



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 General Education
Course Coordinator	Assoc. Prof. Kanyaratt Supaibulwatana, Ph.D. Address: N.107 Rm., 1 st 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
Semester/Year of Study	Academic Year 2022-23 Second Semester (2/2022) / First Year
Prerequisite	None
Co-requisite	None
Day/Time/Study Site Location	Section 1: Friday / 9.00. – 12.00 h. / Onsite (SC1-155) Faculty of Science, Mahidol University, Salaya Campus Section 2: Saturday / 9.00. – 12.00 h. / Online + Onsite (B.400/Phayathai campus)
Date of Latest Revision	28 December 2022

Course Learning Outcomes (CLOs)

After successful completion of this course, students are able to

1. Explain 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. Discuss on the case studies or situations in the context of science and technology that involve with bioinnovation and sustainable society.
3. Apply the knowledge and information concerning bioinnovation and sustainable society for quality of life, sustainable benefits of mankind, society and global environment.
4. Assess the benefits, opportunities, and challenges of bioresources in today's economy.

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

Course Learning Outcomes	Measurement Method			Weight (%)
	Class Attendance, Participation and Behavior in Class	Written Exam	Class Project	
CLO1 Explain concepts of Bioinnovation and Sustainable Society	5%	30%	-	35%
CLO2 Discuss importance of bioinnovation in various aspects related to agriculture, food, energy, environment, health and wellness	5%	30%	-	35%
CLO3 Apply specific innovation to given problems and/or challenges related to innovation and sustainability using problem-based learning	5%	-	25%	30%
Total	15%	60%	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 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

Teaching staff:

Code	Name	Email
KS	Assoc. Prof. Dr. Kanyaratt Supaibulwatana N.107, N. Bld. (MUSC-Payathai)	Kanyaratt.sup@mahidol.ac.th
SC	Asst.Prof. Dr. Somchai Chauvatcharin BT.208, BT. Bld. (MUSC-Payathai)	somchai.cha@mahidol.ac.th
SCh	Asst.Prof. Sitthivut Charoensutthivarakul K.617, K. Bld. (MUSC-Payathai)	sitthivut.cha@mahidol.ac.th
SN	Asst.Prof. Dr. Siriyupa Netramai Office: SC1-316 (MUSC-Salaya) Lab: SC1-353 (MUSC-Salaya)	Siriyupa.net@mahidol.ac.th
SS	Dr. Stefan Schreier Office: SC2-204 (MUSC-Salaya) Lab: SC1-354B (MUSC-Salaya)	stefan.sch@mahidol.ac.th
TK	Dr. Thitisilp Kijchavengkul Office: SC1-306 (MUSC-Salaya) Lab: SC1-353 (MUSC-Salaya)	Thitisilp.kij@mahidol.ac.th
WC	Ms. Wannisa Chuekong (Teaching Assistance) B.400, B. Bld. (MUSC-Payathai)	wannisa.chu@mahidol.ac.th



School of Bioinnovation and Bio-based Product Intelligence (SCIN)
 Program in Bioinnovation (International Program, Multidisciplinary Program)
 Course: SCIN 103: Bioinnovation and Sustainable Society

Degree Bachelor Master Doctoral
 Faculty of Science

Course schedule: ^{1/} means timing for section 1 (Friday) followed with section 2 (Saturday).

Week	Date ^{1/}	Topic (Update: Jan 3, 2023)	Number of Hours		Instructor
			Lecture / Conference	Lab.	
1	13 Jan. 2023	Introduction and class assignment - Bioinnovation and Sustainable Society - Natural resource challenges & management	3	0	KS
2	20 Jan. 2023	Innovation in Food safety & Food security	3	0	SN
3	27 Jan. 2023	Experimental design and modeling for bio-based products development	3	0	TK
4	3 Feb. 2023	Biodegradable material and its roles in global environments	3	0	TK
5	10 Feb. 2023	Bio-based material & Intelligent packaging	3	0	SN
6	17 Feb. 2023	Biofuels of the future	3	0	SS
7	24 Feb. 2023	Biological wastes & sustainable management	3	0	SC
8	3 Mar. 2023	Green architecture & sustainable buildings: The cutting edge technology to build houses	3	0	SS
9	10 Mar. 2023	Midterm examination week (09.00-12.00 h)			KS/WC
10	17 Mar. 2023	Green chemistry and sustainability	3	0	SCh
11	24 Mar. 2023	DNA teleportation: Electromagnetism and DNA, research feature by <i>Luc Montagnier</i>	3	0	SS
12	31 Mar. 2023	Technology Trends and future of medical devices	3	0	SS
13	7 Apr. 2023	Drug discovery for good health and wellness	3	0	SCh
14	21 Apr. 2023	DNA technology and genetically modified organisms: impact and risk	3	0	KS
15	28 Apr. 2023	Conferences: Bioinnovation and Sustainable Society (Project-based)	6	0	KS/WC
16	12 May 2023	Final examination week (09.00-12.00 h)			KS/WC