Program: Master of Science Program in Translational Medicine (International Program)

Degree: Master of Science (Translational Medicine)

Study Plan:

1) Research Program (Scheme A 1)

Year	First Trimester	Cr	Second Trimester	Cr	Third Trimester	Cr
Year 1	621751 Thesis	6	621751 Thesis	6	621751 Thesis	6
Year 2	621751 Thesis	9	621751 Thesis	9	621751 Thesis	9

2) Regular Program (Scheme A 2)

Year	First Trimester	Cr	Second Trimester	Cr	Third Trimester	Cr
Year 1	621701 Concept in Translation Medicine	2	6217XX Elective	12	6217XX Elective	6
	621702 Basic and Clinical Sciences	3	621711 Seminar in Translational Medicine I	1	621751 Thesis	3
	621703 Community Base Translational Medicine	2			621712 Seminar in Translational Medicine II	1
	621704 Research methodology in Translation Medicine and Biostatistics	2				
	Total	**9**	**Total**	**13**	**Total**	**10**
Year 2	621751 Thesis	6	621751 Thesis	3	621751 Thesis	2
	621713 Seminar in Translational Medicine III	1				
	Total	**7**	**Total**	**3**	**Total**	**2**

Program: Master of Science Program in Translational Medicine (International Program)
Degree: Master of Science (Translational Medicine)
Course Description:

Courses	Credit (Lect.-Lab-Self stud.)	Prerequisite	Course Description	Expected Learning Outcomes
Core Courses				
621701 Concept in Translation Medicine	2(2-0-4)	None	Basic concept for apply basic science, basic medical science, medical laboratory, develop of research and new innovation thinking process, an application for health promotion, disease prevention, diagnosis, management and rehabilitation, knowledge and innovation transfer to community and health system	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to use technology to query the knowledge, Creating and presenting an academic works.
621702 Basic and Clinical Sciences	3(2-2-5)	None	Definition, basic principles of biomedical sciences, cell structure, tissue base, human body systems, control and maintenance of human body systems, relationship of basic medical sciences and clinical sciences, pathophysiology of tissues response to diseases	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research.
621703 Community Base Translational Medicine	2(1-2-3)	None	Concepts of community health, theories related to community health, epidemiology in translational medicine, health behavior modification health promotion, disease prevention, individual, family and community regarding health survey and health development, home visit, school health, environment health, basic health care	1. Able to describe the essential concepts of the course. 2. Able to apply academic knowledge and research. 3. Able to working with others. 4. Have a leadership and responsibility for both their own and the whole. 5. Able to analysis of statistical figures. 6. Able to use technology to query the knowledge, Creating and presenting an academic works.

Courses	Credit (Lect.-Lab-Self stud.)	Prerequisite	Course Description	Expected Learning Outcomes
621704 Research methodology in Translation Medicine and Biostatistics	2(1-2-3)	None	Biostatistical methods in translational Medicine, research in methodology, appraisal and application, foreground and background question, sources and hierarchy of evidence, research proposal, research design, study population, sampling, sample size, sample allocation, concealment, outcome assessment, test of statistical significance, clinical important, ethic in human and animal, academic writing	1. Able to describe the essential concepts of the course. 2. Able to apply academic knowledge and research. 3. Able to create an assumptions, Research design, Processing and analysis of experimental results. 4. Have a leadership and responsibility for both their own and the whole. 5. Able to analysis of statistical figures. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards
Seminar Courses				
621711 Seminar in Translational Medicine I	1(0-3-2)	None	Seminar on the translational medicine emphasize the information retrieve, appraisal publication	1. Able to describe the essential concepts of the course. 2. Able to apply academic knowledge and research. 3. Able to analysis of statistical figures. 4. Able to use technology to query the knowledge, Creating and presenting an academic works. 5. Able to present academic work in international conference. 6. Able to comply with ethical and research standards

Courses	Credit (Lect.-Lab-Self stud.)	Prerequisite	Course Description	Expected Learning Outcomes
621712 Seminar in Translational Medicine II	1(0-3-2)	None	Seminar on the translational medicine emphasize the information retrieve, appraisal publication, question creative for research thesis	1. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 2. Able to apply academic knowledge and research. 3. Able to working with others. 4. Able to analysis of statistical figures. 5. Able to use technology to query the knowledge, Creating and presenting an academic works. 6. Able to present academic work in international conference. 7. Able to comply with ethical and research standards

Courses	Credit (Lect.-Lab-Self stud.)	Prerequisite	Course Description	Expected Learning Outcomes
621713 Seminar in Translational Medicine III	1(0-3-2)	None	Seminar on the translational medicine emphasize the information retrieve, appraisal publication, question creative for research thesis development of oral presentation	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to create an assumptions, Research design, Processing and analysis of experimental results. 5. Able to working with others. 6. Have a leadership and responsibility for both their own and the whole. 7. Able to analysis of statistical figures. 8. Able to use technology to query the knowledge, Creating and presenting an academic works. 9. Able to present academic work in international conference. 10. Able to perform research and solve research problems in Translational Medicine. 11. Able to comply with ethical and research standards.
Elective Courses				

