



GRADUATE STUDENT HANDBOOK



ACADEMIC YEAR 2023

FACULTY OF PHARMACEUTICAL SCIENCES
PRINCE OF SONGKLA UNIVERSITY



Academic Service Unit



074-28-8818 074-28-8823



<https://www.pharmacy.psu.ac.th/>

Graduate Manual of Faculty of Pharmaceutical Sciences, PSU.

Academic Year 2023

- Guidelines for Good Postgraduate students
- Course Structure and Study Plan
- General Requirements for Postgraduate Students
- Procedure to Study plan for Master/Ph.D Students
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Guidelines for Good Postgraduate students

Students will be expected:

- to conduct their research under the guidance of one or more supervisors while using attendance at courses and research seminars to widen their knowledge and experience;
- to become safe, professional and highly competent workers in the laboratory environment;
- to complete and satisfy the assessment requirements in a defined program of advanced studies;
- to augment their formal program of studies by attendance at research seminars on the content of which they will be expected to demonstrate awareness;
- to complete written reports on the development of their research which will be assessed as part of the progression requirements, and which will serve to enhance their communication skills;
- to make oral presentations both on their research and as part of their coursework;
- to develop team-working skills where possible by being active members of their research groups, and through participation in other problem solving activities;
- to prepare and defend a thesis setting out the results of research leading to an original contribution to knowledge;
- to demonstrate to the examiners that they have an appropriate level of knowledge in their subject and the necessary competence in research to practice the discipline at the high level expected of the holder of a doctorate.
- The intellectual property will belong to supervisor(s) and the university.

Reference : Adapted from “Blue print for a better PhD” in Chemistry in Britain, April 1995.

Course Structure and Study Plan

- Master of Pharmacy Program in Clinical Pharmacy
- Master of Pharmacy Program in Pharmaceutical Sciences
- Master of Pharmacy Program in Social and Administrative Pharmacy
- Master of Science Program in Cosmetic Sciences (International Program)
- Doctor of Philosophy Program in Pharmaceutical Care
- Doctor of Philosophy Program in Pharmaceutical Sciences
- Doctor of Philosophy Program in Social and Administrative Pharmacy

Master of Science Program in Pharmaceutical Sciences

1) Structure and Total Credits

Courses	Plan A 1	Plan A 2
1. Required Courses	-	5 credits
2. Elective Courses	-	7 credits
3. Thesis	36 credits	24 credits
Total Credits	36 credits	36 credits

2) Course work

1. Required Course

5 credits

595-701	Research Methodology in Pharmaceutical Sciences	3((3)-0-6)
595-702	Graduate Seminar in Pharmaceutical Sciences I	1(0-2-1)
595-703	Graduate Seminar in Pharmaceutical Sciences II	1(0-2-1)
595-704	Research and Development Process in Industrial Pharmacy	1(1-0-2)

2. Elective Courses

7 credits

560-761	Advanced Pharmaceutical Sciences in Pharmacology	2((2)-0-4)
565-761	Pharmaceutical Chemistry for Drug Development	2((2)-0-4)
565-762	Retrosynthesis	2((2)-0-4)
565-763	Protective groups in Organic Synthesis	2((2)-0-4)
565-764	Drug Design	2((2)-0-4)
570-761	Herbal Medicines	2((2)-0-4)
570-762	Chemistry of Natural Products	3((3)-0-6)
570-763	Thai Medicinal Plants and Indigenous Drugs	3((2)-3-4)
570-764	Standardization of Medicinal Plants	3((2)-3-4)
570-765	Chemical Structure Determination of Natural Products	3((3)-0-6)
570-766	Chromatography in Natural Product Research	3((3)-0-6)
580-761	Pharmaceutical Product Development	2((2)-0-4)
580-762	Unit Process in Pharmaceutical Technology	2((2)-0-4)
580-763	Pharmaceutical Formulation Development	3((2)-3-4)
580-764	Drug Delivery Systems	3(3-0-6)
580-775	Nanotechnology and Applications in Drug Delivery	3(3-0-6)

580-776	Biotechnology Today and Tomorrow	3((3)-0-6)
595-761	Advanced Pharmaceutical Biotechnology I	3(3-0-6)
595-762	Advanced Pharmaceutical Biotechnology II	3(3-0-6)
595-763	Scientific Communications and Presentation	3((1)-6-2)
595-764	Special Problem in Pharmaceutical Sciences	3((1)-6-2)
595-765	Module: Innovative Drug and Cosmetic Designs from Natural Products	5((4)-3-6)
595-766	Module: Pharmacogenomic and Personalized Medicine	5((4)-3-6)
595-767	Module: Nutraceutical Design for Ageing and Therapeutic Nutrition	5((4)-3-6)

3. Thesis

- Plan A 1

580-781	Thesis	36 (0-108-0)
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- Plan A 2

580-782	Thesis	24(0-72-0)
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Or other subjects offered by other departments in the Prince of Songkla University or other institutions in Thailand or abroad with the recommendation from the graduate committees.

3) Study Plan

- Plan A 1

Semester	Subjects	Credits
1	580-781 Thesis	9
2	580-781 Thesis 595-702 Graduate Seminar in Pharmaceutical Sciences I*	9 1
3	580-781 Thesis	9
4	580-781 Thesis 595-703 Graduate Seminar in Pharmaceutical Sciences II*	9 1

- Plan A 2

Semester	Subjects	Credits
1	595-701 Research Methodology in Pharmaceutical Sciences	3
	xxx-xxx Elective	7
	595-704 Research and Development Process in Industrial Pharmacy*	1
2	595-702 Graduate Seminar in Pharmaceutical Sciences I	1
	595-782 Thesis	8
3	595-782 Thesis	8
4	595-782 Thesis	8
	595-703 Graduate Seminar in Pharmaceutical Sciences II	1

* Audit

4) Course Description

- 560-761 Advanced Pharmaceutical Sciences in Pharmacology 2((2)-0-4)
 Advance knowledge of pharmacological action and mechanism of drug action, dose-response relationship, receptor theory for drug action and pharmacokinetic approach in delineate drug action, techniques in evaluating organs or tissues response using in vitro and in vivo models
- 565-761 Pharmaceutical Chemistry for Drug Development 2((2)-0-4)
 Concepts for new drug development using knowledges of structure activity relationship; synthesis or chemical modification of active drug to improve stabilities and pharmacological activity; techniques and instruments in pharmaceutical analysis necessary for drug research and development; applications of biotechnology in drug development
- 565-762 Retrosynthesis 2((2)-0-4)
 Design of synthetic pathway of organic compounds by analyzing of target molecule backward to simple starting in complicate structure material
- 565-763 Protective Groups in Organic Synthesis 2((2)-0-4)
 Principles in protection and deprotection of functional groups in advanced organic synthesis involving multi-functional organic compounds

