Paper Number and Title  
227.302 Veterinary Microbiology and Immunology

Credits value  
23

Semester  
Double

Campus  
Turitea

Mode  
Internal

Paper Coordinator  
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Calendar Prescription  
The principles of microbial infectious diseases of animals: including, the biology and molecular biology of microbial pathogens, the immunology of vertebrate hosts and the epidemiology, clinical and public health significance, principles of laboratory diagnosis, control, prophylaxis and treatment of microbial infectious diseases.

Pre- and Co-requisites  
Pre-requisites  
All papers in BVSc 1 and BVSc 2. Acceptance into BVSc 3.

Co-requisites  
Veterinary Pathology I (227.301) and Veterinary Parasitology (227.303).

Restrictions  
None.

Aim  
This paper is a comprehensive course on immunology and infectious diseases of veterinary importance offered in the third year of the veterinary programme.

The immunology component gives a basic understanding of the workings of the mammalian immune system including how it gives protection against pathogenic organisms. Also covered are the principles of vaccination and immunological techniques used for diagnosis and research.

The rest of the paper will concentrate on the bacterial, viral and fungal diseases of veterinary importance. This part of the course will cover the biology of the pathogenic microbes, and how this relates to the epidemiology, pathogenesis, diagnosis, treatment, control and zoonotic impact of the diseases they cause. Special attention will also be paid to the issue of bacterial resistance to drug therapy.
At the completion of the course students should have a working knowledge and understanding of the immune system of vertebrates, the infectious diseases they are affected by and the diagnosis, treatment and control of these diseases.

**Learning Outcomes**

On successful completion of the course a student will be able to:

1. Explain the components and workings of the vertebrate immune system, how it combats infectious organisms and how immunological principles can be used to guide diagnosis and vaccination practices.

2. Explain fundamental aspects of the biology of the bacterial, viral and fungal organisms that cause infectious diseases of veterinary importance and their impact on public health.

3. Explain the processes by which these organisms cause disease in their hosts.

4. Explain the range of methods used in the diagnosis of microbial infectious diseases.

5. Explain the principles behind the approaches to treating and controlling microbial infectious diseases.

**Assessment**

The three components that make up this paper will be assessed individually as follows:

1) Immunology – 20%

   There will be a written test at the end of the first half of Semester One worth 20% of the paper’s total mark.

2) Bacteriology and Mycology – 50%

   Practical and written tests will be undertaken throughout Semester Two and in total will be worth 50% of the paper’s final mark. The tests will be comprised of:
   
   a) A practical test worth 10%.
   b) Two mid-semester written tests each worth 5%.
   c) A final written test worth 30%.

3) Virology – 30%

   Two written tests that are worth a total of 30% of the paper’s final mark, comprised of:

   a) A mid-semester written test worth 10%.
   b) A review of current literature on a selected topic 5%.
   b) A final written test worth 15%.

**Alignment of Assessment to Learning outcomes**

<table>
<thead>
<tr>
<th>Assessment Description</th>
<th>Learning Outcomes Assessed</th>
<th>Contribution to Paper Mark</th>
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<tbody>
<tr>
<td>Immunology Written Test</td>
<td>✓</td>
<td>20%</td>
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Virology Written Tests (x2)  
Current literature review  
✓ ✓ ✓ ✓  30%

| Bacteriology & Mycology Practical Test | ✓ | 10% |

| Bacteriology & Mycology Written Tests (x3) | ✓ ✓ ✓ | 40% |

**Deadlines and Penalties**
It is a requirement of the paper that the contributory tests and the final examination are to be sat at the timetabled times. If a student does not sit them at these times, and does not have a valid excuse, they will be given no marks for those sections which were missed.

**Requirements to Successfully Complete the Paper**
Attendance at laboratory classes is compulsory and will be monitored. Students must achieve a mark of at least 47% in each of the three components that are assessed; i.e. Immunology, Bacteriology/Mycology and Virology. Students must achieve a cumulative mark of at least 50% for the whole paper.

**Learning Programme and Schedule**
Lectures, practical classes, cases and revision as listed in the timetable will be given by staff listed below:

Immunology - Alan Murray.
Veterinary Virology - Magda Dunowska.
Veterinary Bacteriology, Mycology and Molecular Microbiology - Alex Grinberg and Laryssa Howe.

**Student Time Budget**
The course will comprise of approximately 109 hours of lectures, 21 hours of laboratory classes, 25 hours of revision classes/self learning sessions and 10 hours of assessment including written and practical examinations. A total number of 165 student contact hours for the paper, with a total time budget of 330 hours.

**Timetable**
**Semester One**
Monday 2pm SSLB6
Tuesday 10am Vet 1 or lab class in 4.01
Tuesday 11am Vet 1 or lab class in 4.01
Wednesday 10am Vet 1 or lab class in 4.01
Wednesday 11am Vet 1 or lab class in 4.01
Thursday 12noon SSLB5
Friday 2pm WB1

**Semester Two**
Tuesday 10am Vet 1 or lab class in 4.01
Tuesday 11am Vet 1 or lab class in 4.01
Wednesday 10am Vet 1 or lab class in 4.01
Wednesday 11am Vet 1 or lab class in 4.01
Thursday 11am SSLB5
Friday 8am SSLB3
Friday 9am SSLB3
**Proposed Feedback and Support for Student Learning**

All contributing academic staff are available for advice as required. Technical advice may be sought from the microbiology technicians. For this purpose they can be contacted by email, phone or in their offices. It is a good idea to make an appointment for your discussions with staff. Students will be advised of their marks in contributory tests within one month of the assessment.

