

Lecture

Week	Date	Lecture Topic	Lecturer	Teaching and Learning approach
1	4-8-20	Class orientation	Dr. Wiramsri	Online
2	11-8-20	Introduction to Metabolic Regulation for Microbial products	Dr. Wiramsri	Online
3	21-8-20	Microbial products	Dr. Wiramsri	Online
4	25-8-20	Regulation of Enzyme production	Dr. Wiramsri	Online
5	4-9-20 Friday	Industrial enzyme production (13.00-15.00)	Dr. Wiramsri	Online
6	8-9-20	Regulation of carbohydrate metabolism	Dr. Wiramsri	Online
7	18-9-20 Friday	Regulation of carbohydrate metabolism (13.00-15.00)	Dr. Wiramsri	online
8	(21-27)-9-20	Midterm Exam		
9	29-9-20	Organic acids metabolism of microorganism	Dr. Wiramsri	Online
10	6-10-20	Regulation of protein metabolism	Dr. Wiramsri	Online
11	20-10-20	Regulation of lipid metabolism	Dr. Wiramsri	Online
12	27-10-20	Regulation of secondary metabolite metabolism	Dr. Pichayada	Online
13	3-11-20	Regulation of secondary metabolite metabolism	Dr. Pichayada	Online
14	10-11-20	Regulation of alcohol fermentation	Asst. Prof. Dr. Soisuda	Online
15	17-11-20	Regulation of alcohol fermentation	Asst. Prof. Dr. Soisuda	Online
16	27-11-20	Microbial strains improvement for	Dr. Pichayada	online

	Friday	product enhancement by using mutation (13.00-15.00)		
17	(30-11-20)- (15-12-20)	Final Exam		

Laboratory

Week	Date	Laboratory	Lecturer	
1	7-8-20	Laboratory rules	Dr. Wiramsri	Online
2	14-8-20	Extracellular enzyme production	Dr. Wiramsri	Face to face
3	18-8-20	Extracellular enzyme production	Dr. Wiramsri	Face to face
4	28-8-20	Induction of β -Galactosidase in <i>Escherichia coli</i>	Dr. Wiramsri	Face to face
5	1-9-20 Tuesday	Induction of β -Galactosidase in <i>Escherichia coli</i> (9.00-16.30)	Dr. Wiramsri	Face to face
6	11-9-20	Carbohydrate fermentation	Dr. Wiramsri	Face to face
7	15-9-20 Tuesday	Carbohydrate fermentation (9.00-12.00)	Dr. Wiramsri	Face to face
8	(21-27)-9-20	Midterm Exam		
9	2-10-19	Amino acids and protein metabolism	Dr. Wiramsri	Face to face
10	9-10-19	Amino acids and protein metabolism	Dr. Wiramsri	Face to face
11	16-10-20	Amino acids and protein metabolism	Dr. Wiramsri	Face to face
12	30-10-20	Metabolic engineering of the flavinogenic yeast	Dr. Pichayada	Face to face

13	6-11-20	Metabolic engineering of the flavinogenic yeast	Dr. Pichayada	Face to face
14	13-11-20	Discussion	Dr. Pichayada	Face to face
15	20-11-20	Effect of nitrogen sources on alcohol fermentation	Dr. Pichayada	Face to face
16	24-11-19 Tuesday	Effect of nitrogen sources on alcohol fermentation (9.00-12.00)	Dr. Pichayada	Face to face
18	(30-11-20)- (15-12-20)	Final Exam		