

Course Information for BBMS3005 Infection and Immunity

Semester 2

Department of Microbiology, LKS Faculty of Medicine, The University of Hong Kong

Welcome to *BBMS3005 - Infection and Immunity*. We hope you will enjoy the course and understand the relevance and importance of Infection and Immunology in biomedical sciences. Critically, we wish you will attend all lectures seriously with full commitment, which is essential for your overall performance and success for this course. During the course, you will have different learning activities and assessments which are detailed below:

Staff: The course is organized by the Department of Microbiology, LKS Faculty of Medicine, The University of Hong Kong. You may contact the teachers if you have questions or comments on the teaching contents, tutorials or small group studies. For issues on the arrangement of the classes, please contact the course secretariat.

Course coordinator: Prof. Zhiwei CHEN, Department of Microbiology (zchenai@hku.hk)

Course teachers:

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Laboratory/PBL sessions:

Dr. Raven KOK	khkok@hku.hk
Dr. Li LIU	liuli71@hku.hk
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Prof. Zhiwei CHEN	zchenai@hku.hk

Course secretariat: Ms. Kelly NG (kelly.k.ng@hku.hk)

Communication: The course secretariat and sometimes the teachers will send you materials and updates on the course, such as handouts, time and venue of various teaching activities, and so on. We will only be sending out emails to your ...@hku.hk email accounts. It is absolutely essential that you check your assigned ...@hku.hk account regularly.

Course Description: This course will introduce students to the host defense by providing basic concepts and different components of immune system including both nonspecific and specific immunity. It will cover aspects of the pathogen-host interaction, immunologic disorders as well as different humoral, cellular and biochemical elements involved in immune responses. Students will explore the applications of immunology to modern diagnostics, biotechnology, therapeutics and disease prevention.

On completion of the course, you will be able to:

1. Demonstrate solid knowledge of the properties of immune system including definition, structure, mechanism of action, pathogen-host interaction in pathogenesis.
2. Develop the ability to analyze, evaluate problems and interpret information related to host defense and corresponding molecular mechanism, and prevention.
3. Understand the impact of microbial infections in the world.
4. Demonstrate knowledge-based skills in working and collaborating together with fellow students in practical classes and in group presentation of scientific ideas.

5. Apply and disseminate knowledge of infection and immunity in scientific research and in everyday life.

Learning activities (total 120 hours):

1. Lectures	24
2. Laboratory sessions	16
3. PBL/tutorials	8
4. Group project presentation/preparation	14
5. Essay/report writing	8
6. Reading/self-study	50

Lectures (2 hours each):

1. The host immune system	(Z Chen)
2. The immune responses - specificity and memory	(Z Chen)
3. Innate immunity - Inflammation	(R Kok)
4. Innate immunity - Pathogen-associated molecule patterns	(R Kok)
5. Humoral immunity - B and plasma cells	(L Liu)
6. Humoral immunity - ADCC and Nab	(L Liu)
7. T cell-mediated immunity - Th1 and Th2	(Z Chen)
8. T cell-mediated cytotoxicity - Tc1	(Z Chen)
9. Immunity to viruses	(HL Chen)
10. Immunity to bacteria and fungi	(SF Yuan)
11. Immunity to protozoa and worms	(R Kok)
12. Modern vaccinology	(Z Chen)

Laboratory Sessions: (4 hours each)

1. Innate immunity	(R Kok)
2. B cell immunity	(L Liu)
3. T cell immunity	(SF Yuan)
4. Vaccinology	(Z Chen)

PBL/Tutorials: Two cases - one on innate immunity (R Kok); the other on adaptive immunity (L Liu)

In case of 20 enrollments, students will be divided into 2 groups and each group will receive information on a case study related to infection and immunity.

Students will analyze the case based on the available information and synthesize ideas and hypotheses regarding the case presented. The facilitator will guide the students for in-depth discussion of the case and students will formulate learning objectives at the end of each case.

Group Project and Presentation:

Students will be divided into 2-4 groups depending on the total number of students enrolled. A group project, which involves laboratory investigations and literature review, will be assigned to each group. Each group will spend at least 10 hours in group meetings and laboratory investigations of the assigned project. Another 10 hours are suggested for the students to carry out literature review and data analysis. At the end of the course, students of each group will make a presentation (by PowerPoint or similar presentation apps) to the whole class, followed by question-and-answer session. All students must participate in the presentation and study process. After the presentation, each group has to submit a report (2500 words) to the teacher.

Short Essay:

Students will be assigned an essay topic on **Infection and Immunity**. The essay (2000 words) will be due at the end of the course.

Textbook/Reading List:

Individual lecturers will advise reading materials in due course.

Course Assessments:

- Continuous assessment: Attendance/Practical/PBL/Tutorial (25%)
- Group project, presentation, and report (25%)
- Final examination: (50%)
A 2-hour examination will be held in May. The examination will include Multiple Choice questions (MCQ), Short Answer questions (SAQ) and Essay questions.

Learning Outcomes of Each Lecture:

- Lecture 1: The Host Immune System (ZC)
- Lecture 2: The Immune Responses - Specificity and Memory (ZC)
- Lecture 3: Innate Immunity - Inflammation (RK)
- Lecture 4: Innate Immunity - Pathogen-associated Molecule Patterns (RK)
- Lecture 5: Humoral Immunity - B and Plasma Cells (LL)
- Lecture 6: Humoral Immunity - ADCC and Nab (LL)
- Lecture 7: T Cell-mediated Immunity - Th1 and Th2 (ZC)
- Lecture 8: T Cell-mediated Cytotoxicity - Tc1 (ZC)
- Lecture 9: Immunity to Viruses (HC)
- Lecture 10: Immunity to Bacteria and Fungi (SY)
- Lecture 11: Immunity to Protozoa and Worms (RK)
- Lecture 12: Modern Vaccinology (ZC)