SCME 263 Nanobiotechnology (3 credit)

Academic Year 2025/semester 1

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

Room: SC1-156

Google Class Code: ckjh3iy6

https://classroom.google.com/c/NzkxMjMwNDk3NDg5?cjc=ckjh3iy6

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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3. Asst. Prof. Asst.Prof.Dr. Nungnit Wattanavichean
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   Office: SC1-214, Science building 1, Salaya campus
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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.

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
8-August-25	1	Overview: Nanobiotechnology	Assoc. Prof. Dr. Dakrong Pissuwan
15-August-25	2	Nanobiotechnology and cell biology	Assoc. Prof. Dr. Dakrong Pissuwan
22-August-25	3	Biological materials and biomaterials used in nanobiotechnology	Assoc. Prof. Dr. Dakrong Pissuwan
29-August-25	4	Basic of molecular and chemical interaction, molecular recognition, and assembly of biological structure	Asst. Prof. Dr. Nungnit Wattanavichean
5-September-25	5	Nanobiointerface	Asst. Prof. Dr. Nungnit Wattanavichean
12-September-25	6	Nanoparticles and the immune system	Assoc. Prof. Dr. Kanlaya Katewongsa
19-September-25	7	Synthesis of nanomaterials	Assoc. Prof. Dr. Dakrong Pissuwan
26-September-25	8	Nanostructures in drug controlled Release	Assoc. Prof. Dr. Dakrong Pissuwan
		Midterm examination 3 October, 2025	
10-October-25	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
17-October-25	10	Nanoparticles in food application	Asst. Prof. Dr. Nungnit Wattanavichean
24-October-25	11	Nanoparticles in biological labeling and cellular imaging: Science of nanoparticles functionalization	Asst. Prof. Dr. Nungnit Wattanavichean
31-October-25	12	Nanomaterials: Waste utilization and waste treatment	Asst. Prof. Dr. Nungnit Wattanavichean
7-November-25	13	Nanoparticles in agricultural application	Assoc. Prof. Dr. Dakrong Pissuwan
14-November-25	14	Nanoparticles and public health	Asst. Prof. Dr. Nungnit Wattanavichean
21- November-25	15	Microbiome application	Assoc. Prof. Dr. Dakrong Pissuwan
		Final examination 2 November, 2025	