MODULE SPECIFICATION

Academic Year (student cohort covered by specification)	2023-24
Module Code	3191
Module Title	Vaccine Immunology
Module Organiser(s)	Prof Martin Holland & Dr Amber Raja
Faculty	Infectious & Tropical Diseases
FHEQ Level	Level 7
Credit Value	**CATS:** 15 **ECTS:** 7.5
HECoS Code	100265:100345 (1:1)
Term of Delivery	Term 3
Mode of Delivery	For 2023-24 this module will be delivered by predominantly face-to-face teaching modes. Where specific teaching methods (lectures, seminars, discussion groups) are noted in this module specification these will be delivered by predominantly face-to-face sessions. There will be 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	This module is designed for students with a good knowledge of basic immunology.
Accreditation by Professional Statutory and Regulatory Body	Not currently accredited by any other body
Module Cap (Indicative number of students)	Numbers may be capped due to limitations in facilities or staffing
Target Audience	This module is designed for students with an interest in vaccinology, perhaps with a view to a future career in this area. A background in biology including a basic understanding of immunology is required.
Module Description	This module covers the key immunological mechanisms involved in vaccine-induced protection against viral, bacterial and parasitic pathogens. The module also covers a number

	of related topics including vaccine design, vaccination for one health, maternal vaccination, vaccine safety and industrial perspectives. Lectures are given by specialists from LSHTM staff and from a number of UK and international experts in different fields of vaccinology.
Duration	5 weeks at 2.5 days per week
Timetabling slot	Slot E
Last Revised (e.g. year changes approved)	June 2023

Programme(s) This module is linked to the following programme(s)	**Status**
MSc Immunology of Infectious Diseases	Recommended Option
MSc Medical Parasitology	Recommended Option
MSc Tropical Medicine and International Health	Recommended Option

Module Aim and Intended Learning Outcomes

Overall aim of the module
The overall module aim is to: • provide an understanding of the immune mechanisms important for the generation of vaccine-mediated protection against infectious diseases and of the technologies used for vaccine development and their application.

Module Intended Learning Outcomes
By the end of this module, students will be able to: 1. Summarise and compare the immune mechanisms important for vaccine-mediated protection required for different types of pathogens; 2. Use the knowledge of different types of vaccine products to explain how they are developed, manufactured and tested in humans; 3. Evaluate immunological data relating to vaccine studies and clinical trials; 4. Communicate conclusions made from advanced scientific information in writing.

Indicative Syllabus

Session Content
The module is expected to cover the following topics: • Induction of antibody mediated immune response by vaccines; • Induction of T cellular immune response by vaccines; • Innate immune responses and their importance in vaccine development; • Vaccines for tuberculosis; • Vaccines for malaria; • Vaccine for other parasitic infections; • Viral vaccines including Influenza, HIV, HBV, HPV, Rota and Ebola viruses; • Bacterial vaccines including Pneumococcal and Meningococcal; • Vaccine development and manufacture; • Clinical trials for testing candidate vaccines and monitoring licenced vaccines; • Immune correlates in vaccine development. This module does NOT cover vaccine policy/vaccination programmes.

Teaching and Learning

Notional Learning Hours

Type of Learning Time	Number of Hours	Expressed as Percentage (%)
Contact time	55	36.7
Directed self-study	25	16.7
Self-directed learning	10	6.7
Assessment, review and revision	60	40
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.

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
The teaching strategy will consist of formal lectures and student-centred learning through discussion sessions. External speakers from industry and external vaccine development groups will be invited to contribute to teaching.

Assessment

Assessment Strategy
The assessment for this module (3191) has been designed to measure student learning against the module intended learning outcomes (ILOs) as listed above. Formative assessment methods may be used to measure students' progress. The grade for summative assessment(s) only will go towards the overall award GPA. The assessment for this module will be in a class room. The assessment will be in the form of a 1.5-hour unseen written test incorporating lecture materials and data analysis skills (100% of module mark).

Summative Assessment

Assessment Type	Assessment Length (i.e. Word Count, Length of presentation in minutes)	Weighting (%)	Intended Module Learning Outcomes Tested
Unseen Timed Written Test	90 minutes	100	1-4

Resitting assessment
Resits will accord with the LSHTM's Resits Policy The Resit assessments will be the same assessment type as the first attempts (see previous table).

Resources

Indicative reading list
Course materials and lecture notes will be provided via the LSHTM Virtual Learning Environment, Moodle.

Recommended: For students coming from non-immunology MSc programmes, or who feel the need to refresh basic immunology topics, we recommend that they have access to one of the following general Immunology textbooks:

1. Janeway's Immunobiology ISBN-10: 0393884910, ISBN-13: 978-0815345510 (Norton & Company)
2. Roitt's Essential Immunology ISBN: 978-1-118-41577-1 (Wiley-Blackwell)
3. Abbas Cellular and Molecular Immunology, ISBN-10: 9780323479783, ISBN-13: 978-0323479783 (Elsevier).

Other resources
Students are given access to the LSHTM Virtual Learning Environment, (Moodle) where they can access web-based discussion forums, assignments (where applicable), supplementary materials, Panopto recordings and the LSHTM online library resources.

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.