Course Syllabus
MBSB 604 Virus-Cell Interactions and Immunity
Academic Year 2021

Course ID and name: MBSB 604 Virus-Cell Interactions and Immunity
Course coordinator: Dr. Chutima Thepparit
Email: chutima.thp@mahidol.ac.th

Instructors:
1. Dr.Alita Kongchanagul
2. Dr.Chutima Thepparit
3. Dr.Duangnapa Kovanich
4. Dr.Promsin Masrinoul

Supporting Staffs
1. Kunjimas Ketsuwan

Credits: 3 (3-0-6)
Curriculum: Doctor of Philosophy Program in Systems Biosciences (Elective course)
Semester offering: Second semester
Prerequisite: None
Course level: Intermediate

Course Description:
Introduction to virology, Virus replication: attachment and entry, Virus replication and expression: RNA viruses, DNA viruses, reverse transcription and integration, Virus-host interactome, Intracellular trafficking, virus assembly, maturation and release, Viral pathogenesis, Cellular responses to viral infection (innate immunity and adaptive immunity), Antiviral agents, Virotherapy, Introduction to vaccinology, Vaccine design, and development

Course Learning Outcomes (CLOs)
Upon completion of this course, students are able to:
1. Demonstrate core principles and comprehensive knowledge of fundamentals in virology, virus-host interactome, viral pathogenesis, cellular responses to viral infection
2. Identify implications of virus-host interactome, antiviral agents, virotherapy, and vaccine design and development
3. Critically evaluate and present recent published literature in the related field
4. Formulate research questions or creative problems with integration of fundamental principles and knowledge in a manner appropriate to the virus-cell interactions and immunity discipline.

Program Learning Outcomes (PLOs)
Upon completion of this program, students are able to:

1. Comply with ethical codes of conduct both personally and professionally.

2. Demonstrate core principles and comprehensive knowledge in systems biosciences.
3. Integrate innovative concepts and ideas from various disciplines.
4. Critically evaluate and solve sophisticated problems in systems biosciences.
5. Independently synthesize new knowledge with originality.
6. Demonstrate responsibility, interpersonal and team skills, and leadership, both individually and in groups.
7. Analyze statistical data and scientific information from relevant databases and information technology applications.
8. Effectively communicate relevant knowledge and research findings both orally and in writing to different audiences.

Constructive Alignment of Course Content to CLOs and Program ELOs

Lecture No.	Topic	CLOs	Program ELOs
1	Introduction to virology	1	1, 2, 6
2	Virus replication: attachment and entry	1	1, 2, 6
3	Virus replication and expression: RNA viruses	1	1, 2, 6
4	Virus replication and expression: DNA viruses	1	1, 2, 6
5	Virus replication and expression: reverse transcription and integration	1	1, 2, 6
6	Intracellular trafficking, virus assembly, maturation and release	1	1, 2, 6
7	Viral pathogenesis	1	1, 2, 6
8	Cellular responses to viral infection (innate immunity) 1	1,3	1, 2, 4, 6
9	Cellular responses to viral infection (adaptive immunity) 2	1,3	1, 2, 4, 6
10	Virus-host interactome	2,3	1, 2, 4, 6, 7
11	Antiviral agents	2, 3	1, 2, 4, 6
12	Virotherapy	2, 3, 4	1, 2, 6, 7
13	Introduction to vaccinology	3, 4	1, 2, 4, 6
14	Vaccine design and development	3, 4	1-4, 6, 7
15	Assignment presentation and discussion	1, 2, 3, 4	1-4, 6-8

Date	Lecture No.	Topic	Teaching & Learning Strategy	Assessment	Instructor
	1	Introduction to virology	Lecture and group discussion	Written examination	Chutima
	2	Virus replication: attachment and entry	Lecture and group discussion	Written examination	Chutima
	3	Virus replication and expression: RNA viruses	Lecture and group discussion	Written examination	Promsin
	4	Virus replication and expression: DNA viruses	Lecture and group discussion	Written examination	Promsin
	5	Virus replication and expression: reverse transcription and integration	Lecture and group discussion	Assignment	Duangnapa
	6	Intracellular trafficking, virus assembly, maturation and release	Lecture and group discussion	Assignment	Chutima
	7	Viral pathogenesis	Lecture and group discussion	Assignment	Chutima
	8	Cellular responses to viral infection (innate immunity) 1	Lecture and group discussion	Assignment	Alita
	9	Cellular responses to viral infection (adaptive immunity) 2	Lecture and group discussion	Assignment	Alita
	10	Virus-host interactome	Lecture and group discussion	Assignment	Duangnapa
	11	Antiviral agents	Lecture and group discussion	Assignment	Chutima
	12	Virotherapy	Lecture and group discussion	Assignment	Chutima
	13	Introduction to vaccinology	Lecture and group discussion	Written exam	Promsin
	14	Vaccine design and development	Lecture and group discussion	Assignment	Promsin
	15	Assignment presentation and discussion	Presentation, group discussion	Performance assessment using rubrics, Q&A	All

Course Schedule 2022

Monday, Wednesday and Friday, Time 9:00-12:00, Room A407

Assignments

1. Reading, practical or problem-solving assignments from instructors
2. Paper discussions

Assessment Criteria

Assessment Criteria	Assessment Method	Scoring Rubric
Assignment/Exam (70%)	1) Take-home assignments 2) Written exam	1) Punctual assignment submission 2) Creativity 3) Sequencing of information 4) Content accuracy 5) Supporting evidences 6) Grammar and originality
Attendance/participation (10%)	1) Direct observation 2) Group activities and discussion	1) Attendance and punctuality 2) Participation 3) Distracting behaviors 4) General attitude towards learning
Presentation (20%)	1) Presentations 2) Group discussion	1) Organization 2) Content 3) Subject knowledge/ answering questions 4) Presentation style

Students must receive a score of 60% or more to pass the course. Student's achievement will be graded using symbols: A, B+, B, C+, C and F based on the following criteria;

Percentage	Grade	Description
≥ 80%	A	Excellent
75-79.99%	B^+	Good
70-74.99%	B	Fairly good
65-69.99%	C^+	Fair
60-64.99%	C	Poor
< 60%	F	Fail

However, a final grade will be adjusted based on frequency distribution of student's scores from the whole course.

Appeal Procedure

Should the students have any appeal regarding the assessments or grade, inquiry can be made to the instructors and/or the course coordinator immediately either by direct contact, telephone or email.

Course Reading Materials

1.Textbooks and Core Instructional Materials

1. Flint S.J. Principles of Virology. Fourth Edition. ASM press. (2015)

2. Essential Documents and Information
    1. http://www.ncbi.nlm.nih.gov/pubmed
    2. http://www.cdc.gov/vaccines/pubs/pinkbook/index.html
3. Recommended Documents and Information
    1. http://www.virology.ws/These materials may be found on the google classroom.

General Inquiry

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