

Program M.Sc. Tropical Medicine Course Title Host and Environmental Aspects of Tropical Diseases

Course Code TMID 536

Degree Level Faculty Master Tropical Medicine

Interdepartmental

TQF 3: COURSE SPECIFICATION SECTION 1: GENERAL INFORMATION

1. Course code and title

- Thai วขสว 536: โฮสต์และลักษณะของสิ่งแวดล้อมในโรคเขตร้อนEnglish TMID 536: Host and Environmental Aspects of Tropical Diseases
- 2. Number of credits 2(2-0-4) / week

3. Program and type of the course

- 3.1 Program Master of Science in Tropical Medicine
- 3.2 Type of the course Core course

4. Course Coordinator and Lectures

4.1 Course Coordinator

Assoc. Prof. Dr. Karunee Kwanbunjan Department of Tropical Nutrition and Food Science karunee.kwa@mahidol.ac.th

4.2 Lecturers

- Prof. Parnpen Viriyavejakul
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- Assoc. Prof. Yaowapa Maneerat
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- Assoc. Prof. Karunee Kwanbunjan
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5)	Assoc. Prof. Kraichat Tantrakarnapa
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6)	Assoc. Prof. Suwalee Worakhunpiset
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7)	Assoc. Prof. Urai Chaisri
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8)	Asst. Prof. Dumrongkiet Arthan
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13) Asst. Prof. Pornrutsami Jintaridhi Department of Tropical Nutrition and Food Science pornrutsami.jin@mahidol.ac.th 14) Lect. Dr. Suparat Phuanukoonnon Department of Social and Environmental Medicine suparat.phu@mahidol.ac.th 15) Assoc. Prof. Athit Phetrak Department of Social and Environmental Medicine athit.phe@mahidol.ac.th 16) Asst. Prof. Akanitt Jittmittraphap Department of Microbiology and Immunology akanitt.jit@mahidol.ac.th 17) Asst. Prof. Amornrat Aroonnual Department of Tropical Nutrition and Food Science amornrat.aro@mahidol.ac.th 18) Lect. Dr. Thammanitchpol Denpetkul Department of Social and Environmental Medicine Thammanitchpol.den@mahidol.ac.th



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	Tropical Diseases		
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5. Semester/Year

- 5.1 Semester 1 / Academic Year 2022
- 5.2 Number of participant Maximum of 30

6. Pre-requisite course (s)

None

7. Co-requisites

None

8. Venue

Faculty of Tropical Medicine

9. Date of the most recent course specification made

01 August 2021



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SECTION 2: COURSE GOALS AND COURSE OBJECTIVES

Course Goals 1.

The program aims to train students with fundamental knowledge of environmental, nutritional, behavioral and host factors Influence health and diseases in tropics. The association of nutrition, environment and human genetics that play roles in health and diseases as well as immunology and pathology of diseases, in addition health promotion will be introduced. Finish this course will boost knowledge as mentioned above.

2. Objectives of developing/revising this course

2.1 **Course Objectives**

- 1. Explain concept and effect of environmental and social factors as well as sources of toxic substances, health impact and problems.
- 2. Select health promotion strategies to deal with health-related problems.
- 3. Identify significant of nutrition on communicable and chronic non-communicable diseases.
- 4. Demonstrate association of human genetics and nutrition.
- 5. Explain pathology of common communicable and non-communicable diseases.
- 6. Describe fundamental immunology, component of immune system, type of immune system, principle of immunodiagnosis and vaccination.
- 7. Select appropriate diagnosis and its analysis.
- 8. Apply Information technology in literature searching and data analysis.

