



Course Syllabus (Academic Year 2020)

School of Interdisciplinary Studies, Kanchanaburi Campus, Mahidol University

1. **Course No. and Title** : KACB 308 Basic Cellular and Molecular Biology
Credit (study hours) : 3 (3-0-6)
2. **Program Name** : Bachelor of Science in Conservation Biology
3. **Course Module** : Conservation Biology Core Course
Pre/co-requisite : KACB209
4. **Class Semester** : 1st Semester 2nd Semester Academic Year 2020
5. **Class Schedule & Venue** : Tuesday, 09:00 – 12:00 AM, Room XXXX, Lecture Building
6. **Class Coordinator** : Lect. Supatra Chunchob
 Contact No. : 085-0989419 E-mail: supatra.chn@mahidol.edu

7. Course Description

Biomolecules, structure, and function of organelles, cell membrane and cell wall, physiology of the cell, prokaryotic and eukaryotic cells, concept of molecular biology, gene expression and regulation mechanism, protein synthesis and transportation, gene and genome, molecular biology and immune system, regulation of cell cycle, cell differentiation, genetic engineering, laboratory techniques for molecular and cellular biology and an application for conservation biology

8. Course Objectives / Course Learning Outcomes (CLOs)

No.	Objectives / CLOs	Expected Skills / Knowledge			PLOs
		Specific	Generic	Knowledge	
8.1	To describe important structure and function of organelles				1
8.2	To describe important characteristics of each biomolecule and its function in biological processes				1
8.3	To describe relationship between organelles, biological process and cell response				1, 2
8.4	To discuss about the application of molecular techniques for conservation biology				4

NOTE: *PLOs = Program Learning Outcomes

9. Class Instructor List

Name	Contact no.	Email
9.1 Supatra Chunchob (SC)	085-0989419	supatra.chu@mahidol.edu
9.2 Chetsada Phaenark (CP)	080-0762169	chetsada.pha@mahidol.edu
9.3 Weerachon Sawangproh (WS)	093-3390526	weerachan.saw@mahidol.edu

10. Course Outline

Lecture

Week	Date	Contents	CLOs	Teaching & Learning	Instructor's Names
1	19 Jan 21	- Course Orientation - Overview about Cellular and Molecular Biology	1, 2	- Lecture - Group Activity	Supatra
2	26 Jan 21	Principle of Cytology	1, 2	- Lecture - Assignment	Chetsada
3	2 Feb 21	Basic Techniques in Cytology	1, 2, 5	- Lecture - Assignment	Chetsada
4	9 Feb 21	Mitochondria Chloroplast and Cell Metabolism	2, 3	- Lecture - Assignment	Supatra
5	16 Feb 21	Nucleus and Gene Regulation	2, 3	- Lecture - Assignment	Supatra
6	23 Feb 21	Endoplasmic Reticulum, Golgi Complex, Lysosome and Protein Transportation	2, 3	- Lecture - Class discussion	Supatra
7	2 Mar 21	Cell Wall, Cell Membrane and Molecular Transportation	2, 3	- Lecture - Class discussion	Supatra
8	9 Mar 21	Cytoskeleton and Cell Movement	2, 3	- Lecture - Class discussion	Supatra
9	Mid-term Examination (15 – 19 Mar 2021)				
10	23 Mar 21	Cell signaling and Regulation	2, 3	- Lecture - Class discussion	Supatra
11	30 Mar 21	Cell Cycle and Program Cell Death Biology of Cancer Cell	2, 3	- Lecture - Class discussion	Supatra
12	*6 Apr 21	DNA Techniques and Applications	4	- Lecture - Group discussion	Supatra
13	*13 Apr 21	Proteomics and Applications	4	- Lecture - Group discussion	Supatra
14	20 Apr 21	Concept of Bioinformatics	4	- Lecture - Assignment	Weerachon
15	27 Apr 21	Applications of Bioinformatics	4	- Lecture - Assignment	Weerachon
16	4 May 21	Application of Molecular Biology for Conservation Biology	4	- Case study - Group discussion	All Instructors

Week	Date	Contents	CLOs	Teaching & Learning	Instructor's Names
17	Final Examination (10 – 21 May 2021)				
18					

* Makeup Class

11. Course Assessment

No.	Methods / Activities	Regulations	CLOs	Week	Weight Distribution (%)
11.1	Mid-term exam (Lecture)	3 hours exam (other regulations will be announced in the class later)	1-3	1-8	28
11.2	Final exam (Lecture)	3 hours exam (other regulations will be announced in the class later)	3-4	10-17	32
11.3	Quiz / Assignment	Every week	1-4	1-8, 10-17	15
11.4	Field trip report	For Field trip	4	13	10
11.5	Class activity	Group discussion, Presentation	1-4	1-8, 10-17	10
11.6	Class participation	On time class	1-4	1-8, 10-17	5
				Total	100

12. Grading System

Criterion-referenced evaluation

Grade	Score	Grade	Score	Grade	Score	Grade	Score
A	≥ 80 %	B	70 – 74.99%	C	60 – 64.99%	D	50 – 54.99%
B+	75 – 79.99%	C+	65 – 69.99%	D+	55 – 59.99%	F	< 50 %

Norm-referenced evaluation

*If use both criterion and norm-referenced evaluation, please tick two boxes.

13. References

13.1 Alberts Bray et al., 2010. Essential Cell Biology. 3th edition. Garland Science

13.2 Cooper, G.M. and Hausman, R.F. 2007. The Cell: A Molecular Approach. 4th edition. Sinauer Associates, Inc Sunderland, Massachusetts.