



Frontiers of **PHYSICS**

Course Overview



Explore the potential for life in the universe and the most recent scientific discoveries within this area. Students journey through the Universe where they explore the phenomenon of black holes, quasars, dark matter and dark energy. We discuss how stars, the solar system and other objects are formed and link this to the likelihood of life existing on these objects.

Students will explore the latest understanding of what life is and what it needs to survive. The future of space travel, the search for intelligent life, the types of civilisations and Artificial Intelligence are also explored throughout this course. Upon completion, students will develop a rich understanding of the science behind the question of “Are we alone?”



Learning Outcomes

Throughout this course students will:

- Use technology to present a pitch to a panel of experts on a space mission of their own design;
- Work in teams or individually to develop a written proposal on a space mission of their choosing;
- Show an understanding of how stars form and make links between a star’s properties and the chance for life to exist around the star;
- Demonstrate an understanding of an exoplanet and communicate this understanding to a wider audience in a novel format;
- Explore the difficulties of communicating with intelligent life by developing their own strategy to communicate with the class through pictorial;
- Consider the difficulties associated with space travel and develop schematics for their own craft used in their mission proposal.



Homework

Students will be required to complete on average 1 hour of homework per week.



Assessment

For successful completion of this unit students will be required to submit the following tasks:

- Stellar evolution assignment;
- Exoplanet poster;
- Communicating with aliens drawing;
- Mission proposal;
- Elevator pitch