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2.2 Course-level Learning Outcomes: CLOs

At the end of the course, the students should be able to

- **CLO1:** Describe the knowledge in environmental, social factors and host factors as well as nutritional, immunological, pathological factors in tropical diseases.
- **CLO2:** Analyze the relationship among environmental, social factors and host factors as well as nutritional, immunological, pathological factors in tropical diseases (Seminar and problem based study)
- **CLO3:** Help team to solve problems related to environmental, social factors and host factors as well as nutritional, immunological, pathological factors in tropical diseases
- **CLO4:** Select appropriate technique in communicate problems related to environmental, social factors and host factors as well as nutritional, immunological, pathological factors in tropical diseases

2.3 Relationship between level of learning and ELOs

Table 1 ELOs responsible by the course

ELOs	SubELOs
ELO2: Describe comprehensive knowledge of important tropical diseases	N/A
ELO4: Apply knowledge and skills in social science, epidemiology or	N/A
diagnosis of etiologic agents of tropical diseases	
ELO5: Facilitate either as leader or follower to complete assignments	N/A
ELO6: Select appropriate techniques to effectively communicate	N/A
problems/research based information related to tropical medicine to	
community	



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Table 2 Relationship between CLOs and level of learning toward ELOs

Course Code: TMID 536		Expected Learning Outcomes				
		ELO2	ELO3	ELO4	ELO	ELO6
	1				5	
CLO1 Describe the knowledge in		I				
environmental, social factors and host factors						
as well as nutritional, immunological,						
pathological factors in tropical diseases						
CLO2 Analyze the relationship among				R		
environmental, social factors and host factors						
as well as nutritional, immunological,						
pathological factors in tropical diseases						
(Seminar and problem based study)						
CLO3 Help team to solve problems related to					R	
environmental, social factors and host factors						
as well as nutritional, immunological,						
pathological factors in tropical diseases						
CLO4 Select appropriate techniques in						R
communicate problems related to						
environmental, social factors and host factors						
as well as nutritional, immunological,						
pathological factors in tropical diseases						



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SECTION 3: CHARACTERISTICS AND OPERATION

1. **Course Description**

M.Sc. Tropical Medicine

Tropical Diseases

(ภาษาไทย) ปัจจัยต่างๆ ในสิ่งแวดล้อม มลพิษ สารพิษ และปัจจัยทางโภชนาการ ปัจจัยในส่วนของโฮสต์ และพฤติกรรม ที่ส่งผลต่อสุขภาพและการเกิดโรคในเขตร้อน ความสัมพันธ์ของภาวะโภชนาการ และ พันธุกรรมที่มีบทบาทในการเกิดโรคและสุขภาพ พยาธิวิทยาและพยาธิสภาพของโรค รวมทั้งการสร้างเสริม สุขภาพ

(ภาษาอังกฤษ) The environmental factors. Pollutions, toxic substances, and nutritional factors. Host factors and behavior that influence health and diseases in the tropics. The association of nutrition status and human genetics that play roles in health and diseases, pathogenicity and pathology of diseases including health promotion.

2. Number of hours per semester (Lecture/theory – Practice – Self-study)/semester (32.5-0-65)

3. Methods and number of hours given to each student for consultancy and/or suggestion

Consultancy methods	Number of hours	Responsible person
appointment 5 times × 3 hours	15	Karunee Kwanbunjan
appointment 5 times × 3 hours	15	Yaowapa Maneerat
appointment 5 times × 3 hours	15	Yanin Limpanont
appointment 5 times × 3 hours	15	Akanitt Jittmittraphap



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SECTION 4: DEVELOPMENT OF STUDENT'S ACHIEVEMENT TOWARDS COURSE LEARNING OUTCOMES AND ASSESSMENT

1. Brief description of the expected knowledge and skills given to the students

0	Expected knowledge	Expected skills			
CLU	Expected knowledge	Generic	Specific		
CLO1	— Health triad	Knowledge and	N/A		
	 Environmental health and toxicology 	Information			
	— Immunology	acquisition			
	 Nutrition and disease relationship 	skill			
	 Pathology of common communicable and 				
	non-communicable diseases				
	— Health promotion				
CLO2	— Health triad	Systemic thinking	N/A		
	 Environmental health and toxicology 				
	— Immunology				
	 Nutrition and disease relationship 				
	 Pathology of common communicable and 				
	non-communicable diseases				
	— Health promotion				
CLO3	— Health triad	Managerial skill	N/A		
	 Environmental health and toxicology 	Interpersonal skill			
	— Immunology				
	 Nutrition and disease relationship 				
	 Pathology of common communicable and 				
	non-communicable diseases				
	— Health promotion				



