Master of Science Program in Plant Sciences

(International Program)

Revised B.E. 2566

Name of Institution	Mahidol University
Campus/Faculty/Department	Faculty of Science, Department of Plant Science and Faculty of Pharmacy, Department of Pharmaceutical Botany

Section 1 General Information

1. **Curriculum Name**

   Thai หลักสูตรวิทยาศาสตรมหาบัณฑิต สาขาวิชาวิทยาการพืช (หลักสูตรนานาชาติ)

   English Master of Science Program in Plant Sciences (International Program)

2. **Name of Degree and Major**

   Full Title Thai: วิทยาศาสตรมหาบัณฑิต (วิทยาการพืช)

   Abbreviation Thai: วท.ม. (วิทยาการพืช)

   Full Title English: Master of Science (Plant Sciences)

   Abbreviation English: M.Sc. (Plant Sciences)

3. **Major Subjects (if any)** none

4. **Required Credits:** not less than 36 credits

5. **Curriculum Characteristics**

   5.1 **Curriculum type/model:** Master of Science

   5.2 **Language:** English

   5.3 **Recruitment:** Both Thai and international students

   5.4 **Collaboration with Other Universities:** This program is Mahidol University's program

   5.5 **Graduate Degrees Offered to the Graduates**: One degree with one major

6. Curriculum Status and Curriculum Approval

6.1 Revised program B.E. 2566

6.2 Starting in semester 1, academic year B.E. 2566 onwards

6.3 Curriculum screening committee approved the program in its meeting .../... on ..... .

6.4 The Mahidol University Council approved the program in its meeting.../... on .....

6.5 The curriculum/program is approved by ..... on ..... .

7. Readiness to Implement/Promote the Curriculum

The curriculum from the program is readily implemented or promoted its quality and standard according to criteria set by Thai Qualification Framework for Higher Education in academic year B.E. 2568 (2 years after implementation).

8. Career Opportunities of the Graduates

8.1 Researchers in plant sciences in universities, research institutes and organizations, or private companies

8.2 Knowledge transfer specialists or academicians in governmental agencies and non-profit organizations

8.3 Sale representatives or product specialists of scientific instruments and chemical materials in commercial sectors

8.4 Business entrepreneurs in the fields related to plant sciences

9. Name, ID Number, Title and Degree of the Faculty in Charge of the Program

No.	Identification Card Number Academic position - Name – Surname	Degree (Field of Study) University: Year of graduate	Department
1.	x xxxx xxxxxx xx x Asst. Prof. Dr. Benyakan Pongkitwitoon	Ph.D. (Pharmaceutical Sciences) Kyushu University, Japan: 2014 M.Pharm (Pharmaceuticals) Khon Kaen University: 2009 B.Pharm.	Department of Pharmaceutical Botany Faculty of Pharmacy

No.	Identification Card Number Academic position - Name – Surname	Degree (Field of Study) University: Year of graduate	Department
		Khon Kaen University: 2008	
2.	x xxxx xxxxxx xx x Asst. Prof. Dr. Aussanee Pichakum	Ph.D. (Plant Science) Chiba University, Japan: 1995 M.Sc. (Agriculture) Kasetsart University: 1988 B.Sc. (Agriculture) Kasetsart University: 1984	Department Plant Science Faculty of Science
3.	x xxxx xxxxxx xx x Asst. Prof. Dr. Wisuwat Songnuan	Ph.D. (Genetics) Harvard University, USA: 2009 B.Sc. (Biology) Duke University, USA: 2002	Department Plant Science Faculty of Science

10. Venue for Instruction

Faculty of Science, Mahidol University, Phayathai Campus
Faculty of Pharmacy, Mahidol University, Phayathai Campus
Faculty of Science, Mahidol University, Salaya
Online platforms

11. External Factors to Be Considered in Curriculum Planning

11.1 Economic Situation/Development

The recent technological changes including technologies like big data, machine learning, artificial intelligence, drone and satellite technologies, biotechnology, nanotechnology, and renewable energy technologies are affecting almost every area of the economy, society and culture. The United Nations has adopted the Sustainable Development Goals (SDGs), also known as the Global Goals, as a universal call to action to end poverty, protect the planet, and provide peace and

prosperity for people. The curriculum is revised in response to the SDGs to supply the society with science and technology experts in Plant Sciences to drive the sustainable development of the country and the world.

11.2 Social and Cultural Situation/Development

Education for Sustainable Development (ESD) is a key element to achieve the SDGs for quality education as well as all of the 17 SDGs by transforming society. ESD empowers people of all genders and ages to take responsibility for present and future generations and actively contribute to societal transformation by providing the knowledge, skills, attitudes, and values necessary to address sustainable development challenges such as climate change, natural resource depletion, and environmental problems. The program expects our graduates to be global citizens with entrepreneurial mindset with interdisciplinary problem-solving skills who are able contribute professional services or deliver the innovative and sustainable technology to the society.

12. The Effects Mentioned in No.11.1 and 11.2 on Curriculum Development and Relevance to the Missions of the University/Institution

12.1 Curriculum Development

According to items 1 1 .1 and 1 1 . 2 , the curriculum for the Master of Science Program in Plant Sciences is revised to prepare the students with 2 1 st century knowledge and skills in order to be ready for change, transformation, and adaptation to the current global challenges. The program committee has also been taking the needs of the potential employers and alumni from the surveys into consideration to revise the courses in the curriculum to fullfil the knowledge and skills of the graduates to cover the needs of future workplace.

12.2 Relevance to the Missions of the University/Institution

This curriculum supports the mission of the university on the part of academic competency and technological innovation and aims to generates graduates with advanced knowledge and mastery skills in Plant Sciences as well as soft skills and entrepreneurial mindset.

13. Collaboration with Other Curricula of the University (if any)

none

Section 2 Information of the Curriculum

1. Philosophy, Justification, and Objectives of the Curriculum

1.1 Philosophy and Justification of the Curriculum

The Master of Science Program in Plant Sciences (International Program) aims to produce skillful experts in the field of plant sciences and pharmaceutical botany by providing world-class education and research training on both fundamental and applied plant sciences. Graduates are expected to have theoretical knowledges and research skills as well as abilities to solve problems in the areas of their expertises and contribute their professionals to serve the organization, the country, and the world.

1.2 Objectives of the Program

By the end of the study, students are able to

1.2.1 demonstrate moral and professional ethics;

1.2.2 understand the concepts and principles in plant sciences and conduct self-directed learning on related topics;

1.2.3 analyze and criticize research problems in plant sciences and provide solutions to the problems based on integrated current knowledges;

1.2.4 demonstrate leadership attributes and work cooperatively as a team member with high responsibility for assigned tasks;

1.2.5 exhibit skills in information literacy, statistical analysis, and data presentation

1.3 Program Learning Outcomes (PLOs)

1.3.1 Graduates demonstrate moral and professional ethics, recognize the intellectual property rights, and respect the organization rules and social norms

1.3.2 Graduates are able to understand the concepts and principles in plant sciences and conduct self-directed learning on related topics as well as attain updated information following the current trends in plant sciences

1. 3. 3 Graduates are able to think critically, apply their skills to conduct research leading to new findings or solutions and draw conclusions to scientific problems in the field of plant science and related areas

1.3.4 Graduates demonstrate leadership attributes and work cooperatively as a team member with high responsibility for assigned tasks

1.3.5 Graduates exhibit skills in information literacy, statistical analysis, and data presentation to communicate their findings to audiences from different backgrounds universally

2. Plan for Development and Improvement

Plan for Development/Revision	Strategies	Evidences/Indexes
1. The curriculum is to be revised every five years based on the policy of Thai Commission of Higher Education.	1. Follow and evaluate the proceeding of the program every 5 year on a part of • satisfaction of employer / entrepreneur / or those who hire graduates • weak point analysis	1. Satisfactory evaluation report from stakeholders 2. Program proceeding report
2. The curriculum is to provide support for instructors to ensure the quality of teaching and learning activities	1. Monitor and support the instructors' teaching performance to promote interactive teaching and learning	1. Teaching evaluation records
2. The curriculum is to provide support for graduate students' soft skills	1. Encourage and support students to communicate and present scientific research in various activities	1. Courses and activities for students to present scientific articles and research

Section 3 Educational Management System, Curriculum Implementation, and Structure

1. Educational Management System

1.1 System: Two Semester Credit system. 1 Academic Year consists of 2 Regular Semesters, each with not less than 15 weeks of study.

1.2 Summer Session: The program does not offer summer session.

1.3 Credit Equivalence to Semester System: none

2. Curriculum Implementation

2.1 Teaching Schedule

Weekdays from Monday to Friday (8:30 A.M. – 4:30 P.M.)

Semester 1 August – December

Semester 2 January – May

2.2 Qualifications of Prospective Students

2.2.1 Holding a Bachelor's degree in botany, biology, biotechnology, agriculture, pharmaceutical sciences, Thai traditional medicines, or in related fields which are accredited by the Office of the Higher Education Commission.

2.2.2 Having cumulative GPA not less than 2.50

2.2.3 Have and English Proficiency Examination score as the requirement of Faculty of Graduate Studies

2.2.4 Other exceptions may be considered by the Program Administrative Committee and the Dean of the Faculty of Graduate Studies

2.3 Problems of New Students Encounter

Inadequate foundation of plant science and pharmaceuticaltechnical botany due to students' various backgrounds

Insufficient skills in information and scientific literacy

2.4 Strategies for Problem Solving/Limited Requirment in No.2.3

Problems of New Students	Strategies for Problem Solving
Inadequate foundation of plant science and pharmaceuticaltechnical botany due to students' various backgrounds	Students are required to take the courses of integrative pharmaceutical botany and integrative plant science which introduce the basic knowledges of plant science and pharmaceuticaltechnical botany
Insufficient skills in information and scientific literacy	Students are required to take the course of seminar in plant science which prepares students to a scientific presentation of topics in plant sciences related to their theses

2.5 Five-Year-Plan for Recruitment and Graduation of Students

Academic Year	2566	2567	2568	2569	2570
1st	5	5	5	5	5
2nd	-	-	-	-	-
Cumulative numbers	5	10	10	10	10
Expected number of students graduated	-	5	5	5	5

2.6 Budget based on the plan

Budget: The budget is from Department of Plant Science, Faculty of Science, and Department of Pharmaceutical Botany, Faculty of Pharmacy, Mahidol Unversity.Mahidol Unversity.

Estimated income per student

Registration fee

Tuition .....

Thesis .....

Field trip fee .....

Field work fee .....

Thesis research fee .....

Total income per student .....

Estimated expenses

Variable expenses per student

College/university allocation	.....
Position allowance of thesis advisor and committee	.....
Total variable expenses per student	.....

Fixed expenses

Program director payment	.....
Program secretary payment	.....
Staff salary	.....
Teaching payment	.....
Utility fee	.....
Material fee	.....
Equipment fee	.....
Total Fixed expenses	
Number of students at break-even point	2 persons
Cost of students at break-even point	285,300 Baht
Expenses per student per academic year	..... Baht

2.7 Educational System: Classroom Mode

2.8 Transfer of Credits, Courses and Cross University Registration (If any)

Credits transferring must be in compliance with Mahidol University's regulations on Graduate Studies. Should you have more information, please visit our website: www.grad.mahidol.ac.th.

3. Curriculum and Instructors

3.1 Curriculum

3.1.1 **Number of credits** (not less than) 36 credits

3.1.2 **Curriculum Structure**

The curriculum structure is set in compliance with Announcement of Ministry of Education on the subject of Criteria and Standards of Graduate Studies B.E. 2558, Master's Degree, as below:

1) Required courses	12	credits
2) Elective courses not less than	12	credits
3) Thesis	12	credits
Total not less than	36	credits

3.1.3 Courses in the curriculum

1) Required Courses

			Credits (lecture – practice – self-study)
SCID	516	Biostatistics	3 (3-0-6)
วทคร	๕๑๖	ชีวสถิติ	
SCID	518	Generic Skills in Science Research	1 (1-0-2)
วทคร	๕๑๘	ทักษะทั่วไปในการวิจัยทางวิทยาศาสตร์	
SCPL	562	Integrative Plant Sciences	2 (1-2-3)
วทพฤ	๕๖๒	วิทยาการพืชบูรณาการ	
SCPL	672	Seminar in Plant Sciences 1	1 (1-0-2)
วทพฤ	๖๗๒	สัมมนาทางวิทยาการพืช ๑	
PYPB	612	Conservation and Utilization of Medicinal Plant Genetic Resources	3 (3-0-6)
ภกภพ	๖๑๒	การอนุรักษ์และการใช้ประโยชน์แหล่งพันธุกรรมพืชสมุนไพร	
PYPB	621	Integrative Pharmaceutical Botany	2 (1-2-3)
ภกภพ	๖๒๑	เภสัชพฤกษศาสตร์บูรณาการ	

2) Elective Courses

			Credits (lecture – laboratory – self-study)
SCPL	501	Advanced Plant Taxonomy	3 (2-3-5)
วทพฤ	๕๐๑	พฤกษอนุกรมวิธานขั้นสูง	
SCPL	502	Ethnobotany	3 (2-3-5)
วทพฤ	๕๐๒	พฤกษศาสตร์พื้นบ้าน	
SCPL	503	Pollen Biology	3 (2-3-5)
วทพฤ	๕๐๓	ชีววิทยาเรณู	
SCPL	511	Plant Bioregulators	2 (2-0-4)

วทพฤ	๕๑๑	สารควบคุมทางชีววิทยาของพืช	
SCPL	521	Plant Cytogenetics	3 (2-3-5)
วทพฤ	๕๒๑	พันธุศาสตร์ของเซลล์พืช	
SCPL	522	Advanced Plant Molecular Biology	3 (3-0-6)
วทพฤ	๕๒๒	ชีววิทยาระดับโมเลกุลของพืชขั้นสูง	
SCPL	523	Techniques in Plant Molecular Biology	3 (1-6-3)
วทพฤ	๕๒๓	เทคนิคทางชีววิทยาระดับโมเลกุลของพืช	
SCPL	524	Plant Mutation	3 (3-0-6)
วทพฤ	๕๒๔	การกลายพันธุ์ในพืช	
SCPL	541	Advanced Plant Tissue Culture	3 (3-0-6)
วทพฤ	๕๔๑	การเพาะเลี้ยงเนื้อเยื่อพืชขั้นสูง	
SCPL	543	Advanced Phytochemistry	3 (2-3-5)
วทพฤ	๕๔๓	พฤกษเคมีขั้นสูง	
SCPL	544	Advanced Technique in Plant Tissue Culture	1 (0-3-1)
วทพฤ	๕๔๔	เทคนิคการเพาะเลี้ยงเนื้อเยื่อพืชขั้นสูง	
SCPL	563	Plant-microbe interaction	3 (3-0-6)
วทพฤ	๕๖๓	ปฏิสัมพันธ์ระหว่างพืชและจุลชีพ	
SCPL	564	Plant Growth Promotion	3 (2-3-5)
วทพฤ	๕๖๔	การส่งเสริมการเติบโตพืช	
SCPL	571	Current Topics in Plant Sciences	2 (2-0-4)
วทพฤ	๕๗๑	หัวข้อเรื่องปัจจุบันทางวิทยาการพืช	
SCPL	572	Applied Statistics for Plant Science	1 (1-0-2)
วทพฤ	๕๗๒	สถิติประยุกต์เพื่อวิทยาการพืช	
SCPL	601	Advanced Botanical Research	1 (1-0-2)
วทพฤ	๖๐๑	การวิจัยทางพฤกษศาสตร์ขั้นสูง	
SCPL	602	Skill in Botanical Knowledge Transfer	1 (0-2-1)
วทพฤ	๖๐๒	ทักษะทางการถ่ายทอดความรู้ทางพฤกษศาสตร์	
SCPL	611	Plant Adaptation to Environmental Changes	2 (2-0-4)
วทพฤ	๖๑๑	การปรับตัวของพืชในสิ่งแวดล้อมที่เปลี่ยนแปลง	
SCPL	621	Applied Plant Genetics	2 (2-0-4)
วทพฤ	๖๒๑	พันธุศาสตร์ของพืชขั้นประยุกต์	
SCPL	671	Special Problems in Plant Sciences	2 (1-3-3)
วทพฤ	๖๗๑	ปัญหาพิเศษทางวิทยาการพืช	
PYPB	601	Traditional Thai Medicine	3 (3-0-6)

ภกภพ	๖๐๑	การแพทย์แผนไทย	
PYPB	604	Medical Ethnobotany	3 (2-3-5)
ภกภพ	๖๐๔	พฤกษศาสตร์พื้นบ้านทางการแพทย์	
PYPB	607	Development of Herbal Medicine	3 (2-3-5)
ภกภพ	๖๐๗	การพัฒนายาจากสมุนไพร	
PYPB	610	Current Topics in Pharmaceutical Botany	2 (2-0-4)
ภกภพ	๖๑๐	หัวข้อเรื่องปัจจุบันทางเภสัชพฤกษศาสตร์	
PYPB	622	Plant Database Construction and Management	3 (2-3-5)
ภกภพ	๖๒๒	การสร้างและจัดการฐานข้อมูลพืช	
PYPH	695	Applied Plant Biotechnology in Pharmaceutical Sciences	3 (2-3-5)
ภกวพ	๖๙๕	เทคโนโลยีชีวภาพประยุกต์ด้านพืชทางเภสัชศาสตร์	

In addition to elective courses mentioned above, a student may register other courses in international program offered by other faculties equivalent to graduate studies, Mahidol University or the ones offered by other universities according to the student's interest with the approval of the curriculum committee or the advisor.

3) Thesis

SCPL/PYPB	698	Thesis	12 (0-36-0)
วทพฤ/ภกภพ	๖๙๘	วิทยานิพนธ์	

3.1.4 Research Project of the Program

Guidelines for conducting a research project are as follows:

(1) Plant systematics

(2) Plant physiology

(3) Plant molecular biology

(4) Plant tissue culture

(5) Plant biotechnology

(6) Plant cytogenetic

(7) Plant anatomy

(8) Plant ecology

(9) Ethnobotany

(10)Plant conservation

(11)Medicinal plant databases

(12)Phytochemistry of medicinal plants

(13)Quality control of herbal medicines

3.1.5 Definition of Course Codes

Four main alphabets are defined as follows::

The first two alphabets are abbreviation of the faculty offering the course.

SC means Faculty of Science.

PY means Faculty of Pharmacy.

The latter two alphabets are abbreviation of the department or the major offering the course.

ID means inter-department or programs

PL means Department of Plant Science

PB means Department of Pharmaceutical Botany

3 digits of number are 5XX and 6XX indicate that the courses are in the graduate study level.

3.1.6 Study Plan

Year	Semester 1			Semester 2		
1	SCID 518	Generic Skills in Science Research	1 (1-0-2)	SCID 516	Biostatistics	3 (3-0-6)
	SCPL 562	Integrative Plant Sciences	2 (1-2-3)	SCPL 672	Seminar in Plant Sciences 1	1 (1-0-2)
	PYPB 621	Integrative Pharmaceutical Botany	2 (1-2-3)	PYPB612	Conservation and Utilization of Medicinal Plant Genetic Resources	3 (3-0-6)
	Elective		6 credits	Elective		6 credits
		Total 11 credits			**Total 13 credits**	
2	PYPB/SCPL 698	Thesis	6 (0-18-0)	PYPB/SCPL 698	Thesis	6 (0-18-0)
		Total 6 credits			**Total 6 credits**	

3.1.7 Course Description

Please see Appendix A.

3.2 Name, I.D. Number, Title and Degree of Instructors

3.2.1 Full time instructors of the curriculum (Please see Appendix B**)**

No.	Identification Card Number Academic position - Name – Surname	Degree (Field of Study) University: Year of graduate	Department
1.	x xxxx xxxxxx xx x Assoc. Prof. Dr. Paweena Traiperm	Ph.D. (Biological Science) Chulalongkorn University: 2007 M.Sc. (Botany)	Department of Plant Science Faculty of Science

No.	Identification Card Number Academic position - Name – Surname	Degree (Field of Study) University: Year of graduate	Department
		Chulalongkorn University: 2002 B.Sc. (Botany) Khon Kaen University: 1994	
2.	x xxxx xxxxxx xx x Assoc. Prof. Dr. Puangpaka Umpunjun	Ph.D. (Sciences des agroressources) Institut National Polytechnique de Toulouse (INP), France: 1995 D.E.A. (Traitment des matières premières végétales) Institut National Polytechnique de Toulouse (INP), France: 1992 M.Sc. (Botany) Chulalongkorn University: 1990 B.Sc. (Botany) Chulalongkorn University: 1980	Department of Plant Science Faculty of Science
3.	x xxxx xxxxxx xx x Assoc. Prof. Dr. Nathinee Panvisavas	Ph.D. (Plant Molecular Biology) University of Leeds, UK: 2001 M.Sc. (Forensic Science) University of Strathclyde, UK: 2005 M.P.H (Public Health) Mahidol University: 1997 B.Sc. (Pharmacy) Mahidol University: 1994	Department of Plant Science Faculty of Science
4.	x xxxx xxxxxx xx x Assoc. Prof. Dr. Sompop Prathanturarug	Ph.D. (Pharmaceutical Biology) University of Basel, Switzerland: 1998 M.Pharm. (Pharmacognosy) Chulalongkorn University: 1990 B.Sc. (Pharmacy) Chulalongkorn University: 1988	Department of Pharmaceutical Botany Faculty of Pharmacy

No.	Identification Card Number Academic position - Name – Surname	Degree (Field of Study) University: Year of graduate	Department
5.	x xxxx xxxxxx xx x Asst. Prof. Dr. Thaya Jenjittikul	Ph.D. (Agriculture) Kasetsart University: 2003 M.Sc. (Agriculture) Kasetsart University: 1990 B.Sc. (Agriculture) Kasetsart University: 1987	Department of Plant Science Faculty of Science
6.	x xxxx xxxxxx xx x Asst. Prof. Dr. Unchera Viboonjun	Ph.D. (Biotechnology) Mahidol University: 2002 M.Sc. (Biotechnology) Mahidol University: 1999 B.Sc. (Biotechnology) Mahidol University: 1996	Department Plant Science Faculty of Science
7.	x xxxx xxxxxx xx x Asst. Prof. Dr. Sasivimon Swangpol	Ph.D. (Biological Sciences) Chulalongkorn University: 2007 M.Sc. (Horticulture) University of Florida, USA: 1991 B.Sc. (Botany) Chulalongkorn University: 1988	Department Plant Science Faculty of Science
8.	x xxxx xxxxxx xx x Asst. Prof. Dr. Aussanee Pichakum	Ph.D. (Plant Science) Chiba University, Japan: 1995 M.Sc. (Agriculture) Kasetsart University: 1988 B.Sc. (Agriculture) Kasetsart University: 1984	Department Plant Science Faculty of Science
9.	x xxxx xxxxxx xx x Asst. Prof. Dr. Wisuwat Songnuan	Ph.D. (Genetics) Harvard University, USA: 2009 B.Sc. (Biology) Duke University, USA: 2002	Department Plant Science Faculty of Science

No.	Identification Card Number Academic position - Name – Surname	Degree (Field of Study) University: Year of graduate	Department
10.	x xxxx xxxxxx xx x Asst. Prof. Dr. Saroj Ruchisansakun	Ph.D. (Biology: Understanding Evolution) Leiden University, The Netherlands: 2018 M.Sc. (Plant Sciences) Mahidol University: 2016 B.Sc. (Plant Science) Mahidol University: 2010	Department Plant Science Faculty of Science
11.	x xxxx xxxxxx xx x Asst. Prof. Dr. Ngarmnij Chuenboonngarm	Ph.D. (Bioscience) Kasetsart University: 2007 M.Sc. (Environmental Biology) Mahidol University: 1991 B.Sc. (Chemical Biology) Silpakorn University: 1986	Department of Plant Science Faculty of Science
12.	x xxxx xxxxxx xx x Asst. Prof. Dr. Panida Kongsawadworakul	Ph.D. (Plant Cell and Molecular Biology) Universite Montpellier II, France: 2003 M.Sc. (Biotechnology) Mahidol University: 1998 B.Sc. (Biotechnology) Mahidol University: 1994	Department of Plant Science Faculty of Science
13.	x xxxx xxxxxx xx x Asst. Prof. Dr. Alyssa Stewart	Ph.D. (Biological Sciences: Ecology & Evolution) University of Maryland, USA: 2016 B.Sc. (Biology) University of North Carolina, USA: 2008	Department of Plant Science Faculty of Science
14.	x xxxx xxxxxx xx x Asst. Prof. Dr. Benyakan Pongkitwitoon	Ph.D. (Pharmaceutical Sciences) Kyushu University, Japan: 2014	Department of Pharmaceutical

No.	Identification Card Number Academic position - Name – Surname	Degree (Field of Study) University: Year of graduate	Department
		M.Pharm (Pharmaceuticals) Khon Kaen University: 2009 B.Pharm. Khon Kaen University: 2008	Botany Faculty of Pharmacy
15.	x xxxx xxxxxx xx x Asst. Prof. Dr. Bhanubong Bongcheewin	Ph.D. (Plant Systematics) University of London, UK: 2014 M.Sc. (Biology) Khon Kaen University: 2005 B.Sc. (Pharmacy) Khon Kaen University: 2001	Department of Pharmaceutical Botany Faculty of Pharmacy
16.	x xxxx xxxxxx xx x Asst. Prof. Dr. Nisarat Siriwattanametanon	Ph.D. (Pharmacognosy and Phytotherapy) University of London, UK: 2010 M.Phil. (Pharmacognosy and Phytotherapy) University of London, UK: 2007 Pharm.D (Doctor of Pharmacy) University of Illinois at Chicago, USA: 2002 B.Pharm. Khon Kaen University: 1998	Department of Pharmaceutical Botany Faculty of Pharmacy
17.	x xxxx xxxxxx xx x Asst. Prof. Dr. Thanika Pathomwichaiwat	Ph.D. (Phytopharmaceutical Sciences) Mahidol University: 2015 B.S. (Pharmacy) Mahidol University, 2007	Department of Pharmaceutical Botany Faculty of Pharmacy
18.	x xxxx xxxxxx xx x Asst. Prof. Dr. Duangjai Tungmunnithum	Ph.D. (Botany) Chulalongkorn University: 2016 M.Sc. (Botany) Chulalongkorn University: 2011	Department of Pharmaceutical Botany Faculty of

No.	Identification Card Number Academic position - Name – Surname	Degree (Field of Study) University: Year of graduate	Department
		B.Sc. (Biology) Chulalongkorn University: 2009	Pharmacy
19.	x xxxx xxxxxx xx x Asst. Prof. Dr. Methee Phumthum	Ph.D. (Bioscience) Aarhus University, Denmark: 2019 B.Sc. (Biology) Chiang Mai University: 2013	Department of Pharmaceutical Botany Faculty of Pharmacy

3.2.2 Part time instructors

The program will invite special instructors upon necessities.

