

LIFS4550 Biochemistry of Nutrition

Spring semester, 2023

Class time: **Mon 15:00-16:20 & Friday 10:30-11:50**

Venue: 2306

Instructor:

Prof. Tuan Anh NGUYEN,

Email: tuanh@ust.hk, Tel: 3469-2679, Room: 5513

Course goals

- LIFS4550 course will provide you with the knowledge of **nutrition biochemistry** to understand how nutrition is processed and absorbed in our bodies.
- This course also covers many **malnutrition diseases**. In addition, this course provides you with the essential **foundation for further studies** in metabolism, nutrition, and health care after graduation.
- The LIFS4550 course will help the students improve **multiple essential skills**, which will benefit them in applying **for jobs and studying postgraduate**. They include “active learning,” teamwork, oral and written presentation skills.

Learning outcomes

On successful completion of this course, students are expected to be able to:

1. Understand the **essential components** of the major food groups and how they are **metabolized** in our bodies.
2. Assess the role of scientific knowledge in understanding **dietary deficiency** and treating **diet-related problems**.
3. Understand and analyze deeply the **current research papers** related to nutrition, well-equipped to study nutrition-related fields in postgraduate study.
4. **Work in a team, active learning**, and **report** the work results in oral and written formats.

Course description

The biochemistry of significant food ingredients, including carbohydrates, lipids, proteins, phytochemicals, alcohol, vitamins, water, and minerals, will be studied. In addition, the metabolism, nutritional properties, and functions of these ingredients will be emphasized.

Teaching approach

The course content is mainly delivered through two methods, **interactive lectures** and **blended learning**.

The first few **lectures** of the course are the introduction to nutrition and the background of metabolism. Then, each aspect of the food ingredients is given in the subsequent lectures.

The students need to find partners to **work on a project**, which requires active learning, critical thinking, extensive collaboration, and presentation. In a project, a team of students needs to read one core paper and many related papers, **present the contents orally** as a group, and submit a **written report** individually.

Assessment scheme

- Team presentation and individual report (70%):

- 5 papers will be chosen for the five topics, Carbohydrates, Lipids, Proteins, Alcohol, and Fat-Soluble Vitamins.

- Each group will choose one paper to work on.

- The students will choose 1-2 partners to form a group and work together to make and present the paper orally. If the students cannot find partners, they will randomly be teamed up by the instructor.

- **Team presentation (30%):** No specific format required.

+ Each group will be given 15 minutes for the presentation.

+ Q/A section will be conducted for all groups presenting the same topics at the end of the presentation lecture.

+ In each group, one student can present as a representative, or all students can participate in the presentation.

+ The oral presentations will be scored as one for a whole group.

- **The individual report (40%):** Scientific format.

+ Each student needs to write a report related to the assigned paper.

+ The report should be written in a scientific form, including abstract, introduction, results, summary, discussion, and perspectives.

+ The students should summarize and discuss what they learn from the papers.

+ The report should be submitted in the course's final week on Canvas.

+ The assigned report will be scored individually.

+ The students need to check plagiarism carefully.

- List of 5 papers (will be updated soon)

- **Final Exam (written exam 30%):** The final exams will contain multiple-choice and essay questions. **Only a few chapters** are selected to test in the final exam.

Lecture outline

Date	Lecture	Instructor
Feb 3	Course Introduction	TAN
Feb 6, 10	Carbohydrates	TAN
Feb 13, 17	Lipids	TAN
Feb 20	Project-team formation	TAN
Feb 24, 27	Proteins	TAN
Mar 3, 6	Proteins	TAN
Mar 10	Alcohol	TAN
Mar 13, 17, 20	Fat-soluble vitamins	TAN
Mar 24	Group discussion	TAN
Mar 27, 31	Presentations 1, 2	TAN
Apr 3, 14, 17	Presentations 3-5	TAN
Apr 21, 24, 28	Water-soluble vitamins	TAN
May 5	Water-soluble vitamins	TAN
May 8	Minerals	TAN
Updated later	Final exam	TAN

Reference books

1. **Advanced nutrition and human Metabolism-Gropper, Smith and Groff**
2. Color Atlas of Biochemistry-Koolman and Roehm
3. Harper's Illustrated Biochemistry- Murray, Bender, Botham, Kennelly, Rodwell, and Well.