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	Expected knowledge	Expected skills			
CLO		Generic	Specific		
CLO4	— Health triad	Presentation Skill	N/A		
	 Environmental health and toxicology 				
	— Immunology				
	 Nutrition and disease relationship 				
	 Pathology of common communicable and 				
	non-communicable diseases				
	— Health promotion				

2. Teaching Strategy and assessment of the student's learning outcome

	CLO	Teaching	Evaluation Method
CL 01	Describe the knowledge in environmental social		Paper examination
CLOI	factors and host factors as well as nutritional	Discussion	
	immunological, pathological factors in tropical diseases	DISCUSSION	
CLO2	Analyze the relationship among environmental, social	Lecture	Paper examination
	factors and host factors as well as nutritional,	Discussion	Observation
	immunological, pathological factors in tropical diseases		
	(Seminar and problem based study)		
CLO3	Help team to solve problems related to	Lecture	Observation
	environmental, social factors and host factors as well	Discussion	Assignment
	as nutritional, immunological, pathological factors in	Assignment	submission (rubric
	tropical diseases		score)
CLO4	Select appropriate technique in communicate	Lecture	Observation
	problems related to environmental, social factors and	Discussion	Assignment
	host factors as well as nutritional, immunological,	Assignment	submission (rubric
	pathological factors in tropical diseases		score)



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SECTION 5: TEACHING AND EVALUATION

1. Teaching plan

		Number of hours				
Period	Торіс	Lecture	Practice	Self-		Instructor
				study	media	
1	Introduction to TMID 536	0.5	0	1	Lecture, assignment	Karunee
2	Introduction to	1	0	2	Lecture, discussion	Athit,
	environmental health					Thammanitchpo
						ι
3	Environmental pollution	1	0	2	Lecture, discussion	Kraichat
4	Basic concepts in	1	0	2	Lecture, discussion	Suwalee
	environmental toxicology					
5	Introduction to medical	1	0	2	Lecture, discussion	Yanin
	malacology					
6	Introduction applied	1	0	2	Lecture, discussion	Pannamthip
	biotechnology					
7	Applied biotechnology in	1	0	2	Lecture, discussion	Pongrama
	tropical medicine					
8	Social medicine	1	0	2	Lecture, discussion	Suparat
9	Radiation pollution	1	0	2	Lecture, discussion	Amornrat
10	Nutrition and infectious	1	0	2	Lecture, discussion	Dumrongkiet
	diseases					
11	Nutrition and chronic	1.5	0	3	Lecture, discussion	Karunee
	diseases					
12	Nutritional insufficiency	1.5	0	3	Lecture, discussion	Pornrutsami
13	Nutrition and obesity	1.5	0	3	Lecture, discussion	Pattaneeya
14	Nutrigenomic and	1.5	0	3	Lecture, discussion	Pattaneeya
	nutrigenetics					



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15	Evaluation 1: Paper examination



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		Nun	Number of hours		T/L activities and	
Period	Topic	Lecture	Practice	Self- study	media	Instructor
16	Components of immune system	1	0	2	Lecture, discussion	Nathamon
17	Innate Immunity	2	0	4	Lecture, discussion	Narisara
18	Adaptive Immunity	2	0	4	Lecture, discussion	Nathamon
19	Immunological Application	1	0	2	Lecture, discussion	Akanitt
20	Immunization	1	0	2	Lecture, discussion	Akanitt
21		Evaluati	on 2: Pap	er examir	nation	
22	Pathology of environmental diseases	1	0	2	Lecture, discussion	Sumate
23	Pathology of bacterial diseases	1	0	2	Lecture, discussion	Urai
24	Pathology of protozoal diseases	1	0	2	Lecture, discussion	Urai
25	Pathology of helminthic diseases	1	0	2	Lecture, discussion	Yaowapa
26	Pathology of fungal diseases	0.5	0	1	Lecture, discussion	Yaowapa
27	Pathology of diseases caused by viruses, rickettsiae and spirochetes	1	0	2	Lecture, discussion	Parnpen
28	Neoplasia	1	0	2	Lecture, discussion	Parnpen