4. Details of Practicum (if any)

None

5. Thesis requirement

5.1 Short Description

Identifying research topic in the field of plant sciences and pharmaceutical botany, developing research proposal related to the topic, conducting the research including research ethics, data collection, synthesis, analysis, interpretation of the result and dissertation report, presenting and publishing research in the journals within specified time frame.

5.2 Standard Learning Outcomes

5.2.1 Graduates are able to address a research problem, identify research objectives, and conduct research in the field of plant sciences and pharmaceutical botany

5.2.2 Graduates are able to present a research project at the international level and publish the research report with awareness of plagiarism.

5.3 Time Frame

Semester 2 Academic Year 1 onwards

5.4 Number of credits 12 credits

5.5 Preparation

The orientation is set to introduce students to all instructors and current research topics of the program. Students can discuss with their potential thesis supervisor. Information and suggession of research plan, research proposal, experiments, results, and report preparation are discussed during regular meetings with thesis supervisor.

5.6 Evaluation Process

The research progression shall be evaluated by the thesis advisory committee every semester throughout the program. Students are requested to present their research progression in the program seminar every semester. The final oral examination is systematically evaluated by the thesis advisory committee following the standards of the Faculty of Graduate Studies, Mahidol University. The research work or part(s) of thesis must be published or accepted to be published in academic peer-reviewed journals, or presented at an academic conference that has a peer review and publishes the proceedings according to the standards of the Faculty of Graduate Studies, Mahidol University.

Section 4 Learning Outcome, Teaching Strategies and Evaluation

1. Development of Students' Specific Qualifications

Special Characteristics	Teaching Strategies or Student Activities
1. Being able to create comprehensive and innovative solutions and applications in the field of Plant Sciences	1. In-class lectures, case studies, seminars and discussion 2. Yearly national and international scientific conferences
2. Having characteristics of Mahidol University Core Values M = Mastery A = Altruism H = Harmony I = Integrity D = Determination O = Originality L = Leadership	1. Curricular and extra-curricular activities encouraging the characteristics adhere to Mahidol University Core Values

2. Development of Learning Outcome in Each Objective

Expected Outcome	Teaching Strategies	Evaluation Strategies
1. Morality and Ethics 1) Be ethical, honest, disciplined, responsible and refrain from all forms of plagiarism 2) Comply with institutional and societal regulations	1) Interactive lectures and laboratories 2) Individual and group assignments 3) Thesis	1) Behavioral observation in classrooms and laboratories 2) Assignment due dates 3) Evaluation from supervisor and thesis committee

Expected Outcome	Teaching Strategies	Evaluation Strategies
3) Follow research and professional ethics		
2. Knowledge 1) Explain principal knowledge and theories of plant sciences 2) Provide updated solutions toward problems in plant sciences 3) Have ability to continually acquire new knowledge 4) Effectively operate and maintain use of scientific facilities equipments	1) Interactive lectures and laboratories 2) Group discussion 3) Individual and group assignments and presentations 4) Self-study and literature review	1) Written examinations 2) Evaluation of class participation and group discussion by rubrics 3) Evaluation of the quality of reports and presentations by rubrics
3. Intellectual Development 1) Be able to apply and integrate knowledge of plant science and related fields to solve problems 2) Think critically, be able to conduct research and draw conclusions based on knowledge about plant science 3) Be able to effectively operate scientific equipments 4) Be able to develop new concepts,	1) Laboratory practices 2) Group discussion 3) Seminar 4) Thesis	1) Evaluation group discussion by rubrics 2) Evaluation of quality of reports and presentations by rubrics 3) Evaluation from supervisor and thesis committee

Expected Outcome	Teaching Strategies	Evaluation Strategies
knowledge or innovation		
4. Interpersonal Relationship and Responsibility 1) Be responsible for assigned work 2) Be able to work cooperatively as a team member and team leader	1) Interactive lectures and laboratories 2) Group discussion 3) Group assignments and presentations 4) Extracurricular activities	1) Behavioral observation in classrooms and laboratories 2) Evaluation group discussion by rubrics 3) Evaluation of quality of reports and presentations by rubrics
5. Mathematical Analytical Thinking, Communication Skills, and Information Technology Skills 1) Be able to analyze scientific data with proper mathematical and statistical tools 2) Be able to effectively use English to communicate and present data to audiences from different backgrounds	1) Interactive lectures and laboratories 2) Individual and group assignments and presentations 3) Seminar 4) Thesis	1) Evaluation of class participation and group discussion by rubrics 2) Evaluation of the quality of reports and presentations by rubrics 3) Evaluation from supervisor and thesis committee

3. Curriculum Mapping

Please see Appendix C**.**

Section 5 Criteria for Student Evaluation

1. Grading System

Grading system and graduation shall be complied with the criteria stated in Regulations of Mahidol University on Graduate studies.

2. Evaluation Process for the Learning Outcome of Students

2.1 Provide the evaluating process from both students and board of curriculum committee towards each course based on the learning

2.2 Provide students' learning outcome from overall curriculum evaluation from employers' comments, alumni's opinion and external committee.

3. Graduation Requirement

3.1 Total time of study should not exceed the study plan.

3.2 Students must complete courses as stated in the curriculum at least 24 credits including thesis (12 credits) and 36 credits in total with a minimum CUM-GPA of 3.00.

3.3 Students must meet the English Competence Standard of Graduate Students, Mahidol University defined by the Faculty of Graduate Studies, Mahidol University.

3.4 Students must participate in skill development activities of the Graduate Studies, Mahidol University

3.5 Students must submit theses and pass the thesis defense by following Regulations of Mahidol University on Graduate Studies.

3.6 Theses are required to publish in an international academic journal or proceedings that is listed by the Faculty of Graduate Studies, Mahidol University.

Section 6 Faculty Development

1. The Orientation for New Faculty Members

1.1 New instructors have to attend an orientation that aims to provide knowledge and understanding about the policies of Mahidol University and be trained to acknowledge and understand the curriculum and teaching philosophy of the program.

1.2 New instructors will be assigned to appropriate courses following discussion from the program meeting

1.3 The Department of Plant Science or Department of Pharmaceutical Botany offers work spaces, laboratory equipments, as well as research and grant mentors to new instructors.

2. Skill and Knowledge Development for New Faculty Members

2.1 Skills Development in Teaching and Evaluation

2.1.1 New instructors have to attend workshops regarding teaching skills and evaluation methods offered by Mahidol University.

2.1.2 New instructors are encouraged to attend workshops and seminars related to teaching and educational methods

2.2 Other Academic and Professional Skill Development

2.2.1 New instructors are encouraged to attend workshops and seminars related to professional career development

2.2.2 New instructors are encouraged to participate and present their research in national and international conferences.

2.2.3 New instructors are encouraged to participate in trainings, workshops, seminars as well as research group discussions nationally and internationally

Section 7 Quality Assurance

1. Regulatory Standard

1.1 The program administrative committee are appointed to monitor the curriculum according to the standards of the Thai Qualification Framework for Higher Education and the Graduate School. The program meetings are regularly organized every semester.

1.2 Course schedules and reports are prepared in order to evaluate the process at the end of each semester.

1.3 Teaching and learning resources are provided to support each course of the program

1.4 The curriculum is developed and improved following stakeholders' requirement.

1.5 Educational calendar and handbook are provided for all academic year long.

2. Graduates

2.1 Feedbacks and satisfactory evaluation from stakeholders are surveyed via different methods and channels in order to improve quality of the graduates.

2.2 Evaluation process is conducted to determine the success of the curriculum administration by the characteristic and quality of the graduates.

3. Students

3.1 Student advisory system

3.1.1 Program orientation is set to provide information regarding program structure, courses, and suggested plans for graduation for new students.

3.1.2 Academic advisors are assigned to support students with registration, research topic selection, and graduation as well as other issues.

3.1.3 Students can choose research topic of interest and thesis advisors who will assist students with thesis project.

3.1.4 Students are encouraged to attend workshops, seminars, and academic conferences nationally and internationally

3.2 Student appeal system

Appeals can be made directly to the program director in person or as documents before submitting to the Faculty of Graduate Study system.

4. Instructors

4.1 Staff recruitment plan

4.1.1 Recruitment plan for academic staffs in specific areas of expertise to match to the needs of the program is discussed during the program staff meeting.

4.1.2 The qualification of a candidate must be aligned with regulations on human resource development of Mahidol University.

4.2 Training, career development and advancement

Academic staffs are encouraged to participate in training workshops for education, as well as scientific research. All instructors in the program must consistently publish research to meet the minimum requirement by the Faculty of Graduate Studies, Mahidol University and the Commission of Higher Education.

5. Program, Study and Student Assessment

The program has set a standard in order to effectively administer the program following the regulations of Graduate School and the Higher Education Commission. The key performance indicators include:

5.1 At least 80% of all full-time instructors in the program have to participate in meetings that set up plans to evaluate and revise the curriculum.

5.2 The program has the details of the curriculum according to TQF2 which is associated with the Thai Qualifications Framework

5.3 The program has course specifications according to TQF3 before the beginning of each trimester

5.4 Instructors must prepare course reports according to TQF5 after the end of the trimester.

5.5 Instructors must prepare program reports according to TQF7 after the end of the academic year

5.6 Instructors must assess the development and improvement of teaching methods, teaching techniques or the grading system from the evaluation results in TQF 7 of the previous year.

5.7 Full-time instructors must demonstrate academic and/or profession improvement at least once a year.

5.8 The number of supporting staff who demonstrate academic and/ or professional improvement by at least 50 percent each year.

6. Learning Support

The program has regular program meetings to discuss about teaching and learning facilities and equipment as well as library and resources to support education and research.

7. Key Performance Indicators

The Master of Science Program in Plant Sciences (International Program) divides key performance based on the curriculum that meets the standards of Thai Qualifications Framework following conditions: (1) the compulsory performance indicators (numbers 1-5) must pass beyond expectations and (2) the total number of performance indicators must reach their goal by no less than 80 percent each year. The Key Performance Indicators are as follows:

Key Performance Indicators	Academic Year				
	2023	2024	2025	2026	2027
1. At least 80% of all full-time instructors in each program have to participate in meetings that set up plans to evaluate and revise the curriculum.	✓	✓	✓	✓	✓
2. The program must have the details of the curriculum according to TQF2 which is associated with the Thai Qualifications Framework or the standards of the program (if any)	✓	✓	✓	✓	✓
3. The program must have course specifications and field experience specifications (if any) according to TQF3 and TQF4 before the beginning of each trimester	✓	✓	✓	✓	✓
4. Instructors must produce course reports and file experience reports (if any) according to TQF5 and TQF6 within 30 days after the end of the trimester.	✓	✓	✓	✓	✓
5. Instructors must produce program reports	✓	✓	✓	✓	✓

Key Performance Indicators	Academic Year				
	2023	2024	2025	2026	2027
according to TQF7 within 60 days after the end of the academic year					
6. Instructors must revise the grading of students according to learning standards indicated in TQF3 and TQF4 (if any) for at least 25 percent of courses that are offered each academic year.	✓	✓	✓	✓	✓
7. Instructors must assess the development and/or improvement of teaching methods, teaching techniques or the grading system from the evaluation results in TQF 7 of the previous year.		✓	✓	✓	✓
8. Every new instructor (if any) has to participate in the orientation and receive adequate information on the college's teaching requirements.	✓	✓	✓	✓	✓
9. Full-time instructors must demonstrate academic and/ or profession improvement at least once a year.	✓	✓	✓	✓	✓
10. The number of supporting staff (if any) who demonstrate academic and/ or professional improvement by at least 50 percent each year.	✓	✓	✓	✓	✓
11. The level of satisfaction from the previous year's students and new graduates toward curriculum quality, with an average score of at least 3.5 out of 5		✓	✓	✓	✓
12. The level of satisfaction from employers of new graduates with an average score of at least 3.5 out of 5			✓	✓	✓
13. Instructors have been evaluated by students after teaching at 100 percent.	✓	✓	✓	✓	✓
14. The number of accepted students in accordance with the program's plan.	✓	✓	✓	✓	✓

Key Performance Indicators	Academic Year				
	2023	2024	2025	2026	2027
15. Graduates who get a job with a starting rate salary not lower than the rate stated by the Office of the Civil Service Commission (OCSC).			✓	✓	✓
Total key performance indicators (items) for each year	**11**	**13**	**15**	**15**	**15**
Required performance indicators (items)	**5**	**5**	**5**	**5**	**5**
Performance indicators that need to pass expectations	**80%**	**80%**	**80%**	**80%**	**80%**

Section 8 Evaluation and Improvement of the Curriculum Implementation

1. Evaluation on the Teaching Efficiency

1.1 Evaluation of Teaching Strategies

1.1.1 Analysis from students' evaluation towards courses and instructors

1.1.2 Analysis from the program instructors meeting to exchange ideas or comments

1.2 Evaluation of Instructors' Skills in Using Teaching Strategies

Analysis from students' evaluation towards courses and instructors regarding teaching strategies, punctuality, clarification of course objectives and learning outcomes as well as evaluation process.

2. Overall Evaluation of the Curriculum

2.1 Survey on alumni satisfaction

2.2 Survey the number of graduates getting jobs directly related to the fields of study

2.3 Survey on employers' satisfaction with graduates

2.4 Program evaluation from external expertise

3. Evaluation of Curriculum Implementation in Accordance with the Curriculum

Evaluation is assigned annually according to the key performance indicators of section 7, item 7. The criteria of curriculum revision are

"Fair" means the program does not cover the first 10 Key Performance Indicators,

"Good" means the program shows all first 10 Key Performance Indicators,

"Excellent" means the program has all Key Performance Indicators.

Mahidol University requires all programs to revise their curriculum to keep the program up-to-date and improving academic standards at least every 3 years, and to perform program evaluation for program improvement every 5 years.

4. Review of the Evaluation and Plans for Improvement

4.1 Collecting all information, advices, and evaluations of the newly graduates, users/stakeholders, and experts

4.2 Review and analyze the above information by the program committee

4.3 Curriculum revision will be designed by the program committee based on the analyzing data above.

Appendix A

Course Description

1) Required Courses

Credits (lecture – practice – self-study)

SCID 516 Biostatistics 3 (3-0-6)

วทคร ๕๑๖ ชีวสถิติ

Scientific methods and biostatistical analysis; principles and application of statistical methods to design experiment; protocol and analyze data; probability distributions; estimation; hypothesis testing; chi-square test and analysis of frequencies; regression and correlation analysis; analysis of variance; analysis of covariance; probit analysis; non-parametric statistics; use of statistical packages

ระเบียบวิธีวิทยาศาสตร์และการวิเคราะห์ข้อมูลเชิงชีวสถิติ หลักการและการใช้วิธีทางสถิติเพื่อออกแบบในการวางแผน การทดลองและการวิเคราะห์ข้อมูล การแจกแจงความน่าจะเป็น การประมาณค่า การทดสอบสมมุติฐาน การทดสอบด้วยไคกำลังสองและการวิเคราะห์ความถี่ การวิเคราะห์การถดถอยและสหสัมพันธ์ การวิเคราะห์ความแปรปรวน การวิเคราะห์ความแปรปรวนร่วมเกี่ยว การวิเคราะห์การเบี่ยงเบนของเส้นโค้งปกติ สถิติศาสตร์ไม่อิงพารามิเตอร์ การใช้โปรแกรมสำเร็จรูปสถิติ

SCID 518 Generic Skills in Science Research 1(1-0-2)

วทคร ๕๑๘ ทักษะทั่วไปในการวิจัยทางวิทยาศาสตร์

Ethics for researchers; ethical consideration in the use of ideas; data and technology; human subjects and experimental animals; proper design and use of research protocols; methods in search for scientific information; techniques in formulating and writing research projects; thesis proposals and grant applications; research reports; theses and manuscripts for publication; intellectual property right; copyright versus plagiarism; proper credit acknowledgement

จริยธรรมของนักวิจัย การพิจารณาทางจรรยาบรรณในการใช้ความคิดเห็น ข้อมูลและเทคโนโลยี มนุษย์และสัตว์ทดลอง การออกแบบและการวางแผนการวิจัยที่เหมาะสม วิธีการค้นหาสารสนเทศทางวิทยาศาสตร์ เทคนิคในการกำหนดและเขียนโครงการวิจัย โครงร่างวิทยานิพนธ์และการขอทุนวิจัย รายงานการวิจัย วิทยานิพนธ์ และบทความวิชาการเพื่อพิมพ์เผยแพร่ ความสามารถทางปัญญา สิทธิทรัพย์สินทางปัญญา ลิขสิทธิ์และการคัดลอกผลงานของผู้อื่นมาเป็นของตน การให้เกียรติและอ้างถึงบุคคลหรือแหล่งที่มาของข้อมูล

SCPL 562 Integrative Plant Sciences 2(1-2-3)

วทพฤ ๕๖๒ วิทยาการพืชบูรณาการ

Principle and concept regarding plant scinces; ecology; evolution; diversity; morphology; physiology; molecular biology; genetics

กฎเกณฑ์และแนวความคิดเกี่ยวกับวิทยาการพืช นิเวศน์วิทยา วิวัฒนาการ ความหลากหลาย สัณฐานวิทยา สรีรวิทยา ชีววิทยาระดับโมเลกุล พันธุศาสตร์

SCPL 672 Seminar in Plant Sciences 1 1 (1-0-2)

วทพฤ ๖๗๒ สัมมนาทางวิทยาการพืช ๑

A formal presentation of topics in plant sciences that relating to content in thesis theme

การนำเสนอหัวข้อทางวิทยาการพืชที่เกี่ยวข้องกับประเด็นในวิทยานิพนธ์

PYPB 612 Conservation and Utilization of Medicinal Plant Genetic Resources 3(3-0-6)

ภกภพ ๖๑๒ การอนุรักษ์และการใช้ประโยชน์แหล่งพันธุกรรมพืชสมุนไพร

Their importance of medicinal plant genetic resources; *in situ* and *ex* situ conservation techniques including growing collection in the field, seed collection and *in vitro* techniques; sustainable utilization; law, international co-operation and agreements

ความสำคัญของทรัพยากรพันธุกรรมพืชสมุนไพร กลวิธีการอนุรักษ์ทรัพยากรพันธุกรรมพืชได้แก่ การเก็บรวบรวมในสภาพธรรมชาติ ในการแปลงรวบรวมพันธุ์ ในธนาคารเมล็ดพันธุ์และในหลอดทดลอง การใช้ประโยชน์อย่างยั่งยืน กฎหมาย ความร่วมมือระหว่างประเทศและข้อตกลง

PYPB 621 Integrative Pharmaceutical Botany 2 (1-2-3)

ภกภพ ๖๒๑ เภสัชพฤกษศาสตร์บูรณาการ

Principle and concept regarding pharmaceutical botany; plant and phytochemistry; pharmacological data; clinical trials; Thai medicinal plants; dietary supplements; methodology for determination of pharmacological activities of medicinal plants

กฎเกณฑ์และแนวความคิดเกี่ยวกับเภสัชพฤกษศาสตร์ พืชและพฤกษเคมี ฤทธิ์ทางเภสัชวิทยา การทดลองทางคลีนิก พืชสมุนไพรไทย ผลิตภัณฑ์เสริมอาหาร วิธีพิสูจน์ฤทธิ์ทางเภสัชวิทยาของสมุนไพร

2) Elective Courses

Credits (lecture – practice – self-study)

SCPL 501 Advanced Plant Taxonomy 3 (2-3-5)

วทพฤ ๕๐๑ พฤกษอนุกรมวิธานขั้นสูง

Systematic concepts in plant classification; identification; nomenclature; distribution; speciation; phylogenetics and evolution; advanced technology in plant anatomy; pollen biology; cytotaxonomy; plant embryology; plant molecular taxonomy; chemotaxonomy

การจัดจำแนกพืชอย่างเป็นระบบ การระบุชนิดพืช การตั้งชื่อพืช การกระจายพันธุ์ การกำเนิดชนิด วิวัฒนาการชาติพันธุ์และวิวัฒนาการของพืช วิทยาการก้าวหน้าด้านกายวิภาคศาสตร์ เรณูวิทยา เซลล์อนุกรมวิธาน คัพภวิทยา อนุกรมวิธานระดับโมเลกุล เคมีอนุกรมวิธาน

SCPL 502 Ethnobotany 3 (2-3-5)

วทพฤ ๕๐๒ พฤกษศาสตร์พื้นบ้าน

Botanical knowledge of ethnic groups; the use of local plants in foods, medicines, clothing, shelters, languages, literatures, ceremonies, arts, professions etc; integrative research techniques in plant taxonomy, anthropology, archaeology, and paleobotany; methods in sample collection; quality and economic value assessment for sustainable uses of local plant genetic resources and local wisdom conservation

องค์ความรู้ด้านพฤกษศาสตร์ของกลุ่มชาติพันธุ์ การใช้ประโยชน์จากพืชในท้องถิ่นเป็นอาหาร ยารักษาโรค เครื่องนุ่งห่ม ที่อยู่อาศัย ภาษา วรรณกรรม พิธีกรรม ศิลปะ อาชีพและอื่น ๆ บูรณาการระเบียบวิธีวิจัยทางพฤกษอนุกรมวิธาน มานุษยวิทยา โบราณคดี และบรรพพฤกษศาสตร์ วิธีการรวบรวมตัวอย่าง การประเมินคุณภาพและมูลค่าทางเศรษฐกิจเพื่อการใช้ประโยชน์พันธุกรรมพืชในท้องถิ่นอย่างยั่งยืนและอนุรักษ์ภูมิปัญญาพื้นบ้าน

SCPL 503 Pollen Biology 3 (2-3-5)

วทพฤ ๕๐๓ ชีววิทยาเรณู

Spore and pollen structure; morphology and development; conservation and viability of lower vascular plants, gymnospermae and angiospermae; plant sterility; pollen techniques and identification; application to other palynological researches such as plant taxonomy, paleobotany, criminology, iatropalynology and geology

โครงสร้างของสปอร์และเรณู ลักษณะสัณฐานวิทยาและพัฒนาการ การเก็บรักษาและความมีชีวิตของสปอร์และเรณูพืชชั้นต่ำ พืชเมล็ดเปลือยและพืชมีดอก ความเป็นหมัน เรณูเทคนิคและการระบุชื่อ การ

ประยุกต์ใช้ในการวิจัยทางเรณูวิทยาอื่น ๆ เช่น พฤกษอนุกรมวิธาน พฤกษโบราณคดี อาชญวิทยา อุตุนิยมวิทยาและธรณีวิทยา

SCPL 511 Plant Bioregulators 2 (2-0-4)

วทพฤ ๕๑๑ สารควบคุมทางชีววิทยาของพืช

Types and group of chemicals regulated physiological process in plants; functional and control mechanisms; synthesis; biological effects; the applications

ชนิดและกลุ่มของสารเคมีที่เกี่ยวข้องกับกระบวนการสรีรวิทยาพืช หน้าที่และกลไกการควบคุม การสังเคราะห์ ผลทางชีววิทยา แนวทางการประยุกต์

SCPL 521 Plant Cytogenetics 3 (2-3-5)

วทพฤ ๕๒๑ พันธุศาสตร์ของเซลล์พืช

Chromosome classification; chromosomal mechanism of inheritance structure and number; chromosome behavior during mitosis and meiosis relating to the transmission; recombination of the gene; chromosome aberration and mutation; chromosome technology and chromosome study with conventional technique and molecular cytogenetics used in plant research

