



<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 General Education
<b>Course Coordinator</b>	Assoc. Prof. Kanyaratt Supaibulwatana, Ph.D. Address: N.107 Rm., 1 <sup>st</sup> Fl., N. Bld., Department of Biotechnology, 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 2021-22 Second Semester (2/2021) / First Year
<b>Prerequisite</b>	None
<b>Co-requisite</b>	None
<b>Day/Time/Study Site Location</b>	Friday / 9.00. – 12.00 h. / Online + Onsite (SC1-155) Faculty of Science, Mahidol University, Salaya Campus
<b>Date of Latest Revision</b>	24 December 2021

### 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%
<b>Total</b>	<b>15%</b>	<b>60%</b>	<b>25%</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.

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



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

**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	Dr. 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	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



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Week	Date	Topic	Number of Hours		Instructor
			Lecture / Conference	Lab.	
1	7 Jan. 2022	Introduction and class assignment - Bioinnovation and Sustainable Society - Natural resource challenges & management	3	0	KS
2	14 Jan. 2022	Experimental design and modeling for bio-based products development	3	0	TK
3	21 Jan. 2022	Innovation in Food safety & Food security	3	0	SN
4	28 Jan. 2022	Biodegradable material and its roles in global environments	3	0	TK
5	4 Feb. 2022	Bio-based material & Intelligent packaging	3	0	SN
6	11 Feb. 2022	Biofuels of the future	3	0	SS
7	18 Feb. 2022	Green architecture & sustainable buildings: The cutting edge technology to build houses	3	0	SS
8	25 Feb. 2022	Biological wastes & sustainable management	3	0	SC
<b>Midterm examination week (28 Feb - 4 Mar. 2022)</b>					KS/WC
9	4 Mar. 2022	Innovation of drug discovery for coping with emerging diseases	3	0	SCh
10	11 Mar. 2022	Medicinal chemistry for health and wellness	3	0	SCh
11	18 Mar. 2022	DNA teleportation: Electromagnetism and DNA, research feature by Luc Montagnier	3	0	SS
12	25 Mar. 2022	Technology Trends and future of medical devices	3	0	SS
13	1 Apr. 2022	DNA technology and genetically modified organisms: impact and risk	3	0	KS
14	8 Apr. 2022	Conferences: Bioinnovation and Sustainable Society (Project-based)	3	0	KS/WC
15	22 Apr. 2022	Conferences: Bioinnovation and Sustainable Society (Project-based)	3	0	KS/WC
16	29 Apr 2022	Class conclusion	3	0	KS
<b>Final examination week (2-13 May 2022)</b>					KS/WC