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		Nun	nber of h	ours	T/L activities and	
Period	Торіс	Lecture	Practice	Self-	media	Instructor
				study		
29	Pathology of nutritional	0.5	0	1	Lecture, discussion	Parnpen
	diseases					
30		Evaluati	on 3: Pap	per examin	ation	
31	Group Assignment	3	0	6	Group	All lecturers
					presentation,	
					discussion	
	Total	32.5	0	65		

2. Plan to assess students' learning achievement according to CLOs

2.1 Student assessment

a) Formative Assessment (Monitoring student progress)

Assessing through paper examinations 1 and 2; in-class discussion

 b) Teaching strategies used to develop the knowledge and skills in Item 1 above, and how to assess the students' learning outcomes Summative Assessment



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	Tooching/loorning_stratogics	Assessment methods and weight		
CLO	reaching tearning strategies	Assessment Methods/tools	%	
CLO1	Describe the knowledge in environmental, social factors and host factors as well as nutritional, immunological, pathological factors in tropical diseases	MCQ/Written exam/ Matching questions	70	
CLO2	Analyze the relationship among environmental, social factors and host factors as well as nutritional, immunological, pathological factors in tropical diseases (Seminar and problem based study)			
CLO3	Help team to solve problems related to environmental, social factors and host factors as well as nutritional, immunological, pathological factors in tropical diseases	Assignment submission/ Observation	30	
CLO4	Select appropriate technique in communicate problems related to environmental, social factors and host factors as well as nutritional, immunological, pathological factors in tropical diseases			
Total weight				

(1) Assessment methods/Tools and weight



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		Rubric score assess	ment for Presentation		
	Score 5-Excellent	Score 4-Very good	Score 3-Adequate	Score 2-Limited	Score 1-Poor
Knowledge Critique					
Quality of main points	Main points are very clear and	Main points are clear and detailed	Main points are somewhat clear	Main points are not clear	lacking main
	very detailed		but could use more detail	and lack significant detail	points and related details
Demonstrated understanding	Original wording,	Steps beyond simple recall and	Recalls appropriate concepts or	Attempt to answer the	Apparent misconception(s) or
	analogies, or examples.	attempts to interpret ideas to	examples to address question	question by own basic	knowledge gap(s)
	Applies taught concepts to	better answer the question		knowledge	
	answer the question.				
Linking of problem topics	Carefully evaluates multiple	Incorporates multiple concepts to	Answers the question	Answers the question using	No any answer to link with
	topics that apply to the	answer the question and	using several concepts or topics	a single concept or topic	topics
	question,	demonstrates judgment in			
	and synthesizes them into a	applying concepts			
	coherent answer				
Persuasion	Every idea or conclusion is	Every idea or conclusion is	Relates ideas and conclusions	Ideas and facts not clearly	Opinion and fact not clearly
	logically supported by relevant	logically supported by relevant	to facts or concepts taught as	separated. Showing own	separated. Basis for opinions
	facts. Includes judgment of	facts	fact	opinion sometime according	is unclear at times.
	data reliability.			to facts.	



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	Score 5-Excellent	Score 4-Very good	Score 3-Adequate	Score 2-Limited	Score 1-Poor
Presentation					
Precision and detail in	very clear, well-constructed,	clearly correct and showing	correct and show a general	Some errors and show some	numerous errors and lack
presentation document	accurate and show attention to	accuracy of detail	accurately detail	detail	detail
	detail				
Visual tools	Visual aids are very	Visual aids are usually	Visual aids are reasonably	Visual aids have limited	• Visual aids demonstrate
	creative, clear, and easy to	creative, clear, and easy to read	creative, clear, and easy to	creativity or clarity or are	no creativity or clarity
	read	Presentation is often	read	sometimes difficult to read	and are often difficult to
	• Presentation has no	misspellings or	Presentation has an	• Presentation has multiple	read
	misspellings or	grammatical errors	occasional misspelling or	misspellings and/or	• Presentation has
	grammatical errors	 Most figures and images 	grammatical error	grammatical errors	numerous misspellings
	• Figures and images	explained and described well	 Figures are explained 	• Figures are less explained	and/or grammatical
	explained and described well				errors
					• Figures are not explaine
Communication	• Speaker consistently faces the	• Speaker generally faces the	Speaker sometimes faces	• Speaker rarely faces the	• Speaker faces away fror
	audience and	audience and maintains good eye	the audience and maintains	audience or makes eye	the audience or makes n
	maintains good eye	contact	eye contact	contact	eye contact
	contact	• Speaker generally appears to be	 Speaker sometimes appears to 	• Speaker rarely appears to be	 Speaker appears
	 Speaker consistently 	engaging with the audience	be engaging with the audience	engaging with the audience	disengaged from the
	appears to be engaging	 Speaker uses body motions and 	 Speaker's body motions and 	 Speaker uses few body 	audience
	with the audience	gestures well	gestures neither support nor	motions or gestures or has	 Speaker lacks any body
	 Speaker uses body 		detract from presentation	gestures or movements that	motions or gestures or
	motions and gestures very			distract the audience	demonstrates
	effectively				consistently distraction
					body motions or gestures