**Textbook and Other Recommended Reading**

Whenever possible, the lectures will be available on the internet at: [http://calve.massey.ac.nz/](http://calve.massey.ac.nz/). Study and/or resource guides may be provided for each component of this paper. Students are strongly recommended to integrate the lecture material with the resources and recommended textbooks. A number of recommended texts are available in the reserve book room or on the open shelves of the library and these may provide invaluable material to assist you in your understanding of immunology and infectious disease caused by microorganisms. However, please be aware that none of these textbooks provide details about microbial diseases in New Zealand, therefore it is strongly recommended that you attend the lectures.

**Compulsory Textbooks**

**Virology**


**Recommended Textbooks**

**Immunology**


**Bacteriology and Mycology**

Quinn, P. J. et al (2001). Veterinary Microbiology and Microbial Diseases - This book is concise and clear with a useful clinical slant; it provides good support to the lectures.

Songer J.G and Post K.W (2005). Veterinary Microbiology. Bacterial and Fungal Agents of Animal Diseases - This book has a strong clinical orientation and is illustrated throughout with useful colour photos. Please note that it is not located on the same shelf in the library as the other veterinary microbiology textbooks.


Quinn, P. J. et al (1994). Clinical Veterinary Microbiology - This book is mainly concerned with diagnostics and it has useful colour plates showing the reactions to some of the tests you will be learning in the laboratory classes.

Prescott, J. and Bagget, D. Antimicrobial therapy in veterinary medicine, fourth edition.

**Recommended Websites**

**ProMed mail:** [http://www.promedmail.org](http://www.promedmail.org)

The global electronic reporting system for outbreaks of emerging infectious diseases & toxins. You can sign up for a free email alert service to get selected listings delivered directly to your mailbox. Postings typically contain links to further sources of information related to a particular event, including area maps, and official (OIE, FAO or WHO: see below for the websites) notification/information pages. An excellent way to stay informed.
This website contains latest news on infectious disease status worldwide, including the maps of outbreak distribution under World animal health situation/WAHID heading.


All the virology on the WWW: http://www.virology.net/.
A useful site containing a variety of information related to virology, including links to virology-related educational resources.

**Additional Costs**
Clean white laboratory coats and solid shoes must be worn in all laboratory classes.

**Conditions for Aegrotat Pass and Impaired Performance**
If you are prevented by illness, injury or serious crisis from attending an examination (or completing an element of assessment by the due date), or if you consider that your performance has been seriously impaired by such circumstances, you may apply for aegrotat or impaired performance consideration. You must apply on the form available from the Examinations Office, the Student Health Service or the Student Counseling Service.

To qualify for an aegrotat pass on the final examination, you must have attempted at least 40% of the total formal assessment for the microbiology component and your performance must be well above the minimum pass standard, so that the examiners can be confident that you would have passed the paper if you had completed the final examination. You may also apply for aegrotat consideration for other compulsory assessment elements (such as Semester Tests) that occur at a fixed time and place if you are prevented by illness, injury or a serious crisis from attending.

Please note that this paper consists of three compulsory elements (immunology, virology and microbiology), which are assessed separately. You may apply for aegrotat pass only on those components of the paper in which the internal assessments for a given component contribute at least 40% to the mark for that component. As such, aegrotat applications for the immunology component of this paper will not be considered.

**Plagiarism**
Massey University, College of Sciences, has taken a firm stance on plagiarism and any form of cheating. Plagiarism is the copying or paraphrasing of another person’s work, whether published or unpublished, without clearly acknowledging it. It includes copying the work of other students. Plagiarism will be penalized; it is likely to lead to loss of marks for that item of assessment and may lead to an automatic failing grade for the paper and/or exclusion from reenrolment at the University.

**Grevance Procedures**
A student who claims that he/she has sustained academic disadvantage as a result of the actions of a University staff member should use the University Grevance Procedures. Students, whenever practicable, should in the first instance approach the University staff member concerned. If the grievance is unresolved with the staff member concerned, the student should then contact the College of Sciences office on his/her campus for further information on the procedures, or read the procedures in the University Calendar.
Lecture Outline

a) Veterinary Immunology
Comprises lectures given in the first half of Semester One by Alan Murray. The immunology study guide contains a list of topics covered by each lecture.

b) Veterinary Virology
Comprises lectures and laboratory classes throughout Semester One. Magda Dunowska teaches this component of the paper. The lecturer will give the list of topics by lecture at the beginning of the course.

c) Veterinary Bacteriology and Mycology
Comprises lectures and laboratory classes starting in the second half of Semester One and running until the end of the year. Alex Grinberg and Laryssa Howe teach this part of the course. The lecturers will give the list of topics by lecture at the beginning of the course.