

# **LIFS4550 Biochemistry of Nutrition**

Spring semester, 2019

Class time: Tuesday & Wednesday 12:00-13:20

Venue: Room 2502

## **Instructors:**

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## **Course goals**

This course will provide you with the knowledge of biochemistry in the understanding and decision making for developing a healthy and nutritional diet for you.

## **Learning outcomes**

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

1. Describe the basic components of the major food groups which are vital to the functioning of a human body.
2. Apply scientific concepts to justify dietary choices made to protect the onset or aggravation of diet-related ailments.
3. Assess the role of the scientific knowledge in the understanding of dietary deficiency and treatment of diet-related problems.
4. Evaluate the impact of a healthy lifestyle on both an individual and on society as a whole.

## **Course description**

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

## **Teaching approach**

The course content is mainly delivered through interactive lectures. The first few lectures of the course are the introduction to nutrition and the background of metabolism. Then, each of the aspects of the food ingredients is given in the subsequent lectures. For assessment, the students will be assessed by the presentations and reports for each of the respective

ingredients of Carbohydrates-Lipids, Proteins, Alcohol, and Fat-Soluble Vitamins. The final exam will cover Water-Soluble Vitamins, Water, and Minerals.

### Assessment scheme

#### A. Presentation and report (40%): Carbohydrates & Lipid, Proteins, Alcohol, and Fat-Soluble Vitamins.

- The class will be divided into 4 groups that will be drawn with 4 different topics. For each topic, one group will present while three other groups will submit a report and ask at least two questions during the presentation.
- Presentation format (25%): No specific format required, presentation time: 45 min, questions and discussion: 25 min.
- Report (5%): the students can write the report in a group or as an individual. Minimum 1000 words.
- List of 4 topics:
  - (1) Human diseases are associated with Carbohydrate or Lipid metabolism.
  - (2) Human diseases are associated with Protein metabolism.
  - (3) Human diseases are associated with Alcohol metabolism.
  - (4) Human diseases are associated with Fat-Soluble Vitamin metabolism.
- Hints for the presentations and reports
  - + The students may present or report many nutrient-related diseases or focus on one particular disease.
  - + Provide a comprehensive background of the disease.
  - + Provide an essential nutrition biochemistry knowledge of the nutrition factor associating with the chosen disease/diseases.
  - + Mechanism of nutrition biochemistry and diseases.
  - + The involvement of other nutrients with the diseases.
  - + Treatment for the diseases.

#### B. Final Exam: 60%

Water Soluble Vitamins, Water and Minerals

##### Lecture outline

<u>Date</u>	<u>Lecture Topics</u>	<u>Instructor</u>
Jan 31	Introduction	RSCW
Feb 12, 14	Lipid	RSCW
Feb 19, 21	Carbohydrates	RSCW
Feb 26, 28	Proteins	TAN
<b>Mar 5</b>	<b>1<sup>st</sup> presentation (topics 1)</b>	<b>RSCW</b>
Mar 7, 12, 14	Proteins	TAN
Mar 19	Alcohol	TAN

Mar 21	Fat-soluble vitamins	TAN
<b>Mar 26</b>	<b>2<sup>nd</sup> presentation (topics 2)</b>	TAN
Mar 28	Fat-soluble vitamins	TAN
Apr 4, 9	Fat-soluble vitamins	TAN
<b>Apr 11</b>	<b>3<sup>rd</sup> presentation (topics 3)</b>	TAN
Apr 16 (or 23), 25, 30	Water-soluble vitamins	TAN
May 2 7	Minerals	TAN
<b>May 9</b>	<b>4<sup>th</sup> presentation (topics 4)</b>	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.
4. Perspectives in nutrition, 7<sup>th</sup> or 6<sup>th</sup>Edition-Gordon M. Wardlaw
5. Nutritional Biochemistry –T Brody
6. Biochemistry- Christopher K. Matthews, K. E. van Holde, Kevin G. Ahern
7. Biochemistry- Murray, Granner, Mayes, Rodwell