

Mater of Science (Public Health Infectious diseases and Epidemiology)
Faculty of Public Health, Mahidol University

Information on Courses	
1	Course Name: Laboratory Techniques in Epidemiological Investigation of Infectious Diseases
2	Course code: PHIE604
3	Name(s) of Course Director: Asst.Prof.Dr.Tawee Saiwichai Asst.Prof.Dr. Chayaporn Saranpuetti Assoc.Prof.Dr.Wisit Chaveepojnkamjorn
4	Rational For the inclusion of the course in the program: This is the required course that designed to encourage students apply , integrate the knowledge and develop their critical thinking, analytical, problem solving, and communication skills in the Master of Science (Public Health Infectious Diseases and Epidemiology).
5	Semester/year Offered : 1/1
6	Credit value: 2 Credits
7	Pre-requisite (if any) : -
8	Objective (s) of Course: Students are expected to : 1. Explain the principles of laboratory techniques in microbiology, parasitology, entomology, immunology, molecular biology for the diagnosis of infectious diseases 2. Apply knowledge of laboratory techniques in microbiology, parasitology, entomology, immunology, molecular biology for the diagnosis and epidemiological investigation of infectious diseases 3. Analyze data and interpret results of laboratory diagnosis to investigate the outbreak of infectious diseases by using appropriate statistics
9	Course learning outcome (CLO) : Upon completion of the course, students are able to 1. Apply laboratory techniques in microbiology, parasitology, entomology, immunology, molecular biology for the diagnosis of infectious diseases 2. Integrate knowledge of laboratory techniques in microbiology, parasitology, entomology, immunology, molecular biology for the diagnosis and epidemiological investigation of infectious diseases 3. Analyze data by using appropriate statistics in order to investigate the outbreak of infectious diseases

	4. Communicate by interpret the laboratory diagnosis results for the outbreak of infectious diseases investigation
10.	Transferable skill Written, oral, problem solving skill, logical thinking skill, analytic thinking, communication skill
11.	Teaching and learning assessment strategy: Computer-based evaluation by students and course verification by program committee at the end of this course
12.	Course description; Laboratory techniques in microbiology, parasitology, entomology, immunology, molecular biology; data analysis and interpretation using appropriate statistics for diagnosis and epidemiological investigation of infectious diseases
13.	Teaching methods: Interactive lectures, teaching with discussion, demonstration before practice, presentation by students
14.	Evaluation methods and types: Classroom participation, laboratory practice, rubrics to evaluate the assignment, report and presentation, examination (Mid-term and Final examinations)

15. Content outline of the course/module and SLT per topic					
Topic	CLO	No. of Hours			
		Lecture	Practice	SL	TLT
1. Overview of laboratory techniques for investigation of infectious diseases	1, 2	1	2	3	6
2. Conventional techniques for bacterial detection	1, 2	1	2	3	6
3. Conventional techniques for viral detection	1, 2	1	2	3	6
4. Direct examination for parasites	1, 2	1	2	3	6
5. Culture techniques for parasites	1, 2	1	2	3	6
6. Immunological techniques I: IHC	1, 2	1	2	3	6
7. Immunological techniques II: ELISA, IC	1, 2	1	2	3	6

15. Content outline of the course/module and SLT per topic					
Topic	CLO	No. of Hours			
		Lecture	Practice	SL	TLT
8. Molecular techniques I: Polymerase chain reaction (PCR)	1, 2	1	2	3	6
9. Molecular techniques II: Real-time RT-PCR	1, 2	1	2	3	6
10. Molecular techniques III: DNA sequencing	1, 2	1	2	3	6
11. Epidemiological techniques I: Basic techniques in investigation	1, 2	1	2	3	6
12. Epidemiological techniques II: Genomic epidemiological investigation	1, 2, 3	1	2	3	6
13. Application of laboratory techniques for epidemiological investigation of infectious diseases: group work	1, 2, 3	1	2	3	6
14. Presentation I: Outbreak investigation	4	1	2	3	6
15. Presentation II: Outbreak investigation	4	1	2	3	6
Total		15	30	45	90

Note : SL = self-learning, TLT = total learning time