LIFS 1904

Laboratory for General Biology II

The course LIFS 1904 Laboratory for General Biology II comprises altogether five laboratory exercises. The aims of these exercises are three-fold: 1) to enhance the comprehension of the students in the practical sense of what they have learnt in lectures; 2) to provide the students some fundamental hands-on experience in laboratory work; and 3) to equip the students with some practical knowledge related to application of basic scientific principle.

The materials covered in the laboratory exercises of LIFS 1904 are simple but extensive. The students will be given exposure to the areas of animal dissection, biochemical assay, molecular biology, genetics and ecology. Through this series of training, the students will be able to appreciate that *"the applications of simple experiments can bring some meaningful learning experiences"!*

This is a practical course accompanied by the lecture course LIFS 1902. It provides students with some basic concepts and hands-on experience in biological investigation within some areas covered by LIFS1902, including human biology, molecular biology and ecology. The emphasis is on the understanding and application of the scientific principles underlying the experiments.

Bobby TK Yim
Laboratory Instructor
Division of Life Science
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Learning outcomes:

At the end of this course, the student is able to:

1. explain the scientific principles underlying the experimental procedures described in individual sessions
2. demonstrate basic laboratory techniques for carrying out the life science experiments described in individual sessions
3. analyze and interpret experimental data based on scientific reasoning and knowledge
4. abide by ethical principles in laboratory work and data interpretation

Learning activity:

1. Learning environment: A group of three or four students will collaborate to perform the experiments during the semester. Working bench, routinely used labwares and instruments would be assigned to and managed by each group of students.
2. Pre-lab talk: its contents would focus on basic theoretical and practical issues involved in the experiment
3. Pre-lab demonstration: Specific techniques will be taught in respective laboratory exercise via demonstration by instructor; real time closed-up video shot will provide to assist students to understand its details. Right after demonstration, student will perform the demonstrated techniques for the experiment by his/her own.
4. On-bench supervision: Teaching staffs, who is a technician or postgraduate student, will be served as a bench supervisor to take care one bench of students. Bench supervisor will provide assistance and instructions to students during the experiment.

Method of assessment:

1. Every student would need to submit 5 Experimental Worksheets, which is based on a question-answer format. The question set cover underlying principles of experiment, data reporting, data interpretation and statistical analysis.
2. In each experiment practical performance, discipline and laboratory safety of students will be scored by bench supervisor.
3. Every student will be assessed individually by a written final examination, which will access the ability to analyze data and factual knowledge in concepts and principles.

The Hong Kong University of Science and Technology

Division of Life Science

LIFS 1904 Laboratory for General Biology II

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Senior Technician: **Mr. Simon CL Lau**

Technicians: **Ms Carol LM Wong**

Ms Vivian C Yu

Ms Candy PY Lee

LIFS 1904 Laboratory for General Biology
Schedule of Laboratory Activities

Spring Semester 2017-18 (Monday, 14:00 – 16:50, Room 4160, Lift 33)

	Activities	**Date**
Introduction		12 February
Exercise 1	Rat Dissection	
	Session A	26 February
	Session B	5 March
Exercise 2	Digestion of Carbohydrate, Protein and Fat	
	Session A	12 March
	Session B	19 March
Exercise 3	Forensic Study by DNA Finger Printing	
	Session A	26 March
	Session B	9 April
Exercise 4	Genetics Study by Fruit Fly	
	Session A	16 April
	Session B	23 April
Exercise 5	Environmental Pollution and Pollutant Risk Assessment	
	Session A	30 April
	Session B	7 May

Final Examination
(Date and Venue to be arranged by ARR)

Note:
Students would be assigned to either Session A or Session B. Each session will be met on a bi-weekly basis (alternate Monday).

Team of Teaching Assistant

A Teaching Assistant is assigned as a bench supervisor for every working bench. They will supervise the performance of students in particular bench, according to the criteria listed on Page viii and ix. If necessary, ask for advice from your bench supervisor during experiment.

They will also be responsible for marking the experimental worksheet for respective experimental exercise in one of the Session, as below:

Teaching Assistants (internal extension / email)	Experimental Worksheet / Session
Mr. Cha Jun Young (x7285 / jycha)	Ex 1 / Session A
Mr. Ding Dongbo (x7334 / ddingaa)	Ex 1 / Session B
Mr. Guo Chenxi (x7324 / cguoae)	Ex 2 / Session A
Miss Vo Thi Hoai Thuong (x8715 / thtvo)	Ex 2 / Sessoin B
Mr. Wu Junqiang (x7287 / jwube)	Ex 3 / Session A
Mr. He Jiawei (x7316 / jhebd)	Ex 3 / Session B
Miss Liu Kendra Eileen (x7345 / keliuaa)	Ex 4 / Session A
Miss Tsogka Marianthi (x7274 / mtsogka)	Ex 4 / Session B
Miss Zhou Qiuxia (x7282 / qzhouaf)	Ex 5 / Session A
Miss Yu Xiaojie (x8138 / xyuaq)	Ex 5 / Session B

Distribution of Marks

The assessment of your performance in the laboratory exercises of LIFS 1904 is based on your overall achievement in the following areas: laboratory worksheet, performance in the laboratory, and final examinations. Grades range in increments from A+ to F, with F as "Failed".

