

SCME 263 Nanobiotechnology (3 credit)

Academic Year 2024/semester 1

Class Schedule: Friday (9:30-12:20 pm)**Room:** SC1-156/Hybrid Class

Google Class Code: fpnxf5v

<https://classroom.google.com/c/NzAxNDQ4ODI5MDQ3?cjc=fpnxf5v>**Course Coordinator:** Assoc. Prof. Dr. Dakrong PissuwanContact details: email: dakrong.pis@mahidol.ac.th

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Instructors:

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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, 8)

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
9-August-24	1	Overview: Nanobiotechnology	Assoc. Prof. Dr. Dakrong Pissuwan
16-August-24	2	Nanobiotechnology and cell biology	Assoc. Prof. Dr. Dakrong Pissuwan
23-August-24	3	Biological materials and biomaterials used in nanobiotechnology	Assoc. Prof. Dr. Dakrong Pissuwan
30-August-24	4	Basic of molecular and chemical interaction, molecular recognition, and assembly of biological structure	Asst.Prof.Dr. Nungnit Wattanavichean
6-September-24	5	Nanobiointerface	Asst.Prof.Dr. Nungnit Wattanavichean
13-September-24	6	Nanoparticles and the immune system	Assoc. Prof.Dr. Kanlaya Katewongsa
20-September-24	7	Synthesis of nanomaterials	Assoc. Prof. Dr. Dakrong Pissuwan
27-September-24	8	Nanostructures in drug controlled Release	Assoc. Prof. Dr. Dakrong Pissuwan
		Midterm examination 30 September-4 October, 2024	
11-October-24	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
18-October-24	10	Nanoparticles in food application	Asst.Prof.Dr. Nungnit Wattanavichean
25-October-24	11	Nanoparticles in biological labeling and cellular imaging: Science of nanoparticles functionalization	Asst.Prof.Dr. Nungnit Wattanavichean
1-November-24	12	Nanomaterials: Waste utilization and waste treatment	Asst.Prof.Dr. Nungnit Wattanavichean
8-November-24	13	Nanoparticles in agricultural application	Assoc. Prof. Dr. Dakrong Pissuwan
15-November-24	14	Nanoparticles and public health	Asst.Prof.Dr. Nungnit Wattanavichean
22- November-24	15	Microbiome application	Asst.Prof.Dr. Bung-onsiri Intra
		Final examination 2-13 December, 2024	