การจัดจำแนกโครโมโซม กลไกการถ่ายทอดพันธุกรรมพืช โครงสร้างและจำนวน หน้าที่และการเปลี่ยนแปลงโครโมโซมขณะแบ่งเซลล์แบบไมโทซิสและไมโอซิสที่เกี่ยวข้องกับการถ่ายทอดพันธุกรรม การรวมกันใหม่ของยีน ความผิดปกติของโครโมโซมและการกลายพันธุ์ เทคโนโลยีโครโมโซมและการศึกษาโครโมโซมโดยเทคนิคดั้งเดิมและวิธีทางพันธุศาสตร์ระดับโมเลกุลที่ใช้เป็นประโยชน์ในงานวิจัยพืช

SCPL 522 Advanced Plant Molecular Biology 3 (3–0-6)

วทพฤ ๕๒๒ ชีววิทยาระดับโมเลกุลของพืชขั้นสูง

Advanced knowledge on techniques use in plant molecular biology; applications to specific plant system; genetic engineering approaches applied to understand plant develop and function relating to improve yield and quality traits

ความรู้ขั้นสูงเกี่ยวกับเทคนิคที่ใช้ทางชีววิทยาโมเลกุลพืช การประยุกต์โดยเฉพาะกับระบบพืช การประยุกต์เทคนิคทางพันธุวิศวกรรมสำหรับความเข้าใจการเจริญและหน้าที่ของพืชที่เกี่ยวข้องกับการปรับปรุงผลิตผลและคุณภาพ

SCPL 523 Techniques in Plant Molecular Biology 3 (1-6-3)

วทพฤ ๕๒๓ เทคนิคทางชีววิทยาระดับโมเลกุลของพืช

Techniques and methods in plant molecular biology; molecular cloning; isolation of plant DNA, RNA and protein; plant gene transformation techniques; analysis of cloned genes and gene products

เทคนิคและวิธีการที่ใช้ในงานชีววิทยาโมเลกุลพืช การโคลนนิ่งระดับโมเลกุล การสกัด DNA RNA และโปรตีนจากพืช เทคนิคการถ่ายยีนเข้าสู่พืช การวิเคราะห์ยีนที่โคลนได้และผลผลิตของยีน

SCPL 524 Plant Mutation 3 (3-0-6)

วทพฤ ๕๒๔ การกลายพันธุ์ในพืช

Mechanisms of genetic rearrangement in plant and their transmission to the next generation; gene mutation and chromosome structural changes as a spontaneous and induced mutation; current topics and technology of induced mutation for plant improvement; genetic marker detection and environmental monitoring

กลไกการเปลี่ยนแปลงทางพันธุกรรมพืชที่ถ่ายทอดไปยังลูกหลาน การกลายของยีนและการเปลี่ยนแปลงโครงสร้างของโครโมโซมทั้งที่เกิดขึ้นเองตามธรรมชาติและเกิดจากการชักนำ การสำรวจเทคนิคทำหัวข้อและเทคโนโลยีปัจจุบันที่ใช้ในการปรับปรุงพันธุ์พืช การตรวจสอบเครื่องหมายทางพันธุกรรมและการเฝ้าสังเกตทางสิ่งแวดล้อม

SCPL 541 Advanced Plant Tissue Culture 3 (3-0-6)

วทพฤ ๕๔๑ การเพาะเลี้ยงเนื้อเยื่อพืชขั้นสูง

Advanced research and development in plant tissue culture methods; Technology involved in cell and tissue culture; *in vitro* conservation; protoplast culture and fusion; micropropagation; breeding and genetic engineering

การวิจัยและพัฒนาขั้นสูงเกี่ยวกับเทคนิคการเพาะเลี้ยงเนื้อเยื่อพืช เทคโนโลยีที่เกี่ยวข้องกับการเลี้ยงเซลล์และเนื้อเยื่อ การอนุรักษ์พันธุ์พืชในหลอดทดลอง การเพาะเลี้ยงโปรโตพลาสต์และการเชื่อม การขยายพันธุ์ในหลอดทดลอง การปรับปรุงพันธุ์และพันธุวิศวกรรม

SCPL 543 Advanced Phytochemistry 3 (2-3-5)

วทพฤ ๕๔๓ พฤกษเคมีขั้นสูง

The nature of phytochemicals; classifications; chemical structures; biosynthetic pathways; pharmacological actions; uses; plant sources; extraction and separation techniques; identification; screening of phytochemicals; plant secondary metabolites production technology;

molecular control of plant biosynthetic pathways; molecular approaches to engineer plant biosynthetic pathway; current issues in plant phytochemical production; quality control and standards for raw plant materials and herbal extracts

ธรรมชาติของสารเคมีในพืช การแบ่งกลุ่ม โครงสร้างทางเคมี ชีวสังเคราะห์ ฤทธิ์ทางเภสัชวิทยา การนำไปใช้ พืชที่พบ เทคนิคการสกัดแยก การระบุชนิด การตรวจกรองสารเคมีในพืช เทคโนโลยีการผลิตสารทุติยภูมิที่พบในพืช การควบคุมกระบวนการชีวสังเคราะห์พืชในระดับโมเลกุล การดัดแปลงกระบวนการชีวสังเคราะห์พืชด้วยวิธีการทางชีววิทยาระดับโมเลกุล ประเด็นปัจจุบันเกี่ยวกับการผลิตสารเคมีจากพืช การควบคุมคุณภาพและมาตรฐานวัตถุดิบและสารสกัดสมุนไพร

SCPL 544 Advanced Technique in Plant Tissue Culture 1 (0-3-1)
วทพฤ ๕๔๔ เทคนิคการเพาะเลี้ยงเนื้อเยื่อพืชขั้นสูง

Various techniques for plant tissue culture; commercial micropropagation; breeding and *in vitro* conservation

เทคนิคการเพาะเลี้ยงเนื้อเยื่อพืชแบบต่าง ๆ การขยายพันธุ์เชิงพาณิชย์ การปรับปรุงพันธุ์และการอนุรักษ์พันธุ์พืชในระดับหลอดทดลอง

SCPL 563 Plant-Microbe Interaction 3 (3-0-6)
วทพฤ ๕๖๓ ปฏิสัมพันธ์ระหว่างพืชและจุลชีพ

Different types of plant-microbe interactions; molecular and cellular mechanisms of plant-microbe interactions; research approaches to study plant-microbe interactions; effects of such interactions on plants and impacts on human society; current literature and important questions in the field of plant-microbe interactions

ปฏิสัมพันธ์ระหว่างพืชและจุลชีพประเภทต่าง ๆ กลไกระดับเซลล์และระดับโมเลกุลของปฏิสัมพันธ์ระหว่างพืชและจุลชีพ กระบวนการวิจัยที่ใช้ในการศึกษาปฏิสัมพันธ์ระหว่างพืชและจุลชีพ ผลกระทบของปฏิสัมพันธ์ระหว่างพืชและจุลชีพต่อพืชและต่อสังคมมนุษย์ ผลการวิจัยล่าสุดและคำถามที่สำคัญในวงการของปฏิสัมพันธ์ระหว่างพืชและจุลชีพ

SCPL 564 Plant Growth Promotion 3 (2-3-5)
วทพฤ ๕๖๔ การส่งเสริมการเติบโตพืช

Integrate knowledge for higher or crop and medicinal plants; genetics and gene involing to plat growth; control of plant growth at the cellular, tissue and organism levels; role of elicitors and environmental factors on growth; control of plant growth and phytochemical substances under *ex* and *in vitro* conditions

ความรู้บูรณาการสำหรับพืชชั้นสูงหรือพืชปลูกและพืชสมุนไพร พันธุศาสตร์และยีนที่เกี่ยวข้องกับการเติบโตพืช การควบคุมการเติบโตพืชที่ระดับเซลล์ เนื้อเยื่อและทั้งระบบ บทบาทของปัจจัยอิลิซิเตอร์และสิ่งแวดล้อมต่อการเจริญเติบโต การควบคุมการเจริญเติบโตและการสร้างสารเคมีของพืชทั้งสภาพภายนอกและภายในหลอดทดลองรวมทั้งการสร้างสารภายในต้นพืช

SCPL 571 Current Topics in Plant Sciences 2 (2-0-4)

วทพฤ ๕๗๑ หัวข้อเรื่องปัจจุบันทางวิทยาการพืช

Recent publication or other scientific information on advanced and new technologies in plant sciences

เอกสารวิชาการในเล่มพิมพ์หรือสารสนเทศทางวิทยาศาสตร์ที่เป็นเทคโนโลยีก้าวหน้าและใหม่ในวิทยาการพืช

SCPL 572 Applied Statistics for Plant Science 1(1-0-2)

วทพฤ ๕๗๒ สถิติประยุกต์เพื่อวิทยาการพืช

An introduction to using R in plant science research; handling data; summary statistics; chi-square test and ANOVA/ANCOVA correlation; regression; model selection and graphing in R.

โปรแกรมอาร์พื้นฐานเพื่องานวิจัยด้านวิทยาการพืช การจัดข้อมูล การประมวลผลทางสถิติ การทดสอบความแตกต่างทางสถิติ สหสัมพันธ์ การเลือกโมเดลและการนำเสนอแผนภูมิ

SCPL 611 Plant Adaptation to Environmental Changes 2 (2-0-4)

วทพฤ ๖๑๑ การปรับตัวของพืชในสิ่งแวดล้อมที่เปลี่ยนแปลง

Current knowledge in plant physiology; carbohydrate metabolism; water relations; plant nutrition; plant hormones; biotic and abiotic environmental factors relative to plant responses; emphasis on how management practices and environmental conditions affect crop productivity

วิทยาการปัจจุบันด้านสรีรวิทยาพืช แมทาบอลิซึมของคาร์โบไฮเดรต ความสัมพันธ์ของน้ำ ธาตุอาหารพืช ฮอร์โมนพืช ปัจจัยสิ่งแวดล้อมทางชีวภาพและกายภาพที่สัมพันธ์กับการตอบสนองพืช การบริหารจัดการสิ่งแวดล้อมที่มีผลกระทบต่อการผลิตพืช

SCPL 621 Applied Plant Genetics 2 (2-0-4)

วทพฤ ๖๒๑ พันธุศาสตร์ของพืชขั้นประยุกต์

Applications of genetics for sustainable development in agriculture and livelihood of the people; the investigation of genetic variation of virus and bacteria used in gene technology; techniques of genetic engineering; the risks and benefic of GMO

พันธุศาสตร์ประยุกต์เพื่อการพัฒนาแบบยั่งยืนของการเกษตรและชีวิตความเป็นอยู่ การตรวจสอบความแปรปรวนของลักษณะทางพันธุกรรมของไวรัสและแบคทีเรียที่ใช้กับเทคโนโลยียีน เทคนิคทางพันธุวิศวกรรม ข้อจำกัดและข้อดีของจีเอ็มโอ

SCPL 671 Special Problems in Plant Sciences 2 (1-3-3)

วทพฤ ๖๗๑ ปัญหาพิเศษทางวิทยาการพืช

Research on problems of special interests in plant science under the advice of the department staff and unrelated to the thesis research

การวิจัยในปัญหาที่น่าสนใจเป็นพิเศษในเรื่องของวิชาการพืชภายใต้คำแนะนำของอาจารย์ในภาควิชาและเรื่องที่ไม่เกี่ยวกับการวิจัยเพื่อวิทยานิพนธ์

PYPB 604 Medical Ethnobotany 3 (2-3-5)

ภกภพ ๖๐๔ พฤกษศาสตร์พื้นบ้านทางการแพทย์

The development of medical ethnobotany; the use of local herbs; integration of principle and information from anthropology, botany, chemistry and pharmacology; research methodology of medical ethnobotany; current topics in medical ethnobotany research

พัฒนาการของพฤกษศาสตร์พื้นบ้านทางการแพทย์ การใช้สมุนไพรพื้นบ้าน การผสมผสานระหว่างหลักการและข้อมูลทางมานุษยวิทยา พฤกษศาสตร์ เคมีและเภสัชวิทยา ระเบียบวิธีวิจัยด้านพฤกษศาสตร์พื้นบ้านทางการแพทย์ หัวข้อเรื่องปัจจุบันทางการวิจัยทางพฤกษศาสตร์พื้นบ้านทางการแพทย์

PYPB 607 Development of Herbal Medicine 3 (2-3-5)

ภกภพ ๖๐๗ การพัฒนายาจากสมุนไพร

The quality control of medicinal plants following WHO guidelines and the Thai Herbal Pharmacopoiea; development of herbal drugs; herbal food supplements and cosmetics including method for efficacy and safety evaluation using a scientific approach; quality control of herbal medicines using microscopic, chemistry and physicochemistry; determination of adulterant and microbial contamination

การควบคุมคุณภาพยาจากสมุนไพรตามข้อกำหนดขององค์การอนามัยโลกและเภสัชตำรับสมุนไพรของประเทศไทย การพัฒนายาจากสมุนไพร ผลิตภัณฑ์เสริมอาหารและเครื่องสำอางตลอดจนวิธีการประเมิน

ประสิทธิภาพและความปลอดภัยด้วยกระบวนการทางวิทยาศาสตร์ การตรวจสอบคุณภาพของยาสมุนไพรด้วยเทคนิคทางกล้องจุลทรรศน์ ทางเคมีและทางเคมีกายภาพ การตรวจสอบการปนปลอมและการปนเปื้อนเชื้อจุลินทรีย์

PYPB 610 Current Topics in Pharmaceutical Botany 2 (2-0-4)

ภกภพ ๖๑๐ หัวข้อเรื่องปัจจุบันทางเภสัชพฤกษศาสตร์

Recent publication or other scientific information on advanced and new technologies in the field of pharmaceutical botany

เอกสารวิชาการในเล่มพิมพ์หรือสารสนเทศทางวิทยาศาสตร์ที่เป็นเทคโนโลยีก้าวหน้าและใหม่ในเภสัชพฤกษศาสตร์

PYPB 622 Plant Database Construction and Management 3 (2-3-5)

ภกภพ ๖๒๒ การสร้างและจัดการฐานข้อมูลพืช

Data structure; system analysis and design; database management including table creation, querying and adding data to a database

โครงสร้างของข้อมูล การวิเคราะห์และการออกแบบระบบ การจัดการฐานข้อมูลรวมถึงการสร้างตาราง การแสดงข้อมูลและการเติมข้อมูลในฐานข้อมูล

PYPH 695 Applied Plant Biotechnology in Pharmaceutical Sciences 3 (2-3-5)

ภกวพ ๖๙๕ เทคโนโลยีชีวภาพประยุกต์ด้านพืชทางเภสัชศาสตร์

The principle and techniques of plant biotechnology; biopharming; micropropagation; embryogenesis; cell suspension culture; hairy root culture; transgenic plants; application for high quality raw production

หลักการและเทคนิคทางเทคโนโลยีชีวภาพด้านพืช ไบโอฟาร์มมิ่ง การขยายพันธุ์พืชในหลอดทดลอง กระบวนการกำเนิดคัพภะ การเลี้ยงเซลล์แขวนลอย การเลี้ยงราก การถ่ายยีน การประยุกต์เพื่อการผลิตวัตถุดิบคุณภาพดี

3) Thesis/ dissertation

Credits (lecture – practice – self-study)

SCPL/PYPB 698 Thesis 12 (0-36-0)

วทพฤ/ภกภพ ๖๙๘ วิทยานิพนธ์

Identifying research proposals in Plant Sciences; conducting research; ethics; writing research fin dings; presenting; publishing research in standard journals or conferences' proceedings; ethics for presenting and publishing research findings

การกำหนดหัวข้อวิจัยทางวิทยาการพืช การดำเนินการวิจัย จริยธรรม การเขียนผลงานวิจัย การนำเสนอรายงานวิจัย การตีพิมพ์ผลงานวิจัยในวารสารมาตรฐานหรือสิ่งพิมพ์ทางประชุมวิชาการ จริยธรรมสำหรับการนำเสนอและการตีพิมพ์ผลงานวิจัย

Appendix B

Curriculum Vitae of the Faculty in Charge of the Program

1. Name Assoc. Prof. Dr. Paweena Traiperm

Education

Degree	Degree Name	Institute	Year
Ph.D.	Biological Science	Chulalongkorn University	2007
M.Sc.	Botany	Chulalongkorn University	2002
B.Sc.	Botany	Khon Kaen University	1994

Faculty/Institute/College

Department Plant Science, Faculty of Science, Mahidol University

Interesting Research Topics or Specialties

1. Plant Taxonomy and Systematics
2. Plant Anatomy and Applications
3. Plant Histochemistry
4. Pollen Morphology

Academic work as not part of the study for degree certificate and published and disseminated in accordance with the stipulated criteria regarding academic rank appointment in five retrospective years *

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	1. Jirabanjongjit, A., **Traiperm, P.**, Sando, T., Stewart, A.B. Pollination and floral biology of a rare morning glory species endemic to Thailand, *Argyreia siamensis* (2021) Plants, 10(11), pp. 2402.	12/1	2021
	2. Staples, G.W., Chitchak, N., Kochaiphat, P., Rattamanee, C., Rattanakrajang, P. **Traiperm, P.** Convolvulaceae in the	12/1	2021

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	Flora of Thailand: Addenda, Corrigenda and Emendanda, I (2021) Thai Forest Bulletin (Botany), 49(1), pp.88-101.		
	3. Punwong, P., Englong, A., **Traiperm, P.** Chabangborn, A. Vegetation history and human impacts from Thong Pha Phum, western Thailand during the past 700 years (2021) Vegetation History and Archaeobotany, 30(3), pp.383-394.	12/1	2021
	4. Kochaiphat, P., **Traiperm, P.**, UTTERIDGE, T.M. Three new species of *Erycibe* (Convolvulaceae) from Malesia (2021) Phytotaxa, 494(1), pp.103-112.	12/1	2021
	5. Olaranont, Y., Stewart, A.B., **Traiperm, P.** Effects of crude oil on plant growth and leaf anatomical structures in a common coastal plant (2021) International Journal of Phytoremediation, 23(2), pp. 162-170.	12/1	2021
	6. Hassa, P., **Traiperm, P.**, Stewart, A.B. Pollinator visitation and female reproductive success in two floral color morphs of *Ipomoea aquatica* (Convolvulaceae) (2020) Plant Systematics and Evolution, 306(6), pp. 1-11.	12/1	2020
	7. Eserman, L.A., Sosef, M.S.M., Simão-Bianchini, R., **Traiperm, P**., Heider, B., Simões, A.R.G. Proposal to change the conserved type of *Ipomoea*, nom. cons. (Convolvulaceae) (2020) Taxon, 69(6), pp.	12/1	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	1369–1371.		
	8. Kochaiphat, P., Suhaimi, S.-E., Staples, G.W., Utteridge, T.M.A., **Traiperm, P.** Notes on *Erycibe* (Convolvulaceae) from Thailand (2020) Kew Bulletin, 75 (4), DOI 10.1007/S12225-020-09891-7.	12/1	2020
	9. Bianconi, M.E., Hackel, J., Vorontsova, M.S., Alberti, A., Arthan, W., Burke, S.V., Duvall, M.R., Kellogg, E.A., Lavergne, S., McKain, M.R., Meunier, A., Osborne, C.P., **Traiperm, P.**, Christin, P.-A., Besnard, G. Continued Adaptation of C4 Photosynthesis after an Initial Burst of Changes in the *Andropogoneae* Grasses (2020) Systematic Biology, 69(3), pp. 445-461.	12/1	2020
	10. **Traiperm, P.**, Suddee, S. A new species of *Argyreia* (Convolvulaceae) from Thailand (2020) PhytoKeys, 149, pp. 109-115.	12/1	2020
	11. Ketjarun, K., **Traiperm, P.**, Suddee, S., Watthana, S., Gale, S.W. Labellar anatomy of the *Nervilia plicata* complex (Orchidaceae: Epidendroideae) in tropical Asia (2019) Kew Bulletin, 74(1), DOI 10.1007/S12225-018-9788-8.	12/1	2019
	12. **Traiperm, P.**, Fujikawa, K., Chitchak, N., Srisanga, P., Maknoi, C., Staples, G. A new species of *Argyreia* (Convolvulaceae) from Myanmar (2019) Willdenowia, 49(1),	12/1	2019

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	pp. 65-70.		
	13. Surajarusarn, B., **Traiperm, P.**, Amornsakchai, T. Revisiting the morphology, microstructure, and properties of cellulose fibre from pineapple leaf so as to expand its utilization (2019) Sains Malaysiana, 48(1), pp. 145-154.	12/1	2019
	14. Rujichaipimon, W., Pedersen, H.Æ., Phueakkhlai, O., Suddee, S., Sungkaew, S., **Traiperm, P.** On scientific requirements for presentation of "new records": The case of *Dendrobium ruckeri* (Orchidaceae) (2019) Thai Forest Bulletin (Botany), 47(2), pp. 152-158.	12/1	2019
	15. Englong, A., Punwong, P., Selby, K., Marchant, R., **Traiperm, P.**, Pumijumnong, N. Mangrove dynamics and environmental changes on Koh Chang, Thailand during the last millennium (2019) Quaternary International, 500, pp. 128-138.	12/1	2019
	16. Songnuan, W., Pichakum, A., **Traiperm, P.**, Rungjangsuwan, E.-O., Siriwattanakul, U., Leeratsuwan, N., Chareonsap, P.P., Kulpradit, K., Somsri, S., Swangpol, S.C. Diversity of durian (*Durio zibethinus* L.) from Nonthaburi, Thailand based on morpho-palatability characteristics and simple sequence repeat markers (2019)	12/1	2019

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	Agriculture and Natural Resources, 53(3), pp. 218-227.		
	17. Olaranont, Y., Stauffer, F.W., **Traiperm, P.**, Staples, G.W. Investigation of the black dots on leaves of *Stictocardia* species (Convolvulaceae) using anatomical and histochemical analyses (2018) Flora: Morphology, Distribution, Functional Ecology of Plants, 249, pp. 133-142.	12/1	2019
	18. Olaranont, Y., Stewart, A.B., **Traiperm, P.** Physiological and anatomical responses of a common beach grass to crude oil pollution (2018) Environmental Science and Pollution Research, 25(28), pp. 28075-28085.	12/1	2018
	19. Punwong, P., Sritrairat, S., Selby, K., Marchant, R., Pumijumnong, N., **Traiperm, P.** An 800 year record of mangrove dynamics and human activities in the upper Gulf of Thailand (2018) Vegetation History and Archaeobotany, 27(4), pp. 535-549.	12/1	2018
	20. Pramali, K., Bongcheewin, B., **Traiperm, P.** Leaf micromorphological adaptation of *Pogostemon* spp. (section Eusteralis) in Thailand (2018) Agriculture and Natural Resources, 52(3), pp. 250-258.	12/1	2018
	21. Sumanon, P., Swangpol, S.C., **Traiperm, P.** Culm internodal anatomy of the tribe	12/1	2018

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	Oryzeae (Poaceae) in Thailand (2018) Chiang Mai Journal of Science, 45(2), pp. 832-845.		
	22. Rattanakrajang, P., **Traiperm, P.**, Staples, G.W. Re-evaluation of generic characters for *Blinkworthia* (Convolvulaceae) based on morphology and reproductive organ development (2018) Plant Systematics and Evolution, 304(3), pp. 415-429.	12/1	2018
	23. Chitchak, N., **Traiperm, P.**, Staples, G., Rattanakrajang, P., Sumanon, P. Species delimitation of some *Argyreia* (Convolvulaceae) using phenetic analyses: Insights from leaf anatomical data reveal a new species (2018) Botany, 96(4), pp. 217-233.	12/1	2018

Current Teaching Load

SCPL 501	Advanced Plant Taxonomy	3 (2-3-5)
SCPL 503	Pollen Biology	3 (2-3-5)
SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 671	Special Problems in Plant Sciences	2 (1-3-3)
SCPL 672	Seminar in Plant Sciences 1	1 (1-0-2)
SCPL 698	Thesis	12 (0-36-0)
SCPL 601	Advanced Botanical Research	1 (1-0-2)
SCPL 603	Frontier in Plant Systemetics and Evolution	2 (2-0-4)
SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)

SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)

Assigned Teaching Load for the Proposed Program

SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 601	Advanced Botanical Research	1 (1-0-2)
SCPL 605	Frontier in Plant Systematics and Evolution	2 (2-0-4)
SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)

2. Name Assoc. Prof. Dr. Puangpaka Umpunjun

Education

Degree	Degree Name	Institute	Year
Ph.D.	Sciences des agroressources	Institut National Polytechnique de Toulouse (INP), France	1995
D.E.A.	Traitment des matières premières végétales	Institut National Polytechnique de Toulouse (INP), France	1992
M.Sc.	Botany	Chulalongkorn University	1990
B.Sc.	Botany	Chulalongkorn University	1980

Faculty/Institute/College

Department Plant Science, Faculty of Science, Mahidol University

Interesting Research Topics or Specialties

1. Plant cytogenetics and Plant molecular cytogenetics
2. Chromosome technology for plant research: Plant cytotaxonomy, Plant improvement, Phylogeny and evolution, Environmental monitoring and Genomic characterization

Academic work as not part of the study for degree certificate and published and disseminated in accordance with the stipulated criteria regarding academic rank appointment in five retrospective years *

