LIFS 1010 – Introduction to Biological Sciences

School:	**School of Science**
Subject Area:	**Life Science**
Course Credit:	**3**
Instructor:	**AMIN Aftab / KO Ice Wai Ping / KO Robert Kam Ming**
Pre-requisite/co-requisite:	**Nil**

Notes:

- The syllabi provided here is for reference only and may be subject to changes and adjustments as determined by the course instructors.

The Hong Kong University of Science and Technology

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

Fall 2024-25

Monday & Wednesday | 9am-10:20am | Room 2407 (L17/18)

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.

Instructors

- Prof. Robert KO (RK), Course Director | Email: bcrko@ust.hk | Room 5534 (L25/26)
- Dr. Aftab AMIN (AA) | Email: aftabamin@ust.hk | Room 5462 (L25/26)
- Dr. Ice KO (IK) | Email: iceko@ust.hk | Room 5444 (L25/26)

Students are welcome to meet with the instructors if they have any questions about the course. Appointment by email is preferred.

Course Description
As a living being, you are a part of the biological world. Biological Science is the study of life. It's the truest way to understand the world around you and answer existential questions. This course introduces students to the fundamental concepts and principles, ranging from the origin of life, the genetic basis of evolution and biodiversity, the chemical basis of life, cell structure and organ functions in humans, conservation, ecology and behavioral biology. How Chinese medicine views life and aging in humans will also be discussed briefly. Examples and case studies will be illustrated to enhance students' understanding and application of relevant knowledge. Students without HKDSE qualifications may seek the instructor's approval for enrolment.

Intended Learning Outcomes (ILOs)
By the end of this course, students should be able to:
1) Explain the fundamental principles and inter-relationships among biomolecules, cells, and life activities.
2) Describe the origin of life and diversity of life, the genetic basis of evolution, and conservation biology.
3) Describe the principles of ecology and behavioral biology.
4) Describe the structure and function of organs in humans.
5) Apply biological knowledge in explaining current issues relating to the environment and human life.

Assessments (assessing Course ILOs 1-5)

Assessment Task	*Coverage*	*Contribution to Overall Course Grade (%)*	*Date & Time*	*Venue*
Exam I	Lectures 1-11	45	14th October, class slot	Room 2407 (L17/18)
Exam II	Lectures 13-25	55	To be confirmed	To be confirmed

Attendance Bonus:
In addition to the exam marks, a bonus mark of 5% will be given to those students who achieve an attendance rate of ≥80% after the add/drop period (i.e., attending ≥16 lectures from Sep 16 to Nov 27, NOT including that of Exam I).

Final Grade Descriptors

Grade	*Short Description*	*Elaboration on Subject Grading Description*
A	Excellent Performance	Demonstrates a comprehensive grasp of subject matter. Displays an excellent motivation to learn.
B	Good Performance	Shows good knowledge and understanding of the main subject matter. Displays a high motivation to learn.
C	Satisfactory Performance	Possesses adequate knowledge of core subject matter. Demonstrates an effort to achieve broadly defined learning goals.
D	Marginal Pass	Has threshold knowledge of core subject matter. Possesses the potential to develop in the discipline.
F	Fail	Demonstrates insufficient understanding of the subject matter. Does not meet the threshold requirements for development in the discipline.

Communication and Feedback
Exam marks will be communicated via Canvas within two weeks of the corresponding exam.

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.

Academic Integrity
Students are expected to adhere to the university's academic integrity policy. Students are expected to uphold HKUST's Academic Honor Code and to maintain the highest standards of academic integrity. The University has zero tolerance of academic misconduct. Please refer to Academic Integrity | HKUST – Academic Registry for the University's definition of plagiarism and ways to avoid cheating and plagiarism.

Lecture Topics *(Tentative)*

Lecture	Date	Topic	Instructor
Part 1 – Fundamentals of Life			
1	Sep 2 (Mon)	• Course Introduction (RK) • Characteristics of Life and Living Systems (IK)	RK & IK
2	Sep 4 (Wed)	The Chemical Basis of Life – From Atoms to Organic Molecules	IK
3	Sep 9 (Mon)	The Cell: The Basic Unit of Life	IK
Part 2 – The Perpetuation of Life			
4	Sep 11 (Wed)	Genetics and DNA	AA
5	Sep 16 (Mon)	Human Reproduction	AA
	Sep 18 (Wed)	*Public Holiday*	
Part 3 – Evolution			
6	Sep 23 (Mon)	The Origin of Life	IK
7	Sep 25 (Wed)	Evolution	IK
Part 4 – Biodiversity & Conservation			
8	Sep 30 (Mon)	The Value of Biodiversity	IK
9	Oct 2 (Wed)	Human Impacts on the Biosphere	IK
10	Oct 7 (Mon)	Preservation of Endangered Species and Ecosystems	IK
Part 5 – Ecology & Behavioral Biology			
11	Oct 9 (Wed)	Ecology of Individuals and Populations	IK
12	**Oct 14 (Mon)**	**Exam I**	**AA & IK**
13	Oct 16 (Wed)	Species Interactions (I)	
14	Oct 21 (Mon)	Species Interactions (II)	IK
15	Oct 23 (Wed)	Behavioral Biology (I) – Learning, Animal Cognition, and Migration	IK
16	Oct 28 (Mon)	Behavioral Biology (II) – Animal Communications, Reproductive Strategies, and Animal Societies	IK
Part 6 – Human Biology			
17	Oct 30 (Wed)	The Nervous System	AA
18	Nov 4 (Mon)	Heart and Circulation	AA
19	Nov 6 (Wed)	Lungs and Breathing	AA
20	Nov 11 (Mon)	Kidney and Excretion	AA
21	Nov 13 (Wed)	The Digestive System	AA
22	Nov 18 (Mon)	The Immune System	AA
23	Nov 20 (Wed)	Review of Human Biology	AA
24	Nov 25 (Mon)	Living Healthier by Using Chinese Herbs	RK
25	Nov 27 (Wed)	Why We Age: From Chinese Medicine and Modern Medicine Perspectives	RK