MATH0030 (Mathematical Ecology)

Year: 2018–2019
Code: MATH0030
Old code: MATH3506 (UG)/MATHG506 (PG)
Level: 6 (UG)/7 (PG)
Normal student group(s): UG Year 3 Mathematics degrees
PG MSc Mathematical Modelling
Value: 15 credits (= 7.5 ECTS credits)
Term: 1
Structure: 3 hours lectures per week
Assessment: 100% examination
Normal Pre-requisites: MATH0010 (previously MATH1401)
Some basic knowledge of probability is essential, as covered in
MATH0010 (previously MATH1401)

Course Description and Objectives

Mathematical models are used extensively in many areas of the Biological Sciences. This course aims to give a sample of the construction and mathematical analysis of such models in Population Ecology. The fundamental question to be addressed is: what natural (or human) factors control the abundance and distribution of the various populations of animals and plants that we see in Nature?

No special knowledge of Ecology is required or assumed. However, an interest in, and willingness to learn about, concepts and problems in this area are essential. Mathematical techniques used include calculus, mathematical methods and linear algebra, and those developed include the important qualitative technique of phase plane analysis which the course uses extensively.

This course is independent of MATH0082 (previously MATHM505).

Recommended Texts

(i) Elements of Mathematical Biology, Mark Kot, CUP 2001.
(ii) Evolutionary games and population dynamics, Joseph Hofbauer and Karl Sigmund, CUP 2002.
(iv) A Primer in Ecology, N.J. Gotelli, Sinaur Associates Inc.

Detailed Syllabus