MODULE SPECIFICATION

Academic Year (student cohort covered by specification)	2020-21
Module Code	3191
Module Title	Vaccine Immunology
Module Organiser(s)	Dr Martin Goodier and Dr Helen Fletcher
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 2020-21 this module is delivered online. Teaching will comprise a combination of live and interactive activities (synchronous learning) as well as recorded or self-directed study (asynchronous learning). We do not yet know whether or not there will be any on-campus activities during Term 3. This decision will be made in February.
Mode of Study	Full-time
Language of Study	English
Pre-Requisites	This module is designed for students with a basic knowledge of immunology.
Accreditation by Professional Statutory and Regulatory Body	Not currently accredited by any other body
Module Cap (Maximum 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. We also cover a large number of related topics including vaccine design, vaccination for one health, maternal vaccination, vaccine safety, industrial perspectives and vaccine hesitancy. Lectures are given by specialists from LSHTM staff and from a number of UK and international experts in different fields

	of vaccinology. We also host regular interactive sessions for team work on different aspects of the module and to introduce assessments and provide opportunities for revision and familiarisation with these. We hold regular question and answer sessions with both LSHTM and external speakers. Invited webinars are also key to keeping students informed on cutting edge current topics in vaccine immunology.
Duration	5 weeks at 2.5 days per week
Timetabling slot	Slot E
Last Revised (e.g. year changes approved)	September 2020

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

Module Aim and Intended Learning Outcomes

Overall aim of the module
The overall module aim is to: • gain 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
Upon successful completion of the module a student will be able to: 1. Describe the immune mechanisms important for vaccine mediated protection; 2. Distinguish the different vaccine responses needed for different pathogens; 3. Evaluate immunological data relating to vaccine studies and clinical trials. 4. Demonstrate knowledge of different types of vaccine products and understanding of how these vaccines are developed, manufactured and tested in humans.

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;

Session Content
• 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. 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
The teaching strategy will consist of formal lectures and student-centred learning through interactive small group work, oral presentations and discussion sessions. External speakers from industry and external vaccine development groups will be invited to contribute to teaching, and practical classes or visits may also be organised.

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 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 online: • News and Views style report on recent publications in the vaccine field: 50% • Exam: Problem solving/data analysis 50%

Summative Assessment

Assessment Type	Assessment Length (i.e. Word Count, Length of presentation in minutes)	Weighting (%)	Intended Module Learning Outcomes Tested
Coursework	Written assignment of 1500 words (maximum 2000 words) set at the end of week 1 to be completed by the end of week 5 of the module	50	1-4
Timed Test	A series of short answer questions on the interpretation of immunological data from a recently published vaccine study. Online assessment lasting 90 minutes.	50	3

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

Resources

Indicative reading list
For module participants on non-immunology MSc courses or who need to refresh basic immunology topics we strongly recommend reading in advance of the course:

Appropriate immunology textbooks include:
Janeway's Immunobiology ISBN-10 : 0815345518 ▪ ISBN-13 : 978-0815345510. Garland Press.

Roitt's Essential Immunology ASIN : B01N78QW3A. Wiley Blackwell.

Other resources
A link to the immunology resources from our distance learning course IDM102 will be available on the IDM102 Moodle page for those requiring further basic immunology revision 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.