



คณะเทคนิคการแพทย์ มหาวิทยาลัยขอนแก่น Faculty of Associated Medical Sciences KKU

Doctor of Philosophy Programs in Medical Technology Faculty of Associated Medical Sciences Khon Kaen University

1. Course management:

- 3 academic years for Plan 1.1 and 2.1
- 4 academic years for Plan 1.2 and 2.2

2. Program Philosophy:

The Doctoral program in Medical Technology are committed to producing high quality professional graduates with fully knowledge, skill. The graduates are able to develop, conduct and apply re-search to create innovative knowledge in medical technology with high standard.

3. Qualifications:

Qualification of applicants: Bachelor of Science in Medical Technology or Master of Science in Health Science or Medical Science

Plan 1.1: B.Sc. (Medical Technology) and M.Sc. with GPA ≥ 3.50 and have at least 1 peered-review publication as either first or corresponding author.

Plan 1.2: B.Sc. (Medical Technology) with GPA ≥ 3.50 and have at least 1 peered-review publication as either first or corresponding author.

Plan 2.1: B.Sc. (Medical Technology) and M.Sc. with GPA ≥ 3.25

Plan 2.2: B.Sc. (Medical Technology) with GPA ≥ 3.25

4. Program structure:

Doctor of Philosophy in Medical Technology				
Courses	Plan 1.1	Plan 1.2	Plan 2.1	Plan 2.2
Core Courses	-	-	9	13
Elective Courses	-	-	3	11
Dissertation	48	72	36	48
Total Credits	48	72	48	72



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5. Required Courses:

Course Code	Course Title	Credit Hours
AM 137 501	Modern Cell Biology	2 (2-0-4)
AM 137 502	Research Methodology and Biostatistics in Medical Technology	2 (2-0-4)
BS 957 149	Entrepreneurship Healthcare and Health Sciences in Globalization	2 (2-0-4)
AM 137 891	Seminar and Case Study in Clinical Pathology	1 (1-0-2)
AM 137 503	Laboratory Management	2 (2-0-4)
AM 137 504	Laboratory standard and Professional Laws	2 (2-0-4)
AM 137 505	Clinical Pathology	2 (2-0-4)
AM 137 892	Seminar and Case Study in Precision Medicine	1 (1-0-2)
AM 137 508	Genetics and Human Genome	2 (2-0-4)
AM 137 509	Molecular Precision Medicine and Medical Bioinformatics	3 (1-6-5)
AM 137 510	Precision Medicine and Application	2 (1-3-4)
AM 137 893	Seminar and Case Study in Biosensors for Medical Technology	1 (1-0-2)
SC 218 405	Chemical Sensors and Biosensors	2 (2-0-4)
AM 137 513	Selected Topics in Inorganic Chemistry for Sensors	2 (2-0-4)
AM 137 514	Validation of Biosensors in Medical Sciences	2 (2-0-4)
AM 137 894	Seminar and Case Study in Assisted Reproductive Technology	1 (1-0-2)
AM 137 516	Reproductive System and Molecular Genetics	2 (2-0-4)
AM 137 517	Laboratory Knowledge of Assisted Reproductive Technology	2 (2-0-4)
AM 137 518	Clinical Assisted Reproductive Technology	2 (2-0-4)



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6. Elective Courses:

Course Code	Course Title	Credit Hours
AM 137 506	Laboratory Interpretation and Clinical Correlation	2 (2-0-4)
AM 137 507	Special Problems in Clinical Pathology	1 (1-0-2)
AM 137 511	Clinical Correlation and Genomic and Precision Medicine Laboratory Results	2 (2-0-4)
AM 137 512	Management System of Genomics and Precision Medicine Laboratory	1 (1-0-2)
AM 137 515	Design of Biosensor Platform and Medical Applications	3 (1-6-5)
AM 137 519	Andrology Laboratory Practice	3 (1-6-5)
AM 137 520	In Vitro Fertilization and Embryo Culture	3 (2-3-6)
AM 137 521	Work Integrated Learning at Assisted Reproductive Technology Laboratory	3 (0-9-5)
AM 137 108	Research in Proteomic, Kinome, Metabolomic and Medical Applications	1 (1-0-2)
AM 137 206	Molecular Genetics of Bacteria	2 (2-0-4)
AM 137 207	Molecular Genetics of Major Histocompatibility Complex	2 (2-0-4)
AM 137 522	Health Informatics and Its Application	2 (2-0-4)

7. Thesis:

Course Code	Course Title	Credits
AM 137 996	Dissertation	48
AM 137 997	Dissertation	72
AM 137 998	Dissertation	36
AM 137 999	Dissertation	48



