



**FACULTY OF
MEDICAL SCIENCE**



FACULTY OF MEDICAL SCIENCE

Founded in 2001, the Faculty is expected to produce needed personnel in the fields of medical science and technology. Focusing on breakthroughs in research activities for both instructors and students, the Faculty aspires to become an academic leader in the Asia-Pacific region.

Our missions are carried out by four departments: Microbiology and Parasitology, Biochemistry, Physiology, and Anatomy along with the Secretariat Office and the Medical Science Academic Unit (MSASU).

The MSASU is a unique unit designed to provide academic services in medical science, including science and technology. It also serves as support for teaching and learning as well as research at all levels. Additionally, the unit engages in the development of research skills for lecturers and staff members. MSASU is composed of four subunits: (1) Microbiology Diagnosis, (2) Parasitic Infectious Disease Diagnosis, (3) Assisted Reproduction Technology, and (4) Scientific Instrument Service.

Currently six Master's of Science Programs are offered in the following fields:

1. Medical Science
2. Parasitology
3. Microbiology
4. Biochemistry
5. Physiology
6. Anatomy

The Faculty strives to be an effective quality center of research inquiries and knowledge dissemination in the health sciences.

Master of Science Program in Anatomy

Research Focus

- Cell and Molecular Biology
- Cell and Tissue Pathology
- Reproductive Biology
- Neuroanatomy
- Molecular Neuro Biology
- Morphological and Morphometric Studies
- Developmental Biology and Genetics
- Gross Anatomy
- Stem Cell and Cancer
- Toxicology
- Forensic Anthropology

Structure of the Program

1. Credit Requirements *

Requirements	Option 1.1	Option 1.2
Coursework	-	24
- Required Course	-	3
- Core Courses	-	12
- Electives	-	9
Required Non-credit Courses	5	5
Thesis	36	12
Total	36	36

* Minimum credits required

2. Required Course

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Cell Biology	-	-	422513	3
Total	-	-	1	3

3. Core Courses

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Regional Anatomy 1	-	-	419511	3
Regional Anatomy 2	-	-	419512	3
Neuroanatomy	-	-	419521	3
Microscopic Anatomy	-	-	419531	3
Total	-	-	4	12

4. Electives

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Reproductive and Assisted Reproductive Technique	-	-	419512	2
Anatomical Laboratory of Circulation System	-	-	419513	1
Anatomical Laboratory of Musculoskeletal System	-	-	419514	1
Anatomical Laboratory of Respiratory System	-	-	419515	1
Anatomical Laboratory of Urinary System	-	-	419516	1
Anatomical Laboratory of Digestive System	-	-	419517	1
Anatomical Laboratory of Reproductive System	-	-	419518	1
Research Methods in Anatomical Science	-	-	419519	2
Neuropharmacology	-	-	419522	2
Neurochemistry	-	-	419523	2
Electron Microscopy	-	-	419534	1
Image Analysis for Research	-	-	419535	1

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Immunohistochemical Technique	-	-	419536	1
Human Embryology	-	-	419541	2
Cell and Tissue Culture Laboratory	-	-	419543	1
Advanced Human Genetics	-	-	419544	2
Current Topics in Anatomy	-	-	419594	1
Total	-	-	≥5	≥9

5. Required Non-credit Courses

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Research Methodology in Health Sciences	422510	3	422510	3
Seminar 1	419596	1	419596	1
Seminar 2	419597	1	419597	1
Total	3	5	3	5

6. Thesis Credit Requirements

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Thesis 1, Option 1.1	419551	9	-	-
Thesis 2, Option 1.1	419552	9	-	-
Thesis 3, Option 1.1	419553	9	-	-
Thesis 4, Option 1.1	419554	9	-	-
Thesis 1, Option 1.2	-	-	419561	4
Thesis 2, Option 1.2	-	-	419562	4
Thesis 3, Option 1.2	-	-	419563	4
Total	4	36	3	12

Master of Science Program in Biochemistry

Research Focus

- Medical Biochemistry and Molecular Biology
- Extraction and Bioassay of Thai Medicinal Plants Related to Human Diseases, including Osteoarthritis, Cancers, Skin Diseases, Alzheimer Disease, and Neuronal Abnormalities
- Recombinant Protein Production for Human Diseases and Biochemical Technology
- Genetic and Biochemistry of Detection for Avian Influenza
- Biochemical Toxicology and Nanotechnology
- Biochemistry of Thalassemia
- Biochemistry and Molecular Biology of Cancer
- Cell Signaling
- Plant Biochemistry, Molecular Biology and Signaling
- Plant Proteomics
- Bioinformatics
- Neuronal Stem Cell
- Bioplastics

