



Mahidol University  
Faculty of Tropical Medicine,  
Department of Clinical Tropical Medicine

**Programme Specification**  
Master of Clinical Tropical Medicine  
(International Program)  
For Academic Year 2018-2022



**Programme Specification**  
**Master of Clinical Tropical Medicine Programme (International Program)**  
**Revised Programme 2018**  
**For Academic Year 2018-2022**

<b>Name of Institution</b>	Mahidol University
<b>Campus/Faculty/Department</b>	Faculty of Tropical Medicine, Department of Clinical Tropical Medicine

**Section 1 General Information**

**1. Curriculum Name**

<b>Thai</b>	หลักสูตรอายุรศาสตร์เขตร้อนคลินิกมหำบัณฑิต (หลักสูตรนานาชาติ)
<b>English</b>	Master of Clinical Tropical Medicine Programme (International Program)

**2. Name of Degree and Major**

Full Title Thai:	อายุรศาสตร์เขตร้อนคลินิกมหำบัณฑิต
Abbreviation Thai:	อค.ม.
Full Title English:	Master of Clinical Tropical Medicine
Abbreviation English:	M.C.T.M.

**3. Major Subjects (if any): N/A**

**4. Required Credits: not less than 36 credits**

**5. Curriculum Characteristics**

- 5.1 **Curriculum type/model:** Master's Degree
- 5.2 **Language:** English
- 5.3 **Recruitment:** Both Thai and international students
- 5.4 **Collaboration with Other Universities:** This programme is Mahidol University's program.
- 5.5 **Graduate Degrees Offered to the Graduates:** One degree

**6. Curriculum Status and Curriculum Approval**

- 6.1 Programme is a revised programme 2018
- 6.2 Starting in semester 1, academic year 2018 onwards
- 6.3 Curriculum committee approved the programme in its meeting 6/2018 on February 27, 2018
- 6.4 The Mahidol University Council approved the programme in its meeting 532 meeting on May 16, 2018

**7. Readiness to Implement/Promote the Curriculum**

The curriculum from the programme is readily implemented in the academic year 2018 and promoted its quality and standard according to criteria set by Thai Qualification Framework for Higher Education in academic year 2019 (1 years after implementation).

## 8. Opportunities of the Graduates

8.1 Medical doctors with in-depth knowledge in tropical medicine, both in theory and practice, working in hospitals, travel clinics, medical and organisations, both in government and public sectors

8.2 General physicians with tropical medicine expertise, who can be community leaders, consultants or policy makers for prevention of tropical diseases in communities, national, region or worldwide

8.3 General physicians with the expertise in clinical research especially in tropical medicine

## 9. Name of the Faculty in Charge of the Programme (All from Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University)

No.	Name	Degree (Field of Study), University: Year of graduate
1.	Asst Prof Supat Chamnanchanunt, M.D.	Dip. Thai Board of Haematology, Thai Medical Council: 2005 D.T.M.&H., Mahidol University: 2001 M.D., Rangsit University: 1998
2.	Asst Prof Udomsak Silachamroon, M.D.	Dip. Thai Board of Preventive Medicine (Travel Medicine), Thai Medical Council: 2013 Dip. Thai Board of Pulmonary Medicine, The Royal College of Physician of Thailand: 1998 Dip. Thai Board of Internal Medicine, Thai Medical Council: 1996 M.Sc. (Medicine), Chulalongkorn University: 1998 M.D. (Second-class Honours), Chulalongkorn University: 1990
3.	Lect Chatporn Kittitrakul, M.D.	Dip. Thai Board of Preventive Medicine (Travel Medicine), Thai Medical Council: 2016 Dip. Thai Board of Gastroenterology, Thai Medical Council: 2009 Dip. Thai Board of Internal Medicine, Thai Medical Council: 2007 D.T.M.&H., Mahidol University: 2003 M.D. (First-class Honours), Chulalongkorn University: 2001
4.	Lect Dr Wirongrong Chierakul, M.D.	Ph.D. (Life and Biomolecular Science) "Open University, United Kingdom": 2009 Dip. Thai Board of Preventive Medicine (Travel Medicine), Thai Medical Council: 2016 Dip. Thai Board of Internal Medicine, Thai Medical Council: 1995 M.D. Mahidol University: 1991

## 10. Venue for Instruction

Faculty of Tropical Medicine, Mahidol University

## 11. External Factors to Be Considered in Curriculum Planning

### 11.1 Economic Situation/Development

Current era of technology and globalization, international travelling is very convenient and fast. Additionally, global warming is also a threat. Therefore, the emerging and re-emerging of tropical infectious diseases causing tremendous public health concerns around the world especially the tropical regions. The shortage of the skilled medical personnel in many developing countries leads to more serious situation. Some common tropical infectious diseases are persistently and progressively problems, such as tuberculosis, dengue infection, etc. Due to these facts, the programme is aim to produce doctors who are experts in tropical medicine and are able to response to these issues.

### **11.2 Social and Cultural Situation/Development**

In the new generations, the global burden of the disease is changing extremely, mainly due to the change of population life expectancy and reduced growth rate. Spelling travelling, especially to tropical region, is another factor making this programme more demanded.

## **12. The Effects Mentioned in No.11.1 and 11.2 on Curriculum Development and Relevance to the Missions of the University/Institution**

### **12.1 Curriculum Development**

According to the problems stated in item 11, the Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University developed the curriculum of Master of Clinical Tropical Medicine (International Program) in order that students are able to manage all aspects of tropical diseases. According to the stakeholder survey, the needs of increasing the networking in the area of research of interest and also the more intensive mentoring system provided to students are expected.

### **12.2 Relevance to the Missions of the University/Institution**

The curriculum supports the mission of the university and the Faculty as it aims to develop doctors who are knowledgeable and skilful in tropical medicine and research to provide health services to improve the quality of life of people, especially in tropical areas.

## **13. Collaboration with Other Curricula of the University**

### **13.1 Course(s) offered by other faculties/departments/ programs**

For the first semester, students study the courses provided in Graduate Diploma in Clinical Tropical Medicine and Hygiene (D.T.M.&H.) which are appeared as the followings.

#### **Core Courses**

TMMH	502	Food- and Water-borne Diseases: Soil-transmitted Helminthiasis	3 (2-2-5)
TMMH	503	Food- and Water-borne Diseases: Tissue Parasites	2 (2-0-4)
TMMH	504	Important Mosquito-borne Diseases	3 (3-0-6)
TMMH	505	Non-mosquito Vector-borne Diseases and Zoonosis	2 (2-0-4)

#### **Elective Courses**

TMID	510	Statistics for Clinical Research	3 (2-2-5)
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TMCD	503	Introduction to Clinical Research (Suggested for GCP certificate)	1 (1-0-2)
TMCD	530	Tropical Infectious Diseases Case Study	1 (0-2-1)
TMMH	508	Travel Medicine I	1 (1-0-2)
TMCD	532	Travel Medicine II	2 (2-0-4)

**13.2 Course(s) offered to other programs:** None

**13.3 Coordination:** The courses provided in 13.1 are mainly co-ordinated by the Department of Clinical Tropical Medicine. The changes or any revisions made to the courses are discussed through the monthly department meetings in which the committees from both programs are involved.

## Section 2 Information of the Curriculum

### 1. Philosophy, Justification, and Objectives of the Curriculum

#### 1.1 Philosophy and Justification of the Curriculum

##### 1.1.1 Philosophy of Program

Mahidol University determination statement is to be the ‘Wisdom of the Land’ and aims to produce global professionals who are well equipped with depth and breadth of knowledge. It aims to produce the graduates with attainment of academic achievement through learning-centered education, outcome-based education and constructivism.

Aligned with that, the Master of Clinical Tropical Medicine (International Program) was established to train medical graduates to become extensively proficient and skilful in clinical tropical medicine and research on tropical diseases, cultivate attitudes and skills in both fundamental and clinical researches being conducted with responsibilities in themselves and consideration on rights of research participants in line with widely recognized ethical standards for research.

##### 1.1.2 Significance of Programme

Currently, knowledge and technology have rapidly progressed and developed, whereby modern communication technology are playing a significant role. Taking a role in providing health-related knowledge, medical treatment, and advices on disease prevention to patients, it is extremely necessary for physicians to develop their knowledge in response with the world of innovation, as well as contemplate in accepting and analysing information.

#### 1.2 Objectives of the Programme:

There are two plans of the programme, both of which are aimed to produce graduates which will be qualified as:

Upon completion of the programme, medical graduates will achieve proficiency in the following areas:

1. An ethical and moral medical professional and researcher.
2. Knowledgeable in common tropical diseases, their challenges and solutions, skilful in approaching patients with tropical diseases to get to the diagnosis and provide proper treatment and to plan for further prevention and control.
3. Knowledgeable in conducting international-standard clinical research.
4. The capacity and skills to critically appraise the research publications, skilful in conducting clinical research, communicating and developing professionalism.
5. Skills for communicating research to the international community via publications and presentations (for Plan A(2) only).
6. Skills in utilizing instruments to collect and analyse statistical data and presenting works with appropriate technology.

The programme objectives are aligned and translate into the programme learning outcomes as shown in 1.3 and in Appendix C.

