Master of Science Program in Physical Therapy

Faculty of Associated Medical Sciences, Khon Kaen University

1. **Course management:**
   - 2 academic years

2. **Program philosophy:**

The Master's program in Physical Therapy (MS PT program) is committed to produce high quality professional graduates with knowledge and skill in areas relating to Physical Therapy. The graduates are able to conduct, develop and apply evidence-based and learning activities to improve their academic proficiency, along with their leadership, ethics, and morality.

3. **Qualifications:**

The MS PT program has 2 plans, and the applicants' qualifications are as follows;

- **Plan A1,** a Bachelor's degree or equivalent in Physical Therapy, with a minimum cumulative grade point average (GPA) of 3.5 and over, and at least 1 publication or presentation with a peer review process.
- **Plan A2,** a Bachelor's degree or equivalent in Physical Therapy, with a minimum cumulative grade point average (GPA) of 2.75 and over.

4. **Program structure:**

The MS PT program has minimum of 36 credits. It can be divided into two plans:

- **Plane A1:** Research oriented; with the total 36 credits from the thesis activities. However, the students may be assigned to participate in non-credit courses helping them to improve proficiency in the required area.
- **Plan A2:** Research & coursework; the total 36 credits are divided into 12 credits for the core courses, 12 credits for the elective courses helping them to improve their proficiency in particular areas relating to their thesis topics, and another 12 credits from thesis activities.

<table>
<tr><th colspan="2" rowspan="2">Program structure</th><th colspan="2">Credit number</th></tr>
<tr><th>Plan A1</th><th>Plan A2</th></tr>
<tr><td colspan="2">1) Core courses</td><td>-</td><td>12</td></tr>
<tr><td rowspan="2">2) Elective courses</td><td>Specialized elective courses (related to the thesis topic)</td><td rowspan="2">-</td><td>6</td></tr>
<tr><td>Free elective courses</td><td>6</td></tr>
<tr><td colspan="2">3) Thesis</td><td>36</td><td>12</td></tr>
<tr><td colspan="2">Total</td><td>36</td><td>36</td></tr>
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5. Core courses:

Course code	Course title	Credit hours
AM 208 511	Research Methodology, Biostatistics and Evidence Based for Physical Therapy	4 (2-4-5)
AM 208 512	Integrated Human Movement Sciences	3 (2-2-5)
AM 208 513	Research Tools and Advanced Treatment Modalities in Physical Therapy	2 (1-2-3)
AM 208 514	Clinical Diagnosis in Physical Therapy	2 (2-0-4)
AM 208 515	Seminar in Physical Therapy Research	1 (1-0-2)

6. Elective courses:

Course code	Course title	Credit hours
AM 208 121	Professional Skill in Manipulative Therapy	3 (2-2-5)
AM 208 122	Advanced Management in Musculoskeletal Disorders	3 (2-3-5)
AM 208 123	Restoration for Respiration and Postural Control in Neuromuscular Imbalance	3 (2-3-5)
AM 208 124	Advanced Clinical Practicum in Physical Therapy for Musculoskeletal Disorders	2 (0-10-5)
AM 208 221	Physical Therapy in Neuro-rehabilitation 1	3 (2-3-5)
AM 208 222	Physical Therapy in Neuro-rehabilitation 2	3 (2-2-5)
AM 208 223	Advanced Clinical Practicum in Physical Therapy for Neurological Patients	3 (0-15-5)
AM 208 321	Integrative Clinical Respiratory Physiotherapy	3 (1-4-2)
AM 208 322	Respiratory Physiotherapy in Lung Dysfunction	3 (1-6-2)
AM 208 421	Early Intervention and Advanced Physical Therapy for Neuro-pediatrics	3 (2-2-5)
AM 208 422	Physical Therapy for Cerebral Palsy and Motor Delay	3 (2-2-5)
AM 208 423	Advanced Clinical Practicum in Physical Therapy for Neurological Pediatric	3 (0-15-5)
AM 208 521	Exercise Sciences in Elderly	3 (3-0-6)
AM 208 522	Pain Management for Physical Therapy	3 (3-0-6)
AM 208 523	Therapeutic Thai Massage	3 (2-3-5)

