

# MASTER OF PHARMACY PHARMACEUTICAL SCIENCES



Faculty of Pharmaceutical Sciences  
Khon Kaen University

# Master of Pharmacy Program in Pharmaceutical Sciences

## Faculty of Pharmaceutical Sciences

### General information

#### Program

Master of Pharmacy Program in Pharmaceutical Sciences

#### Degree

M.Pharm. (Pharmaceutical Sciences)

#### Total credits

≥36credits (2 year program)

#### Study plan

1.1 Type A1 Thesis only

1.2 Type A2 Course work and thesis

#### Language (Mode of teaching)

Thai and English

#### Program structure

	Program structure	
	Type A1	Type A2
1) Compulsory	5*	7
2) Electives	-	11
3) Thesis	36	18
Total credits	<b>36</b>	<b>36</b>

\* Compulsory for Type A1 (audit)

Code	Course	Credit
PS327 811	Research Methodology and Biostatistics	3(2-3-6)
PS327 891	Seminar in Pharmaceutical Sciences I	1(1-0-3)
PS327 892	Seminar in Pharmaceutic Sciences II	1(1-0-3)

#### Compulsory for Type A2

Code	Course	Credit
PS327 811	Research Methodology and Biostatistics	3(2-3-6)
PS327 891	Seminar in Pharmaceutical Sciences I	1(1-0-3)
PS327 892	Seminar in Pharmaceutic Sciences II	1(1-0-3)
PS327 894	Special Problems in Phramaceutical Sciences	2(0-6-6)

#### Electives for Type A2

Code	Course	Credit
PS327 831	Drug Development and Design	3(2-3-4)
PS327 832	Design of Experiment in Pharmaceutics	3(2-3-5)
PS327 833	Integrated Drug Formulation Sciences	4(2-6-8)
PS327 834	Drug Delivery Sciences	2(2-0-4)
PS327 835	Pharmaceutical Instrumental Analysis	4(2-6-8)
PS327 836	Medicinal Plant Tissue Culture	2(1-3-4)
PS327 837	Pharmaceutical Quality by Design	2(2-0-4)
PS327 838	Business Development of Pharmaceutical Innovations and Intellectual property	2(2-0-6)
PS327 840	Quality Control of Pharmaceuticals, Food Product and Cosmetics	3(2-3-6)

PS327 841	Industrial Pharmacy	2(2-0-4)
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PS327 842	Drug Registration and Regulation Control	2(2-0-4)
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### **Thesis**

PS327 898	Thesis	36 credits
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PS327 899	Thesis	18 credits
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### **Example of Study Plan**

#### **Year 1, Semester 1**

#### **Credits**

	Type A1	Type A2
PS327 811 Research Methodology and Biostatistics	3(2-3-6)*	3(2-3-6)
PS327 891 Seminar in Pharmaceutical Sciences I	1(1-0-3)*	1(1-0-3)
PS357 894 Special Problems in Pharmaceutical Sciences	-	2(0-6-6)
PS327 xxx Elective Courses	-	3
PS327 898 Thesis	9	-
<b>Total credits</b>	<b>13</b>	<b>9</b>
<b>Accumulate credits</b>	<b>9</b>	<b>9</b>

#### **Year 1, Semester 2**

#### **Credits**

	Type A1	Type A2
PS327 892 Seminar in Pharmaceutical Sciences II	1(1-0-3)*	1(1-0-3)
PS327 xxx Elective Courses	-	8
PS327 898 Thesis	9	-
<b>Total credits</b>	<b>10</b>	<b>9</b>
<b>Accumulate credits</b>	<b>18</b>	<b>18</b>

**Year 2, Semester 1****Credits**

	Type A1	Type A2
PS327 898 Thesis	9	-
PS327 899 Thesis	-	9
<b>Total credits</b>	<b>9</b>	<b>9</b>
<b>Accumulate credits</b>	<b>27</b>	<b>27</b>

**Year 2, Semester 2****Credits**

	Type A1	Type A2
PS327 898 Thesis	9	-
PS327 899 Thesis	-	9
<b>Total credits</b>	<b>9</b>	<b>9</b>
<b>Accumulate credits</b>	<b>36</b>	<b>36</b>

**Course description**

PS327 811 Research Methodology and Biostatistics 3(2-3-6)

Prerequisite: No

Research methodology preparation of research proposal literature review via e-resources, document collecting and citation using freeware programs, guidelines for proposal preparation, study design, data collection, data and statistical analysis, preparation of manuscript

PS327 831 Drug Development and Design 3(2-3-4)

Prerequisite: No

Principles of drug design, methods and concepts of drug development using biological, chemical, biotechnological and computational aspects, recent advances of drug development

PS327 832 Design of experiment in Pharmaceutics

3(2-3-5)

Prerequisite: No

Using Fishbone diagram on focusing the important factors and critical attribute parameters, principle of experimental design, type of experimental designs, completely randomized design, randomized complete block design, screening for important factors using fractional factorial design and Plackette-Burman design, response surface methodology in process optimization and formulation optimization

PS327 833 Integrated Drug Formulation Sciences

4(2-6-8)

