

Appendix D  
Program Learning Outcomes

Table 1: Comparison between before and after revised objective of the program

Objective of the Program	Revised Objective of the Program
๑. ประพฤติปฏิบัติตามหลัก คุณธรรมและจริยธรรมทางวิชาการและวิชาชีพ	By the end of the study, students are able to 1. Possess ethics and integrity in the academic and professional works
๒. มีความรู้ในสาขาวิทยาการเภสัชภัณฑ์ โดยสามารถวิเคราะห์และประยุกต์ความรู้จากภูมิปัญญาในการพัฒนางานส่งเสริมสุขภาพด้านเภสัชภัณฑ์	2. Acquire the phytopharmaceutical knowledge and able to apply the wisdom of indigenous knowledge to promote health
๓. มีทักษะในการพัฒนางานวิจัยสมุนไพรและผลิตเภสัชภัณฑ์ที่มีคุณภาพและได้มาตรฐาน	3. Analyse and conduct the standard phytopharmaceutical research or develop the phytopharmaceutical product
๔. มีความรับผิดชอบต่อนหน้าที่รับผิดชอบ สามารถทำงานเป็นกลุ่ม จัดการงานส่วนรวมได้อย่างเหมาะสม	4. Corporate social responsibility and be academic leaders with team work skills
๕. สามารถใช้หลักการทางวิทยาศาสตร์ เครื่องมือสารสนเทศให้เกิดประโยชน์ในสาขาวิทยาการเภสัชภัณฑ์ และมีการสื่อสารโดยใช้ภาษาที่สุภาพ	5. Possess the appropriate communication and information technology utilization in order to promote the phytopharmaceutical work

Table 2: Relationship between objective of the program and program learning outcome

Objective of the Program	Program Learning Outcome*				
	PLO1	PLO2	PLO3	PLO4	PLO5
1. Possess ethics and integrity in the academic and professional works	✓				
2. Acquire the phytopharmaceutical knowledge and able to apply the wisdom of indigenous knowledge to promote health		✓			
3. Analyse and conduct the standard phytopharmaceutical research or develop the phytopharmaceutical product			✓		
4. Corporate social responsibility and be academic leaders with team work skills				✓	
5. Possess the appropriate communication and information technology utilization in order to promote the phytopharmaceutical work					✓

**\*PLO 1** Communicate both in oral and written phytopharmaceutical knowledge and research output to the community with ethical responsibility

**PLO 2** Explain the phytopharmaceutical knowledge in depth

**PLO 3** Analyse, design, and conduct the phytopharmaceutical research related to various issues including product development from natural product, pharmacological of herbal medicine, manufacturing of herbal product

**PLO 4** Develop skills in phytopharmaceutical research with social responsibility and team work skills

**PLO 5** Use appropriate scientific principle and information tools effectively in order to promote the phytopharmaceutical work

Table 3: Standard domains of learning outcome and Program Learning Outcomes

Domains	Standard Learning Outcomes (TQF)	Program Learning Outcomes				
		PLO1	PLO2	PLO3	PLO4	PLO5
Morality and Ethics	1.1 Be honest to academic term including collecting and presenting data or research and display a positive attitude in professional settings.	✓				
	1.2 Be honest, fair and equitable	✓				
	1.3 Follow the university regulations, social rules, laws and professional ethics others	✓				
	1.4 Modest, gentle and submissive	✓				
Knowledge	2.1 Conquer knowledges of the phytopharmaceutical sciences and the other related sciences		✓			
	2.2 Acquire the principles or key theory of the phytopharmaceutical sciences to facilitate the development of the phytopharmaceutical research or products		✓			
	2.3 Able to apply the wisdom of indigenous knowledge to promote health		✓			
Intellectual Development	3.1 Think, collect, analyze and summarize the phytopharmaceutical problems; compare and choose the appropriate methods for problem solving to reach conclusion			✓		
	3.2 Create, plan and conduct the academic work and research			✓		
	3.3 Develop novel research project which are useful to the society			✓		
Interpersonal Relationship and Responsibility	4.1 Be responsible for group and individual assignments				✓	
	4.2 Work effectively as a team in the role of team leader and member, develop the potential of self and colleagues regularly by sharing knowledge and experience.				✓	
	4.3 Manage time and work systematically and efficiently				✓	

