

Course syllabus
MBMG 513 Gene Expression and Applications
3 Credits (2-2-5)
Academic Year 2021

Course schedule:

Date: Monday-Friday

Time: 09:30-16:30

Course coordinator: Kusol Pootanakit

Tel: 02-441-9003-7 ext. 1467, e-mail: kusol.poo@mahidol.ac.th

Instructors:

Apinunt Udomkit, Ph.D., Prof.

Arpaporn Sutipatanasomboon, Ph.D.

Chalernporn Ongvarrasopone, Ph.D., Prof.

Chalongrat Noree, Ph.D., Asst. Prof.

Chanan Angsuthanasombat, Ph.D., Prof.

Duncan R. Smith, Ph.D., Prof.

Kanokporn Triwitayakorn, Ph.D., Assoc. Prof.

Kusol Pootanakit, Ph.D., Asst. Prof.

Nattaya Srisawad, Ph.D.

Panadda Boonserm, Ph.D., Assoc. Prof.

Saovaros Svasti, Ph.D., Prof.

Sarin Chimnarong, Ph.D., Assoc. Prof.

Supajit Sraphet, Ph.D.

Lab supporting Staff:

Chanikarn Boonchuay

Chaweewan Chimwai

Course Schedule:

Date/ time	Topics/Details	Number of Hours	Class Activity/ Teaching Media	Lecturer
Sep 23 9:30-11:30	PCR principles and applications	2	Lecture/virtual lab	Kusol Pootanakit
13:30-16:30	In-silico primer design	1-2	Lecture-Lab	Kusol Pootanakit
Sep 24	Mahidol Day *special holiday as decreed by the government* NO CLASS			
Sep 27 9:30-11:30	cDNA and genomic libraries	2	Lecture	Panadda Boonserm
13:30-16:30	Sequence alignment	1-2	Lecture-Lab	Kusol Pootanakit
Sep 28 9:30-11:30	Recombinant selection and screening	2	Lecture	Kusol Pootanakit
13:30-15:30	Expression in <i>E. coli</i> of cloned DNA molecules	2	Lecture	Panadda Boonserm
Sep 29	Self-study	3	Assignment due	
	Self-study	3	Assignment due	
Sep 30 9:30-11:30	Cloning in bacteria other than <i>E. coli</i>	2	Lecture	Chanan Angsuthanasombat
13:30-15:30	Gene expression in yeast	2	Lecture	Chalongrat Noree
Oct 1 9.30-11.30	Gene expression in animal: transgenic and knockout animals	2	Lecture	Saovaros Svasti
13.30-15.30	Concepts in plant cells and development	2	Lecture	Arpaporn Sutipatanasomboon
Oct 4 9.30-11.30	Gene expression in plants	2	Lecture	Arpaporn Sutipatanasomboon
	Self-study	3	Assignment due	
Oct 5	Self-study	3	Assignment due	
	Self-study	3	Assignment due	
Oct 6 9:30-11:30	Post-transcriptional regulation	2	Lecture	Sarin Chimnaronk
13:30-15:30	Mobile genetic elements	2	Lecture	Apinunt Udomkit
Oct 7 9:30-11:30	DNA marker/Genomic DNA analysis	2	Lecture/virtual lab	Kanokporn Triwitayakorn
13:30-15:30	Virus gene structure and regulation	2	Lecture	Duncan R. Smith
Oct 8 9:30-11:30	Next generation sequencing technologies and their applications	2	Lecture	Chalernporn Ongvarrasopone
Oct 11	Self-study	3	Assignment due	
	Self-study	3	Assignment due	
Oct 12 14:30-15:30	Problem-based final assignment	1	Discussion	

Date/ time	Topics/Details	Number of Hours	Class Activity/ Teaching Media	Lecturer
Oct 13	Anniversary of the Death of King Bhumibol *NO CLASS*			
Oct 14 9:30-12.00	PowerPoint presentation	3	Presentation	Teaching staff

Evaluation Plan for Learning Outcome

Learning Outcome	Activity	Evaluated in Week	Evaluation Ratio
1. Acquire new knowledge and innovation in gene expression and applications (2.1, 2.2, 2.3)	Assignment, quiz, written examination	1-4	60%
2. Integrate comprehensive knowledge in gene expression to solve scientific research questions (3.1, 3.2, 3.3)	Problem-based learning, presentation (oral and poster)	1-4	10%
3. Analyze and present lab data by using appropriate information and communication technologies (5.1, 5.2)	Presentation (report, lab notebook)	1-4	10%
4. Demonstrate scientific integrity, responsibility, and safety practice (1.1, 1.2, 1.3)	Class attendance, Lab performance	1-4	15%
5. Demonstrate teamwork, interpersonal skills and responsibilities for the work assignments (4.1, 4.2)	Class participation, Group presentation, Group assignment	1-4	5%

Student's achievement will be graded using symbols: A, B+, B, C+, C, D+, D and F based on the criteria as follows:

Percentage	Grade	Description
80–100	A	Excellent
75–79	B+	Very Good
70–74	B	Good
65–69	C+	Fairly Good
60–64	C	Fair
55–59	D+	Poor
50–54	D	Very Poor
0–49	F	Fail