7. Thesis:

Course code	Course title	Credits
AM 208 898	Thesis	36
AM 208 899	Thesis	12

8. Study Plan:

	1st Year / First semester	Credits	
		Plan A1	**Plan A2**
AM 208 511	Research Methodology, Biostatistics and Evidence Based for Physical Therapy	-	4
AM 208 512	Integrated Human Movement Science	-	3
AM 208 513	Research Tools and Advanced Treatment Modalities in Physical Therapy	-	2
AM 208 514	Clinical Diagnosis in Physical Therapy	-	2
AM 208 898	Thesis	9	-
	Total	**9**	**11**
	Total Credit Attempted	**9**	**11**

	1st Year / Second semester	Credits	
		Plan A1	**Plan A2**
AM 208 515	Seminar in Physical Therapy Research	1*	1
AM 208 898	Thesis	9	-
AM 208 899	Thesis	-	4
xxx xxx	Elective courses	-	6
	Total	**9**	**11**
	Total Credit Attempted	**18**	**22**

	2nd Year / First semester	Credits	
		Plan A1	**Plan A2**
AM 208 898	Thesis	9	-
AM 208 899	Thesis	-	4
xxx xxx	Elective courses	-	6
	Total	**9**	**10**
	Total Credit Attempted	**27**	**32**

	2nd Year / Second semester	Credits	
		Plan A1	**Plan A2**
AM 208 898	Thesis	9	-
AM 208 899	Thesis	-	4
	Total	**9**	**4**
	Total Credit Attempted	**36**	**36**

Note: * Non-credit course for plan A1, student need to obtain a satisfactory grade (S).

9. Course description:

AM 208 511 Research Methodology, Biostatistics and Evidence Based for Physical Therapy **4 (2-4-5)**

Research methodology in physical therapy: definition and steps of research execution, formulation of research questions, research objective and hypotheses, qualitative and quantitative study designs, sampling and randomized allocation, code of conduct and research ethics; biostatistics in physical therapy: overview of biostatistics, descriptive statistics, inferential statistics, analysis of continuous outcome, analysis of categorical outcome, non-parametric statistics, sample size estimation, statistics for physical therapy measurement tools and statistical program for data analysis); and evidence-based practice in physical therapy: definition, introduction and importance of evidence-based physical therapy, process of evidence-base physical therapy such as clinical or related question, systematic search, critical appraisal, conclusion and application for improving physical therapy practice

AM 208 512 Integrated Human Movement Science **3 (2-2-5)**

Theory of motor control and learning, application of motor control and motor learning theories in promoting and restoring motor performance, neurophysiology of motor control and motor learning, advanced muscular physiology and muscle training, advanced physiology of exercises on the nervous system, immune system, respiratory system and cardiovascular system, factors affecting human performance and the promotion of human performance, the application of human movement sciences for the improvement of human performance in children, athletes and the elderly.

AM 208 513 Research Tools and Advanced Treatment Modalities in Physical Therapy **2 (1-2-3)**

Importance and types of validity and reliability of the measurements; importance and classification of the measurement tools; as well as data interpretation for clinical and research values; concepts, principles, and the development of assessment forms and questionnaires, as well as validity and reliability assessments for measurement tools. Measurement tools and data interpretation for the various abnormality, including musculoskeletal system, balance and mobility, neurological disorders, cardiopulmonary disorders, ergonomics, laboratory diagnosis relating to physical therapy, advanced physical therapy equipment in electrotherapy, rehabilitation, and cardiopulmonary and circulatory systems.

AM 208 514 Clinical Diagnosis in Physical Therapy 2 (2-0-4)

Basis of clinical reasoning process and diagnosis in pediatric patients, patients with brain and spinal cord disorders, patients with pulmonary and cardiovascular problems, patients with orthopedic problems, patients with gender and age specific problems, patients with metabolic syndromes, and patients with sport injuries.

AM 208 515 Seminar in Physical Therapy Research 1 (1-0-2)

Reading, analysis, criticism, and presentation academic articles and research relating to the thesis.

AM 208 121 Professional Skill in Manipulative Therapy 3 (2-2-5)

Principle of technical selection in manipulative therapy in patients with spinal and peripheral joint problems, evidence based of clinical studies in headache, neck pain, back pain, shoulder pain, and knee pain, radiodiagnosis of bone and joint disorders.

