MATH0087 (Frontiers in Mathematical Modelling and its Applications)

Year: 2023-2024
Code: MATH0087
Level: Masters
Value: 15 UCL credits (7.5 ECTS)
Term: 2
Structure: 3 hours of lectures per week
Assessment: 100% examination
Lecturer: Professor V Smyshlyaev, Dr P Pearce & M Jensen

Course Description and Objectives

This module will introduce a range of problems, their associated mathematical model and solutions. Topics will be introduced covering problems motivated by industry, physics, mechanics, biology, the environment and society. By referring to texts or papers, the aim is to highlight the modelling approach taken and discuss the appropriateness of the model based on selective analytical or numerical solutions.

Where appropriate, students will utilise knowledge and skills developed in the compulsory components to perform simulations or to visualise behaviour.

Detailed Syllabus

The detailed syllabus is likely to change from year to year with the use of guest lecturers and visitors but examples may include

1. Applications of techniques of nonlinear dynamics

2. Waves and multi-scale modelling

3. Environmental related phenomena

4. Biomedical modelling

5. Industrial case studies

6. Social dynamics

7. Vortex dynamics

This module introduces the students to research carried out by the staff and is designed to assist students in their choice of a suitable project.

September, 2023