### 1.3 Expected Learning Outcomes (ELOs)

ELO 1 Demonstrate ethical consideration and follow the code of conduct for medical practice and research

ELO 2 Apply all aspects of tropical medicine, including epidemiology, aetiology, disease manifestations, diagnosis, treatment, prevention and control during clinical work in the management of patients and in working with communities

ELO 3 Appraise research articles using informed and reasoned consideration of the results, methods, statistical analysis and assumptions, applying knowledge in tropical medicine

ELO 4 Organise tropical medicine clinical research according to the ICH GCP by applying utilising of medical statistics, accepted research methodologies, and the principle of good clinical practice (GCP)

ELO 5 Formulate professional teamwork in clinical Tropical Medicine

ELO 6 Communicate effectively using appropriate technologies for data analysis and presentation

ELO 7 Develop a scientific research suitable for publishing in an international peer-reviewed journal and/or presentation at an international conference (Plan A(2) only)

## 2. Plan for Development and Improvement

Plan for Development/Revision	Strategies	Evidences/Indexes
1. Minor revision every year in response to the stakeholder needs and expectations	1. Stakeholders needs and expectations survey 2. Follow and evaluate the implementation of the programme every year • Satisfaction of employer/entrepreneur/ or those who hire graduates	1. Stakeholders survey report 2. Satisfactory evaluation report
2. Major revision every five years based on the policy of Thai Office of Commission of Higher Education	• SWOT analysis	1. SWOT result 2. Revised curriculum
3. Teacher development program	In-house training for all lecturers and orientation for new staff	1. Training attendance 2. Post-training evaluation



## Section 3 Educational Management System, Curriculum Implementation, and Structure

### 1. Educational Management System

- 1.1 **System:** Educational management system operated as two semesters
- 1.2 **Summer Session:** N/A
- 1.3 **Credit Equivalence to Semester System:** N/A

### 2. Curriculum Implementation

2.1 **Teaching Schedule:** Weekdays from Monday to Friday (8:00-16:30)

#### 2.2 Qualifications of Prospective Students

##### 2.2.1 For Plan A(2): An applicant is required to have:

- 1. Holding a Medical degree (M.D. or M.B.B.S. or equivalent degrees) with cumulative GPA not less than 3.0 and be a qualified registered medical practitioner who practices for more than 3 years, with recommendation and confirmation documents, or
- 2. Graduated in Diploma of Tropical Medicine and Hygiene (D.T.M.&H.) or other equivalent diploma degrees within 5 years, and
- 3. Have an English Proficiency Examination score as required by Faculty of Graduate Studies

##### 2.2.2 For Plan B: An applicant is required to have:

- 1. Holding a Medical degree (M.D. or M.B.B.S. or equivalent degrees) with cumulative GPA not less than 2.7 and be a qualified registered medical practitioner who practices for more than 1 year, with recommendation and confirmation documents, or
- 2. Graduated in Diploma of Tropical Medicine and Hygiene (D.T.M.&H.) or other equivalent diploma degrees within 5 years, and
- 3. Have an English Proficiency Examination score as required by Faculty of Graduate Studies

#### 2.3 Problems of New Students Encounter

- 1. Students from non-native English speaking countries with unsatisfied English proficiency may encounter the problem during teaching and learning activities, writing thesis/thematic paper.
- 2. Students may lack knowledge in medical statistics which is essential for research works.

#### 2.4 Strategies for Problem Solving/Limited Requirement in No.2.3

Problems of New Students	Strategies for Problem Solving
1. Students from non-native English speaking countries with unsatisfied English proficiency may encounter the problem during teaching and learning activities, writing thesis/thematic paper.	1. Students who could not pass the satisfaction English proficiency test must attend extra English course and pass the required English proficiency test during the first semester.
2. Students who lack knowledge in medical statistics which is essential for research works.	2. The programme provide discussion and scenario of the use of statistical analysis during the seminar sessions and adding more elective courses of medical statistics for all students, both basic and practical. All students are encouraged to attend these courses.

## 2.5 Five-Year-Plan for Recruitment and Graduation of Students

Academic Year	2018		2019		2020		2021		2022	
	A(2)	B	A(2)	B	A(2)	B	A(2)	B	A(2)	B
The number of students enrolled	5	6	5	6	5	6	5	6	5	6
Cumulative number	10	6	10	6	10	6	10	6	10	6
The number of graduate students	5	6	5	6	5	6	5	6	5	6

\*According to the break-even below, at least 6 students are required each year for the whole program.

## 2.6 Budget based on the plan

Budget: The budget is from Faculty of Tropical Medicine, Mahidol University.

Estimated income per student	Plan A(2)	Plan B
Registration fee		
Tuition	108,000	135,000
Research	150,000	40,000
Thesis/Thematic paper credit fee	18,000	10,500
<b>Total income per student</b>	<b>276,000</b>	<b>185,500</b>

Estimated expenses	Plan A(2)	Plan B
<b>Variable expenses per student</b>		
Overhead cost for Faculty of Graduate Studies and University	21,600	27,000
Thesis/Thematic paper support budget	60,000	40,000
Translator incentive	8,000	8,000
Research site fee	10,000	10,000
Proposal and thesis/thematic paper defence examination	18,000	10,500
Transportation for patients (long case exam)	500	500
<b>Total variable expenses per student</b>	<b>118,100</b>	<b>96,000</b>
<b>Fixed expenses</b>		
Lecturer salary	667,540	667,540
Allowance for off-site activity	10,000	20,000

Estimated expenses	Plan A(2)	Plan B
Utility fee	25,000	25,000
Facility	20,000	20,000
Supply	20,000	20,000
Equipment	15,000	15,000
Guest lecturer	-	10,000
Transportation for patients	-	5,000
<b>Total fixed expenses</b>	<b>757,540</b>	<b>782,540</b>

	Plan A(2)	Plan B
Number of students at break-even point	5 students	6 students
Cost of students at break-even point	220,800 Bahts	185,500 Bahts

\*Both plans use shared resourced at concurrent period, therefore the break-even point will be the maximum break-even between both plans in which at least **6** students are required each year for the whole programme (as shown in table 2.5).

## 2.7 Educational System: Classroom Mode

## 2.8 Transfer of Credits, Courses and Cross University Registration (If any)

Credits transferring must be in compliance with Mahidol University's regulations on Graduate Studies. More information can be found at [www.grad.mahidol.ac.th](http://www.grad.mahidol.ac.th).

## 3. Curriculum and Instructors

### 3.1 Curriculum

**3.1.1 Number of credits** (not less than) 36 credits

### 3.1.2 Curriculum Structure

The curriculum structure is set in compliance with Announcement of Ministry of Education on the subject of Criteria and Standards of Graduate Studies B.E. 2558, Master Degree, Plan A(2) and Plan B as below:

	Plan A(2)	Plan B
Required courses	22	22
Elective courses not less than	2	8
Thesis	12	-
Thematic Paper	-	6
<b>Total not less than</b>	<b>36</b>	<b>36</b>

In case of graduates from Diploma of Tropical Medicine and Hygiene (D.T.M.&H.), the credits can be transferred not exceeding 9 credits and 12 credits of course subjects for Plan A(2) and Plan B, respectively (excluding thesis/thematic paper).

### 3.1.3 Courses in the curriculum

#### 1) Required Courses (22 Credits)

		Credits (lecture – practice – self-study)
TMMH 502	Food- and Water-borne Diseases: Soil-transmitted Helminthiases	3 (2-2-5)
วขอส ๕๐๒	โรคที่ติดต่อทางอาหารและน้ำ: โรคหนอนพยาธิที่ติดต่อทางดิน	๓ (๒-๒-๕)
TMMH 503	Food- and Water-borne Diseases: Tissue Parasites	2 (2-0-4)
วขอส ๕๐๓	โรคที่ติดต่อทางอาหารและน้ำ: โรคปรสิตในเนื้อเยื่อ	๒ (๒-๐-๔)
TMMH 504	Important Mosquito-borne Diseases	3 (3-0-6)
วขอส ๕๐๔	โรคติดต่อสำคัญที่นำโดยยุง	๓ (๓-๐-๖)
TMMH 505	Non-mosquito Vector-borne Diseases and Zoonosis	2 (2-0-4)
วขอส ๕๐๕	โรคติดต่อจากพาหะอื่นนอกจากยุงและโรคติดต่อจากสัตว์สู่คน	๒ (๒-๐-๔)
<sup>a</sup> TMCD 526	Tropical Medicine Apprenticeship	6 (3-6-9)
วขอข ๕๒๖	เวชปฏิบัติในอายุรศาสตร์เขตร้อน	๖ (๓-๖-๙)
<sup>b</sup> TMCD 504	Clinical Apprenticeship	6 (3-6-9)
วขอข ๕๐๔	เวชปฏิบัติทางคลินิก	๖ (๓-๖-๙)
TMCD 527	Clinical Case Teaching	3 (3-0-6)
วขอข ๕๒๗	สอนกรณีศึกษาทางคลินิก	๓ (๓-๐-๖)
TMCD 535	Seminar in Clinical Tropical Medicine	3 (2-2-5)
วขอข ๕๓๕	สัมมนาอายุรศาสตร์เขตร้อนคลินิก	๓ (๒-๒-๕)

#### 2) Elective Courses

##### Plan A(2) (not less than 2 Credits)

##### Plan B (not less than 8 Credits)

		Credits (lecture – practice – self-study)
TMID 510	Statistics for Clinical Research	3 (2-2-5)
วขสว ๕๑๐	สถิติสำหรับการวิจัยทางคลินิก	๓ (๒-๒-๕)
TMCD 503	Introduction to Clinical Research	1 (1-0-2)
วขอข ๕๐๓	บทนำสู่การวิจัยทางคลินิก	๑ (๑-๐-๒)
TMCD 521	Literature Review	2 (0-4-2)
วขอข ๕๒๑	ทบทวนวรรณกรรม	๒ (๐-๔-๒)
TMCD 523	Clinical Laboratory Methods for Research	1 (1-0-2)
วขอข ๕๒๓	การตรวจห้องปฏิบัติการทางคลินิกสำหรับงานวิจัย	๑ (๑-๐-๒)
TMCD 524	Interesting Case Report	1 (0-2-1)
วขอข ๕๒๔	รายงานผู้ป่วยที่น่าสนใจ	๑ (๐-๒-๑)
TMCD 530	Tropical Infectious Diseases Case Study	1 (0-2-1)
วขอข ๕๓๐	กรณีศึกษาผู้ป่วยโรคติดต่อเขตร้อน	๑ (๐-๒-๑)
TMCD 531	Tropical Clinical Pathology	1 (1-0-2)
วขอข ๕๓๑	พยาธิวิทยาเขตร้อนคลินิก	๑ (๑-๐-๒)

	<b>Credits (lecture – practice – self-study)</b>
TMMH 508 Travel Medicine I	1 (1-0-2)
วขอส ๕๐๘ เวชศาสตร์การเดินทาง ๑	๑ (๑-๐-๒)
TMCD 532 Travel Medicine II	2 (2-0-4)
วขอช ๕๓๒ เวชศาสตร์การเดินทาง ๒	๒ (๒-๐-๔)
TMCD 533 Special Clinics in Tropical Medicine	1 (1-0-2)
วขอช ๕๓๓ คลินิกเฉพาะทางในอายุรศาสตร์เขตร้อน	๑ (๑-๐-๒)
TMCD 534 Practical Statistic for Clinical Research	1 (0-2-1)
วขอช ๕๓๔ สถิติปฏิบัติการสำหรับการวิจัยทางคลินิก	๑ (๐-๒-๑)

In addition to elective courses mentioned above, a student may register other courses in international programme offered by other faculties or the ones offered by other universities according to the student's interest with the approval of the curriculum committee or the advisor.

