

LIFS1904 Laboratory for General Biology II

Course Outline for Spring 2023

Teaching Team

Instructor & Course Coordinator:	Dr. Aftab AMIN Office: Room 5462 (Lift 25-26) Email: aftabamin@ust.hk
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Senior Technician:	Mr. Yau Ming WONG
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Technicians:	Ms. Carol L.M. WONG
	Ms. Vivian C. YU
	Mr. Wai Shing WONG

	Section/Exercise	Name	Email: @connect.ust.hk
Teaching Assistants (TAs): (Lab Duty/ marking) *Marking Final Assessment	LAB A/ Ex. 1	Ms. LAU Hiu Yan (Jessica)	hylauas
	LAB B/ Ex. 1	Ms. CHEUNG Ka Yan	kycheungba
	LAB A & B/ Ex. 1	Ms. LI Yubing	ylihj
	LA1/ Ex. 2	Ms. CHENG Kefan	kchengag
	LA2/ Ex. 2	Ms. CAO Jiaming	jcaoak
	LA3/ Ex. 2	Mr. XU Yang	yxudu
	LA1/ Ex. 3/ *	Ms. GU Yuzhe	yguba
	LA2/ Ex. 3/ *	Mr. LIU Kwok Yu	kyliuae
	LA3/ Ex. 3/ *	Ms. HUANG Yanxi	yhuangft
	LA1 - LA3/ Ex. 3	YANG Zhiyong	zyangcb
	LA1 - LA3/ Ex. 3	WANG Youqi	ywangpt
	LA1 - LA3/ Ex. 3	LI Yunbo	ylihe
	LA1 - LA3/ Ex. 3	QU Rui	rquaa

	LA1/ Ex. 4	Mr. ALLA Abdalla Galaa Mohamed	agmalia
	LA2/ Ex. 4	Mr. LIU Yang	yliuho
	LA3/ Ex. 4	Mr. YE Ziyun	zyeai

Course Description

Credit:	1
Prerequisite:	LIFS1901 / \geq Level 3 HKDSE 1x Biology / passing grade in AL/AS Biology
Corequisite:	LIFS1902
Exclusions:	NIL
Grading:	Pass or Fail

LIFS 1904, Laboratory for General Biology II, comprises of four laboratory exercises: Genetic Studies, DNA Fingerprinting, Animal Dissection and Biochemical Assays. The aims of these exercises are: **1)** to reinforce the materials learnt in lectures by providing related laboratory exercises; **2)** to provide some fundamental hands-on experiences in laboratory work; and **3)** to equip the students with practical knowledge related to the application of basic scientific principles. Practical training will allow students to appreciate that “*the applications of simple experiments can bring some meaningful learning experiences*”.

This is a practical course accompanying the lecture course LIFS 1902. It provides students with some basic concepts and hands-on experiences in biological investigation within some areas covered by LIFS 1902, including genetics, molecular biology and human biology. The emphasis is on the understanding and application of the scientific principles underlying the experiments.

Intended Learning Outcomes (ILOs)

Upon successful completion of this course, students will be able to:

1. Explain scientific principles underlying the experiment procedures in each exercise.
2. Demonstrate basic laboratory techniques for carrying out Life Science experiments.

3. Analyze and interpret experiment data based on scientific reasoning and knowledge.
4. Abide by ethical principles in laboratory work and result presentation.

Learning Activities

1. **Pre-lab talk:** Content will focus on basic theoretical and practical issues concerning the specific experiment.
2. **Practical demonstration:** Specific techniques in each exercise will be demonstrated by the Teaching Team. Real-time or pre-recorded close-up videos will be provided for students to understand the technical details. After the demonstration, students will subsequently apply the techniques in their experiments.
3. **Laboratory exercise:** A group of three to four students will collaborate to perform the experiments. A workbench, labware and instruments will be assigned to and managed by each group of students.
4. **Bench supervision:** TAs will provide guidance and assistance to one bench of students to ensure smooth progress. The instructor and technicians will also provide instructions and support to the class.

Course Schedule

Students **MUST** attend **FOUR Laboratory Sessions** on the assigned date and time.

