



School of Bioinnovation and Bio-based Product Intelligence (SCIN)
 Program in Bioinnovation (International Program, Multidisciplinary Program)
 Course: SCIN 261 Fundamental biophysics

Degree Bachelor Master Doctoral
 Faculty of Science

Course Code and Course Title	Thai วิชา ๒๖๑ ชีวฟิสิกส์พื้นฐาน English SCIN 261 Fundamental biophysics
Number of Credits	2 (2-0-4) (Lecture 2 hours – Laboratory 0 hour/week - Self-Study 4 hours/week)
Curriculum and Course Type	Program of Study Bachelor’s Degree Program in Bioinnovation (International Program, Multidisciplinary Program) Course Type Major Course
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 2020 First Semester (1/2021) / Second Year
Prerequisite	None
Co-requisite	None
Day/Time/Study Site Location	Thursday / 01.30-03.30PM Faculty of Science, Mahidol University, Salaya Campus (ONLINE)
Date of Latest Revision	27 July 2021

Course Learning Outcomes (CLOs)

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

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- 1) CLO1 Explain concepts and principles of biophysical systems
- 2) CLO2 Elaborate a model of a biophysical phenomena
- 3) CLO3 Solve the mathematics necessary to construct a model of a biophysical phenomena
- 4) CLO4 Critique the results of a model of a biophysical phenomena
- 5) CLO5 Apply models to solve problems and applications

Course Description:

Biophysics concepts. Molecular and cellular aspects of biological systems. Physics principles of biological molecules, living systems and life processes. Neuro-biophysics. Mathematical, statistical and analytical approaches for quantitative study of living systems and life processes

Credit hours / trimester

Lecture (Hours)	Additional class (Hours)	Laboratory/field trip/internship (Hours)	Self- study (Hours)
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30 hours (2 hours x 15 weeks)	-	60 hours (4 hour/ 15 weeks)
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Number of hours that the lecture provides individual counseling and guidance

1 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 40% (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	5%	10%	-	15%
CLO2	5%	10%	-	15%
CLO3	5%	10%	15%	30%
Total	15%	30%	15%	60%

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 at least D.

The tentative Grade evaluation

Total Percentage of Evaluation	Below 50	50-54.99	55-59.99	60-64.99	65-69.99	70-79.99	80-89.99	90-100
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 2021

Week	Topic	Hours			Teaching methods/ multimedia	Instructor
		Lecture	Laboratory	Self-study		
1 12Aug (To be made up)	Introduction of course discipline and class orientation. What is Biophysics?	2	0	4	Active lecture	Wannapong Triampo
2 19Aug	What is Biophysics?	2	0	4	Active lecture	Wannapong Triampo
3 26 Aug	Biomechanics aspects of biological systems.	2	0	4	Group discussion Active lecture	Wannapong Triampo
4 2 Sep	Biomechanics aspects of biological systems.	2	0	4	Active lecture	Wannapong Triampo
5 9 Sep	Fluid mechanics of biological systems.	2	0	4	Active lecture	Wannapong Triampo
6 16 Sep	Fluid mechanics of biological systems.	2	0	4	Group discussion Active lecture	Wannapong Triampo
7 23 Sep	Electricity of living systems and life processes.	2	0	4	Active lecture	Wannapong Triampo
8 30 Sep	Electricity of living systems and life processes.	2	0	4	Active lecture	Wannapong Triampo
9 7 Oct	Midterm examination					
10 14 Oct	Neuro-biophysics.	2	0	4	Group discussion Active lecture	Wannapong Triampo
11 21 Oct	Neuro-biophysics.	2	0	4	Group discussion Active lecture	Wannapong Triampo
12 28 Oct	Mathematical, statistical and analytical approaches for quantitative study of living systems and life processes.	2	0	4	Group discussion Active lecture	Wannapong Triampo



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Week	Topic	Hours			Teaching methods/ multimedia	Instructor
		Lecture	Laboratory	Self-study		
13 4 Nov	Mathematical, statistical and analytical approaches for quantitative study of living systems and life processes.	2	0	4	Active Lecture, Group discussion	Wannapong Triampo
14 11 Nov	Mathematical, statistical and analytical approaches for quantitative study of living systems and life processes.	2	0	4	Active Lecture, Group discussion	Wannapong Triampo
15 18 Nov	Applications of biophysics	2	0	4	Active Lecture, Project-based learning	Wannapong Triampo
16 25 Nov	Applications of biophysics (Holiday to be rescheduled)	2	0	4	Active Lecture, Project-based learning	Wannapong Triampo
17 2 Dec	Final examination					

Teaching Materials and Resources

Rodney Cotterill (2011). Biophysics: An Introduction. John Wiley & Sons;