- 565-764 Drug Design 2((2)-0-4)
 Drug design underlying chemistry and physics of drugs, structure activity relationship, computer-aid drug design, specific target drug design, relationship of drug metabolism in drug design and drug design based on molecular similarity
- 570-761 Herbal Medicines 2((2)-0-4)
 Medicinal plants for the treatment of several health disorders associated with the gastrointestinal tract, skin, central nervous system, respiratory tract, cardiovascular system, urinary tract and endocrine systems as well as those for the treatment of cancers, inflammation and gout
- 570-762 Chemistry of Natural Products 3((3)-0-6)
 Building blocks used in the skeleton structures of natural products, chemical and biochemical reactions in living organisms, biosynthetic studies, chemical and physical properties of secondary metabolites of various classes including polyketides, phenylpropanoids, flavonoids, coumarins, lignans, phenolic derivatives, terpenoids, steroids, alkaloids and nitrogenous compounds
- 570-763 Thai Medicinal Plants and Indigenous Drugs 3((2)-3-4)
 Thai medicinal plants and indigenous medicines; a search for and an evaluation of herbal information; a survey of Thai traditional medicine knowledge; ethnopharmacology and folklore remedies; interpretative studies of ancient scripts; comparative analysis of medicinal plants used as remedies in Thai traditional households, primary health care and the national list of essential safe medicines; modern medicines; fundamentals in Thai traditional medicine as foundations for the development of modern medicine; laws relevant to the prescription of medicinal plants or related products; organizations and strategic planning for the development of Thai herbal/ alternative medicines
- 570-764 Standardization of Medicinal Plants 3((2)-3-4)
 Examination of Pharmacopeial monographs of herbal raw materials and medicines, quality assessment of herbal raw materials and medicines, i.e. organoleptic; microscopic; chemical and physical methods; determination of active constituents, quantitative HPLC analysis and method validation, preparation of herbal extracts enriched for active constituents, innovations in herbal extraction and standardization

- 570-765 Chemical Structure Determination of Natural Products 3((3)-0-6)
Spectroscopic characteristics of various classes of natural products including flavonoids, coumarins, chromones, quinones, terpenoids, steroids, alkaloids, amino acids and peptides, and carbohydrates; fundamental in chemical structure elucidation and identification of chemicals from natural products with complex chemical structures, particularly using NMR spectroscopic techniques and other spectroscopic analyses; configurational and conformational analysis using spectroscopic and derivatization approaches.
- 570-766 Chromatography in Natural Product Research 3((3)-0-6)
Principles in chromatographic separations; introduction and basis of various chromatographic techniques; plate theory and its extension; mechanisms of retention and dispersion; components in chromatography - loading, column, detection, output, instrumentation; concepts and strategic selections of chromatographic techniques and conditions; selection and modifications of stationary phases and mobile phases; tandem technology; high-performance and ultra-high performance technology; special supporting materials; manipulation of chromatograms
- 580-761 Pharmaceutical Product Development 2((2)-0-4)
Process in pharmaceutical product development, concept of formulation design and related technology
- 580-762 Unit Process in Pharmaceutical Technology 2((2)-0-4)
Site selection, design and layout pharmaceutical manufacture, good environmental management, equipment and layout, Good Manufacturing Practice, waste management
- 580-763 Pharmaceutical Formulation Development 3((2)-3-4)
Principle, formulation techniques and formulation development of pharmaceutical dosage forms, Industrial scale up and related pharmaceutical aspects
- 580-764 Drug Delivery Systems 3(3-0-6)
Concept and theory of drug delivery systems; oral sustained and controlled release systems, topical delivery systems, protein and peptide delivery and targeted drug delivery; vaccine and gene delivery; principle in drug design, development and evaluation of drug delivery systems

- 580-775 Nanotechnology and Applications in Drug Delivery 3(3-0-6)
 Nanotechnology in drug delivery systems; preparation, applications, characterization and safety evaluation of nanoparticulate system
- 580-776 Biotechnology Today and Tomorrow 3((3)-0-6)
 Principle and application of classical and cutting-edge biotechnology commonly used in pharmaceutical research such as DNA sequencing technology, DNA-editing technology, microarray technology, phage display technology, biosensor, and other related technologies; future trend in biotechnology in pharmaceutical research
- 580-861 Pharmaceutical Aerosols 2((2)-0-4)
 Factors involving in drug delivery to the airways, manufacturing process, delivery and product testing of the aerosols, the design and development of respiratory drug delivery, delivery of protein and peptide for systemic activities
- 580-862 Advanced Cosmetic Sciences 3((2)-3-4)
 Concepts in advanced cosmetic sciences, novel cosmetic delivery, skin and percutaneous absorption of active constituents in cosmetic products; evaluation of bioactive properties, stability and safety of novel cosmetic products, emulsions and surfactant association structures, vesicular systems, molecular and particulate systems as cosmetic delivery
- 595-701 Research Methodology in Pharmaceutical Sciences 3((3)-0-6)
 Systematically conduct both qualitative and quantitative research project; choosing a research topic; searching tools; planning for research; writing a research protocol; data analysis, statistics for research, data interpretation, presentation of research result and ethical consideration in research
- 595-702 Graduate Seminar in Pharmaceutical Sciences I 1(0-2-1)
 Development of an overall understanding of the principles of oral communication in pharmaceutical science based on published, peer reviewed publications, or original research conducted by the student, including presentation techniques, listening skills, critical analysis of scientific presentations, participation in scientific discussions

- 595-703 Graduate Seminar in Pharmaceutical Sciences II 1(0-2-1)
Development of an overall understanding of the principles of oral communication in pharmaceutical science based on published, peer reviewed publications, or original research conducted by the student, including presentation techniques, listening skills, critical analysis of scientific presentations, participation in scientific discussions and/or Seminar on the progressive of students' researches and presentation skills
- 595-704 Research and Development Process in Industrial Pharmacy 1(1-0-2)
Basic knowledge of research and development process in industrial pharmacy; drug discovery; extraction from natural products; chemical synthesis and biological activity determinations; in vitro and in vivo testing; raw materials and pharmaceutical products quality controls; efficacies and safety assessments
- 595-761 Advanced Pharmaceutical Biotechnology I 3(3-0-6)
Basic and applications of biotechnology in pharmaceutical research and development; structure and function of DNA, enzymes in gene manipulation; introduction of interest gene into host cells; protoplast fusion and hybridoma technology; gene expression and regulation in prokaryotic and eukaryotic systems; process development of cell cultures; plant; animal and microbial cell cultures and their applications for production of pharmacologically active compounds
- 595-762 Advanced Pharmaceutical Biotechnology II 3(3-0-6)
Fermentation technology and factors affecting in fermentation process; analytical procedures of biotechnology-derived pharmaceutically active compounds in downstream and upstream processing; gene amplification technique by Polymerase Chain Reaction; analysis of cloned gene by hybridizations and sequencing technique; isolation and purification of biotechnological products by methods of filtration, centrifugation, electrophoresis and chromatography; chemical process engineering; quality control of biotechnology-derived pharmaceutical products; the application of biotechnology in drug discovery and evaluation and the regulations and ethics in pharmaceutical biotechnology

