Course Code and Course Title	English: SCIN 103 Bioinnovation and Sustainable Society Thai: วทนว ๑๐๓ ชีวนวัตกรรมและสังคมยั่งยืน
Number of Credits	3 (3-0-6)
Curriculum and Course Type	Program of Bachelor's Degree Program in Science and Technology (International Program, Multidisciplinary Program) Course Type Compulsory Course
Course Coordinator	1) Assoc. Prof. Kanyaratt Supaibulwatana, Ph.D. Address: N.107 Rm., 1st 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 2) Dr. Papasara Chantawichitwong Address: School of Bioinnovation and Bio-based Product Intelligence Faculty of Science, Mahidol University e-mail: papasara.cha@mahidol.ac.th
Semester/Year of Study	Academic Year 2026 First Semester (1/2026) / First Year
Prerequisite	None
Co-requisite	None
Day/Time/Study Site Location	**Wednesday / 09.00 – 12.00 h.** **SC1-158 room**., Faculty of Science, Mahidol University, Salaya Campus
Date of Latest Revision	July 20, 2026

Course Learning Outcomes (CLOs)

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

1) CLO1: Explain the concepts and principles of bioinnovation and sustainable society, including climate systems, biodiversity, natural resource flows, and the impacts of human activities on the environment in the context of sustainability.
2) CLO2: Analyze the roles and importance of bioinnovation in agriculture, food, energy, environmental management, health, and wellness through case studies and contemporary issues related to sustainable society.
3) CLO3: Apply knowledge of bioinnovation and sustainability to propose appropriate solutions or innovations for addressing problems and challenges related to quality of life, society, and the global environment through problem-based learning approaches.
4) CLO4: Evaluate the benefits, opportunities, limitations, and challenges associated with the utilization of bio-resources and bio-based innovations in the context of the modern economy and sustainable development.

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

3 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%
			Total	**15%**	**50%**	**35%**	**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	<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
PC	Dr. Papasara Chantawichitwong SC1-353B (MUSC-Salaya)	papasara.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.ac.th
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.ac.th
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	PC	SC	SN	SS	TK	TT	Project	Points	%
Midterm	25	15	-	-	15	30	-	-	-	85	**35**
Final	-	-	15	15	-	15	15	-	-	60	**15**
Assignment	5	-	15	-	15	-	-	30	50*	115	**35**
Class Activity	15	-	-	-	-	-	-	-	-	15	**15**

Note* Project evaluation from teachers and class members.

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)

SCIN 103 Bioinnovation and Sustainable Society (3 (3-0-6) Wednesday, 09.00-12.00 h. (SC1-158 Rm.)

Week	Date	Topic	Instructor	Exam	Assignment
1	5 Aug. 2026	Bioinnovation and Sustainable Development Goals (SDGs)	KS	✓	✓
2	19 Aug. 2026	Innovation for Bioresources Management: Natural resource challenges & management: Socio-economic aspects of bioresources, environment & innovation	KS	✓	-
3	26 Aug. 2026	Innovation in Future Foods & Food Safety	SN	-	✓
4	2 Sept. 2026	Artificial intelligence in bioinnovation research	NN	✓	-
5	9 Sept. 2026	Smart and Intelligent packaging	SN	✓	-
6	16 Sept. 2026	Biofuels of The Future	SS	✓	-
7	23 Sept. 2026	Green architecture & sustainable buildings: The cutting-edge technology to build houses	SS	✓	-
	30 Sept. 2026	**Midterm Examination (09.00-12.00 h)**			
8	7 Oct. 2026	Innovations and Future Trends for Space and Extraterrestrial Environments: A Roadmap for Resource Utilization	TT	-	✓
9	14 Oct. 2026	Smart biodegradable material and its roles in global environments	TK	✓	-
10	21 Oct. 2020	Green chemistry and sustainability	SCh	✓	-
11	28 Oct. 2026	Technology Trends & Future of Medical Devices	SS	✓	-
12	4 Nov. 2026	Advancements in Lunar and Mars Exploration	TT	-	✓
13	11 Nov. 2026	Sustainable wellness in modern society	PC	-	✓
14	18 Nov. 2026	Preventive medicine and nutraceutical innovation	PC	✓	-
15	25 Nov. 2026	Conferences: Bioinnovation and Sustainable Development	KS / PC / WC	-	✓
	9 Dec. 2026	**Final Examination (09.00-12.00 h)**			