

SCME 263 Nanobiotechnology (3 credit)

Academic Year 2026/semester 1

Class Schedule: Friday (9:30-12:30 pm)

Room: SC1-154

Google Class Code: twzjoxb5

<https://classroom.google.com/c/ODcwOTM2NDE2ODYz?cjc=twzjoxb5>

Course Coordinator: Assoc. Prof. Dr. Dakrong Pissuwan

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Instructors:

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2. Assoc. Prof. Dr. Kanlaya Katewongsa
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For consultation relating to this course, please contact the instructor and arrange a time for meeting if necessary. In the case of contacting guest lecturers, please do it through course coordinator. The course will run online for the whole course to reduce the chance of Covid-outbreak.

Course Description: This course introduces students to understand the relationship between biological system and nanotechnology and how to engineer the behavior of molecules at the nano-scale, concepts of nanobiotechnology and its applications in biosensing, biomedical engineering, material application, drug release, diagnostics, food, environment, and public health. Material properties used in nanobiotechnology will be included.

Grading Policy: Course assessment will be based on the following:

Attendance: 10%

Students must attend all classes for receiving a full mark, and 80% of classes overall to pass. Late (> 15 min) will be recorded as absence.

Quizzes and class activities before midterm examination 30% (for weeks 1, 2, 3,7)

Midterm Examination 20%

There will be questions from week 4, 5, 6, 8 lectures

Quizzes or Assignments and class activities after midterm examination 10% (for weeks 13, 15)

Final Examination 30%

There will be questions from week 9,10, 11, 12, 14 lectures

The final grade given will be based on letter scale (A, B⁺, B, C⁺, C, D⁺, D, F). In order to pass the course, you must achieve an overall mark of at least 50%.

Reference Materials

1. David Andrew Phoenix and Waqar Ahmed, Nanobiotechnology, Manchester: One Central Press Ltd, 2014.
2. Other material as indicated by instructors

Class Schedule SCME263, Subject Coordinator: Assoc. Prof. Dakrong Pissuwan

Date	Week	Topic	Instructor
7-August-26	1	Overview: Nanobiotechnology	Assoc. Prof. Dr. Dakrong Pissuwan
14-August-26	2	Nanobiotechnology and cell biology	Assoc. Prof. Dr. Dakrong Pissuwan
21-August-26	3	Biological materials and biomaterials used in nanobiotechnology	Assoc. Prof. Dr. Dakrong Pissuwan
28-August-26	4	Basic of molecular and chemical interaction, molecular recognition, and assembly of biological structure	Asst. Prof. Dr. Nungnit Wattanavichean
4-September-26	5	Nanobiointerface	Asst. Prof. Dr. Nungnit Wattanavichean
11-September-26	6	Nanoparticles and the immune system	Assoc. Prof. Dr. Kanlaya Katewongsa
18-September-26	7	Synthesis of nanomaterials	Assoc. Prof. Dr. Dakrong Pissuwan
25-September-26	8	Nanostructures in drug controlled Release	Assoc. Prof. Dr. Dakrong Pissuwan
		Midterm examination 2 October, 2026	
9-October-26	9	Nano printing of DNA, RNA, and proteins biochips applications in nano scale detection Lab-on-a-chip devices (LOC)	Asst. Prof. Dr. Nungnit Wattanavichean
16-October-26	10	Nanoparticles in food application	Asst. Prof. Dr. Nungnit Wattanavichean
30-October-26	11	Nanoparticles in biological labeling and cellular imaging: Science of nanoparticles functionalization	Asst. Prof. Dr. Nungnit Wattanavichean
6-November-26	12	Nanomaterials: Waste utilization and waste treatment	Asst. Prof. Dr. Nungnit Wattanavichean
13-November-26	13	Nanoparticles in agricultural application	Assoc. Prof. Dr. Dakrong Pissuwan
20-November-26	14	Nanoparticles and public health	Asst. Prof. Dr. Nungnit Wattanavichean
27- November-26	15	Microbiome application	Assoc. Prof. Dr. Dakrong Pissuwan
		Final examination 4 December, 2026	