### 3) Thesis (for Plan A(2))

	<b>Credits (lecture – practice – self-study)</b>
TMCD 698 Thesis	12 (0-36-0)
วขอช ๖๙๘ วิทยานิพนธ์	๑๒ (๐-๓๖-๐)

### 4) Thematic paper (for Plan B)

	<b>Credits (lecture – practice – self-study)</b>
TMCD 697 Thematic Paper	6 (0-18-0)
วขอช ๖๙๗ สารนิพนธ์	๖ (๐-๑๘-๐)

#### 3.1.4 Research Project of the Programme [for Plan A(2)]

- (1) Travel Medicine
- (2) Malaria
- (3) Dengue infection
- (4) Rickettsioses
- (5) Melioidosis
- (6) HIV/AIDS
- (7) Tuberculosis
- (8) Leptospirosis
- (9) Other tropical diseases

#### 3.1.5 Thematic Paper Project (for Plan B)

- (1) Dengue infection
- (2) Tuberculosis
- (3) Malaria
- (4) Rickettsioses
- (5) Melioidosis

- (6) Travel Medicine
- (7) HIV/AIDS
- (8) Leptospirosis
- (9) Other tropical diseases

### 3.1.6 Definition of Course Codes

Four main alphabets are defined as follows:

The first two alphabets are abbreviation of the faculty offering the course.

TM (๗๗) is an abbreviation of the Faculty of Tropical Medicine.

The latter two alphabets are abbreviation of the department or the major offering the course.

CD (๑๗) means an abbreviation of the Department of Clinical Tropical Medicine.

MH (๑๘) means an abbreviation of the Diploma of Tropical Medicine and Hygiene.

ID (๘๗) means an abbreviation of Interdepartment

Three digits of number are 5XX and 6XX indicate that the courses are in the graduate study level.

### 3.1.7 Study Plan

Plan A(2)		
Year	Semester 1	Semester 2
1	TMMH 502 Food- and Water-borne Diseases: Soil-transmitted Helminthiasis 3 (2-2-5)	TMCD 535 Seminar in Clinical Tropical Medicine 3 (2-2-5)
	TMMH 503 Food- and Water-borne Diseases: Tissue Parasites 2 (2-0-4)	TMCD 526 Tropical Medicine Apprenticeship 6 (3-6-9)
	TMMH 504 Important Mosquito-borne Diseases 3 (3-0-6)	TMCD 527 Clinical Case Teaching 3 (3-0-6)
	TMMH 505 Non-mosquito Vector-borne Diseases and Zoonosis 2 (2-0-4)	
	Elective course not less than 2 credits	
	<b>Total 12 credits</b>	<b>Total 12 credits</b>
	Research	Start from Year 1 Semester 2 to Year 2
	TMCD 698 Thesis	12 (0-36-0)
	<b>Total 12 credits</b>	

Plan B		
Year	Semester 1	Semester 2
1	TMMH 502 Food- and Water-borne Diseases: Soil-transmitted Helminthiasis 3 (2-2-5)	TMCD 535 Seminar in Clinical Tropical Medicine 3 (2-2-5)

Plan B		
Year	Semester 1	Semester 2
	TMMH 503 Food- and Water-borne Diseases: Tissue Parasites 2 (2-0-4)	TMCD 504 Clinical Apprenticeship 6 (3-6-9)
	TMMH 504 Important Mosquito-borne Diseases 3 (3-0-6)	TMCD 527 Clinical Case Teaching 3 (3-0-6)
	TMMH 505 Non-mosquito Vector-borne Diseases and Zoonosis 2 (2-0-4)	
	Elective course not less than 5 credits	Elective course not less than 3 credits
	<b>Total 15 credits</b>	<b>Total 15 credits</b>
<b>Research</b>	<b>Start from Year 1 Semester 2 (End in Year 1/Extendible to Year 2)</b>	
	TMCD 697 Thematic Paper	6 (0-18-0)
	<b>Total 6 credits</b>	

### 3.1.8 Course Description

Please see Appendix A.

### 3.2 Name of Instructors

#### 3.2.1 Full time instructors of the curriculum (Please click link for detail)

No.	Name	Department
1.	<a href="#">Prof Dr Kesinee Chotivanich</a>	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
2.	<a href="#">Prof Polrat Wilairatana</a> , M.D.	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
3.	<a href="#">Prof Punnee Pitisuttithum</a> , M.D. Head of Department	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
4.	<a href="#">Assoc Prof Dr Noppadon Tangpukdee</a>	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
5.	<a href="#">Assoc Prof Vipha Thanachartwet</a> , M.D.	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
6.	<a href="#">Assoc Prof Wattana Leowattana</a> , M.D.	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
7.	<a href="#">Asst Prof Dr Apichart Nontprasert</a>	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
8.	<a href="#">Asst Prof Dr Jittima Dhitavat</a> , M.D. Deputy Head of Department	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
9.	<a href="#">Asst Prof Kittiyod Poovorawan</a> , M.D.	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
10.	<a href="#">Asst Prof Supat Chamnanchanunt</a> , M.D. Programme Secretariat	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
11.	<a href="#">Asst Prof Udomsak Silachamroon</a> , M.D. Programme Committee Member	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University

No.	Name	Department
12.	<a href="#">Asst Prof Viravarn Luvira</a> , M.D.	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
13.	<a href="#">Asst Prof Watcharapong Piyaphanee</a> , M.D. Deputy Head of Department	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
14.	<a href="#">Asst Prof Weerapong Phumratanaprapin</a> , M.D.	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
15.	<a href="#">Lect Dr Borimas Hanboonkunupakarn</a> , M.D.	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
16.	<a href="#">Lect Chatporn Kittitrakul</a> , M.D. Programme Committee Member	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
17.	<a href="#">Lect Chayasin Mansanguan</a> , M.D.	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
18.	<a href="#">Lect Dr Janjira Thaipadungpanich</a>	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
19.	<a href="#">Lect Lapakorn Chatapat</a> , M.D.	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
20.	<a href="#">Lect Dr Natthida Sriboonvorakul</a>	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
21.	<a href="#">Lect Dr Prakaykaew Charunwatthana</a> , M.D.	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
22.	<a href="#">Lect Dr Sant Muangnoicharoen</a> , M.D. Programme Committee Member	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
23.	<a href="#">Lect Supitcha Kamolratanakul</a> , M.D.	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
24.	<a href="#">Lect Thundon Ngamprasertchai</a> , M.D.	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
25.	<a href="#">Lect Wasin Matsee</a> , M.D.	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University
26.	<a href="#">Lect Dr Wirongrong Chierakul</a> , M.D. Programme Chair	Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University

### 3.2.2 Full time instructors

No.	Name	Department
1.	<a href="#">Prof Srivicha Krudsood</a> , M.D.	Department of Tropical Hygiene, Faculty of Tropical Medicine, Mahidol University
2.	<a href="#">Prof Yaowalark Sukthana</a> , M.D.	Department of Protozoology, Faculty of Tropical Medicine, Mahidol University
3.	<a href="#">Assoc Prof Dr Direk Limmathurotsakul</a> , M.D.	Department of Tropical Hygiene, Faculty of Tropical Medicine, Mahidol University
4.	<a href="#">Assoc Prof Chukiat Sirivichayakul</a> , M.D.	Department of Tropical Pediatrics, Faculty of Tropical Medicine, Mahidol University



No.	Name	Department
5.	<a href="#">Assoc Prof Dr Dorn Watthanakulpanich</a> , M.D.	Department of Helminthology, Faculty of Tropical Medicine, Mahidol University
6.	<a href="#">Assoc Prof Kriengsak Limkittikul</a> , M.D.	Department of Tropical Pediatrics, Faculty of Tropical Medicine, Mahidol University
7.	<a href="#">Assoc Prof Dr Parnpen Viriyavejakul</a> , M.D.	Department of Tropical Pathology, Faculty of Tropical Medicine, Mahidol University
8.	<a href="#">Assoc Prof Dr Paron Dekumyoy</a>	Department of Helminthology, Faculty of Tropical Medicine, Mahidol University
9.	<a href="#">Assoc Prof Dr Poom Adisakwattana</a>	Department of Helminthology, Faculty of Tropical Medicine, Mahidol University
10.	<a href="#">Assoc Prof Dr Pornpip Petmitr</a>	Department of Protozoology, Faculty of Tropical Medicine, Mahidol University
11.	<a href="#">Assoc Prof Dr Pratap Singhasivanon</a> , M.D.	Department of Tropical Hygiene, Faculty of Tropical Medicine, Mahidol University
12.	<a href="#">Assoc Prof Dr Urusa Thaenkham</a>	Department of Helminthology, Faculty of Tropical Medicine, Mahidol University
13.	<a href="#">Assoc Prof Dr Yaowapa Maneerat</a>	Department of Tropical Pathology, Faculty of Tropical Medicine, Mahidol University
14.	<a href="#">Asst Prof Dr Aongart Mahittikorn</a>	Department of Protozoology, Faculty of Tropical Medicine, Mahidol University
15.	<a href="#">Asst Prof Dr Jiraporn Ruangsittichai</a>	Department of Medical Entomology, Faculty of Tropical Medicine, Mahidol University
16.	<a href="#">Asst Prof Dr Kobporn Boonak</a>	Department of Microbiology and Immunology, Faculty of Tropical Medicine, Mahidol University
17.	<a href="#">Asst Prof Dr Muthita Vanaporn</a>	Department of Microbiology and Immunology, Faculty of Tropical Medicine, Mahidol University
18.	<a href="#">Asst Prof Dr Nathamon Kosoltanapiwat</a>	Department of Microbiology and Immunology, Faculty of Tropical Medicine, Mahidol University
19.	<a href="#">Asst Prof Dr Piengchan Sonthayanon</a>	Department of Molecular Tropical Medicine and Genetics, Faculty of Tropical Medicine, Mahidol University
20.	<a href="#">Asst Prof Dr Pornsawan Leungwutiwong</a>	Department of Microbiology and Immunology, Faculty of Tropical Medicine, Mahidol University
21.	<a href="#">Asst Prof Dr Ronald Enrique Morales Vargas</a>	Department of Medical Entomology, Faculty of Tropical Medicine, Mahidol University
22.	<a href="#">Asst Prof Dr Saengduen Moonsom</a>	Department of Protozoology, Faculty of Tropical Medicine, Mahidol University
23.	<a href="#">Asst Prof Dr Saranath Lawpoolsri Niyom</a> , M.D.	Department of Tropical Hygiene, Faculty of Tropical Medicine, Mahidol University
24.	<a href="#">Asst Prof Dr Suchada Sumruayphol</a>	Department of Medical Entomology, Faculty of Tropical Medicine, Mahidol University
25.	<a href="#">Asst Prof Dr Sumate Ampawong</a>	Department of Tropical Pathology, Faculty of Tropical Medicine, Mahidol University

No.	Name	Department
26.	<a href="#">Asst Prof Dr Supaluk Popruk</a>	Department of Protozoology, Faculty of Tropical Medicine, Mahidol University
27.	<a href="#">Asst Prof Dr Urai Chaisri</a>	Department of Tropical Pathology, Faculty of Tropical Medicine, Mahidol University
28.	<a href="#">Asst Prof Dr Watcharee Arunsodsai</a> , M.D.	Department of Tropical Pediatrics, Faculty of Tropical Medicine, Mahidol University
29.	<a href="#">Asst Prof Weerawan Hattasingh</a> , M.D.	Department of Tropical Pediatrics, Faculty of Tropical Medicine, Mahidol University
30.	<a href="#">Asst Prof Dr Wirichada Pan-ngum</a>	Department of Tropical Hygiene, Faculty of Tropical Medicine, Mahidol University
31.	<a href="#">Lect Dr Sungsit Sungvornyothin</a>	Department of Medical Entomology, Faculty of Tropical Medicine, Mahidol University
32.	<a href="#">Lect Supawat Chatchen</a> , M.D.	Department of Tropical Pediatrics, Faculty of Tropical Medicine, Mahidol University

### 3.2.3 Part time instructors/Consultant

No.	Name	Affiliation
1.	Prof Nicholas J White, M.D.	
2.	Prof Nicholas P Day, M.D.	
3.	Prof Arjen Dondorp, M.D.	
4.	Prof Daniel Paris, M.D.	

