NUTR 312: Nutrition and Chronic Disease

Spring 2016

Meets: Tuesdays March 8 – April 26, 2016
2:00-5:00 pm (note - no class on March 22, and there is a take home exam due on May 10)

Location: Jaharis 156,
Boston Campus

Instructor: Sarah Booth, PhD
Jean Mayer USDA HNRCA Room 905B
Sarah.Booth@tufts.edu
Phone: 617 556-3231
Office hours by appointment

Teaching Assistant: TBD

Tufts Graduate Credit: 0.5

Prerequisites: Graduate General Nutrition recommended

Course description
This course will examine the relationships between nutrition and chronic disease. The roles of nutrients, foods, and diet patterns in the promotion, prevention or treatment of several chronic diseases will be presented. The interactions between pathophysiologic processes (such as inflammation and epigenetic factors) and nutrients will be explored. Research concepts such as study design and use of biomarkers will also be discussed.

The first part of the course will focus on common chronic diseases such as obesity, diabetes, hypertension, dyslipidemia, and cardiovascular disease. Current recommendations from sources aimed at prevention of these health problems will be discussed. In the second part of the course, musculoskeletal disorders, cancer and neurodegenerative diseases will be featured.

Course objectives
For each of the chronic diseases covered the student should be able to:
1) Summarize the manifestations of the disease
2) Describe the basic mechanism(s) that cause the disease
3) Explain the role of nutritional factors in the prevention, promotion or treatment of disease
4) For nutrients involved in the disease process, review relevant issues that may influence disease risk or outcome, including foods and diet patterns, bioavailability, and metabolism
5) State the biomarkers proposed to assess disease risk, progression or severity
6) Describe any health disparities associated with the disease
7) Identify gaps in knowledge about relationships between the disease and nutrition, and propose a testable hypothesis about this gap
Description of assignments, tests, and other required activities
Course activities include lectures, in class activities such as Team Based Learning (see below), class discussions, assignments based on topics covered in class, and a cumulative final exam.

Attendance: Attendance is not mandatory but highly recommended since 30% of course credit is based on in class participation.

Required reading: There is no required textbook for the course. Required reading for each section of the course is stated in the detailed course schedule below and will be posted on the course site on Trunk. Required readings must be completed prior to lectures and in-class activities, such as Team Based Learning.

Recommended reading: Recommended reading is optional. For each course topic, recommended readings are listed in the detailed course schedule below and will be posted on Trunk.

For students who wish to review nutrients discussed during the course or to assist in completion of course assignments, use of this text is recommended: Dietary Reference Intakes: The Essential Guide to Nutrient Requirements (2006). The entire volume may be downloaded free of charge at the National Academies Press website (registration may be required): http://www.nap.edu/catalog.php?record_id=11537

In class activities: In class activities include lectures, Team Based Learning and class discussions.

The elements of Team Based Learning (TBL) include:
- All students are assigned the same reading material, which must be completed in advance.
- At the beginning of the TBL activity, a very brief simple quiz is given to insure that each student is adequately prepared. Quiz scores of less than 50% correct will indicate lack of adequate preparation and will result in 50% deduction from the participation credit available for that activity.
- Students are then randomly divided into groups of 7-10 students (depending on final class enrollment). All of the groups are provided with the same set of questions based on the reading(s) and/or previous lecture. Questions must be discussed as a group and answers must represent the group consensus.
- The entire class reconvenes and each group reports their answers.

Assignments to be completed out of class: After each topic covered in class, students will be asked to complete a brief assignment that reinforces and expands upon key concepts covered in class and in required reading. Assignments should be returned to course instructors within one week. No credit will be awarded for assignments turned in more than one week following the course date when the topic was covered. Students will be asked to briefly summarize the following:
1) Fundamental manifestations of the disease discussed.
2) Summary of the disease process and roles of key nutrients in the disease process.
3) For relevant foods and diet patterns, issues regarding bioavailability and metabolism of key nutrients that could influence risk for the disease or the disease process.
4) At least one gap in the knowledge about the disease and its relationship with nutritional factors, and a testable hypothesis related to the gap.

