



Mahidol University

Faculty of Medicine Ramathibodi Hospital

Department of Clinical Epidemiology and Biostatistics

Doctor of Philosophy Program in

# **CLINICAL EPIDEMIOLOGY**

Master of Science Program in

# **MEDICAL EPIDEMIOLOGY**

Doctor of Philosophy Program  
and Master of Science Program in

# **DATA SCIENCE FOR HEALTHCARE AND CLINICAL INFORMATICS**

## Who we are – our history

The Department of Clinical Epidemiology and Biostatistics (CEB) under the Faculty of Medicine Ramathibodi Hospital, Mahidol University, had been established since 1986 under the name of Clinical Epidemiology Unit. Since then, it was expanded to be the CEB in 2004. Our main responsibilities are to educate and facilitate the Faculty's members and Thai academic staffs in doing research. Four international programs of Doctor of Philosophy (Ph.D.) in Clinical Epidemiology and Master of Science (M.Sc.) programs in Medical Epidemiology and Ph.D. and M.Sc. Data Science for Healthcare and Clinical Informatics have been developed complying with Mahidol University and the Faculty's visions and missions of being the world class university and excellence in health sciences and leader in national health advocacy.

## Ph.D. in Clinical Epidemiology

### Expected Learning Outcomes (ELOs)

Graduates should be able to

ELO 1.	integrate and apply knowledge in Clinical Epidemiology, Evidence-based Medicine (EBM), Biostatistics, Health Social Science, Health Economics, and IT in their clinical/public health practice.
ELO 2.	apply EBM skills for various questions in routine clinical practice.
ELO 3.	perform advanced statistical analysis for various clinical and health science researches.
ELO 4.	develop research protocol in clinical and health science researches using various study designs.
ELO 5.	conduct research complying with international ethical standards and collaborate with research teams
ELO 6.	disseminate/communicate research findings or evidences to public by applying IT

### Program structure

Program	Required courses	Elective courses	Research	Total credits
Plan I: Research only	-	-	48	48
Plan II: Coursework and research	23	4	48	75

## Enrollment criteria

### Plan I: Research only

1. Graduated Doctor of Medicine, Pharmacy, Dentistry, Health Sciences, medical specialty certificate or other related disciplines and graduated appropriate Master's degree (e.g. Clinical Epidemiology, Epidemiology, Biostatistics, Clinical Economics Health Sciences, or other related disciplines) or graduated in medical specialty certificate. (Diploma of Fellowship of the Royal College of Physicians)
2. Grade point average at least 3.50.
3. Have at least 3 publications in peer-reviewed international journals, as the first or corresponding author.
4. English test score according to the requirements for English proficiency established by the Faculty of Graduate Studies of Mahidol University.
5. If an applicant does not meet the above criteria, but has other suitable qualification and experience, they may be considered to apply for admission by the Program Director and The Dean of Faculty of Graduate Studies

### Plan II: Coursework and research

The same criteria as plan I, except not requiring publication in a peer-reviewed international journal.

## M.Sc.in Medical Epidemiology

### ELOs

Graduates should be able to

ELO 1.	Be able to integrate and apply knowledge in Medical Epidemiology, Biostatistics and research methodology.
ELO 2.	Be able to apply evidence-based medicine skills* for various questions in routine clinical practice and research.
ELO 3.	Be able to perform statistical analysis for various medical or public health researches
ELO 4.	Be able to develop research protocol in medical or public health researches
ELO 5.	Be able to conduct research complying with international ethical standards and collaborate with research teams
ELO 6.	Be able to disseminate/communicate research findings or evidences to public by applying IT

## Program structure

Program	Required courses	Elective courses	Research	Total credits
Coursework with research	20	4	12	36

## Enrollment criteria

1. Graduated Doctor of Medicine, Pharmacy, Dentistry and other related disciplines.
2. Having cumulative GPA not less than 2.75.
3. Have a suitable English Proficiency Examination score according the requirements of Faculty of Graduate Studies.
4. If an applicant does not meet the above criteria, but has other suitable qualifications and experience, they may be considered to apply for admission by the Program Director and The Dean of Faculty of Graduate Studies.