#### 4. Details of Practicum (N/A)

#### 5. Thesis requirement

Thesis is for Plan A(2) students and thematic paper is for Plan B students. The thesis/thematic paper must be complied with the regulations of Faculty of Graduate Studies, Mahidol University. All clinical research must be approved by the Ethical Committee of the Faculty of Tropical Medicine (FTM-EC).

##### 5.1 Short Description

Considering Thesis, it must be relevant to knowledge of tropical medicine. The students must pass the course which provide knowledge on ethics in human research and get the certificate for good clinical practice (GCP) before they can submit to the EC. The proposal must be approved by FTM Ethic Committee (FTM-EC) and local study site EC (if applicable) before students can start enrolling subjects or collecting data.

In case of research in animals, the protocol must be approved by the FTM Institutional Animal Care and Use Committee (FTM-IACUC). The Ethical Approval Certificate both in human or animal research must be attached as an appendix of thesis/thematic paper.

##### 5.2 Standard Learning Outcomes

Graduates are able to apply the knowledge on clinical tropical medicine to the research works, and also able to evaluate research articles, organize and formulate professional team work in conducting clinical research, communicate effectively their research findings and using proper technologies, demonstrate ethical consideration through the research work. Moreover, in Plan A(2), graduates will be able to publish an international peer-review article and/or present their research works in an international conference.

### 5.3 Time Frame

Student can take the proposal examination during the 2<sup>nd</sup> semester of 1<sup>st</sup> academic year. The data collection can begin after the proposal has been approved by the FTM-EC and local study site EC (if applicable). **For Plan B students who want to graduate within a year may have roughly 2 months period for data collection.** The defence of the thematic paper should be finish by the month 6 of the 2<sup>nd</sup> semester of 1<sup>st</sup> year. For plan A(2) students, the thesis should be finalized and approved by the end of 2<sup>nd</sup> academic year.

### 5.4 Number of credits

12 credits for thesis of Plan A(2) and 6 credits for thematic paper in Plan B

### 5.5 Preparation

Students will develop the proposal under the supervision of the proposed advisory committee since the 1<sup>st</sup> semester. By the beginning of the 2<sup>nd</sup> semester, the majority of the input to the proposal will be finished and ready to set up the appointment for the defence. The advisory team, at least 3 qualified members will look after the process to make certain that the student can go through the process seamlessly. One of the advisory team will also give advice on the medical statistic. During data collection period, the advisory team will oversee the process of data collection, the integrity and validity of the data.

The thesis/thematic paper information/template from official document or website are accessible through the Bangkok School of Tropical Medicine and also the Faculty of Graduate Studies website.

### 5.6 Evaluation Process

For Plan A(2), students and advisor must report the progression of the thesis using the Form GR42 before the end of every semester after thesis registration. The research work of the student's thesis must be published or presented at an international conference with published proceedings before graduation.

The research process will be evaluated by the advisor of the student's thesis/thematic paper regularly. The defence of thesis/thematic paper is systematically evaluated by the committee which include at least one qualified external examiner (outside Mahidol University) as a chair of the committee.

In addition, Plan B students need to pass a comprehensive examination which will focus on the topic of the research work of the student and on the related knowledge on research such as the medical statistic, clinical trials, etc.

## Section 4 Learning Outcome, Teaching Strategies and Evaluation

### 1. Development of Students' Specific Qualifications

Special Characteristics	Teaching Strategies or Student Activities
1. Fulfil the expected outcomes of Mahidol graduates M- Mastery      A- Altruism      H- Harmony      I- Integrity D- Determination   O- Originality      L- Leadership	Through extra-curriculum activities, e.g., Ethics, GCP training / Cultural activities of FTM, Academic Forum, Soft skills development (at least 2 activities/semester)
2. Fulfil the expected outcomes of the Faculty of Tropical Medicine Tr- Transformation and Innovation Op- Open and globally connected      M- Multidisciplinary E- Entrepreneurship      D- Data-driven decision	

### 2. Development of Learning Outcome in Each Objective

Expected Outcome	Teaching Strategies	Evaluation Strategies
<b>1. Morality and Ethics</b>		
<b>ELO1:</b> Demonstrate ethical consideration and follow the code of conduct for medical practice and research	Problem solving, Case discussion, Ward round, Work assignment, Field trip, Proposal, Thesis/Thematic paper writing	Attendance/ Observation & Assessment report using rubric scale Ethical approval/ Defence of proposal & thesis
<b>2. Knowledge</b>		
<b>ELO 2:</b> Apply all aspects of tropical medicine, including epidemiology, aetiology, disease manifestations, diagnosis, treatment, prevention and control during clinical work in the management of patients and in working with communities	Problem solving, Case Discussion, Ward Round, Work Assignment, Field Trip	Assessment report using rubric scale/ Examination (MEQ, OSCE, Long case)
<b>3. Intellectual Development</b>		
<b>ELO3:</b> Appraise research articles using informed and reasoned consideration of the results, methods, statistical analysis and assumptions, applying knowledge in tropical medicine	Assignment, Presentation, Q&A, Discussion, Proposal, Thesis/Thematic paper presentation/writing	Assessment report during presentation and literature review using Rubric scale
<b>ELO4:</b> Organise tropical medicine clinical research according to the ICH GCP by applying medical statistics, accepted research methodologies, and the principle of good clinical practice (GCP)	Proposal, Thesis/Thematic paper writing	Comprehensive Examination/ Defence of proposal & thematic paper/ Completeness of clinical research

Expected Outcome	Teaching Strategies	Evaluation Strategies
<b>ELO7:</b> Develop a scientific research suitable for publishing in an international peer-reviewed journal and/or presentation at an international conference (For Plan A[2] only)	Proposal/Thesis writing, Discussion, Publication/Presentation	Ethical approval/ Defence of proposal & thesis/ Publication/Presentation in international conference
<b>4. Interpersonal Relationship and Responsibility</b>		
<b>ELO5:</b> Formulate professional teamwork in clinical Tropical Medicine	Problem solving, Case Discussion, Ward Round, Work Assignment, Field Trip/ Thesis/Thematic paper conduct	Assessment report using rubric scale/ Observation/ Quality and completeness of assignment / Thesis / Thematic paper
<b>5. Mathematical Analytical Thinking, Communication Skills, and Information Technology Skills</b>		
<b>ELO6:</b> Communicate effectively using appropriate technologies for data analysis and presentation	Proposal, Thesis/Thematic paper writing/ Discussion/ Presentation	Observation & Assessment Report using Rubric scale

### 3. Curriculum Mapping

Please see Appendix B.

## Section 5 Criteria for Student Evaluation

### 1. Grading System

Grading system and graduation shall be complied with the criteria stated in Regulations of Mahidol University on Graduate studies.

### 2. Evaluation Process for the Learning Outcome of Students

Student assessments are performed according to each individual teaching and learning activities and varies among learning outcomes as shown in the diagram below. The left-sided group of columns show the courses in the programme, the second column shows teaching and learning activities, the third column shows the assessment used in each course and the right most column indicates the ELO that the correspondence courses provide. Moreover, the graduate will be followed up for tracking their success in their career, i.e. continued education, active work in tropical medicine, continued research works and publications, which reflects life-long learning.

Theme	Plan	KS	Semester I	Semester II	ELOs	Teaching & Learning Activities	Assessment	Assessment for ELO	
Clinical	Both plans	Knowledge	TMMH502		2	Lecture, Case discussion, Games, Problem-solving, Laboratory Demonstration & Practice, Assignment, Q&A, Seminars	Attendance / Observation of in-class participation/ Summative Examination (MCQ, short assay, Oral)		
			TMMH503						
			TMMH504						
			TMMH505						
			TMCD530						
	Plan A Plan B	Skills & Life-long Learning		TMCD527	1,2,5	Problem solving, Case Discussion, Ward Round, Work Assignment, Field Trip	Formative Assessment Report using Rubric scale		
				TMCD526	1,2,5	Problem solving, Case Discussion, Case Simulation, Work Assignment	Formative Assessment Report using Rubric scale/ Summative Examination (MEQ)	2	
				TMCD504	1,2,5	Problem solving, Case Discussion, Ward Round, Work Assignment	Formative Assessment Report using Rubric scale/ Summative Examination (OSCE, Long case)	1,2,5	
				TMMH508	1,2	Lecture, Case discussion, Games, Problem-solving, Laboratory Demonstration & Practice, Assignment, Q&A, Seminars	Attendance / Observation of in-class participation/ Formative Assessment Report using Rubric scale		
				TMCD532	2				
Research	Both plans	Knowledge	TMCD503		1,3,4,5	Lecture, Demonstration, Assignment, Q&A	Attendance / Observation of in-class participation/ Formative Assessment Report using Rubric scale		
				TMID510		4,6	Discussion, Demonstration & Practice, Assignment, Q&A		
				TMCD534		4,6			
				TMCD535	1,2,3,4,5,6	Assignment, Presentation, Q&A, Discussion	Formative Assessment Report using Rubric scale	1,3,5,6	
				TMCD521	1,2,3,4,5,6	Assignment, Presentation, Q&A, Discussion	Attendance/ Assessment Report using Rubric scale		
	Plan B	Skills & Life-long Learning		TMCD697*	1,2,3,4,5,6	Proposal/Thematic paper writing, Discussion	Comprehensive Examination/ Ethical approval/ Defence of proposal & thematic paper	1,3,4,5,6	
				TMCD698*	1,2,3,4,5,6,7	Proposal/Thesis writing, Discussion, Publication/Presentation	Ethical approval/ Defence of proposal & thesis/ Publication/Presentation in international stage	1,3,4,5,6,7	

\* Can extend to Year 2

### 3. Graduation Requirement

#### 3.1 Plan A2

- 1) Total time of study should not exceed the study plan.
- 2) Students must complete courses as stated in the curriculum at least 36 credits including thesis (12 credits) and 24 credits in total with a minimum cumulative GPA of 3.00.
- 3) Students must meet the English Competence Standard of Graduate Students, Mahidol University defined by the Faculty of Graduate Studies, Mahidol University.
- 4) Students must participate in professional skill development activities of the Faculty of Graduate Studies, Mahidol University.