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	1. Chow, J., Puangpairote, T., Anamthawat-Jónsson, K., **Umpunjun, P**. Karyotypic and molecular cytogenetic characterization of diploid and polyploid accessions of medicinal herbs in the genus Paris from northern Thailand (2020) ScienceAsia, 46(3), pp. 297-307.	12/1	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	2. Moonkaew, P., Nopporncharoenkul, N., Jenjittikul, T., **Umpunjun, P.** Cytogenetic and pollen identification of genus *Gagnepainia* (Zingiberaceae) in Thailand (2020) Comparative Cytogenetics, 14(1), pp. 11-25.	12/1	2020
	3. Nopporncharoenkul, N., Jenjittikul, T., Chuenboonngarm, N., Anamthawat-Jónsson, K., **Umpunjun, P.** Cytogenetic verification of *Curcuma candi*da (Zingiberaceae) from Thailand and Myanmar (2020) Thai Forest Bulletin (Botany), 48 (1), pp. 7-17.	12/1	2020
	4. Anamthawat-Jónsson, K., **Umpunjun, P.** Polyploidy in the Ginger Family from Thailand (2020) DOI:http://dx.doi.org/10.5772/intechopen.92859.	12/1	2020

Current Teaching Load

SCPL 501	Advanced Plant Taxonomy	3 (2-3-5)
SCPL 503	Pollen Biology	3 (2-3-5)
SCPL 521	Plant Cytogenetics	3 (2-3-5)
SCPL 524	Plant Mutation	3 (3-0-6)
SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 621	Applied Plant Genetics	2 (2-0-4)
SCPL 671	Special Problems in Plant Sciences	2 (1-3-3)
SCPL 672	Seminar in Plant Sciences 1	1 (1-0-2)
SCPL 698	Thesis	12 (0-36-0)
SCPL 601	Advanced Botanical Research	1 (1-0-2)

SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 622	Frontier in Plant Cell and Molecular Biology	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)

Assigned Teaching Load for the Proposed Program

SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 601	Advanced Botanical Research	1 (1-0-2)
SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 621	Applied Plant Genetics	2 (2-0-4)
SCPL 622	Frontier in Plant Cell and Molecular Biology	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)

3. Name Assoc. Prof. Dr. Nathinee Panvisavas

Education

Degree	Degree Name	Institute	Year
Ph.D.	Plant Molecular Biology	University of Leeds, UK	2001
M.Sc.	Forensic Science	University of Strathclyde, UK	2005
M.P.H	Public Health	Mahidol University	1997
B.Sc.	Pharmacy	Mahidol University	1994

Faculty/Institute/College

Department Plant Science, Faculty of Science, Mahidol University

Interesting Research Topics or Specialties

1. Forensic Botany
2. Forensic DNA Analysis of Biological Evidence
3. Applications of DNA technology in Forensic Science

Academic work as not part of the study for degree certificate and published and disseminated in accordance with the stipulated criteria regarding academic rank appointment in five retrospective years *

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	1. Prasongsom, S., Thammasiri, K., Narangajavana, J., Thitamadee, S., Chuenboonngarm, N., **Panvisavas, N.** Cryopreservation of *Dendrobium cruentum* Rchb. F. seeds by D cryo-plate and V cryo-plate techniques (2020) Walailak Journal of Science and Technology, 17 (3), pp. 181-191.	12/1	2020
	2. Prasongsom, S., Thammasiri, K.,	11/0.4	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	Chuenboonngarm, N., **Panvisavas, N.** Narangajavana, J., Thitamadee, S. Conservation of *Dendrobium cruentum* rchb. f. (2020) Acta Horticulturae, 1298, pp. 187–194		
	3. Imsomboon, T., Thammasiri, K., Kosiyajinda, P., Chuenboonngarm, N., **Panvisavas, N.** Cryopreservation of protocorm-like bodies of *Vanda lilacina* Teijsm. & Binn., a Thai orchid species, by V-cryo-plate and D-cryo-plate methods (2020) Walailak Journal of Science and Technology, 17(4), pp. 369-379.	12/1	2020
	4. Bunakkharasawat, W., Panok, L., **Panvisavas, N.** Genetic discrimination of the poisonous *Urobotrya siamensis* from the green-leaf vegetable 'Pak-wan' (2019) Forensic Science International: Genetics Supplement Series, 7(1), pp. 730-731.	11/0.4	2019
	5. Zin, T., Bandhaya, A., **Panvisavas, N.** Tissue storage solution for preservation and transfer of forensic specimen in high ambient-temperature (2019) Forensic Science International: Genetics Supplement Series, 7 (1), pp. 182-184.	11/0.4	2019
	6. Nontiapirom, K., Bunakkharasawat, W., Sojikul, P., **Panvisavas, N.** Assessment and prevention of forensic DNA contamination in DNA profiling from latent fingerprint	11/0.4	2019

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	(2019) Forensic Science International: Genetics Supplement Series, 7 (1), pp. 546-548.		
	7. Pakdee, O., Songnuan, W., **Panvisavas, N.**, Pokethitiyook, P., Yokthongwattana, K., Meetam, M. Functional characterization of metallothionein-like genes from *Physcomitrella patens*: expression profiling, yeast heterologous expression, and disruption of PpMT1.2a gene (2019) Planta, 250(2), pp. 427-443.	12/1	2019
	8. Imsomboon, T., Thammasiri, K., Kosiyajinda, P., Chuenboonngarm, N., **Panvisavas, N.** Cryopreservation of non-precultured protocorms of *Acampe rigida* (Buch.-Ham. Ex Sm.) P.F. Hunt using V cryo-plate and D cryo-plate methods. (2019) Acta Horticulturae, 1234, pp. 269-278.	11/0.4	2019
	9. Prasongsom, S., Thammasiri, K., Narangajavana, J., Thitamadee, S., Chuenboonngarm, N., **Panvisavas, N.** Vitrification-based cryopreservation of *Dendrobium cruentum* Rchb. F. seeds (2019) Acta Horticulturae, 1234, pp. 157-166.	11/0.4	2019

Current Teaching Load

SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 671	Special Problems in Plant Sciences	2 (1-3-3)

SCPL 698	Thesis	12 (0-36-0)
SCPL 601	Advanced Botanical Research	1 (1-0-2)
SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 622	Frontier in Plant Cell and Molecular Biology	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)
SCFS 518	Criminalistics	3 (2-2-5)
SCFS 534	Principles of Crime Scene Investigation	2 (2-0-4)
SCFS 535	Practical Skills in Crime Scene Investigation	2 (0-4-2)
SCFS 536	Forensic Science Profession	2 (1-2-3)
SCFS 538	Forensic DNA Analysis	2 (1-2-3)
SCFS 698	Thesis	12 (0-36-0)

Assigned Teaching Load for the Proposed Program

SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 601	Advanced Botanical Research	1 (1-0-2)
SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 622	Frontier in Plant Cell and Molecular Biology	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)

4. Name Assoc. Prof. Dr. Sompop Prathanturarug

Education

Degree	Degree Name	Institute	Year
Ph.D.	Pharmaceutical Biology	University of Basel, Switzerland	1998
M.Pharm.	Pharmacognosy	Chulalongkorn University	1990
B.Sc.	Pharmacy	Chulalongkorn University	1988

Faculty/Institute/College

Department of Pharmaceutical Botany, Faculty of Pharmacy, Mahidol University

Interesting Research Topics or Specialties

1. Quality Improvement of Medicinal Plant Raw Material
2. Medicinal Plant Biotechnology
3. Standardization of Herbal Medicine
4. Pharmaceutical Botany

Academic work as not part of the study for degree certificate and published and disseminated in accordance with the stipulated criteria regarding academic rank appointment in five retrospective years *

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Benjawan S, Nimitphong H, Tragulpiankit P, Musigavong O, **Prathanturarug S**, Pathomwichaiwat T. The effect of *Cissus quadrangularis* L. on delaying bone loss in postmenopausal women with osteopenia: A randomized placebo-controlled trial. Phytomedicine 2022; 101: 154115.	12/1	2022
Published research work	Chotchoungchatchai S, Krairit O, Tragulpiankit P, **Prathanturarug S**. Development and reliability testing of an	13/0.8	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	assessment tool for pressure ulcers based on Thai traditional medicine. Thai Pharmaceutical and Health Science Journal 2022;17(1):29-36.		
Published research work	Thong-On W, Pathomwichaiwat T, Boonsith S, Koo-Amornpattana W, **Prathanturarug S.** Green extraction optimization of triterpenoid glycoside-enriched extract from *Centella asiatica* (L.) Urban using response surface methodology (RSM). Sci Rep. 2021; 11: 22026.	12/1	2021
Published research work	Nutmakul T, Pattanapanyasat K, Soonthornchareonnon N, Mori M, **Prathanturarug S.** Speed of action and stage specificity of Bencha-loga-wichian, a Thai traditional antipyretic formulation, against Plasmodium falciparum and the chloroquine-potentiating activity of its active compounds, tiliacorinine and yanangcorinine. J Ethnopharmacol. 2020; 258: 112909.	12/1	2020
Published research work	Chotchoungchatchai S, Krairit O, Tragulpiankit P, **Prathanturarug S.** The efficacy of honey and a Thai Herbal Oil preparation in the treatment of pressure ulcers based on Thai traditional medicine wound diagnosis versus standard practice: An open-label randomized controlled trial. Contemp Clin Trials Commun. 2020; 17: 100538.	12/1	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Nguyen KV, Pongkitwitoon B, Pathomwichaiwat T, Viboonjun U, Prathanturarug S. Effects of methyl jasmonate on the growth and triterpenoid production of diploid and tetraploid *Centella asiatica* (L.) Urb. hairy root cultures. Sci Rep. 2019; 9(1): 18665.	12/1	2019

Current Teaching Load

PYPB 621	Integrative Pharmaceutical Botany	2 (1-2-3)
PYPB 612	Conservation and Utilization of Medicinal Plant	3 (3-0-6)
PYPB 695	Applied Plant Biotechnology in Pharmaceutical Sciences	3 (2-3-5)
PYPB 698	Thesis	12 (0-36-0)

Assigned Teaching Load for the Proposed Program

PYPB 621	Integrative Pharmaceutical Botany	2 (1-2-3)
PYPB 612	Conservation and Utilization of Medicinal Plant	3 (3-0-6)
PYPB 695	Applied Plant Biotechnology in Pharmaceutical Sciences	3 (2-3-5)
PYPB 698	Thesis	12 (0-36-0)

5. Name Assist. Prof. Dr. Thaya Jenjittikul

Education

Degree	Degree Name	Institute	Year
Ph.D.	Agriculture	Kasetsart University	2003
M.Sc.	Agriculture	Kasetsart University	1990
B.Sc.	Agriculture	Kasetsart University	1987

Faculty/Institute/College

Department Plant Science, Faculty of Science, Mahidol University

Interesting Research Topics or Specialties

1. Plant Systematics and Evolution: surveys of plant resource diversity, review their taxonomic status, and infer their phylogenetic relationship
2. Plant Molecular Biology: study of taxonomic lineage using DNA technology
3. Botany Education: enhancing botanical learning ability via structural models and innovative computer software and curriculum
4. Ethnobotany: study of plant uses in ethnic tribes
5. Scientific Illustrations: study benefits of illustrations to science study

Academic work as not part of the study for degree certificate and published and disseminated in accordance with the stipulated criteria regarding academic rank appointment in five retrospective years *

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	1. **Jenjittikul, T** & Larsen, K. 2020. Two new species of Kaempferia from Thailand. Nat. Hist. Bul. Siam Soc. 64(1): 17-23.	12/1	2020
	2. Nilapaka, W., **Jenjittikul, T.**, Stewart, A., Tedsungnoen, K., Swangpol, S.C. Floral visitors of Kluai Bua Si Som (*Musa rubra* -	11/0.4	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	Musaceae): An ornamental plant in Thailand (2020) Acta Horticulturae, 1298, pp. 107-112.		
	3. Chart, C., Chuengpanya, R., Muangkroot, A., **Jenjittikul, T.** & Chuenboonngarm, N. Propagation of *Gentiana nudicalis* Kurz subsp. lakshnakarae (Kerr) Halda by tissue culture (2020) Thai Journal of Botany, 12(1), pp. 69-90.	9/0.6	2020
	4. Chuengpanya, R., Pornchuti, W., Muangkroot, A., **Jenjittikul, T.**, Chuenboonngarm, N. *In vitro* propagation of *Zehneria platysperma* (W.J. de Wilde & Duyfjes) H. Schaef. & S.S. Renner (Cucurbitaceae), an endemic plant of Thailand (2020) Acta Horticulturae, 1285, pp. 221-230.	11/0.4	2020
	5. **Jenjittikul, T.**, Ruchisansakun, S. *Kaempferia albiflora* (Zingiberaceae), a new species from Thailand (2020) Kew Bulletin, 75(1), pp. 13	12/1	2020
	6. **Jenjittikul, T.**, Ruchisansakun, S. *Stephania kaweesakii* (Menispermaceae), a new tuberous species from Thailand (2020) Phytotaxa, 464(3), pp. 257-260.	12/1	2020
	7. Ruchisansakun, S., **Jenjittikul, T.**, & Maknoi, C. *Scaphochlamys longipedunculata*, a new species from Southern Thailand (2020) Edinburgh Journal of Botany, 77(3), pp. 543-549.	12/1	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	8. Nopporncharoenkul, N., Laongsri, W., **Jenjittikul, T.** Two new species of *Kaempferia* subgenus Protanthium (Zingiberaceae) from northern Thailand (2020) Nordic Journal of Botany, 38(2), pp. e02633	12/1	2020
	9. Moonkaew, P., Nopporncharoenkul, N., **Jenjittikul, T.**, Umpunjun, P. Cytogenetic and pollen identification of genus *Gagnepainia* (Zingiberaceae) in Thailand (2020) Comparative Cytogenetics, 14(1), pp. 11-25.	12/1	2020
	10. Nopporncharoenkul, N., **Jenjittikul, T.**, Chuenboonngarm, N., Anamthawat-Jónsson, K., Umpunjun, P. Cytogenetic verification of *Curcuma candida* (Zingiberaceae) from Thailand and Myanmar (2020) Thai Forest Bulletin (Botany), 48(1), pp. 7-17.	12/1	2020
	11. Thongphichai, W., Tuchinda, P., Pohmakotr, M., Reutrakul, V., Akkarawongsapat, R., Napaswad, C., Limthongkul, J., **Jenjittikul, T.**, Saithong, S. Anti-HIV-1 activities of constituents from the rhizomes of *Boesenbergia thorelii* (2019) Fitoterapia, 139, pp. 104388.	12/1	2019
	12. Maknoi, C., Ruchisansakun, S., **Jenjittikul, T.** *Curcuma putii* (Zingiberaceae), a New Species from	12/1	2019

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	Thailand (2019) Annales Botanici Fennici, 56(4-6) pp. 351-353.		
	13. Thammasiri, K., Prasongsom, S., Kongsawadworakul, P., Chuenboonngarm, N., **Jenjittikul, T.**, Soonthornchainaksaeng, P., Viboonjun, U., Muangkroot, A. Cryopreservation of *Arundina graminifolia* (D. Don) hochr. Seeds using D cryo-plate method (2019) Acta Horticulturae, 1234, pp. 301-308.	11/0.4	2019
	14. Nopporncharoenkul, N., **Jenjittikul, T.** *Kaempferia graminifolia* (subgen. Protanthium: Zingiberaceae), a new endemic species from Thailand (2018) Phytotaxa, 379(3), pp. 261-266.	12/1	2018
	15. Theanphong, O., **Jenjittikul, T.**, Mingvanish, W., Rungsihirunrat, K. Phylogenetic relationships of *kaempferia* plants based on inter-simple sequence repeat fingerprints (2018) Songklanakarin Journal of Science and Technology, 40(3), pp. 617-622.	12/1	2018

Current Teaching Load

SCPL 501	Advanced Plant Taxonomy	3 (2-3-5)
SCPL 502	Ethnobotany	3 (2-3-5)
SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 671	Special Problems in Plant Sciences	2 (1-3-3)
SCPL 672	Seminar in Plant Sciences 1	1 (1-0-2)
SCPL 698	Thesis	12 (0-36-0)

SCPL 601	Advanced Botanical Research	1 (1-0-2)
SCPL 603	Frontier in Plant Systemetics and Evolution	2 (2-0-4)
SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)

Assigned Teaching Load for the Proposed Program

SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 671	Special Problems in Plant Sciences	2 (1-3-3)
SCPL 601	Advanced Botanical Research	1 (1-0-2)
SCPL 605	Frontier in Plant Systematics and Evolution	2 (2-0-4)
SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)

6. Name Assist. Prof. Dr. Unchera Viboonjun

Education

Degree	Degree Name	Institute	Year
Ph.D.	Biotechnology	Mahidol University	2002
M.Sc.	Biotechnology	Mahidol University	1999
B.Sc.	Biotechnology	Mahidol University	1996

Faculty/Institute/College

Department Plant Science, Faculty of Science, Mahidol University

Interesting Research Topics or Specialties

1. Transcriptome and proteome analysis in plant research
2. Molecular markers in plant identification and characterization
3. Identification and characterization of genes for rubber tree improvement

Academic work as not part of the study for degree certificate and published and disseminated in accordance with the stipulated criteria regarding academic rank appointment in five retrospective years *

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	1. Pinweha, N., Netrphan, S., Sojikul, P., **Viboonjun, U.**, Sae-Lim, P., Narangajavana, J. Cross-kingdom microRNA transfer for the control of the anthracnose disease in cassava (2022) Tropical Plant Pathology, 1-16. https://doi.org/10.1007/s40858-022-00503-2	12/1	2022
	2. Chuengpanya, R., Muangkroot, A., Jenjittikul, T., Thammasiri, K., Umpunjun, P., **Viboonjun, U.**, Chuenboonngarm, N.	12/1	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	In vitro propagation and genetic fidelity assessment of *Hedychium longicornutum* Griff. ex Baker, a vulnerable Zingiberaceous plant of Thailand (2022) Current Applied Science and Technology, 22(6), pp. 1-21. DOI: 10.55003/cast.2022.06.22.012		
	3. Yoosomboon, P., Sojikul, P., **Viboonjun, U.**, Narangajavana, J. Salicylic acid-Induced syntaxin gene expression coexists with enhanced resistance against *Colletotrichum gloeosporioides* infection in cassava (2021) Tropical Plant Biology, 14(1), pp. 50-62.	12/1	2021
	4. Kongsawadworakul, P., Vattanatam, P., Inta, W., **Viboonjun, U.**, Swangpol, S.C. Expression of anthocyanin biosynthetic genes in ornamental bananas (2020) Acta Horticulturae, 1298, pp. 651-656.	11/0.4	2020
	5. Hormhuan, P., **Viboonjun, U.**, Sojikul, P., Narangajavana, J. Enhancing of anthracnose disease resistance indicates a potential role of antimicrobial peptide genes in cassava (2020) Genetica, 148(3-4), pp. 135-148.	12/1	2020
	6. Prasongsansuk, P., Thiangtrongjit, T., Nirapathpongporn, K., **Viboonjun, U.**, Kongsawadworakul, P., Reamtong, O., Narangajavana, J. Comparative proteomic analysis of differentially expressed	12/1	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	proteins related to phloem and xylem development in rubber tree (*Hevea brasiliensis*) (2020) Trees - Structure and Function, 34(6), pp. 1467-1485.		
	7. Nguyen, K.V., Pongkitwitoon, B., Pathomwichaiwat, T., **Viboonjun, U.**, Prathanturarug, S. Effects of methyl jasmonate on the growth and triterpenoid production of diploid and tetraploid *Centella asiatica* (L.) Urb. hairy root cultures (2019) Scientific Reports, 9(1), pp. 18665.	12/1	2019
	8. Arreewichit, P., Sae-Lim, P., Nirapathpongporn, K., **Viboonjun, U.**, Kongsawadworakul, P., Narangajavana, J. Opposite physiological effects upon jasmonic acid and brassinosteroid treatment on laticifer proliferation and co-occurrence of differential expression of genes involved in vascular development in rubber tree (2019) Physiology and Molecular Biology of Plants, 25(5), pp. 1283-1299.	12/1	2019
	9. Sae-Lim, P., Naktang, C., Yoocha, T., Nirapathpongporn, K., **Viboonjun, U.**, Kongsawadworakul, P., Tangphatsornruang, S., Narangajavana, J. Unraveling vascular development-related genes in laticifer-containing tissue of rubber tree by high-throughput	12/1	2019

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	transcriptome sequencing (2019) Current Plant Biology, 19, pp. 100112.		
	10. Patanun, O., **Viboonjun, U**., Punyasuk, N., Thitamadee, S., Seki, M., Narangajavana, J. Cassava microRNAs and storage root development (2019) Biologia Plantarum, 63, pp. 193-199.	12/1	2019
	11. Thammasiri, K., Prasongsom, S., Kongsawadworakul, P., Chuenboonngarm, N., Jenjittikul, T., Soonthornchainaksaeng, P., **Viboonjun, U.**, Muangkroot, A. Cryopreservation of *Arundina graminifolia* (D. Don) hochr. Seeds using D cryo-plate method (2019) Acta Horticulturae, 1234, pp. 301-308.	11/0.4	2019

Current Teaching Load

SCPL 503	Pollen Biology	3 (2-3-5)
SCPL 522	Advanced Plant Molecular Biology	3 (3-0-6)
SCPL 523	Techniques in Plant Molecular Biology	3 (1-6-3)
SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 611	Plant Adaptation to Environmental Changes	2 (2-0-4)
SCPL 621	Applied Plant Genetics	2 (2-0-4)
SCPL 671	Special Problems in Plant Sciences	2 (1-3-3)
SCPL 672	Seminar in Plant Sciences 1	1 (1-0-2)
SCPL 698	Thesis	12 (0-36-0)
SCPL 601	Advanced Botanical Research	1 (1-0-2)
SCPL 602	Skill in Botanical Knowledge Transfer	1 (0-2-1)
SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 622	Frontier in Plant Cell and Molecular Biology	2 (2-0-4)

SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)

Assigned Teaching Load for the Proposed Program

SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 611	Plant Adaptation to Environmental Changes	2 (2-0-4)
SCPL 671	Special Problems in Plant Sciences	2 (1-3-3)
SCPL 601	Advanced Botanical Research	1 (1-0-2)
SCPL 606	Skills in Botanical Knowledge	1 (0-2-1)
SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 621	Applied Plant Genetics	2 (2-0-4)
SCPL 622	Frontier in Plant Cell and Molecular Biology	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)

7. Name Assist. Prof. Dr. Sasivimon Swangpol

Education

Degree	Degree Name	Institute	Year
Ph.D.	Biological Sciences	Chulalongkorn University	2007
M.Sc.	Horticulture	University of Florida, Gainesville, U.S.A.	1991
B.Sc.	Botany	Chulalongkorn University	1988

Faculty/Institute/College

Department of Plant Science, Faculty of Science, Mahidol University

Interesting Research Topics or Specialties

1. Plant Systematics and Evolution: surveys of plant resource diversity, review their taxonomic status, and infer their phylogenetic relationship
2. Plant Molecular Biology: study of taxonomic lineage using DNA technology
3. Botany Education: enhancing botanical learning ability via structural models and innovative computer software and curriculum
4. Ethnobotany: study of plant uses in ethnic tribes
5. Scientific Illustrations: study benefits of illustrations to science study

Academic work as not part of the study for degree certificate and published and disseminated in accordance with the stipulated criteria regarding academic rank appointment in five retrospective years *

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	1. Kongsawadworakul, P., Vattanatam, P., Inta, W., Viboonjun, U., **Swangpol, S.C.** Expression of anthocyanin biosynthetic genes in ornamental bananas (2020) Acta Horticulturae, 1298, pp. 651–656.	11/0.4	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	2. Nilapaka, W., Jenjittikul, T., Stewart, A., Tedsungnoen, K., **Swangpol, S.C.** Floral visitors of Kluai Bua Si Som (*Musa rubra* - Musaceae): An ornamental plant in Thailand (2020) Acta Horticulturae, 1298, pp. 107–112.	11/0.4	2020
	3. Thiyajai, P., Charoenkiatkul, S., Kulpradit, K., **Swangpol, S.**, Sridonpai, P., Judprasong, K. Nutritional composition of indigenous durian varieties (2020) Malaysian Journal of Nutrition, 26(1), pp. 93-99.	12/1	2020
	4. Songnuan, W., Pichakum, A., Traiperm, P., Rungjangsuwan, E.-O., Siriwattanakul, U., Leeratsuwan, N., Chareonsap, P.P., Kulpradit, K., Somsri, S., **Swangpol, S.C.** Diversity of durian (*Durio zibethinus* L.) from Nonthaburi, Thailand based on morpho-palatability characteristics and simple sequence repeat markers (2019) Agriculture and Natural Resources, 53(3), pp. 218-227.	12/1	2019
	5. Sumanon, P., **Swangpol, S.C.**, Traiperm, P. Culm internodal anatomy of the tribe *Oryzeae* (Poaceae) in Thailand (2018) Chiang Mai Journal of Science, 45(2), pp. 832-845.	12/1	2018

Current Teaching Load

SCPL 501	Advanced Plant Taxonomy	3 (2-3-5)
SCPL 502	Ethnobotany	3 (2-3-5)
SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 671	Special Problems in Plant Sciences	2 (1-3-3)
SCPL 672	Seminar in Plant Sciences 1	1 (1-0-2)
SCPL 698	Thesis	12 (0-36-0)
SCPL 601	Advanced Botanical Research	1 (1-0-2)
SCPL 603	Frontier in Plant Systemetics and Evolution	2 (2-0-4)
SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 622	Frontier in Plant Cell and Molecular Biology	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)