## Lists of coursework for Ph.D. (Clin Epidemiol) and M.Sc. (Med Epidemiol)

Course ID	Course title, Credits
RACE622	Study Designs & Measurements in Clinical Epidemiology, 3
RACE625	Medical Statistics in Clinical Research, 3
RACE611	Clinical Epidemiology and Evidence-based Medicine, 3
RACE 624/RAME 624	Research Informatics and Data Management, 3/2
RACE608	Social Science in Clinical Practice and Research, 2
RACE626	Advanced Statistical Analysis in Clinical Research, 3
RACE603	Research Protocol Design, 2
RACE607/RAME607	Clinical Economics, 3/2
RACE617	Randomized Controlled Trials, 2
RACE618/ RAME618	Systematic review & Meta-analysis, 3/2
RACE799/ RACE898/ RACE698	Thesis, 48/48/12

## Ph.D. in Data Science for Healthcare and Clinical Informatics

### ELOs

Graduates should be able to

ELO 1.	conduct data science and clinical informatics research in healthcare with international ethical standards.
ELO 2.	integrate all knowledge of data science for healthcare and clinical informatics to various types of healthcare data and information systems.
ELO 3.	appropriately process and analyze big data and manage clinical information systems in healthcare organisations and the health system.
ELO 4.	conduct research and collaborate with research team.
ELO 5.	communicate and disseminate research findings in international peer-reviewed journals with effective visualisations.

### Program structure

Program	Required courses	Elective courses	Research	Total credits
Plan I: Research only	-	-	48	48
Plan II-B: Coursework and research	18	6	48	72

### Enrollment criteria

#### Plan I: Research only for student with M.Sc. Data Science for Healthcare and Clinical Informatics degree

1. Graduated with a Master's degree in Data Science for Healthcare and Clinical Informatics or a closely-related discipline from an accredited national or international academic institution recognised and attested by the Higher Education Commission
2. Grade point average not less than 3.50
3. Have an English Proficiency Examination score according to the requirements of the Faculty of Graduate Studies
4. Work or have experience as an instructor or researcher in data sciences or clinical informatics or closely relevant fields for at least three years
5. Have at least 3 publications in peer-reviewed international journals within the last 5 years, as the first or corresponding author

- Exemptions from the above conditions may be granted by the Program Committee and the Dean of the Faculty of Graduate Studies under exceptional circumstances.

### Plan II-B: Coursework and Research for student with Bachelor's degree

- Graduated with a doctor of medicine/dentistry/pharmacy/nursing degree or graduated with a bachelor's degree in health sciences, information science, mathematics/statistics, engineering, management science, social science, or an IT-related discipline from an accredited national or international academic institution recognised and attested by the Higher Education Commission
- Grade point average not less than 3.00
- Have an English Proficiency Examination score meeting the requirements of the Faculty of Graduate Studies
- Exemptions from the above conditions may be granted by the Program Committee and the Dean of the Faculty of Graduate Studies under exceptional circumstances.

## M.Sc. in Data Science for Healthcare and Clinical Informatics

### ELOs

Graduates should be able to

ELO 1.	conduct data science and clinical informatics research in healthcare complying with ethical standards.
ELO 2.	apply all knowledge of data science for healthcare and clinical informatics to healthcare data and information systems.
ELO 3.	process and analyze big data and manage clinical information systems in healthcare organisations.
ELO 4.	collaborate with research team.
ELO 5.	disseminate and communicate research findings with effective visualisations.