5) Students must submit thesis and pass the thesis defence by following Regulations of the Faculty of Graduate Studies, Mahidol University.

6) The thesis/a part of thesis is required to publish in an international scientific journal or proceedings that is listed by the Faculty of Graduate Studies, Mahidol University.

### **3.2 Plan B**

1) Total time of study should not exceed the study plan.

2) Students must complete their courses as stated in the curriculum with at least 36 credits including thematic paper (6 credits) and courses 30 credits in total with a minimum cumulative GPA of 3.00.

3) Students must meet the English Competence Standard of Graduate Students, Mahidol University defined by the Faculty of Graduate Studies, Mahidol University.

4) Students must participate in professional skill development activities of the Faculty of Graduate Studies, Mahidol University.

5) Students must pass the comprehensive examination following Regulations of the Faculty of Graduate Studies, Mahidol University.

6) Students must present their thematic papers and pass the defence examination by following Regulations of the Faculty of Graduate Studies, Mahidol University.

7) The thematic paper or part of thematic paper must be published and can be searched.



## Section 6 Faculty Development

### 1. The Orientation for New Faculty Members

1.1 Orientation that aims to provide knowledge and understanding about the policies and philosophy of Mahidol University and the faculty/institute/college.

1.2 Getting to know the Faculty, Departments, Offices, etc. Both workforce and places.

1.3 Training on concerned disciplines, curriculum, process of teaching, and assignments by the Head of the Departments and Programme Director. Mentoring system by senior faculty.

1.4 Orientation according to the human resource development plan of the Faculty, under the capacity development projects. The training provided include outcome-based education, lesson plan, preparation plan for teaching, student assessment, etc.

1.5 Soft skills training for new Faculty, including entrepreneurship, leadership, research, IT skills, mindful in organization, etc.

### 2. Skill and Knowledge Development for New Faculty Members

#### 2.1 Skills Development in Teaching and Evaluation

2.1.1 Workshops on the teaching skills, including teaching technique in 21<sup>st</sup> century, using technology, educational technology, etc.

2.1.2 Workshops on the curriculum and programme, including outcome-based education, course and programme design, etc.

#### 2.2 Other Academic and Professional Skill Development

2.2.1 Support faculty to conduct the research, including proposal development, good clinical practice, project management, how to write a manuscript, etc.

2.2.2 Support faculty to seek and apply for research grant, including how to write up the grant applications, etc.

2.2.3 Support instructors to attend meetings, training sessions, seminars and studies at other institutes and organizations

2.2.4 Support instructors to present for proceedings of national and international conferences

## Section 7 Quality Assurance

### 1. Regulatory Standard

1.1 Head of Department take a responsibility to manage and assign the courses of the department, assign member to be programme committee, lecturers responsible for the programme, course coordinators, etc.

1.2 The programme must be reviewed and update every year, whereas the major revision or update must be done every 5 years

1.3 Programme Committee evaluate and make a review of programme submitted to Office of Higher Education Commission (OHEC) for Quality assessment via online system.

Faculty of Tropical Medicine has established the Bangkok School of Tropical Medicine (BSTM) under the supervision of the Deputy Dean for Education and Deputy Dean for Student Affairs working together with the Director of the Programs to administer the programme management. There is also a Steering Committee of BSTM to make certain that the programs of the Faculty of Tropical Medicine are complied with all regulations from every authority.

### 2. Graduates

For the process of quality improvement, the information on the success of the programme is based on also the successful of the graduates in terms of employment rate, active life-long learning, working or further education in the field of tropical medicine.

The follow-up system, satisfaction system, etc. have been setup for gather the information to feed back for the improvement and revision of the program.

### 3. Students

**3.1 The enrolment process** has been changed to improve the effectiveness of screening and facilitate the applicants. More than 80% of students in the programme are international students, therefore the application and enrolment procedures are adapted to make the process as convenient as possible. Therefore, the online application system, online entrance examination, online interview processes are provided to make sure the accessibility for all future students.

**3.2 Orientations:** Programme provides student handbook in a soft copy, a link to websites in which students can access anywhere anytime. However, the orientation has been given to all students at the beginning of the first and second semesters. These include detail of each course objectives, course learning outcomes, teaching and learning activities and student assessments.

**3.3 Mentoring and advisory:** Bangkok School of Tropical Medicine has appointed Student Affairs Advisory Team consisted of lecturers and volunteers. This Advisory Team, different from the Thematic Advisory Team, give personal advice to students in general aspects. Students can consult, report any problems, voice their opinions or give feedbacks via direct email contact announced at BSTM website. This can facilitate the response of any problem arisen during the study at the program. Moreover, students can directly contact BSTM officer and director of the

programme via email or direct appointment at BSTM office or Department of Clinical Tropical Medicine Office.

**3.4 Appeal Process:** In case of any doubt or uncertainty in the marks or grades of the student assessments, students can directly contact advisors, supervisors, lecturers or Director of the Program. In case that student would like to appeal the marks or grades, there are several processes this can be done. Students can appeal via website <http://www.tn.mahidol.ac.th/eng/dean.php>, suggestion box, email or submit the Appeal form to Director of the Programme, Deputy Dean for Education, Dean of Faculty of Tropical Medicine, or Dean of Faculty of Graduate Studies.

#### **4. Instructors**

More than 80% of academic staff members are Ph.D. holders (or equivalent) while the remaining hold master's degrees. The promotion of academic staff is merit-based following the standard process of Mahidol University. Individual academic staff can develop his/her career path according to the guidelines provided by Mahidol University.

#### **5. Programme, Study and Student Assessment**

The curriculum and course syllabus was developed and designed based on the feedback from all stakeholders. The executive committees of the programme have the bi-annually meetings in order to evaluate and brainstorming for update, revision the content of each subject and teaching methods.

Student evaluation about course content, teaching and learning process, assessment methods and curriculum are performed regularly the end of each semester. In addition, the leaders collect student feedbacks from meetings with students which are organized yearly and use these feedbacks for programme improvements. (Meet the Dean, Talk to Dean, suggestion box, etc). All of these activities and relevant systems aim to help students achieve objectives of the program. Feedbacks from the national lecturers are collected once a year. The international experts send their feedbacks at the end of each course. Feedback from teaching staff and support staff is helpful in the process of the courses and curriculum development and improvement. The feedbacks from staff members are collected regularly through program- executive committee meetings.

The curriculum and programme is minor reviewed and update every year and the major revision of the programme occurs every 5 years.

The programme was submitted for Mahidol quality assurance using ASEAN University Network-quality assurance criteria since September 2016, and will submit for ASEAN AUN-QA assessment in the year 2018.

#### **6. Learning Support**

The Rajanagarindra building is mainly used for teaching during 2<sup>nd</sup> semester on the 16<sup>th</sup> & 17<sup>th</sup> floors, consists of 1 lecture hall on each floor, with 60 seats which are fully equipped to serve learning activities, 1 student rooms with total capacity 5 seats and 1 computer. The whole area

of Rajanagarindra building provides MU-Wifi hotspot throughout the two floors. The Chamlong Harinasuta building is a 11-storey building in which the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> floor are used for teaching with total 3 lecture rooms (168 seats), 3 meeting rooms (50 seats), 2 laboratories (90 seats), 1 VDO conference room and 1 student activity room (30 seats), in addition, Rajvithi Library, 1 computer room on the second floor with the capacity 40 computers. Each then is classroom has been equipped with 1 computer, 1 projector, black board/white board and all are furnished with air conditions. The entire area of FTM has been covered with MU wireless network to support the teaching and learning activities. Moreover, FTM has arranged study areas for self-study so that the students can learn at their convenience. The Faculty also has an up-to-date, specialist 250-bed Hospital for Tropical Diseases, where students may observe patients and treatments for tropical diseases to support their research work.

Individual support service has set up the evaluation of quality and subject for improvement. The satisfactory surveys of the use of facilities have been conducted regularly.

### 7. Key Performance Indicators

The Master of Clinical Tropical Medicine Programme, Department of Clinical Tropical Medicine divides key performance based on the curriculum that meets the standards of Thai Qualifications Framework following conditions: (1) the compulsory performance indicators (numbers 1-5) must pass beyond expectations and (2) the total number of performance indicators must reach their goal by no less than 80 percent each year. The Key Performance Indicators are as follows:

Key Performance Indicators	Academic Year				
	2018	2019	2020	2021	2022
1. At least 80% of all in charge of the curriculum in each programme have to participate in meetings that set up plans to evaluate and revise the curriculum.	✓	✓	✓	✓	✓
2. The programme must have the details of the curriculum according to TQF2 which is associated with the Thai Qualifications Framework or the standards of the programme (if any).	✓	✓	✓	✓	✓
3. The programme must have course specifications and field experience specifications (if any) according to TQF3 before the beginning of each semester.	✓	✓	✓	✓	✓
4. Instructors must produce course reports and file experience reports (if any) according to TQF5 within 30 days after the end of the semester.	✓	✓	✓	✓	✓
5. Instructors must produce programme reports according to TQF7 within 60 days after the end of the academic year.	✓	✓	✓	✓	✓

Key Performance Indicators	Academic Year				
	2018	2019	2020	2021	2022
6. Instructors must revise the grading of students according to learning standards indicated in TQF3 for at least 25 percent of courses that are offered each academic year.	✓	✓	✓	✓	✓
7. Instructors must assess the development and/or improvement of teaching methods, teaching techniques or the grading system from the evaluation results in TQF 7 of the previous year.	-	✓	✓	✓	✓
8. Every new instructor (if any) has to participate in the orientation and receive adequate information on teaching requirements.	✓	✓	✓	✓	✓
9. Full-time instructors must demonstrate academic and/or profession improvement at least once a year.	✓	✓	✓	✓	✓
10. The number of supporting staff (if any) must demonstrate academic and/or professional improvement by at least 50 percent each year.	✓	✓	✓	✓	✓
11. The level of satisfaction from the previous year's students and new graduates toward curriculum quality, with an average score of at least 3.5 out of 5.	-	✓	✓	✓	✓
12. The level of satisfaction from employers of new graduates with an average score of at least 3.5 out of 5.	-	-	✓	✓	✓

## Section 8 Evaluation and Improvement of the Curriculum Implementation

### 1. Evaluation on the Teaching Efficiency

#### 1.1 Evaluation of Teaching Strategies

1.1.1 Analysis of students' evaluation towards courses and instructors

1.1.2 Discussion among the faculty meeting to exchange ideas or comments

#### 1.2 Evaluation of Instructors' Skills in Using Teaching Strategies

1.2.1 Analysis of students' evaluation towards courses and instructors

1.2.2 Evaluation from instructors themselves and colleagues

### 2. Overall Evaluation of the Curriculum

2.1 Survey instructors' opinions toward students and vice versa

2.2 Survey on jobs of graduates

2.3 Exit interview by 3<sup>rd</sup> party after graduation: deep dialogue

2.4 Employers' satisfaction surveys

### 3. Evaluation of Curriculum Implementation in Accordance with the Curriculum

Evaluation is made annually by the Evaluation Committee comprising of 3 persons:

1) Programme Director,

2) Programme secretariat, and

3) External expert in tropical medicine

The criteria of curriculum revision are

“**Fair**” means the programme does not cover the first 10 Key Performance Indicators,

“**Good**” means the programme shows all first 10 Key Performance Indicators,

“**Excellent**” means the programme has all Key Performance Indicators.

