APPLIED IMMUNOLOGY - 2024/5

Module code: BMS3108

Module Overview

In this module you will use the knowledge and fundamental principle of immunology acquired in the previous year (year 2, Introduction to Immunology) to study how the immune system actually functions in a range of physiological and pathological situations in the veterinary field. This will allow a dive into translational immunology, as well as an insight into comparative immunology between animal species specificities. Real-life examples will be presented including cutting-edge findings and technologies

Module provider

School of Biosciences

Module Leader

ROLLIER Christine (Biosciences)

Number of Credits: 15

ECTS Credits: 7.5

Framework: FHEQ Level 6

Module cap (Maximum number of students): N/A

Overall student workload

Workshop Hours: 2

Independent Learning Hours: 91

Lecture Hours: 16

Seminar Hours: 2

Tutorial Hours: 2

Guided Learning: 32

Captured Content: 5

Module Availability

Semester 1

Prerequisites / Co-requisites

BMS2045 Introduction to Immunology

Module content

Indicative content includes the following themes focused on animal & veterinary immunology and One Health.

- Effector responses, and technologies to measure the innate & adaptive immunity in quantitative and qualitative aspects, including the role of genetic studies
- Immune dysfunctions such as allergies (hypersensitivities)
- Specifics of cancer immunology
- Responses to infectious diseases, systemic and mucosal.
- Vaccine development

The module content is designed to step up from the fondamentals of immunology, acquired in the L5 Introduction to Immunology module: the basic knowledge will be used to explore aspects specific to veterinary immunology, and to applied immunology in the veterinary field. To this end, the lectures are given by experts in their respective field, with real-life and contemporary examples of applied veterinary immunology.

The module will also contribute to solid basis for the semester 2 module on infectious diseases

Assessment pattern

Assessment type	Unit of assessment	Weighting
Coursework	Course work with oral presentation	40
Examination Online	2hr Online Exam within 4hr window	60

Alternative Assessment

N/A

Assessment Strategy

The summative assessment for this module consists of a course work presented orally, as well as an exam. The assessment strategy is designed to provide students with the opportunity to demonstrate a detailed knowledge of immunology applied to veterinary bioscience and animal science, as well as to be ale to critically analyse papers and present information succinctly and efficiently.

Students will be able to demonstrate their ability to read and critically analyse research papers on immunology, and to demonstrate their understanding of analyzing immunology results. In particular, by diving into a research paper and topic, students will have the opportunity to develop specific knowledge and useful examples of veterinary immunology. Moreover, the oral presentation is limited

in time to develop their capacity to extract the key information, summarise it without losing the important points, and present it in an engaging manner similar to an interview. The presentation is in similar formats to grant and PhD interview, allowing for a real life and authentic assessment, thus supporting employability and development of transferable skills (critical thinking, communication). Students will have to show resourcefulness in exploring the speicifc field of their course work.

Formative assessment and feedback will be provided throughout with examples of exam type questions that will be discussed, and discussion / support and feedback on the course work. In addition, students will be provided with feedback on their performance with the coursework, which will teach them to explore and master a topic of applied immunology.

The final, open book exam will consist of two essay questions with a 90 minutes time limit, connected with the learning outcomes. The student will have a choice to select two questions out of a set. The exam will assess the capacity of the student to remember the concepts and specific examples, in a timed manner, and will require them to have understood concepts that cover several examples over several lectures (deeper learning). The open book format allows them to find information, which is a realistic experience.

Feedback will be provided prior to the oral assessment, by discussing the assignment and their plans. The marking scheme will be specified and examples provided. Feedback on the final exam will be provided as written using rubrics, and one-to-one feedback will be provided when requested.

