale Gibson, School of Physics**
What will you learn from this Elective?	There are a number of learning aims of this "From Planets to the Cosmos" module: <u>Current & past issues</u>: Students will be exposed to the discoveries of the long history of Astronomy and how our view of the Universe and of ourselves has changed over time, e.g. with the discovery of thousands of worlds around other stars. <u>Exposure to new domains of knowledge</u>: The module will provide an introduction that will enable the understanding of the basic facts, principles, theories, and methods of modern Astronomy. Additionally, students will understand our place in the Universe (the big picture) and the local Irish connection to the wider international Astronomical community. <u>Reflection and critical thinking</u>: Students will learn key events in the development of modern Astronomy and recognize that science is an evolving body of knowledge. Students will be able to reflect on how our view of the Universe has changed, particularly in the last few decades, and be able to critically evaluate the current ideas, particularly in the light of incomplete data or assumptions. Students will also be able to present the results of these reflections in the small group presentations. <u>Foster reflection and engage in diverse groups</u>: As noted above, students will be given a small presentation project which they will work on and present in class in small groups, and hence be actively encouraged to engage with peers from across College as well as develop communication skills. Finally, this Trinity Elective will address the potential of Astronomy to address problems of the contemporary world, in particular our sustainable planet.
Student Workload	This is a web-facilitated module, where students will have a workload of 22 contact hours, about 30 hours of online learner-centred assessment, and 70 hours of self-learning activities. • Students will be provided with notes in advance to encourage engagement with module content before lectures. • Students will be provided with online material to clarify / enhance sections (e.g., provision of maths background / breakout sections where appropriate) • Students will engage in a small-group project (5-10 students/group).

	• Students may have the opportunity to visit an Irish observatory, such as Dunsink.
Assessment Components	This module will be 100% continuous assessment. Below we describe how the module will be broken into three components: 1. Online mid-course assignment, which provide students with feedback (20% of final mark). 2. Small group project (10% of final mark), where students will research a modern topic in Astronomy with 5-10 peers and present the results to their peers as a video or poster. 3. Online final assignment, assessing all aspects of the course (50 % of final mark).
Indicative Reading List	• Astronomy: A beginner's guide to the Universe, Chaisson & McMillan (Note: e-text available with Mastering Astronomy subscription) • Bennett, Donoghue, Schneider, Voit, "The Essential Cosmic Perspective" 8th edition (Note: e-text available with Mastering Astronomy subscription) • The Cosmos: Astronomy in the new millennium, Pasachoff & Filipenko
Learning Outcomes	On successful completion of this module, students should be able to describe and interpret the basic facts, principles, theories, and methods of modern Astronomy, examine which are of importance for a given problem, and be able to critically assess and apply this knowledge to understand the relevance of astronomy in the modern world. In particular, on successful completion of this module, students should be able to: 1. Describe our place in the Universe from our Solar System to the largest scales and be able to discuss how this influences our view of ourselves, e.g. the uniqueness or otherwise of our home planet and life; 2. Be able to reconstruct the important key events in the history of Astronomy and critically discuss why science is a creative and evolving body of knowledge; 3. Be able to select and evaluate key evidence that supports or challenges our explanations for the physical nature of stars, galaxies, and the cosmos and justify that choice. 4. Explain the relevance of Astronomy and technology to address problems of the contemporary world, e.g. climate change, and apply their knowledge to solving a physical problem related to climate change.