### 4. Review of the Evaluation and Plans for Improvement

4.1 Gathering all information, advices, and evaluations of the newly graduates, employers, alumni, and experts to feedback for improvement. Information includes satisfaction, needs and expectations.

4.2 Review and analyse the above information by the faculty member in-charge of the program

4.3 Presenting the improvement plan for the programme at the end of every academic year

4.4 Make a major revision and update of the whole programme every 5 years

## Appendix A: Course Description

Required Courses

		Credits (Lecture-Lab-Self-study)
TMMH	502	3 (2-2-5)
วขอส	๕๐๒	โรคที่ติดต่อทางอาหารและน้ำ: โรคหนอนพยาธิที่ติดต่อทางดิน
		Bacteria, viruses; protozoa; soil-transmitted helminths; life cycle; pathogenesis; pathology; clinical manifestations; diagnosis; treatment; control; prevention
		แบคทีเรีย ไวรัส โปรโตซัว หนอนพยาธิที่ติดต่อทางดิน วงจรชีวิต พยาธิกำเนิด พยาธิสภาพ
		ลักษณะทางคลินิก การวินิจฉัย การรักษา การควบคุมโรค การป้องกัน
TMMH	503	2 (2-0-4)
วขอส	๕๐๓	โรคที่ติดต่อทางอาหารและน้ำ: โรคปรสิตในเนื้อเยื่อ
		Pathogens; intermediate hosts; pathogenesis; pathology; clinical manifestation; diagnosis, management; prevention and control
		ปรสิตก่อโรค โฮสต์กึ่งกลาง พยาธิกำเนิด พยาธิสภาพ ลักษณะทางคลินิก การวินิจฉัย การ
		รักษา การป้องกันและควบคุมโรค
TMMH	504	3 (3-0-6)
วขอส	๕๐๔	โรคติดต่อสำคัญที่นำโดยยุง
		Malaria; dengue infection; Japanese encephalitis and lymphatic filariasis; epidemiology; pathogens; mosquito vectors; life cycle; pathogenesis; pathology; clinical manifestations; treatment; prevention and control
		มาลาเรีย ไข้เลือดออก ไข้สมองอักเสบเจอี โรคเท้าช้าง ระบาดวิทยา เชื้อก่อโรค ยุงนำโรค
		วงจรชีวิต พยาธิกำเนิด พยาธิสภาพ ลักษณะทางคลินิก การวินิจฉัย การรักษา การป้องกันและควบคุมโรค
TMMH	505	2 (2-0-4)
วขอส	๕๐๕	โรคติดต่อจากพาหะอื่นนอกจากยุงและโรคติดต่อจากสัตว์สู่คน
		Epidemiology; pathogens; vectors; life cycle; pathogenesis; pathology; clinical manifestations; diagnosis; treatment; prevention and control
		ระบาดวิทยา เชื้อก่อโรค พาหะนำโรค วงจรชีวิต พยาธิกำเนิด พยาธิสภาพ ลักษณะทางคลินิก
		การวินิจฉัย การรักษา การป้องกันและควบคุมโรค
TMCD	504	6 (3-6-9)
วขอ	๕๐๔	เวชปฏิบัติทางคลินิก

**Credits (Lecture-Lab-Self-study)**

Integration of knowledge and clinical skills in tropical medicine; patients study, history taking, physical examination; diagnosis, differential diagnosis; laboratory interpretation, plan of patient management

การบูรณาการความรู้และทักษะทางคลินิกในเวชศาสตร์เขตร้อน การศึกษาผู้ป่วย การซักประวัติ ตรวจร่างกาย การวินิจฉัย วินิจฉัยแยกโรค การแปลผลทางห้องปฏิบัติการ การวางแผนการรักษาผู้ป่วย

**TMCD 526 Tropical Medicine Apprenticeship 6 (3-6-9)**

**วขอข ๕๒๖ เวชปฏิบัติในอายุรศาสตร์เขตร้อน**

History taking; differential diagnosis; laboratory test interpretations; plan of treatment, and clinical progression of inpatient and outpatient with tropical diseases

การซักประวัติ ตรวจร่างกาย การวินิจฉัยแยกโรค การแปลผลตรวจทางห้องปฏิบัติการ การวางแผนดูแลรักษาผู้ป่วย และติดตามอาการทางคลินิกของผู้ป่วยในและผู้ป่วยนอกที่ป่วยด้วยโรคเขตร้อน

**TMCD 527 Clinical Case Teaching 3 (3-0-6)**

**วขอข ๕๒๗ สอนกรณีศึกษาทางคลินิก**

Common tropical diseases; case scenario; symptoms, clinical signs; laboratory tests and interpretation

ปัญหาโรคเขตร้อนที่พบบ่อย กรณีศึกษาผู้ป่วยโรคเขตร้อน อาการ อาการแสดงทางคลินิก การตรวจและแปลผลทางห้องปฏิบัติการ

**TMCD 535 Seminar in Clinical Tropical Medicine 3 (2-2-5)**

**วขอข ๕๓๕ สัมมนาอายุรศาสตร์เขตร้อนคลินิก**

Interesting topics in clinical tropical medicine; principle and methodology of literature search; critical appraisal; medical statistic and applied statistic in research article; research methodology

สรุปบทความวิชาการเกี่ยวกับงานวิจัยที่น่าสนใจด้านโรคเขตร้อน วิธีค้นคว้าบทความ หลักการนำเสนอบทบทวนวิชาการบทความทางการแพทย์และวิทยาศาสตร์ สถิติทางการแพทย์และสถิติประยุกต์ในบทความการวิจัย ระเบียบวิธีวิจัย

**Elective Course**

**TMID 510 Statistics for Clinical Research 3 (2-2-5)**

**วขสว ๕๑๐ สถิติสำหรับการวิจัยทางคลินิก**

Statistical methods and their application in clinical research consisting of basic concepts, statistical methodology, chance or error from sampling, correlation, linear regression, survival analysis, sample size estimation



## Credits (Lecture-Lab-Self-study)

วิธีทางสถิติและการประยุกต์ในการวิจัยด้านคลินิก แนวคิดพื้นฐาน ระเบียบวิธีทางสถิติ ความบังเอิญหรือข้อผิดพลาดจากการสุ่มตัวอย่าง การวิเคราะห์สหสัมพันธ์ การวิเคราะห์การถดถอยเชิงเส้น การวิเคราะห์การรอดชีพ การประมาณค่าขนาดตัวอย่าง

**TMCD 503 Introduction to Clinical Research 1 (1-0-2)**

**วขอช ๕๐๓ บทนำสู่การวิจัยทางคลินิก**

Basic research methodology and application in medical study, including protocol writing; clinical trials; diagnosis tests; etiologic study; good clinical practice; designing case-record forms; sampling and allocation; ethical issues and consent form; conduct of the study; data management; publication and presentation

ความรู้พื้นฐานเกี่ยวกับวิธีการวิจัยทางคลินิก การเขียนโครงร่างการวิจัย จริยธรรมในการวิจัย การบริหารงานวิจัย การดำเนินการวิจัยตามแนวทางการวิจัยทางคลินิกที่ดี การวิจัยเพื่อหาสาเหตุและกลไกการเกิดโรค การทดสอบยา หรือวัคซีนในคน ตลอดจนประเมินวิธีการวินิจฉัย การรักษา และการป้องกันโรค จริยธรรมในการวิจัย และการเผยแพร่ผลงานวิจัยต่อสาธารณชน

**TMMH 508 Travel Medicine I 1 (1-0-2)**

**วขอช ๕๐๘ เวชศาสตร์การเดินทาง ๑**

Common problems and diseases in travellers, pre-travelling and post-travelling screening, counselling, prevention and management

ปัญหาและโรคที่พบบ่อยในนักท่องเที่ยว ตรวจคัดกรองก่อนและหลังการเดินทาง การให้คำแนะนำ การป้องกันและดูแลรักษา

**TMCD 532 Travel Medicine II 2 (2-0-4)**

**วขอช ๕๓๒ เวชศาสตร์การเดินทาง ๒**

Pre-travel counselling and vaccination; travel-related diseases, malaria in travellers, traveller diarrhoea water purification for travellers; international health control; underwater hazard; care of returned travellers

คำปรึกษาและการให้วัคซีนก่อนการเดินทาง การป้องกันโรคที่เกี่ยวข้องกับการเดินทาง มาลาเรีย ในนักท่องเที่ยว อาการท้องร่วงในนักท่องเที่ยว การทำน้ำให้บริสุทธิ์สำหรับนักท่องเที่ยว การควบคุมสุขภาพระหว่างชาติ อันตรายใต้น้ำ และการดูแลนักท่องเที่ยวเมื่อกลับจากการเดินทาง

**TMCD 521 Literature Review 2 (0-4-2)**

**วขอช ๕๒๑ ทบทวนวรรณกรรม**

Tropical disease literatures; research topic related to management of common or interesting tropical diseases

วรรณกรรมด้านโรคเขตร้อน หัวข้องานวิจัยที่เกี่ยวข้องกับการจัดการดูแลรักษาผู้ป่วยโรคเขตร้อนที่พบบ่อยหรือที่น่าสนใจ