- 595-763 Scientific Communication and Presentation 3((1)-6-2)
Reading and comprehension of scientific articles particularly those in the area of pharmaceutical sciences and related disciplines; creative writing for scientific manuscripts in various formats, including research proposals, reports, original research articles, review articles; presentation and audiovisual media for presentation; practicum in communication and presentation skills related to the lectures
- 595-764 Special Problem in Pharmaceutical Sciences 3((1)-6-2)
The study of a special problem in pharmaceutical sciences; research practice to gain knowledge and skills in an experimental design and pharmaceutical research techniques; information inquiry; a basis to serve a thesis by a student under supervision of a lecturer
- 595-765 Module: Innovative Drug and Cosmetic Designs from Natural Products 5((4)-3-6)
Innovations of pharmaceutical active compounds discovery from natural products; green extraction methods innovations; biological activities screening; pharmacological activities testing; toxicology testing; physical and chemical properties evaluations; innovation for drug and cosmetic design; formulations and pharmaceutical products quality controls; process for product registration; innovation for packaging design according to market demands; economic feasibility evaluation for business model
- 595-766 Module: Pharmacogenomic and Personalized Medicine 5((4)-3-6)
Role of the individual genomes in drug response; diagnostic for genetic polymorphism and effects on pharmacokinetics, pharmacodynamics and drug metabolizing enzymes; analyzing of human genetic typing; prediction of gene-associated diseases; gene-associated to drug allergy; tools for human genome sequencing; exploration of relationship between individual and patient genetics; drug and dose design of personalized medicine; searching and developing of new drug and new recipe suitable for individual or group population
- 595-767 Module: Nutraceutical Design for Ageing and Therapeutic Nutrition 5((4)-3-6)
Principle of nutraceutical design for elderly people and nutrition therapy; innovation of food and food ingredients designed for elderly people and for pathological disorder people; development of functional food and medical food; diet planning strategy suitable for individual patient

- 595-801 Seminar in Pharmaceutical Sciences II 1(0-2-1)
Literature survey and presentation of the data involving in new and interesting publications or future trend in the area of pharmaceutical sciences from textbooks, journals, medias and others for example electronic data, ect., analyze and evaluation scientific literature and integrate the information for presentation and discussion
- 595-802 Seminar in Pharmaceutical Sciences II 1(0-2-1)
This course is continued from 595-801 by searching analyzing and assessment the literatures; collection and evaluation new information both from primary and secondary sources in the areas of pharmaceutical sciences for the presentation and discussion
- 595-861 Special Problem in Advanced Pharmaceutical Sciences 3(0-6-3)
The study of a special topic in pharmaceutical sciences by a student; practicing in problem-based research, design an experiment and investigation of advanced pharmaceutical researches; specialization in research process to serve a thesis work under supervision of advisor
- 595-781 Thesis 36(0-108-0)
Investigating and researching for the new knowledge and/or innovations in the topic related to pharmaceutical sciences under supervision and guidance of the thesis advisor, communicating, presentation, write a thesis and pass the thesis defense
- 595-782 Thesis 24(0-72-0)
Investigating and researching for the new knowledge and/or innovations in the topic related to pharmaceutical sciences under supervision and guidance of the thesis advisor, communicating, presentation, write a thesis and pass the thesis defense
- 595-881 Thesis 48(0-144-0)
Investigating and creating the research in pharmaceutical sciences including research and development of drug discovery for new knowledge and/or innovations under supervision and guidance of the thesis advisor, communicating, deep-presentation, write a dissertation and pass the thesis defense

595-882 Thesis 72(0-216-0)

Investigating and creating the research in pharmaceutical sciences including research and development of drug discovery for new knowledge and/or innovations under supervision and guidance of the thesis advisor, communicating, deep-presentation, write a dissertation and pass the thesis defense

595-883 Thesis 36(0-108-0)

Investigating and creating the research in pharmaceutical sciences including research and development of drug discovery for new knowledge and/or innovations under supervision and guidance of the thesis advisor, communicating, deep-presentation, write a dissertation and pass the thesis defense

595-884 Thesis 48(0-144-0)

Investigating and creating the research in pharmaceutical sciences including research and development of drug discovery for new knowledge and/or innovations under supervision and guidance of the thesis advisor, communicating, deep-presentation, write a dissertation and pass the thesis defense

Doctor of Philosophy Program in Pharmaceutical Sciences

1) Structure and Total Credits

Courses	Plan 1.1	Plan 1.2	Plan 2.1	Plan 2.2
1. Required Courses	-	-	2 credits	5 credits
2. Elective Courses	-	-	10 credits	19 credits
3. Thesis	48 credits	72 credits	36 credits	48 credits
Total Credits	48 credits	72 credits	48 credits	72 credits

2) Course work

1. Required Course

		Plan 2.1	2 credits
		Plan 2.2	5 credits
595-701	Research Methodology in Pharmaceutical Sciences		3((3)-0-6)
595-704	Research and Development Process in Industrial Pharmacy*		1(1-0-2)
595-801	Seminar in Pharmaceutical Sciences I		1(0-2-1)
595-802	Seminar in Pharmaceutical Sciences II		1(0-2-1)

2. Elective Courses

			10 - 19 credits
		Plan 2.1	10 credits
		Plan 2.2	19 credits
560-761	Advanced Pharmaceutical Sciences in Pharmacology		2((2)-0-4)
565-761	Pharmaceutical Chemistry for Drug Development		2((2)-0-4)
565-762	Retrosynthesis		2((2)-0-4)
565-763	Protective groups in Organic Synthesis		2((2)-0-4)
565-764	Drug Design		2((2)-0-4)
570-761	Herbal Medicines		2((2)-0-4)
570-762	Chemistry of Natural Products		3((3)-0-6)
570-763	Thai Medicinal Plants and Indigenous Drugs		3((2)-3-4)
570-764	Standardization of Medicinal Plants		3((2)-3-4)
570-765	Chemical structure determination of natural products		3((3)-0-6)
570-766	Chromatography in Natural Product Research		3((3)-0-6)
580-761	Pharmaceutical Product Development		2((2)-0-4)

580-762	Unit Process in Pharmaceutical Technology	2((2)-0-4)
580-763	Pharmaceutical Formulation Development	3((2)-3-4)
580-764	Drug Delivery Systems	3(3-0-6)
580-775	Nanotechnology and Applications in Drug Delivery	3(3-0-6)
580-776	Biotechnology Today and Tomorrow	3((3)-0-6)
580-861	Pharmaceutical Aerosols	2((2)-0-4)
580-862	Advanced Cosmetic Sciences	3((2)-3-4)
595-761	Advanced Pharmaceutical Biotechnology I	3(3-0-6)
595-762	Advanced Pharmaceutical Biotechnology II	3(3-0-6)
595-763	Scientific Communications and Presentation	3((1)-6-2)
595-765	Module: Innovative Drug and Cosmetic Designs from Natural Products	5((4)-3-6)
595-766	Module: Pharmacogenomic and Personalized Medicine	5((4)-3-6)
595-767	Module: Nutraceutical Design for Ageing and Therapeutic Nutrition	5((4)-3-6)
595-861	Special Problem in Advanced Pharmaceutical Sciences	3(0-6-3)

3. Thesis

- Plan 1.1

595-881	Thesis	48(0-144-0)
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- Plan 1.2

595-882	Thesis	72(0-216-0)
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- Plan 2.1

595-883	Thesis	36(0-108-0)
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- Plan 2.2

595-884	Thesis	48(0-144-0)
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Or other subjects offered by other departments in the Prince of Songkla University or other institutions in Thailand or abroad with the recommendation from the graduate committees.

