WARWICK

# IL027
# Computer Modelling for All

**Module Convenors**
James Kermode (Engineering)
Christoph Ortner (Mathematics)
Emma Uprichard (CIM/Q-Step)

# Module Aims

- IL027 is an interdisciplinary module teaching problem solving on a computer in a variety of disciplines
- The module will focus specifically on problem solving as opposed to the fine details of computer programming
- There will be a *core* part of the module (3 weeks) as well as *topics* addressing problems from a variety of disciplines (6 weeks)

# What will you learn?

1. Gain experience with mathematical descriptions of real-world phenomena
2. Acquire elementary programming techniques in a high-level scripting language
3. Develop competence in usage of scientific computing and data analysis tools
4. Construct simple programs to solve mathematical models
5. Develop competence in presenting, e.g. visualising numerical data and communicating it to an interdisciplinary audience
6. Develop ability to critically analyse results, both individually and as part of a team, e.g. the consistency of results with model assumptions or external observations and limitations of the model

# Module Organisation

- Teaching and Learning activities
  - One 2 hour lecture per week – Mon 9-11, OC0.04
  - One drop-in example class per week – Thurs 3-5pm, OC1.09
  - Monday lectures are lecture captured (barring technical failures). Available from Moodle IL027 pages after each lecture
  - Group project presentations – 26 April, 2pm-5pm, OC1.06
- Assessment
  - 15 CAT module (standard)
    - 72% : weekly assignments – 9 x 8%
    - 28% : interdisciplinary group work – 14% examiner, 7% peer (group), 7% peer (other groups)
  - 12 CAT module (reduced)
    - 70% : weekly assignments – 7 x 10%
    - 30% : interdisciplinary group work, split as above

# Module Organisation contd.

- We're required by IATL to record attendance – please tick off your name on list being passed around
- Module leader: James Kermode J.R.Kermode@warwick.ac.uk
- Office hours:  Tue 9-10am, Thur 9-10am, D210 Engineering
- Main resources: IL027 Module pages, GitHub repo and JuliaBox
  - https://warwick.ac.uk/fac/cross_fac/iatl/activities/modules/ugmodules/computermodelling/
  - Notebooks and Assignments: https://github.com/IL027/ComputerModelling
  - JuliaBox environment (Warwick-only, sign in required) https://next.juliabox.com/up/warwick/TY56HN3G

# Assignment Submission

- Assignments must be submitted via Tabula (https://tabula.warwick.ac.uk)
- Deadline is Fri of week after Mon lecture (~2 weeks)
- Link JuliaBox to IL027 GitHub repo containing lecture and assignment notebooks (demo in today's lecture)
- Complete assignment on JuliaBox. Tests are provided to give you some feedback on your solutions
- Download your completed notebook file (`.ipynb` file extension) and upload this to Tabula as your submission
- Marking is semi-automated and we'll aim to provide feedback within 1-2 weeks so you can monitor progress

# Lecture and assignment schedule

| Week | Lecturer | Assignment due |
|---|---|---|
| 1 | Core 1 – Christoph Ortner, Mathematics | – |
| 2 | Core 2 – James Kermode, Engineering | 1 (set week 1) |
| 3 | Core 3 – Ortner/Kermode | 2 (set week 2) |
| 4 | Topic 1 – Chris Brady & Heather Ratcliffe, RSE/Physics | 3 (set week 3) |
| 5 | Topic 2 – Magnus Richardson, Complexity | 4 (set week 4) |
| 6 | *Reading week – no lecture* | 5 (set week 5) |
| 7 | Topic 3 – Nigel de Noronha, Sociology/Q-Step | – |
| 8 | Topic 4 – Scott Habershon, Chemistry | 6 (set week 7) |
| 9 | Topic 5 – Sebastian Vollmer, Statistics | 7 (set week 8) |
| 10 | Topic 6 – Michael Castelle, CIM/Q-Step | 8 (set week 9) |
| 11 | – | 9 (set week 10) |