Assigned Teaching Load for the Proposed Program

SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 671	Special Problems in Plant Sciences	2 (1-3-3)
SCPL 601	Advanced Botanical Research	1 (1-0-2)
SCPL 605	Frontier in Plant Systematics and Evolution	2 (2-0-4)
SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 622	Frontier in Plant Cell and Molecular Biology	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)

8. Name Assist. Prof. Dr. Aussanee Pichakum

Education

Degree	Degree Name	Institute	Year
Ph.D.	Plant Science	Chiba University, Japan	1995
M.Sc.	Agriculture	Kasetsart University	1988
B.Sc.	Agriculture	Kasetsart University	1984

Faculty/Institute/College

Department Plant Science, Faculty of Science, Mahidol University

Interesting Research Topics or Specialties

1. Performances of plant response through plant growth regulators use and stress condition
2. Fruit science focusing on kiwifruit, Japanese apricot, longan and durian productivity under climate changes

Academic work as not part of the study for degree certificate and published and disseminated in accordance with the stipulated criteria regarding academic rank appointment in five retrospective years *

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	1. Khwankaew, J., Bunnag, W., **Pichakum, A.,** Songnuan, W., Dhammasamisorn, B., Narawatthana, S., Chotechuen, S., Chamarerk, V. & Meetam, M. Differences in nutrient remobilization characteristics and relationship to senescence and grain nutrient content among rice varieties (2022) Journal of Crop Science and Biotechnology, https://doi.org/10.1007/s12892-022-	12/1	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	00141-9 2. Saengow, C., Wongsapsakul, N., Cha-um, S., Tisarum, R., Tulyananda, T., Nimpaiboon, A., **Pichakum, A.**, Yooyongwech, S. High temperature enhanced zinc and water content in inflorescences and shoot tips of longan (*Dimocarpus longan* Lour.) (2021) Acta Horticulturae, 1312, pp. 151-156.	11/0.4	2021
	3. **Pichakum, A.**, Kaewmanee, C., Detpitthayanan, S., Chintakovid, W. Effect of hot wind on insects in longan (*Dimocarpus longan* Lour.) orchard during off-season production in the Chao Phraya Delta (2021) Acta Horticulturae, 1312, pp. 367-372.	11/0.4	2021
	4. Phetkhajone, S., **Pichakum, A.**, Songnuan, W. The study of the kinetics of metalaxyl accumulation and dissipation in durian (*Durio zibethinus* L.) leaf using high-performance liquid chromatography (HPLC) technique (2021) Plants, 10(4), p. 708.	12/1	2021
	5. Pichakum, N., **Pichakum, A.** Evaluating the drought endurance of landscaping ground cover plants in a roof top model. Horticulturae, 7(2), p.31.	12/1	2021
	6. Srikoat, P., **Pichakum, A.**, Boonkorkaew, P., Pichakum, N. Effect of paclobutrazol on growth of young potted flame tree	11/0.4	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	(*Delonix regia* (Hook.) Raf.) (2020) Acta Horticulturae, 1298, pp. 443–449.		
	7. Meetam, M., Sripintusorn, N., Songnuan, W., Siriwattanakul, U., **Pichakum, A.** Assessment of physiological parameters to determine drought tolerance of plants for extensive green roof architecture in tropical areas (2020) Urban Forestry and Urban Greening, 56, pp. 26874.	12/1	2020
	8. **Pichakum, A.**, Traisuwan, N., Kammak, C., Chintakovid, W. Climate change affecting off-season longan (*Dimocarpus longan* Lour.) production at alluvial plains of Thailand (2020) Acta Horticulturae, 1293, pp. 231-237.	11/0.4	2020
	9. Traisuwan, N., Kammak, C., Chintakovid, W., **Pichakum, A.** Effect of hot wind on annual growth of longan (*Dimocarpus longan* Lour.) (2020) Acta Horticulturae, 1293, pp. 225-230.	11/0.4	2020
	10. Detpitthayanan, S., Romyanon, K., Songnuan, W., Metam, M., **Pichakum, A.** Paclobutrazol Application Improves Grain 2AP Content of Thai Jasmine Rice KDML105 under Low-Salinity Conditions (2019) Journal of Crop Science and Biotechnology, 22(3), pp. 275-282.	12/1	2019
	11. Songnuan, W., **Pichakum, A.**, Traiperm, P., Rungjangsuwan, E.-O., Siriwattanakul, U., Leeratsuwan, N., Chareonsap, P.P.,	12/1	2019

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	Kulpradit, K., Somsri, S., Swangpol, S.C. Diversity of durian (*Durio zibethinus* L.) from Nonthaburi, Thailand based on morpho-palatability characteristics and simple sequence repeat markers (2019) Agriculture and Natural Resources, 53(3), pp. 218-227.		
	12. **Pichakum, A.**, Chaiwimol, W., Meetam, M., Songnuan, W. Responses of green kiwifruit grown in low-chill area to hydrogen cyanamide application (2018) Acta Horticulturae, 1206, pp. 97-103.	11/0.4	2018

Current Teaching Load

SCPL 511	Plant Bioregulators	2 (2-0-4)
SCPL 611	Plant Adaptation to Environmental Changes	2 (2-0-4)
SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 671	Special Problems in Plant Sciences	2 (1-3-3)
SCPL 672	Seminar in Plant Sciences 1	1 (1-0-2)
SCPL 698	Thesis	12 (0-36-0)
SCPL 601	Advanced Botanical Research	1 (1-0-2)
SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 612	Frontier in Plant Physiology	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)

Assigned Teaching Load for the Proposed Program

SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 671	Special Problems in Plant Sciences	2 (1-3-3)
SCPL 601	Advanced Botanical Research	1 (1-0-2)

SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 612	Frontier in Plant Physiology	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)

9. Name Assist. Prof. Dr. Wisuwat Songnuan

Education

Degree	Degree Name	Institute	Year
Ph.D.	Genetics	Harvard University, USA	2009
B.Sc.	Biology	Duke University, USA	2002

Faculty/Institute/College

Department Plant Science, Faculty of Science, Mahidol University

Interesting Research Topics or Specialties

Pollen allergy

Academic work as not part of the study for degree certificate and published and disseminated in accordance with the stipulated criteria regarding academic rank appointment in five retrospective years *

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	1. Phetkhajone, S., Pichakum, A., **Songnuan, W.** The study of the kinetics of metalaxyl accumulation and dissipation in durian (*Durio zibethinus* L.) leaf using high-performance liquid chromatography (HPLC) technique (2021) Plants, 10(4), 708.	12/1	2021
	2. Meetam, M., Sripintusorn, N., **Songnuan, W.**, Siriwattanakul, U., Pichakum, A. Assessment of physiological parameters to determine drought tolerance of plants for extensive green roof architecture in tropical areas (2020) Urban Forestry and	12/1	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	Urban Greening, 56, pp. 126874.		
	3. Naclerio, R., Ansotegui, I.J., Bousquet, J., Canonica, G.W., D'Amato, G., Rosario, N., Pawankar, R., Peden, D., Bergmann, K.-C., Bielory, L., Caraballo, L., Cecchi, L., Cepeda, S.A.M., Chong Neto, H.J., Galán, C., Gonzalez Diaz, S.N., Idriss, S., Popov, T., Ramon, G.D., Ridolo, E., Rottem, M., **Songnuan, W.**, Rouadi, P. International expert consensus on the management of allergic rhinitis (AR) aggravated by air pollutants: Impact of air pollution on patients with AR: Current knowledge and future strategies (2020) World Allergy Organization Journal, 13(3), pp. 100106.	12/1	2020
	4. Opasawatchai, A., Yolwong, W., Thuncharoen, W., Inrueangsri, N., Itsaradisaikul, S., Sasisakulporn, C., Jotikasthira, W., Matangkasombut, O., Reamtong, O., Manuyakorn, W., **Songnuan, W.**, Matangkasombut, P. Novel salivary gland allergens from tropical mosquito species and IgE reactivity in allergic patients (2020) World Allergy Organization Journal, 13(2), pp. 100099.	12/1	2020
	5. Siriwattanakul, U., Piboonpocanun, S., **Songnuan, W.** Rapid pollen rupture and release of pollen cytoplasmic	12/1	2019

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	granules upon hydration of allergenic grass and weed species commonly found in subtropical regions (2019) Aerobiologia, 35(4), pp. 719-730.		
	6. Detpitthayanan, S., Romyanon, K., **Songnuan, W.**, Metam, M., Pichakum, A. Paclobutrazol Application Improves Grain 2AP Content of Thai Jasmine Rice KDML105 under Low-Salinity Conditions (2019) Journal of Crop Science and Biotechnology, 22(3), pp. 275-282.	12/1	2019
	7. Pakdee, O., **Songnuan, W.**, Panvisavas, N., Pokethitiyook, P., Yokthongwattana, K., Meetam, M. Functional characterization of metallothionein-like genes from Physcomitrella patens: expression profiling, yeast heterologous expression, and disruption of PpMT1.2a gene (2019) Planta, 250(2), pp. 427-443.	12/1	2019
	8. Aud-In, S., Somkid, K., **Songnuan, W.** Group-1 grass pollen allergens with near-identical sequences identified in species of subtropical grasses commonly found in Southeast Asia (2019) Medicina (Lithuania), 55(5), pp. 193.	12/1	2019
	9. Dhammachat, S., Somkid, K., Piboonpocanun, S., Reamtong, O., Pacharn, P., Bunnag, C., Nakano, M., **Songnuan, W.** Isoforms of group 1	12/1	2019

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	allergens from a tropical/ subtropical para grass (*Urochloa mutica*) display different levels of igE reactivity and cross-reactivity (2019) European Annals of Allergy and Clinical Immunology, 51(4), pp. 174-185.		
	10. **Songnuan, W.,** Pichakum, A., Traiperm, P., Rungjangsuwan, E.-O., Siriwattanakul, U., Leeratsuwan, N., Chareonsap, P.P., Kulpradit, K., Somsri, S., Swangpol, S.C. Diversity of durian (*Durio zibethinus* L.) from Nonthaburi, Thailand based on morpho-palatability characteristics and simple sequence repeat markers (2019) Agriculture and Natural Resources, 53(3), pp. 218-227.	12/1	2019
	11. **Songnuan, W.**, Bunnag, C., Soontrapa, K., Pacharn, P., Wangthan, U., Siriwattanakul, U., Malainual, N. Airborne fungal spore distribution in Bangkok, Thailand: correlation with meteorological variables and sensitization in allergic rhinitis patients (2018) Aerobiologia, 34(4), pp. 513-524.	12/1	2018
	12. Pichakum, A., Chaiwimol, W., Meetam, M., **Songnuan, W.** Responses of green kiwifruit grown in low-chill area to hydrogen cyanamide application (2018) Acta Horticulturae, 1206, pp. 97-103.	11/0.4	2018
	13. Yoodee, S., Kobayashi, Y., **Songnuan,**	12/1	2018

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	W., Boonchird, C., Thitamadee, S., Kobayashi, I., Narangajavana, J. Phytohormone priming elevates the accumulation of defense-related gene transcripts and enhances bacterial blight disease resistance in cassava (2018) Plant Physiology and Biochemistry, 122, pp. 65-77.		

Current Teaching Load

SCPL 503	Pollen Biology	3 (2-3-5)
SCPL 511	Plant Bioregulators	2 (2-0-4)
SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 611	Plant Adaptation to Environmental Changes	2 (2-0-4)
SCPL 671	Special Problems in Plant Sciences	2 (1-3-3)
SCPL 672	Seminar in Plant Sciences 1	1 (1-0-2)
SCPL 698	Thesis	12 (0-36-0)
SCPL 601	Advanced Botanical Research	1 (1-0-2)
SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 622	Frontier in Plant Cell and Molecular Biology	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)

Assigned Teaching Load for the Proposed Program

SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 611	Plant Adaptation to Environmental Changes	2 (2-0-4)
SCPL 671	Special Problems in Plant Sciences	2 (1-3-3)
SCPL 601	Advanced Botanical Research	1 (1-0-2)
SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 622	Frontier in Plant Cell and Molecular Biology	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)

10. Name Assist. Prof. Dr. Saroj Ruchisansakun

Education

Degree	Degree Name	Institute	Year
Ph.D.	Biology: Understanding Evolution	Leiden University, The Netherlands	2018
M.Sc.	Plant Sciences	Mahidol University	2016
B.Sc.	Plant Science	Mahidol University	2010

Faculty/Institute/College

Department Plant Science, Faculty of Science, Mahidol University

Interesting Research Topics or Specialties

Systematics, Evolution, and Pollination Biology of Balsaminaceae and Zingiberaceae; Conservation Biology; Ethnobotany.

Academic work as not part of the study for degree certificate and published and disseminated in accordance with the stipulated criteria regarding academic rank appointment in five retrospective years *

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	1. **Ruchisansakun, S.**, Suksathan, P., Triboun, P. and Sinrothanakorn, C., Impatiens tanintharyiensis, a new record of Impatiens sect. Semeiocardium (Balsaminaceae) for Thailand (2021) Thai Forest Bulletin (Botany), 49(1), pp.44-48.	12/1	2021
	2. **Ruchisansakun, S.**, Mertens, A., Janssens, S. B., Smets, E. F., & van der Niet, T. Evolution of pollination syndromes and corolla symmetry in Balsaminaceae reconstructed using	12/1	2021

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	phylogenetic comparative analyses (2021) Annals of Botany, 127(2), pp. 267-280.		
	3. Jenjittikul, T., **Ruchisansakun, S.** *Kaempferia albiflora* (Zingiberaceae), a new species from Thailand (2020) Kew Bulletin, 75(1), pp. 13.	12/1	2020
	4. Jenjittikul, T., **Ruchisansakun, S.** *Stephania kaweesakii* (Menispermaceae), a new tuberous species from Thailand (2020) Phytotaxa, 464(3), pp. 257-260.	12/1	2020
	5. **Ruchisansakun, S.**, Jenjittikul, T., & Maknoi, C. *Scaphochlamys longipedunculata*, a new species from Southern Thailand (2020) Edinburgh Journal of Botany, 77(3), pp. 543-549.	12/1	2020
	6. **Ruchisansakun, S.**, Triboun, P., Suksathan, P. *Impatiens capillipes* (Balsaminaceae), a new record for Thailand (2020) Thai Forest Bulletin (Botany), 48(1), pp. 48-51.	12/1	2020
	7. **Ruchisansakun, S.**, & Suksathan, P. Impatiens jenjittikuliae (Balsaminaceae), a new species from Thailand (2019) PhytoKeys, 124, pp. 139-147.	12/1	2019
	8. Maknoi C., **Ruchisansakun S.**, Jenjittikul T. *Curcuma putii* (Zingiberaceae), a new species from Thailand (2019) Annales Botanici Fennici, 56, pp. 351-353.	12/1	2019
	9. **Ruchisansakun, S**., Suksathan, P., Van Der Niet, T., Smets, E. F., Lwin, S., &	12/1	2018

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	Janssens, S. B. Three new species of *Impatiens* (Balsaminaceae) from Myanmar (2018) Phytotaxa, 338(1), pp. 63-74. 10. **Ruchisansakun, S.**, Suksathan, P., Van der Niet, T., Smets, E. F., & Janssens, S. B. Balsaminaceae of Myanmar. (2018) Blumea-Biodiversity, Evolution and Biogeography of Plants, 63(3), pp. 199-267.	12/1	2018

Current Teaching Load

SCPL 671	Special Problems in Plant Sciences	2 (1-3-3)
SCPL 672	Seminar in Plant Sciences 1	1 (1-0-2)
SCPL 698	Thesis	12 (0-36-0)
SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 603	Frontier in Plant Systemetics and Evolution	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)

Assigned Teaching Load for the Proposed Program

SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 671	Special Problems in Plant Sciences	2 (1-3-3)
SCPL 601	Advanced Botanical Research	1 (1-0-2)
SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 605	Frontier in Plant Systematics and Evolution	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)

11. Name Assist. Prof. Dr. Ngarmnij Chuenboonngarm

Education

Degree	Degree Name	Institute	Year
Ph.D.	Bioscience	Kasetsart University	2007
M.Sc.	Environmental Biology	Mahidol University	1991
B.Sc.	Chemical Biology	Silpakorn University	1986

Faculty/Institute/College

Department Plant Science, Faculty of Science, Mahidol University

Interesting Research Topics or Specialties

1. *In vitro* collection, propagation, improvement of wild and cultivated plants of Zingiberaceae, Carnivorous plants, rare and endemic species
2. Role of plant growth regulator on carbohydrate to improve plant growth and development

Academic work as not part of the study for degree certificate and published and disseminated in accordance with the stipulated criteria regarding academic rank appointment in five retrospective years *

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	1. Chuengpanya, R., Jenjittikul, T., Muangkroot, A., Chuenboonngarm, N. In vitro Propagation of *Coleus albicalyx* (Suddee) Suddee, a Rare Plant of Thailand (2021) Brurapha Science Journal, 26(3), pp.1364-1370	9/0.6	2021
	2. Chuengpanya, R., **Chuenboonngarm, N.**, Sakchaichanchol, K., Muangkroot, A., Thammasiri, K. In vitro propagation and callus induction of *Hedychium*	11/0.4	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	longicornutum Griff. ex Baker using different explants (2020) Acta Horticulturae, 1298, pp. 323-330.		
	3. Prasongsom, S., Thammasiri, K., **Chuenboonngarm, N.**, Panvisavas, N. Narangajavana, J., Thitamadee, S. Conservation of *Dendrobium cruentum* rchb. f. (2020) Acta Horticulturae, 1298, pp. 187-194	11/0.4	2020
	4. Chart, C., Chuengpanya, R., Muangkroot, A., Jenjittikul, T. & **Chuenboonngarm, N**. Propagation of *Gentiana nudicalis* Kurz subsp. lakshnakarae (Kerr) Halda by tissue culture. (2020) Thai Journal of Botany, 12(1), pp. 69-90.	9/0.6	2020
	5. Chuengpanya, R., Pornchuti, W., Muangkroot, A., Jenjittikul, T., **Chuenboonngarm, N.** *In vitro* propagation of *Zehneria platysperma* (W.J. de Wilde & Duyfjes) H. Schaef. & S.S. Renner (Cucurbitaceae), an endemic plant of Thailand (2020) Acta Horticulturae, 1285, pp. 221-230.	11/0.4	2020
	6. Nopporncharoenkul, N., Jenjittikul, T., **Chuenboonngarm, N.**, Anamthawat-Jónsson, K., Umpunjun, P. Cytogenetic verification of *Curcuma candida* (Zingiberaceae) from Thailand and Myanmar (2020) Thai Forest Bulletin (Botany), 48(1), pp. 7-17.	12/1	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	7. Imsomboon, T., Thammasiri, K., Kosiyajinda, P., **Chuenboonngarm, N.**, Panvisavas, N. Cryopreservation of protocorm-like bodies of *Vanda lilacina* Teijsm. & Binn., a Thai orchid species, by V-cryo-plate and D-cryo-plate methods (2020) Walailak Journal of Science and Technology, 17(4), pp. 369–379.	12/1	2020
	8. Prasongsom, S., Thammasiri, K., Narangajavana, J., Thitamadee, S., **Chuenboonngarm, N.**, Panvisavas, N. Cryopreservation of *Dendrobium cruentum* Rchb. F. seeds by D cryo-plate and V cryo-plate techniques (2020) Walailak Journal of Science and Technology, 17(3), 181-191.	12/1	2020
	9. Imsomboon, T., Thammasiri, K., Kosiyajinda, P., **Chuenboonngarm, N.**, Panvisavas, N. Cryopreservation of non-precultured protocorms of *Acampe rigida* (Buch.-Ham. Ex Sm.) P.F. Hunt using V cryo-plate and D cryo-plate methods (2019) Acta Horticulturae, 1234, pp. 269-278.	11/0.4	2019
	10. Prasongsom, S., Thammasiri, K., Narangajavana, J., Thitamadee, S., **Chuenboonngarm, N.**, Panvisavas, N. Vitrification-based cryopreservation of *Dendrobium cruentum* Rchb. F. Seeds (2019) Acta Horticulturae, 1234, pp. 157-166.	11/0.4	2019

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	11. Thammasiri, K., Prasongsom, S., Kongsawadworakul, P., **Chuenboonngarm, N.**, Jenjittikul, T., Soonthornchainaksaeng, P., Viboonjun, U., Muangkroot, A. Cryopreservation of *Arundina graminifolia* (D. Don) hochr. Seeds using D cryo-plate method (2019) Acta Horticulturae, 1234, pp. 301-308.	11/0.4	2019

Current Teaching Load

SCPL 503	Pollen Biology	3 (2-3-5)
SCPL 524	Plant Mutation	3 (3-0-6)
SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 611	Plant Adaptation to Environmental Changes	2 (2-0-4)
SCPL 671	Special Problems in Plant Sciences	2 (1-3-3)
SCPL 672	Seminar in Plant Sciences 1	1 (1-0-2)
SCPL 698	Thesis	12 (0-36-0)
SCPL 601	Advanced Botanical Research	1 (1-0-2)
SCPL 602	Skill in Botanical Knowledge Transfer	1 (0-2-1)
SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 612	Frontier in Plant Physiology	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)

Assigned Teaching Load for the Proposed Program

SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 611	Plant Adaptation to Environmental Changes	2 (2-0-4)
SCPL 671	Special Problems in Plant Sciences	2 (1-3-3)
SCPL 601	Advanced Botanical Research	1 (1-0-2)
SCPL 606	Skills in Botanical Knowledge Transfer	1 (0-2-1)
SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 612	Frontier in Plant Physiology	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)

12. Name Assist. Prof. Dr. Panida Kongsawadworakul

Education

Degree	Degree Name	Institute	Year
Ph.D.	Plant Cell and Molecular Biology	Universite Montpellier II, France	2003
M.Sc.	Biotechnology	Mahidol University	1998
B.Sc.	Biotechnology	Mahidol University	1994

Faculty/Institute/College

Department Plant Science, Faculty of Science, Mahidol University

Interesting Research Topics or Specialties

1. Biochemistry and molecular biology of rubber tree
2. Molecular genetics of the onset of Trunk Phloem Necrosis in rubber tree
3. Physiological and molecular mechanisms of Hevea latex coagulation
4. Biotechnological improvement of rubber tree
5. Transcriptome and proteome analysis in plant research

Academic work as not part of the study for degree certificate and published and disseminated in accordance with the stipulated criteria regarding academic rank appointment in five retrospective years *

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	1. Tungmunnithum, D., **Kongsawadworakul, P.**, Hano, C. A cosmetic perspective on the antioxidant flavonoids from *Nymphaea lotus* L. (2021) Cosmetics, 1, pp. 1-9.	12/1	2021
	2. **Kongsawadworakul, P.**, Vattanatam, P., Inta, W., Viboonjun, U., Swangpol, S.C. Expression of anthocyanin biosynthetic genes in ornamental bananas (2020) Acta	11/0.4	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	Horticulturae, 1298, pp. 651-656.		
	3. Tabtipwon, P., Temsiririrkkul, R., Thongpraditchote, S., Buranaphalin, S., Bongcheewin, B., **Kongsawadworakul, P.** Anti-inflammatory activity of *Curcuma cf. amada* Roxb. 'Wan en Lueang' (2020) Pharmaceutical Sciences Asia, 47(2), pp. 121-129.	12/1	2020
	4. Prasongsansuk, P., Thiangtrongjit, T., Nirapathpongporn, K., Viboonjun, U., **Kongsawadworakul, P.**, Reamtong, O., Narangajavana, J. Comparative proteomic analysis of differentially expressed proteins related to phloem and xylem development in rubber tree (*Hevea brasiliensis*) (2020) Trees - Structure and Function, 34(6), pp. 1467–1485	12/1	2020
	5. Arreewichit, P., Sae-Lim, P., Nirapathpongporn, K., Viboonjun, U., **Kongsawadworakul, P.**, Narangajavana, J. Opposite physiological effects upon jasmonic acid and brassinosteroid treatment on laticifer proliferation and co-occurrence of differential expression of genes involved in vascular development in rubber tree (2019) Physiology and Molecular Biology of Plants, 25(5), pp. 283-1299.	12/1	2019
	6. Sae-Lim, P., Naktang, C., Yoocha, T., Nirapathpongporn, K., Viboonjun, U.,	12/1	2019

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	Kongsawadworakul, P., Tangphatsornruang, S., Narangajavana, J. Unraveling vascular development-related genes in laticifer-containing tissue of rubber tree by high-throughput transcriptome sequencing (2019) Current Plant Biology, 19, pp. 100112.		
	7. Bongcheewin, B., Darbyshire, I., Satitpatipan, V., **Kongsawadworakul, P.** Taxonomic revision of *Clinacanthus* (Acanthaceae) in Thailand (2019) Phytotaxa, 391(4), pp. 253-263.	12/1	2019
	8. Thammasiri, K., Prasongsom, S., **Kongsawadworakul, P.**, Chuenboonngarm, N., Jenjittikul, T., Soonthornchainaksaeng, P., Viboonjun, U., Muangkroot, A. Cryopreservation of *Arundina graminifolia* (D. Don) hochr. Seeds using D cryo-plate method (2019) Acta Horticulturae, 1234, pp. 301-308.	12/1	2019