3) Study Plan

- Plan 1.1

Semester	Subjects	Credits
1	595-881 Thesis	8
2	595-881 Thesis	8
	595-801 Seminar in Pharmaceutical Sciences I*	1
3	595-881 Thesis	8
4	595-881 Thesis	8
5	595-881 Thesis	8
6	595-881 Thesis	8
	595-802 Seminar in Pharmaceutical Sciences II*	1

*Audit

- Plan 1.2

Semester	Subjects	Credits
1	595-882 Thesis	9
2	595-882 Thesis	9
	595-801 Seminar in Pharmaceutical Sciences I*	1
3	595-882 Thesis	9
4	595-882 Thesis	9
5	595-882 Thesis	9
6	595-882 Thesis	9
7	595-882 Thesis	9
8	595-882 Thesis	9
	595-802 Seminar in Pharmaceutical Sciences II*	1

*Audit

- Plan 2.1

Semester	Subjects	Credits
1	xxx-xxx Elective	10
2	595-801 Seminar in Pharmaceutical Sciences I 595- 883 Thesis	1 4
3	595- 883 Thesis	8
4	595- 883 Thesis	8
5	595- 883 Thesis	8
6	595- 883 Thesis 595-802 Seminar in Pharmaceutical Sciences II	8 1

- Plan 2.2

Semester	Subjects	Credits
1	595- 701 Research Methodology in Pharmaceutical Sciences 595-704 Research and Development Process in Industrial Pharmacy* xxx-xxx Elective	3 1 12
2	595-801 Seminar in Pharmaceutical Sciences I xxx-xxx Elective 595- 884 Thesis	1 7 3
3	595- 884 Thesis	5
4	595- 884 Thesis	8
5	595- 884 Thesis	8
6	595- 884 Thesis	8
7	595- 884 Thesis	8
8	595-802 Seminar in Pharmaceutical Sciences II 595- 884 Thesis	1 8

* Audit

4) Course Description

- 560-761 Advanced Pharmaceutical Sciences in Pharmacology 2((2)-0-4)
Advance knowledge of pharmacological action and mechanism of drug action, dose-response relationship, receptor theory for drug action and pharmacokinetic approach in delineate drug action, techniques in evaluating organs or tissues response using in vitro and in vivo models
- 565-761 Pharmaceutical Chemistry for Drug Development 2((2)-0-4)
Concepts for new drug development using knowledges of structure activity relationship; synthesis or chemical modification of active drug to improve stabilities and pharmacological activity; techniques and instruments in pharmaceutical analysis necessary for drug research and development; applications of biotechnology in drug development
- 565-762 Retrosynthesis 2((2)-0-4)
Design of synthetic pathway of organic compounds by analyzing of target molecule backward to simple starting in complicate structure material
- 565-763 Protective Groups in Organic Synthesis 2((2)-0-4)
Principles in protection and deprotection of functional groups in advanced organic synthesis involving multi-functional organic compounds
- 565-764 Drug Design 2((2)-0-4)
Drug design underlying chemistry and physics of drugs, structure activity relationship, computer-aid drug design, specific target drug design, relationship of drug metabolism in drug design and drug design based on molecular similarity
- 570-761 Herbal Medicines 2((2)-0-4)
Medicinal plants for the treatment of several health disorders associated with the gastrointestinal tract, skin, central nervous system, respiratory tract, cardiovascular system, urinary tract and endocrine systems as well as those for the treatment of cancers, inflammation and gout

570-762 Chemistry of Natural Products 3((3)-0-6)

Building blocks used in the skeleton structures of natural products, chemical and biochemical reactions in living organisms, biosynthetic studies, chemical and physical properties of secondary metabolites of various classes including polyketides, phenylpropanoids, flavonoids, coumarins, lignans, phenolic derivatives, terpenoids, steroids, alkaloids and nitrogenous compounds

570-763 Thai Medicinal Plants and Indigenous Drugs 3((2)-3-4)

Thai medicinal plants and indigenous medicines; a search for and an evaluation of herbal information; a survey of Thai traditional medicine knowledge; ethnopharmacology and folklore remedies; interpretative studies of ancient scripts; comparative analysis of medicinal plants used as remedies in Thai traditional households, primary health care and the national list of essential safe medicines; modern medicines; fundamentals in Thai traditional medicine as foundations for the development of modern medicine; laws relevant to the prescription of medicinal plants or related products; organizations and strategic planning for the development of Thai herbal/ alternative medicines

570-764 Standardization of Medicinal Plants 3((2)-3-4)

Examination of Pharmacopeial monographs of herbal raw materials and medicines, quality assessment of herbal raw materials and medicines, i.e. organoleptic; microscopic; chemical and physical methods; determination of active constituents, quantitative HPLC analysis and method validation, preparation of herbal extracts enriched for active constituents, innovations in herbal extraction and standardization

570-765 Chemical Structure Determination of Natural Products 3((3)-0-6)

Spectroscopic characteristics of various classes of natural products including flavonoids, coumarins, chromones, quinones, terpenoids, steroids, alkaloids, amino acids and peptides, and carbohydrates; fundamental in chemical structure elucidation and identification of chemicals from natural products with complex chemical structures, particularly using NMR spectroscopic techniques and other spectroscopic analyses; configurational and conformational analysis using

spectroscopic and derivatization approaches.

- 570-766 Chromatography in Natural Product Research 3((3)-0-6)
Principles in chromatographic separations; introduction and basis of various chromatographic techniques; plate theory and its extension; mechanisms of retention and dispersion; components in chromatography - loading, column, detection, output, instrumentation; concepts and strategic selections of chromatographic techniques and conditions; selection and modifications of stationary phases and mobile phases; tandem technology; high-performance and ultra-high performance technology; special supporting materials; manipulation of chromatograms
- 580-761 Pharmaceutical Product Development 2((2)-0-4)
Process in pharmaceutical product development, concept of formulation design and related technology
- 580-762 Unit Process in Pharmaceutical Technology 2((2)-0-4)
Site selection, design and layout pharmaceutical manufacture, good environmental management, equipment and layout, Good Manufacturing Practice, waste management
- 580-763 Pharmaceutical Formulation Development 3((2)-3-4)
Principle, formulation techniques and formulation development of pharmaceutical dosage forms, Industrial scale up and related pharmaceutical aspects
- 580-764 Drug Delivery Systems 3(3-0-6)
Concept and theory of drug delivery systems; oral sustained and controlled release systems, topical delivery systems, protein and peptide delivery and targeted drug delivery; vaccine and gene delivery; principle in drug design, development and evaluation of drug delivery systems