Prerequisite: No

Integrated knowledge of pharmaceutics and technology related to formulation of dosage forms, solutions, dispersions, semisolids and tablet, application of knowledge in drug formulation sciences for solving the problems in developing and evaluation of the dosage forms

PS327 834 Drug Delivery Sciences 2(2-0-4)

Prerequisite: No

Controlled release and drug delivery sciences, novel sciences of drug delivery for gastrointestinal tract, skin, mucosa, and drug and gene delivery to target organ

PS327 835 Pharmaceutical Instrumental Analysis

4(2-6-8)

Prerequisite: No

Techniques of high technology instruments both for quantitative and qualitative analysis, atomic absorption spectroscopy, ultraviolet-visible spectrophotometry, near-infrared spectroscopy, high-performance liquid chromatography, gas chromatography, liquid chromatography-mass spectrometry, potentiometry, and capillary electrophoresis

PS327 836 Medicinal Plant Tissue Culture

2 (1-3-4)

Prerequisite: No

Basic technique and principles of plant tissue culture, organization of tissue culture laboratory and equipment, composition and preparation of nutrient media, plant tissue culture techniques, storage of plant cell culture, transferring of the plantlets from nutrient medium to soil, applications of plant tissue culture technique for the secondary metabolites production, controlling of culture condition, feeding of precursor, elicitation, immobilization and transformation by *Agrobacterium*, the application of genetic engineering for improvement of plant or plant tissue with high yield production of secondary metabolite which possesses pharmaceutical activity

PS327 837 Pharmaceutical Quality by Design

2(2-0- 4)

Prerequisite: No

International Conference for Harmonization of Pharmaceutical development (ICH guidance Q8), ICH of Quality Risk Management (Q9), ICH of Pharmaceutical Quality System (Q10), Pharmaceutical registration, Quality by Design

methodology, evolution of process understanding, identification of critical quality attributes (CQAs) and critical process parameters (CPPs), development of a design space, design space concepts, using design of experiment to define a design space, quality risk analysis and control strategy, process analytical technology, nondestructive analysis and chemometrics

PS327 838 Business Development of Pharmaceutical Innovations 2(2-0-4)

and Intellectual property

Prerequisite: No

Evaluation of intellectual property, pharmaceutical innovations, types of IP, patent, patty patent, copyrights and related rights, trademarks and industrial design, feasibility study of pharmaceutical business model, generating business model canvas (BMC)

PS327 839 Bioassay in Drug Discovery 3(2-3-6)

Prerequisite: No

Determination of the biological activities and pharmacological activities of synthetic compounds and herbal extracts in in vitro, in cell culture, in vivo and in silico. antioxidative activities, anti-inflammatory, anticancer, antiviral, enzyme inhibitory effect, estrogenicity, behavioral change and effect on central nervous system. the process of drug metabolism and the drug interaction with metabolizing enzymes

PS327 840 Quality Control of Pharmaceuticals, food product 3(2-3-6)

and Cosmetics

Prerequisite: No

Quality control of pharmaceuticals in model drugs and herbal medicine, food product and cosmetics, law, regulations, guidelines, and good manufacturing procedures related in both national and international level

PS327 841 Industrial Pharmacy

2(2-0-4)

Prerequisite: No

Regulation related to industrial pharmacy, pharmaceutical production and scale enlargement, prospective validation, concurrent validation, retrospective validation, design qualification, installation qualification, operation qualification and performance qualification, specification of raw material, packaging material and finished product, good manufacturing practice, production management, planning and inventory control, risk management, environmental monitoring and control, basic statistic and mathematics for production, process capability, process analysis technology

PS327 891 Seminar in Pharmaceutical Sciences I

1(1-0-3)

Prerequisite: No

Selection, review and evaluation of literatures involving a research project, presentation, discussion and report, presentation procedure focused on teamworking

PS327 892 Seminar in Pharmaceutical Sciences II

1(1-0-3)

Prerequisite: No

Selection, review and evaluation of literatures focusing on updated methodologied invloving a research project, analysis and criticized literature reviews, presentation; discussion and report, presentation procedure focused on teamworking

PS327 894 Special Problems in Pharmaceutical Sciences

2(0-6-6)

Prerequisite: No

Research ethics on literature reviewing and presentation, selection of a topic in pharmaceutical sciences involved pharmaceutical Sciences, finding research questions, literature review, experimental design, experimentation, data analysis, discussion, presentation and report

PS327 898 Thesis

36 credits

Prerequisite: Type A1

Research in pharmaceutical sciences e.g. drug discovery, utilization of medicinal plants and natural products, quality and standardization of drug and related products, drug delivery systems, development of cosmetics and cosmeceuticals, knowledge management of professional pharmacy, organization of proposal presentation, literature reviews on related research topics, data collection, data analysis, writing reports, research publication in terms of full article or presentation in international or national conferences

PS327 899 Thesis

18 credits

Prerequisite: Type A1

Research in pharmaceutical sciences e.g. drug discovery, utilization of medicinal plants and natural products, quality and standardization of drug and related products, drug delivery systems, development of cosmetics and cosmeceuticals, organization of proposal presentation, literature reviews on related research topics, data collection, data analysis, writing reports, research publication in terms of full article or presentation in international or national conferences