



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 Science and Technology (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 2022 First Semester (1/2022) / Second Year
Prerequisite	None
Co-requisite	None
Day/Time/Study Site Location	Thursday / 10.30-12.30 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:

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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 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)	wtrampo@gmail.com, wannapong.tri@mahidol.edu



Teaching Schedule 1st Semester of Academic Year 2022

Week	Topic	Hours			Teaching methods/ multimedia	Instructor
		Lecture	Laboratory	Self-study		
1 10 Aug	Introduction of course discipline and class orientation. What is Biophysics?	2	0	4	Active lecture	Wannapong Triampo
2 17 Aug	What is Biophysics?	2	0	4	Active lecture	Wannapong Triampo
3 24 Aug	Molecular and cellular aspects of biological systems.	2	0	4	Group discussion Active lecture	Wannapong Triampo
4 31 Aug	Molecular and cellular aspects of biological systems.	2	0	4	Active lecture	Wannapong Triampo
5 7 Sep	Physics principles of biological molecules, living systems and life processes.	2	0	4	Active lecture	Wannapong Triampo
6 17 Sep	Physics principles of biological molecules, living systems and life processes.	2	0	4	Group discussion Active lecture	Wannapong Triampo
7 21 Sep	Physics principles of biological molecules, living systems and life processes.	2	0	4	Active lecture	Wannapong Triampo
8 28 Sep	Physics principles of biological molecules, living systems and life processes.	2	0	4	Active lecture	Wannapong Triampo
9 5 Oct	Midterm examination					
10 12 Oct	Neuro-biophysics.	2	0	4	Group discussion Active lecture	Wannapong Triampo
11 19 Oct	Neuro-biophysics.	2	0	4	Group discussion Active lecture	Wannapong Triampo
12 26 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 2 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 9 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 16 Nov	Applications of biophysics	2	0	4	Active Lecture, Project-based learning	Wannapong Triampo
16 23 Nov	Applications of biophysics	2	0	4	Active Lecture, Project-based learning	Wannapong Triampo
17 3 Dec	Final examination					

Teaching Materials and Resources

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