Structure of the Program

1. Credit Requirements *

Requirements	Option 1.1	Option 1.2
Coursework	-	24
- Core Courses	-	9
- Electives	-	15
Required Non-credit Courses	5	5

Requirements	Option 1.1	Option 1.2
Thesis	36	12
Total	36	36

* Minimum credits required

2. Core Courses

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Biochemical Techniques and Instrumentation	-	-	418501	3
Advanced Biochemistry	-	-	418502	3
Biochemistry, Cell and Molecular Biology	-	-	422514	3
Total	-	-	3	9

3. Electives

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Research Project in Biochemistry	-	-	418511	2
Protein Studies	-	-	418512	3
Current Topics in Biochemistry and Related Fields	-	-	418513	2
Biochemistry of Human Genetic Disorders	-	-	418521	3
Biochemistry and Molecular Biology of Cancer	-	-	418522	3
Advanced Medical Molecular Biology	-	-	418523	3
Viral Biochemistry	-	-	418524	2
Biochemistry of Nutrition and Chemopreventives	-	-	418525	3
Nutrigenomics	-	-	418526	3
Biochemical Toxicology	-	-	418527	3
Human Molecular Genetics	-	-	418528	3
Plant Biochemistry	-	-	418531	3
Biochemistry and Molecular Biology of Plant Development	-	-	418532	3

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Molecular Biology and Genetics Techniques in Plant Study	-	-	418533	3
Physiological and Molecular Basis of Plant Hormones	-	-	418534	3
Physiological and Molecular Basis of Plant Stress Responses	-	-	418535	3
Chemoinformatics for Biochemical Studies	-	-	418536	3
Bioinformatics for Biochemical and Molecular Biological Studies	-	-	418537	3
Molecular Data Mining	-	-	418538	3
Bioinformatics Programing	-	-	418539	3
Advanced Scientific Instrumentation	-	-	422520	3
Advanced Protein Chemistry and Proteomics	-	-	422522	3
Proteases in Human Diseases	-	-	422526	3
Modern Technologies for Pharmacogenomics	-	-	422527	3
Stem Cells in Health and Therapy	-	-	422528	3
Medical Nanotechnology	-	-	422529	3
Biochemistry of Signal Transduction and Regulation	-	-	422532	3
Cell Culture for Medical Science	-	-	422533	3
Current Topics in Medical Science	-	-	422594	3
Total	-	-	≥5	≥15

4. Required Non-credit Courses

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Research Methodology in Health Sciences	422510	3	422510	3
Seminar 1	418596	1	418596	1
Seminar 2	418597	1	418597	1
Total	3	5	3	5

5. Thesis Credit Requirements

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Thesis 1, Option 1.1	418551	9	-	-
Thesis 2, Option 1.1	418552	9	-	-
Thesis 3, Option 1.1	418553	9	-	-
Thesis 4, Option 1.1	418554	9	-	-
Thesis 1, Option 1.2	-	-	418561	4
Thesis 2, Option 1.2	-	-	418562	4
Thesis 3, Option 1.2	-	-	418563	4
Total	4	36	3	12

Master of Science Program in Medical Science

Research Focus

- Medical Science Technology
- Medical Molecular Biology
- Medical Nanotechnology
- Medical Biomaterial Technology
- Nutrition and Food
- Environmental Health
- Public Health Management

Structure of the Program

1. Credit Requirements *

Requirements	Option 1.1	Option 1.2
Coursework	-	24
- Core Courses	-	9
- Electives		15
Required Non-credit Courses	5	5
Thesis	36	12
Total	36	36

* Minimum credits required

2. Core Courses

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Research Methodology in Health Sciences	-	-	422511	3
Cell Biology <i>or</i> Biochemistry, Cell and Molecular Biology *	-	-	422513/ 422514	3
Current Topics in Medical Science	-	-	422594	3
Total	-	-	3	9