Summary of Assignments and Grading
The course will be graded on the basis of 100 total points. Course credit will be based on out-of-class assignments (45 points), one final exam (25 points), and in class activities (30 points).
**In class activities:** Credit will be based on the observations of the instructors and teaching assistant, with deductions from TBL quizzes as described above.

**Out of class assignments:** Each submission will be graded in comparison to a key developed by instructors. The key will be posted two weeks after the date the topic was covered in class. No credit will be given for assignments returned more than two weeks after the topic was covered in class.

**Final exam:** The final exam will be cumulative and will be in a take home format. You will have one week to complete the exam, which will be due on **May 10, 2016 by 5pm**. The exam can be submitted electronically. Material on the final exam will be drawn from lectures, required readings and in class activities.

**Academic Conduct**
Academic integrity, including avoiding plagiarism, is critically important. Each student is responsible for being familiar with the standards and policies outlined in the Friedman School’s *Policies and Procedures* manual ([http://nutrition.tufts.edu/student/documents](http://nutrition.tufts.edu/student/documents)). It is the responsibility of the student to be aware of, and comply with, these policies and standards. In accordance with Tufts University’s policy on academic misconduct, violations of standards of academic conduct will be sanctioned by penalties ranging from grade reduction or failure on an assignment; grade reduction or failure of a course; up to dismissal from the school, depending on the nature and context of any infraction ([http://uss.tufts.edu/studentaffairs/judicialaffairs/Academic%20Integrity.pdf](http://uss.tufts.edu/studentaffairs/judicialaffairs/Academic%20Integrity.pdf)).

**Course Schedule Summary**

<table>
<thead>
<tr>
<th>Date</th>
<th>Week</th>
<th>Topic</th>
<th>Faculty</th>
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</thead>
<tbody>
<tr>
<td>Tuesday March 8</td>
<td>2:00-5:00 pm</td>
<td>Overview of Biomarkers &amp; Aging</td>
<td>S.Booth, PhD</td>
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<td>Racial/Ethnic Disparities in Healthcare Access</td>
<td>A. Acevedo, PhD</td>
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<td>Tuesday March 15</td>
<td>2:00-5:00 pm</td>
<td>Obesity</td>
<td>E. Saltzman, MD</td>
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<td>Team Based Learning: Gerosciences</td>
<td>S. Booth, PhD</td>
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<tr>
<td>Tuesday March 29</td>
<td>2:00-5:00 pm</td>
<td>Diabetes</td>
<td>E. Saltzman, MD</td>
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<td>Team Based learning: TBD</td>
<td>S. Booth, PhD</td>
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<td>Tuesday April 5</td>
<td>2:00-5:00 pm</td>
<td>Cardiovascular Disease</td>
<td>G. Huggins, MD</td>
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<td>Team Based learning: TBD</td>
<td>S. Booth, PhD</td>
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<td>Tuesday April 12</td>
<td>2:00-5:00 pm</td>
<td>Nutrition, Cancer and Epigenetics</td>
<td>J. Mason, MD</td>
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<td>Team Based Learning: Multivitamin Use &amp; Disease Risk</td>
<td>S. Booth, PhD</td>
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<td>Tuesday April 19</td>
<td>2:00-5:00 pm</td>
<td>Osteoarthritis, Osteoporosis and Sarcopenia</td>
<td>K. Shea, PhD</td>
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<td>L. Margolis, MS, RD</td>
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<td>Tuesday April 26</td>
<td>2:00-5:00 pm</td>
<td>Nutrition and Neurodegenerative Disease:</td>
<td>D. Steindler, PhD</td>
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<td>Team Based Learning: The Aging Brain</td>
<td>S. Booth, PhD</td>
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<tr>
<td>Tuesday, May 10</td>
<td>5:00 pm</td>
<td>Final Take Home Exam Due</td>
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