# Access to H.E.
# National Programme Unit

openawards

| Unit Title: | Astrophysics | | |
|---|---|---|---|
| Graded Unit Code: | GA33PHY22 | Ungraded Unit Code: | UA33PHY22 |
| Pathway(s): | Science and Engineering | | |
| Module(s): | Physics | | |
| Level: | 3 | Credit Value: | 6 |
| Valid from: | 1st December 2021 | Valid to: | 31/7/2026 |

**The following QAA grade descriptors must be applied if you are delivering the graded version of this unit:**

| 1 | Understanding of the subject |
|---|---|
| 2 | Application of knowledge |
| 4 | Use of information |
| 5 | Communication and presentation |
| 7 | Quality |

| LEARNING OUTCOMES | ASSESSMENT CRITERIA |
|---|---|
| **The learner will:** | **The learner can:** |
| 1. Understand how telescopes work and are used to observe astronomical objects. | 1.1 Describe the principle of an astronomical telescopes consisting of two converging lenses, reflecting and refracting telescopes, including the relative merits of each. Draw ray diagrams for image formation. |
| | 1.2 Compare and contrast the differences of radio telescopes and optical telescopes including the structure, positioning, use, resolving and collecting powers. |
| | 1.3 Evaluate the use of large diameter telescopes in observing astronomical objects. |

| LEARNING OUTCOMES | ASSESSMENT CRITERIA |
|---|---|
| **The learner will:** | **The learner can:** |
| 2.   Understand how stars are classified. | 2.1  Describe the classification of stars by their luminosity and spectral class, including the interpretation of the Hertzsprung-Russell diagram. <br><br> 2.2 Define absolute magnitude with due reference to the terms parsec and light year. <br><br> 2.3 Explain the classification of stars by their temperature with reference to black-body radiation. <br><br> 2.4 Calculate the black-body temperature of sources using Wien's displacement law. <br><br> 2.5 Use the Stefan-Boltzman Law to compare the power output (luminosity) <br><br> 2.6 Apply Wien's Law and the Stefan-Boltzman Law to classify stars. |
| 3.   Understand concepts in astrophysics and cosmology | 3.1. Describe the "timeline" of the universe as currently theorised by scientists. <br><br> 3.2. Use the doppler effect to solve calculations related to binary stars, galaxies and quasars and explain the different methods for measuring distances of stars. <br><br> 3.3. Apply Hubble's Law to interpret and explain the expansion of the universe as currently theorised by scientists. <br><br> 3.4. Explain what quasars are, including their discovery and formation. <br><br> 3.5. Explain and evaluate the methods used to detect exoplanets. |