MODULE SPECIFICATION

Academic Year (student cohort covered by specification)	2021-22
Module Code	2057
Module Title	Demographic Methods
Module Organiser(s)	Georges Reniers & Anushé Hassan
Faculty	Epidemiology and Population Health
FHEQ Level	Level 7
Credit Value	**CATS:** 15 **ECTS:** 7.5
HECoS Code	101408
Term of Delivery	Term 1
Mode of Delivery	For 2021-22, this module will be delivered online until reading week. A combination of face-to-face and online learning will be used thereafter. We will, however, continue to accommodate students who wish to study remotely for the entire term. There will be a combination of live and interactive activities (synchronous learning) as well as pre-recorded learning materials and self-directed study (asynchronous learning).
Mode of Study	Full-time
Language of Study	English
Pre-Requisites	None
Accreditation by Professional Statutory and Regulatory Body	n/a
Module Cap (indicative number of students)	None
Target Audience	This module is compulsory for students on the MSc Demography and Health and a requirement for those wishing to take the Population Dynamics and Projections module (2429). Students on the MSc Epidemiology can take the first 5 weeks as an elective.
Module Description	A module teaching the key techniques of demographic analysis relevant to the study of population and health.

Duration	**Part 1**: 5 weeks (Thursday morning and a repeat on Thursday afternoon); **Part 2**: 5 weeks (Wednesday afternoon + Thursday afternoon)
Timetabling slot	Term 1
Last Revised (e.g. year changes approved)	September 2021

Programme(s) This module is linked to the following programme(s)	**Status**
MSc Demography & Health	Compulsory
MSc Epidemiology	Recommended (first 5 weeks)

Module Aim and Intended Learning Outcomes

Overall aim of the module
The overall module aim is to: • Enable students to understand and apply key techniques of demographic analysis relevant to the study of population and health.

Module Intended Learning Outcomes
Upon successful completion of the first half of this module, a student will be able to: 1. Demonstrate an understanding of some key techniques used in demographic analysis for the measurement of fertility and mortality. This includes standardization techniques and the construction of life tables. 2. Identify the key steps in interpreting basic demographic data 3. Explain the usefulness of a demographic approach for the study of population and health issues Upon successful completion of the entire module, a student will be able to: 4. Demonstrate a broader understanding of techniques used in demographic analysis for the measurement of fertility, mortality, migration, population structure and change 5. Appreciate how different types of demographic information may be collected and used

Indicative Syllabus

Session Content
The first half of the module comprises the equivalent of five half-day sessions. Each session consists of background reading, a pre-recorded video lecture and a live classroom session wherein lecture materials and applications (practical exercises) are discussed. Most applications and exercises are computer-based. To that end students can use either **Excel**, **Stata** or **R**. In the

Session Content

first half of the term (week 1-5), we cover one topic per week. In the second half of the term (weeks 7-11), we cover two topics per week.

The module is expected to cover the following topics (subject to change):

Part 1 (weeks 1-5)

- **Population composition, basic rates and ratios:** Ratios, probabilities and rates, the balancing equation of population change, person-years, age and sex (population pyramids)
- **Measuring mortality and standardization:** Crude Death Rate (CDR), age-specific death rates, direct and indirect standardization, other mortality indices (IMR, U5MR, MMR)
- **Life tables:** Cohort and period life tables, life expectancy (e_0)
- **Life table extensions and applications.** The life table as a stationary population, survivorship ratios, Net Reproduction Rate (NRR)
- **Fertility:** concepts and definitions, child/woman ratio, Crude Birth Rate (CBR), General Fertility Rate (GFR), age-specific fertility rates, Total Fertility Rate (TFR), cohort fertility

Part 2 (weeks 7-11)

- **Cohort fertility and parity progression:** Period versus cohort fertility measures (tempo distortions), Completed Family Size (CFS), Parity Progression Ratio's (PPR)
- **Birth Intervals and the proximate determinants of fertility**
- **Demographic data sources (1)**: censuses, vital registration, and surveys
- **Demographic data sources (2):** longitudinal studies, demographic surveillance, and causes of death
- **Measures of morbidity and mortality:** Health expectancies (Sullivan's active life expectancy and Disability Adjusted Life Expectancy), and health gap measures (Disability Adjusted Life-Years, DALY)
- **Migration:** definitions, migration as a component of population change, data sources, age patterns of migration rates, estimating net migration
- **Multiple decrements:** Multiple decrement life tables and cause-deleted life tables
- **Nuptiality:** Marriage rates (decremental versus non-decremental rates), Indirect median age at first marriage, Singulate Mean Age at Marriage (SMAM), nuptiality tables

