Schedule for 2310656 + 2310651

Integrated Techniques in Protein Biochemistry (3 credits)

First semester (2025)

Time: Lab: ~~MO 13.00 - 17.00, TU 9.00 - 17.00~~ // Room: 603

MON: 9 am - 4 pm, TU: 1 - 4 pm .

Co-ordinator: Kuakarun, Pawinee, Karan, Rath

Note: Topic สีแดงหมายถึงเรียนเฉพาะนิสิต 2310656

Topic	Lect (hr)	Lab (hr)	Date	1st Instructor	2nd Instructor	3rd Instructor	4th Instructor	Room
1. Basic techniques in Biochemistry								
Orientation & Check in		0.5	Aug 4, 9 - 9.30 am	Kuakarun	Pawinee			
LECT 1.1 Lab safety & Data treatment	1.5		Aug 4, 9.30 - 11 am	Saowarath				
LECT 1.2 Calculation for reagent preparation, pipette and water	1		Aug 4, 11 am - 12 pm	Rath				
LECT 1.3 pH and buffer	1.5		Aug 4, 1 - 2.30 pm	Rath				
LECT 1.4 Centrifugation	1		Aug 4, 2.30 - 3.30 pm	Alisa				
LECT 1.5 Computational analysis of protein structures	1		Aug 5, 1 - 2 pm	Thanyada ขอปรับวัน				
LAB 1.1 Computational analysis of protein structures		3	Aug 5, 2 - 5 pm (extend 1 h)	Thanyada ขอปรับวัน	Kuakarun			
LAB 1.2 pH and buffer		3	Aug 18, 9 am - 12 pm	Rath	Pawinee	Nuchanat	Napol	
LECT 1.5 Spectrophotometer	2		Aug 18, 1 - 3 pm	Manchumas				
LECT 1.6 Centrifugation	2		Aug 18, 4 - 5 pm	Alisa				
LAB 1.3 Spectrophotometer (reagent preparation)		3	Aug 19, 1 - 4 pm	Manchumas	Supaart	Nuchanat	Supitcha	
LAB 1.3 Spectrophotometer		6	Aug 25, 9 am - 4 pm	Manchumas	Supaart	Nuchanat	Supitcha	
LECT 2.1 Bacterial cell culture and sterilization techniques	1.5		Aug 26, 1 - 4 pm	Manchumas				
LECT 2.2 Principles of gene induction e.g. lac operon	1.5			Manchumas				
LAB 1.4 Centrifugation		6	Sep 1, 9 am - 4 pm	Alisa	Nuchanat	Napol	Supitcha	
LAB 2.1 Gene expression and regulation (reagent preparation)		3	Sep 2, 1 - 4 pm	Manchumas	Karan	Nuchanat		
LAB 2.2 The effect of different effectors and antibiotics on the production of b-galac		6	Sep 8, 9 am - 4 pm	Manchumas	Karan	Nuchanat		
2.2.1 Catabolite repression								
2.2.2 Effect of chloramphenical, steptomycin and ampicillin in protein synthesis								
Gene expression analysis			(Sep 9, 1 - 4 pm)					
LECT	0.5		Sep 9, 1 - 1.30 pm	Supaart	Manchumas			
LAB		2.5	Sep 9, 1.30 - 4 pm	Supaart	Manchumas			
LAB 1.2 pH and buffer Discussion	1		Sep 15, 9 - 10 am	Rath	Nuchanat	Napol	Pawinee	
LAB 1.3 Spectrophotometer Discussion	1		Sep 15, 10 - 11 am	Manchumas	Nuchanat			
LAB 2.1 Gene expression and regulation Discussion	1		Sep 15, 11 am - 12 pm	Manchumas				
LAB 1.4 Centrifugation Discussion	1		Sep 15, 1 - 2 pm	Alisa	Nuchanat			
3. Enzyme expression, purification, characterization, and kinetics								
LECT 3.1 Concept of isolation and purification of enzymes	1.5		Sep 15, 2 - 3.30 pm	Alisa				
LAB 3.1 Lab brief (overview)/reagent preparation		3	Sep 16, 1 - 4 pm	Karan	Pawinee			
