



Program: Bioinnovation (International Program, Multidisciplinary Program)

Program Level  Bachelor  Master  Doctor

Course Title: Bioinnovation and Sustainable Society

Faculty of Science

Course Code: SCIN 103:

School of Bioinnovation and Bio-based Product Intelligence (SCIN)

<b>Course Code and Course Title</b>	English: SCIN 103 Bioinnovation and Sustainable Society Thai: วิชา ๑๐๓ ชีวนวัตกรรมและสังคมยั่งยืน
<b>Number of Credits</b>	3 (3-0-6)
<b>Curriculum and Course Type</b>	Program of Bachelor's Degree Program in Science and Technology (International Program, Multidisciplinary Program) Course Type Compulsory Course
<b>Course Coordinator</b>	Assoc. Prof. Kanyaratt Supaibulwatana, Ph.D. Address: N.107 Rm., 1 <sup>st</sup> Fl., N. Bld., Faculty of Science, Mahidol University, 272 Rama VI Road, Ratchathewi, Bangkok 10400, THAILAND Tel. 02-201-5303; e-mail: kanyaratt.sup@mahidol.ac.th
<b>Semester/Year of Study</b>	Academic Year 2024 First Semester (1/2024) / First Year
<b>Prerequisite</b>	None
<b>Co-requisite</b>	None
<b>Day/Time/Study Site Location</b>	<b>Wednesday / 09.30 – 12.30 h.</b> SC1-158 rm., Faculty of Science, Mahidol University, Salaya Campus; B.400 rm., Faculty of Science, Mahidol University, Phaya Thai
<b>Date of Latest Revision</b>	July 9, 2024

### Course Learning Outcomes (CLOs)

On completion of the course, the students will be able to;

- 1) CLO1: Explain concepts of Bioinnovation and Sustainable Society, how nature works regarding the climate, biodiversity and the flow of natural resources, and realize the impact of human activity on the environment based on Bioinnovation and perspectives of sustainable society.
- 2) CLO2: Discuss importance of Bioinnovation in various aspects related to agriculture, food, energy, environment, health and wellness. Discuss on the case studies or situations in the context of Bioinnovation and sustainable society.
- 3) CLO3: Apply specific innovation to given problems and/or challenges related to innovation and sustainability using problem-based learning for quality of life, sustainable benefits of mankind, society and global environment.
- 4) CLO4: Assess the benefits, opportunities, and challenges of bioresources utilization for today's economy and sustainability.



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### Course Description

The philosophy and significant roles of natural resources management; biodiversity; relation of resource demand and supply with human and environment; potential of bioresources, bioproducts and biological wastes; creative strategies and integration of Bioinnovation for sustainable benefits of mankind, society and global environment.

### 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

CLOs	Teaching and learning experience management			Learning Outcome Measurement			
	Lecture	Class activity	Presentation	Class Participation & Performance	Written Exam	Assignment	Weight (%)
CLO1	✓			-	30%	-	30%
CLO2	✓	✓		5%	20%	-	25%
CLO3	✓	✓	✓	5%	-	25%	30%
CLO4	✓	✓	✓	5%	-	10%	15%
<b>Total</b>				<b>15%</b>	<b>50%</b>	<b>35%</b>	<b>100%</b>

### 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.



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Total Percentage of Evaluation	<50	≥ 50 < 55	≥ 55 < 60	≥ 60 < 65	≥ 65 < 70	≥ 70 < 75	≥ 75 < 80	≥ 80
Grade	F	D	D+	C	C+	B	B+	A

D is considered a minimal level for students to achieve learning outcomes.

