



คณะเทคนิคการแพทย์ มหาวิทยาลัยขอนแก่น Faculty of Associated Medical Sciences KKU

Master of Science Program in Medical Science

Faculty of Associated Medical Sciences, Khon Kaen University

1. Course management:

- 2 academic years

2. Program Philosophy:

The program provides the advanced knowledge on medical sciences and technologies as well as research practice and the relevant ethical considerations.

3. Qualifications:

- Plan A1, a Bachelor's degree in a field subject to the approval of the program's Executive Committee with a minimum cumulative grade point average (GPA) of not less than 3.50 **or** has experience in publishing papers as well as a research proposal for consideration upon an interview.
- Plan A2, a Bachelor's degree in a field subject to the approval of the program's Executive Committee with a minimum cumulative grade point average (GPA) of not less than 2.75.

4. Program structure:

The degree has total courses with 36 credits for minimum. It can be divided into two plans: non-course work (Plane A 1) and course work (Plane A 2) programs.

- **Plane A 1:** Research oriented; it consists of a thesis course with a minimum credit of 36. The program may assign the study of some courses or non-credit courses, but the results should be up to the standard specified by the program.
- **Plane A 2:** Research & coursework; it consists of a thesis course with a minimum credit of 12, and other coursework with a minimum credit of 12. The total credits for the whole program should be 36 credits for minimum.

Program Structure	Credit Number	
	Plan A1	Plan A2
Compulsory Courses	-	12
Elective Courses	-	4
Thesis	36	20
Total	36	36



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5. Compulsory Courses:

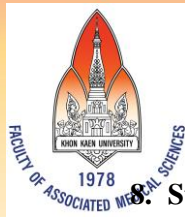
Course Code	Course Title	Credit Hours
MD 567 712	Cells and Molecular Biology	3(3-0-6)
AM 427 501	Research Methodology in Medical Sciences and Applications	2(2-0-4)
AM 427 505	Applications of Biochemistry and Molecular Biology in Health & Disease	2(2-0-4)
AM 427 506	Molecular Biology Techniques in Medical Science	3(2-3-4)
AM 428 891	Seminar I	1(1-0-3)
AM 428 892	Seminar II	1(1-0-3)

6. Elective Courses:

Course Code	Course Title	Credit Hours
AM 137 206	Molecular Bacterial Genetics	2(2-0-4)
AM 427 101	Molecular Oncology and Cancer Immunology	2(2-0-4)
AM 427 301	Molecular Pathogenesis and Analysis of Thalassemia	2(1-3-4)
AM 427 302	Integration of Laboratory Results for Thalassemia Diagnosis	1(1-0-3)
AM 427 420	Molecular Genetics of Major Histocompatibility Complex	2(2-0-4)
AM 427 504	Critical Appraisal of Medical Sciences Research Articles	2(2-0-4)
AM 427 507	Body Systems and Laboratory Profiles	1(1-0-3)
AM 527 191	Special Problems in Clinical Chemistry	2(1-3-4)
AM 527 291	Special Problems in Clinical Microbiology	2(1-3-4)
AM 527 391	Special Problems in Clinical Hematology	2(1-3-4)
AM 527 392	Special Problems in Clinical Microscopy	2(1-3-4)
AM 527 491	Special Problems in Clinical Immunology	2(1-3-4)
BS 957 149	Entrepreneurship Healthcare and Health Sciences in Globalization	2 (2-0-4)

7. Thesis:

Course Code	Course Title	Credits
AM 427 898	Thesis	36
AM 427 899	Thesis	20



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Study Plan:

1 st Year		First semester	
		Plan A 1	Plan A 2
MD 567 712	Cells and Molecular Biology	-	3
AM 427 501	Research Methodology in Medical Sciences and Applications		2
AM 427 505	Applications of Biochemistry and Molecular Biology in Health & Disease	-	2
AM427 898	Thesis	9	-
XXX XXX	Elective	-	2
Total		9	9
Total Credit Attempted		9	9

1 st Year		Second semester	
		Plan A 1	Plan A 2
AM427 506	Molecular Biology Techniques in Medical Science	-	3
AM427 898	Thesis	9	-
AM427 899	Thesis	-	4
XXX XXX	Elective	-	2
Total		9	9
Total Credit Attempted		18	18

2 nd year		First Semester	
		Plan A 1	Plan A 2
AM428 891	Seminar 1	-	1
AM427 898	Thesis	9	-
AM427 898	Thesis	-	8
Total		9	9
Total Credit Attempted		27	29

2 nd Year		Second Semester	
		Plan A 1	Plan A 2
AM428 892	Seminar 2	-	1
AM427 898	Thesis	9	-
AM427 899	Thesis	-	8
Total		9	9
Total Credit Attempted		36	36



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9. Course description

9.1 Compulsory Courses

AM427 501 Research Methodology in Medical Sciences and Applications of Biostatistics 2(2-0-4)

Type of research and clinical epidemiology, medical science research and design, biostatistics and applications, data analysis and interpretation, development of research proposal and thesis writing, manuscript preparation, patent/ petty patent, research and professional ethics, literature search using information technology and relevant ethics, as well as the development of conceptual framework from literature review

AM427 505 Applications of Biochemistry and Molecular Biology in Health & Disease 2(2-0-2)