- 580-775 Nanotechnology and Applications in Drug Delivery 3(3-0-6)
 Nanotechnology in drug delivery systems; preparation, applications, characterization and safety evaluation of nanoparticulate system
- 580-776 Biotechnology Today and Tomorrow 3((3)-0-6)
 Principle and application of classical and cutting-edge biotechnology commonly used in pharmaceutical research such as DNA sequencing technology, DNA-editing technology, microarray technology, phage display technology, biosensor, and other related technologies; future trend in biotechnology in pharmaceutical research
- 580-861 Pharmaceutical Aerosols 2((2)-0-4)
 Factors involving in drug delivery to the airways, manufacturing process, delivery and product testing of the aerosols, the design and development of respiratory drug delivery, delivery of protein and peptide for systemic activities
- 580-862 Advanced Cosmetic Sciences 3((2)-3-4)
 Concepts in advanced cosmetic sciences, novel cosmetic delivery, skin and percutaneous absorption of active constituents in cosmetic products; evaluation of bioactive properties, stability and safety of novel cosmetic products, emulsions and surfactant association structures, vesicular systems, molecular and particulate systems as cosmetic delivery
- 595-701 Research Methodology in Pharmaceutical Sciences 3((3)-0-6)
 Systematically conduct both qualitative and quantitative research project; choosing a research topic; searching tools; planning for research; writing a research protocol; data analysis, statistics for research, data interpretation, presentation of research result and ethical consideration in research
- 595-702 Graduate Seminar in Pharmaceutical Sciences I 1(0-2-1)
 Development of an overall understanding of the principles of oral communication in pharmaceutical science based on published, peer reviewed publications, or original research conducted by the student, including presentation

techniques, listening skills, critical analysis of scientific presentations, participation in scientific discussions

- 595-703 Graduate Seminar in Pharmaceutical Sciences II 1(0-2-1)
Development of an overall understanding of the principles of oral communication in pharmaceutical science based on published, peer reviewed publications, or original research conducted by the student, including presentation techniques, listening skills, critical analysis of scientific presentations, participation in scientific discussions and/or Seminar on the progressive of students' researches and presentation skills
- 595-704 Research and Development Process in Industrial Pharmacy 1(1-0-2)
Basic knowledge of research and development process in industrial pharmacy; drug discovery; extraction from natural products; chemical synthesis and biological activity determinations; in vitro and in vivo testing; raw materials and pharmaceutical products quality controls; efficacies and safety assessments
- 595-761 Advanced Pharmaceutical Biotechnology I 3(3-0-6)
Basic and applications of biotechnology in pharmaceutical research and development; structure and function of DNA, enzymes in gene manipulation; introduction of interest gene into host cells; protoplast fusion and hybridoma technology; gene expression and regulation in prokaryotic and eukaryotic systems; process development of cell cultures; plant; animal and microbial cell cultures and their applications for production of pharmacologically active compounds
- 595-762 Advanced Pharmaceutical Biotechnology II 3(3-0-6)
Fermentation technology and factors affecting in fermentation process; analytical procedures of biotechnology-derived pharmaceutically active compounds in downstream and upstream processing; gene amplification technique by Polymerase Chain Reaction; analysis of cloned gene by hybridizations and sequencing technique; isolation and purification of biotechnological products by methods of filtration, centrifugation, electrophoresis and chromatography; chemical process engineering; quality control of biotechnology-derived pharmaceutical

products; the application of biotechnology in drug discovery and evaluation and the regulations and ethics in pharmaceutical biotechnology

- 595-763 Scientific Communication and Presentation 3((1)-6-2)
Reading and comprehension of scientific articles particularly those in the area of pharmaceutical sciences and related disciplines; creative writing for scientific manuscripts in various formats, including research proposals, reports, original research articles, review articles; presentation and audiovisual media for presentation; practicum in communication and presentation skills related to the lectures
- 595-764 Special Problem in Pharmaceutical Sciences 3((1)-6-2)
The study of a special problem in pharmaceutical sciences; research practice to gain knowledge and skills in an experimental design and pharmaceutical research techniques; information inquiry; a basis to serve a thesis by a student under supervision of a lecturer
- 595-765 Module: Innovative Drug and Cosmetic Designs from Natural Products 5((4)-3-6)
Innovations of pharmaceutical active compounds discovery from natural products; green extraction methods innovations; biological activities screening; pharmacological activities testing; toxicology testing; physical and chemical properties evaluations; innovation for drug and cosmetic design; formulations and pharmaceutical products quality controls; process for product registration; innovation for packaging design according to market demands; economic feasibility evaluation for business model
- 595-766 Module: Pharmacogenomic and Personalized Medicine 5((4)-3-6)
Role of the individual genomes in drug response; diagnostic for genetic polymorphism and effects on pharmacokinetics, pharmacodynamics and drug metabolizing enzymes; analyzing of human genetic typing; prediction of gene-associated diseases; gene-associated to drug allergy; tools for human genome sequencing; exploration of relationship between individual and patient genetics;

drug and dose design of personalized medicine; searching and developing of new drug and new recipe suitable for individual or group population

595-767 Module: Nutraceutical Design for Ageing and Therapeutic Nutrition 5((4)-3-6)

Principle of nutraceutical design for elderly people and nutrition therapy; innovation of food and food ingredients designed for elderly people and for pathological disorder people; development of functional food and medical food; diet planning strategy suitable for individual patient

595-801 Seminar in Pharmaceutical Sciences II 1(0-2-1)

Literature survey and presentation of the data involving in new and interesting publications or future trend in the area of pharmaceutical sciences from textbooks, journals, medias and others for example electronic data, ect., analyze and evaluation scientific literature and integrate the information for presentation and discussion

595-802 Seminar in Pharmaceutical Sciences II 1(0-2-1)

This course is continued from 595-801 by searching analyzing and assessment the literatures; collection and evaluation new information both from primary and secondary sources in the areas of pharmaceutical sciences for the presentation and discussion

595-861 Special Problem in Advanced Pharmaceutical Sciences 3(0-6-3)

The study of a special topic in pharmaceutical sciences by a student; practicing in problem-based research, design an experiment and investigation of advanced pharmaceutical researches; specialization in research process to serve a thesis work under supervision of advisor

595-781 Thesis 36(0-108-0)

Investigating and researching for the new knowledge and/or innovations in the topic related to pharmaceutical sciences under supervision and guidance of the thesis advisor, communicating, presentation, write a thesis and pass the thesis defense

- 595-782 Thesis 24(0-72-0)
Investigating and researching for the new knowledge and/or innovations in the topic related to pharmaceutical sciences under supervision and guidance of the thesis advisor, communicating, presentation, write a thesis and pass the thesis defense
- 595-881 Thesis 48(0-144-0)
Investigating and creating the research in pharmaceutical sciences including research and development of drug discovery for new knowledge and/or innovations under supervision and guidance of the thesis advisor, communicating, deep-presentation, write a dissertation and pass the thesis defense
- 595-882 Thesis 72(0-216-0)
Investigating and creating the research in pharmaceutical sciences including research and development of drug discovery for new knowledge and/or innovations under supervision and guidance of the thesis advisor, communicating, deep-presentation, write a dissertation and pass the thesis defense
- 595-883 Thesis 36(0-108-0)
Investigating and creating the research in pharmaceutical sciences including research and development of drug discovery for new knowledge and/or innovations under supervision and guidance of the thesis advisor, communicating, deep-presentation, write a dissertation and pass the thesis defense
- 595-884 Thesis 48(0-144-0)
Investigating and creating the research in pharmaceutical sciences including research and development of drug discovery for new knowledge and/or innovations under supervision and guidance of the thesis advisor, communicating, deep-presentation, write a dissertation and pass the thesis defense

General Requirements for Postgraduate Students

1. Graduate Study Programs

1.1 Master's Degree

A program of study emphasizes on academic and research development in various areas at a level higher than a bachelor's degree. The program consists of at least 36 credits of study with 2 study plans to choose from:

Plan A 1 : Thesis only with 36 credits. Students may be assigned additional audit course work.

