

LIFS 1010 – Introduction to Biological Sciences (3-credit)

Fall 2023-24

Tuesday & Thursday

3pm-4:20pm

Room 2465 (L25/26)

Instructors

- Prof. Robert KO (RK), Course Director | Email: bcrko@ust.hk
- Dr. Aftab AMIN (AA) | Email: aftabamin@ust.hk
- Dr. Ice KO (IK) | Email: iceko@ust.hk

Course Description

This course introduces students to the fundamental concepts and principles of biological sciences, ranging from the chemical basis of life, cell structure and function, genetics and molecular biology, evolution and the origin of life, biodiversity and conservation, ecology and behavioral biology, to the structure and life processes in human. Examples and case studies will be illustrated to enhance students' understanding and application of relevant knowledge. Students without HKDSE qualifications may seek instructor's approval for enrolment.

Prerequisites

A passing letter grade in LANG 1401 OR LANG 1402 OR LANG 1403 OR LANG 1404 OR LANG 1002 (prior to 2022-23).

Exclusions

LIFS 1901, LIFS 1902, Level 3 or above in HKDSE 1/2x Biology OR in HKDSE 1x Biology.

Intended Learning Outcomes (ILOs)

- 1) Explain the fundamental principles and inter-relationship among biomolecules, cells, and life.
- 2) Describe evolution, the origin and diversity of life, and conservation biology.
- 3) Describe the principles of ecology and behavioral biology.
- 4) Describe the structure and life processes in humans.
- 5) Apply biological knowledge in explaining current issues relating to the environment and human life.

Assessment Scheme (assessing Course ILOs 1-5)

- Group Project 20%
- Mid-term Examination 40%
- Final Examination 40%

Teaching and Learning Activities

Scheduled activities: 2 lectures per week (each lecture 1 hour 20 minutes)

Teaching Activities

Lectures

In-class Discussions & Group Projects

Attaining Course ILOs

1-5

5

Key References

Cunningham W.P., Cunningham M.A. and O'Reilly, C.M. (2023) *Principles of Environmental Science: Inquiry and Applications* (10th edition). McGraw-Hill Companies, Inc.

Mader S.S. and Windelspecht M. (2023) *Human Biology* (17th edition). McGraw-Hill Companies, Inc.

Raven P.H., Johnson G.B., Mason K.A., Losos J.B. and Duncan T. (2020) *Biology* (12th edition). McGraw-Hill Companies, Inc.

Lecture Topics (Tentative)

Lecture	Date	Topic	Instructor
Part 1 – Fundamentals of Life			
1	Sep 5 (Tue)	<ul style="list-style-type: none">Course IntroductionCharacteristics of Life and Living Systems	IK
2	Sep 7 (Thu)	From Atoms to Organic Molecules	IK
3	Sep 12 (Tue)	The Cell: The Basic Unit of Life	IK
Part 2 – The Perpetuation of Life			
4	Sep 14 (Thu)	Genetics – DNA and Chromosomes	AA
5	Sep 19 (Tue)	Genetics – Cell Cycle and Meiosis	AA
6	Sep 21 (Thu)	<ul style="list-style-type: none">Human ReproductionGroup Projects	AA
Part 3 – Evolution			
7	Sep 26 (Tue)	The Origin of Life	IK
8	Sep 28 (Thu)	Evolution	IK
Part 4 – Biodiversity & Conservation			
9	Oct 3 (Tue)	The Value of Biodiversity	IK
10	Oct 5 (Thu)	Human Impacts on the Biosphere	IK
11	Oct 10 (Tue)	Preservation of Endangered Species and Ecosystems	IK
Part 5 – Ecology & Behavioral Biology			
12	Oct 12 (Thu)	Ecology of Individuals and Populations	IK
13	Oct 17 (Tue)	Species Interactions (I)	IK
14	Oct 19 (Thu)	Species Interactions (II)	IK
15	Oct 24 (Tue)	Mid-term Exam	AA & IK
16	Oct 26 (Thu)	Behavioral Biology (I) – Learning, Animal Cognition, and Migration	IK
17	Oct 31 (Tue)	Behavioral Biology (II) – Animal Communications, Reproductive Strategies, and Animal Societies	IK
Part 6 – Human Biology			
18	Nov 2 (Thu)	The Nervous System	AA
19	Nov 7 (Tue)	The Digestive System	AA
20	Nov 9 (Thu)	Heart and Circulation	AA
21	Nov 14 (Tue)	Lungs and Breathing	AA
22	Nov 16 (Thu)	Kidney and Excretion	AA
23	Nov 21 (Tue)	Muscles and Movement	AA
24	Nov 23 (Thu)	Aging Theory: Chinese Medicine Vs Modern Medicine	RK
25	Nov 28 (Tue)	Project Presentations (I)	AA & IK
26	Nov 30 (Thu)	Project Presentations (II)	AA & IK