

11:709:400 Advanced Nutrition 1: Macronutrients (3 credit hours)
MW 5.35-6.55pm, Art History 200
Department of Nutritional Sciences
University

Fall 2015
Index # 00765
SEBS-Rutgers

Instructors

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Office Hours: Drop-in Monday 11:00-12:00, Thursday 3:00-4:00, and by appointment

Prerequisites

01:694:301, 01:694:403/404, 11:115:301 or 11:115:407/408 (or equivalent) is a prerequisite for this course

Course Description

Understanding the regulation and tissue-specific utilization of the macronutrients (carbohydrates, proteins and lipids) within the body. Macronutrient digestion, absorption, and transport will be covered, and the integrated nature of physiological and biochemical aspects of metabolism in health and disease will be stressed. The majority of the course uses traditional lectures; active learning (problem based studies) will also be employed.

Recommended (not required) text ; available on reserve in Chang Library.

Biochemical, Physiological and Molecular Biological Aspects of Human Nutrition, MH Stipanuk & MA Caudill, eds. Elsevier-Saunders, Third Edition 2013

Learning objectives

After taking this course, students will

1. Describe macronutrient (carbohydrates, proteins, fats and alcohol) digestion, absorption, transport, and usage throughout the body during the day.
2. Detail the biochemical mechanisms by which a healthy organism coordinates the use of different fuels to maintain homeostasis.
3. Define the changes that occur in macronutrient metabolism in different physiological and pathological states, with emphasis on both chronic and inherited diseases.
4. Communicate how macronutrient intake, quantitatively and qualitatively, can affect physiology and contribute to pathological problems such as diabetes mellitus, the metabolic syndrome, cardiovascular disease, and cancer.

Course Requirements

1. Attendance is expected; required during active learning sessions
2. First examination (carbohydrates) – 25%, September 28th
3. Second examination (proteins/amino acids)-20%, October 19th

4. Third examination (lipids)-35%, November 23rd
5. Fourth examination (Integrated metabolism)-20%, December 21st

ADVANCED NUTRITION I: Macronutrients

11:709:400

FALL 2015

Monday/Wednesday, 6th (5:35-6:55pm)

Art History 200

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NOTE: 01:694:301, 01:694:403/404, 11:115:301 or 11:115:407/408 (or equivalent) is a prerequisite for this course

1	Sept. 2	Introduction – Carbohydrates	Watford
2.	8*	Fiber/Digestion	Watford
3.	9	Glucose transport/Regulation	Watford
4.	14	Glycolysis	Watford
5.	16	Fate of pyruvate	Watford
6.	21	Glycogen	Watford
7.	23	Gluconeogenesis	Watford
8.	28	Exam 1 (lectures 1-7)	Watford
9.	30	Protein requirements/digestion	Watford
10.	Oct 5	B6 & fate of amino acids	Watford
11.	7	Protein turnover/Interorgan flux	Watford
12.	12	BCAA/Glutamine	Watford
13.	14	Nitrogen Excretion	Watford
14.	19	Exam III (lectures 9-13)	Watford
15.	21	Introduction to Lipids; Lipid consumption	Storch
16.	26	Lipid Digestion & Absorption 1	Storch
17.	28	Digestion & Absorption II; Lipoproteins I	Storch
18.	Nov 2	Lipoproteins II	Storch
19.	4	Lipid Metabolism I	Storch
20.	9	Lipid Metabolism II	Storch
21.	11	Atherosclerosis	Storch
22.	16	Lipids & chronic disease I	Storch
23.	18	Lipids & chronic disease II; fat substitutes	Storch
24.	23	Exam II (lectures 15-23)	Storch
THANKSGIVING BREAK			
25.	30	Integrated metabolism: Starvation	Watford
26.	Dec 2	Alcohol/Exercise	Watford
27.	7	Diabetes 1	Watford
28.	9	Diabetes 2, Obesity, Metabolic Syndrome	Watford

*Tuesday Sept 8th is Monday Schedule

FINAL EXAMINATION
4pm-7pm MONDAY, DECEMBER 21ST

The final grade will be determined based on the four examinations (% of total grade).

Examination 1	25%
Examination 2	20%
Examination 3	35%
Examination 4 (final)	20%

Textbook recommendation (not required)

Biochemical, Physiological and Molecular Biological Aspects of Human Nutrition, M.H. Stipanuk, M.A. Caudill, ed., Elsevier-Saunders, Third Edition 2013

Copies of the text are available in the Chang Library, Foran Hall.

An additional course 709:402 Advanced Nutrition I: Readings is offered as a 1 credit option to this course. Two sections are scheduled: Monday 5th period (3:55-5:15pm) CDL 110 & Wednesday 5th period (3:55-5:15pm) Thompson 206. The readings course will review problems based on the material covered in this class each week. The additional course is intended for those students who feel that their background and understanding of biochemistry limits their achievement in this course. Problems discussed in 402 will be available for self-study for those students not taking 402.