

Nudgee Beach Environmental Education Centre in support of Senior Biology

Biodiversity and the interconnectedness of life: Senior Biology (2019 Syllabus v1.2)

This program supports completion of the mandatory field work, practical activities and the internal assessment items (IA1 & IA2) for Unit 3 (Biodiversity and the interconnectedness of life). Students will investigate and evaluate the biodiversity and ecosystem dynamics of Moreton Bay Marine Park at Nudgee Beach. To support student success this program can be run over 1 or 2 days.

In relation to assessment item IA1 students can attend a 1 day program that focuses on qualitative and quantitative data collection. This data can then be used to support the student completion of the internal data test or students can use these sampling techniques to modify and collecting of primary data for assessment item IA2 which would then be carried out on day 2.

During this field study students will;

- **Recognise** that biodiversity includes the diversity of species and ecosystems.
- **Investigation** of environmental factors limiting the distribution and abundance of species in an ecosystem
- **Use** a range of Techniques for identifying organisms (e.g. keys and field guides)
- **Determine** the diversity within a mangrove ecosystem
- **Use** sampling techniques (e.g. transects, quadrats)
- **Measure** of species richness and evenness (relative species abundance)
- **Use** a variety of appropriate technologies, such as data loggers, soil pH testing kits, inclinometers to measure canopy height and other equipment to measure abiotic factors in the field.
- **Analyse** species diversity indices, forest condition scores and abiotic data (soil pH, air temperature, soil temperature, soil moisture, humidity and light intensity) to compare ecosystems.
- **Explain** how environmental factors limit the distribution and abundance of species in an ecosystem.
- **Evaluate** the condition of the ecosystems using data collected from the field.
- **Interpretation** of data to classify and name an ecosystem
- **Evaluation** of strengths and limitations of data collection methodologies
- **Investigate** ecosystem dynamics including interactions with and between species and interactions between abiotic and biotic components of the mangrove or sandflats ecosystems.
- **Determine** diversity of species using measures such as species richness, evenness, percentage cover, percentage frequency.
- **Select and appraise** an ecological surveying technique to analyse species diversity between two spatially variant ecosystems of the same classification.

Pre-program support

During pre-program activities students will be given a base study done in Morton bay (*Mangrove habitats as nurseries*) that involves ecological sampling and analytical techniques relative to the study context (e.g. mangroves or sandflats). Students will become familiar with this study, equipment and data collection protocols maximising independent participation on program day. From this students will formulating research questions and a modified methodology that investigates the zonation plan of the Nudgee Beach section of the Moreton Bay Marine Park.

Post-program support

Students will be provided with a field study, set of primary data (qualitative and quantitative) and information that they can interpret, analysis, evaluate, extrapolate and directly apply to successfully complete a high level student assessment item.