## Credits (Lecture-Lab-Self-study)

TMCD	523	Clinical Laboratory Methods for Research	1 (1-0-2)
วขอช	๕๒๓	การตรวจห้องปฏิบัติการทางคลินิกสำหรับงานวิจัย Principle and procedures in laboratory analyses; various laboratory techniques in microbial immunology, molecular biology and tissue culture หลักการและวิธีการปฏิบัติการในห้องทดลอง เทคนิควิธีการต่างๆ ที่ใช้ในงานจุลชีววิทยา ภูมิคุ้มกัน ชีววิทยาระดับโมเลกุล และการเพาะเลี้ยงเนื้อเยื่อ	
TMCD	524	Interesting Case Report	1 (0-2-1)
วขอช	๕๒๔	รายงานผู้ป่วยที่น่าสนใจ Interesting tropical disease cases, discussion, orientation; holistic approach, case management ผู้ป่วยโรคเขตร้อนที่น่าสนใจ การอภิปรายปัญหาทางการแพทย์ของผู้ป่วย การวางแผนทางกรณีผู้ป่วย การเข้าถึงปัญหาผู้ป่วยแบบองค์รวม การจัดการดูแลผู้ป่วย	
TMCD	530	Tropical Infectious Diseases Case Study	1 (0-2-1)
วขอช	๕๓๐	กรณีศึกษาผู้ป่วยโรคติดเชื้อเขตร้อน Community hospital setting, primary health care system, referral system; integration of knowledge and clinical skills in tropical medicine; case study; clinical manifestation; diagnosis of tropical infectious diseases; laboratory investigation, treatment and care in community setting ระบบโรงพยาบาลชุมชน ระบบการดูแลสุขภาพขั้นต้น ระบบส่งต่อ การบูรณาการความรู้และทักษะทางคลินิกในเวชศาสตร์เขตร้อน กรณีศึกษา การแสดงออกทางคลินิกของโรค การวินิจฉัยโรคติดเชื้อเขตร้อน การสืบค้นทางห้องปฏิบัติการในพื้นที่ชุมชน การบำบัดและการดูแลผู้ป่วยในชุมชน	
TMCD	531	Tropical Clinical Pathology	1 (1-0-2)
วขอช	๕๓๑	พยาธิวิทยาเขตร้อนคลินิก Application of clinical pathology, haematology, blood banking; microbiology; laboratory accuracy; application of laboratory testing; laboratory interpretation; differential diagnosis of common tropical diseases การประยุกต์องค์ความรู้ทางด้านพยาธิวิทยาคลินิก โลหิตวิทยาทางคลินิก/ธนาคารเลือด จุลชีววิทยาคลินิก ความถูกต้องของการตรวจทางห้องปฏิบัติการ การนำการตรวจทางห้องปฏิบัติการไปใช้ประโยชน์ที่เหมาะสม การแปลผลทางห้องปฏิบัติการ การวินิจฉัยแยกโรคเขตร้อนที่พบบ่อย	
TMCD	533	Special Clinics in Tropical Medicine	1 (1-0-2)
วขอช	๕๓๓	คลินิกเฉพาะทางในอายุรศาสตร์เขตร้อน	

**Credits (Lecture-Lab-Self-study)**

Infectious diseases clinic, viral hepatitis clinic, travel clinic, skin diseases clinic, fever clinic, parasitic clinic; imaging interpretation in tropical diseases

คลินิกโรคติดเชื้อ คลินิกโรคไวรัสตับอักเสบ คลินิกนักร้องเที่ยว คลินิกโรคผิวหนัง คลินิกไข้  
คลินิกโรคปรสิต การแปลผลภาพรังสีวินิจฉัยโรคเขตร้อน

**TMCD 534 Practical Statistic for Clinical Research 1 (0-2-1)**

**วขอข ๕๓๔ สถิติปฏิบัติการสำหรับการวิจัยทางคลินิก**

Practical statistics; various types of variables; statistical software packages; descriptive statistics, inferential statistics; error from sampling; correlation, linear regression, survival analysis

สถิติปฏิบัติการ ตัวแปรต่างๆ โปรแกรมการวิเคราะห์สถิติสำเร็จรูป สถิติพรรณนา สถิติ  
อนุมาน ความบังเอิญ ข้อผิดพลาดจากการสุ่มตัวอย่าง การวิเคราะห์สหสัมพันธ์ การวิเคราะห์การถดถอยเชิงเส้น  
การวิเคราะห์เชิงการรอดชีพ

**Thesis**

**TMCD 698 Thesis 12(0-36-0)**

**วขอข ๖๙๘ วิทยานิพนธ์**

Research proposal design for problem solving and quality development; research process, research operation; thesis presentation; research ethics; compilation and dissemination of research result; ethics in research dissemination

การออกแบบโครงการวิจัยเพื่อการแก้ปัญหาและพัฒนาคุณภาพ กระบวนการวิจัย การ  
ดำเนินการวิจัย การนำเสนอวิทยานิพนธ์ จริยธรรมในการวิจัย การเรียบเรียงวิทยานิพนธ์เพื่อเผยแพร่เชิง  
วิชาการ จริยธรรมในการเผยแพร่ผลงานวิชาการ

**Thematic paper**

**TMCD 697 Thematic paper 6 (0-18-0)**

**วขอข ๖๙๗ สารนิพนธ์**

Research process; proposal design, research methodology, sample size calculation, statistical analysis plan; ethical consideration; research protocol, case record form; data collection; statistical analysis, data analysis, data interpretation, data presentation, compilation and dissemination of research result

กระบวนการวิจัย การออกแบบงานวิจัย ระเบียบวิธีวิจัย การคำนวณขนาดประชากร  
วิจัย แผนการวิเคราะห์ จริยธรรมการวิจัย การพิจารณาจริยธรรมการวิจัย โครงร่างงานวิจัย แบบบันทึกข้อมูล  
ผู้ป่วย การเก็บข้อมูล การวิเคราะห์ทางสถิติ วิเคราะห์ข้อมูล แปลผลข้อมูล นำเสนอข้อมูล การเรียบเรียงและ  
เผยแพร่ผลงานวิจัย

## Appendix B: Curriculum Mapping

Table B-1: Curriculum Mapping

Subjects		Morality and Ethics	Knowledge	Intellectual Skills			Interpersonal Relationship and Responsibility	Mathematical Analytical Thinking
		ELO1	ELO2	ELO3	ELO4	ELO7 (PlanA[2])	ELO5	ELO6
<b>1. Required courses</b>								
TMMH502	Food- and Water-borne Diseases: Soil-transmitted Helminthiases	○	●	○	○	○		
TMMH503	Food- and Water-borne Diseases: Tissue Parasites	○	●	○	○	○		
TMMH504	Important Mosquito-borne Diseases	○	●	○	○	○		
TMMH505	Non-mosquito Vector-borne Diseases and Zoonosis	○	●	○	○	○		
TMCD504	Clinical Apprenticeship	●	●	●	●	○	●	
TMCD526	Tropical Medicine Apprenticeship	●	●	●	●	○	●	
TMCD527	Clinical Case Teaching	○	●	●	●	●	●	
TMCD535	Seminar in Clinical Tropical Medicine	○		●	●	●		●
<b>2. Elective courses</b>								
TMID510	Statistics for Clinical Research				●	●		●
TMMH508	Travel Medicine I	○	●					
TMCD503	Introduction to Clinical Research	●		●	●	●	○	
TMCD521	Literature Review	○	○	●	●	○	●	●
TMCD523	Clinical Laboratory Methods for Research	○	○				○	
TMCD524	Interesting Case Report	○	○	○	○		○	
TMCD530	Tropical Infectious Diseases Case Study	○	●	○	○		●	
TMCD531	Tropical Clinical Pathology	○	○				○	
TMCD532	Travel Medicine II	○	●	●	●		○	

Subjects		Morality and Ethics	Knowledge	Intellectual Skills			Interpersonal Relationship and Responsibility	Mathematical Analytical Thinking
		ELO1	ELO2	ELO3	ELO4	ELO7 (PlanA[2])	ELO5	ELO6
TMCD533	Special Clinics in Tropical Medicine	○	○		○			
TMCD534	Practical Statistic for Clinical Research				●	●		●
<b>3. Thesis or thematic paper</b>								
TMCD697	Thematic Paper [For Plan B]	●	●	●	●		●	●
TMCD698	Thesis [For Plan A(2)]	●	●	●	●	●	●	●
● Major responsibility		○ Minor responsibility						

**Table B-2:** Table of Relationship between Learning Outcomes of the Programme and Core Value of Mahidol University

Learning Outcomes	Core value of Mahidol University
<b>1. Morality and Ethics:</b> Students have to have moral and ethics, be able to live with others, and focus on benefits of others.	
ELO1: Demonstrate ethical consideration and code of conduct in medical practice and research	Integrity
<b>2. Knowledge:</b> Students will be knowledgeable, competent in advanced public health nursing. Develop, analyse, sensitize body of knowledge and innovative model of community based care through research.	
ELO 2: Apply all aspects of tropical medicine, including epidemiology, aetiology, disease manifestations, diagnosis, treatment, prevention and control during clinical work in the management of patients and in working with communities	Mastery, Altruism, Determination, Leadership
<b>3. Intellectual skills:</b> Students become self-directed and autonomous thinker	
ELO3: Appraise research articles using informed and reasoned consideration of the results, methods, <u>statistical analysis</u> and assumptions, applying knowledge in tropical medicine	Mastery, Originality
ELO4: Organise tropical medicine clinical research according to the ICH GCP by applying medical statistics, accepted research methodologies, and the principle of good clinical practice (GCP)	Mastery, Altruism, Determination
ELO7: Develop a scientific article suitable for publishing in an international peer-reviewed journal and/or presentation at an international conference <b>(For Plan A[2] only)</b>	Integrity, Originality
<b>4. Interpersonal relationship and responsibility:</b> Students must have good behaviours and interpersonal relationship. They should be responsible for their work, self-respected, and respect to others	
ELO5: Formulate professional teamwork in clinical Tropical Medicine	Harmony, Leadership
<b>5. Mathematical analytical thinking, communication skills, and information</b>	
ELO6: Communicate effectively using appropriate technologies for data analysis and presentation	Determination, Originality

