

onsite Lecture 503 ห้องแล็บ 603								Schedule for 2310656							
								Integrated Techniques in Protein Biochemistry (3 credits)							
								Second semester (2021)							
Time: Lect: MO 9.00 - 15.00, THU 13.00 - 17.00 // Room: 503				Co-ordinator: Kuakarun, Pawinee				Microsoft teams: 2310656_INTG TECH PROT_2021.Group							
Time: Lab: MO 9.00 - 15.00, THU 13.00 - 17.00 // Room: 603								Team code: 9pue5ty							
Topic		Lect (hr)	Lab (hr)	Date		1st Instructor	2nd Instructor	3rd Instructor	รูปแบบการเรียนการสอน						
1. Basic techniques in Biochemistry															
Orientation & Check in			0.5	Jan 10, 9 - 9.30 am					online						
LECT 1.1 Lab safety & Data treatment		1.5		Jan 10, 9.30 - 11 am		Saowarath			online						
LECT 1.2 Calculation for reagent preparation, pipette and water		1		Jan 10, 11 am - 12 pm		Rath			online						
LECT 1.3 Centrifugation		1		Jan 10, 1 - 2.30 pm		Alisa			online						
LECT 1.4 pH and buffer		1.5		Jan 13, 1 - 2.30 pm		Rath			online						
LAB 1.1 pH and buffer			2.5	Jan 13, 2.30 - 5 pm		Rath	Pawinee		online						
LECT 1.5 Spectrophotometer		2		Jan 17, 9 - 11 am		Manchumas			online						
LAB 1.2 Spectrophotometer			3	Jan 17, 11 am - 3 pm		Manchumas	Supaart		online						
LECT 1.7 Computational analysis of protein structures		1		Jan 20, 1 pm - 2 pm		Thanyada			online						
LAB 1.3 Computational analysis of protein structures			3	Jan 20, 2 pm - 5 pm		Thanyada	Kuakarun		online						
Examination: to be announced															
2. Gene Expression and regulation															
LECT 2.1 Cell culture and sterilization techniques		1.5		Jan 24, 9 - 10.30 am		Manchumas			online						
LECT 2.2 Principles of gene induction e.g. lac operon		1.5		Jan 24, 10.30 am - 12 pm		Manchumas			online						
LAB 2.1 Reagent and medium preparation			6	Jan 24, 1 - 3 pm & Jan 27, 1 - 5 pm		Manchumas	Vichien		online						
LAB 2.2 The effect of different effectors and antibiotics on the production of b-gal			5	Jan 31, 9 am - 3 pm		Manchumas	Vichien		online						
2.2.1 Catabolite repression									onsite						
2.2.2 Effect of chloramphenical, streptomycin and ampicillin in protein synthesis									onsite						
LAB 2.3 Discussion			3	Feb 3, 1 - 4 pm		Manchumas	Vichien		online						
3. Enzyme expression, purification, characterization, and kinetics															
LECT 3.1 Concept of isolation and purification of enzymes		3		Feb 7, 9 am - 12 pm		Alisa			online						
LECT 3.2 Chromatography I		3		Feb 7, 1 - 3 pm & Feb 10, 1 - 2 pm		Supaart			onsite+online						
- TLC															
LAB 3.1 Lab brief (overview)			1	Feb 10, 2 - 3 pm		Kuakarun	Vichien	Pawinee	onsite						

LAB 3.2 Medium preparation		2	Feb 10, 3 - 5 pm	Vichien	Pawinee		onsite
LAB 3.3 Reagent preparation for column and culture inoculation		3	Feb 14, 9 am - 12 pm	Vichien	Pawinee		onsite
LAB 3.4 Protein expression, column packing and cell harvest		6	Feb 14, 1 - 3 pm & Feb 17, 1 - 5 pm	Vichien	Pawinee		onsite
LECT 3.3 Lyophilization, UF and dialysis	1.5		Feb 21, 9 - 10.30 am	Kittikhun			onsite
LECT 3.4 SDS-PAGE and Western blotting	1.5		Feb 21, 10.30 am - 12 pm	Vichien			
LAB 3.5 Enzyme isolation, enzyme purification I		4	Feb 24, 1 - 5 pm	Vichien	Pawinee		onsite
LAB 3.6 Enzyme purification II		6.5	Feb 28, 9 am - 3 pm & Mar 3, 1 - 2.30 pm	Vichien	Pawinee		onsite
LECT 3.5 Concept of Enzyme kinetics assay	1.5		Mar 3, 2.30 - 4 pm	Kuakarun			onsite
Examination: Midtem examination week							
LAB 3.7 SDS-PAGE and Western blotting		5	Mar 14, 9 am - 3 pm	Kuakarun	Vichien		onsite
LECT 3.6 Chromatography (Part II)	3		Mar 17, 1 - 4 pm	Supaart			onsite+online
- HPLC & FPLC							
- GC -MS (Demonstration)							
LAB 3.8 Discussion I (Protein Purification, SDS-PAGE, Western blot)		3	Mar 21, 9 am - 12 pm	Kuakarun	Pawinee		onsite
LAB 3.9 Enzyme kinetics		9	Mar 24, 1 - 5 pm & Mar 28, 9 am - 3 pm	Kuakarun	Pawinee		onsite
LAB 3.10 Discussion II (Kinetics)		3	Mar 31, 1 - 4 pm	Kuakarun	Pawinee		onsite
LAB 3.11 Product determination		6	Apr 4, 9 am - 3 pm & Apr 7, 1 - 2 pm				onsite
LAB 3.12 HPLC analysis		3	Apr 7, 2 - 5 pm	Kuakarun	Pawinee		onsite
LAB 3.13 Discussion III, Wrap-up		5	Apr 11, 9 am - 3 pm	Kuakarun	Pawinee	TA	onsite
LAB 3.14		3	Apr 18, 9 am - 12 pm	Kuakarun	Pawinee		onsite
· Course evaluation							onsite
· Reagent and chemical waste treatment							onsite
· LAB check - out							onsite
LAB Practical Exam**		6	Apr 25, 9 am - 4 pm	Kuakarun	Pawinee		onsite
Examination: to be announced							

Paper Examination	40%
Lab Practical Examination	20%
Performance	10%
Report and Presentation	20%
Quiz	5%
Attendance	5%