Current Teaching Load

SCPL 522	Advanced Plant Molecular Biology	3 (3-0-6)
SCPL 523	Techniques in Plant Molecular Biology	3 (1-6-3)
SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 621	Applied Plant Genetics	2 (2-0-4)
SCPL 671	Special Problems in Plant Sciences	2 (1-3-3)
SCPL 672	Seminar in Plant Sciences 1	1 (1-0-2)
SCPL 698	Thesis	12 (0-36-0)
SCPL 601	Advanced Botanical Research	1 (1-0-2)

SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 622	Frontier in Plant Cell and Molecular Biology	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)

Assigned Teaching Load for the Proposed Program

SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 671	Special Problems in Plant Sciences	2 (1-3-3)
SCPL 601	Advanced Botanical Research	1 (1-0-2)
SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 622	Frontier in Plant Cell and Molecular Biology	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)

13. Name Assist. Prof. Dr. Alyssa Stewart

Education

Degree	Degree Name	Institute	Year
Ph.D.	Biological Sciences (Ecology & Evolution)	University of Maryland, USA	2016
B.Sc.	Biology	University of North Carolina, USA	2008

Faculty/Institute/College

Department Plant Science, Faculty of Science, Mahidol University

Interesting Research Topics or Specialties

1. Pollination ecology
2. Plant-animal interactions
3. Biodiversity and conservation

Academic work as not part of the study for degree certificate and published and disseminated in accordance with the stipulated criteria regarding academic rank appointment in five retrospective years *

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	1. **Stewart, A.B.**, Diller, C., Dudash, M.R., Fenster, C.B. Pollination-precision hypothesis: support from native honey bees and nectar bats (2022) New Phytologist, doi: 10.1111/nph.18050	12/1	2022
	2. Jirabanjongjit, A., Traiperm, P., Sando, T., **Stewart, A.B.** Pollination and floral biology of a rare morning glory species endemic to Thailand, *Argyreia siamensis* (2021) Plants, 10(11), pp. 2402.	12/1	2021
	3. Subedi, B., **Stewart, A.B.**, Neupane, B.,	12/1	2021

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	Ghimire, S., Adhikari, H. Butterfly species diversity and their floral preferences in the Rupa Wetland of Nepal (2021) Ecology and Evolution, 11(5), pp. 2086–2099.		
	4. Diego, C.E.N., **Stewart, A.B.**, Bumrungsri, S. Pollinators necessary for the reproductive success of critically endangered mangrove, *Sonneratia griffithii* (2021) Aquatic Botany, 169, pp. 103340.	12/1	2021
	5. Olaranont, Y., **Stewart, A.B.**, Traiperm, P. Effects of crude oil on plant growth and leaf anatomical structures in a common coastal plant (2021) International Journal of Phytoremediation, 23(2), pp. 162-170.	12/1	2021
	6. Hassa, P., Traiperm, P., **Stewart, A.B.** Pollinator visitation and female reproductive success in two floral color morphs of *Ipomoea aquatica* (Convolvulaceae) (2020) Plant Systematics and Evolution, 306: pp.1-11.	12/1	2020
	7. **Stewart, A.B.**, Waitayachart, P. Year-round temporal stability of a tropical, urban plant-pollinator network (2020) PLoS ONE, 15 (4), pp. e0230490.	12/1	2020
	8. Diego, C.E.N., **Stewart, A.B.**, Bumrungsri, S. Pollinators increase reproductive success of a self-compatible Mangrove, *Sonneratia ovata*, in Southern Thailand	12/1	2019

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	(2019) Tropical Natural History, 19(2), pp. 88-102.		
	9. Olaranont, Y., **Stewart, A.B.**, Traiperm, P. Physiological and anatomical responses of a common beach grass to crude oil pollution (2018) Environmental Science and Pollution Research, 25(28), pp. 28075-28085.	12/1	2018
	10. Wayo, K., Phankaew, C., **Stewart, A.B.**, Bumrungsri, S. Bees are supplementary pollinators of self-compatible chiropterophilous durian (2018) Journal of Tropical Ecology, 34(1), pp. 41-52.	12/1	2018
	11. **Stewart, A.B.**, Sritongchuay, T., Teartisup, P., Kaewsomboon, S., Bumrungsri, S. Habitat and landscape factors influence pollinators in a tropical megacity, Bangkok, Thailand (2018) PeerJ-Life & Environment, 6, pp. e5335	12/1	2018

Current Teaching Load

SCPL 501	Advanced Plant Taxonomy	3 (2-3-5)
SCPL 503	Pollen Biology	3 (2-3-5)
SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 572	Applied Statistics for Plant Science	1 (1-0-2)
SCPL 671	Special Problems in Plant Sciences	2 (1-3-3)
SCPL 672	Seminar in Plant Sciences 1	1 (1-0-2)
SCPL 698	Thesis	12 (0-36-0)
SCPL 601	Advanced Botanical Research	1 (1-0-2)
SCPL 603	Frontier in Plant Systemetics and Evolution	2 (2-0-4)

SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)

Assigned Teaching Load for the Proposed Program

SCPL 562	Integrative Plant Sciences	2 (1-2-3)
SCPL 572	Applied Statistics for Plant Science	1 (1-0-2)
SCPL 601	Advanced Botanical Research	1 (1-0-2)
SCPL 605	Frontier in Plant Systematics and Evolution	2 (2-0-4)
SCPL 604	Frontier in Interdisciplinary Botany	2 (2-0-4)
SCPL 673	Seminar in Advanced Botany I	1 (1-0-2)
SCPL 674	Seminar in Advanced Botany II	1 (1-0-2)
SCPL 699	Dissertation	36 (0-108-0)
SCPL 799	Dissertation	48 (0-144-0)

14. Name Assist. Prof. Dr. Benyakan Pongkitwitoon

Education

Degree	Degree Name	Institute	Year
Ph.D.	Pharmaceutical Sciences	Kyushu University, Japan	2014
M.Pharm.	Pharmaceuticals	Khon Kaen University	2009
B.Pharm.	-	Khon Kaen University	2008

Faculty/Institute/College

Department of Pharmaceutical Botany, Faculty of Pharmacy, Mahidol University

Interesting Research Topics or Specialties

1. Improvement of medicinal plant secondary metabolites using biotechnological approaches
2. Development of immunoassays to determine plant bioactive compounds

Academic work as not part of the study for degree certificate and published and disseminated in accordance with the stipulated criteria regarding academic rank appointment in five retrospective years *

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Sakamoto S., Uchiyama H., Yusakul G, Kyokong N., **Pongkitwitoon B.,** Putalun, W., Tanaka H., Morimoto S. Open sandwich fluorescence-linked immunosorbent assay for detection of soy isoflavone glycosides (2021) Food Chemistry, 361, 129829.	12 / 1	2021
	Pongkitwitoon B., Simpan K., Chobsri T., Sritularak B., Putalun, W. Combined UV-C irradiation and precursor feeding enhances mulberroside: A production in *Morus alba* L. cell suspension cultures (2020) ScienceAsia, 46(6), pp. 679–685.	12 / 1	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	Boonsnongcheep S., **Pongkitwitoon B.** Factors affecting micropropagation of *Cannabis sativa* L.: A review (2020) Pharmaceutical Sciences Asia, 47(1), pp. 21–29.	12 / 1	2020
	Pongkitwitoon B., Boonsnongcheep S., Kitisripanya T., Yusakul G., Sakamoto S., Tanaka H., Morimoto S., Putalun W. Preparation of a highly specific single chain variable fragment antibody targeting miroestrol and its application in quality control of *Pueraria candollei* by enzyme-linked immunosorbent assay. (2019) Phytochemical Analysis, 30:6, 600-608.	12 / 1	2019
	Nguyen K.V., **Pongkitwitoon B.,** Pathomwichaiwat T., Viboonjun U., Prathanturarug S. Effects of methyl jasmonate on the growth and triterpenoid production of diploid and tetraploid *Centella asiatica* (L.) Urb. hairy root cultures. (2019) Scientific Reports, 9:1,18665.	12 / 1	2019
	Jutathis K., **Pongkitwitoon B.,** Sritularak B., Tanaka H., Putalun W. Development of monoclonal antibody-based enzyme-linked immunosorbent assay for quantitative quality control of *Derris scandens* (Roxb.) Benth. (2019) Journal of Immunoassay and Immunochromatography. 40:4, 407-418.	12 / 1	2019
	Pongkitwitoon B., Sakamoto S., Nagamitsu	12 / 1	2018

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	R., Putalun W., Tanaka H., Morimoto S. A monoclonal antibody-based enzyme-linked immunosorbent assay for determination of homoharringtonine, (2018) Planta Medica. 84:14, 1038-1044.		

Current Teaching Load

PYPB 621	Integrative Pharmaceutical Botany	2 (1-2-3)
PYPB 612	Conservation and Utilization of Medicinal Plant	3 (3-0-6)
PYPB 607	Development of Herbal Medicine	3 (2-3-5)
PYPB 610	Current Topics in Pharmaceutical Botany	2 (2-0-4)
PYPB 695	Applied Plant Biotechnology in Pharmaceutical Sciences	3 (2-3-5)
PYPB 698	Thesis	12 (0-36-0)
SCPL 564	Plant Growth Promotion	3 (2-3-5)
SCPL 672	Seminar in Plant Sciences I	1 (1-0-2)

Assigned Teaching Load for the Proposed Program

PYPB 621	Integrative Pharmaceutical Botany	2 (1-2-3)
PYPB 612	Conservation and Utilization of Medicinal Plant	3 (3-0-6)
PYPB 607	Development of Herbal Medicine	3 (2-3-5)
PYPB 610	Current Topics in Pharmaceutical Botany	2 (2-0-4)
PYPB 695	Applied Plant Biotechnology in Pharmaceutical Sciences	3 (2-3-5)
PYPB 698	Thesis	12 (0-36-0)
SCPL 564	Plant Growth Promotion	3 (2-3-5)
SCPL 672	Seminar in Plant Sciences I	1 (1-0-2)

15. Name Assist. Prof. Dr. Bhanubong Bongcheewin

Education

Degree	Degree Name	Institute	Year
Ph.D.	Plant Systematics	Birkbeck College, University of London, UK.	2014
M.Sc.	Biology	Khon Kaen University	2005
B.Sc.	Pharmacy	Khon Kaen University	2001

Faculty/Institute/College

Department of Pharmaceutical Botany, Faculty of Pharmacy, Mahidol University

Interesting Research Topics or Specialties

1. Plant Systematics
2. Botanical crude drug authentication
3. Chemotaxonomy

Academic work as not part of the study for degree certificate and published and disseminated in accordance with the stipulated criteria regarding academic rank appointment in five retrospective years *

Type of academic work	Title	Standard criteria and Weights	Year of publication
published research	Pansumrit P, Pathomwichaiwat T, Kladwong P, Tiyaworanant S, Nguanchoo V, **Bongcheewin B**, An ethnobotanical study of the genus *Smilax* in Thailand and its botanical authentication for Hua-khao-yen crude drugs. Pharmaceutical Sciences Asia, 2022; 49:230-41.	12/1	April 2022
published research	**Bongcheewin B**, Poopath M, Paton A, *Gomphostemma phetchaburiense* (Lamiaceae), a new species from a limestone karst in southwest Thailand, Blumea. 2022; 67:33–6.	12/1	March 2022
published research	**Bongcheewin B**, Ingrouille MJ, Paton AJ, A revision of *Gomphostemma* (Lamiaceae). Kew	12/1	March 2022

Type of academic work	Title	Standard criteria and Weights	Year of publication
	Bulletin. 2022; DOI 10.1007/S12225-021-09991-Y.		
published research	Kabkrathok P, Jarussophon S, Unger O, Lomarat P, Reutrakul V, Pittayanurak P, **Bongcheewin B**, Anantachoke N, Mass spectral analysis of secondary metabolites from *Zingiber montanum* rhizome extract using UHPLC-HR-ESI-QTOF-MS/MS. Phytochemical Analysis. 2021; 1–15.	12/1	May/2021
published research	Sato R, Sasaki A, Mori Y, Komai M, Kamo S, Onuki M, Seki T, Kawabe Z, Miyajima S, Tomoshige S, Kawasaki T, Sato S, Nakamura T, Kubo N, Takeda S, Date S, Okamoto S, Boonyaritthongchai P, Thirapanmethee K, Chomnawang MT, **Bongcheewin B**, Nguyen TL, Nguyen HLT, Le HT, Nakamura Y, Kuramochi K, Investigation on the epoxidation of piperitenone and structure-activity relationships of piperitenone oxide for differentiation-inducing activity. Journal of Oleo Science. 2020; 69(8):951-8.	12 / 1	April/2020
published research	Tabtipwon P, Temsiririrrirkkul R, Thongpraditchote S, Buranaphalin S, **Bongcheewin B**, Kongsawadworakul P, Anti-inflammatory activity of *Curcuma* cf. *amada* Roxb. 'Wan en Lueang'. Pharmaceutical Sciences Asia. 2020; 47(2):121-9.	12 / 1	April/2020
published research	Aneklaphakij C, Bunsupa S, Sirichamorn Y, **Bongcheewin B**, Satitpatipan V. Taxonomic notes on the ' Mahat' (*Artocarpus lacucha*, Moraceae) species complex in Thailand. Plants. 2020; 9(391):1-17.	12 / 1	March/2020

Type of academic work	Title	Standard criteria and Weights	Year of publication
published research	**Bongcheewin B**, Darbyshire I, Satitpatipan V, Kongsawadworakul P. Taxonomic revision of *Clinacanthus* (Acanthaceae) in Thailand. Phytotaxa. 2019;391(4):253-63.	12/1	Feb/2019
published research	Rattanamaneerusmee A, Thirapanmethee K, Nakamura Y, **Bongcheewin B**, Chomnawang MT. Chemopreventive and biological activities of *Helicteres isora* L. fruit extracts. Res Pharm Sci 2018;13(6):484-92.	12 / 1	Dec/2018
published research	Paton AJ, Suddee S, **Bongcheewin B**. *Chelonopsis thailandica,* a new species and new record of *Chelonopsis* (Lamiaceae) from Thailand. Thai Foest Bull. 2018;46(2):151-4.	12 / 1	Nov/2018
published research	Pramali K, **Bongcheewin B**, Traiperm P. Leaf micromorphological adaptation of *Pogostemon* spp. (section *Eusteralis*) in Thailand. Agri Nat Res. 2018;52:250-8.	12 / 1	Jun/2018

Current Teaching Load

PYPB 605	Medicinal Plant Taxonomy	3(3-0-6)
PYPB 612	Conservation and Utilization of Medicinal plant genetic resources	3(3-0-6)
PYPB 621	Integrate Pharmaceutical Botany	3(3-0-6)
PYPH 670	Herbal Product and Formulation Development	3(2-3-5)

Assigned Teaching Load for the Proposed Program

PYPB 607	Development of Herbal Medicine	3(2-3-5)
PYPP 600	Seminar in Pharmaceutical Chemistry and Phytochemistry I	1(1-0-2)
PYPP 601	Seminar in Pharmaceutical Chemistry and Phytochemistry II	1(1-0-2)
PYPP 698	Thesis	12(0-36-0)
PYPP 798	Thesis	36(0-108-0)

16. Name Assist. Prof. Dr. Nisarat Siriwatanametanon

Education

Degree	Degree Name	Institute	Year
Ph.D.	Pharmacognosy and Phytotherapy	University of London, UK	2010
M.Phil.	Pharmacognosy and Phytotherapy	University of London, UK	2007
Pharm.D	Doctor of Pharmacy	University of Illinois at Chicago	2002
B.Pharm.	-	Khon Kaen University	1998

Faculty/Institute/College

Department of Pharmaceutical Botany, Faculty of Pharmacy, Mahidol University

Interesting Research Topics or Specialties

1. Bioactivities of medicinal plants
2. Clinical trials of medicinal plants
3. Clinical uses of medicinal plants

Academic work as not part of the study for degree certificate and published and disseminated in accordance with the stipulated criteria regarding academic rank appointment in five retrospective years * - no publication in the last 5 years

Current Teaching Load

PYPB 621 Integrative Pharmaceutical Botany 2 (1-2-3)

Assigned Teaching Load for the Proposed Program

PYPB 621 Integrative Pharmaceutical Botany 2 (1-2-3)

17. Name Dr. Thanika Pathomwichaiwat

Education

Degree	Degree Name	Institute	Year
Ph.D.	Phytopharmaceutical Sciences	Mahidol University	2015
B.S.	Pharmacy	Mahidol University	2007

Faculty/Institute/College

Department of Pharmaceutical Botany, Faculty of Pharmacy, Mahidol University

Interesting Research Topics or Specialties

1. Standardization and quality improvement of medicinal plant raw materials
2. Chemometrics for quality control of herbal medicine
3. Clinical study of herbal medicine

Academic work as not part of the study for degree certificate and published and disseminated in accordance with the stipulated criteria regarding academic rank appointment in five retrospective years *

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	Benjawan, S., Nimitphong, H., Tragulpiankit, P., Musigavong, O., Prathanturarug, S., **Pathomwichaiwat, T.**, 2022. The effect of *Cissus quadrangularis* L. on delaying bone loss in postmenopausal women with osteopenia: a randomized placebo-controlled trial. Phytomedicine 101, 154115.	12/1	2022
	Pansumrit, P., **Pathomwichaiwat, T.,** Kladwong, P., Tiyaworanant, S., Nguanchoo, V., Bongcheewin, B., 2022. An	12/1	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	ethnobotanical study of the genus *Smilax* in Thailand and its botanical authentication for Hua-khao-yen crude drugs. Pharmaceutical Sciences Asia 49, 230-241.		
	Atiratana, T., Traiperm, P., Kochaiphat, P., **Pathomwichaiwat, T**., Viboonjun, U., 2022. Comparative assessments of alkaloids and phenolic compounds in a Thai medicinal plant, *Erycibe elliptilimba*, and other species in the genus. Acta Hortic 1339, 59-66.	12/1	2022
	Thong-on, W., **Pathomwichaiwat, T**., Boonsith, S., Koo-amornpattana, W., Prathanturarug, S., 2021. Green extraction optimization of triterpenoid glycoside-enriched extract from *Centella asiatica* (L.) Urban using response surface methodology (RSM). Scientific Reports 11, 22026.	12/1	2021
	Inchan A, **Pathomwichaiwat T**, Bualeong T, Tipratchadaporn S, Chootip K. Anti-hypotensive effect of “Yahom Navakot” in rats with orthostatic hypotension. Journal of Traditional and Complementary Medicine. 2021. DOI: https://doi.org/10.1016/j.jtcme.2021.08.002.	12/1	2021
	Rattanavipanon W, Nithiphongwarakul C, Sirisuwansith P, Chaiyasothi T, Thakkinstian A, Nathisuwan S, **Pathomwichaiwat T**. Effect of tomato, lycopene and related products on blood pressure: a systematic review and network meta-analysis.	12/1	2021

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	Phytomed. 2021:153512.		
	Kwankhao P, Chuthaputti A, Tantipidok Y, **Pathomwichaiwat T**, Theantawee W, Buabao S, Chantraket R, Puttarak P, Petrakart P, Chinsoi P, Chungsiriporn D, Bongcheewin B, Sermsinsiri V. The current situation of the herbal medicinal product system in Thailand. Journal of Health Science. 2020;29:S82-S95.	2/0.6	2020
	Nguyen KV, Pongkitwitoon B, **Pathomwichaiwat T**, Viboonjun U, Prathanturarug S. Effects of methyl jasmonate on the growth and triterpenoid production of diploid and tetraploid *Centella asiatica* (L.) Urb. hairy root cultures. Scientific Reports. 2019;9(1):18665.	12 / 1	2019

Current Teaching Load

PYPB 621	Integrative Pharmaceutical Botany	2 (1-2-3)
PYPB 612	Conservation and Utilization of Medicinal Plant	3 (3-0-6)
PYPB 607	Development of Herbal Medicine	3 (2-3-5)
PYPH 670	Herbal Product and Formulation Development	3 (2-3-5)
SCPL 672	Seminar in Plant Sciences I	1 (1-0-2)

Assigned Teaching Load for the Proposed Program

PYPB 621	Integrative Pharmaceutical Botany	2 (1-2-3)
PYPB 612	Conservation and Utilization of Medicinal Plant	3 (3-0-6)
PYPB 607	Development of Herbal Medicine	3 (2-3-5)
PYPB 698	Thesis	12 (0-36-0)
PYPH 670	Herbal Product and Formulation Development	3 (2-3-5)
SCPL 672	Seminar in Plant Sciences I	1 (1-0-2)

18. Name Assist. Prof. Dr. Duangjai Tungmunnithum

Education

Degree	Degree Name	Institute	Year
Ph.D.	Ph.D. in Botany	Chulalongkorn University	2016
M.Sc.	M.Sc. in Botany	Chulalongkorn University	2011
B.Sc.	B.Sc. in Biology	Chulalongkorn University	2009

Faculty/Institute/College

Department of Pharmaceutical Botany, Faculty of Pharmacy, Mahidol University

Interesting Research Topics or Specialties

1. Biomedical research
2. Flavonoids and other phytochemical compounds from medicinal plants/ natural products
3. Pharmacological activities, especially anti-aging and antioxidant effects
4. Cosmeceuticals and phytopharmaceutical applications
5. Pharmaceutical botany

Academic work as not part of the study for degree certificate and published and disseminated in accordance with the stipulated criteria regarding academic rank appointment in five retrospective years *

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
Published research work	**Tungmunnithum, D.**; Drouet, S.; Hano, C. Flavonoids from Sacred Lotus Stamen Extract Slows Chronological Aging in Yeast Model by Reducing Oxidative Stress and Maintaining Cellular Metabolism. Cells 2022, 11, 599.	12/1	2022
Published research work	**Tungmunnithum, D.**; Drouet, S.; Garros, L.; Lorenzo, J.M.; Hano, C. Flavonoid Profiles	12/1	2022

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	and Antioxidant Potential of Monochoria angustifolia (G. X. Wang) Boonkerd & Tungmunnithum, a New Species from the Genus Monochoria C. Presl. Antioxidants 2022, 11, 952.		
Published research work	**Tungmunnithum, D.**; Drouet, S.; Hano, C. Phytochemical Diversity and Antioxidant Potential of Natural Populations of *Nelumbo nucifera* Gaertn. throughout the Floristic Regions in Thailand. Molecules 2022, 27, 681.	12/1	2022
Published research work	**Tungmunnithum, D.**; Drouet, S.; Hano, C. Validation of a High-Performance Liquid Chromatography with Photodiode Array Detection Method for the Separation and Quantification of Antioxidant and Skin Anti-Aging Flavonoids from *Nelumbo nucifera* Gaertn. Stamen Extract. Molecules 2022, 27, 1102.	12/1	2022
Published research work	**Tungmunnithum, D.**; Drouet, S.; Lorenzo, J.M.; Hano, C. Effect of Traditional Cooking and *In Vitro* Gastrointestinal Digestion of the Ten Most Consumed Beans from the Fabaceae Family in Thailand on Their Phytochemicals, Antioxidant and Anti-Diabetic Potentials. Plants 2022, 11, 67.	12/1	2022
Published research work	**Tungmunnithum, D.**; Drouet, S.; Lorenzo, J.M.; Hano, C. Characterization of Bioactive Phenolics and Antioxidant Capacity of Edible Bean Extracts of 50 Fabaceae Populations Grown in Thailand. Foods 2021,	12/1	2021

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	10, 3118.		
Published research work	**Tungmunnithum, D.**; Drouet, S.; Lorenzo, J.M.; Hano, C. Green Extraction of Antioxidant Flavonoids from Pigeon Pea (*Cajanus cajan* (L.) Millsp.) Seeds and Its Antioxidant Potentials Using Ultrasound-Assisted Methodology. Molecules 2021, 26, 7557.	12/1	2021
Published research work	**Tungmunnithum, D.**; Pinthong, D.; Hano, C. Flavonoids from *Nelumbo nucifera* Gaertn., a Medicinal Plant: Uses in Traditional Medicine, Phytochemistry and Pharmacological Activities. Medicines 2018, 5, 127.	12/1	2018
Published research work	Addi, M.; Elbouzidi, A.; Abid, M.; **Tungmunnithum, D.**; Elamrani, A.; Hano, C. An Overview of Bioactive Flavonoids from Citrus Fruits. Appl. Sci. 2022, 12, 29.	12/1	2022
Published research work	Bencheikh, N.; Bouhrim, M.; Merrouni, I.A.; Boutahiri, S.; Kharchoufa, L.; Addi, M.; **Tungmunnithum, D.**; Hano, C.; Eto, B.; Legssyer, A.; Elachouri, M. Antihyperlipidemic and Antioxidant Activities of Flavonoid-Rich Extract of *Ziziphus lotus* (L.) Lam. Fruits. Appl. Sci. 2021, 11, 7788.	12/1	
Published research work	Ullah, M.A., Gul, F.Z., Khan, T; **Tungmunnithum, D.**et al.. Differential induction of antioxidant and anti-inflammatory phytochemicals in agitated micro-shoot cultures of *Ajuga integrifolia*	12/1	2021