Mid-term examination: 22 - 26 Sep 2025; **24 Sep 2025 13:00 - 16:00 น.** (เนื้อหาก่อนเรื่องเอนไซม์)								
3. Enzyme expression, purification, characterization, and kinetics								
LECT 3.1 Lab brief (overview)	0.5		Sep 29. 9 - 9.30 am	Karan	Pawinee			
LAB 3.2 culture inoculation & gene induction by IPTG for 2-3 h			Sep 29. 9.30 am - 12 pm	Karan	Pawinee			
LECT 3.2 Chromatography I (ion exchange, affinity, GPC)	2		Sep 29, 1 - 3 pm	Karan				
LAB 3.2 (cont) cell harvest and kept at -20 C	3		Sep 29, 3 - 4 pm	Karan	Pawinee			
LAB 3.3 column packing		3	Sep 30, 1 - 4 pm	Karan	Pawinee	Rath	Nuchanat	
LAB 3.2 enzyme isolation and purification		6	Oct 6, 9 am - 4 pm	Karan	Pawinee	Rath	Nuchanat	
FPLC Workshop		3	Oct 7, 1 - 4 pm	Kuakarun	Karan	Pawinee		
Troubleshooting workshop (protein expression and purification)		3	Oct 14, 1 - 4 pm	Kuakarun	Karan	Pawinee		
LECT 3.4 SDS-PAGE& Western blotting & Lab brief		1.5	Oct 20, 9 - 10.30 am	Kuakarun	Pawinee			
LAB 3.4 SDS-PAGE& Western blotting		4.5	Oct 20, 10.30 am - 4 pm	Kuakarun	Pawinee			
LAB 3.4 (cont) Western blotting		3	Oct 21, 1 - 4 pm	Kuakarun	Pawinee			
LAB 3.1 & 3.4 Chromatography, SDS-PAGE & Western blot Discussion		3	Oct 27, 9 am - 12 pm	Kuakarun	Karan	Pawinee		
LECT 3.6 Concept of Enzyme kinetics assay & Lab brief	1.5		Oct 27, 1 - 2.30 pm	Kuakarun				
LAB 3.5 enzyme kinetics (reagent preparation)		2	Oct 27, 2.30 - 4.30 pm	Kuakarun	Pawinee	Karan	Rath	
LECT 3.7 Lyophilization, UF and dialysis	1.5		Oct 28, 1 - 2.30 pm	Karan				
LAB 3.6 & 3.7 TLC & HPLC (sample & reagent preparation)		1.5	Oct 28, 2.30 - 4 pm	Kuakarun	Pawinee	Karan		
LECT 3.8 Chromatography II (TLC & HPLC)	3		Nov 3, 9 am - 12 pm	Karan				
LAB 3.6 & 3.7 TLC & HPLC		3	Nov 3, 1 - 4 pm	Karan	Pawinee	Kuakarun		
LAB 3.6 & 3.7 (cont) TLC & HPLC		3	Nov 4, 1 - 4 pm	Karan	Pawinee	Kuakarun		
LAB 3.5 & 3.6 & 3.7 kinetics, TLC & HPLC discussion		3	Nov 10, 9 am - 12 pm	Kuakarun	Karan	Pawinee		
GC demonstration & result analysis								
LECT	1		Nov 10, 1 - 2 pm	Supaart				

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LAB (demonstration & result analysis)		2	Nov 10, 2 - 4 pm	Supaart	Alisa	Karan		
Trobleshooting workshop (kinetics, TLC, HPLC)		3	Nov 11, 1 - 4 pm	Kuakarun	Karan	Pawinee		
Course evaluation/ reagent and chemical waste treatment, lab check out		3	Nov 17, 9 - 12 am	Kuakarun	Pawinee			
Practical Exam		6	Dec 4, 9 am - 4 pm	Kuakarun	Pawinee			
Final-term examination: 24 Nov - 8 Dec 2025; **25 Nov 2025 13:00 - 16:00 น.** (เนื้อหาตั้งแต่เรื่องเอนไซม์)								
Paper Examination	40%							
Lab Practical Examination	20%							
Performance	10%							
Report and Presentation	20%							
Quiz	5%							
Attendance	5%							