Venue	Day & Time
Division of LIFS Teaching LAB Room 4160 (Lift 33)	Monday, 14:00 – 16:50

Introduction/Orientation	Date
Exercise 1: Genetic Study using Fruit Fly	
LAB A	6 Feb
LAB B	13 Feb

Exercise 2: Forensic Study by DNA Fingerprinting	Date
Group A1	20 Feb
Group A2	27 Feb
Group A3	6 Mar

Exercise 3: Rat Dissection	Date
Group A1	13 Mar
Group A2	20 Mar
Group A3	27 Mar

Exercise 4: Digestion of Protein, Carbohydrate and Fat	Date
Group A1	3 Apr
Group A2	17 Apr
Group A3	24 Apr

Final Assessment	Date
Format and guidelines TBA.	30 Mar

Assessment Scheme

- Students will be graded “**Pass**” or “**Fail**” depending on their **overall performance**.
- **Only** students who **attended ALL laboratory sessions, submit ALL worksheets AND final assessment** will be considered for a “Pass” grade. **Unless** mitigating circumstances have been stated by **official means** and relevant **permission(s) has been granted**.

Summary

Method of Assessment	Contribution to Final Grade	ILOs to be Assessed (As listed on Page ii)
Laboratory Performance	20% (5% per session)	(1) & (2)
Experiment Worksheets	40% (10% per worksheet)	(1), (3) & (4)
Final Assessment	40%	(1), (3) & (4)

Laboratory Performance

Each student is required to attend **FOUR laboratory sessions**. Absence in any session without clear explanation or justification may result in a “FAIL” grade. The performance of students in each session, including practical performance, discipline, and laboratory safety, will be assessed individually and on a group-by-group basis. Full marks (5% per regular laboratory session) will be given if all criteria are satisfied. This assessment will focus on:

- Motivation to accomplish the tasks of the experiments.
- Understanding and proper execution of experiment procedures.
- Effective communication with group members and members of the Teaching Team.
- Timely completion of experiments.
- Tidiness of the bench after experiments

Laboratory Performance Evaluation Criteria and Safety Precautions.

Working in a laboratory may expose one to potentially dangerous tools and hazardous reagents. Therefore, students **MUST** exercise discipline and caution to ensure the experiments are conducted under safe and optimum conditions.

Students should:

- **READ** the laboratory manual **BEFORE** coming to the laboratory.
- **Follow** lab/manual instructions and safety precautions carefully and accurately.
- **DO NOT VIOLATE** lab rules or marks will be **DEDUCTED FROM THE TOTAL SCORE**.

Rules	Remarks	Deduction
<i>Attendance</i>	ATTEND ALL SESSIONS for the ENTIRE SCHEDULED DURATION , unless mitigating circumstances have been provided by official means and permission has been granted.	3%
<i>Punctuality</i>	BE ON TIME, (no more than 5 minutes late) for all sessions.	2%
<i>Dress Code</i>	WEAR PROPER CLOTHING to ensure your lower body is fully covered (i.e. no shorts, short skirts, open-toe shoes/sandals) to minimize the risk of potential injuries.	1%
	WEAR LAB COATS AT ALL TIMES.	1%
	USE PERSONAL PROTECTIVE EQUIPMENT (PPE; gloves, goggles etc.) for protection if required (handling hazardous chemicals/ reagents – carrying out sensitive experiments).	1%
	Long hair/loose hair must be tied up to avoid contact with chemicals, flames etc.	1%

Rules	Remarks	Deduction
<i>Performance</i>	DO NOT perform any unauthorized experiments or improvise any procedures.	3%
	DO NOT operate any equipment until properly instructed.	1%
	SEEK ADIVICE IF UNSURE of any procedures, the operation of equipment or the handling of apparatus.	1%
	Handle reagents/apparatus carefully and switch off any equipment when not in use.	1%
	Appropriately label all samples, reagents, waste materials etc. Group number/student name/date should also be marked if required.	1%
	Clean the laboratory bench with 70% ethanol BEFORE and AFTER the experiment.	1%
	DO NOT take any equipment, consumables, and reagents away from the laboratory.	3%
	Dispose of different wastes in designated receptacles.	1%
<i>Additional Precautions</i>	Students should NOT eat, drink, or put anything in their mouth while in the laboratory	2%
	Students should NOT put any unnecessary items on the bench during the experiment.	1%
	Students should Keep walkways clear of bags, stools, and other obstacles.	1%

ABOVE ALL – HEALTH AND SAFETY ARE VITAL!

