Course Code and Course Title	English SCIN 394 Senior Project in Bioinnovation I Thai วทนว ๓๙๔ โครงการศึกษากรณีพิเศษ ๑
Number of Credits	3 (0-9-3)
Curriculum and Course Type	Program of Bachelor's Degree Program in Science and Technology (International Program, Multidisciplinary Program) Course Type Compulsory Course
Course Coordinator	Assoc. Prof. Kanyaratt Supaibulwatana, Ph.D. Address: B.400 Rm., 4th Fl., B. Bld. Faculty of Science, Mahidol University, 272 Rama VI Road, Bangkok 10400 Tel. 02-201-5470- 1; e-mail: kanyaratt.sup@mahidol.ac.th
Semester/Year of Study	Academic Year 2024, 2nd Semester (2/2024) / **3rd** Year Students
Prerequisite	None
Co-requisite	None
Day/Time/Study Site Location	- Wednesday / 12.30 – 17.00 h onsite (online, occasionally) - Date & times (special training for employability and future skills) as mentioned in the course schedule, as condition of pre-course schedule. Appointment for class is possibly modified (TBA). Faculty of Science, Mahidol University, Phaya Thai Campus
Date of Latest Revision	1 January 2025

Course Learning Outcomes (CLOs)

After successful completion of this course, students are able to

CLO1	Evaluate the impact of research concepts by demonstrating the identification of research pain points and articulating how the proposed research would alleviate such problems
CLO2	Develop the ability to formulate clear and concise research aims that address identified pain points.
CLO3	Predict and analyze expected outcomes of the proposed research, demonstrating a grasp of the potential contributions to existing knowledge.
CLO4	Design a comprehensive research methodology, including data collection and analysis techniques, suitable for investigating the proposed research aim
CLO5	Demonstrate the ability to conduct a safety evaluation relevant to the proposed research, ensuring ethical and responsible research practices
CLO6	Collaborates effectively with team members and demonstrates adaptability in diverse working environments and laboratory cultures

CLO7	Utilizes appropriate IT skills and resources proficiently to gather scientific information, critically evaluate pain points, and analyze the feasibility of the research proposal.
CLO8	Demonstrates a strong commitment to ethical research practices, including responsible data handling, transparency, and consideration of potential societal impacts.
CLO9	Align the proposed research with potential applications, considering real-world relevance and applicability.

Course Description

Philosophy and concepts of research and the creation of research innovation; methodology; type of re-search; research procedures; research instruments; research question; background and hypothesis; re-search planning; risk assessment and risk management for research; research proposal writing; scientific research presentation.

Credit Hours / Trimester

Theory (Hours)	Addition Class Orientation/Training (Hours/Semester)	Research /Workshop (Hours/Semester)	Self-study (Hours/Semester)
-	Hybrid class, webinar 18 Hours/Semester	150 Hours/Semester	48 Hours/Semester

Number of Hours per Week for Individual Advice

3 hours per week or student requirement during prescribed date and time

Evaluation of the CLOs

CLO	Teaching and learning experience				Evaluation			
					Proposal		Presentation	
	Interactive lecture	Group Discussion	Through advisor	Training	Advisor	Course Coordinator	Presentation	Q&A
CLO1 Evaluate the impact of research concepts by demonstrating the identification of research pain points and articulating how the proposed research would alleviate such problems	✓	✓	✓	✓	5	4		5
CLO2 Develop the ability to formulate clear and concise	✓	✓	✓	✓	5	4		

CLO	Teaching and learning experience				Evaluation			
					Proposal		Presentation	
	Interactive lecture	Group Discussion	Through advisor	Training	Advisor	Course Coordinator	Presentation	Q&A
research aims that address identified pain points.								
CLO3 Predict and analyze expected outcomes of the proposed research, demonstrating a grasp of the potential contributions to existing knowledge.	✓	✓	✓	✓	5	4		
CLO4 Design a comprehensive research methodology, including data collection and analysis techniques, suitable for investigating the proposed research aim	✓	✓	✓	✓	10	8		
CLO5 Demonstrate the ability to conduct a safety evaluation relevant to the proposed research, ensuring ethical and responsible research practices	✓	✓	✓	✓	5	3		
CLO6 Collaborates effectively with team members and demonstrates adaptability in diverse working environments and laboratory cultures		✓	✓	✓	5		15	
CLO7 Utilizes appropriate IT skills and resources proficiently to gather scientific information, critically evaluate pain points, and analyze the feasibility of the research proposal.	✓	✓	✓	✓	5	3		
CLO8 Demonstrates a strong commitment to ethical research practices, including responsible data handling, transparency, and consideration of potential societal impacts.			✓	✓	5			

CLO	Teaching and learning experience				Evaluation			
					Proposal		Presentation	
	Interactive lecture	Group Discussion	Through advisor	Training	Advisor	Course Coordinator	Presentation	Q&A
CLO9 Align the proposed research with potential applications, considering real-world relevance and applicability.	✓	✓	✓	✓	5	4		
					50	30	15	5

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	Grade	GPA	Meaning
≤ 80 - 100	A	4.0	Pass
≤ 75 - < 80	B+	3.5	
≤ 70 - < 75	B	3.0	
≤ 65 - < 69	C+	2.5	
≤ 60 - < 65	C	2.0	
≤ 55- < 60	D+	1.5	
≤ 50 - < 55	D	1.0	
0 - < 50	F	0	Fail

Program: Bioinnovation (International Program, Multidisciplinary Program) Program Level ☑ Bachelor ☐ Master ☐ Doctor
Course Title: Senior Project in Bioinnovation I Faculty of Science
Course Code: SCIN 394 School of Bioinnovation and Bio-based Product Intelligence (SCIN)

Course Schedule SCIN 394 Senior Project in Bioinnovation I (Semester 2/Academic Year 2024-25)

No.	Date	Topic	Number of Hours			Instructor
			Workshop	Research	Self-study	
1	26 Feb. 2025	- Introduction - Finalize topic selection	2	-	6	Course coordinator
2	12 Mar. 2025	- Rules and regulation - Research philosophy - Risk assessment and management	2	-	6	Course coordinator
3	26 Mar. 2025	- Proposal development - Case study on proposal development - Training on proposal writing	3	-	9	Course coordinator
4	-	Research: lab skills and Mini project	-	150	-	Advisor
5	TBA	Proposal Presentation Day 1	3	-	9	Advisor, Course coordinator
6	TBA	Proposal Presentation Day 2	3	-	9	
7	TBA	Proposal Presentation Day 3	3	-	9	
8	TBA	Conclusion	2	-	-	Course coordinator
		Total	18	150	48	