



Mahidol University

Faculty of Medicine Ramathibodi Hospital

Section for Clinical Epidemiology and Biostatistics

Doctor of Philosophy Program in Data Science for
Health Care (International Program)

Master of Science Program in Data Science for
Health Care (International Program)



Mahidol University
Faculty of Medicine Ramathibodi Hospital
Section for Clinical Epidemiology and Biostatistics

Program Committee

Ph.D. Director



Dr.Oraluck

M.Sc. Director



Dr.Ratchainant



Dr. Ammarin



Dr. Anuchate



Dr. Nawanan



Dr. Pawin



Dr. Sakda



Dr. Thunyarat



Dr. Viji



Dr. Chusak



Dr. Patarawan



Expected learning outcomes (ELOs)

Ph.D. (Data Science for Health Care)	M.Sc. (Data Science for Health Care)
1. Be able to conduct data science research in health care with international standard proven by international ethical publications	1. Be able to conduct data science research and/or use of data in health care complying with international ethical standards
2. Be able to integrate and apply data mining and machine learning algorithm to various types and sizes of health care data	2. Be able to apply data mining and machine learning algorithm to various types and sizes of health care data
3. Be able to design and recommend data framework in health care system	3. Be able to design data framework in health care system
4. Be able to work as a team, communicate and disseminate research findings with efficient visualization	4. Be able to work as a team and communicate research findings with efficient visualization
5. Be lifelong health innovation learners in big data and health care system	5. Be lifelong health innovation learners in big data and health care system



Mahidol University

Faculty of Medicine Ramathibodi Hospital
Section for Clinical Epidemiology and Biostatistics

Coursework and Thesis

Code	Subject	Credit	Course Coordinator
Required/Core courses			
RACE 625	Medical Statistics in Clinical Research	3 (2-2-5)	Asst. Prof. Dr. Sasivimol Rattanasiri
RADS 608	Principles and Concepts of Health Systems	2 (2-0-4)	Assoc. Prof. Dr. Nithat Sirichotiratana
RADS 603	Business Intelligence	2 (1-2-3)	Dr. Ratchainant Thammasudjarit
RADS 601	Health Informatics and Health Information Technology	3 (2-2-5)	Dr. Oraluck Pattanaprateep / Dr. Nawanant Theera-Ampornpant
RADS 602	Data Mining and Machine Learning	3 (2-2-5)	Dr. Oraluck Pattanaprateep / Lect. Anuchate Pattanateepapon
RACE 626	Advanced Analysis in Clinical Research	3 (2-2-5)	Prof. Dr. Ammarin Thakkinstian
Elective courses			
RADS 604	Innovation in Health Information Technology	2 (1-2-3)	Dr. Oraluck Pattanaprateep / Lect. Anuchate Pattanateepapon
RADS 611	Advanced modeling techniques	3 (2-2-5)	Dr. Ratchainant Thammasudjarit
RADS 605	Advanced machine learning	3 (2-2-5)	Dr. Ratchainant Thammasudjarit
Dissertation/Thesis			
RACE 799	Dissertation (Plan II)	48 (0-192-0)	-
RACE 698	Thesis (M.Sc.)	12 (0-48-0)	-



Timeframe for Coursework

Year	2019											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
								<u>Block 1</u> RACE 625 RADS 608		<u>Block 2</u> RADS601 RADS603		BREAK
								Mathematical statistics				
	2020											
	<u>Block 3</u> RACE 626 RADS 602		<u>Block 4</u> RADS 604 RADS 611		<u>Block 5</u> RADS 605							
	RACE 603**											
M.Sc.						Defend Topic & Develop Proposal	Develop & Defend Proposal	Apply Grant/ Ethics	Conduct study		Manuscript	
Ph.D.									Qualifying Examination			Defend topic

** Attend some topics of RACE 603: Research protocol design



Mahidol University

Faculty of Medicine Ramathibodi Hospital

Section for Clinical Epidemiology and Biostatistics

Mathematical Statistics

No.	Date	Time	Topics	Instructor
1.	Wed, Aug 21, 2019	09.00 – 12.00	Calculus I	Dr. Ratchainant Thammasudjarit
2.	Mon, Aug 26, 2019	09.00 – 12.00	Calculus II	Dr. Ratchainant Thammasudjarit
3.	Fri, Aug 30, 2019	09.00 – 12.00	Probability theory I	Dr. Ratchainant Thammasudjarit
4.	Wed, Sep 11, 2019	09.00 – 12.00	Probability theory II	Dr. Ratchainant Thammasudjarit
5.	Tue, Sep 17, 2019	09.00 – 12.00	Matrix and Vector I	Lect. Anuchate Pattanateepapon
6.	Thu, Sep 19, 2019	09.00 – 12.00	Matrix and Vector II	Lect. Anuchate Pattanateepapon
7.	Tue, Sep 24, 2019	09.00 – 12.00	Linear algebra I	Lect. Anuchate Pattanateepapon
8.	Tue, Oct 1, 2019	13.00 – 16.00	Linear algebra II	Lect. Anuchate Pattanateepapon
9.	Fri,, Oct 11, 2019	09.00 – 12.00	Basic Python I	Dr. Ratchainant Thammasudjarit
10.	Tue, Oct 15, 2019	09.00 – 12.00	Basic Python II	Dr. Ratchainant Thammasudjarit
11.	Thu, Oct 24, 2019	13.00 – 16.00	Basic R programming I	Lect. Anuchate Pattanateepapon
12.	Thu, Oct 31, 2019	09.00 – 12.00	Basic R programming II	Lect. Anuchate Pattanateepapon