IMMEDIATELY report all accidents

(NO MATTER HOW SMALL; skin exposure, cuts, burns, spillage etc.)

to the TEACHING TEAM!

Experiment Worksheets

Each student is required to submit **FOUR experiment worksheets**, one for each exercise. The template of worksheets and experiment data, if any, will be available on Canvas. The worksheet questions cover the underlying principles of the experiments, data reporting, interpretation, and statistical analysis.

STUDENTS MUST PRINT

WORKSHEETS FOR EXERCISE 1 AND EXERCISE 3

BEFORE THE PRACTICALS

Failure to do so will result in a 20% Mark Deduction.

For each submission you should:

1. Fill in your Name, Student Number, Group number, Laboratory Session, and Date.
2. Provide answers to ALL questions in the worksheet. You DO NOT NEED to prepare an extensive laboratory report containing detailed sections under headings such as, Introduction, Discussion etc.
3. Ensure all submissions are your **OWN WORK**. Academic integrity and honesty are key values at HKUST. Submissions containing indications of CHEATING (e.g. making up data) or PLAGIARISM (e.g. copying from others or external sources) will be assigned ZERO MARKS, “FAIL”. Disciplinary actions will be taken - (<http://ugadmin.ust.hk/ug-guide/integrity/dishonesty.html>; <https://libguides.ust.hk/referencing/plagiarism>)

Deadlines:

Exercise	LAB Session	Due Date/ Time	Return Date /Time
1 PRINT	LAB A	06.02.23 - 16:50 / End of lab session (HARDCOPY ONLY)	Start of next lab session
1 PRINT	LAB B	13.02.23 - 16:50 / End of lab session (HARDCOPY ONLY)	Start of next lab session
2	LA1	27.02.23 - 13:59 (SOFTCOPY ONLY SpeedGrader)	13.03.23, 12:00-12:59
2	LA2	06.03.23 - 13:59 (SOFTCOPY ONLY SpeedGrader)	20.03.23, 12:00-12:59
2	LA3	13.03.23 - 13:59 (SOFTCOPY ONLY SpeedGrader)	27.03.23, 12:00-12:59
3 PRINT	LA1	13.03.23 - 16:50 / End of lab session (HARDCOPY ONLY)	Start of next lab session
3 PRINT	LA2	20.03.23 - 16:50 / End of lab session (HARDCOPY ONLY)	Start of next lab session
3 PRINT	LA3	27.03.23 - 16:50 / End of lab session (HARDCOPY ONLY)	Start of next lab session
4	LA1	12.04.23 - 13:59 (SOFTCOPY ONLY SpeedGrader)	17.04.23, 12:00-12:59
4	LA2	24.04.23 - 13:59 (SOFTCOPY ONLY SpeedGrader)	02.05.23, 12:00-12:59
4	LA3	02.05.23 - 13:59 (SOFTCOPY ONLY SpeedGrader)	08.05.23, 12:00-12:59

- 1. Exercise 1 and 3: Marks will not be awarded to late submissions.**
- A PDF **SOFTCOPY** for exercise 2 and 4 must be submitted on Canvas Assignments, before the above indicated deadline. The submission will be graded and returned online.
- LATE SUBMISSIONS:** later than 13:59, but on or before 16:50 on the indicated date **will be marked down by 30%**.
- Any worksheet handed in later than 16:50 of the deadline date will still be marked by the TA, however, your mark for that worksheet will be **ZERO**.

5. Any marking related questions **must be directed to the TA who marked your work** within 5 days of receipt. All marks will be finalized thereafter. The TA has the right to reject any mark correction after this time.
6. If you have any special reason for early/ late submission, please contact LIFS 1904 instructor in advance.

Final Assessment

Each student is required to submit **ONE final assessment**. The student will be assessed on their understanding of laboratory exercise principles and procedures, as well as their ability to analyze and present information. The format and detailed guidelines will be announced on the 30th of March and students must upload **softcopies (PDF)** on the **27th of April, before 13:59**. The submission will be graded (SpeedGrader) and returned online on the **8th of May, before 13:59**.