



School of Bioinnovation and Bio-based Product Intelligence (SCIN)
Program in Bioinnovation (International Program, Multidisciplinary Program)
Course: SCIN 262 Materials Science and Applications

Degree Bachelor Master Doctoral
Faculty of Science

Course Code and Course Title	English SCIN 262 Materials Science and Applications Thai วิชา ๒๖๒ วัสดุศาสตร์และการนำไปใช้
Number of Credits	3 (3-0-6)
Curriculum and Course Type	Program of Study Bachelor's Degree Program in Science and Technology (International Program, Multidisciplinary Program) Course Type Major Elective Course
Course Coordinator	Asst. Prof. Siriyupa Netramai, Ph.D Address: School of Bioinnovation and Bio-based Product Intelligent, Faculty of Science, Mahidol University Tel: n/a email: siryupa.net@mahidol.edu
Semester/Year of Study	Academic Year 2023 Second Semester (2/2023) / Second Year
Prerequisite	None
Co-requisite	None
Day/Time/Study Site Location	Wednesday / 9.30AM-12.30PM / Online/On campus SC1-161, Faculty of Science, Mahidol University, Salaya Campus / Zoom
Google Classroom Link	https://classroom.google.com/c/NjQ5NzM0OTUxODI4
Google Classroom Code	amgu4am
Date of Latest Revision	17 December 2023

Course Learning Outcomes (CLOs)

After successful completion of this course, students are able to

1. Explain important properties, processing, fabrications, applications, and waste management of selected materials
2. List crucial materials' properties required for specific applications in agriculture, and pharmaceutical- and food industries
3. Select appropriate material(s) to be used in particular application(s) in agriculture, and pharmaceutical- and food industries

Objectives of Development / Revision

To propose the new program

Course Description

Properties, processing, fabrications, applications, and waste management of materials, including plant fibers, woods, papers, glass, metals, polymers, nanomaterials, biodegradable materials, and stimuli-responsive materials, used in the daily life, agriculture, and pharmaceutical- and food industries.



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Credit Hours / Trimester

Theory (Hours)	Addition Class (Hours)	Laboratory/Field trip/ Internship (Hours)	Self-study (Hours)
45 Hours/Semester (3 Hours x 15 Weeks)	-	-	90 Hours/Semester (6 Hours x 15 Weeks)

Number of Hours per Week for Individual Advice

2 hours per week or student requirement during prescribed date and time

Evaluation of the CLOs

Course Learning Outcomes	Measurement Method				Weight (%)
	Class Participation	Written Exam	Assignment	Presentation	
CLO1 Explain important properties, processing, fabrications, applications, and waste management of selected materials	5%	20%	10%	-	25%
CLO2 List crucial materials' properties required for specific applications in agriculture, and pharmaceutical- and food industries	5%	20%	10%	-	35%
CLO3 Select appropriate material(s) to be used in particular application(s) in agriculture, and pharmaceutical- and food industries	5%	10%	10%	5	30%
Total	15%	50%	30%	5%	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 50	50-54.99	55-59.99	60-64.99	65-69.99	70-74.99	75-79.99	80-100
Grade	F	D	D+	C	C+	B	B+	A



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Teaching Schedule 2nd Semester of Academic Year 2022

Week	Date	Topic	Number of Hours*		Instructor
			Lecture	Laboratory	
1	10 Jan. 2024	- Course introduction - History of man-made materials	3	0	Asst. Prof. Siriyupa Netramai
2	17 Jan. 2024	Leaf, plant fibers, & woods: Properties, processing, applications, and degradation	3	0	Asst. Prof. Siriyupa Netramai
3	24 Jan. 2024	Papers & paperboards: Properties, processing, applications, and degradation	3	0	Asst. Prof. Siriyupa Netramai
4	31 Jan. 2024	Glass: Properties, processing, applications, and degradation	3	0	Asst. Prof. Siriyupa Netramai
5	7 Feb. 2024	Metals: Properties, processing, applications, and degradation	3	0	Asst. Prof. Siriyupa Netramai
Speed test I					
6	14 Feb. 2024	Polymers: Properties, processing, applications, and degradation	3	0	Asst. Prof. Siriyupa Netramai
7	21 Feb. 2024		3	0	Asst. Prof. Siriyupa Netramai
8	28 Feb. 2024		3	0	Dr. Thitisilp Kijchavengkul
9	13 Mar. 2024	Material testing	3	0	Asst. Prof. Siriyupa Netramai
10	20 Mar. 2024	Nanomaterials: Properties, processing, and applications	3	0	Dr. Thitisilp Kijchavengkul
11	27 Mar. 2024		3	0	Dr. Thitisilp Kijchavengkul
Speed test II					
12	3 Apr. 2024	Compostable & biodegradable materials: Properties, processing, and applications	3	0	Dr. Thitisilp Kijchavengkul
13	10 Apr. 2024	Material waste management	3	0	Dr. Thitisilp Kijchavengkul
14	17 Apr. 2024	Nanomaterials: Properties, processing, and applications	3	0	Dr. Theeranun Janjarasskul
15	24 Apr. 2024	Stimuli-responsive materials: Properties, processing, and applications	3	0	Dr. Theeranun Janjarasskul
Final examination (29 Apr.-10 May 2024)					

* Wednesday 9.30AM-12.30PM Online/On campus Faculty of Science, Mahidol University, Salaya Campus