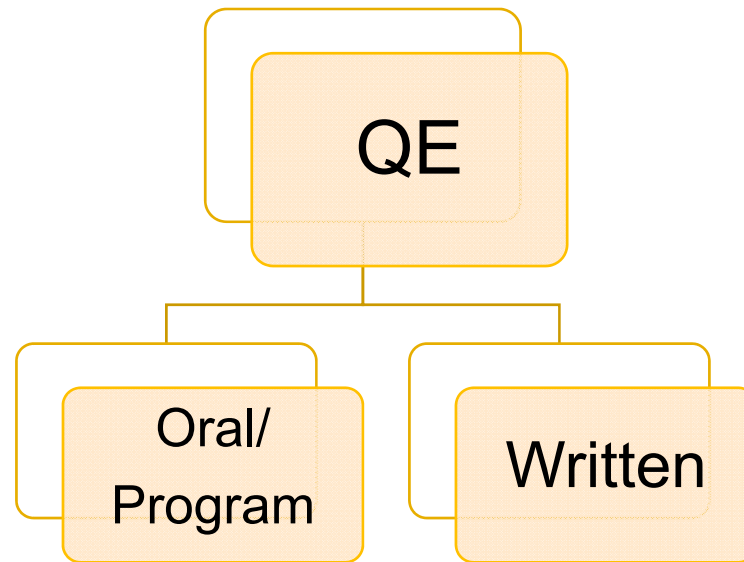


Mahidol University

Faculty of Medicine Ramathibodi Hospital
Section for Clinical Epidemiology and Biostatistics

Qualifying Examination for Ph.D.

- Completion of coursework
- Two times per year
- Before defend proposal





Mahidol University

Faculty of Medicine Ramathibodi Hospital

Section for Clinical Epidemiology and Biostatistics

M.Sc. Timeframe for Research

Year	2020											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
M.Sc. RACE 698						Defend Topic & Develop Proposal	Develop & Defend Proposal	Apply Grant/ Ethics	Conduct study		Manuscript	
	2021											
	Writing thesis		Defend thesis			Submit thesis						



Mahidol University

Faculty of Medicine Ramathibodi Hospital

Section for Clinical Epidemiology and Biostatistics

Timeframe for Ph.D.

Year												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	Course work							1 st MS		QE		DT
2021	DVP	DFP	EC & Grant		CS & DR/DM			CS & DR/DM				
2022	DA		2 nd MS WT		DFT		TS					

CS, Conduct study

DA, Data analysis

DM, Data management

DR, Data retrieval

DT, Defend topic

DFP, Defend proposal

DFT, Defend thesis

DVP, Develop proposal

MS, Manuscript

TS, Thesis submission

WT, Writing thesis

Wisdom of the Land



Mahidol University

Faculty of Medicine Ramathibodi Hospital

Section for Clinical Epidemiology and Biostatistics

Proposal/Thesis Evaluations (after coursework)

- **Set up terms of references (TOR)**
- Progress based on TOR every 6 months
- **Evaluators:**
 - Supervisors and program committee
- Results
 - Satisfy (S) $\geq 60\%$
 - In progression (P) 40% - 60%
 - Un-satisfy (U) $< 40\%$
 - 2 consecutive U = Terminate from the program
 - 3 consecutive P = 1 U



Mahidol University

Faculty of Medicine Ramathibodi Hospital
Section for Clinical Epidemiology and Biostatistics

Graduation Requirements

M.Sc.

- Coursework not less than 24 credits and 12 credits for Thesis, **“B or higher”** in each course. (GPA \geq 3.00)
- Must pass English proficiency examination
 - TOEFL iBT > 54 or
 - IELTS \geq 5 or
 - TOEFL-ITP 480
 - MU GRAD TEST > 60
- Successfully defend thesis
- Must participate in skill development activities (Research, Language and communication, Information technology, and Leaderships and management)
(Soft skills: <http://www.grad.mahidol.ac.th/softskills/en/>)
- Thesis must have been Published
 - 1 manuscript for M.Sc.



Mahidol University

Faculty of Medicine Ramathibodi Hospital
Section for Clinical Epidemiology and Biostatistics

Graduation Requirements

Ph.D.

- Coursework not less than 24 credits and 48 credits for dissertation, **“B or higher”** in each course. (GPA \geq 3.00)
- Must pass English proficiency examination
 - TOEFL iBT > 61 or
 - IELTS \geq 5 or
 - TOEFL-ITP 500
- Must pass qualifying examination (2 failures will have to terminate/transfer to M.Sc.)
- Successfully defend thesis
- Must participate in skill development activities (Research, Language and Communication, Information Technology, and Leadership and Management)
(Soft skills: <http://www.grad.mahidol.ac.th/softskills/en/>)
- Dissertation must have been Published
 - 2-3 manuscripts for Ph.D.



Mahidol University

Faculty of Medicine Ramathibodi Hospital

Section for Clinical Epidemiology and Biostatistics



Thank you