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	Score 5-Excellent	Score 4-Very good	Score 3-Adequate	Score 2-Limited	Score 1-Poor
Response to questions and	excellent accurate, clear and	good accurate, clear and effective	adequate accurate, clear and	poorly accurate, clear and	not accurate, clear and
answer	effective		effective	effective	effective



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Rubric score assessment of TMID 536 Host and Environmental Aspects of Tropical Diseases (Group Assignment)

Evaluator				
	Student rate			
	Group 1 Group 2 Group 3 Group 4			
	Nutrition	Environmental Health	Pathology	Immunology
Knowledge Critique (15 %)				
Quality of main points				
Demonstrated understanding				
Linking of problem topics				
Persuasion				
Average rate				
Total student's score				
Presentation (15 %)				
Precision and detail in presentation				
document				
Visual tools				
Communication				
Response to questions and answer				
Average rate				
Total student's score				

Average rate = (sum of rates from all criteria) /4

Total student's score = average rate x % section score



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Grading (2)

А	≥ 80
B+	70-79.99
В	60-69.99
C+	50-59.99
С	40-49.99

Passing grade is B

(3) **Re-examination**

Student who gets grade lower than B has an opportunity to take a re- examination once. The result of re-examination will be graded

as;

В	≥60	Pass
C+	50-59.99	Not pass
С	40-49.99	Not pass

3. Student's appeal

Possibility of student's appeal is directly to course co-ordinator by personal contact, letter or email.

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SECTION 6: FACILITIES AND INFRASTRUCTURE

