

LIFS 3060: MICROBIOLOGY (Spring 2022-23)

Course Instructors:

Professor David BANFIELD (**course director**): Rm 5441, Ext. 8633, email: bodkb@ust.hk

Dr. Jessica C. M. TANG : Rm 5450, Ext. 7314, email: bocemun@ust.hk

Entry Level: Pre-requisite LIFS 2040 or LIFS 2060 or with permission of the course director.

Course schedule: **Mon, Wed: 10:30-11:50; LTC**

Course objectives: This course aims to introduce students to the fundamentals of identification, structure, physiology, and genetics of microorganisms; and the importance of microorganisms in human health, the environment, and in biotechnology.

Learning outcomes: Upon completion of this course students will be able to:

1. Describe and comprehend important features of bacteria, fungi, protozoa and viruses.
2. Describe and comprehend important aspects of the physical and nutritional requirements of microorganisms.
3. Describe the methods used to measure microbial numbers and those to control the growth of unwanted microorganisms.
4. Identify the driving forces for the distribution of microbial diversity in the natural environment.
5. Discuss the roles of environmental microorganisms in the functioning of the biosphere and in the development of human civilization.
6. Describe important infectious diseases locally and internationally, in the past and present time.
7. Explain how pathogenic microbes cause human diseases and how the human body guards against microbial invasion.
8. Explain the biological principles underlying medical intervention of infectious disease.

Course Assessment:

Assessment Tasks	Contribution to Final Grade (%)	Learning Outcomes to be Assessed
Midterm exam	40%	1, 2, 3, 4, 5
Final exam	60%	1, 3, 6, 7,8

Recommended Textbook (not compulsory):

- **Prescott's Microbiology, 12e Connect** can be purchased from McGraw Hill online, HKD 380 for one semester or HKD380 via the campus bookstore (access for 180 days).

Week	Date	Topic	Instructor
1	Feb 6, 8	Introduction to microbiology (Chapters 1, 2)	BANFIELD
2	Feb 13, 15	Bacterial cell structure (Chapter 3)	BANFIELD
3	Feb 20, 22	Archaea and eukaryotic cell structure (Chapters 4, 5)	BANFIELD
4	Feb 27, Mar 1	Fungi (Chapter 26), Protists (Chapter 25)	BANFIELD
5	Mar 6, 8	Viruses (Chapters 6, 27), Microbial Growth (Chapter 7)	BANFIELD
6	Mar 13	Mid-term (details to be announced later)	BANFIELD
7	Mar 15, 20	Microbial interactions (Chapter 32), Microbial genomics (Chapter 18)	TANG
8	Mar 22, 27	Control of microorganisms in the environment (Chapter 8)/ Antimicrobial chemotherapy (Chapter 9)	TANG
9	Mar 29, Apr 3	Innate and adaptive immunity (Chapter 33, 34)	TANG
10	Apr 12, 17	Pathogenicity and infection (Chapter 35)	TANG
11	Apr 19, 24	Clinical microbiology and immunology (Chapter 36)	TANG
12	Apr 26, May 3	Epidemiology and public health microbiology (Chapter 37)	TANG
13	May 8	Revision class	TANG