



School of Bioinnovation and Bio-based Product Intelligence (SCIN)
 Program in Bioinnovation (International Program, Multidisciplinary Program)
 Course: SCID 183 21st Century Learning and Learners

Degree Bachelor Master Doctoral
 Faculty of Science

Course Code and Course Title	ภาษาไทย วิศวกรรม ๑๘๓ การเรียนรู้และผู้เรียนแห่งศตวรรษที่ ๒๑ ภาษาอังกฤษ SCID 183 21st Century Learning and Learners
Number of Credits	3 (3-0-6) (Lecture 3 hours – Laboratory 0 hour/week - Self-Study 6 hours/week)
Curriculum and Course Type	Program of Study Bachelor’s Degree Program in Biomedical Engineering (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 Second Semester (2/2022-23) / First Year
Prerequisite	None
Co-requisite	None
Day/Time/Study Site Location	Thursday / 9-12 Faculty of Science[, Mahidol University, Salaya Campus (ONLINE)
Date of Latest Revision	1 January 2024

Course Learning Outcomes (CLOs)

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

- CLO1 Explain the learning theories and principles in the 21st century
- CLO2 Explain the 21st learner characteristics
- CLO3 Analyse the effective 21st-century learning processes and methods
- CLO4 Design effective learning management suitable for the 21st century

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 (Tentative)

A. Formative Assessment

Assignment, 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	2%	8%	-	10%
CLO2	2%	8%	-	10%
CLO3	2%	8%		10%
CLO4	2%	8%	10%	20%
Total	8%	32%	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, students 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	75-85	86-100
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)	wtrampo@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 18 Jan	- Course Orientation What is learning?	3	0	6	Active lecture+ Hands-on	Wannapong
2 25 Jan	Learning Theory & 21 st Century Learner	3	0	6	Active lecture+ Hands-on	Wannapong
3 1 Feb	Learning Theory & 21 st Century Learner	3	0	6	Active lecture+ Hands-on	Wannapong
4 8 Feb	21 st Century Skills & Competencies	3	0	6	Active lecture+ Hands-on	Wannapong
5 15 Feb	21 st Century Skills & Competencies	3	0	6	Active lecture+ Hands-on	Wannapong
6 22 Feb	Logical & Critical thinking	3	0	6	Active lecture+ Hands-on	Wannapong
7 29 Feb	Logical & Critical thinking	3	0	6	Active lecture+ Hands-on	Wannapong
8 7 March	Midterm	3	0	6	Active lecture	Wannapong Triampo
9 14 Mar	Creative thinking & innovation	3	0	6	Active lecture+ Hands-on	Wannapong Triampo
10 21 Mar	Complex-Problem Solving	3	0	6	Active lecture+ Hands-on	Wannapong Triampo
11 28 Mar	Complex-Problem Solving	3	0	6	Active lecture+ Hands-on	Wannapong Triampo
12 4 Apr	Technology-enhanced learning	3	0	6	Active lecture+ Hands-on	Wannapong Triampo
13 11 Apr	Technology-enhanced learning	3	0	6	Active lecture+ Hands-on	Wannapong Triampo



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		Lecture	Laboratory	Self-study		
14 18 Apr	Technology-enhanced learning	3	0	6	Active lecture+ Hands-on	Wannapong Triampo
15 25 Apr	Technology-enhanced learning (Last day)	3	0	6	Active lecture+ Hands-on	Wannapong Triampo
16 2 May	Final examination					
	Total hours	45	0	90		

Teaching Materials and Resources

Susan A. Ambrose., et al., How Learning Works: Seven Research-Based Principles for Smart Teaching, 2010, Wiley