



MODULE SPECIFICATION

Academic Year (student cohort covered by specification)	2026-27
Module Code	2607
Module Title	Methods in Climate Change and Planetary Health
Module Organiser(s)	Tony Carr, Matt Gibson, Hugh Sharma Waddington
Faculty	EPH
FHEQ Level	Level 7
Credit Value	CATS: 10 ECTS: 5
Term of Delivery	Term 1
Mode of Delivery	Face to face
Mode of Study	Full-time
Language of Study	English
Pre-Requisites	None
Accreditation by Professional Statutory and Regulatory Body	None
Module Cap (Indicative number of students)	None
Target Audience	This module is compulsory for students on the MSc Climate Change and Planetary Health programme.
Module Description	This module provides in-depth coverage of methods, models, and data analysis techniques relevant to climate change and planetary health research. The module includes sessions addressing the following topics: • Introduction to methods and models in planetary health research • Overview of planetary health drivers and impacts in modelling contexts. • Case studies demonstrating the application and limitations of models in planetary health topics (e.g., food systems, infectious diseases) • Analysis, interpretation, and communication of model outcomes



	Uncertainty in modelling and its implications for research and policy
Duration	10 weeks at 0.5 days per week
Timetabling slot	Term 1
Last Revised (e.g. year changes approved)	N/A

Programme(s)	Status
This module is linked to the following programme(s)	
MSc Climate Change and Planetary Health	Compulsory
MSc Nutrition for Global Public Health	Recommended
MSc One Health: Ecosystems, Humans and Animals	Recommended

Module Aim and Intended Learning Outcomes

Overall aim of the module
The overall module aim is to: provide students with in-depth knowledge of methods and models in climate change and planetary health research, and to develop transferable data analysis and management techniques that can be applied across various research contexts and topics.

Module Intended Learning Outcomes
Upon successful completion of the module a student will be able to: 1. Discuss and explain methods and modelling tools for planetary health research, including their strengths and limitations, from disciplines related to planetary health 2. Apply methods, datasets, and scenarios to analyse the interactions between environmental, socio-economic, and health impacts 3. Create scenarios and pathways to analyse adaptation strategies and solutions to reduce health and environmental impacts. 4. Interpret findings from analyses, including uncertainties and present these findings in a clear, concise, and logical manner. 5. Appraise research projects in the fields of climate change and planetary health.

Indicative Syllabus

Session Content

The module addresses topics crucial to understanding and applying methods in planetary health through a combination of lectures, seminars, and practical sessions.

Lectures and seminars will:

1. Introduce methods and models in planetary health research
2. Describe examples of planetary health drivers and impacts that can be modelled, including in the fields of energy, food systems, and air pollution
3. Discuss example topics to demonstrate practical aspects of methods, their limitations, uncertainties, and scenario development

Practical sessions will:

1. Introduce techniques for modelling climate change and health impacts using models and databases from infectious disease modelling
2. Introduce techniques for modelling environmental footprints and health impacts using models and databases from food systems modelling

Teaching and Learning

Notional Learning Hours

Type of Learning Time	Number of Hours	Expressed as Percentage (%)
Contact time	20	20%
Directed self-study	25	25%
Self-directed learning	25	25%
Assessment, review and revision	30	30%
Total	100	100%

Teaching and Learning Strategy

Teaching consists of ten half-day sessions generally comprised of lectures, practical sessions and seminar/group activities, including carefully constructed exercises and discussion in the practical sessions; guided reading; case studies and critical appraisal of research project (through individual, group and class work)

Assessment

Assessment Strategy

The assessment for this module has been designed to measure student learning against the module intended learning outcomes (ILOs) as listed above. The summative assessment will be undertaken on completion of the module at the end of term 1. Formative assessment methods will be used to measure students' progress.

The summative assessment for this module will be a scientific report analysing and interpreting data. Students will be given a dataset and tasked with analysing the data using skills acquired during the course. They will discuss uncertainties or limitations and develop evidence-based policy recommendations while considering implications for stakeholders and policymakers.

Summative Assessment

Assessment Type	Assessment Length (i.e. Word Count, Length of presentation in minutes)	Weighting (%)	Intended Module Learning Outcomes Tested
Report	2500 words	100	1-5

Resitting assessment

Resits will accord with [Chapter 8a](#) of the LSHTM Academic Manual.

The resit will take the same form as the original summative assessment, involving data analysis and writing a scientific report interpreting the results, but using a different dataset.

Resources

Indicative reading list (*if applicable*)

Guidance note: Please list up to 12 core texts and sources for the module.

On planetary health:

Whitmee, S. *et al.* Safeguarding human health in the Anthropocene epoch: report of The Rockefeller Foundation-Lancet Commission on planetary health. *The Lancet* **386**, 1973–2028 (2015).

Riaz, M. M. A., Wangari, M.-C. & Mugambi, J. K. No climate change justice in lieu of global authorship equity. *The Lancet* **401**, 1074 (2023).

On food systems:

Willett, W. *et al.* Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. *The Lancet* **393**, 447–492 (2019).

Springmann, M. *et al.* Options for keeping the food system within environmental limits. *Nature* **562**, 519–525 (2018).

On modelling of health impacts of dietary change:

Springmann, M. *et al.* The healthiness and sustainability of national and global food based dietary guidelines: modelling study. *BMJ* **370**, m2322 (2020).

GBD 2017 Diet Collaborators *et al.* Health effects of dietary risks in 195 countries, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet* **0**, (2019).

On air pollution

J. Lelieveld, K. Klingmüller, A. Pozzer, R. T. Burnett, A. Haines, and V. Ramanathan. Effects of fossil fuel and total anthropogenic emission removal on public health and climate. PNAS, 25 March 2019. <https://doi.org/10.1073/pnas.1819989116>

Manisalidis, I., Stavropoulou, E., Stavropoulos, A. & Bezirtzoglou, E. Environmental and Health Impacts of Air Pollution: A Review. *Frontiers in Public Health* **8**, (2020).

On climate change impacts on agriculture

Jägermeyr, J., Müller, C., Ruane, A.C. *et al.* Climate impacts on global agriculture emerge earlier in new generation of climate and crop models. *Nat Food* **2**, 873–885 (2021). <https://doi.org/10.1038/s43016-021-00400-y>

Rosenzweig, C. *et al.* Coordinating AgMIP data and models across global and regional scales for 1.5°C and 2.0°C assessments. Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences **376**, 20160455 (2018).



On learning programming with R

R for Data Science: Import, Tidy, Transform, Visualize, and Model Data

<https://r4ds.had.co.nz/> - free to view online

RStudio Cheatsheets inc Data Visualization with ggplot2

<https://posit.co/resources/cheatsheets/> - free to download online

Other resources

Guidance note: Please list the other study resources for the module.

Teaching for Disabilities and Learning Differences

The module-specific site on Moodle will provide students with access to lecture notes and copies of the slides used during the lecture prior to the lecture in accessible formats (Word/PDF and PPT/PDF). All lectures will be recorded and made available on Moodle.

The LSHTM Moodle has been made accessible to the widest possible audience, using a VLE that allows for up to 300% zoom, permits navigation via keyboard and use of speech recognition software, and that allows listening through a screen reader. All students have access to "SensusAccess" software which allows conversion of files into alternative formats.

The module will provide additional support for students with disabilities and learning differences in accordance with the Student Support Services section of the Student Handbook.