



School of Bioinnovation and Bio-based Product Intelligence (SCIN)
Program in Bioinnovation (International Program, Multidisciplinary Program)
Course: SCIN 382 Phytochemistry and Herbal Products

Degree Bachelor Master Doctoral
Faculty of Science

Course Code and Course Title	English: SCIN 382 Phytochemistry and Herbal Products Thai: วทนว ๓๘๒ พฤษเคมีและผลิตภัณฑ์สมุนไพร
Number of Credits	2 (2-0-4)
Curriculum and Course Type	Program of Study Bachelor's Degree Program in Science and Technology (International Program, Multidisciplinary Program) Course Type Specific course
Course Coordinator and Teaching Staff	Dr Sitthivut Charoensutthivarakul (SC) Address: K618 Chalermphrakiat Building School of Bioinnovation and Bio-based Product Intelligence, Faculty of Science, Mahidol University Tel: 0-2201-5956 email: sitthivut.cha@mahidol.edu
Semester/Year of Study	Academic Year 2021 First Semester (1/2021) / 3 rd and 4 th Year
Prerequisite	SCBM 281 Biochemistry or equivalent
Co-requisite	None
Day/Time/Study Site Location	Thursday 9.30-11.30 Faculty of Science, Mahidol University, Salaya Campus
Date of Latest Revision	19 July 2021

Course Learning Outcomes (CLOs)

After successful completion of this course, students are able to

- CLO1: Identify the roles and importance of phytochemicals and herbal products in human's life
- CLO2: Classify each phytochemical compound based on their biosynthetic origins and properties
- CLO3: Choose appropriate techniques of sample preparation and extraction of herbal products
- CLO4: Determine appropriate analytical techniques to identify the active ingredients and control the quality of the product
- CLO5: Propose an idea to develop and improve the quality of herbal product by using the extent of scientific knowledge and current technology
- CLO6: Deliver well-structured presentation to their peers

Objectives of Development / Revision

The objectives of this course are to provide students the knowledge, principles and analytical skills concerning phytochemistry and the process involved in herbal product's preparation and quality control together with the current trend in this area as well as promote students' communication skills and professional ethics.

Course Description

ความหมายและความสำคัญของพฤษเคมีและผลิตภัณฑ์สมุนไพร เส้นทางการสังเคราะห์ ประเภทของสารผลิตภัณฑ์จากสมุนไพร การเตรียมตัวอย่างและการสกัดสมุนไพร เทคนิคการแยกและการวิเคราะห์สารพฤษเคมี การควบคุมคุณภาพและ



กฎระเบียบที่เกี่ยวข้อง แนวโน้มและหัวข้อปัจจุบันทางพฤกษเคมีและผลิตภัณฑ์สมุนไพร การนำเสนอผลงานปากเปล่าในหัวข้อผลิตภัณฑ์สมุนไพร

Definitions and importance of phytochemistry and herbal products; biosynthetic pathway; categories of medicinal natural products; sample preparations and extractions of medicinal herbs; separation and analytical techniques of phytochemicals; the quality control and related regulations; current trends and topics in phytochemistry and herbal products; oral presentations in the topic of herbal products

Credit Hours / Trimester

Theory (Hours)	Addition Class (Hours)	Laboratory/Field trip/ Internship (Hours)	Self-study (Hours)
30 Hours/Semester (2 Hours x 15 Weeks)	-	-	60 Hours/Semester (4 Hours x 15 Weeks)

Number of Hours per Week for Individual Advice

1 hour per week by appointment at **K618** Faculty of Science, Mahidol University, Phyathai Campus or online via <https://mahidol.webex.com/meet/sittthivut.cha>. Students can contact the instructors by email or via the Google Classroom which will be responded during the office hour.

Evaluation of the CLOs

Course Learning Outcomes	Measurement Method			Weight (%)
	Class Participation and In-class Discussion	Written Exam	Individual Oral Presentation	
CLO1 Identify the roles and importance of phytochemicals and herbal products in human's life	2%	5%	5%	12%
CLO2 Classify each phytochemical compound based on their biosynthetic origins and properties	2%	16%	7%	25%
CLO3 Choose appropriate techniques of sample preparation and extraction of herbal products	8%	13%	-	21%
CLO4 Determine appropriate analytical techniques to identify the active ingredients and control the quality of the product	8%	13%	-	21%
CLO5 Propose an idea to develop and improve the quality of herbal product by using the extent of scientific knowledge and current technology	-	8%	6%	14%
CLO6 Deliver well-structured presentation to related audiences	-	-	7%	7%
Total	20%	55%	25%	100%



Measurement and evaluation

After completion of the evaluation process each student is assigned a criterion-referenced grade (as shown in the table below). Evaluation and achievement will be justifying according to Faculty and University code, conducted by grading system of A, B+, B, C+, C, D and F. To pass this course, student must earn a grade of a least D.

Total Percentage of Evaluation	Below 49.5	49.5-54.5	54.5-59.5	59.5-64.5	64.5-69.5	69.5-74.5	74.5-79.5	79.5-100
Grade	F	D	D+	C	C+	B	B+	A

Teaching Schedule 1st Semester of Academic Year 2021

Week	Date	Topic	Hour		Instructor
			Lecture	Lab	
1	12 Aug	No class (Mother's Day)	-	-	-
2	19 Aug	Course Introduction and orientation. Overview of the fundamentals of chemistry	2	0	SC (online)
3	26 Aug	Basic Phytochemistry Concepts	2	0	SC (online)
4	2 Sep	Biosynthetic pathway in plants	2	0	SC (online)
5	9 Sep	Biosynthetic pathway in plants	2	0	SC (online)
6	16 Sep	Biosynthetic pathway in plants	2	0	SC (online)
7	23 Sep	Biosynthetic pathway in plants Sample inspection, collection, and preparation techniques	2	0	SC (online)
8	30 Sep	Extraction techniques	2	0	SC (online)
Midterm examination (content up to week 7)					
10	14 Oct	Extraction techniques/Separation techniques	2	0	SC
11	21 Oct	No class (Special Holidays)	-	-	-
12	28 Oct	Separation techniques	2	0	SC
13	4 Nov	Analytical techniques	2	0	SC
14	11 Nov	Current trends and topics in phytochemistry and herbal product (QC and regulations)	2	0	SC and Special Instructor
15	18 Nov	Current trends and topics in phytochemistry and herbal product (products)	2	0	SC and Special Instructor
16	25 Nov	Individual assignment	2	0	SC
Final examination (overall content)					