### Appendix C: Programme Learning Outcomes

**Table C-1:** Comparison between before and after revised objective of the programme

Objectives of the Programme 2012	Revised Objectives of the Programme 2018
1. Graduates who exert moral and ethics in clinical research according to international standard	1. An ethical and moral medical professional and researcher
2. Doctors who can analyse the important issue in tropical diseases, plan for clinical investigation, give diagnosis and treatment correctly	2. Medical doctors who are knowledgeable in common tropical diseases, their challenges and solutions, skilful in approaching patients with tropical diseases to get to the diagnosis and provide proper treatment and to plan for further prevention and control
3. Medical doctors who are knowledgeable, skilful and have practical experience in conducting clinical research, capable of performing critical appraisal of the research publications	3. Knowledgeable in conducting international-standard clinical research
	4. The capacity and skills to critically appraise the research publications, skilful in conducting clinical research, communicating and developing professionalism
4. Graduates who can works as a team, have good interpersonal relationship	5. Skills for communicating research to the international community via publications and presentations (for Plan A(2) only).
5. Skills in utilizing instruments to collect and analyse statistical data and presenting works with appropriate technology	6. Skills in utilizing instruments to collect and analyse statistical data and presenting works with appropriate technology

**Table C-2:** Relationship between objective of the programme and expected learning outcome

Objectives of the Program	Expected Learning Outcome (ELO)*						
	ELO1	ELO2	ELO3	ELO4	ELO5	ELO6	ELO7
<b>1. Morality and Ethics</b>							
1. An ethical and moral medical professional and researcher.	✓	✓	✓	✓	✓	✓	
<b>2. Knowledge</b>							
2. Knowledgeable in common tropical diseases, their challenges and solutions, skilful in approaching patients with tropical diseases to get to the diagnosis and provide proper treatment and to plan for further prevention and control	✓	✓	✓	✓	✓	✓	✓
3. Knowledgeable in conducting international-standard clinical research	✓	✓	✓	✓	✓		✓
<b>3. Intellectual Development</b>							
4. The capacity and skills to critically appraise the research publications, skilful in conducting clinical research, communicating and developing professionalism		✓	✓	✓	✓	✓	✓
<b>4. Interpersonal Relationship and Responsibility</b>							
5. Skills for communicating research to the international community via publications and presentations (for Plan A(2) only).	✓	✓				✓	✓
<b>5. Mathematical Analytical Thinking, Communication Skills, and Information Technology Skills</b>							
6. Skills in utilizing instruments to collect and analyse statistical data and presenting works with appropriate technology			✓	✓		✓	

\* **ELO1** Demonstrate ethical consideration and code of conduct in medical practice and research

**ELO2** Apply all aspects of tropical medicine, including epidemiology, aetiology, disease manifestations, diagnosis, treatment, prevention and control during clinical work in the management of patients and in working with communities

**ELO3** Appraise research articles using informed and reasoned consideration of the results, methods, statistical analysis and assumptions, applying knowledge in tropical medicine

**ELO4:** Organise tropical medicine clinical research according to the ICH GCP by applying medical statistics, accepted research methodologies, and the principle of good clinical practice (GCP)

**ELO5** Formulate professional teamwork in clinical Tropical Medicine

**ELO6** Communicate effectively using appropriate technologies for data analysis and presentation

**ELO7** Develop a scientific article suitable for publishing in an international peer-reviewed journal and/or presentation at an international conference (For Plan A(2) only)



**Table C-3: Learning and Assessment Strategies for Expected Learning Outcomes Evaluation**

Expected Outcome	Learning Method	Assessment
<b>1. Morality and Ethics</b>		
<b>ELO1:</b> Demonstrate ethical consideration and follow the code of conduct for medical practice and research	Problem solving, Case Discussion, Ward Round, Work Assignment, Field Trip, Proposal/Thesis writing, Discussion, Publication/Presentation	Attendance/ Observation & Assessment Report using Rubric scale Ethical approval/ Defence of proposal & thesis
<b>2. Knowledge</b>		
<b>ELO 2:</b> Apply all aspects of tropical medicine, including epidemiology, aetiology, disease manifestations, diagnosis, treatment, prevention and control during clinical work in the management of patients and in working with communities	Problem solving, Case Discussion, Ward Round, Work Assignment, Field Trip	Attendance/ Assessment Report using Rubric scale/ Examination (MEQ, OSCE, Long case)
<b>3. Intellectual Development</b>		
<b>ELO3:</b> Appraise research articles using informed and reasoned consideration of the results, methods, statistical analysis and assumptions, applying knowledge in tropical medicine	Assignment, Presentation, Q&A, Discussion Proposal/Thesis writing, Discussion, Publication/Presentation	Assessment Report during presentation and literature review using Rubric scale
<b>ELO4:</b> Organise tropical medicine clinical research according to the ICH GCP by applying medical statistics, accepted research methodologies, and the principle of good clinical practice (GCP)	Proposal/Thesis writing, Discussion, Publication/Presentation	Comprehensive Examination/ Defence of proposal & thematic paper/ Completeness of Clinical Research
<b>ELO7:</b> Develop a scientific research suitable for publishing in an international peer-reviewed journal and/or presentation at an international conference <b>(For Plan A[2] only)</b>	Proposal/Thesis writing, Discussion, Publication/Presentation	Ethical approval/ Defence of proposal & thesis/ Publication/Presentation in international stage
<b>4. Interpersonal Relationship and Responsibility</b>		
<b>ELO5:</b> Formulate professional teamwork in clinical Tropical Medicine	Problem solving, Case Discussion, Ward Round, Work Assignment, Field Trip, Proposal/Thesis writing, Discussion, Publication/Presentation	Assessment Report using Rubric scale Comprehensive Examination/ Observation/ Quality and Completeness of Assignment
<b>5. Mathematical Analytical Thinking, Communication Skills, and Information Technology Skills</b>		
<b>ELO6:</b> Communicate effectively using appropriate technologies for data analysis and presentation	Proposal/Thesis writing, Discussion, Publication/Presentation	Observation & Assessment Report using Rubric scale

*The Mahidol University Council has approved the adjusted programme in its 532<sup>th</sup> meeting on May 16, 2018*

Table C-4: Relationship between Courses of the Programme and Expected Learning Outcomes

Course	Credit	Plan	Semester	ELO1		ELO2		ELO3		ELO4		ELO5		ELO6		ELO7		
				<sup>b</sup> KS	<sup>c</sup> Level	<sup>b</sup> KS	<sup>c</sup> Level	<sup>b</sup> KS	<sup>c</sup> Level	<sup>b</sup> KS	<sup>c</sup> Level	<sup>b</sup> KS	<sup>c</sup> Level	<sup>b</sup> KS	<sup>c</sup> Level	<sup>b</sup> KS	<sup>c</sup> Level	
<b>Core/Suggested courses</b>																		
<b>Clinical</b>																		
TMMH502: Food- and Water-borne Diseases (I) and Soil-transmitted Helminthiases	3 (2-2-5)	Both plans	1			SK3-5	I/R											
TMMH503: Food- and Water-borne Diseases (II) (Tissue Parasites)	2 (2-0-4)		1				I/R											
TMMH504: Important Mosquito-borne Diseases	3 (3-0-6)		1				I/R											
TMMH505: Non-mosquito Vector-borne Diseases and Zoonosis	2 (2-0-4)		1				I/R											
TMCD504: Clinical Apprenticeship	6 (3-6-9)	Plan B	2		R/M/A	SK3-5, GS3-5, SS2-7	R/M/A						I/R/M/A					
TMCD526: Tropical Medicine Apprenticeship	6 (3-6-9)	Plan A	2	GK1, GS1,	R/M/A		R/M/A						GS3-5,	I/R/M/A				
TMCD527: Clinical Case Teaching	3 (3-0-6)	Both plans	2	GS3-4, SS1	I/R		R/M/A						10, 12	I/R				
TMCD530: Tropical Infectious Diseases Case Study	1 (0-2-1)	plans	1/2		I/R		R/M							I/R/M				
<b>Research</b>																		
TMCD535: Seminar in Clinical Tropical Medicine	3 (2-2-5)	Both plans	2	GK1, SK1-2, GS1-4	I/R/M/A	SK3-5, GS3-5	R/M	GK2-3, GS6-8, SS8-10	I/R/M/A	GK4-5, SK6, GS2, 9-10	I/R			GK5, GS5,7-8,10 SS14	I/R/M/A			
TMCD503: Introduction to Clinical Research	1 (1-0-2)		1/2	GK1, SK1-2	I/R				GK2-3	I	GK4, SK6	I	GS3-5	I/R				
TMID510: Statistics for Clinical Research	3 (2-2-5)		1/2								GK5, GS8	I/R			GK5	I/R		
TMCD534: Practical Statistics for Clinical Research	1 (0-2-1)		2								GK5, SK6, GS8	R/M			GK5, GS7-8, SS14	I/R/M		
<b>Thesis/Thematic paper</b>																		
TMCD697: Thematic Paper	6 (0-18-0)	Plan B	2		M/A		M		M/A	GK4-5, SK6, GS2, 8-11, SS11-13	M/A		M/A		M/A			
TMCD698: Thesis	12 (0-36-0)	Plan A	2/3/4	GK1, SK1-2, GS1-4, SS1	M/A	SK3-5, GS3-5	M	GK2-3, GS6-8, SS8-10	M/A		M/A	GS3-5, 10, 12	M/A	GK5, GS5,7-8,10 SS14	M/A	GS13	M/A	
Publication		Plan A	3/4		M/A		M		M/A		M/A		M		M/A	GS13-14, SS15	M/A	
<b>Elective Courses (2 credits for Plan A, 8 credits for Plan B)</b>																		
TMMH508: Travel Medicine I	1 (1-0-2)	Both plans	1	GK1, SK1,	I/R	SK3-5, GS3-5, SS2-7	I/R											
TMCD532: Travel Medicine II	2 (2-0-4)		1	GS1-4, SS1	R		I/R/M											
TMCD533: Special Clinics in Tropical Medicine	1 (1-0-2)		2				R											
TMCD523: Clinical Laboratory Methods for Research	1 (1-0-2)		2				R											
TMCD531: Tropical Clinical Pathology	1 (1-0-2)		2				R											
TMCD524: Interesting Case Report	1 (0-2-1)		2	GK1, SK1, GS1-4, SS1	R/M		R/M											
TMCD521: Literature Review	2 (0-4-2)		2	GK1, SK1-2, GS1-4	R/M		SK3-5, GS3-5	R/M	GK2-3, GS6-8, SS8-10	R/M	GK4-5, SK6, GS2, 8-10	R/M	GS3-5, 10, 12	R/M	GK5, GS5,7-9, SS14	R/M		
<sup>a</sup> Semester (2 semesters/year), <sup>b</sup> KS: Knowledge & Skills (As shown in Table 2.3.3); GK: General Knowledge, SK: Specific Knowledge, GS: Generic Skills, SS: Specific Skills																		
<sup>c</sup> Level: I = Introduced; R= Reinforced & opportunity to practice; M= Mastery at the senior or exit level; A= Assessment for the ELO																		