Module aims

- This module aims to provide a clear understanding of different functions of the immune system of animals, in physiological and pathological processes, as well as how the immune system can be harnessed in biotechnologies, with themes focused on animal & veterinary immunology

Learning outcomes

		Attributes Developed
001	Acquire knowledge and examples of how the immune system influences infectious and non-infectious diseases in different species	CK
002	Explore how the immune system can be harnessed in biotechnologies and notably vaccine development for veterinary use	CK
003	Gain cutting edge information on the most used techniques to characterize immune responses in different species	CK
004	Read and critically analyze research on veterinary immunology: interpret results, evaluate methods, explore relevance and impact in aspecific field	CKPT
005	Summarize and present succinctly immunology results and concepts	CPT
006	Work independently demonstrating initiative, self-organisation and time management	CT
007	Investigate and analyse problems	CPT
008	Integrate numerical & non-numerical information	CPT

Attributes Developed

C - Cognitive/analytical

K - Subject knowledge

T - Transferable skills

P - Professional/Practical skills

Methods of Teaching / Learning

The learning and teaching strategy is designed to develop independent thinking, analytical and presentation skills, in addition to achieve the modules outcome on the subject knowledge. This will benefit students' employability, digital capabilities, resourcefulness.

The learning and teaching methods include lectures / seminars, class tutorials with possibility for debate and workshops, revision tutorials. They will use the knowledge acquired in the year 2 immunology module to learn how the immune system acts and can be harnessed in different situations. The live session include lectures by experts, as well as tutorials and workshops for active learning and to troubleshoot any problem, and to enhance the understanding.

Enable students to highlight areas that require further explanation or clarification during tutorials.

Specific workshops to support, prepare and feedback for the assessments are included. In preparation for the course work, students will have the opportunity to explore a specific topic, to apply their knowledge to this topic, and gain feedback on their critical thinking. Students are encouraged to develop their own judgement and opinions.

The students are expected to be active participants wen given preparation materials ahead of the lectures, and further readings of interest (which are not limited to book chapters, but also will encompass research papers). The students will have tutorials for the course work and the exam, where they can bring their questions. Moreover, the students will have workshops to support their progress with the coursework. Some of the guided learning / directed study is in the form of self test, practice essay questions, and provide opportunities for formative feedback.

The students are expected to make the best use of the external experts, as each lecture will be open to questions and discussions. Student participation is encouraged also through the discussion board.

Indicated Lecture Hours (which may also include seminars, tutorials, workshops and other contact time) are approximate and may include in-class tests where one or more of these are an assessment on the module. In-class tests are scheduled/organised separately to taught content and will be published on to student personal timetables, where they apply to taken modules, as soon as they are finalised by central administration. This will usually be after the initial publication of the teaching timetable for the relevant semester.

Reading list

https://readinglists.surrey.ac.uk
Upon accessing the reading list, please search for the module using the module code: BMS3108

Other information

The School of Biosciences and Medicine is committed to developing graduates with strengths in Employability, Digital Capabilities, Global and Cultural Capabilities, Sustainability, and Resourcefulness and Resilience. This module is designed to allow students to develop knowledge, skills, and capabilities in the following areas:

Resourcefulness & resilience: Seminars and course work with presentation, to promote self-directed learning and use of facts, plus background research and further reading in preparation for exam. The lectures and tutorials / workshops are designed to encourage active participation. Formative assesment and feedback will provide a safe environment to explore and ask questions, and ultimately build confidence.

Global & cultural capabilities: Lectures cover a wide range of examples from various disciplines with impact across the OneHealth sector, with problems affecting different areas / countries. Module delivered by a range of speakers with diverse backgrounds.

Sustainability: In line with OneHealth approach the module works towards relevant Sustainable Development Goals (SDGs) like SDG2 (food security, improved nutrition and sustainable agriculture) and SDG3 (health), as the students will learn the importance of animal health for food, but also with regard to zoonosis.

Digital capabilities: Use of various programmes such as Zoom and Panopto for online interaction and review of content. High content of digital external resources to support lectures. Use of digital resources for developing the recorded oral presentation for the course work

Employability: The module is designed to meet employers expectations towards self learning ability, critical analysis, problem-solving skills and resilience, as well as oral presentation and capacity to summarise and present complex data efficiently.

Programmes this module appears in

Programme	Semester	Classification	Qualifying conditions
Biological Sciences (Animal Biology and Ecology) BSc (Hons)	1	Optional	A weighted aggregate mark of 40% is required to pass the module
Biological Sciences BSc (Hons)	1	Optional	A weighted aggregate mark of 40% is required to pass the module
Veterinary Biosciences BSc (Hons)	1	Compulsory	A weighted aggregate mark of 40% is required to pass the module

Please note that the information detailed within this record is accurate at the time of publishing and may be subject to change. This record contains information for the most up to date version of the programme / module for the 2024/5 academic year.