Altogether 5 laboratory worksheets are to be submitted and each of them is worth 5% of your total laboratory score. Therefore, a sum of 25% will be awarded to the worksheet. The remaining 75% will be allocated to laboratory performance and a final examination. A total of 10% of your marks will be awarded to your laboratory performance (according to the criteria listed on Page viii and ix) in the five exercises, whereas the remaining 65% will be allotted to the final examination.

In summary, the grade for this course will be determined as follows,

Method of Assessment	Contribution to Final Grade (%)	*Learning Outcomes to be assessed
Experimental Worksheet	25%	(1), (3) & (4)
Laboratory Performance	10%	(2)
Final Examination	65%	(1), (3) & (4)

*Listed on Page iii

Note

Only those students, who fully attend all of the required laboratory session, accordingly, will be considered for Grade D or above ("Pass").

Laboratory Rules

Working in a biochemical laboratory may expose one to potentially dangerous tools and equipment, and hazardous chemicals. Therefore, you need to exercise discipline and cautiousness in your work. The following rules are mandatorily enforced in the LIFS 1904 laboratory in order to ensure that experiments are conducted under the best and safest conditions. Any offences to these rules will be penalized by deducting scores accordingly.

Punctuality: you should be in the laboratory on time. **Full attendance** is required for the entire duration of the experiment, except under circumstances where permission is granted.

Laboratory coats must be worn at all times in the laboratory. Gloves must be worn when handling the following: dissection work, hazardous chemicals or reagents, nucleic acids and proteins.

Labels, notes, pens/pencils and other materials should never be placed in your mouth.

Any accidents, such as cuts, burns, and spillage of culture or toxic reagents, must be reported to the instructor immediately.

Flasks, tubes and other plastic- or glasswares containing cultures or other laboratory samples placed in incubators must be labeled with your name, date and nature of the specimen.

All used plastic- and glasswares, reagents and other kinds of laboratory wastes must be disposed of in designated receptacles or garbage cans.

When handling equipment and tools, make sure you know the proper way of using them. Ask for advice if you do not.

Make sure all equipments are turned off when not in use.

None of the equipment, consumables and experimental samples is to be taken from the laboratory without permission.

Laboratory Performance Evaluation Criteria

Students who break the following regulations will be penalized by deducting 1-5% from the total score of the lab course.

Attendance

a. Full attendance for the entire duration of experiment, except under circumstances where permission is granted. 5%

b. Students are NOT allowed to swap the assigned sessions and group, except with permission granted from instructor. 3%

Punctuality

You should be on time (no more than 5 minutes late) for any lab session/follow-up session. 2%

Dress Code

a. Lab coats must be **worn at all times** as protection against lab hazards. 1%

b. **Cover lower body with clothing** i.e. no shorts, short skirts, stockings, sandals, slippers, to minimize injuries against spills. 1%

c. Long loose hair must be **tied up** securely to minimize contact with Bunsen flame, chemicals etc. 1%

Performance

a. Pay attention to instructions of TAs and the lab manual. 2%

b. Execute the lab procedures carefully and accurately. 2%

Experimental Worksheet

Students are required to submit Experimental Worksheet for all Exercises. Therefore, a total of five worksheets will be submitted by each student.

In each worksheet, you are required to put down your Name, Student Number, Group Number, Experimental Date, and the Number and Title of the Exercise concerned. After you have provided all the above information, proceed directly to provide answers to the questions and problems of the worksheet. You are **NOT** required to rewrite the introduction and experimental protocols. So do not waste your time in doing that.

This Experimental Worksheet is either,

1. in-class assignment to be submitted by the end of the same experiment, or,
2. take-home assignment to be submitted on the experimental day of next exercise.

Format of Experimental Worksheet	Involved Exercise
In-class Assignment	Exercise 1, 4, 5
Take-home Assignment	Exercise 2, 3

For in-class assignment, the worksheet would be distributed in class and student can put down all the answer(s) and/or data onto the PROVIDED WORKSHEET directly.

For take-home assignment, its questions/problems are already listed out in the last part of corresponding protocol; however, student should present all answer(s) and/or data onto SEPARATED SHEET(S) of PAPER, accordingly.

One assigned teaching assistants will be responsible for collecting and marking all the worksheets on an exercise.