CHULALONGKORN UNIVERSITY
COURSE SYLLABUS

1.Course Number 2310381
2.English Abbreviation of Course Title BIOCHEM LAB BIOENG
3.Course Title
Thai: ปฏิบัติการชีวเคมีสาหรับวิศวกรชีวภาพ
English : Biochemistry Laboratory for Bioengineers
4.Credit 1.0 (0.0 – 3.0 – 0.0)
5.Responsible Section
5.1.Faculty/Equivalent FACULTY OF SCIENCE
5.2.Department DEPARTMENT OF BIOCHEMISTRY
5.3.Section
6.Method of Measurement Letter Grade (A B+ B C+ C D+ D F)
7.Type of Course Semester Course
8.Semester Intl 2nd semester
9.Academic Year 2020
10.Teaching Management

Class Section	Instructor	Evaluation Period
	10016000 SUPAART SIRIKANTARAMAS	30-04-2021 to 31-05-2021
	10011417 Assoc. Prof. Dr. KUAKARUN KRUSONG	30-04-2021 to 31-05-2021
	10018691 Assist. Prof. Dr. SURASAK CHUNSRIVIROT	30-04-2021 to 31-05-2021
	10002004 TEERAPONG BUABOOCHA	30-04-2021 to 31-05-2021
	10017406 SUCHART CHANAMA	30-04-2021 to 31-05-2021
	10004298 SAOWARATH JANTARO	30-04-2021 to 31-05-2021
	10020974 Dr. Vorrapon Chaikeeratisak	30-04-2021 to 31-05-2021
	10019893 Dr. Kittikhun Wangkanont	30-04-2021 to 31-05-2021

11.Condition

12.Program that uses this course
13.Level Bachelor year 3
14.Venue of Class Encouraging the use of active learning. Revising experiments to be most updated laboratory course.
15.Course Description

ปฏิบัติการ และปฏิบัติการด้วยโปรแกรมคอมพิวเตอร์เกี่ยวกับชีวเคมีและชีววิทยาโมเลกุล ที่สอดคล้องกับวิชาชีวเคมีสาหรับวิศวกรชีวภาพ

Laboratory in biochemistry and molecular biology including the use of computer programs according to Biochemistry for Bioengineers course.

16.Course Outline

16.1.Learning/Teaching Style

✓ Blended

16.2.Behavioral Objectives

#	Behavioral Objectives
1	ปฏิบัติตนในห้องปฏิบัติการได้ถูกต้องและปลอดภัย และบอกวิธีการจัดการสารเคมีและของเสียได้ Learning outcomes : • 1.1.Possessing well-rounded knowledge • 3.1.Being able to think critically • 4.1.Having professional skills Teaching/Development Method : • Lecture Evaluation Method : • Behavior observation
2	Be able to analyse protein structure and use basic bioinformatics to study protein functions Be able to explain principles in protein analysis, enzyme activity measurement, carbohydrate metabolism, PCR and gene regulation Be able to perform basic genetic engineering techniques Learning outcomes : • 1.1.Possessing well-rounded knowledge • 2.1.Being moral and ethical • 2.2.Having an awareness of etiquette • 3.1.Being able to think critically • 4.1.Having professional skills • 5.1.Having an inquiring mind • 5.2.Knowing how to learn Teaching/Development Method : • Lecture • Discussion • Experiment Evaluation Method : • Written examination • Behavior observation • Report/Project assessment

Behavioral Objectives Table

รายละเอียด	1		2		3			4					5		6	7	8	9
	1.1	1.2	2.1	2.2	3.1	3.2	3.3	4.1	4.2	4.3	4.4	4.5	5.1	5.2				
1	●				●			●										
2	●		●	●	●			●					●	●				

16.3.Content

Week	Description	Student Assignment
1	Course overview and lab safety Behavioral Objectives : • 1 Outcome : • 1.1 • 3.1 • 4.1 Instructor : • SUPAART	
2	Structural analysis I Behavioral Objectives : • 2 Outcome : • 1.1 • 2.1 • 2.2 • 3.1 • 4.1 • 5.1 • 5.2 Instructor : • KUAKARUN	
3	Structural analysis II Behavioral Objectives : • 2 Outcome : • 1.1 • 2.1 • 2.2 • 3.1 • 4.1 • 5.1 • 5.2 Instructor : • SURASAK	
5	Bioinformatics Behavioral Objectives : • 2 Outcome : • 1.1 • 2.1 • 2.2 • 3.1 • 4.1 • 5.1 • 5.2 Instructor : • TEERAPONG	

6	Protein Behavioral Objectives : • 2 Outcome : • 1.1 • 2.1 • 2.2 • 3.1 • 4.1 • 5.1 • 5.2 Instructor : • SUCHART	
9	Enzyme Behavioral Objectives : • 2 Outcome : • 1.1 • 2.1 • 2.2 • 3.1 • 4.1 • 5.1 • 5.2 Instructor : • SUPAART	
10	Carbohydrate metabolism Behavioral Objectives : • 2 Outcome : • 1.1 • 2.1 • 2.2 • 3.1 • 4.1 • 5.1 • 5.2 Instructor : • SAOWARATH	
12	PCR Behavioral Objectives : • 2 Outcome : • 1.1 • 2.1 • 2.2 • 3.1 • 4.1 • 5.1 • 5.2 Instructor : • Vorrapon	
13	Basic genetic engineering techniques Behavioral Objectives : • 2 Outcome : • 1.1 • 2.1 • 2.2 • 3.1 • 4.1 • 5.1 • 5.2 Instructor : • Vorrapon	
14	Gene regulation Behavioral Objectives : • 2 Outcome : • 1.1 • 2.1 • 2.2 • 3.1 • 4.1 • 5.1 • 5.2 Instructor : • Kittikhun	

16.4.Teaching Media

✓ สื่อนำเสนอในรูปแบบ Powerpoint media

✓ สื่ออิเล็กทรอนิกส์ เว็บไซต์

16.5.Communication with students through social networks

16.5.1.Form and Usage: ✓ Microsoft Team

16.5.2.Learning Management System ✓ CourseVille

16.6.Students Consultation 2.0 Hour/Week

16.7.Assessment

Activities Assessed	Percent
Quiz	5.00
Attendance	5.00
Performance	5.00
Report	20.00
Computer-based midterm examination	25.00
Paper-based final examination	40.00

Assessment Criteria

17.Reading List

17.1.Required Texts

17.2.Supplementary Texts

17.3.Research/Academic Articles (if any)

17.4.Related Electronic Media or Websites
18.Teaching Evaluation
18.1.18.1. Evaluation through the CUCAS – SCE system
18.2.Changes made in accordance with previous teaching evaluation
19.Remark