Courses		Credit (Lect.-Lab-Self stud.)	Prerequisite	Course Description	Expected Learning Outcomes
621721	Comprehensive Laboratory Skill	3(3-0-6)	None	Advanced laboratory techniques for diagnostic then and now, DNA and RNA extractions from blood and clinical specimens, electrophoresis, polymerase chain reaction, real-time PCR, comprehensive genomic characterization, exploring DNA data based on the World Wide Web, HPLC, MS, next generation sequencing, chromosome study, Immunolabeling, organ explant culture, stem cell and derivatives identification, entrepreneur medical laboratory	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards.
621722	Contemporary Parasitology	3(2-2-5)	None	Classification of parasites, parasites and vectors, neglected parasites, molecular and biochemical parasitology, parasites immunology, advances in parasitology, trends in parasitology, experimental parasitology, comparative parasitology, parasitology research, drug and vaccination for parasites, innovation for parasites prevention and control	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards.

Courses	Credit (Lect.-Lab-Self stud.)	Prerequisite	Course Description	Expected Learning Outcomes
621723 Integrative Infection and Immunity	3(2-2-5)	None	The diversity, fundamental structure, physiological characteristics of human pathogens, bacteria, viruses, fungi, pathogenesis of infection, integrated immune response and host defense, mechanism of microbial invasion, immune pathology, appropriately controlled inflammation, the therapeutic treatment of infections or diseases, components of the immune system for research and diagnostics	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards.
621724 Advanced Molecular Biology	3(2-2-5)	None	Molecular technology, DNA replication, genetic recombination, RNA processing and translation, biochemical mechanisms of diseases, experimental design and data analysis	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards.

Courses	Credit (Lect.-Lab-Self stud.)	Prerequisite	Course Description	Expected Learning Outcomes
621725 Production and Development for Diagnostic Kit	3(2-2-5)	None	Principle, processes and techniques for production and development of diagnostic kit, Element of diagnostic kit, Technology used in diagnostic kit, performance evaluation and quality control of diagnostic kit	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards.
621726 Applied Oral Biology	3(2-2-5)	None	Development structures and functions of oral tissues, oral bacterial ecology in the normal and pathologic condition, Updated dental innovations in applied health care research	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards.

Courses	Credit (Lect.-Lab-Self stud.)	Prerequisite	Course Description	Expected Learning Outcomes
621727 Tissue Culture and Molecular Laboratory in Dentistry	3(2-2-5)	None	Oral tissue culture techniques for dental research, principle of material, instrument and equipment for analytical research	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards.
621731 Novel Platform in Cardiovascular Condition	3(2-2-5)	None	Fundamental concept of cardiovascular system, cardiovascular disease, anatomy, pathogenesis, pathophysiology of cardiovascular disease, risk factors, health assessment, health promotion, disease prevention, management of common problems in cardiovascular system, innovation thinking in cardiovascular disease research	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards.

Courses	Credit (Lect.-Lab-Self stud.)	Prerequisite	Course Description	Expected Learning Outcomes
621732 Innovative and Technology for Gene Therapy	3(2-2-5)	None	Definition and principle of gene therapy, benefits of gene therapy, types of gene therapy, principle of using viral vector for gene therapy, types of viral vectors can be used for gene therapy; principle of using non-viral vectors for gene therapy, diseases can be treated by gene therapy, complications of gene therapy	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards.
621733 Musculoskeletal Innovation and Technology	3(2-2-5)	None	The translation medicine in musculoskeletal system, knowledge about fundamental of musculoskeletal system, application in research and innovation, essential anatomy, cell biology in musculoskeletal system, regenerative medicine and tissue engineering in orthopedics, innovative thinking in musculoskeletal research, current research direction in orthopedics	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards.

Courses	Credit (Lect.-Lab-Self stud.)	Prerequisite	Course Description	Expected Learning Outcomes
621734 Gastroenterology in Translational Medicine	3(2-2-5)	None	Classification of gastroenterology diseases, morphology, epidemiology, host-environments-disease interactions, mechanisms of common gastroenterology infections, pathogenesis and pathology, epidemiology, prevention and disease control	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards.
621735 Innovative and Technology for Vaccine Design	3(2-2-5)	None	Biologic basis for development and evaluation of new viral, bacteriologic, parasitic, and cancer vaccines antibody, microbial technologies genetic engineering for vaccine antigen, novel adjuvants antigen-carrier systems, vaccine presentation and delivery, phase I and II clinical vaccine trials, Good Clinical Practice (GCP) and vaccine policy in Thailand	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards.

