



School of Bioinnovation and Bio-based Product Intelligence (SCIN)  
Program in Bioinnovation (International Program)  
Course: SCIN 263 Basic Laboratory Skills for Biosciences

Degree ☒ Bachelor ☐ Master ☐ Doctoral  
Faculty of Science

### Course Syllabus

Course Code and Course Title	English	SCIN 263	Basic Laboratory Skills for Biosciences
	Thai	วทนว ๒๖๓	ทักษะปฏิบัติการพื้นฐานทางชีววิทยาศาสตร์
Number of Credits	1 (0-3-1)		
Curriculum and Course Type	Program of Study Bachelor's Degree Program in Bioinnovation (International Program)		
	Course Type Specific Courses		
Course Coordinator	Assistant Professor Dr. Sitthivut Charoensutthivarakul Department of Pharmacology, Faculty of Science, Mahidol University Tel. 0 2201 5956 Email: <a href="mailto:sitthivut.cha@mahidol.ac.th">sitthivut.cha@mahidol.ac.th</a>		
	Assistant Professor Dr. Darapond Triampo Department of Chemistry, Faculty of Science, Mahidol University Tel: 08 7915 1128 Email: <a href="mailto:darapond.tri@mahidol.ac.th">darapond.tri@mahidol.ac.th</a>		
Semester/Year of Study	2 <sup>nd</sup> Semester / Academic Year 2025		
Prerequisite	SCCH 189 Chemistry Laboratory or equivalent		
Co-requisite	-		
Day/Time/Study Site Location	Monday / 1.30-4.30 PM at MDL laboratory		
Date of Latest Revision	30 December 2025		

### Course Learning Outcomes (CLOs)

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

1. Safely handle and operate essential bioscience laboratory equipment
2. Follow safety protocols and guidelines in the laboratory.
3. Accurately perform various measurements using appropriate techniques.
4. Ensure precision and reliability in experimental results and reports.

### Course Description

Basic skills required for bioscience laboratory, ethics and chemical and biological safety concerns on self, others, and environment, general equipment used in bioscience laboratory, mensuration, pH measurement, solution preparation, serial dilution technique, standard solution preparation, and calibration curve, media preparation and sterilization, data records and experimental report, effective teamwork technique, communication skill, information technology in the laboratory.



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#### Credit Hours / Semester

Theory (Hours)	Addition Class (Hours)	Laboratory/Field trip/ Internship (Hours)	Self-study (Hours)
45 Hours/Semester (3 Hours x 15 Weeks)	None	None	15 Hours/Semester (1 Hour x 15 Weeks)

#### Number of Hours per Week for Individual Advice

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

#### Evaluation of the CLOs

Course Learning Outcomes	Measurement Method			Weight (%)
	Written Exam	Activity Participation and Responsibility	Activity test & Report	
CLO1 Safely handle and operate essential bioscience laboratory equipment	5%	10%	5%	20%
CLO2 Follow safety protocols and guidelines in the laboratory.	5%	10%	5%	20%
CLO3 Accurately perform various measurements using appropriate techniques.	10%	20%	10%	40%
CLO4 Ensure precision and reliability in experimental results and reports.	5%	10%	5%	20%
Total	25%	50%	25%	100%

#### 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



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**Teaching staff:**

Code	Name	Email
SC	Assistant Professor Dr. Sitthivut Charoensutthivarakul Department of Pharmacology, Faculty of Science	<a href="mailto:sitthivut.cha@mahidol.ac.th">sitthivut.cha@mahidol.ac.th</a>
DT	Assistant Professor Dr. Darapond Triampo Department of Chemistry, Faculty of Science	<a href="mailto:darapond.tri@mahidol.ac.th">darapond.tri@mahidol.ac.th</a>
AR	Assistant Professor Dr. Adisak Romsang Department of Biotechnology, Faculty of Science	<a href="mailto:adisak.rom@mahidol.ac.th">adisak.rom@mahidol.ac.th</a>
TL	Dr. Teerarat Likitwattanasade Department of Biotechnology, Faculty of Science	<a href="mailto:teerarat.lik@mahidol.ac.th">teerarat.lik@mahidol.ac.th</a>
SS	Dr. Stefan Schreier School of Bioinnovation and Bio-based Product Intelligence, Faculty of Science,	<a href="mailto:stefan.scr@mahidol.ac.th">stefan.scr@mahidol.ac.th</a>
WT	Associate Professor Dr. Wannapong Triampo Department of Physics, Faculty of Science	<a href="mailto:wtriampo@gmail.com">wtriampo@gmail.com</a>

**Teaching Assistant:**

Ms. Napason Chabang

School of Bioinnovation and Bio-based Product Intelligence, Faculty of Science

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Ms. Wannisa Chuekong

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## Teaching Schedule

Week	Date	Topic	Number of hours		Instructor
			Lecture	Laboratory	
1	05/01/2026	Doing good science and Ethics: - Housekeeping and Labelling - Sample Handling and Storage - Flow chart and Lab notebook	-	3	Sitthivut Charoensutthivarakul
2	12/01/2026	Introduction to Laboratory Safety – General lab safety	-	3	Adisak Romsang
3	19/01/2026	- Dealing with the Data & Report - Units of Measurement - Errors, precision, and accuracy	-	3	Sitthivut Charoensutthivarakul
4	26/01/2026	Common Equipment in Bioscience I - Balances - pH meters & Hot/Stir plate - Centrifuge - Vortex	-	3	Teerarat Likitwattanasade Adisak Romsang
5	02/02/2026	Common Equipment in Bioscience II - Autoclave - Biosafety cabinet - Chemical fume hood - Incubator shaker	-	3	Teerarat Likitwattanasade Adisak Romsang
6	09/02/2026	No class (SCIN outing)			-
7	16/02/2026	Biosafety, chemical safety and hazardous waste management	-	3	Adisak Romsang
8	23/02/2026	Microscopy and Image Analysis*	-	3	Stefan Schreier Wannapong Triampo
Midterm Examination					
9	09/03/2026	Instrumental Analysis, Standard Curve, and Data Calibration	-	3	Wannapong Triampo Darapond Triampo
10	16/03/2026	Spectrophotometer Theoretical Principle	-	3	Wannapong Triampo Darapond Triampo
11	23/03/2026	Case study - Dilution: The solution series - Spectrophotometer	-	3	Darapond Triampo Wannapong Triampo
12	30/03/2026	Basic Excel for bioscience - Graph - Commonly used functions - Trend line, equation	-	3	Darapond Triampo Wannapong Triampo



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		- Labelling, legend - Graph, figure and captions in report			
13	6/04/2026	No class (Chakri Memorial Day)	-	3	-
14	13/04/2026	No class (Songkran)	-	3	-
15	20/04/2026	Integrated Problem through bioscience-based PBL*	-	3	Darapond Triampo Wannapong Triampo Stefan Schreier
Final Examination					

\*Teaching site still to be determined.