

Schedule for 2310656					
Integrated Techniques in Protein Biochemistry (3 credits)					
First semester (2023)					
				Co-ordinator: Kuakarun, Pawin	
Time: Lab: MO 13.00 - 17.00, TU 9.00 - 17.00 // Room: 603					
Topic	Lect (hr)	Lab (hr)	Date	1st Instructor	2nd Instructor
1. Basic techniques in Biochemistry					
Orientation & Check in		0.5	Aug 7, 9 - 9.30 am	Kuakarun	Pawinee
LECT 1.1 Lab safety & Data treatment	1.5		Aug 7, 9.30 - 11 am	Saowarath	
LECT 1.2 Calculation for reagent preparation, pipette and water	1		Aug 7, 11 am - 12 pm	Rath	
LECT 1.3 Centrifugation	1		Aug 7, 1 - 2 pm	Alisa	
LECT 1.4 pH and buffer	1.5		Aug 7, 2 - 3.30 pm	Rath	
LAB 1.1 pH and buffer		3	Aug 8, 9 am - 12 pm	Rath	Pawinee
LECT 1.5 Spectrophotometer	1		Aug 8, 1 - 2 pm	Manchumas	
LAB 1.2 Spectrophotometer		3	Aug 8, 2 - 5 pm	Manchumas	Supaart
LECT 1.7 Computational analysis of protein structures	1		Aug 15, 9 - 10 am	Thanyada	
LAB 1.3 Computational analysis of protein structures		3	Aug 15, 10 am - 1 pm	Thanyada	Kuakarun
2. Gene Expression and regulation					
LECT 2.1 Cell culture and sterilization techniques	1.5		Aug 21, 1 - 1.30 pm	Manchumas	
LECT 2.2 Principles of gene induction e.g. lac operon	1.5		Aug 21, 1.30 - 4 pm	Manchumas	
LAB 2.1 Reagent and medium preparation		6	Aug 22, 9 am - 4 pm	Manchumas	Karan
LAB 2.2 The effect of different effectors and antibiotics on the production of protein		6	Aug 28, 1 - 4 pm, Aug 29, 9 am - 12 pm	Manchumas	Karan
2.2.1 Catabolite repression					
2.2.2 Effect of chloramphenicol, streptomycin and ampicillin in protein synthesis					
LAB 2.3 Discussion		3	Sep 4, 1 - 4 pm	Manchumas	Karan
3. Enzyme expression, purification, characterization, and kinetics					
LECT 3.1 Concept of isolation and purification of enzymes	1.5		Sep 5, 9 am - 10.30 am	Alisa	
LECT 3.2 Chromatography I	3		Sep 5, 1 - 4 pm	Supaart	

LECT 3.3 Chromatography II	3		Sep 11, 1 - 4 pm	Supaart	
- HPLC & FPLC					
- GC -MS (Demonstration)					
- TLC					
Mid-term examination: <b>สอบ 25 - 29 Sep 2023 [TBA]</b>					
LAB 3.1 Lab brief (overview)		1	Oct 2, 1 - 2 pm	Kuakarun	Karan
LAB 3.2 Medium preparation		3	Oct 2, 2 pm - 5 pm	Karan	Pawinee
LAB 3.3 Reagent preparation for column and culture inoculation		3	Oct 3, 9 am - 12 pm	Karan	Pawinee
LECT 3.4 Lyophilization, UF and dialysis	1.5		Oct 3, 1 - 2.30 pm	Kittikhun	
LECT 3.5 SDS-PAGE and Western blotting	1.5		Oct 3, 2.30 am - 4 pm	Kuakarun	
LAB 3.4 Protein expression, column packing and cell harvest		7	Oct 9, 1 - 5 pm & Oct 10, 9 am - 12	Karan	Pawinee
LAB 3.5 Enzyme isolation, enzyme purification		12	Oct 10, 1 - 5 pm & Oct 16, 1 - 5	Karan	Pawinee
			Oct 17, 9 am - 1 pm		
LECT 3.6 Concept of Enzyme kinetics assay	1.5		Oct 17, 2 - 4 pm	Kuakarun	
LAB 3.7 SDS-PAGE and Western blotting		7	Oct 24, 9 am - 5 pm	Kuakarun	Karan
LAB 3.8 Lab & Discussion I (Protein Purification, SDS-PAGE, Western blot)		3	Oct 30, 1 - 4 pm	Kuakarun	Pawinee
LAB 3.9 Enzyme kinetics		11	Oct 31, 9 am - 5 pm & Nov 6, 1 - 5 pm	Kuakarun	Pawinee
LAB 3.10 Discussion II (Kinetics)		3	Nov 7, 9 am - 12 pm	Kuakarun	Pawinee
LAB 3.11 Product determination (TLC & HPLC)		7	Nov 7, 1 - 5 pm & Nov 13, 1 - 5 pm	Kuakarun	Pawinee
LAB 3.12 HPLC analysis		3	Nov 14, 9 am - 12 pm	Kuakarun	Pawinee
LAB 3.13 Discussion III (Product determination) & Wrap-up		4	Nov 14, 1 - 5 pm	Kuakarun	Pawinee
LAB Practical Exam**		6	Nov 21, 9 am - 4 pm	Kuakarun	Pawinee
LAB 3.14		3	Nov 22, 9 am - 12 pm	Kuakarun	Pawinee
· Course evaluation					
· Reagent and chemical waste treatment					
· LAB check - out					
Final examination: <b>สอบ 27 Nov - 12 Dec 2023 [28-Nov-2023, 13:00 - 16:00]</b>					

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