



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 Specific 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: siriyupa.net@mahidol.ac.th
Semester/Year of Study	Academic Year 2021 Second Semester (2/2021) / Second Year
Prerequisite	None
Co-requisite	None
Day/Time/Study Site Location	Wednesday / 9.00AM-12.00PM / Online/On campus SC1-159 , Faculty of Science, Mahidol University, Salaya Campus / Zoom
Google Classroom Link	https://classroom.google.com/c/NDO3MDEyMTE2Njcy
Google Classroom Code	2cpl22
Date of Latest Revision	16 December 2021

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 2021

Week	Date	Topic	Number of Hours*		Instructor
			Lecture	Laboratory	
1	5 Jan. 2022	- Course introduction - History of man-made materials	3	0	Asst. Prof. Siriyupa Netramai
2	12 Jan. 2022	Leaf, plant fibers, & woods: Properties, processing, applications, and degradation	3	0	Asst. Prof. Siriyupa Netramai
3	19 Jan. 2022	Papers & paperboards: Properties, processing, applications, and degradation	3	0	Asst. Prof. Siriyupa Netramai
4	26 Jan. 2022	Glass: Properties, processing, applications, and degradation	3	0	Asst. Prof. Siriyupa Netramai
5	2 Feb. 2022	Metals: Properties, processing, applications, and degradation	3	0	Asst. Prof. Siriyupa Netramai
Speed test I					
6	9 Feb. 2022	Polymers: Properties, processing, applications, and degradation	3	0	Asst. Prof. Siriyupa Netramai
7	TBA		3	0	Asst. Prof. Siriyupa Netramai
8	23 Feb. 2022		3	0	Dr. Thitisilp Kijchavengkul
9	9 Mar. 2022	Material testing	3	0	Asst. Prof. Siriyupa Netramai
10	16 Mar. 2022	Nanomaterials: Properties, processing, and applications	3	0	Dr. Thitisilp Kijchavengkul
11	23 Mar. 2022		3	0	Dr. Thitisilp Kijchavengkul
Speed test II					
12	30 Mar. 2022	Compostable & biodegradable materials: Properties, processing, and applications	3	0	Dr. Thitisilp Kijchavengkul
13	TBA	Material waste management	3	0	Dr. Thitisilp Kijchavengkul
14	20 Apr. 2022	Nanomaterials: Properties, processing, and applications	3	0	Invited speaker
15	27 Apr. 2022	Stimuli-responsive materials: Properties, processing, and applications	3	0	Invited speaker
Final examination (2-13 May 2021)					

* Wednesday 9.00AM-12.00PM Online/On campus Faculty of Science, Mahidol University, Salaya Campus

** TBA = To be announced