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	Buch. Ham. ex D.Don with biotic elicitors. AMB Expr 11, 137 (2021).		
Published research work	Lebrun, M., Miard, F., Drouet, S. **Tungmunnithum, D**.et al. Physiological and molecular responses of flax (*Linum usitatissimum* L.) cultivars under a multicontaminated technosol amended with biochar. Environ Sci Pollut Res 28, 53728–53745 (2021).	12/1	2021
Published research work	**Tungmunnithum, D.**; Drouet, S.; Kabra, A.; Hano, C. Enrichment in Antioxidant Flavonoids of Stamen Extracts from *Nymphaea lotus* L. Using Ultrasonic-Assisted Extraction and Macroporous Resin Adsorption. *Antioxidants* **2020**, *9*, 576.	12/1	2020
Published research work	**Tungmunnithum, D.**; Abid, M.; Elamrani, A.; Drouet, S.; Addi, M.; Hano, C. Almond Skin Extracts and Chlorogenic Acid Delay Chronological Aging and Enhanced Oxidative Stress Response in Yeast. *Life* **2020**, *10*, 80.	12/1	2020
Published research work	**Tungmunnithum, D.**; Elamrani, A.; Abid, M.; Drouet, S.; Kiani, R.; Garros, L.; Kabra, A.; Addi, M.; Hano, C. A Quick, Green and Simple Ultrasound-Assisted Extraction for the Valorization of Antioxidant Phenolic Acids from Moroccan Almond Cold-Pressed Oil Residues. *Appl. Sci.* **2020**, *10*, 3313.	12/1	2020
Published research work	**Tungmunnithum, D.**; Renouard, S.; Drouet, S.; Blondeau, J.-P.; Hano, C. A Critical Cross-Species Comparison of Pollen	12/1	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	from *Nelumbo nucifera* Gaertn. vs. *Nymphaea lotus* L. for Authentication of Thai Medicinal Herbal Tea. *Plants* **2020**, *9*, 921.		
Published research work	**Tungmunnithum, D.**; Kongsawadworakul, P.; Hano, C. A Cosmetic Perspective on the Antioxidant Flavonoids from *Nymphaea lotus* L. Cosmetics 2021, 8, 12.	12/1	2021
Published research work	Asad, B.; Khan, T.; Gul, F.Z.; Ullah, M.A.; Drouet, S.; Mikac, S.; Garros, L.; Ferrier, M.; Bose, S.; Munsch, T.; **Tungmunnithum, D.**; Lanoue, A.; Giglioli-Guivarc'h, N.; Hano, C.; Abbasi, B.H. Scarlet Flax Linum grandiflorum (L.) *In Vitro* Cultures as a New Source of Antioxidant and Anti-Inflammatory Lignans. Molecules 2021, 26, 4511.	12/1	
Published research work	Khan, A.K.; Kousar, S.; **Tungmunnithum, D.;** Hano, C.; Abbasi, B.H.; Anjum, S. Nano-Elicitation as an Effective and Emerging Strategy for *In Vitro* Production of Industrially Important Flavonoids. Appl. Sci. 2021, 11, 1694.	12/1	2021
Published research work	Shah, M.; Jan, H.; Drouet, S.; **Tungmunnithum, D.**; Shirazi, J.H.; Hano, C.; Abbasi, B.H. Chitosan Elicitation Impacts Flavonolignan Biosynthesis in *Silybum marianum* (L.) Gaertn Cell Suspension and Enhances Antioxidant and Anti-Inflammatory Activities of Cell Extracts. *Molecules* **2021**, *26*, 791.	12/1	2021
Published research	**Tungmunnithum, D.**; Hano, C. Cosmetic	12/1	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
work	Potential of *Cajanus cajan* (L.) Millsp: Botanical Data, Traditional Uses, Phytochemistry and Biological Activities. *Cosmetics* **2020**, *7*, 84.		
Published research work	**Tungmunnithum, D.**; Tanaka, N.; Uehara, A.; Iwashina, T. Flavonoids Profile, Taxonomic Data, History of Cosmetic Uses, Anti-Oxidant and Anti-Aging Potential of *Alpinia galanga* (L.) Willd. *Cosmetics* **2020**, *7*, 89.	12/1	2020
Published research work	Nazir, S.; Jan, H.; **Tungmunnithum, D.**; Drouet, S.; Zia, M.; Hano, C.; Abbasi, B.H. Callus Culture of Thai Basil Is an Effective Biological System for the Production of Antioxidants. *Molecules* **2020**, *25*, 4859.	12/1	2020
Published research work	Bose S, Munsch T, Lanoue A, Garros L, **Tungmunnithum D**, Messaili S, Destandau E, Billet K, St-Pierre B, Clastre M, Abbasi BH, Hano C and Giglioli-Guivarc'h N (**2020**) UPLC-HRMS Analysis Revealed the Differential Accumulation of Antioxidant and Anti-Aging Lignans and Neolignans in In Vitro Cultures of *Linum usitatissimum* L. Front. Plant Sci. 11:508658.	12/1	2020
Published research work	Drouet, S.; **Tungmunnithum, D.;** Lainé, É.; Hano, C. Gene Expression Analysis and Metabolite Profiling of Silymarin Biosynthesis during Milk Thistle (*Silybum marianum* (L.) Gaertn.) Fruit Ripening. *Int. J. Mol. Sci.* **2020**, *21*, 4730.	12/1	2020
Published research	Zaeem, A.; Drouet, S.; Anjum, S.; Khurshid,	12/1	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
work	R.; Younas, M.; Blondeau, J.P.; **Tungmunnithum, D.**; Giglioli-Guivarc'h, N.; Hano, C.; Abbasi, B.H. Effects of Biogenic Zinc Oxide Nanoparticles on Growth and Oxidative Stress Response in Flax Seedlings vs. *In Vitro* Cultures: A Comparative Analysis. *Biomolecules* **2020**, *10*, 918.		
Published research work	Khurshid R, Ullah MA, T**ungmunnithum D**, Drouet S, Shah M, Zaeem A, et al. (2020) Lights triggered differential accumulation of antioxidant and antidiabetic secondary metabolites in callus culture of *Eclipta alba* L. PLoS ONE 15(6): e0233963	12/1	2020
Published research work	Hano, C.; **Tungmunnithum, D**. Plant Polyphenols, More than Just Simple Natural Antioxidants: Oxidative Stress, Aging and Age-Related Diseases. *Medicines* **2020**, *7*, 26.	12/1	2020
Published research work	Anna Malinowska, M.; Billet, K.; Drouet, S.; Munsch, T.; Unlubayir, M.; **Tungmunnithum, D.;** Giglioli-Guivarc'h, N.; Hano, C.; Lanoue, A. Grape Cane Extracts as Multifunctional Rejuvenating Cosmetic Ingredient: Evaluation of Sirtuin Activity, Tyrosinase Inhibition and Bioavailability Potential. *Molecules* **2020**, *25*, 2203.	12/1	2020
Published research work	**Tungmunnithum, D.**; Intharuksa, A.; Sasaki, Y. A Promising View of Kudzu Plant, *Pueraria montana* var. *lobata* (Willd.) Sanjappa & Pradeep: Flavonoid Phytochemical Compounds, Taxonomic	12/1	2020

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	Data, Traditional Uses and Potential Biological Activities for Future Cosmetic Application. *Cosmetics* **2020**, *7*, 12.		
Published research work	Bilal Haider Abbasi, Muhammad Asad Ullah, Muhammad Nadeem, Duangjai **Tungmunnithum,** Christophe Hano, Exogenous application of salicylic acid and gibberellic acid on biomass accumulation, antioxidant and anti-inflammatory secondary metabolites production in multiple shoot culture of *Ajuga integrifolia* Buch. Ham. ex D.Don, Industrial Crops and Products. 145 (2020) 112098	12/1	2020
Published research work	Drouet, S.; Leclerc, E.A.; Garros, L.; **Tungmunnithum, D**.; Kabra, A.; Abbasi, B.H.; Lainé, É.; Hano, C. A Green Ultrasound-Assisted Extraction Optimization of the Natural Antioxidant and Anti-Aging Flavonolignans from Milk Thistle *Silybum marianum* (L.) Gaertn. Fruits for Cosmetic Applications. Antioxidants 2019, 8, 304.	12/1	2019
Published research work	Ullah MA, **Tungmunnithum D**, Garros L, Hano C, Abbasi BH. Monochromatic lights-induced trends in antioxidant and antidiabetic polyphenol accumulation in in vitro callus cultures of *Lepidium sativum* L. J Photochem Photobiol B. 2019 Jul;196:111505.	12/1	2019
Published research work	**Tungmunnithum D**, Garros L, Drouet S, Renouard S, Lainé E, Hano C. Green Ultrasound Assisted Extraction of trans	12/1	2019

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	Rosmarinic Acid from *Plectranthus scutellarioides* (L.) R.Br. Leaves. Plants. 2019, 8(50): 1-15.		
Published research work	Ullah M A, **Tungmunnithum, D**,Garros L, Drouet S, Hano C and Abbasi B H. Effect of Ultraviolet-C Radiation and Melatonin Stress on Biosynthesis of Antioxidant and Antidiabetic Metabolites Produced in In Vitro Callus Cultures of *Lepidium sativum* L. Int. J. Mol. Sci. 2019, 20(7), 1-19.	12/1	2019
Published research work	Shah M, Ullah M A, Drouet S, Younas M, **Tungmunnithum D**, Giglioli- Guivarc'h N, Hano C and Abbasi B H. Interactive Effects of Light and Melatonin on Biosynthesis of Silymarin and AntiInflammatory Potential in Callus Cultures of *Silybum marianum* (L.) Gaertn. Molecules 2019, 24: 1-18.	12/1	2019
Published research work	Nazir M., **Tungmunnithum D.**, Bose S., Drouet S., Garros L., Giglioli- Guivarc'h N., Abbasi B.H., and Hano C. Differential production of phenylpropanoid metabolites in callus cultures of *Ocimum basilicum* L. with distinct in vitro antioxidant activities and *in vivo* protective effects against UV stress. J. Agric. Food Chem. 2019.	12/1	2019
Published research work	Abbasi B.H., Siddiquah A., Tungmunnithum D., Bose S., Younas M., Garros L., Drouet S., Giglioli-Guivarc'h N. and Hano C. *Isodon rugosus* (Wall. ex Benth.) Codd *In Vitro* Cultures: Establishment, Phytochemical	12/1	2019

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	Characterization and In Vitro Antioxidant and Anti-Aging Activities. Int. J. Mol. Sci. 2019. 20: 1-22.		
Published research work	Nadeem M.,**Tungmunnithum D.**, Hano C., Abbasi B.H., Hashmi S.S., Ahmad W. and Zahir A. The current trends in the green syntheses of titanium oxide nanoparticles and their applications. Green Chemistry Letters and Reviews. 2018. 11: 492–502.	12/1	2018
Published research work	Garros, L.; Drouet, S.; Corbin, C.; Decourtil, C.; Fidel, T.; Lebas de Lacour, J.; Leclerc, E.A.; Renouard, S.; **Tungmunnithum, D.**; Doussot, J.; Abassi, B.H.; Maunit, B.; Lainé, É.; Fliniaux, O.; Mesnard, F.; Hano, C. Insight into the Influence of Cultivar Type, Cultivation Year, and Site on the Lignans and Related Phenolic Profiles, and the Health-Promoting Antioxidant Potential of Flax (*Linum usitatissimum* L.) Seeds. Molecules 2018, 23, 2636.	12/1	2018
Published research work	**Tungmunnithum D.**, Thongboonyou A., Pholboon A. and Yangsabai A. Flavonoids and Other Phenolic Compounds from Medicinal Plants for Pharmaceutical and Medical Aspects: An Overview. Medicines 2018, 5: 1-22.	12/1	2018
Published research work	Drouet, S.; Garros, L.; Hano, C.; **Tungmunnithum, D.**; Renouard, S.; Hagège, D.; Maunit, B.; Lainé, É. A Critical View of Different Botanical, Molecular, and Chemical Techniques Used in	12/1	2018

Types of Academic Work	Title	Standard Criteria and Weights	Year of Publication
	Authentication of Plant Materials for Cosmetic Applications. *Cosmetics* **2018**, *5*, 30.		

Current Teaching Load

PYPB 605	Taxonomy of medicinal plants	3(2-3-5)
PYPB 621	Integrative Pharmaceutical Botany	2(1-2-3)
PYPH 673	Special problems in phytopharmaceutical products	2(0-6-2)
PYPH 602	Seminar in phytopharmaceutical research	1(1-0-2)
PYPH 601	Seminar in phytopharma ceutical sciences	1(1-0-2)
PYID 685	Research methodology in pharmacy	2(2-0-4)
PYPH 679	Seminar II	1(1-0-2)
PYPH 698	Thesis	12(0-36-0)
PYPB 698	Thesis	12 (0-36-0)
SCPL 564	Plant Growth Promotion	3 (2-3-5)
SCPL 672	Seminar in Plant Sciences I	1 (1-0-2)

Assigned Teaching Load for the Proposed Program

PYPB 621	Integrative Pharmaceutical Botany	2 (1-2-3)
PYPB 698	Thesis	12 (0-36-0)
SCPL 564	Plant Growth Promotion	3 (2-3-5)
SCPL 672	Seminar in Plant Sciences I	1 (1-0-2)

19. Name Assist. Prof. Dr. Methee Phumthum

Education

Degree	Degree Name	Institute	Year
Ph.D.	Bioscience	Aarhus University, Denmark	2019
B.Sc.	Biology	Chiang Mai University	2013

Faculty/Institute/College

Department of Pharmaceutical Botany, Faculty of Pharmacy, Mahidol University

Interesting Research Topics or Specialties

1. Ethnobotany
2. Medicinal plants
3. Plant conservation

Academic work as not part of the study for degree certificate and published and disseminated in accordance with the stipulated criteria regarding academic rank appointment in five retrospective years *

Type of academic work	Publications	Standard criteria of academic work / weight	Year of publication
Published research	Sadgrove NJ, Padilla-González GF, **Phumthum M.** Fundamental Chemistry of Essential Oils and Volatile Organic Compounds, Methods of Analysis and Authentication (2022). *Plants*, *11*, 789.	12 / 1	2022
Published research	Ngah L., Tsopgni W.D.T., Nyobe J.C.N., Tcho A.T., Langat M.K., Ndom J.C., Mas-Claret E., Sadgrove N.J., Waffo A.F.K., **Phumthum M**. A New Antimicrobial Phenylpropanol from the Leaves of *Tabernaemontana inconspicua* Stapf. (Apocynaceae) Inhibits Pathogenic Gram-Negative Bacteria (2022). *Antibiotics*, *11*(1), 121.	12 / 1	2022
Published research	Green A., Padilla-Gonzalez G.F., **Phumthum M.**, Simmonds M.S.J., Sadgrove N.J. Comparative	12 / 1	2021

Type of academic work	Publications	Standard criteria of academic work / weight	Year of publication
	Metabolomics of Reproductive Organs in the Genus Aesculus (Sapindaceae) Reveals That Immature Fruits Are a Key Organ of Procyanidin Accumulation and Bioactivity (2021). *Plants*, *10*(12), 2695.		
Published research	**Phumthum M.**, Nguanchoo V., Balslev H. Medicinal plants used for treating mild Covid-19 symptoms among Thai Karen and Hmong (2021) Frontiers in Pharmacology, 12, 966987.	12 / 1	2021
published research	**Phumthum M.,** Sadgrove N.J. High-Value Plant Species Used for the Treatment of "Fever" by the Karen Hill Tribe People (2020) Antibiotics, 9(5), 220.	12 / 1	2020
published research	**Phumthum M**. How far are we? Information from the three decades of ethnomedicinal studies in Thailand (2020) Ethnobiology and Conservation, 9(21), 1-12.	12 / 1	2020
published research	**Phumthum M.,** Balslev H. Anti-Infectious Plants of The Thai Karen: A Meta-Analysis (2020) Antibiotics, 9(6), 298.	12 / 1	2020
Published research	**Phumthum M.,** Balslev H., Kantasrila R., Kaewsangsai S., Inta A. Ethnomedicinal Plant Knowledge of the Karen in Thailand (2020). *Plants, 9(7),* 813.	12 / 1	2020
published research	**Phumthum M.**, Balslev H. Using ICPC-2 standard to identify Thai Zingiberaceae of pharmacological interest (2020) Plants, 9(7):906	12 / 1	2020

Current Teaching Load

PYPB 612	Conservation and Utilization of Medicinal Plant	3 (3-0-6)
PYPB 698	Thesis	12 (0-36-0)
SCPL 672	Seminar in Plant Sciences I	1 (1-0-2)

Assigned Teaching Load for the Proposed Program

PYPB 612	Conservation and Utilization of Medicinal Plant	3 (3-0-6)
PYPB 698	Thesis	12 (0-36-0)

SCPL 672 Seminar in Plant Sciences I 1 (1-0-2)

Appendix C

Curriculum Mapping

● Major responsibility ○ Minor responsibility

Subjects	Morality and Ethics			Knowledge				Intellectual skills				Interpersonal relationship and Responsibility		Mathe-matical Analytical thinking	
	1	2	3	1	2	3	4	1	2	3	4	1	2	1	2
1) Required Courses															
SCID 516 Biostatistics	●	-	○	-	●	-	-	●	●	○	-	●	-	●	●
SCID 518 Generic Skills in Science Research	●	●	●	-	-	●	-	-	-	-	○	○	●	●	-
SCPL 562 Integrative Plant Sciences	●	-	-	●	●	●	○	●	-	-	○	-	○	-	●
SCPL 672 Seminar in Plant Sciences 1	●	-	○	●	○	-	-	-	●	○	●	●	○	-	●
PYPB 612 Conservation and Utilization of Medicinal Plant Genetic Resources	-	-	●	●	●	-	-	●	●	-	-	●	-	-	●
PYPB 621 Integrative Pharmaceutical Botany	●	-	-	●	●	●	○	●	-	-	○	-	●	-	●
2) Elective Courses															
SCPL 501 Advanced Plant Taxonomy	-	-	○	●	●	●	●	○	●	●	●	-	●	-	●

Subjects	Morality and Ethics			Knowledge				Intellectual skills				Interpersonal relationship and Responsibility		Mathe-matical Analytical thinking	
	1	2	3	1	2	3	4	1	2	3	4	1	2	1	2
SCPL 502 Ethnobotany	●	-	o	●	●	-	●	o	●	●	●	-	●	-	●
SCPL 503 Pollen Biology	-	●	-	●	●	o	●	-	●	●	o	o	●	o	●
SCPL 511 Plant Bioregulators	●	-	o	●	●	-	-	●	●	-	-	●	●	-	●
SCPL 521 Plant Cytogenetics	-	●	-	●	●	o	-	●	o	●	o	-	o	●	o
SCPL 522 Advanced Plant Molecular Biology	●	-	o	●	●	-	-	●	●	-	-	●	●	-	●
SCPL 523 Techniques in Plant Molecular Biology	-	o	●	-	o	●	●	-	o	●	●	-	o	●	●
SCPL 524 Plant Mutation	-	-	●	●	●	-	o	●	o	●	o	-	●	●	o
SCPL 541 Advanced Plant Tissue Culture	●	-	o	●	●	-	-	●	●	-	-	●	●	-	●
SCPL 543 Advanced Phytochemistry	-	●	-	●	●	o	-	●	o	●	o	-	●	●	o
SCPL 544 Advanced Technique in Plant Tissue Culture	-	o	●	-	o	●	●	-	o	●	●	-	o	●	●

Subjects	Morality and Ethics			Knowledge				Intellectual skills				Interpersonal relationship and Responsibility		Mathe-matical Analytical thinking	
	1	2	3	1	2	3	4	1	2	3	4	1	2	1	2
SCPL 563 Plant-Microbe Interaction	●	-	o	●	●	-	-	●	●	-	-	●	-	-	●
SCPL 564 Plant Growth Promotion	o	-	●	●	●	●	●	●	●	-	-	o	●	o	●
SCPL 571 Current Topics in Plant Sciences	o	-	●	o	●	o	-	●	●	-	-	●	-	-	●
SCPL 572 Applied Statistics for Plant Science	-	-	-	-	●	-	-	●	●	-	o	●	-	●	●
SCPL 611 Plant Adaptation to Environmental Changes	●	-	o	●	●	-	-	●	●	-	-	●	-	-	●
SCPL 621 Applied Plant Genetics	-	-	●	●	●	-	-	●	●	-	-	-	●	-	●
SCPL 671 Special Problems in Plant Sciences	o	-	●	-	●	o	●	-	o	●	●	●	o	●	●
PYPB 604 Medical Ethnobotany	●	-	o	●	●	-	●	o	●	●	●	-	●	-	●
PYPB 607 Development of Herbal Medicine	●	-	o	●	●	-	●	o	●	●	●	-	●	-	●

Subjects	Morality and Ethics			Knowledge				Intellectual skills				Interpersonal relationship and Responsibility		Mathe-matical Analytical thinking	
	1	2	3	1	2	3	4	1	2	3	4	1	2	1	2
PYPB 610 Current Topics in Pharmaceutical Botany	O	-	●	O	●	O	-	●	●	-	-	●	O	-	●
PYPB 622 Plant Database Construction and Management	●	-	O	●	-	-	●	-	-	●	-	-	●	●	●
PYPH 695 Applied Plant Biotechnology in Pharmaceutical Sciences	-	●	-	●	●	-	●	O	●	●	-	O	●	-	●
๓) Thesis															
SCPL/PYPB 698 Thesis	●	●	●	O	●	●	●	O	●	O	●	●	O	●	●

Table of Relationship between Learning Outcomes of the Program and Core Value of Mahidol University

Learning Outcomes	Core value of Mahidol University
1. Morality and Ethics	
1.1 Be ethical, honest, disciplined, responsible and refrain from all forms of plagiarism	Integrity
1.2 Comply with institutional and societal regulations	Harmony
1.3 Follow research and professional ethics	Integrity
2. Knowledge	
2.1 Explain principal knowledge and theories of plant sciences	Mastery
2.2 Provide updated solutions toward problems in plant sciences	Mastery
2.3 Have ability to continually acquire new knowledge	Determination
2.4 Effectively operate and maintain use of scientific facilities equipments	Determination
3. Intellectual skills: Students become self-directed and autonomous thinker	
3.1 Be able to apply and integrate knowledge of plant science and related fields to solve problems	Mastery
3. 2 Think critically, be able to conduct research and draw conclusions based on knowledge about plant science	Mastery
3.3 Be able to effectively operate scientific equipments	Determination
3.4 Be able to develop new concepts, knowledge or innovation	Originality
4. Interpersonal relationship and responsibility	
4.1 Be responsible for assigned work	Determination
4.2 Be able to work cooperatively as a team member and team leader	Harmony

Learning Outcomes	Core value of Mahidol University
5. Mathematical analytical thinking, communication skills, and information	
5.1 Be able to analyze scientific data with proper mathematical and statistical tools	Mastery
5.2 Be able to effectively use English to communicate and present data to audiences from different backgrounds	Mastery

Appendix D

Program Learning Outcomes

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

Objective of the Program B.E. 2561	Revised Objectve of the Program B.E. 2565
เพื่อผลิตมหาบัณฑิตที่มีความรู้ความสามารถดังนี้ ๑. เป็นผู้มีคุณธรรม จริยธรรม และมีจรรยาบรรณวิชาการวิชาชีพของนักวิทยาการพืช ๒. มีความรู้และความเข้าใจในหลักการและทฤษฎีที่เกี่ยวข้องกับศาสตร์ด้านวิทยาการพืช สามารถเรียนรู้ได้ด้วยตนเองและการติดตามความก้าวหน้าให้ทันสมัยเสมอ ๓. สามารถวิเคราะห์ วิจารณ์ผลงานวิจัย ดำเนินกระบวนการวิจัยได้อย่างถูกต้อง ๔. มีทักษะการทำงานเป็นทีม มีมนุษยสัมพันธ์ที่ดี มีภาวะผู้นำและมีความรับผิดชอบในหน้าที่ที่ได้รับมอบหมาย ๕. ใช้การวิเคราะห์เชิงตัวเลขและเทคโนโลยีสารสนเทศในการศึกษา ค้นคว้าเพื่อการเรียนรู้ด้วยตนเองและนำเสนอผลงานได้อย่างมีประสิทธิภาพ	By the end of the study, students are able to 1. demonstrate moral and professional ethics; 2. understand the concepts and principles in plant sciences and conduct self-directed learning on related topics; 3. analyze and criticize research problems in plant sciences and provide solutions to the problems based on integrated current knowledges; 4. demonstrate leadership attributes and work cooperatively as a team member with high responsibility for assigned tasks; 5. exhibit skills in information literacy, statistical analysis, and data presentation

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

Objective of the Program	Program Learning Outcome*				
	PLO1	PLO2	PLO3	PLO4	PLO5
Demonstrate moral and professional ethics	✓				
Understand the concepts and principles in plant sciences and conduct self-directed learning on related topics.		✓			
Analyze and criticize research problems in plant sciences and provide solutions to the problems based on integrated current knowledges.		✓			
Demonstrate leadership attributes and work cooperatively as a team member with high responsibility for assigned tasks.				✓	
Exhibit skills in information literacy, statistical analysis, and data presentation.					✓

* PLO1 Graduates demonstrate moral and professional ethics, recognize the intellectual property rights, and respect the organization rules and social norms

PLO2 Graduates are able to understand the concepts and principles in plant sciences and conduct self-directed learning on related topics as well as attain updated information following the current trends in plant science

PLO3 Graduates are able to think critically, apply their skills to conduct research leading to new findings or solutions and draw conclusions to scientific problems in the field of plant science and related areas

