

**11:709:400 ADVANCED NUTRITION: Macronutrients**  
**(Lecture list for 16:709:553)**  
**FALL 2022 Tuesday/Thursday 4<sup>th</sup> (2.00pm-3.20pm)**  
**CDL 102**

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**In order to protect the health and well-being of all members of the University community, masks must be worn by all persons on campus when in the presence of others (within six feet) and in buildings in non-private enclosed settings (e.g. common workspaces, workstations, meeting rooms, classrooms, etc.). Masks must be worn during in person any class meetings, examinations, office hours; any student not wearing a mask will be asked to leave.**

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

<b>1</b>	Sept. 6	Tissue specific metabolism/Carbohydrates	Watford
<b>2.</b>	8	Non-Digestible Carbohydrates: Fiber/HMO	Watford
<b>3.</b>	13	Digestion/Transport/Regulation/Glycolysis 1	Watford
<b>4.</b>	15	Glycolysis 2/Pentose Shunt/PDHC	Watford
<b>5.</b>	20	TCA cycle/oxphos/Glycogen	Watford
<b>6.</b>	22	Gluconeogenesis/Problem Based Questions	Watford
<b>7.</b>	27	<b>EXAM I</b>	
<b>8.</b>	29	Lipids-Introduction to Lipids	Storch
<b>9.</b>	Oct 4	Lipids-Digestion and Absorption –I	Storch
<b>10.</b>	6	Lipids-Digestion and Absorption 2/Lipoproteins I	Storch
<b>11.</b>	11	Lipids-Lipoproteins 2	Storch
<b>12.</b>	13	Lipids-Anabolic lipid metabolism	Sampath
<b>13.</b>	18	Lipids-Catabolic lipid metabolism	Sampath
<b>14.</b>	20	Lipids-Cholesterol	Sampath
<b>15.</b>	25	Lipids-CHD Part I	Sampath
<b>16.</b>	27	Lipids – CHD Part II/Problem Based Questions	Sampath
<b>17.</b>	Nov 1	<b>EXAM II</b>	
<b>18.</b>	3	Dietary Protein: quantity and quality	Watford
<b>19.</b>	8	B6/Non-protein nitrogen metabolism	Watford
<b>20.</b>	10	Non-protein contn., Protein turnover	Watford
<b>21.</b>	15	Interorgan amino acid flux I BCAA/Glut/Gln	Watford
<b>22.</b>	17	Interorgan II, Glut GLN, Problem Based Question	Watford
<b>23.</b>	22	<b>EXAM III (officially a Thursday)</b>	
		<b>THANKSGIVING BREAK</b>	
<b>23.</b>	29	Nitrogen Excretion	Watford
<b>25.</b>	Dec	Starvation/Exercise	Watford
<b>26.</b>	Dec. 2	Diabetes 1	Watford
<b>27.</b>	7	Diabetes 2, Obesity, Metabolic Syndrome	Watford
<b>28.</b>	13	Alcohol, Problem Based Questions	Watford

**FINAL EXAMINATION**  
**12 noon-3.00pm**  
**Thursday, December 23<sup>rd</sup>**

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

Examination 1 (20%)

Examination 2 (35%)

Examination 3 (20%)

Examination 4 (25%)

**Textbook recommendation (not required)**

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

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

**Note:** An additional course, 709:402 Advanced Nutrition I: Readings, is offered as a 1 credit option to this course. Two sections are scheduled: Monday 12.10-1.30 in RAB 104, and Monday 2.00-3.20 in Thompson 206. The readings course will review problems and study questions 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 and questions discussed in 402 will be available for self-study for those students not taking 402.