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8. Study Plan:

1 st Year		First semester			
		A 1.1	A 1.2	A 2.1	A 2.2
AM 137 501	Modern Cell Biology	-		-	2 (2-0-4)
AM 137 502	Research Methodology and Biostatistics in Medical Technology	-	-	-	2 (2-0-4)
BS 957 149	Entrepreneurship Healthcare and Health Sciences in Globalization	-		2 (2-0-4)	2 (2-0-4)
AM 137 XXX	Specific Subjects in Track	-	-	6 (x-x-x)	4 (x-x-x)
AM XXX XXX	Elective	-	-	3 (x-x-x)	4 (x-x-x)
AM 137 996	Dissertation	9	-	-	-
AM 137 997	Dissertation	-	9	-	-
Total		9	9	11	14
Total Credit Attempted		9	9	11	14
1 st Year		Second semester			
		A 1.1	A 1.2	A 2.1	A 2.2
AM 137 XXX	Specific Subjects in Track	-	-	-	2 (x-x-x)
AM 137 89X	Seminar and Case Study in Track			1 (x-x-x)	1 (x-x-x)
AM XXX XXX	Elective	-	-	-	7 (x-x-x)
AM 137 996	Dissertation	9	-	-	-
AM 137 997	Dissertation	-	9	-	-
AM 137 998	Dissertation	-	-	6	-
Total		9	9	7	10
Total Credit Attempted		18	18	18	24

2 nd year		First semester			
		A 1.1	A 1.2	A 2.1	A 2.2
AM 137 996	Dissertation	9	-	-	-
AM 137 997	Dissertation	-	9	-	-
AM 137 998	Dissertation	-	-	9	-
AM 137 999	Dissertation	-	-	-	9
Total		9	9	9	9
Total Credit Attempted		27	27	27	33
2 nd year		Second semester			
		A 1.1	A 1.2	A 2.1	A 2.2
AM 137 996	Dissertation	9	-	-	-
AM 137 997	Dissertation	-	9	-	-
AM 137 998	Dissertation	-	-	9	-
AM 137 999	Dissertation	-	-	-	9
Total		9	9	9	9
Total Credit Attempted		36	36	36	42
3 rd year		First semester			
		A 1.1	A 1.2	A 2.1	A 2.2
AM 137 996	Dissertation	9	-	-	-
AM 137 997	Dissertation	-	9	-	-
AM 137 998	Dissertation	-	-	9	-
AM 137 999	Dissertation	-	-	-	9
Total		9	9	9	9
Total Credit Attempted		45	45	45	51
3 rd year		Second semester			
		A 1.1	A 1.2	A 2.1	A 2.2
AM 137 996	Dissertation	3	-	-	-
AM 137 997	Dissertation	-	9	-	-
AM 137 998	Dissertation	-	-	3	-
AM 137 999	Dissertation	-	-	-	9
Total		3	9	3	9
Total Credit Attempted		48	54	48	60



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4 th year		First semester			
		A 1.1	A 1.2	A 2.1	A 2.2
AM 137 997	Dissertation	-	9	-	-
AM 137 999	Dissertation	-	-	-	9
Total		-	9	-	9
Total Credit Attempted		-	63	-	69

4 th year		Second semester			
		A 1.1	A 1.2	A 2.1	A 2.2
AM 137 997	Dissertation	-	9	-	-
AM 137 999	Dissertation	-	-	-	3
Total		-	9	-	3
Total Credit Attempted		-	72	-	72
Total Credit		48	72	48	72

9. Course description

AM 137 501 Modern Cell Biology 2 (2-0-4)

Cell structure of prokaryote and eukaryote, DNA: structures, synthesis, metabolism and functions, protein: structures, synthesis, metabolism and functions, carbohydrate and lipid: structures, synthesis, metabolism and functions, gene expression and regulations, intracellular and extracellular traffic, cell cycle and regulations, cell senescence and cell death, signal transduction and signaling pathways, extracellular matrix and its signaling, stem cells: types and lineages, tumor biology, molecular biological techniques, genomics, proteomics and metabolomics, cell culture and animal models

AM 137 502 Research Methodology and Biostatistics in Medical Technology 2 (2-0-4)

Research process, proposal development, report writing and publication, ethics in human research, ethics in research literature review, information technology, biostatistics in medical technology, data analysis, probability and distribution, sample size and random sampling, descriptive statistics, inferential statistics, hypothesis testing using parametric and non-parametric statistics, variance analysis, correlation and linear regression analysis, quantitative research, statistics for diagnosis, method validation and verification for diagnosis



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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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