Courses	Credit (Lect.-Lab-Self stud.)	Prerequisite	Course Description	Expected Learning Outcomes
621736 Concepts for New Drug Development	3(2-2-5)	None	New active agent discovery, process of new drug development, pharmacological test, toxicity test, formulation development, clinical studies, drug registration, patent drug registration, post-marketing surveillance, development of generic drugs and bioequivalence, pharmaceutical research and development from herbal medicine and local knowledge, pharmaceutical industry in Thailand, national drug policy	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards.
621737 Smart Elderly	3(2-2-5)	None	Knowledge about geriatrics care and its application in research and innovation. The topics include principles of primary geriatrics care, health assessment, health promotion and disease prevention in geriatrics, management of common problems in geriatrics, long-term care, home health care, geriatric palliative care, geriatrics rehabilitation and innovation thinking in geriatrics care research	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards.

Courses	Credit (Lect.-Lab-Self stud.)	Prerequisite	Course Description	Expected Learning Outcomes
621738 Modern Nutrition	3(2-2-5)	None	Study of food, nutrients, and energy, nutrition in each age, relationship between nutrition and health, mal and over nutrition, nutrition and exercise, nutritional treatment in patients, food consumption for good health, research on nutrition	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards.
621739 Modern Women Health	3(2-2-5)	None	Knowledge about fundamental of women health care and its application in research and innovation, menstruation, fertility, menopause, health assessment, health promotion, disease prevention, management of common problems in women health and innovation thinking in women health care research	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards.

Courses	Credit (Lect.-Lab-Self stud.)	Prerequisite	Course Description	Expected Learning Outcomes
621740 Palliative Care	3(2-2-5)	None	Knowledge of palliative care, examine palliative care practice, core concepts related to palliative care, symptom management, evidenced based practice, psychological states, pharmacology, ethical issues, end of life care and interpersonal skills and pastoral care	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards.
621741 Translational Health Care	3(2-2-5)	None	Factor influence on health, association between individual illness, family counseling, community study in multicultural society, community diagnosis, concept and tool of epidemiology, prevention of a specific disease, patient-oriented clinical research, behavioral studies, collaboration between family, community and government, national health research policy	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards.

Courses	Credit (Lect.-Lab-Self stud.)	Prerequisite	Course Description	Expected Learning Outcomes
621742 Complementary Medicine	3(2-2-5)	None	Definition and principle of complementary medicine, benefits of complementary medicine, types and patterns of complementary medicine, principle of traditional Chinese medicine, principle of acupuncture, diseases effectively treated by acupuncture, methods of acupuncture treatment for chronic disease, method for acupuncture treatment for pain relief, contraindication and complications of acupuncture	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards.
621743 Geographic Information System Translation Medicine	3(2-2-5)	None	Principle, theory, practice of geographic information system, remote sensing for disease management and community medicine, data management, data analysis, and the application of GIS for data presentation and make decision in translation medicine	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards.

Courses	Credit (Lect.-Lab-Self stud.)	Prerequisite	Course Description	Expected Learning Outcomes
621744 Learning Organization and Knowledge Management in Health Systems	3(2-2-5)	None	Concepts, theories, methods and instruments for learning culture of the organization and community, learning of team, systematic thinking, knowledge management in health organization and community, applied knowledge in community management, quality development, quality process, quality practice and quality outcomes	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards.
205501 Entrepreneurship and Innovation	2(2-0-4)	None	Study of entrepreneurship, innovation and technology business, open innovation, attitudes and motivation of innovative entrepreneurs and social entrepreneurs, characteristics of successful entrepreneurs, new venture process, business model generation and business plan, business frost & Sullivan feasibility and problems of new ventures	1. Able to describe the essential concepts of the course. 2. Able to describe the advanced knowledge and technology. In Translational Medicine and related field. 3. Able to apply academic knowledge and research. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to use technology to query the knowledge, Creating and presenting an academic works. 7. Able to comply with ethical and research standards.
Thesis Courses				

	Courses	Credit (Lect.-Lab-Self stud.)	Prerequisite	Course Description	Expected Learning Outcomes
621751	Thesis (Scheme A 1)	45 Credits	None	Research work on the problem in translational medicine, under advice by research advisor	1. Able to create an assumptions, Research design, Processing and analysis of experimental results. 2. Able to create new knowledge or innovation of Translational Medicine and related field. 3. Able to publish in international journal. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to analysis of statistical figures. 7. Able to use technology to query the knowledge, Creating and presenting an academic works. 8. Able to present academic work in international conference. 9. Able to perform research and solve research problems in Translational Medicine. 10. Able to comply with ethical and research standards.

Courses	Credit (Lect.-Lab-Self stud.)	Prerequisite	Course Description	Expected Learning Outcomes
621751 Thesis (Scheme A 2)	15 Credits	None	Research work on translational medicine problems under advice by research advisor leading to the preparation of a doctoral thesis (Curriculum on course training and research work)	1. Able to create an assumptions, Research design, Processing and analysis of experimental results. 2. Able to create new knowledge or innovation of Translational Medicine and related field. 3. Able to publish in international journal. 4. Able to working with others. 5. Have a leadership and responsibility for both their own and the whole. 6. Able to analysis of statistical figures. 7. Able to use technology to query the knowledge, Creating and presenting an academic works. 8. Able to present academic work in international conference. 9. Able to perform research and solve research problems in Translational Medicine. 10. Able to comply with ethical and research standards.