MODULE SPECIFICATION

Academic Year (student cohort covered by specification)	2021-22
Module Code	2491
Module Title	Data Challenge
Module Organiser(s)	Sam Clifford, Thomas Cowling & James Munday
Faculty	Epidemiology & Population Health
FHEQ Level	Level 7
Credit Value	CATS: **15** ECTS: **7.5**
HECoS Code	100260
Term of Delivery	Term 2
Mode of Delivery	For 2021-22 this module is currently planned as a mixture of online and face-to-face teaching. Teaching will comprise a combination of live and interactive activities (synchronous learning) as well as recorded or self-directed study (asynchronous learning).
Mode of Study	Full-time
Language of Study	English
Pre-Requisites	Students are required to have completed the modules Statistics for Health Data Science, Epidemiology for Health Data Science, Health Data Management and Programming, or equivalent. Students must be able to demonstrate familiarity with: linear regression models and generalised linear models (GLMs); R software; data management skills.
Accreditation by Professional Statutory and Regulatory Body	None
Module Cap (indicative number of students)	30 students.
Target Audience	This is a compulsory module for the programme MSc Health Data Science.
Module Description	This module provides students with an experience reflecting real-world practice of a health data scientist in the workforce. This module is designed to provide students with the opportunity to apply key skills and concepts that they have learned in data management, epidemiology and statistics in

	order to address an important health-related research question posed by a non-academic client.
Duration	5 weeks at 2 days per week
Timetabling slot	Slot C2
Last Revised (e.g. year changes approved)	August 2021

Programme(s) This module is linked to the following programme(s)	**Status**
MSc Health Data Science	Compulsory

Module Aim and Intended Learning Outcomes

Overall aim of the module
The overall module aim is to: • Assist students in developing the professional skills necessary for a career as a data scientist: effective teamwork, good project management, communication skills and the ability to visualise data and results from analyses. • Apply students' previous learning from prior modules to a real-world health data problem.

Module Intended Learning Outcomes
Upon successful completion of the module a student will be able to: 1. critically evaluate a real-world application of the whole data science process, including defining the question, obtaining a dataset, performing an analysis, and appropriately interpreting the results; 2. examine and implement strategies for effective team work and good project management within a health data science project; 3. assess different ways of visualising health data to communicate effectively with a wide audience; 4. communicate effectively within inter-disciplinary teams; 5. critically reflect on the whole data science process.

Indicative Syllabus

Session Content
The module is expected to cover the following topics: • Teamwork and project management • Presentation skills and communicating to diverse audiences • Liaising with non-academic clients to delineate a research question • Data summary and visualisation • Practical experience of the whole data science process, from developing the research question to performing an analysis and interpreting the results.

Teaching and Learning

Notional Learning Hours

Type of Learning Time	Number of Hours	Expressed as Percentage (%)
Contact time	30	20
Directed self-study	45	30
Self-directed learning	40	27
Assessment, review and revision	35	23
Total	**150**	**100**

Student contact time refers to the tutor-mediated time allocated to teaching, provision of guidance and feedback to students. This time includes activities that take place in face-to-face contexts such as lectures, seminars, demonstrations, tutorials, supervised laboratory workshops, practical classes, project supervision as well as where tutors are available for one-to-one discussions and interaction by email. Student contact time also includes tutor-mediated activities that take place in online environments, which may be synchronous (using real-time digital tools such as Zoom or Blackboard Collaborate Ultra) or asynchronous (using digital tools such as tutor-moderated discussion forums or blogs often delivered through the School's virtual learning environment, Moodle).

The division of notional learning hours listed above is indicative and is designed to inform students as to the relative split between interactive (online or on-campus) and self-directed study.

Teaching and Learning Strategy
This module will be undertaken almost entirely in student teams (which will remain the same composition throughout the module). Each team will be allocated a client (a non-academic partner), who will provide a research question of interest. The module is problem-based, with each team being guided by an advisor who will help the team identify information and resources needed to tackle the problem at hand. Students will not be given permission to complete the project as individuals. Taught components of the module will address – via lectures, workshops and seminars – effective teamwork, communication skills, data visualisation, and other relevant skills. Students will reflect on their experiences in the module with a piece of summative assessment at the end of the module. Students are encouraged to reflect at the end of each week and write a short piece regarding the week's learning, project work, and how the week's experiences relate to prior learning, experience and self-image. The short pieces will not be formally assessed.

Assessment

Assessment Strategy
A mixture of formative and summative assessment tasks will be used. Formative assessment will include written comments from the team's "client" about how they approached the initial briefing meeting, and comments from staff and peers regarding an initial group presentation outlining the team's research question and their plans to address it. Summative assessment will include three components. The first will be an oral (team-based) presentation to tutors, the other teams and, optionally, clients. Each student in the team will be required to contribute orally to the presentation. Second, each team will submit a written report for the client, outlining the research question, the methodological approaches taken, the analyses and conclusions. Third, each student will submit an individually written critical reflection about how their team operated (both as a whole and as individuals), challenges encountered and how they were dealt with, and lessons learned. The essay should form a coherent piece of writing and not simply be a collation of the short, weekly reflections. The short reflections are not formally assessed and do not need to be submitted to the teaching team.

Summative Assessment

Assessment Type	**Assessment Length (i.e. Word Count, Length of presentation in minutes)**	**Weighting** (%)	**Intended Module Learning Outcomes Tested**
Group Presentation	30-minute presentation and 15-minute Q&A session	20	3, 4
Group Work	15 pages, excluding technical appendices	50	1, 4
Coursework	Approx. 5 pages	30	2, 5

Resitting assessment
Resits will accord with the LSHTM's Resits Policy For individual students resitting a group assessment there will be an approved alternative assessment as detailed below. For the group presentation, students will participate in an individual Q&A presentation session. For the group work assessment, students will submit an individual report on the same question and data, following written feedback on the group report.

Assessment being replaced	**Approved Alternative Assessment Type**	**Approved Alternative Assessment Length** (i.e. Word Count, Length of presentation in minutes)
Group Presentation	Individual Presentation	10 minutes per student
Group Work	Coursework	15 pages

Resources

Indicative reading list

Kenett, R. and Redman, T. The Real Work of Data Science. Wiley, 2019.

Wilson, G., Bryan, J., Cranston, K., Kitzes, J., Nederbragt, L., et al. Good enough practices in scientific computing. PLOS Computational Biology, 2017, 13(6): e1005510. doi:10.1371/journal.pcbi.1005510

Jennifer A. Moon. Resources 2 & 9. Resource for reflective learning, 2004. URL http://dera.ioe.ac.uk/ id/eprint/12995.

Other resources

Module information, including timetables, lecture notes, practical instructions and key literature for each session will be made available via the Virtual Learning Environment (Moodle).

Data required for the project will be provided by the "clients" and will be accessed by students in a manner appropriate for the type of data.

Teaching for Disabilities and Learning Differences

The module-specific site on Moodle gives students access to lecture notes and copies of the slides used during the lecture. Where appropriate, lectures are recorded and made available on Moodle. All materials posted on Moodle, including computer-based sessions, have been made accessible where possible.

LSHTM Moodle is accessible to the widest possible audience, regardless of specific needs or disabilities. More detail can be found in the Moodle Accessibility Statement which can also be found within the footer of the Moodle pages. All students have access to "SensusAccess" software which allows conversion of files into alternative formats.

Student Support Services can arrange learning or assessment adjustments for students where needed. Details and how to request support can be found on the LSHTM Disability Support pages.