* Choose one

3. Electives

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Medical Science:				
Advanced Scientific Instrumentation	-	-	422520	3
Advanced Protein Chemistry and Proteomics	-	-	422522	3
Proteases in Human Diseases	-	-	422526	3
Modern Technologies for Pharmacogenomics	-	-	422527	3
Stem Cells in Health and Therapy	-	-	422528	3
Medical Nanotechnology	-	-	422529	3
Biochemistry of Signal Transduction and Regulation	-	-	422532	3
Cell Culture for Medical Sciences	-	-	422533	3
Physiology:				
Respiratory Physiology	-	-	421521	2
Renal Physiology	-	-	421522	2
Gastrointestinal Physiology	-	-	421523	2
Endocrine Physiology	-	-	421524	2
Basic Neuroscience	-	-	421525	2
Applied Vascular Physiology	-	-	421526	2
Cardiovascular Physiology	-	-	421527	2
Cellular Physiology	-	-	421528	2
Electrophysiology of Ion Channel	-	-	421529	2
Applications in Exercise Physiology	-	-	421530	2
Physiology of Aging and Rejuvenation	-	-	421531	2
Applied Nutrition Science in Health and Disease	-	-	421532	2
Use of Laboratory Animals and Animal Ethics	-	-	421533	2
Research Project in Physiology	-	-	421534	5
Anatomy:				
Anatomical Laboratory of Circulatory System	-	-	419513	1
Anatomical Laboratory of Musculoskeletal System	-	-	419514	1
Anatomical Laboratory of Respiratory System	-	-	419515	1
Anatomical Laboratory of Urinary System	-	-	419516	1
Anatomical Laboratory of Digestive System	-	-	419517	1
Anatomical Laboratory of Reproductive System	-	-	419518	1

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Research Methods in Anatomical Sciences	-	-	419519	2
Neuropharmacology	-	-	419522	2
Neurochemistry	-	-	419523	2
Electron Microscopy	-	-	419534	1
Image Analysis for Research	-	-	419535	1
Immunohistochemical Technique	-	-	419536	1
Human Embryology	-	-	419541	2
Cell and Tissue Culture Laboratory	-	-	419543	1
Advanced Human Genetics	-	-	419544	2
Current Topics in Anatomy	-	-	419594	1
Biochemistry:				
Research Project in Biochemistry	-	-	418511	2
Protein Studies	-	-	418512	3
Current Topics in Biochemistry and Related Fields	-	-	418513	2
Biochemistry of Human Genetic Disorders	-	-	418521	3
Biochemistry and Molecular Biology of Cancer	-	-	418522	3
Advanced Medical Molecular Biology	-	-	418523	3
Viral Biochemistry	-	-	418524	2
Biochemistry of Nutrition and Chemopreventives	-	-	418525	3
Nutrigenomics	-	-	418526	3
Biochemical Toxicology	-	-	418527	3
Human Molecular Genetics	-	-	418528	3
Plant Biochemistry	-	-	418531	3
Biochemistry and Molecular Biology of Plant Development	-	-	418532	3
Molecular Biology and Genetics Techniques in Plant Study	-	-	418533	3
Physiological and Molecular Basis of Plant Hormones	-	-	418534	3
Physiological and Molecular Basis of Plant Stress Responses	-	-	418535	3
Chemoinformatics for Biochemical Studies	-	-	418536	3
Bioinformatics for Biochemical and Molecular Biological Studies	-	-	418537	3

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Molecular Data Mining	-	-	418538	3
Bioinformatics Programing	-	-	418539	3
Medical Microbiology:				
Medical Microbiology	-	-	266511	3
Diagnostic Medical Microbiology	-	-	266512	3
Microbiology for Public Health and Sanitation	-	-	266513	3
Advanced Immunology	-	-	266514	3
Advanced Medical Virology	-	-	266515	3
Advanced Medical Bacteriology	-	-	266516	3
Advanced Medical Mycology	-	-	266517	3
Medical DNA Technology	-	-	266518	3
Microbial Forensics	-	-	266519	3
Applied Microbiology:				
Advanced Microbial Physiology	-	-	266502	3
Research Techniques in Molecular Biology and Microbiology	-	-	266503	3
Selected Topics in Microbiology	-	-	266504	3
Bioinformatics	-	-	266506	3
Quantitative Predictive Microbiology	-	-	266507	3
Advanced Microbial Genetics	-	-	266508	3
Microbial Food Safety	-	-	266509	3
Microbiology of Wastewater Treatment	-	-	266521	3
Microbial Biotechnology	-	-	266522	3
Advanced Microbial Enzyme Technology	-	-	266523	3
Microbial Cell Immobilization	-	-	266524	3
Biotechnological Applications of Actinomycetes	-	-	266525	3
Fungal Biotechnology	-	-	266526	3
Microbial Ecology	-	-	266531	3
Pollution Microbiology	-	-	266532	3
Microbial Degradation and Deterioration	-	-	266533	3
Microbial Diversity and Phylogeny	-	-	266534	3
Total	-	-	≥5	≥15