AM 208 122 Advanced management in musculoskeletal disorders 3 (2-3-5)

Advanced management in muscle, bone, and joint: grade of movement, selection of advanced technique, advanced management in regional disorders including cervical spine, thoracic spine, lumbar spine, pelvic and sacral, temporomandibular joint, shoulder, elbow, wrist and hand, hip. Knee, ankle and foot, clinical reasoning of upper quadrant management, clinical reasoning of lower quadrant management.

AM 208 123 Restoration for respiration and postural control in neuromuscular imbalanc 3 (2-3-5)

Neuromuscular imbalance, the kinesiopathological model of the human system, advanced neurobiomechanics of breathing and postural control, assessment of breathing pattern and posture, principle for technique selection, advanced techniques for improvement of diaphragmatic function, pelvis restoration, and treatment for upper crossed and lower crossed syndrome.

AM 208 124 Advanced Clinical Practicum in Physical Therapy for Musculoskeletal Disorders 2 (0-10-5)

Condition: Student need to pass AM208 121 or AM208 122

Physical therapy clinical practice in patients with musculoskeletal disorders such as back pain, neck pain, knee pain, shoulder pain and the other joints pain under supervision of lecturers of school of Physical Therapy, Faculty of Associated Medical Sciences, Khon Kaen University and specialist physical therapists. Clinical Practice consists of history taking, physical examination, analysis and problem summary, treatment

planning, giving holistic physical therapy and post-intervention evaluation, home visiting, developing an innovation to reduce pain, case presentation of patients with musculoskeletal disorders, clinical reasoning process, evidence-based physical therapy, professional ethics, humanized care, principles of co-working.

AM 208 221 Physical Therapy in Neuro-rehabilitation 1 3 (2-3-5)

Application of ICF in clinical reasoning for neurological physical therapy, intervention models for physical therapy, problems in patients with neurological condition and contemporary approaches, motor control, motor relearning program for movement improvement, medical complications in stroke and spinal cord injury patients as well as physical therapy managements, upper limb, lower limb and trunk control training strategies, physical therapy assessments for patients with spinal cord injury, problems and training strategies for patients with complete spinal cord injury, training strategies for bed, wheelchair, and upright activities in patients with complete spinal cord injury patients, functional training for bed and upright activities, balance, abnormal gait and training strategies, and case study.

AM 208 222 Physical Therapy in Neuro-rehabilitation 2 3 (2-2-5)

Introduction, neurological pathology and relating problems, problems and assessments in individuals with Parkinson disease, physical therapy treatments and management in Parkinson disease, problems and assessments in individuals with traumatic brain injury, physical therapy treatments and management in traumatic brain injury, problems and assessments in individuals with cerebellar disorders, physical therapy treatments and management in individuals with cerebellar disorders, walking device and its applications in individuals with lower limb deficits, dysphagia and speech management, postural control and fall: problems, assessments and management, evidence-based clinical practice in neurological disorders, case study.

AM 208 223 Advanced Clinical Practicum in Physical Therapy for Neurological Patients 3 (0-15-5)

Condition: Student need to pass AM208 221 or AM208 222

Physical therapy clinical practice in patients with various neurological conditions, including those with brain and spinal cord problems under the supervision of staff from the school of Physical Therapy, Faculty of Associated Medical Sciences, Khon Kaen University. Clinical Practice consists of history taking, physical examination, analysis and problem summary, treatment planning, giving holistic physical therapy and results evaluation, home visiting, home adaptation, with providing home and community rehabilitation program.

AM 208 321 Integrative Clinical Respiratory Physiotherapy 3 (1-4-2)

Physical examination base on physiology of lung expansion, airway mucus clearance, gas exchange and dyspnea, exercise physiology and bedside exercise testing, electrocardiogram, chest X-ray, respiratory and cardiovascular pharmacotherapy for respiratory physiotherapist, airway pressure therapy, oxygen therapy, aerosol therapy, humanity and temperature therapy, lung expansion therapy, airway mucus clearance therapy, respiratory physiotherapy practices in patient with medical and surgical conditions, case study presentation and discussion.

