SCBM236 Fundamental Microbiology and Immunology

Academic Year 2/2025

Course coordinators: Vimvara Vacharathit vimvara.vac@mahidol.ac.th

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Room: SC1-151

Google Classroom link for students:
https://classroom.google.com/c/ODM2NzM2MTE5NDYy?cjc=n2kaxhvc

Schedule

Date	Time		Topics	Instructor
Jan 9	09:00-10:00		Course Orientation and Microscopy Techniques	CS/KT
	10:00-11:00	L1	Introduction to the Immune System	FL
	11:00-12:00	L2	Why Are Microbes So Diverse and Adaptable?	PA
Jan 16	09:00-10:30	L3	Innate Immunity: Cells and Functions	FL
	10:30-12:00	L4	Bacterial Structure & Function	RK
Jan 23	09:00-10:30	L5	Adaptive immunity: Cells and Functions	CS
	10:30-12:00	L6	Bacterial Growth, Nutrition & Control	RK/NS
Jan 30	09:00-10:30	L7	The Complement System and Pattern Recognition Receptors	FL
	10:30-12:00	L8	Bacterial Genetics & Antimicrobial Resistance	NS
Feb 6	09:00-10:30	L9	Antigen Processing, Presentation, MHC	CS
	10:30-12:00	L10	The World of Fungi and Clinically Important Fungi	NK
Feb 13	09:00-10:30		Group activity 1: From Pathogen Entry to Adaptive Immunity	FL
	10:30-12:00	L11	Fungi as Factories of Life-Saving Molecules	AW
Feb 20	09:00-10:30	L12	Antigen Recognition in the Adaptive Immune System	WS
	10:30-12:00	L13	Protozoan Parasites	TT
Feb 27	09:00-10:30		Group activity 2: Immunological Tolerance and Autoimmunity	WS
	10:30-12:00	L14	Helminths of Medical Importance	KT
Midterm examination (L1 - L14)				
Mar 13	09:00-10:30	L15	T Lymphocyte Activation and Effector Functions	WS
	10:30-12:00	L16	Concepts of Virus and Important Viral Diseases	ThTh
Mar 20	09:00-10:30		Group activity 3: Immunity to tumors	VV
	10:30-12:00	L17	Viral Cancer and How to Control It	AS

Date	Time		Topics	Instructor
Mar 27	09:00-10:30	L18	B Lymphocyte Activation, Antibodies and Effector Functions	CS
	10:30-12:00	L19	Host–Pathogen Interactions Across Microbes	VV
Apr 3	09:00-10:30		Group activity 4: Immunological Response to Vaccine	CS
	10:30-12:00	L20	Microbiome and Inter-microbial Interactions	WP
Apr 10	09:00-10:30	L21	Mucosal Immunity & Microbiota	VV
	10:30-12:00	L22	Clinical Metagenomics	WP
Apr 17	09:00-12:00		Group activity 5: Methods for Identification of Microbes	RA
Apr 24	09:00-10:30	L23	From Bench-to-Bedside and Beyond	CS, VV, WS, FL
	10:30-12:00	L24	Why Do We Study Microbes?	NS, NK, KT, ThTh, WP, RK
Final examination (L15-L24)				

Instructors:

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Course Syllabus

SCBM236 Fundamental Microbiology and Immunology

3 credits (3-0-6)

Academic Year 2/2025

Course Description:

This course introduces fundamental concepts in various aspects of microbiology and immunology, which are the foundation of many subjects in the biomedical field. The knowledge acquired by the students should form the basis for further studies, especially in medical microbiology and immunology courses.

Course Objectives:

Upon completion of this course, students will be able to:

1. Describe the organization, components, and core functions of the innate and adaptive immune systems.
2. Explain the significance of microbes and describe the scope and sub-disciplines of microbiology.
3. Explain basic characteristics of major groups of microbes, including bacteria, viruses, fungi, and parasitic microbes.
4. Apply fundamental immunological concepts to interpret scenarios involving infection, vaccination, immune tolerance, autoimmunity, and cancer.
5. Explain how interactions between the host, microbes, and the microbiota shape immune responses, host physiology, and disease.

Duration: January 9th – April 24th, 2026

Recommended Reading:

1. Madigan, M. T., Bender, K. S., Buckley, D. H., Sattley, W. M., & Stahl, D. A. (2021). *Brock biology of microorganisms* (16th ed.). Pearson.
2. Abbas, A. K., Lichtman, A. H., & Pillai, S. (2023). *Basic immunology: Functions and disorders of the immune system* (7th ed.). Elsevier.

Scoring:

- Examination 80
- Post-lecture pop quizzes 10
- Group activities 20

Grading:

A	>80
B+	75-79
B	70-74
C+	65-69
C	60-64
D+	55-59
D	50-54
F	<50

Student Appeal:

Students may appeal following the rules and regulations of the Faculty of Science and Mahidol University.

Course Policies

* Participation is strongly encouraged. Please refrain from phone use (or other electronic devices) during class (unless used for studying or scientific-related search).
* Cheating, plagiarism, or copy-and-pasting from others will result in 0 point for the reports, quizzes and exams.
* Attendance below 80% will result in a 10-point deduction from the total adjusted exam points.