Teaching and Learning

Notional Learning Hours

Type of Learning Time	Number of Hours	Expressed as Percentage (%)
Contact time	45	30
Directed self-study	30	20
Self-directed learning	30	20
Assessment, review and revision	45	30
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 and self-directed study.

Teaching and Learning Strategy
Pre-recorded lecture videos, reading lists and computer practical materials that contains one or more applications of the material covered in the lecture are available in Moodle, and the students are expected to self-study using these materials before each of the synchronous sessions. Following the asynchronous directed self-study, a 90-minute synchronous session is scheduled and this consists of a Q&A session facilitated by the lecturer (approx. 30 minutes) and a tutorial where facilitators discuss the solutions in-group towards the end of each practical (approx. 60 minutes). In AY2021-22, we will reserve slots on the timetable for (i) unsupervised group work and (ii) digital office hours where students can log in for 1:1 support with a tutor/lecturer. Neither of these two activities are compulsory. For the practicals, students can use a statistical package of their choice. Whenever this is relevant, the solutions are provided in Excel, Stata as well as R. Solutions and computing code are made available through Moodle.

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. Formative assessment methods are used to measure students' progress. An online formative assessment with feedback will be organised in December. Formal examination is held in June as part of the summer exams A formula 'cheat' sheet will accompany the exam questions. Students are, in other words, not expected to learn formulas by heart. Students are only examined on their understanding of demographic methods, not on their ability to implement these methods and techniques in a statistical software package.

Summative Assessment

Assessment Type	**Assessment Length (i.e. Word Count, Length of presentation in minutes)**	**Weighting** (%)	**Intended Module Learning Outcomes Tested**
Exam (Papers 1 & 2)	1 question in Paper 1	100	1 – 5

Resitting assessment
Resits will accord with the LSHTM's Resits Policy

Resources

Indicative reading list

Most of the topics in this course (and more) are covered by four online modules that LSHTM has developed for the International Union for the Scientific Study of Population. These are freely accessible via http://papp.iussp.org/, and are also referred to as the "PAPP sessions" (Population Analysis for Policies and Programs). The PAPP sessions do not require any prior knowledge of calculus and can be used as the lecture notes for this course (in combination with the slides used in class)

Student who prefer a different style of presentation may also consult one of the following three textbooks:

(1) Palmore, J. A., & Gardner, R. W. (1994). *Measuring mortality, fertility, and natural increase: A self-teaching guide to elementary measures.* Honolulu: East-West Center, 169 p.

This is a basic textbook covering most topics from the first half of the term. Ideal for students without a strong maths background and more succinct than the PAPP sessions. A pdf of this book is available from http://scholarspace.manoa.hawaii.edu/

(2) Rowland, Donald T. (2003). *Demographic methods and concepts.* Oxford: Oxford University Press, 546 p.

Another non-technical introduction to demography, including a discussion of migration measurement.

(3) Preston, S., Guillot, M. & Heuveline, P. (2001). M. *Demography. Measuring and Modeling Population processes*. Oxford: Blackwell, 291 p.

Standard reference for graduate students with a stronger quantitative background (some expositions involve calculus). Also covers the topics taught in the second half of the term and is a good reference for those interested in extensions of the methods covered in class.

Teaching for Disabilities and Learning Differences

Lecture notes (including pre-recorded video lectures with transcripts for most lectures), reading lists, and computer practical resources are made available through Moodle. Suggestions for background reading are tailored to the students prior training in statistics and/or mathematics. All of the material covered in the lectures is also available through an open access learning platform developed by LSHTM (http://papp.iussp.org/). Supplementary exercises with solutions (including old exam questions) are made available through 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.

For students who require learning or assessment adjustments and support this can be arranged through the Student Support Services – details and how to request support can be found on the LSHTM Disability Support pages.