4. Required Non-credit Courses

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Research Methodology in Health Sciences	422510	3	422510	3
Seminar 1	422595	1	422595	1
Seminar 2	422596	1	422596	1
Total	3	5	3	5

5. Thesis Credit Requirements

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Thesis 1, Option 1.1	422551	9	-	-
Thesis 2, Option 1.1	422552	9	-	-
Thesis 3, Option 1.1	422553	9	-	-
Thesis 4, Option 1.1	422554	9	-	-
Thesis 1, Option 1.2	-	-	422561	4
Thesis 2, Option 1.2	-	-	422562	4
Thesis 3, Option 1.2	-	-	422563	4
Total	4	36	3	12

Master of Science Program in Microbiology

Research Focus

- Environmental Microbiology
- Microbial Ecology and Diversity
- Molecular Medical Microbiology
- Microbial Biotechnology
- Immunology
- Virology

Structure of the Program

1. Credit Requirements *

Requirements	Option 1.1	Option 1.2
Coursework	-	24
- Core Courses	-	6
- Electives	-	18
Required Non-credit Courses	5	5
Thesis	36	12
Total	36	36

* Minimum credits required

2. Core Courses

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Advanced Microbial Physiology (<i>or</i>) Medical Microbiology *	-	-	266502 / 266511	3
Biochemistry, Cell and Molecular Biology	-	-	422514	3
Total	-	-	2	6

* Choose one

3. Electives

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Medical Microbiology:				
Medical Microbiology	-	-	266511	3
Diagnostic Medical Microbiology	-	-	266512	3
Microbiology for Public Health and Sanitation	-	-	266513	3
Advanced Immunology	-	-	266514	3
Advanced Medical Virology	-	-	266515	3
Advanced Medical Bacteriology	-	-	266516	3
Advanced Medical Mycology	-	-	266517	3
Medical DNA Technology	-	-	266518	3
Microbial Forensics	-	-	266519	3
Applied Microbiology:				
Advanced Microbial Physiology	-	-	266502	3
Research Techniques in Molecular Biology and Microbiology	-	-	266503	3
Selected Topics in Microbiology	-	-	266504	3
Bioinformatics	-	-	266506	3
Quantitative Predictive Microbiology	-	-	266507	3
Advanced Microbial Genetics	-	-	266508	3
Microbial Food Safety	-	-	266509	3
Microbiology of Wastewater Treatment	-	-	266521	3
Microbial Biotechnology	-	-	266522	3
Advanced Microbial Enzyme Technology	-	-	266523	3
Microbial Cell Immobilization	-	-	266524	3
Biotechnological Applications of Actinomycetes	-	-	266525	3
Fungal Biotechnology	-	-	266526	3
Microbial Ecology	-	-	266531	3
Pollution Microbiology	-	-	266532	3
Microbial Degradation and Deterioration	-	-	266533	3
Microbial Diversity and Phylogeny	-	-	266534	3
Total	-	-	≥6	≥18

4. Required Non-credit Courses

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Research Methodology in Health Sciences	422510	3	422510	3
Seminar 1	266596	1	266596	1
Seminar 2	266597	1	266597	1
Total	3	5	3	5

5. Thesis Credit Requirements

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Thesis 1, Option 1.1	266551	9	-	-
Thesis 2, Option 1.1	266552	9	-	-
Thesis 3, Option 1.1	266553	9	-	-
Thesis 4, Option 1.1	266554	9	-	-
Thesis 1, Option 1.2	-	-	266561	4
Thesis 2, Option 1.2	-	-	266562	4
Thesis 3, Option 1.2	-	-	266563	4
Total	4	36	3	12

Master of Science Program in Parasitology

Research Focus

- Medical Parasitology
- Molecular Medical Parasitology
- Medical Entomology
- Epidemiology of Parasitology
- Vector Biology
- Immunology