**Teaching staff:**

Code	Name	Email
KS	Assoc. Prof. Dr. Kanyaratt Supaibulwatana N.107, N. Bld. (MUSC - Phaya Thai)	kanyaratt.sup@mahidol.ac.th
NN	Asst.Prof. Dr. Narin Nuttavut P412B, Physic Bld. (MUSC - Phaya Thai)	narin.nut@mahidol.ac.th
SC	Asst.Prof. Dr. Somchai Chauvatcharin BT.208, BT. Bld. (MUSC - Phaya Thai)	somchai.cha@mahidol.ac.th
SCh	Asst.Prof. Dr. Sitthivut Charoensutthivarakul K.617, K. Bld. (MUSC - Phaya Thai)	sitthivut.cha@mahidol.ac.th
SN	Asst.Prof. Dr. Siriyupa Netramai SC1-316 and SC1-353 (MUSC-Salaya)	siriyupa.net@mahidol.ac.th
SS	Dr. Stefan Schreier SC2-204 and SC1-354B (MUSC-Salaya)	stefan.scr@mahidol.edu
TK	Dr. Thitisilp Kijchavengkul SC1-306 and SC1-353 (MUSC-Salaya)	thitisilp.kij@mahidol.ac.th
TT	Dr. Tatpong Tulyananda SC1-354B (MUSC-Salaya)	tatpong.tul@mahidol.edu
WC	Ms. Wannisa Chuekong (Teaching assistance) B.400, B. Bld. (MUSC- Phaya Thai)	wannisa.chu@mahidol.ac.th

**Course Assessment (exams and assignment) by Instructors and class members:**

Assessment	KS	NN	SC	SCh	SN	SS	TK	TT	Project	Points	%
Midterm	25	15	15	15	-	15	15	-	-	100	35
Final	-	-	-	15	-	30	-	-	-	45	15
Assignment	5	-	-	-	15	-	-	15	70*	105	35
Class Activity	15	-	-	-	15	-	-	-	15	45	15

**Note\*** Project evaluation from teachers and class members.



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### SCIN 103 Bioinnovation and Sustainable Society (3 (3-0-6)

Wednesday, 09.30-12.30 h. (SC1-158 Rm.)

Week	Date	Topic	Instructor	Exam	Assignment
1	7 Aug. 2024	Bioinnovation and Sustainable Development Goals (SDGs)	KS	✓	✓
2	14 Aug. 2024	Innovation for Bioresources Management: Future Trends, Risks and Sustainability	KS	✓	-
3	21 Aug. 2024	Innovation in Future Foods & Food Safety	SN	-	✓
4	28 Aug. 2024	Image Processing and AI for Innovation	NN	✓	-
5	4 Sept. 2024	Intelligent Packaging & Global Smart Packaging Trends	TK	✓	-
6	11 Sept. 2024	Green Chemistry and Sustainability	SCh	✓	-
7	18 Sept. 2024	Concept of zero wastes for industrialization and sustainable management	SC	✓	-
8	25 Sept. 2024	Biofuels of The Future	SS	✓	-
9	2 Oct. 2024	<b>Midterm Examination (09.30-12.30 h)</b>			
10*	9 Oct. 2024	Innovation in Drug Discovery & Wellness	SCh	✓	-
11	16 Oct. 2024	Technology Trends & Future of Medical Devices	SS	✓	-
12	30 Oct. 2024	Green Architecture & Sustainable Buildings: The Cutting-edge Technology of Smart Building	SS	✓	-
13	6 Nov. 2024	Innovations and Future Trends for Space and Extraterrestrial Environments: A Roadmap for Resource Utilization	TT	-	✓
14	13 Nov. 2024	Bio-based Material and Its Roles in Global Environments	SN	-	✓
15	20 Nov. 2024	Conferences-I: Innovation Perspectives and Challenges for Profit, People and Planet	KS / WC	-	✓
16	27 Nov. 2024	Conferences-II: Innovation Perspectives and Challenges for Profit, People and Planet	KS / WC	-	
17	4 Dec. 2024	<b>Final Examination (09.30-12.30 h)</b>			

**Note\*** Lecture on October 9th, 2024 will be arranged at Phaya Thai campus.