Plan A 2 : Combined course work and thesis with at least 18 thesis credits, and 18 course work credits.

Duration of Study : 2 years

1.2 Doctor of Philosophy

A program of study emphasizes on academic and research development in various areas at a level higher than a master's degree. The program consists of at least 48 credits of study for applicants with a master's degree or equivalent and at least 72 credits of study for applicants with a bachelor's degree or excellent academic record or equivalent. There are 4 study plans to choose from:

- Plan 1.1 : Thesis only plan, Applicant with a master's degree or equivalent must take at least 48 credits for thesis. Student may be assigned additional audit course work or activities.

- Plan 1.2 : Thesis only plan, Applicant with a bachelor's degree or equivalent must take at least 72 credits for thesis. Student may be assigned additional audit course work or activities.

- Plan 2.1 : Applicant with a master's degree or equivalent must take at least 36 credits of thesis and at least 12 credits of course work.

- Plan 2.2 : Applicant with a bachelor's degree or equivalent must take at least 48 credits of thesis and at least 24 credits of course work.

Duration of Study : 3-4 years (depend on study plan)

2. Registration

Both online and advance registrations are available to students. Check PSU academic calendar on website of Registrar's Division at <http://reg.psu.ac.th>. Students may not register for more than 15 credits per semester and registration must be with the consent of academic or thesis advisor.

3 Thesis Advisor / Co-advisor

Students under the master's degree plan A program and Ph.D. students must file the Request for Advisor and Co-advisor Appointment (GS1) before registering for thesis credit.

4. Coursework

We are constantly aware of the need to ensure that our postgraduate students obtain a "broad base of knowledge" during their studies for a postgraduate degree. He/she should consult his/her supervisor. We recognize however that each postgraduate student has different requirement and aspirations. All students are encouraged to take full advantage of the broad range of educational opportunities that are available within the Faculty.

5. Changing of the Study Plan

Request for change in the student's plan of study must be filed and approved by the respective school / faculty and change can be made at least 1 semester after the study commencement.

6. English Language Proficiency

Master's degree and Ph.D. students must pass the English proficiency test as determined by the Graduate School.

Testing institute	Master's Degree	Master's Degree (International Program) and Ph.D.
1. PSU-TEP	An average of at least 65% in Reading & Structure	An average of at least 60% in Reading & Structure, Listening and Writing
2. CU-TEP	At least 65 score in Reading Listening and Writing	At least 60 score in Reading Listening and Writing
3. TOEFL (Paper Based)	Score of 450	Score of 500

Testing institute	Master's Degree	Master's Degree (International Program) and Ph.D.
4. TOEFL (revised Paper-delivered Test)	Score of 34	Score of 46
5. TOEFL (Institutional Testing Program)	Score of 450	Score of 520
6. TOEFL (Computer Based)	Score of 133	Score of 173
7. TOEFL (Internet Based)	Score of 45	Score of 61
8. IELTS	Score of 4.5	Score of 5.0

Test results are valid for 2 years before you started your degree at PSU. Students who wish to use test results from TOEFL, IELTS, or other testing institutes must submit a General Request Form 1 (RF1) for English language equivalent with the valid test result through the academic/thesis advisor to the Graduate School for approval.

7. Laboratory procedures and safety

Comprehensive information on general and specific safety matters is included in the Postgraduate Handbook. A senior researcher is responsible for ensuring that suitable procedures appropriate to the activity within that lab are agreed to and that every postgraduate student working is aware of and conforms to the agreed procedures. Before commencing work in the lab, all postgraduate students are required to read the general safety instructions as laid out in the Handbook and the specific safety instructions for the lab/s in which he/she is working. He/she is also required to fill out the appropriate form to record that they have read and understood the safety rules.

8. Assessment of student progress

Students must present a progress report, every 6 months, or more frequently after advice from advisor

9. Dismissal from Study

9.1 Not registering within 30 days after commencement of semester, without getting the approval for suspension of study.

9.2 Obtaining a cumulative GPA less than 2.50 after each semester.

9.3 Completing 2/3 of the required course work credits, not including thesis credits, and receiving a cumulative GPA less than 2.75