Domains	Standard Learning Outcomes (TQF)	Program Learning Outcomes				
		PLO1	PLO2	PLO3	PLO4	PLO5
Morality and Ethics	1.1 Be honest to academic term including collecting and presenting data or research and display a positive attitude in professional settings.	✓				
	1.2 Be honest, fair and equitable	✓				
	1.3 Follow the university regulations, social rules, laws and professional ethics others	✓				
	1.4 Modest, gentle and submissive	✓				
Math, Communication, IT Skills	5 .1 Be proficiently using information technology to retrieve information from relevant databases to obtain quality information					✓
	5.2 Collect, process data analysis and synthesis by the correct and appropriate science and appropriate science and information tools.					✓
	5.3 Effectively communicate research information both national and/or international level.					✓

Table 4: Learning and Assessment Strategies for Program Learning Outcomes Evaluation

PLOs	Learning Method	Assessment
Communicate both in oral and written phytopharmaceutical Knowledge and research output to the community with ethical responsibility	1) Group discussion 2) Project assignment and presentation 3) Analysis of the phytopharmaceutical experiment	1) Presentation evaluation 2) Quality of report 3) Evaluation o progress report regularity 4) Examination
Explain phytopharmaceutical knowledge in depth	1) Individual assignment 2) Case studies 3) Discussion 4) Seminar	1) Quality of assignment 2) Analysis report for the case studies 3) Classroom behavioral observation 4) Student's punctuality from classroom attendance

PLOs	Learning Method	Assessment
		5) Evaluation of seminar presentation
Analyse, design, and conduct the phytopharmaceutical research related to various issues including product development from natural product, pharmacological of herbal medicine, manufacturing of herbal product	1) Lecture 2) Laboratory and training 3) Case study 4) Problem-based learning 5) Discussion	1) Examination 2) Evaluation of laboratory results and improvement of training skill 3) Analysis report for the case studies and Problem-based learning 4) Presentation evaluation 5) Classroom behavioral observation
Develop skills in phytopharmaceutical research with social responsibility and team work skills	1) Group participation 2) Group Discussion 3) Group Assignment	1) Behavioral observation 2) Student Evaluation toward their group 3) Evaluation of summary from discussion
Use appropriate scientific principle and information tools effectively in order to promote the phytopharmaceutical work	1) Arranging information technology training session 2) Assignments for students to search, present and discussion 3) Practicing the scientific article writing	1) Presentation Evaluation 2) Evaluation from the number of the searched articles 3) Evaluation from the quality of report or the scientific article writing

Table 5: Relationship between Courses of the Program and Program Learning Outcomes

Code	Name	Credits	PLOs				
			1	2	3	4	5
<b>Required courses</b>							
PYID 685	Research Methodology in Pharmacy I	2(2-0-4)	R	M	R	R	P/M
PYPB 605	Taxonomy of Medicinal Plants	3(2-3-5)			M		P
PYPG 667	Phytochemistry	3(3-0-6)		M	M		R

Code	Name	Credits	PLOs				
			1	2	3	4	5
PYPH 670	Herbal production and formulation Development	3(2-3-5)	M	M	P		
PYPH 671	Alternative Medicinal Products	3(3-0-6)	M		M		
PYPH 672	Quality Assurance Guidelines for Herbal products	3(2-3-5)	M	M	I/P		
PYPH 601	Seminar in Phytopharmaceutical Sciences	1(1-0-2)	R	M	P	M	M
PYPH 602	Seminar in Phytopharmaceutical Research	1(1-0-2)	M	M	P	M	M
<b>Elective Courses</b>							
PYMI 665	Quality Assessment and Microbiological Control	3(2-3-5)	P		P	P	P
PYPB 601	Traditional Thai Medicine	3(3-0-6)	I/R		I/R		
PYPG 649	Development of Medicinal Plants I	3(2-3-5)			I/P		
PYPG 655	Chemistry of natural products	3(3-0-6)			R		
PYPH 673	Special Problem in Phytopharmaceutical Products	2(0-6-2)	M	M	M		P
PYPH 674	Herbal Products for Spa	3(1-6-4)			I/P		
PYPH 675	Essentials in Disease Prevention and Health Promotion	2(2-0-4)	I		I/R		
PYPH 689	Phytomedicine	3(3-0-6)			R		I/R
PYPH 693	Phytocosmeceuticals	3(2-3-5)		P	R/P		
PYPH 694	Nutraceuticals	3(3-0-6)			R		
PYPH 695	Applied Plant Biotechnology in Pharmaceutical Sciences	3(2-3-5)	P		P	P/M	
PYPM 666	Drug Screening Techniques I	3(2-3-5)	P		P		
<b>Thesis</b>							
PYPH 698	Thesis	12(0-36-0)	M	M	M	M	M

I = ELO is introduced &amp; assessed

R = ELO is reinforced &amp; assessed

P = ELO is practiced &amp; assessed

M = Level of Mastery is assessed