

# **LIFS4550 Biochemistry of Nutrition**

Spring semester, 2020

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

Venue: Room 1104 Academic Concourse

## **Instructors:**

Prof. Tuan Anh NGUYEN, Email: tuanh@ust.hk Tel: 3469-2679 Room: 5513

Prof. Raymond S. C. WONG, Email: bcayw@ust.hk Tel: 2358-7271 Room: 5446

## **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.

## 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. The students can form a group of with any member number or the students can also choose to work alone. The presentation time: 60 min for all presentations, questions and discussion for all presentations: 25 min. The individual presentation gets 5 min, two-student presentation gets 10 min, and three-student presentation gets 15 min, over-three-student presentation gets 20 min.
- Reports (3x5%): 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%

#### Lecture outline

Date	Lecture	Instructor
Feb 21	Course introduction	TAN
Feb 24, 28	Carbohydrates	RSCW
Mar 2, 6	Lipid	RSCW
Mar 9	Sugar and human intelligent	RSCW
Mar 13, 16, 20	Proteins	TAN
Mar 23	Alcohol	TAN
Mar 27, 30	Fat-soluble vitamins	TAN
Apr 3, 6	Fat-soluble vitamins	TAN
Apr 17	1 <sup>st</sup> presentation (or assignment)	RSCW
Apr 20	2 <sup>nd</sup> presentation (or assignment)	TAN
Apr 24, 27	Water-soluble vitamins	TAN
May 4	Water-soluble vitamins	TAN
May 8	3 <sup>rd</sup> presentation (or assignment)	TAN
May 11, 15	Minerals	TAN
May 18	4 <sup>th</sup> presentation (or assignment)	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