## **COURSE DESCRIPTION**

*Prerequisites: 01:694:301 or 11:115:403, 404 or 01:694:407-408; all prerequisite courses must be completed with a grade of C or better; This course is acceptable as an elective for Biological Science (119), Biochemistry (115) and Animal Biotechnology (126), and is used to calculate the Science GPA for Medical School applications.*

The course covers the comprehensive study of regulation of carbohydrate, lipid and protein metabolism at cellular and organized levels; integration of metabolism by hormones, diet and pathophysiological states. Overall, the course focuses on human nutrition and metabolism but includes evidence from experimental and domestic animals to illustrate mechanisms.

## **STUDENT LEARNING GOALS**

Through lectures, readings, and class discussions, including Problem Based Learning, students will gain:

1. A comprehensive understanding of the physiological and molecular basis of macronutrient metabolism and how various nutritional phases (absorptive through starvation) affect the digestion, processing, and utilization of macronutrients.
2. An understanding of macronutrient metabolism during different physiological and pathological conditions (exercise, obesity, undernutrition, different types of diabetes mellitus, inborn errors of metabolism, and dyslipidemias).
3. Knowledge of consequences of consuming excess or insufficient amounts of the macronutrients and the mechanisms involved (carbohydrates, lipids, proteins, and alcohol).

Learning goals will be assessed by the 4 examinations.

**Examinations** will include multiple-choice, fill-in, true-false, matching, and short essay questions. Sample examinations may be posted as study guides.

### **Note about missed exams:**

Make-up exams may be granted under exceptional circumstances. It is the student's responsibility to contact the instructor responsible for that exam prior to the missed exam to arrange a make-up exam date and time. Instructor approval is required to take a make-up exam.

Appropriate documentation verifying the circumstances for a missed examination must be provided to the instructor prior to taking the make-up examination.

Test or examinations missed on the grounds of medical circumstances must be supported by a Physician's Statement. Note: The Physician's Statement must be the original (copies are not acceptable) and must include a legible name and the telephone number and address of the physician's office; the physician's office may be contacted to verify that the forms were completed by the physician.

Tests or examinations missed on the grounds of non-medical circumstances must be supported by appropriate documentation, i.e. death certificates, obituary notice, automobile accident reports, airline/train/bus tickets/receipt for emergency travel, etc. and must include full details of destination, departure and return dates. Missing an exam for a vacation or social gathering, or due to employment are not acceptable reasons.

## **Learning Goals for the Didactic Practice in Dietetics**

2018 Core Knowledge for the RDN (KRDN) – The Rutgers Department of Nutritional Sciences Undergraduate Didactic Program in Dietetics is accredited by the Accreditation Council for Education in Nutrition and Dietetics (ACEND) of the Academy of Nutrition and Dietetics (AND). The following ACEND Core Knowledge Aptitudes are included within the curriculum of this course:

KRDN 1.1: Demonstrate how to locate, interpret, evaluate and use professional literature to make ethical, evidence-based practice decisions (i.e. active learning via discussions of case studies; exams).

KRDN 1.2: Use current information technologies to locate and apply evidence-based guidelines and protocols (i.e. active learning via discussions of case studies; exams).

KRDN 1.3. Apply critical thinking skills (i.e. active learning via discussions of case studies; exams)

KRDN 2.3. Assess the impact of a public policy position on nutrition and dietetics practice (i.e. active learning via discussions of case studies; exams)

KRN.3.5. Describe basic concepts of nutritional genomics (i.e. active learning via discussions of case studies; exams).

### **ACADEMIC INTEGRITY POLICY**

Each student is responsible for understanding the RU Academic Integrity Policy. This policy will be strongly enforced. For all examinations and assignments, the students will be required to uphold the RU Honor Pledge, which states, “On my honor, I have neither received nor given any unauthorized assistance on this examination or assignment”. All written assignments may be screened by an automated plagiarism detection service that compares student work against a large data base of past work (including not only published work but also previous student submissions).

The RU Academic Integrity Policy and code of student conduct are available at:

*<http://nbacademicintegrity.rutgers.edu/home/academic-integrity-policy/>*

*<https://studentconduct.rutgers.edu/processes/university-code-student-conduct>*