### Program structure

Program	Required courses	Elective courses	Research	Total credits
Thesis plan	16	8	12	36

## Enrollment criteria

1. Graduated with a doctor of medicine/dentistry/pharmacy/nursing degree or graduated with a bachelor's degree in health sciences, information science, mathematics/statistics, engineering, management science, social science, or an IT-related discipline from an accredited national or international academic institution recognised and attested by the Higher Education Commission
2. Grade point average not less than 2.75
3. Have an English Proficiency Examination score meeting the requirements of the Faculty of Graduate Studies
4. Exemptions from the above conditions may be granted by the Program Committee and the Dean of the Faculty of Graduate Studies under exceptional circumstances.

## List of Coursework for Ph.D. and M.Sc. in Data Science for Healthcare and Clinical Informatics

Course ID	Course title, Credits
RADI 601*	Health Informatics and Health Information Technology, 2
RADI 602*	Data Mining and Knowledge Discovery, 2
RADI 603	Medical Statistics and Programming for Data Science and Clinical Informatics, 2
RADI 604	Principles and Concepts of Health Systems, 2
RADI 605	Innovation in Health Information Technology, 2
RADI 606	Information Technology Management in Healthcare Organisations, 2
RADI 607**	Theories in Health Informatics and Health Information Technology, 3
RADI 608**	Machine Learning, 3
RADI 609	Research Methodology in Data Science and Clinical Informatics, 2
RADI 610	Seminar in Data Science and Clinical Informatics Research, 2
RADI 799/ RADI 898/ RADI 698	Thesis, 48/48/12

\*For M.Sc. in Data Science for Healthcare and Clinical Informatics

\*\*For Ph.D. in Data Science for Healthcare and Clinical Informatics

## Instructors

Prof. Ammarin Thakkinstian, Ph.D.	Assoc. Prof. Sasivimol Rattanasiri, Ph.D.
Assoc. Prof. Atiporn Ingsathit, M.D., Ph.D.	Assoc. Prof. Patarawan Woratanarat, MD., Ph.D.
Assoc. Prof. Thunyarat Anothaisintawee, M.D., Ph.D.	Asst. Prof. Pawin Numthavaj, M.D., Ph.D.
Asst. Prof. Chusak Okascharoen, M.D., Ph.D.	Asst. Prof. Sakda Arj-Ong Vallibhakara, M.D., Ph.D.
Asst. Prof. Oraluck Pattanaprteep, Ph.D.	Asst. Prof. Charungthai Dejthevaporn, MD., Ph.D.
Dr. Kunlawat Thadanipon, M.D. M.Sc.	Dr. Vijj Kasemsup, M.D., Ph.D.
Dr. Boonchai Kijsanayothin, M.D., Ph.D.	Dr. Nawanan Theera-Ampornpunt, M.D., Ph.D.
Dr. Ratchainant Thammasudjarit, Ph.D.	Dr. Anuchate Pattanateepapon, D.Eng.
Dr. Suparee Boonmanunt, Ph.D.	Dr. Supada Plitphonganphim, Ph.D.
Dr. Somchai Chutipongtanate, Ph.D., M.D.	

## Come and Join Our Team

Teamwork is what gets the job done. Imagine a large scale multi-center randomised controlled trial or a big data analytic, you will have many staffs to involve including Epidemiologist, Data Scientist, Biostatistician, Computer Scientist, content experts, and support team. The principle investigator is the leader of the team effort and that is the position we are going to put you in. You will learn how to develop research proposal which requires integrating knowledge in research methodology, Clinical Epidemiology, Biostatistics, Data Science, Clinical Informatics and other relevant areas. Conducting study complying with international ethical standard will be coached by advisers and support staffs. You will be in the driving seat and have us as a navigator taking you to achieve your goal. You are not left on your own, and we will work closely together as a team. We would like to invite you to be one of our research team. We are looking forward to work with you.

## Location

3rd Floor, Research Building  
8th Floor, Medical Learning Resource Center  
and Ramathibodi School of Nursing Building,  
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