

## Acoustic Monitoring as a Marine Conservation Tool (C003924)

Due to Covid 19, the education and assessment methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

**Course size** *(nominal values; actual values may depend on programme)*

**Credits** 5.0

**Study time** 125 h

**Contact hrs**

39.0h

**Course offerings in academic year 2021-2022**

A (semester 1)

English

Gent

**Lecturers in academic year 2021-2022**

O'Brien, Jill

GALWAY02 lecturer-in-charge

**Offered in the following programmes in 2021-2022**

**crdts**

**offering**

[International Master of Science in Marine Biological Resources\(main subject Applied Marine Ecology and Conservation \)](#)

5

A

[International Master of Science in Marine Biological Resources](#)

5

A

**Teaching languages**

English

**Keywords**

Bioacoustics, marine mammals, passive acoustics, static acoustics.

**Position of the course**

**Contents**

Underwater acoustics is the study of sound propagation through water. As sound travels much more efficiently through water cetaceans have evolved to use this mechanism for navigating, finding food and communicating. This ability allows cetaceans to carry out their normal functions irrespective of sight which would be greatly influenced by turbidity, depth and darkness. Through the study of underwater acoustics we can get an insight into cetacean occurrence and behaviour when visual observations are not possible such as during hours of darkness and during adverse weather conditions. This module will train students in the different acoustic monitoring technologies available and how to analyse and interpret acoustic datasets.

Syllabus to include:

- Introduction to underwater acoustics and bioacoustics
- How animals (marine mammals) produce sound
- Acoustic recording equipment
- Recording and analysis of underwater sound
- Interpretation of acoustic data for conservation purposes

**Initial competences**

**Final competences**

- 1 Discuss the role of acoustics in conservation.
- 2 Design acoustic surveys as components of marine conservation initiatives.
- 3 Identify appropriate equipment to meet survey objectives within environmental constraints.
- 4 Retrieve, analyse and interpret acoustic data.

**Conditions for credit contract**

Access to this course unit via a credit contract is determined after successful competences assessment

**Conditions for exam contract**

This course unit cannot be taken via an exam contract

**Teaching methods**

Seminar

**Extra information on the teaching methods**

This module utilises a case study approach, seminal research papers are evaluated and discussed by the learners. This module also uses a role play component where learners must adopt a viewpoint supported by available evidence in debate with their peers tasked with holding opposite viewpoints.

**Learning materials and price**

none

**References**

- Au, W.W.L. (1993) The sonar of dolphins. Springer-Verlag New York.
- Au, W. W. L. (1997) Echolocation in dolphins with a dolphin-bat comparison. Bioacoustics 8, 1-2, 137-162.
- Au, W.W.L. (2000) Echolocation in dolphins, in Hearing by Whales and Dolphins, edited by W.W.L. Au, A.N. Popper, and R.R. Fay (Springer New York), 364-408.
- Richardson, W.J.; Greene, C.R; Malme, C.I. and Thomson, D.H. (1995) Marine Mammals
- Noise. Academic Press, San Diego.
- Zimmer, W. 2011 Passive Acoustic Monitoring of Cetaceans. Cambridge University Press. Online ISBN: 9780511977107, Hardback ISBN: 9780521193429
- Journals and other module material will be placed on moodle by the module co-ordinator

**Course content-related study coaching**

Students experiencing difficulties should engage with course staff, or academic support units within GMIT.

**Assessment moments**

continuous assessment

**Examination methods in case of periodic assessment during the first examination period****Examination methods in case of periodic assessment during the second examination period****Examination methods in case of permanent assessment**

Oral examination, Assignment

**Possibilities of retake in case of permanent assessment**

examination during the second examination period is possible

**Extra information on the examination methods**

All assessments are formative and summative, they contribute to the module grade. The module is 100% continuous assessment and there is no terminal examination. The module is assessed using a combination of theoretical and practical exercises including presentations, data analysis and reporting.

**Calculation of the examination mark**

- Theory assessment: Continuous Assessment; 40 %
- Practical assignment: Continuous Assessment; 30 %
- Presentation Presentation: Continuous Assessment; 30 %