AM 208 322 Respiratory Physiotherapy in Lung Dysfunction 3 (1-6-2)

Physiology and physical examination associated with lung expansion, airway mucus clearance, gas exchange and dyspnea, exercise physiology and testing in patient with lung dysfunction, oxygen therapy and respiratory pharmacology for respiratory physiotherapist, lung expansion therapy, airway mucus clearance therapy, common lung diseases and lung dysfunction, respiratory physiotherapy practices in patient with medical, surgical and critical conditions, case study presentation and discussion.

AM 208 421 Early Intervention and Advanced Physical Therapy for Neuro-pediatrics 3 (2-2-5)

Principles and importance of early intervention, physical examination, problem analysis, plan of treatment in physical therapy in children with neurological impairments, follow-up of treatment, advanced knowledge in research, related literature and clinical use, case studies.

AM 208 422 Physical Therapy for Cerebral Palsy and Motor Delay 3 (2-2-5)

Knowledge of patients with cerebral palsy and motor delayed infants, children and adults, management for patients with cerebral palsy and motor delay, philosophy, theory and concept of physical therapy treatment, synthesis and principles of treatment system. Physical examination, typical and atypical motor and functional development assessment, analysis and strategy of posture and movement development approach and treatment, using positioning and NDT (neurodevelopmental therapy) handling, integrated sensory-motor development stimulation in infant and child, and an alternative treatment for patients with CP. The NDT and ICF practice models in children with cerebral palsy, current knowledge in research of patients with cerebral palsy and motor delay, related literature and clinical use.

AM 208 423 Advanced Clinical Practicum in Physical Therapy for Neurological Pediatric 3 (0-15-5)

Physical Therapy Clinical Practice in children with neurological deficits such as children with cerebral palsy, delayed development, special needs and other disabilities under supervision of lecturers of school of

Physical Therapy, Faculty of Associated Medical Sciences, Khon Kaen University. Clinical Practice consists of history taking, physical examination, analysis and problem summary, treatment planning , giving holistic physical therapy and results evaluation, home visiting, providing home and community rehabilitation program for patients or care givers.

AM 208 521 Exercise Sciences in Elderly 3 (0-15-5)

Basic knowledge of demography in elderly, anatomy and physiology, health problems, pharmacology, nutrition, physical examination, principle of general exercise, , aquatic exercise , ball exercise, Thai dance exercise, exercise in special condition for elderly with overweight and obesity, musculoskeletal disorders, cardiovascular diseases and diabetes mellitus, advanced research.

AM 208 522 Pain Management for Physical Therapy 3 (3-0-5)

Basic knowledge and clinical reasoning of pain neurophysiology, pain transmission and modulation, stress and pain, neuroplasticity and pain, pain and behavior, The biopsychosocial model and pain, pain assessment, principle of pain management, pain Pharmacology, pain difference between age and gender, pain modulation by physical treatment, therapeutic exercise and pain, relaxation technique, joint mobilization and manipulation, acupressure, massage, thermotherapy, electrotherapy, pain management in acute and chronic pain, neuropathic pain, phantom limb pain.

AM 208 523 Therapeutic Thai Massage 3 (2-3-5)

Definition, justification and history of therapeutic Thai massage (TTM) , theory of 10- sen and interpretation in the view c modern medicine such as anatomy and modern disorder, principles of practice TTM, physiological effects, indications, contra- indications, therapeutic techniques and screening for individuals with musculoskeletal disorders, therapeutic Thai massage for the body area including leg and foot, arm and shoulder, upper/lower back, neck and head, abdominal, scapulocostal syndrome, knee arthritis, stress and anxiety, and other musculoskeletal disorders, and case studies.

AM 208 898 Thesis 36 credits

Conducting an experiment or a research, ethical research and publication writing, Thesis writing in physical therapy under the supervision and guidance of supervisor and approved by the graduate committee of the faculty. Thesis publication or acceptation in a standard or professional journal.

AM 208 899 Thesis 12 credits

Conducting an experiment or a research, ethical research and publication writing, Thesis writing in physical therapy under the supervision and guidance of supervisor and approved by the graduate committee of the faculty, thesis publication or acceptation in a standard or professional journal.

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