1. Required Texts

- Abbas AK. Basic Immunology Updated Edition: Functions and Disorders of the Immune. 3rd ed. Philadelphia: WB Saunders; 2011.
- Ballantyne B, Marrs TM, Syversen T. General and applied toxicology. 2nd ed. London: Macmillan Reference Ltd; 1999.
- Binford CH, Conner DH. Pathology of Tropical and Extraordinary Diseases. An Atlas. Vol.
 1. Washington, DC: The Armed Forces Institute of Pathology; 1976. p. 244 339.
- Blumenthal DS, Rutrenber J. Introduction to Environmental Health. 2nd ed. NewYork: Springer Publishing Company; 1995.
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- Edward ER, Richard SF, Robert DB. Invertebrate zoology: A functional evolutionary approach. 7th ed. California: Brooks/Cole Thomson Learning; 2003. 1008 pp.
- 7) Brown JE. Nutrition now. 4th ed. Belmont: Thomson Wadsworth; 2005.
- 8) Delve PJ. Roitt's Essential Immunology. 12thed. London: Wiley-Blackwell; 2011.
- 9) Elmadfa I, Leitzmann C. Ernährung des Menschen. 2. Stuttgart: Auflage Verlag Ulme; 1988.
- Gilles HM, Peter W. Color Atlas of Tropical Medicine and Parasitology. 4th ed. New York: Mosby-Wolfe; 1995.
- Greenwood D, Slack R, Peutherer J, Barer M. Medical Microbiology. 17th ed. Chicago: Elsevier Inc.; 2007.
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- Gutierrez Y, Lichtenberg F. Protozoal diseases. In: Damjanov L, linder J. editors.
 Anderson's Pathology. 10th ed. Vol. 1. New York: Mosby year Book, Inc.; 1996. p. 985 1011.
- Jeffery HC, Leach RM. Atlas of Medical Helminthology and Protozoology. 3rd ed. (revised by GO. Cowan). London: Churchill Livingstone; 1991.
- 15) Kaufmann SHE, Sher A, Ahmed R. Immunology of Infectious Diseases. Washington DC: ASM Press; 2002.
- 16) Kindt TJ, Goldsby RA, Osborne BA. Kuby Immunology. 6thed. New York: WH Freeman and Company; 2007.
- 17) Klaassen CD. Casarett & Doull's Toxicology: The basic science of poison. 6th ed. New York: McGraw-Hill; 2001.
- Klatt EC. Robbins and Cotran Atlas of Pathology. 1st ed. Philadephia: SaundersElsevier;
 2006.
- Kumar V, Abbas AK, Fausto N. Robbins and Cotran Pathologic Basic of Diseases, 7thed.
 Philadephia: Saunders Elsevier; 2005.
- Lucas S. Pathology of tropical infections. In: McGee JOD, Isaacson PG, Wright NA. editors. Oxford Textbook of Pathology. Vol. 2b. New York: Oxford University Press; 1992, p. 2189 - 2225.
- Mann J, Truswell AT. Essentials of human nutrition. 3rd ed. New York: Oxford University Press Inch: 2007.
- 22) Mehlhorn H. Parasitology in Focus. Philadephia: Springer-Verlag; 1988.
- 23) Murphy K. Janeway's Immunobiology. 8thed. New York: Garland Science; 2011.
- 24) Orihel TC, Lawrence RA. Parasites in Human Tissues. Chicago, IL: ASCP Press; 1995.
- 25) Paul WE. Fundamental Immunology. 6thed. Philadelphia: Lippincott Williams & Wilkins; 2008.

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 Clinicopathologic foundations of medicine. 4th ed. Baltimore: Lippincott Williams &
 Wilkins; 2001.
- 27) Salfelder K. Atlas of Parasitic Pathology. Vol. 20. UK: Kluwer Academic Publishers; 1992.
- Sri-aroon P. Handbook of Freshwater snails of medical importance in Thailand. 50th Anniversary Faculty of Tropical Medicine, Mahidol University; 2010. 22 pp.
- 29) Yu MH. Environmental toxicology: Biological and health effects of pollutants. 2nd ed.
 New York: CRC Press; 2004.

2. Suggested Materials

- Chaisri U, Nagata M, Kurazono H, Horie H, Tongtawe P, Hayashi H, et al. Localization of Shiga toxins of enterohaemorrhagic *Escherichia coli* in kidneys of paediatric and geriatric patients with fatal haemolytic uraemic syndrome. Microbial Pathog. 2001;31(2): 59-67.
- 2) Medscape website
- 3. Other resources (if applicable)

None



Program MSc. Tropical Medicine Course Title Host and Environmental Aspects of **Tropical Diseases**

TMID 536

Course Code

Degree Level Faculty

Master Tropical Medicine

Department

Interdepartmental

SECTION 7: COURSE'S EVALUATION AND IMPROVEMENT

1. Student's evaluation towards the effectiveness of the course

- 1) Discussion between students and lecturers
- 2) Observation on students behavior
- 3) Lecturers evaluation according to teaching topics

2. Assessment of teaching strategy

- Observation of lecturers participation in seminar period 1)
- 2) Examination results
- 3) Learning evaluation test

3. Improvement of teaching approaches

After obtaining student's evaluation and teaching strategy results, meetings of all lecturers will be organized. The meeting aims to evaluation results and discuss on improvement of teaching topics, teaching strategy as necessary.

4. Verification of student's learning achievement

Verifications are performed during course conduct, i.e. questions setting to students, knowledge improvement of students from their advisor inquiry, Lecturers from others course are invited to attend the seminar. After finishing the course, verification is carried on via research proposal observation, research work presentation in student forum.

5. Review of the course's effectiveness and plan for improvement

Evaluation and verification information will be used to improve the course as;

- 1) Course modification every 2 years
- 2) Teaching technique modification by students selves learning or IT integration
- 3) Change or switch the lecturers