PLO4 Graduates demonstrate leadership attributes and work cooperatively as a team member with high responsibility for assigned tasks

PLO5 Graduates exhibit skills in information literacy, statistical analysis, and data presentation to communicate

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 ethical, honest, disciplined, responsible and refrain from all forms of plagiarism	✓				
	1. 2 Comply with institutional and societal regulations	✓				
	1. 3 Follow research and professional ethics	✓				
Knowledge	2.1 Explain principal knowledge and theories of plant sciences		✓			
	2. 2 Provide updated solutions toward problems in plant sciences		✓			
	2. 3 Have ability to continually acquire new knowledge		✓			
	2.4 Effectively operate and maintain use of scientific facilities equipments		✓			
Intellectual Development	3.1 Be able to apply and integrate knowledge of plant science and related fields to solve problems			✓		
	3. 2 Think critically, be able to conduct research and draw conclusions based on knowledge about plant science			✓		
	3.3 Be able to effectively operate scientific equipments			✓		
	3. 4 Be able to develop new concepts, knowledge or innovation			✓		
Interpersonal Relationship and Resp	4.1 Be responsible for assigned work				✓	

Domains	Standard Learning Outcomes (TQF)	Program Learning Outcomes				
		PLO1	PLO2	PLO3	PLO4	PLO5
	4.2 Be able to work cooperatively as a team member and team leader				✓	
Math, Communication, IT Skills	5. 1 Be able to analyze scientific data with proper mathematical and statistical tools					✓
	5. 2 Be able to effectively use English to communicate and present data to audiences from different backgrounds					✓

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

PLOs	Learning Method	Assessment
Graduates demonstrate moral and professional ethics, recognize the intellectual property rights, and respect the organization rules and social norms	1) Interactive lectures and laboratories 2) Individual and group assignments 3) Thesis	1) Behavioral observation in classrooms and laboratories 2) Assignment due dates 3) Evaluation from supervisor and thesis committee
Graduates are able to understand the concepts and principles in plant sciences and conduct self-directed learning on related topics as well as attain updated information following the current trends in plant science	1) Interactive lectures and laboratories 2) Group discussion 3) Individual and group assignments and presentations 4) Self-study and literature review	1) Written examinations 2) Evaluation of class participation and group discussion by rubrics 3) Evaluation of the quality of reports and presentations by rubrics
Graduates are able to think critically, apply their skills to	1) Laboratory practices 2) Group discussion	1) Evaluation group discussion by rubrics

PLOs	Learning Method	Assessment
conduct research leading to new findings or solutions and draw conclusions to scientific problems in the field of plant science and related areas	3) Seminar 4) Thesis	2) Evaluation of quality of reports and presentations by rubrics 3) Evaluation from supervisor and thesis committee
Graduates demonstrate leadership attributes and work cooperatively as a team member with high responsibility for assigned tasks	1) Interactive lectures and laboratories 2) Group discussion 3) Group assignments and presentations 4) Extracurricular activities	1) Behavioral observation in classrooms and laboratories 2) Evaluation group discussion by rubrics 3) Evaluation of quality of reports and presentations by rubrics
Graduates exhibit skills in information literacy, statistical analysis, and data presentation to communicate	1) Interactive lectures and laboratories 2) Individual and group assignments and presentations 3) Seminar 4) Thesis	1) Evaluation of class participation and group discussion by rubrics 2) Evaluation of the quality of reports and presentations by rubrics 3) Evaluation from supervisor and thesis committee

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

Code	Name	Credits	PLOs				
			1	2	3	4	5
Required Courses							
	SCID 516 Biostatistics		-	I	I	-	I
	SCID 518 Generic Skills in Science Research		I	-	-	I	R
	SCPL 562 Integrative Plant Sciences		R	R	R	P	R
	SCPL 672 Seminar in Plant Sciences 1		R	R	R	P	R
	PYPB 612 Conservation and Utilization of Medicinal Plant Genetic Resources		R	R	R	M	R
	PYPB 621 Integrative Pharmaceutical Botany		R	R	R	P	R
Elective Courses							
	SCPL 501 Advanced Plant Taxonomy		-	R	R	P	R
	SCPL 502 Ethnobotany		R	R	R	P	-
	SCPL 503 Pollen Biology		-	R	R	P	R
	SCPL 511 Plant Bioregulators		-	R	R	-	R
	SCPL 521 Plant Cytogenetics		-	R	R	P	-
	SCPL 522 Advanced Plant Molecular Biology		-	R	R	-	M
	SCPL 523 Techniques in Plant Molecular Biology		R	R	R	P	R
	SCPL 524 Plant Mutation		-	R	R	P	R
	SCPL 541 Advanced Plant Tissue Culture		-	R	R	-	R
	SCPL 543 Advanced Phytochemistry		R	R	R	P	M
	SCPL 544 Advanced Technique in Plant Tissue Culture		R	R	R	P	M
	SCPL 563 Plant-Microbe Interaction		-	R	R	-	R

Code	Name	Credits	PLOs				
			1	2	3	4	5
	SCPL 5 6 4 Plant Growth Promotion		-	R	R	P	R
	SCPL 571 Current Topics in Plant Sciences		R	M	M	M	M
	SCPL 572 Applied Statistics for Plant Science		-	I	I	-	M
	SCPL 611 Plant Adaptation to Environmental Changes		-	R	R	-	R
	SCPL 621 Applied Plant Genetics		R	R	R	M	-
	SCPL 671 Special Problems in Plant Sciences		M	M	M	P	M
	PYPB 604 Medical Ethnobotany		R	R	R	P	-
	PYPB 6 0 7 Development of Herbal Medicine		R	R	R	P	-
	PYPB 6 1 0 Current Topics in Pharmaceutical Botany		R	M	M	M	M
	PYPB 6 2 2 Plant Database Construction and Management		R	R	R	P	M
	PYPH 695 Applied Plant Biotechnology in Pharmaceutical Sciences		R	R	R	P	M
Thesis							
	SCPL/PYPB 698 Thesis		M	M	M	M	M

I = ELO is introduced & assessed R = ELO is reinforced & assessed

P = ELO is practiced & assessed M = Level of Mastery is assessed

Table 6: The expectation of learning outcomes at the end of the academic year

Year of study	Knowledge, skills, and any other expected learning outcomes				
	PLO1	PLO2	PLO3	PLO4	PLO5
1st	/	/	/	/	/
2nd	/	/	/	/	/

Appendix E

(For only Revised Curriculum)

The Revision of Master of Science Program in Plant Sciences

Volume B.E. 2566

Faculty of Science, Department of Plant Science and

Faculty of Pharmacy, Department of Pharmaceutical Botany

and Faculty of Graduate Studies, Mahidol University

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1. **The Curriculum was approved by the Office of the Higher Education Commission on** .....
2. **The Mahidol University Council has approved this revised curriculum in the ……. meeting on**.....
3. **The revised curriculum will be effective with student class ……. from the ……semester of the Academic Year …… onwards.**
4. **Rationale of revision**

4.1 The curriculum is revised to be in accordance with Thai Qualification Framework for Higher Education B.E. 2552.

4.2 The curriculum is revised according to the program learning outcomes that reflect the current needs of stakeholders.

5. The details of the revision

5.1 The faculties in charge of the program and the full-time instructors of the curriculam have been changed as follow:

Current Program Volume B.E. 2561	**Revised Program Volume B.E. 2566**
Faculties in Charge of the Program	**Faculties in Charge of the Program**
Assoc. Prof. Dr. Sompop Prathanturarug	-
Asst. Prof. Dr. Aussanee Pichakum	Asst. Prof. Dr. Aussanee Pichakum
Asst. Prof. Dr. Bhanubong Bongcheewin	-
-	Asst. Prof. Dr. Benyakan Pongkitwitoon
-	Asst. Prof. Dr. Wisuwat Songnuan

Full time instructors of the curriculum	Full time instructors of the curriculum
Assoc. Prof. Dr. Kanchit Thammasiri	-
Assoc. Prof. Dr. Paweena Traiperm	Assoc. Prof. Dr. Paweena Traiperm
Assoc. Prof. Dr. Puangpaka Umpunjun	Assoc. Prof. Dr. Puangpaka Umpunjun
Assoc. Prof. Dr. Nathinee Panvisavas	Assoc. Prof. Dr. Nathinee Panvisavas
Assoc. Prof. Dr. Sompop Prathanturarug	Assoc. Prof. Dr. Sompop Prathanturarug
Asst. Prof. Dr. Thaya Jenjittikul	Asst. Prof. Dr. Thaya Jenjittikul
Asst. Prof. Dr. Unchera Viboonjun	Asst. Prof. Dr. Unchera Viboonjun
Asst. Prof. Dr. Sasivimon Swangpol	Asst. Prof. Dr. Sasivimon Swangpol
Asst. Prof. Dr. Aussanee Pichakum	Asst. Prof. Dr. Aussanee Pichakum
Asst. Prof. Dr. Wisuwat Songnuan	Asst. Prof. Dr. Wisuwat Songnuan
Asst. Prof. Dr. Ngarmnij Chuenboonngarm	Asst. Prof. Dr. Ngarmnij Chuenboonngarm
Asst. Prof. Dr. Panida Kongsawadworakul	Asst. Prof. Dr. Panida Kongsawadworakul
Dr. Alyssa Stewart	Asst. Prof. Dr. Alyssa Stewart
Dr. Benyakan Pongkitwitoon	Asst. Prof. Dr. Benyakan Pongkitwitoon
Dr. Bhanubong Bongcheewin	Asst. Prof. Dr. Bhanubong Bongcheewin
Dr. Nisarat Siriwattanametanon	Asst. Prof. Dr. Nisarat Siriwattanametanon
Dr. Thanika Pathomwichaiwat	Dr. Thanika Pathomwichaiwat
-	Asst. Prof. Dr. Duangjai Tungmunnithum
-	Asst. Prof. Dr. Saroj Ruchisansakun
-	Asst. Prof. Dr. Methee Phumthum

5.2 Request for offering a new elective course:

SCPL xxx Entrepreneurship and innovation driven by plant science and pharmaceutical botany 3(3-0-6)

วทพฤ xxx นวัตกรรมและความเป็นผู้ประกอบการที่ขับเคลื่อนโดยวิทยาการพืชและเภสัชพฤกษศาสตร์ ๓ (๓-๐-๖)

Entrepreneurial mindset; process of innovation; design thinking; technology canvas; opportunity canvas; business model canvas; intellectual property; laws and regulations related to commercialization of plant science technology and pharmaceutical botany

แนวคิดแบบผู้ประกอบการ; กระบวนการสร้างนวัตกรรม; การคิดเชิงออกแบบ; แผนการประเมินเทคโนโลยี; แผนการประเมินโอกาส; แผนโมเดลธุรกิจ; ทรัพย์สินทางปัญญา; กฎหมายและข้อกำหนดเกี่ยวกับการทำให้เกิดธุรกิจด้านเทคโนโลยีวิทยาการพืชและเภสัชพฤกษศาสตร์

5.3 Improvement of course decription and contents.

PYPB 610	Current Topics in Pharmaceutical Botany	2 (2-0-4)
PYPB 604	Medical Ethnobotany	3 (2-3-5)

5.4 Closing of the following courses

SCPL 601	Advanced Botanical Research	1 (1-0-2)
SCPL 602	Skill in Botanical Knowledge Transfer	1 (0-2-1)
PYPB 601	Traditional Thai Medicine	3 (3-0-6)

The Comparison Table of Courses between the Current Program and Revising Program

Courses of the Current Program	Courses of the Revising Program	Remark
Core Courses (12 credits)	**Core Courses (12 credits)**	
SCID 516 Biostatistics 3(3-0-6) วทคร ๕๑๖ ชีวสถิติ	SCID 516 Biostatistics 3 3-0-6) วทคร ๕๑๖ ชีวสถิติ	
SCID 518 Generic Skills in Science Research 1(1-0-2) วทคร ๕๑๘ ทักษะทั่วไปในการวิจัยทางวิทยาศาสตร์	SCID 518 Generic Skills in Science Research 1(1-0-2) วทคร ๕๑๘ ทักษะทั่วไปในการวิจัยทางวิทยาศาสตร์	
SCPL 562 Integrative Plant Sciences 2(1-2-3) วทพฤ ๕๖๒ วิทยาการพืชบูรณาการ	วทพฤ ๕๖๒ วิทยาการพืชบูรณาการ 2(1-2-3) SCPL 562 Integrative Plant Sciences	
SCPL 672 Seminar in Plant Sciences I 1(1-0-2) วทพฤ ๖๗๒ สัมมนาทางวิทยาการพืช ๑	SCPL 672 Seminar in Plant Sciences I 1(1-0-2) วทพฤ ๖๗๒ สัมมนาทางวิทยาการพืช ๑	
PYPB 612 Conservation and Utilization of Medicinal Plants Genetic Resources 3(3-0-6) ภกภพ ๖๑๒ การอนุรักษ์และการใช้ประโยชน์แหล่งพันธุกรรมพืชสมุนไพร	PYPB 612 Conservation and Utilization of Medicinal Plants Genetic Resources 3(3-0-6) ภกภพ ๖๑๒ การอนุรักษ์และการใช้ประโยชน์แหล่งพันธุกรรมพืชสมุนไพร	
PYPB 621 Integrative in Pharmaceutical Botany 2(1-2-3) ภกภพ ๖๒๑ เภสัชพฤกษศาสตร์บูรณาการ	PYPB 621 Integrative in Pharmaceutical Botany 2(1-2-3) ภกภพ ๖๒๑ เภสัชพฤกษศาสตร์บูรณาการ	

Courses of the Current Program	Courses of the Revising Program	Remark
Elective Courses (not less than 12 Credits)	**Elective Courses (not less than 12 Credits)**	
SCPL 21 Plant Cytogenetics 3(2-3-5) วทพฤ ๕๒๑ พันธุศาสตร์ของเซลล์พืช	SCPL 21 Plant Cytogenetics 3(2-3-5) วทพฤ ๕๒๑ พันธุศาสตร์ของเซลล์พืช	
SCPL 522 Advanced Plant Molecular Biology 3(3-0-6) วทพฤ ๕๒๒ ชีววิทยาระดับโมเลกุลของพืชขั้นสูง	SCPL 522 Advanced Plant Molecular Biology 3(3-0-6) วทพฤ ๕๒๒ ชีววิทยาระดับโมเลกุลของพืชขั้นสูง	
SCPL 523 Techniques in Plant Molecular Biology 3(2-3-5) วทพฤ ๕๒๓ เทคนิคทางชีววิทยาระดับโมเลกุลของพืช	SCPL 523 Techniques in Plant Molecular Biology 3(2-3-5) วทพฤ ๕๒๓ เทคนิคทางชีววิทยาระดับโมเลกุลของพืช	
SCPL 571 Current Topics in Plant Sciences 2(2-0-5) วทพฤ ๕๗๑ หัวข้อเรื่องปัจจุบันทางวิทยาการพืช	SCPL 571 Current Topics in Plant Sciences 2(2-0-5) วทพฤ ๕๗๑ หัวข้อเรื่องปัจจุบันทางวิทยาการพืช	
SCPL 621 Applied Plant Genetics 2(2-0-4) วทพฤ ๖๒๑ พันธุศาสตร์ของพืชขั้นประยุกต์	SCPL 621 Applied Plant Genetics 2(2-0-4) วทพฤ ๖๒๑ พันธุศาสตร์ของพืชขั้นประยุกต์	
SCPL 671 Special Problems in Plant Sciences 2(1-3-3) วทพฤ ๖๗๑ ปัญหาพิเศษทางวิทยาการพืช	SCPL 671 Special Problems in Plant Sciences 2(1-3-3) วทพฤ ๖๗๑ ปัญหาพิเศษทางวิทยาการพืช	
SCPL 501 Advanced Plant Taxonomy 3(2-3-5) วทพฤ ๕๐๑ พฤกษอนุกรมวิธานขั้นสูง	SCPL 501 Advanced Plant Taxonomy 3(2-3-5) วทพฤ ๕๐๑ พฤกษอนุกรมวิธานขั้นสูง	

Courses of the Current Program	Courses of the Revising Program	Remark
SCPL 502 Ethnobotany 3(2-3-5) วทพฤ ๕๐๒ พฤกษศาสตร์พื้นบ้าน	SCPL 502 Ethnobotany 3(2-3-5) วทพฤ ๕๐๒ พฤกษศาสตร์พื้นบ้าน	
SCPL 503 Pollen Biology 3(2-3-5) วทพฤ ๕๐๓ ชีววิทยาเรณู	SCPL 503 Pollen Biology 3(2-3-5) วทพฤ ๕๐๓ ชีววิทยาเรณู	
SCPL 511 Plant Bioregulators 2(2-0-4) วทพฤ ๕๑๑ สารควบคุมทางชีววิทยาของพืช	SCPL 511 Plant Bioregulators 2(2-0-4) วทพฤ ๕๑๑ สารควบคุมทางชีววิทยาของพืช	
SCPL 521 Plant Cytogenetics 3(2-3-5) วทพฤ ๕๒๑ พันธุศาสตร์ของเซลล์พืช	SCPL 521 Plant Cytogenetics 3(2-3-5) วทพฤ ๕๒๑ พันธุศาสตร์ของเซลล์พืช	
SCPL 522 Advanced Plant Molecular Biology 3(3-0-6) วทพฤ ๕๒๒ ชีววิทยาระดับโมเลกุลของพืชขั้นสูง	SCPL 522 Advanced Plant Molecular Biology 3(3-0-6) วทพฤ ๕๒๒ ชีววิทยาระดับโมเลกุลของพืชขั้นสูง	
SCPL 523 Techniques in Plant Molecular Biology 3(3-2-5) วทพฤ ๕๒๓ เทคนิคทางชีววิทยาระดับโมเลกุลของพืช	SCPL 523 Techniques in Plant Molecular Biology 3(3-2-5) วทพฤ ๕๒๓ เทคนิคทางชีววิทยาระดับโมเลกุลของพืช	
SCPL 524 Plant Mutation 3(3-0-6) วทพฤ ๕๒๔ การกลายพันธุ์ในพืช	SCPL 524 Plant Mutation 3(3-0-6) วทพฤ ๕๒๔ การกลายพันธุ์ในพืช	
SCPL 541 Advanced Plant Tissue Culture 3(3-0-6) วทพฤ ๕๔๑ การเพาะเลี้ยงเนื้อเยื่อพืชขั้นสูง	SCPL 541 Advanced Plant Tissue Culture 3(3-0-6) วทพฤ ๕๔๑ การเพาะเลี้ยงเนื้อเยื่อพืชขั้นสูง	
SCPL 543 Advanced Phytochemistry 3(2-3-5)	SCPL 543 Advanced Phytochemistry 3(2-3-5)	

Courses of the Current Program	Courses of the Revising Program	Remark
วทพฤ ๕๔๓ พฤกษเคมีขั้นสูง	วทพฤ ๕๔๓ พฤกษเคมีขั้นสูง	
SCPL 544 Advanced Techniques in Plant Tissue Culture 1(0-3-1) วทพฤ ๕๔๔ เทคนิคการเพาะเลี้ยงเนื้อเยื่อพืชขั้นสูง	SCPL 544 Advanced Techniques in Plant Tissue Culture 1(0-3-1) วทพฤ ๕๔๔ เทคนิคการเพาะเลี้ยงเนื้อเยื่อพืชขั้นสูง	
SCPL 563 Plant-Microbe Interaction 3(3-0-6) วทพฤ ๕๖๓ ปฏิสัมพันธ์ระหว่างพืชและจุลชีพ	SCPL 563 Plant-Microbe Interaction 3(3-0-6) วทพฤ ๕๖๓ ปฏิสัมพันธ์ระหว่างพืชและจุลชีพ	
SCPL 564 Plant Growth Promotion 3(2-3-5) วทพฤ ๕๖๔ การส่งเสริมการเติบพืช	SCPL 564 Plant Growth Promotion 3(2-3-5) วทพฤ ๕๖๔ การส่งเสริมการเติบพืช	
SCPL 571 Current Topics in Plant Sciences 2(2-0-4) วทพฤ ๕๗๑ หัวข้อเรื่องปัจจุบันทางวิทยาการพืช	SCPL 571 Current Topics in Plant Sciences 2(2-0-4) วทพฤ ๕๗๑ หัวข้อเรื่องปัจจุบันทางวิทยาการพืช	
SCPL 572 Applied Statistics for Plant Science 1(1-0-2) วทพฤ ๕๗๒ สถิติประยุกต์เพื่อวิทยาการพืช	SCPL 572 Applied Statistics for Plant Science 1(1-0-2) วทพฤ ๕๗๒ สถิติประยุกต์เพื่อวิทยาการพืช	
SCPL 601 Advanced Botanical Research 1(1-0-2) วทพฤ ๖๐๑ การวิจัยทางพฤกษศาสตร์ชั้นสูง	-	Course cancellation
SCPL 602 Skill in Botanical Knowledge Transfer 1(1-0-2) วทพฤ ๖๐๒ ทักษะทางการถ่ายทอดความรู้ทางพฤกษศาสตร์		Course cancellation

Courses of the Current Program	Courses of the Revising Program	Remark
SCPL 611 Plant Adaptation to Environmental changes 2(2-0-4) วทพฤ ๖๑๑ การปรับตัวของพืชในสิ่งแวดล้อมที่เปลี่ยนแปลง	SCPL 611 Plant Adaptation to Environmental changes 2(2-0-4) วทพฤ ๖๑๑ การปรับตัวของพืชในสิ่งแวดล้อมที่เปลี่ยนแปลง	
SCPL 621 Applied Plant Genetics 2(2-0-4) วทพฤ ๖๒๑ พันธุศาสตร์ของพืชขั้นประยุกต์	SCPL 621 Applied Plant Genetics 2(2-0-4) วทพฤ ๖๒๑ พันธุศาสตร์ของพืชขั้นประยุกต์	
SCPL 671 Special Problems in Plant Sciences 2(1-3-3) วทพฤ ๖๗๑ ปัญหาพิเศษทางวิทยาการพืช	SCPL 671 Special Problems in Plant Sciences 2(1-3-3) วทพฤ ๖๗๑ ปัญหาพิเศษทางวิทยาการพืช	
-	SCPL xxx Entrepreneurship and innovation driven by plant science and pharmaceutical botany 3(3-0-6) วทพฤ xxx นวัตกรรมและความเป็นผู้ประกอบการที่ขับเคลื่อนโดยวิทยาการพืชและเภสัชพฤกษศาสตร์	New course
PYPB 601 Traditional Thai Medicine 3(3-0-6) ภกภพ ๖๐๑ การแพทย์แผนไทย		Course cancellation
PYPB 604 Medical Ethnobotany 3(2-3-5) ภกภพ ๖๐๔ พฤกษศาสตร์พื้นบ้านทางการแพทย์	PYPB 604 Medical Ethnobotany ภกภพ ๖๐๔ พฤกษศาสตร์พื้นบ้านทางการแพทย์ 3(2-3-5)	
PYPB 607 Development of Herbal Medicine 3(2-3-5) ภกภพ ๖๐๗ การพัฒนายาจาก	PYPB 607 Development of Herbal Medicine 3(2-3-5) ภกภพ ๖๐๗ การพัฒนายาจากสมุนไพร	

Courses of the Current Program	Courses of the Revising Program	Remark
สมุนไพร		
PYPB 610 Current Topics in Pharmaceutical Botany 2(2-0-4) ภกภพ ๖๑๐ หัวข้อเรื่องปัจจุบันทางเภสัชพฤกษศาสตร์	PYPB 610 Current Topics in Pharmaceutical Botany 2(2-0-4) ภกภพ ๖๑๐ หัวข้อเรื่องปัจจุบันทางเภสัชพฤกษศาสตร์	
PYPB 622 Plant Database Construction and Management 3(2-3-5) ภกภพ ๖๒๒ การสร้างและจัดการฐานข้อมูลพืช	PYPB 622 Plant Database Construction and Management 3(2-3-5) ภกภพ ๖๒๒ การสร้างและจัดการฐานข้อมูลพืช	
PYPH 695 Applied Plant Biotechnology in Pharmaceutical Sciences 3(2-3-5) ภกวพ ๖๙๕ เทคโนโลยีชีวภาพประยุกต์ด้านพืชทางเภสัชศาสตร์	PYPH 695 Applied Plant Biotechnology in Pharmaceutical Sciences 3(2-3-5) ภกวพ ๖๙๕ เทคโนโลยีชีวภาพประยุกต์ด้านพืชทางเภสัชศาสตร์	
Thesis (12 credits)	**Thesis** (12 credits)	
SCPL/PYPB 698 Thesis 12(0-36-0) วทพฤ/ภกภพ 698 วิทยานิพนธ์	SCPL/PYPB 698 Thesis 12(0-36-0) วทพฤ/ภกภพ 698 วิทยานิพนธ์	

6. The Comparison Table of the Curriculum Structure between the Current Program and Revised Program Based on Criteria on Graduate Studies B.E. 2558 (set by Ministry of Education)

Course Category	Credits		
	Criteria on Graduate Studies B.E. 2558	Curriculum Structure of the Current Program	Curriculum Structure of the Revised Program
1. Required courses	Not less than 12	12	12
2. Elective courses		Not less than 12	Not less than 12
3. Thesis/thematic paper	Not less than 12	12	12
Total credits (not less than)	36	36	36