9.4 Exceeding the study duration with a cumulative GPA less than 3.00

9.5 Thesis proposal not approved by the following time

- Master's degree Plan A1 : over 4 semesters

- Master's degree Plan A2 : over 5 semesters

- Ph.D. Plan 1.1, 1.2 : over 6 semesters

- Ph.D. Plan 2.1, 2.2 : over 7 semesters

9.6 Not passing the thesis examination or Comprehensive examination for the 2nd time.

9.7 Not submitting the complete thesis within 6 months of the thesis examination date

9.8 Not submitting the complete non-thesis work within 3 months of the examination date

9.9 Use of unethical behavior and conduct to become a graduate scholar

10. Completion of Study

10.1 Completion of all courses as required by the program of study with a minimum cumulative GPA of 3.00

10.2 Pass the minimum English proficiency test set by the Graduate School for each program of study.

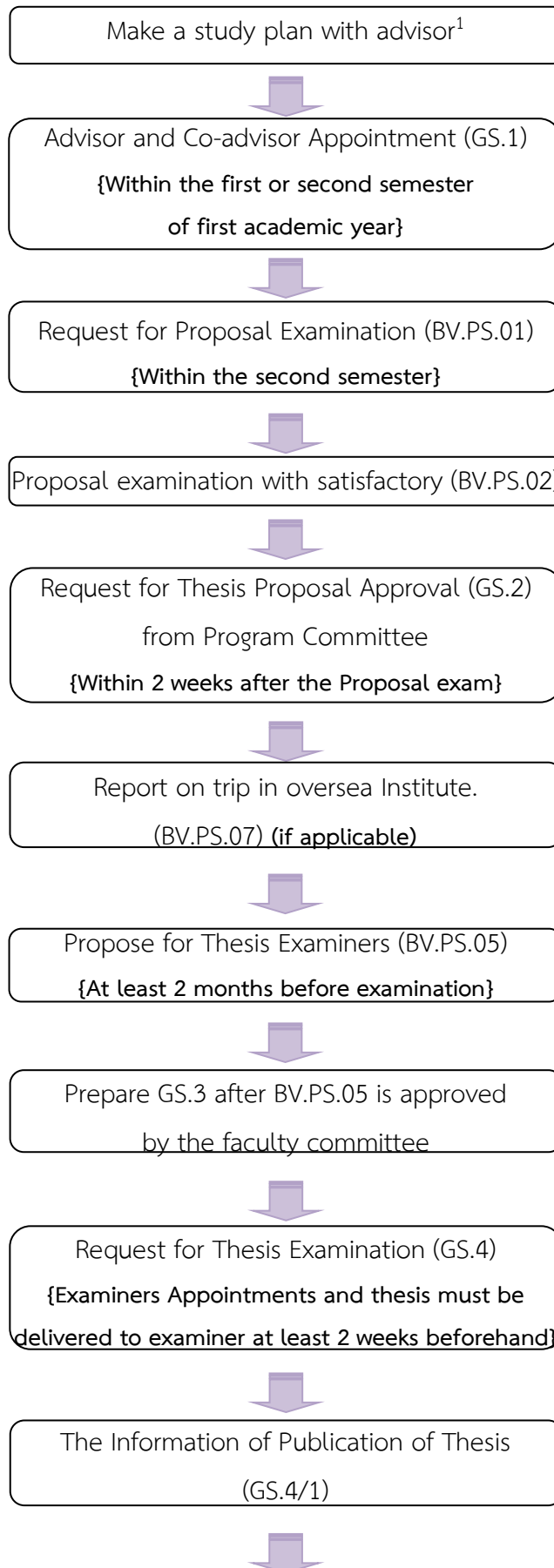
10.3 Pass the thesis proposal examination and thesis examination with a grade of S or X, In the case of master's degree Plan A student. Pass the qualifying exam, thesis proposal examination and thesis examination with a grade of S or X, in the case of Ph.D. student.

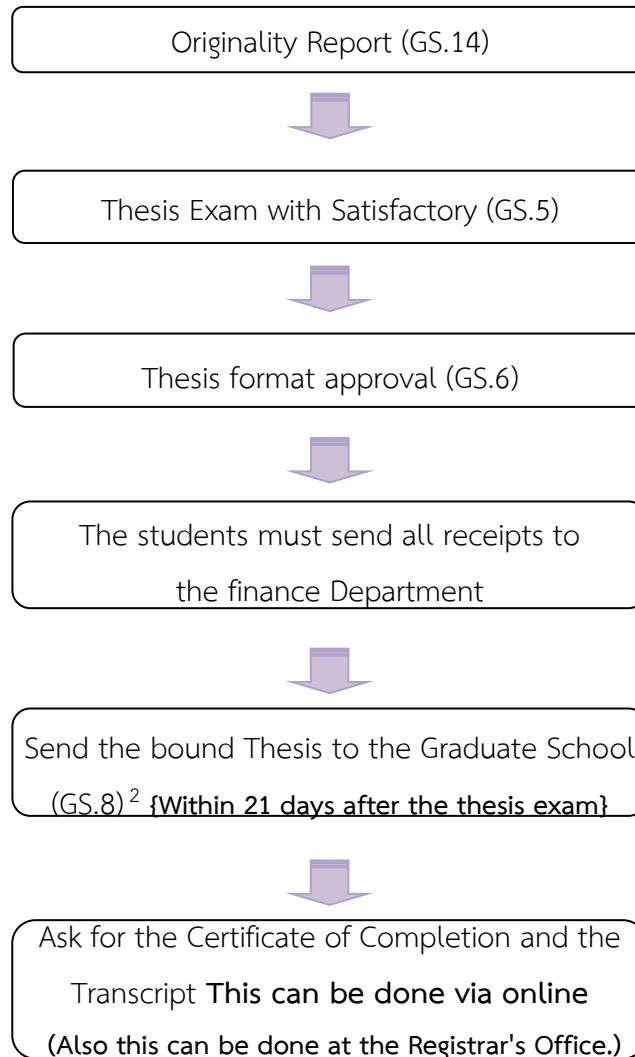
10.4 Master's degree Plan A student must present his/her work in a conference proceedings or published or accepted for publications in a peer reviewed journal.

10.5 Ph.D. student's research work must be published or accepted for publications in a peer reviewed journal

10.6 Upon completion of all requirements set by the program and the Graduate Study Regulation B.E. 2556, students may file a request for graduation to the Registrar's Division via an online system <http://reg.psu.ac.th/graduateNew/index.aspx>

Procedure to Study plan for Master Students





¹ One who cannot appoint advisor at the beginning: the head of department or program chairman will be in charge.

² Submit five copies of thesis to graduate school and one copy for Academic Service