Structure of the Program

1. Credit Requirements *

Requirements	Option 1.1	Option 1.2
Coursework	-	24
- Core Courses	-	6
- Electives	-	18
Required Non-credit Courses	5	5
Thesis	36	12
Total	36	36

* Minimum credits required

2. Core Courses

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Biochemistry, Cell and Molecular Biology	-	-	422514	3
Medical Parasitology	-	-	424511	3
Total	-	-	2	6

3. Electives

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Experimental Parasitology	-	-	424501	3
Diagnosis of Parasitology	-	-	424502	3
Ecology and Epidemiology of Parasites	-	-	424503	3
Molecular Parasitology	-	-	424504	3
Immunology of Parasitic Infections	-	-	424505	3
Current Topics in Parasitology I	-	-	424506	3
Medical Helminthology	-	-	424512	3
Medical Protozoology	-	-	424513	3
Clinical Parasitology	-	-	424514	3
Medical Malacology	-	-	424515	3
Medical Entomology	-	-	424521	3
Mosquitoes and Control	-	-	424522	3
Laboratory Techniques in Entomology	-	-	424523	3
Forensic Entomology	-	-	424524	3
Taxonomy of Medical Arthropods	-	-	424525	3
Total	-	-	≥6	≥18

4. Required Non-credit Courses

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Research Methodology in Health Sciences	422510	3	422510	3
Seminar 1	424596	1	424596	1
Seminar 2	424597	1	424597	1
Total	3	5	3	5

5. Thesis Credit Requirements

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Thesis 1, Option 1.1	424551	9	-	-
Thesis 2, Option 1.1	424552	9	-	-
Thesis 3, Option 1.1	424553	9	-	-
Thesis 4, Option 1.1	424554	9	-	-
Thesis 1, Option 1.2	-	-	424561	4
Thesis 2, Option 1.2	-	-	424562	4
Thesis 3, Option 1.2	-	-	424563	4
Total	4	36	3	12

Master of Science Program in Physiology

Research Focus

- Electrophysiology
- Neurophysiology and Behavioral Neuroscience
- Cardiovascular Physiology
- Molecular Physiology
- Membrane Biology and Membrane Biology of Ion Transport
- Exercise Physiology

Structure of the Program

1. Credit Requirements *

Requirements	Option 1.1	Option 1.2
Coursework	-	24
- Required Course	-	3
- Core Courses	-	8
- Electives	-	13
Required Non-credit Courses	5	5
Thesis	36	12
Total	36	36

* Minimum credits required

2. Required Course

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Cell Biology	-	-	422513	3
Total	-	-	1	3

3. Core Courses

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
System Physiology	-	-	421511	3
Integrative Physiology	-	-	421512	3
Physiology Research Techniques	-	-	421513	2
Total	-	-	3	8

4. Electives

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Respiratory Physiology	-	-	421521	2
Renal Physiology	-	-	421522	2
Gastrointestinal Physiology	-	-	421523	2
Endocrine Physiology	-	-	421524	2
Basic Neuroscience	-	-	421525	2
Applied Vascular Physiology	-	-	421526	2
Cardiovascular Physiology	-	-	421527	2
Cellular Physiology	-	-	421528	2
Electrophysiology of Ion Channels	-	-	421529	2
Applications in Exercise Physiology	-	-	421530	2
Physiology of Aging and Rejuvenation	-	-	421531	2
Applied Nutrition Science in Health and Disease	-	-	421532	2
Use of Laboratory Animals and Animal Ethics	-	-	421533	2
Research Project in Physiology	-	-	421534	5
Advanced Cell Biology Techniques	-	-	421535	2
Total	-	-	≥5	≥13

5. Required Non-credit Courses

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Research Methodology in Health Sciences	422510	3	422510	3
Seminar 1	421596	1	421596	1
Seminar 2	421597	1	421597	1
Total	3	5	3	5

6. Thesis Credit Requirements

Requirements	Option 1.1		Option 1.2	
	Course No.	Cr.	Course No.	Cr.
Thesis 1, Option 1.1	421551	9	-	-
Thesis 2, Option 1.1	421552	9	-	-
Thesis 3, Option 1.1	421553	9	-	-
Thesis 4, Option 1.1	421554	9	-	-
Thesis 1, Option 1.2	-	-	421561	4
Thesis 2, Option 1.2	-	-	421562	4
Thesis 3, Option 1.2	-	-	421563	4
Total	4	36	3	12