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 Pissuwan

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Phone: 022015935

Instructors:

1. Assoc. Prof. Dr. Dakrong Pissuwan

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Office: K554, Phayathai campus

Phone: 022015935

2. Assoc. Prof. Dr. Kanlaya Katewongsa

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Office: Pr314, Department of Biochemistry, Phayathai campus

Phone: 022015604

3. Asst. Prof. Dr. Bungonsiri Intra

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Office: K543, Department of Biotechnology, Phayathai campus

Phone: 02201 5916

4. Asst. Prof. Asst. Prof. Dr. Nungnit Wattanavichean

email: nungnit.wat@mahidol.ac.th

Office: SC1-214, Science building 1, Salaya campus

Phone: 0634215941

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 Covidoutbreak.

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

Wattanavichean	Date	Week	Topic	Instructor
16-August-24 2	9-August-24	1	Overview: Nanobiotechnology	Assoc. Prof. Dr.
23-August-24 3 Biological materials and biomaterials used in nanobiotechnology Assoc. Prof. Dr. Dakrong Pissuwan				Dakrong Pissuwan
23-August-24 3 Biological materials and biomaterials used in nanobiotechnology Assoc. Prof. Dr. Dakrong Pissuwan	16-August-24	2	Nanobiotechnology and cell biology	Assoc. Prof. Dr.
23-August-24 3 Biological materials and biomaterials used in nanobiotechnology Assoc. Prof. Dr. Dakrong Pissuwan				Dakrong Pissuwan
30-August-24	23-August-24	3	Biological materials and	Assoc. Prof. Dr.
interaction, molecular recognition, and assembly of biological structure 6-September-24			biomaterials used in nanobiotechnology	Dakrong Pissuwan
interaction, molecular recognition, and assembly of biological structure 6-September-24	30-August-24	4	Basic of molecular and chemical	Asst.Prof.Dr. Nungnit
assembly of biological structure 6-September-24 5 Nanobiointerface Asst.Prof.Dr. Nungni 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 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) 18-October-24 10 Nanoparticles in food application Wattanavichean 25-October-24 11 Nanoparticles in biological labeling and cellular imaging: Science of nanoparticles functionalization 1-November-24 12 Nanomaterials: Waste utilization and waste treatment 8-November-24 13 Nanoparticles in agricultural application Assoc. Prof. Dr. Dakrong Pissuwan 15-November-24 14 Nanoparticles and public health Asst.Prof.Dr. Nungni Wattanavichean	8			_
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13-September-24	6-September-24	5	Nanobiointerface	Asst.Prof.Dr. Nungnit
Comparison of the comparison				Wattanavichean
20-September-24 7 Synthesis of nanomaterials Assoc. Prof. Dr. Dakrong Pissuwan	13-September-24	6	Nanoparticles and the immune system	Assoc. Prof.Dr.
Dakrong Pissuwan				Kanlaya Katewongsa
27-September-24 8	20-September-24	7	Synthesis of nanomaterials	Assoc. Prof. Dr.
Release Dakrong Pissuwan				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) 18-October-24 10 Nanoparticles in food application Asst.Prof.Dr. Nungri Wattanavichean 25-October-24 11 Nanoparticles in biological labeling and cellular imaging: Science of nanoparticles functionalization Asst.Prof.Dr. Nungri Wattanavichean Vattanavichean Vatta	27-September-24	8	_	Assoc. Prof. Dr.
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11-October-24 9 Nano printing of DNA, RNA, and proteins biochips applications in nano scale detection Lab-on-a-chip devices (LOC) 18-October-24 10 Nanoparticles in food application Wattanavichean 25-October-24 11 Nanoparticles in biological labeling and cellular imaging: Science of nanoparticles functionalization 1-November-24 12 Nanomaterials: Waste utilization and waste treatment 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. Nungni Wattanavichean				
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1-November-24 12 Nanomaterials: Waste utilization and Asst.Prof.Dr. Nungni waste treatment 8-November-24 13 Nanoparticles in agricultural application 15-November-24 14 Nanoparticles and public health Asst.Prof.Dr. Nungni Dakrong Pissuwan Asst.Prof.Dr. Nungni Wattanavichean			cellular imaging: Science of	Wattanavichean
waste treatment 8-November-24 13 Nanoparticles in agricultural application Dakrong Pissuwan 15-November-24 14 Nanoparticles and public health Wattanavichean Asst.Prof.Dr. Nungni Wattanavichean			nanoparticles functionalization	
8-November-24 13 Nanoparticles in agricultural application Assoc. Prof. Dr. Dakrong Pissuwan 15-November-24 14 Nanoparticles and public health Asst.Prof.Dr. Nungni	1-November-24	12	Nanomaterials: Waste utilization and	Asst.Prof.Dr. Nungnit
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15-November-24 14 Nanoparticles and public health Asst.Prof.Dr. Nungni Wattanavichean	8-November-24	13	Nanoparticles in agricultural application	Assoc. Prof. Dr.
Wattanavichean				Dakrong Pissuwan
	15-November-24	14	Nanoparticles and public health	Asst.Prof.Dr. Nungnit
22 November 24 15 Migrations and Locking A (D.CD				Wattanavichean
22- November-24 15 Microbiome application Asst.Prof.Dr.	22- November-24	15	Microbiome application	Asst.Prof.Dr.
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Final examination 2-13 December, 2024			· · · · · · · · · · · · · · · · · · ·	