Applications of chemistry and metabolism of biomolecules biochemistry and molecular biology of immunohematology, genomics, transcriptomics, metabolomics, proteomics, microbiota and metagenomics, enzymology, endocrinology, nutrition, infectious, non-communicable and genetic diseases and precision medicine

AM427 506 Molecular Biology Techniques in Medical Science 3(2-3-4)

Techniques in molecular biology and applications to the diagnosis of diseases and research study, including gene cloning and expression, DNA amplification, DNA hybridization, DNA sequencing, proteomic analysis, biosensor, antibody production, and molecular techniques for diagnosis of emerging disease

AM428 891 Seminar I 1 (1-0-3)

Critical reading of published articles related to students' thesis, assessing validity of results, strength and weakness of the paper, presenting the results of critical reading in class using English language as a medium of communication

AM428 892 Seminar II 1 (1-0-3)

Searching and reviewing literatures related to students' thesis, analyzing and collecting body of knowledge in depth, conceptualizing framework for further study, summarizing and presenting the results of literature review in class using English language as a medium of communication

MD567 712 Cells and Molecular Biology 3 (3-0-6)

The molecular organization of cells and cellular energy, metabolism, genome, gene regulation, chemical components of cells, structure and function of cells, cell growth and division, cell communication, cell development and differentiation, cell interactions, cell pathology and cell death, molecular and cellular basis of diseases, tumor development, the evolution of cell and the immune system

9.2 Elective Courses

AM427 507 Body Systems and Laboratory Profiles 1(1-0-3)

Pathophysiology of the body systems and laboratory assessment, integumentary, cardiovascular, lymphatic, respiratory, digestive, endocrine, urinary, and reproductive systems.

AM137 206 Molecular Bacterial Genetics 2 (2-0-4)

Molecular genetics of bacteria, chromosome and its component such as core and accessory genome, extrachromosomal genetic elements including plasmid, mobile genetics elements role of genes and their expression in phenotypic and genotypic properties, application of molecular bacterial genetics in molecular technology research



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AM427 101 Molecular Oncology and Cancer Immunology 2 (2-0-4)

Molecular biology of cancer cells, carcinogenesis, cancer genetics and epigenetics, immune responses against tumor, cancer and transformed cells, mechanisms of immune evasion by tumor and cancer cells, cancer diagnosis, prevention and cell/immunotherapy.

AM427 301 Molecular Pathogenesis and Analysis of Thalassemia 2 (1-3-4)

Molecular basis of thalassemia genes, the relationships between thalassemic genes and pathophysiology of diseases, pre- and post-natal laboratory diagnosis of thalassemia, the genotype-phenotype relationship, the thalassemia patient's family study, the prevention and control of thalassemia, the recent advance in management and laboratory diagnosis of the disease

AM 427 302 Integration of Laboratory Results for Thalassemia Diagnosis 1 (1-0-3)

National policy and strategy of prevention and control of thalassemia, principle, method, reporting, interpretation, screening, hemoglobin and DNA analyses for diagnosis of thalassemia, evaluation of couple at risk for severe thalassemia disease, prenatal diagnosis, and case study

AM 427 420 Molecular Genetics of Major Histocompatibility Complex 2(2-0-4)

Molecular structure of the major histocompatibility complex (MHC), gene clusters, gene families and gene organization with respect to functional and evolutionary relationships, medical significance of the complex, techniques in analysis of the MHC genes both at the DNA and protein levels, principle of genetic segregation of the MHC genes and approaches to the study of disease associations with the MHC

AM 527 191 Special Problems in Clinical Chemistry 2(1-3-4)

Solving problems in clinical chemistry, analysis, planning, appropriate test or recent techniques selection to deal with the current problems

AM 527 291 Special Problems in Clinical Microbiology 2 (1-3-4)

Problem solving in clinical microbiology, analysis, planning, appropriate tests or recent techniques selection to deal with the current problem

AM527 391 Special Problems in Clinical Hematology 2(1-3-4)

Solving problems in clinical hematology, analysis, planning, appropriate test or recent techniques selection to deal with the current problems

AMv527 392 Special Problems in Clinical Microscopy 2(1-3-4)

Solving problem in clinical microscopy, analysis, planning, appropriate test or recent techniques selection to deal with the current problems

AMv527 491 Special Problems in Clinical Immunology 2(1-3-4)

Problems solving in clinical immunology including analysis, planning, appropriate test or recent techniques selection to deal with the current problems

BS 957 149 Entrepreneurship Healthcare and Health Sciences in Globalization 2 (2-0-4)

Dynamic health and health science business, analysis, searching business opportunity and strategic planning for health business health science and public health, health insurance, pharmacy, medical instrument. Investment analysis and planning, capital management, to applied technology for management. The introductory laws, standard and ethics for the entrepreneurial health business and health science, case study and project



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9.3 Thesis

AM427 898 Thesis 36 credits

Conducting an experiment or a research and making thesis in medical science or integrate research from problems in routine work under the supervision and guidance of the supervisor, approved by the graduate committee of the faculty. Article writing and related ethics, manuscript writing for publishing in a standard journal

AM427 899 Thesis 20 credits

Conducting an experiment or a research and making thesis in medical science under the supervision and guidance of the supervisor, approved by the graduate committee of the faculty. Article writing and related ethics, manuscript writing for publishing in a standard journal

Contact Person:

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