

LIFS4550 Biochemistry of Nutrition

Course Outline for Fall 2023

| <u>Instructors</u> | <u>Email</u> | <u>Room</u> |
|-----------------------|------------------|-------------|
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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.

Course Objectives

- To teach students about the **biochemistry of nutrition** and **metabolism**.
- To enhance student comprehension regarding the process of nutrient acquisition, digestion, and absorption.
- To enhance student knowledge regarding **malnutrition diseases**.
- To provide students with an essential **foundation for further studies** in metabolism, nutrition, and health care after graduation.
- The course will help students develop **multiple skills** that are essential for postgraduate studies and employment, such as active learning, teamwork, scientific writing, and presentations.

Intended Learning Outcomes

1. Understand the **essential components** of 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 **current research papers** related to nutrition.
4. **Students will be able to work in a team, apply active learning**, and accurately **report** results.

Teaching approach

1. The course content is mainly delivered through two methods, **interactive lectures**, and **blended learning**. The first few **lectures** of the course will introduce core concepts regarding nutrition and metabolism. Each nutrient will be examined comprehensively in subsequent lectures.
2. **Group Presentations:** Students will form their own groups/or will be divided into groups. Students must demonstrate active learning, critical thinking, proper use of scientific language and extensive collaboration.

Assessment scheme

A. Group Presentation (60%):

- Students will be tasked to form presentation groups as specified by the instructors.
- Ungrouped students will be randomly assigned into groups by the instructors.
- Final groups will be announced in mid-September.
- Please contact the instructors to resolve disputes.
- 10 core papers covering five topics (Carbohydrates, Lipids, Proteins, Alcohol, and Vitamins) will be selected by the instructors.
- Each group will be assigned to present one of the core research papers.
- Groups will be required to make a PowerPoint or Poster presentation.
- Each group will be given 20 minutes for the presentation,
- Each group will have a 10-minute Question & answer session.
- The instructors will assign each group the task of asking another group questions. For example, Group 1 could be assigned to ask Group 2 questions.
- Each group should submit a draft of the presentation slides by email 2 weeks in advance for general feedback from the instructors.
- The group leader must submit a softcopy (PDF) of the final presentation on canvas 1 week in advance for similarity/plagiarism/AI checks.
- A single grade will be assigned to each group according to the **presentation rubric**.
- All students should participate actively (team dynamics/synergy will be evaluated).
- Peer evaluation may be conducted to evaluate the participation of your group members and the presentation of other groups, which may affect the final score of each student.

B. Final Exam (written exam or assignment, 40%):

- True and False Questions.
- Multiple-choice questions.
- Essay questions.
- Instructors will provide guidance regarding their own questions.

Course Schedule

Class time: Tuesday 1hr 20 min & Thursday 1hr 20 mins (10:30AM - 11:50AM)

Class Venue: Rm 1104, Acad Concourse.

| Date | Lecture | Instructor |
|-------------------|------------------------|-------------------------|
| Sep 5 | Course introduction | Dr. Amin |
| Sep 7 | Carbohydrates | Dr. Amin |
| Sep 12 | Carbohydrates | Dr. Amin |
| Sep 14 | Lipids | Dr. Amin |
| Sep 19 | Project-team formation | Dr. Amin |
| Sep 21 | Lipids | Dr. Amin |
| Sep 26 | Proteins | Dr. Amin |
| Sep 28 | Proteins | Dr. Amin |
| Oct 3 | Alcohol | Prof. Hirano |
| Oct 5 | Fat-soluble vitamins | Prof. Hirano |
| Oct 10 | Fat-soluble vitamins | Prof. Hirano |
| Oct 12 | Fat-soluble vitamins | Prof. Hirano |
| Oct 17 | Group discussion | Prof. Hirano & Dr. Amin |
| Oct 19 | Presentation 1 | Prof. Hirano & Dr. Amin |
| Oct 24 | Presentations 2 | Prof. Hirano & Dr. Amin |
| Oct 26 | Presentations 3 | Prof. Hirano & Dr. Amin |
| Oct 31 | Presentations 4 | Prof. Hirano & Dr. Amin |
| Nov 2 | Presentations 5 | Prof. Hirano & Dr. Amin |
| Nov 7 | Water-soluble vitamins | Prof. Hirano |
| Nov 9 | Water-soluble vitamins | Prof. Hirano |
| Nov 14 | Water-soluble vitamins | Prof. Hirano |
| Nov 16 | Minerals | Prof. Hirano |
| Exam ARO Dec 7-19 | TBA | Prof. Hirano & Dr. Amin |

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.

