



School of Bioinnovation and Bio-based Product Intelligence (SCIN)
 Program in Bioinnovation (International Program, Multidisciplinary Program)
 Course: SCGI 283 Nature and Philosophy of Science

Degree Bachelor Master Doctoral
 Faculty of Science

Course Code and Course Title	Thai วิชาศน ๒๘๓ ธรรมชาติและปรัชญาของวิทยาศาสตร์ English SCGI 283 Nature and Philosophy of Science
Number of Credits	3 (3-0-6) (Lecture 3 hours – Laboratory 0 hours/week - Self-Study 6 hours/week)
Curriculum and Course Type	Program of Study Bachelor’s Degree Program (International Program) Course Type General Education
Course Coordinator	Assoc. Prof. Wannapong Triampo, Ph.D. Address: Department of Physics, Faculty of Science, Mahidol University 272 Rama VI Road, Ratchathewi District, Bangkok 10400, THAILAND Tel. 02-201-5770-1 e-mail: wtriampo@gmail.com , wannapong.tri@mahidol.edu
Semester/Year of Study	Academic Year 2022 First Semester (1/2022) / First Year
Prerequisite	None
Co-requisite	None
Day/Time/Study Site Location	Thursday / 13:30-16.30 Faculty of Science, Mahidol University, Salaya Campus (ONLINE)
Date of Latest Revision	July 2022

Course Learning Outcomes (CLOs)

After successful completion of this course, students will be able to:

- 1) CLO1 Explain key laws, theories, and principles of science
- 2) CLO2 Explain key concepts of the philosophy of science
- 3) CLO3 Analyze the scientific process used in solving the problem in real life.
- 4) CLO4 Propose inquiry-based scientific model suitable for given situation or problem

Course Description

Nature and philosophy of science; the history of and origin science; measurement and scientific discovery; from Galileo to Einstein; science and STEM as inquiry; biology: theory and lab; chemistry: theory and Lab; physics: theory and lab; integrated science; contemporary science and technology.

Credit hours / trimester

Lecture (Hours)	Additional class (Hours)	Laboratory/field trip/internship (Hours)	Self- study (Hours)
45 hours (3 hours x 15 weeks)	-		90 hours (6 hour/ 15 weeks)

Number of hours that the lecture provides individual counseling and guidance

2 hour / week or student requirement during prescribed date and time

Evaluation of the CLOs



Learning Measurement and Evaluation

A. Formative Assessment

Quiz & feedback for all CLOs with weight 50% (of total weight)

B. Summative Assessment

(1) Evaluation Methods and Weight

Course Learning Outcomes	Evaluation Strategies			Weight (%)
	Class Attendance, Participation and Behavior in Class	Written Exam	Class Project Executed without Plagiarism	
CLO1 Explain key laws, theories and principles of science	3%	5%	-	8%
CLO2 Explain key concepts of philosophy of science	3%	5%	-	8%
CLO3 Analyse scientific process used in solving problem in real life.	3%	15%		18%
CLO4 Propose inquiry –based scientific model suitable for given situation or problem	1%	5%	10%	26%
Total	10%	30%	10%	50%

Note: Students have the right to request a review of a grade and appeal evaluation decisions

(Mahidol University Disciplinary Measures 2010)

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.

The tentative Grade evaluation

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
WT	Wannapong Triampo R3/1- SC 3 Building N (MUSC-Salaya)	wtriampo@gmail.com , wannapong.tri@mahidol.edu



Teaching Schedule 1st Semester of Academic Year 2020

Teaching plan

Teaching Plan

Week	Topic	Hours			Teaching methods/ multimedia	Instructor
		Lecture	Laboratory	Self-study		
1 11 Aug	Introduction of course discipline and class orientation. What is the nature and philosophy of science?	3	0	6	Active lecture	Wannapong
2 18 Aug	What is the nature and philosophy of science?	3	0	6	Active lecture	Wannapong
3 25 Aug	What is the nature and philosophy of science?	3	0	6	Active lecture	Wannapong
4 1 Sep	The history of science	3	0	6	Active lecture	Wannapong
5 8 Sep	Measurement for discovery in Science	3	0	6	Active lecture	Wannapong
6 15 Sep	Measurement for discovery in Science	3	0	6	Active lecture	Wannapong
7 22 Sep	From science to Technology	3	0	6	Active lecture	Wannapong
8 29 Sep	From Science to Innovation	3	0	6	Active lecture	Wannapong
9 6 Oct	Midterm Examination	3	0	6	Active lecture	Wannapong Triampo
10 20 Oct	Science and STEM as Inquiry	3	0	6	Group discussion Active lecture	Wannapong Triampo
11 27 Oct	Contemporary Biology: Theory and Lab	3	0	6	Group discussion Active lecture	Wannapong Triampo
12 3 Nov	Contemporary Chemistry: Theory and Lab	3	0	6	Active Lecture, Group discussion	Wannapong Triampo
13 10 Nov	Contemporary Physics: Theory and Lab	3	0	6	Active Lecture, Group discussion	Wannapong Triampo
14 17 Nov	Integrated science	3	0	6	Active Lecture, Group discussion	Wannapong Triampo



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Week	Topic	Hours			Teaching methods/ multimedia	Instructor
		Lecture	Laboratory	Self-study		
					Project-based learning	
15 1 Dec	Contemporary science and technology	3	0	6	Active Lecture, Project-based learning	Wannapong Triampo
16 8 Dec	Final examination					
	Total hours	45	0	90		

Note: There will be one made-up class because of the holiday.

Teaching Materials and Resources

Douglas Allchin, Teaching the Nature of Science: Perspectives & Resources, 2013

SHIPS Education Press, Saint Paul, MN, USA

Samir Okasha, Philosophy of Science: A Very Short Introduction (1st ed), Oxford University Press, 2002