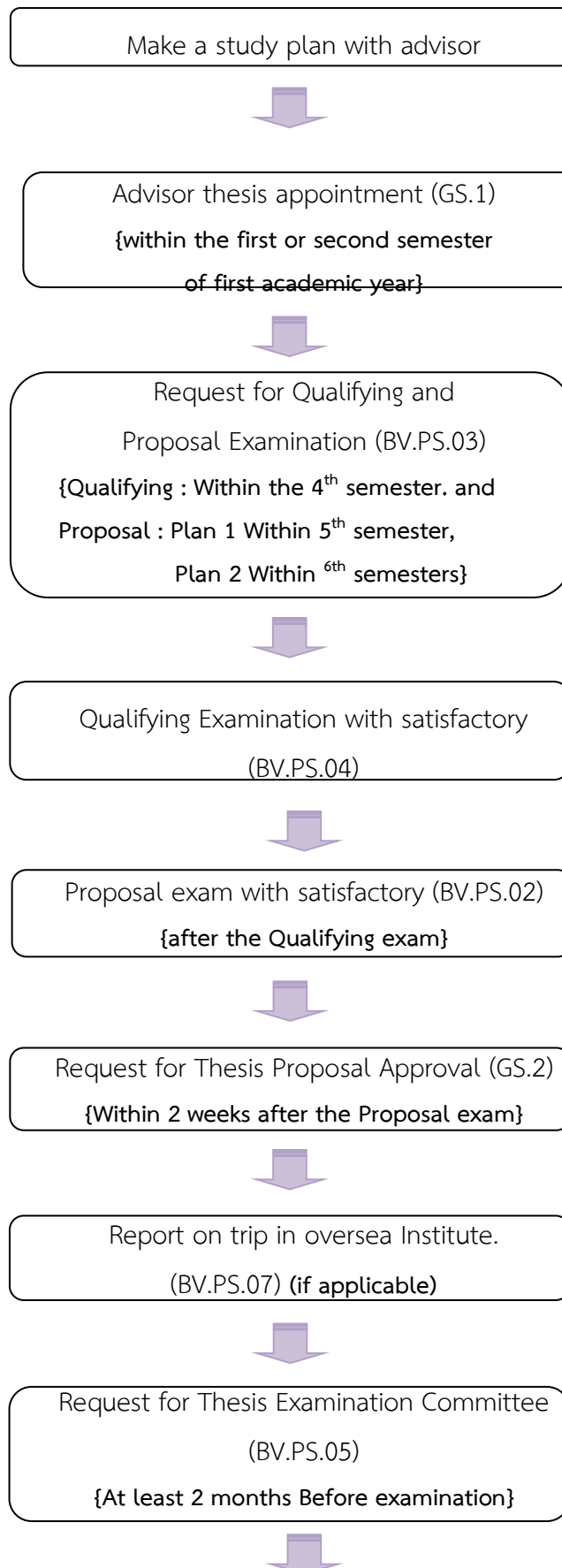
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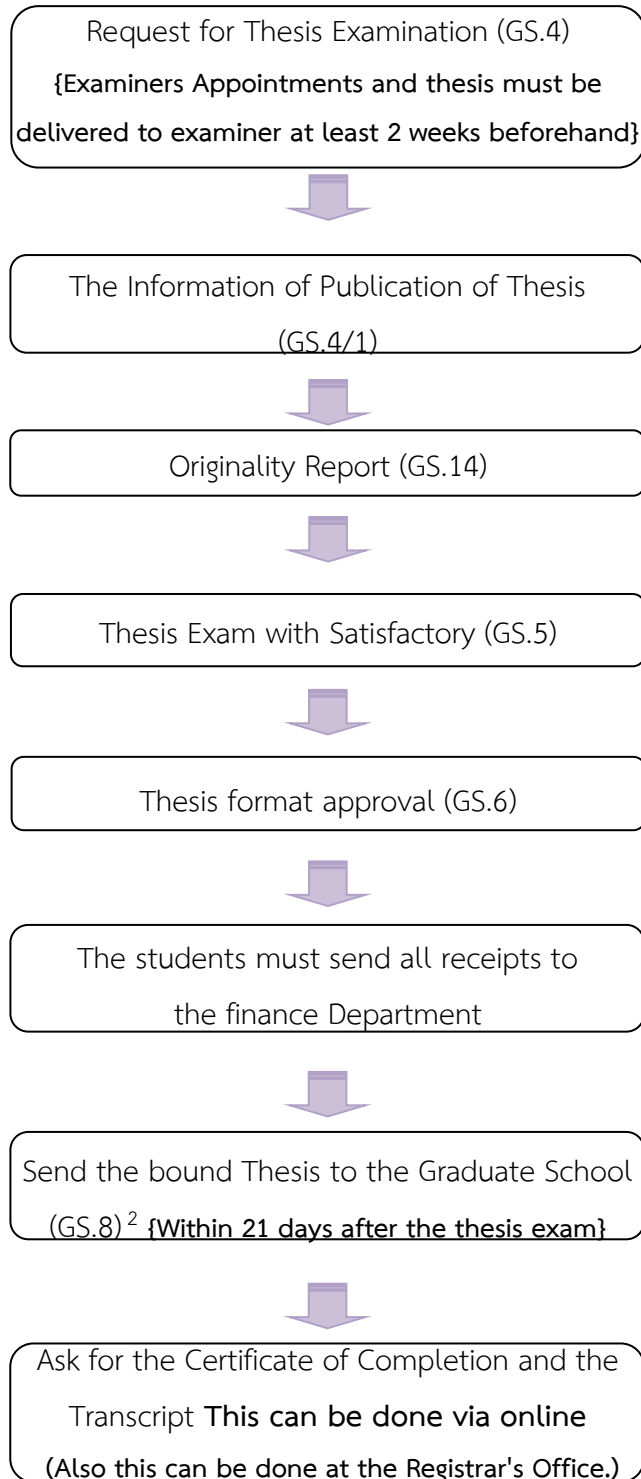
Research Progress Report (BV.PS06) in the last week of each semester as following:

The 1st semester must hand in at the middle of November

The 2nd semester must hand in at the end of May

Procedure to Study plan for Ph.D. Students





¹ One who cannot appoint advisor at the beginning: the head of department or program chairman will be in charge.

² Submit five copies of thesis to graduate school and one copy for Academic Service

Note

Research Progress Report (BV.PS06) in the last week of each semester as following:

The 1st semester must hand in at the middle of November

The 2nd semester must hand in at the end of May

Criteria :

1. Thesis Proposal Examination Committee

Committees consist of 3 to 5 members

- Thesis advisor
- Thesis co-advisor (if any)
- Lecturer and/or recognized expert in the related field of research

Upon completion of the proposal examination and its approval, students must file the Request for Thesis Proposal Approval (GS2)

2. Qualifying Exam Committee

Committees consist of not less than 3 members

- Chairman of the Program Committee
- Thesis advisor
- Thesis co-advisor (if any)
- Lecturer and/or recognized expert in the related field of research

All Ph.D. students are required to pass a qualifying exam set up by their respective school / faculty within 4 semesters after the study commencement. The exam will assess the student's basic knowledge and potential to become a Ph.D. candidate with ability to conduct a doctoral level research.

3. Thesis Examination Committee

At the end of student's research work, a thesis examination committee must be appointed the Request for Appointment of Thesis Examination Committee (GS3). The committee consists of :

- At least 1 external expert in the related field of research, who is not the current thesis co-advisor
- At least 1 lecturer who is not the current thesis co-advisor and recognized expert in the related area
- Thesis advisor
- Thesis co-advisor (if requested)

Note : Thesis advisor / co-advisor may not act as Chairperson of the examination committee and at least 3 committees but not over 5. For Ph.D. level, the external expert is chairperson of examining committee.

Download Forms

On website <http://service2.pharmacy.psu.ac.th/index.php/2023-04-12-06-18-46/2023-04-12-06-25-07> or www.grad.psu.ac.th

Sending forms for thesis

Course	Secretary Program
- Master of Pharmacy Program in Clinical Pharmacy - Doctor of Philosophy Program in Clinical Pharmacy	Miss Waraporn Awapak Department of Clinical Pharmacy
- Master of Science Program in Pharmaceutical Sciences - Doctor of Philosophy Program in Pharmaceutical Sciences	Miss Panisara Boonsanong or Miss Sasipa Intharueangrung Academic service
- Master of Pharmacy Program in Social and Administrative Pharmacy - Doctor of Philosophy Program in Social and Administrative Pharmacy	Miss Pakjira Kitipanasil Department of Pharmacy Administration
Master of Science Program in Cosmetic Sciences (International Program)	Miss Pongsaporn Buadee Department of Pharmaceutical Technology

Funds and Scholarships

Funds and Scholarships (Graduate School)

<https://grad.psu.ac.th/en/>

Scholarship (Faculty)

www.pharmacy.psu.ac.th or <http://service2.pharmacy.psu.ac.th/>

Related Links

	Website
Faculty of Pharmaceutical Sciences, PSU	www.pharmacy.psu.ac.th
Graduate School, PSU	http://www.grad.psu.ac.th
Registrar's Division	http://reg.psu.ac.th/
Student Information System	https://sis-hatyai5.psu.ac.th/Default.aspx
The Computer Center	https://diis.psu.ac.th/
Pharmaceutical Laboratory Service Center	http://plsc.pharmacy.psu.ac.th/
International Affairs Office	http://www.interaffairs.psu.ac.th/

Introduction of personnel

Admintrator

Asst.Prof.Dr. Chatchai Wattanapiromsakul
Associate Dean for Research and Graduate Studies,
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E-mail : chatchai.w@psu.ac.th



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Doctor of Philosophy Program in Pharmaceutical Care

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Doctor of Philosophy Program in Social and Administrative Pharmacy

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