11:709:400  Advanced Nutrition 1: Macronutrients (3 credit hours)  Fall 2015
MW 5.35-6.55pm, Art History 200  Index # 00765
Department of Nutritional Sciences  SEBS-Rutgers
University

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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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 I (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 I 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 I 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)**
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.