COURSE SYLLABUS

COURSE INFORMATION:
Nutrigenomics and Nutraceuticals
11:400:410
3 credits

CONTACT INFORMATION:
Instructor(s): Dr. Laura Rokosz & Dr. Marc Myers
Office Location: N/A
Office Hours: By appointment
Phone: 215-595-6414 (Dr. Myers) & 908-764-9062 (Dr. Rokosz)
Email: marc.meyers@meyers-consulting.com; egglrock@comcast.net

COURSE MATERIALS:
Required Readings—Nutrigenomics

***NOTE—Students are expected to purchase and read first two chapters of the book by February 1st.***


Recommended Readings—Nutraceuticals (optional readings, not required)


COURSE DESCRIPTION:
This course will explore the science of nutrigenomics and focus on those plant and animal nutraceuticals, bioactives that provide important health, wellness and comfort benefits. Regulatory and labeling impact on functional food production will also be presented. The course will also investigate opportunities for commercial development of functional and genotype-specific personalized foods and beverages of the future with focus on market-driving factors.

LEARNING OBJECTIVES:
At the end of the course, students will be able to:
1. Demonstrate how common food ingredients affect health by altering the expression of genes and the structure of an individual’s genome.
2. Understand how nutrients interact with the genome, and, the mechanism of action of nutraceuticals and dietary supplements in cells,
3. Learn how novel treatment of important diseases may be addressed through improved nutrition or the development of targeted health promoting foods and beverages.

ASSIGNMENTS/RESPONSIBILITIES & ASSESSMENT:

EDUCATIONAL PHILOSOPHY & INSTRUCTIONAL METHODS:

The course incorporates a variety of learning opportunities and measures. Critical thinking on food science topics related to molecular biology, nutrition, chemistry, and sociology are incorporated throughout. The
material is technical in nature and provides students with multiple learning media, including assigned readings, class lectures and notes, videos, practical application of information, written papers, two (2) exams, and a team PowerPoint oral presentations.

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<tr>
<th>GRADING:</th>
<th>(%)</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Class Attendance</td>
<td>5</td>
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<tr>
<td>Class Participation/Assignments</td>
<td>5</td>
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<tr>
<td>Exams</td>
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<tr>
<td>Exam #1 – Mid-Term exam</td>
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<td>Exam #2 – Final Exam (non-cumulative)</td>
<td>30</td>
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<tr>
<td>Written Projects and Class Presentations</td>
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<tr>
<td>Written Project on Nutrigenomics (individual)</td>
<td>15</td>
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<td>Class (team) Presentation on Nutraceutical applications (PowerPoint)</td>
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<td>Extra Credit</td>
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<td>Extra credit – Guest speaker report(s)</td>
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<td>(2 guest speakers are planned)</td>
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<td>TOTAL</td>
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<td>(Up to 110% with extra credit)</td>
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DEPARTMENT POLICIES AND EXPECTATIONS FOR STUDENT PERFORMANCE

Graduates of the department receive degrees as food science professionals, and professional behavior constitutes a key component of our academic programs. The department expects all students – at any level and in any program to:

- Attend classes.
- Come to class on time.
- Complete reading Readings on schedule, when applicable.
- Complete all course Readings on time.
- Write using correct format, grammar, spelling, and reference style.
- Turn in work that meets ethical standards and is not plagiarized.
- Take responsibility for obtaining and making up missed work.
- Finish all course work by the end of the semester.
- Inform instructors in advance if classes need to be missed.
- Provide documentation to support reasons for missing class, assignments and examinations.

Department policies

Grading: takes the above standards into consideration and applies penalties for failure to meet them. Instructors are not required to read or give a passing grade to work that is late, incomplete, or inadequately prepared.

PAPERS AND PRESENTATIONS
Papers (individual)

1. Each student will submit an individual paper on a Nutrigenomics topic as outlined in class. An electronic template for the report will be provided.
2. Select topic for written project by March 1, 2016 (15% of grade). Try to submit three topics of interest to you to Dr. Rokosz for approval. Approval will be based mainly on avoiding duplications and addressing current research interests. Final written report will be due on April 5, 2016.

Presentations (teams)

1. The class will form 1-2 teams. Teams will select topics for group class presentation by March 29, 2016. Teams will give their presentation after the Final Exam on April 26, 2016 (15% of grade). Submit three topics of interest to you to Dr. Meyers for approval. Approval will be based mainly on avoiding duplications and addressing current research interests.
2. Upon approval of a topic, research the topic and develop a PowerPoint presentation to present highlights of your findings, per our class discussion. Teams will have time to meet the end of most class periods, or can meet on an agreed-to alternate time.
3. Limit the presentation to a total of 20 slides with an additional slide for References
4. Submit slides by 12 midnight on the night prior to the day of your presentation. No modifications will be permitted once your slides are submitted.
5. Your presentation should NOT EXCEED 30 MINUTES in total. Twenty to twenty-five minutes is ideal with an additional 5 minutes for questions from the audience. This represents approximately 12-15 slides of presentable material (not counting title, subtitles and references)

OTHER INFORMATION:
Students will be responsible for adhering to the academic integrity policies found at http://academicintegrity.rutgers.edu.

It is important that students have the tools to succeed in this course. Please see the instructor *as soon as possible* with any difficulties or questions regarding the course materials. In addition, the Office of Student Affairs is available at http://studentaffairs.rutgers.edu for any other needs or concerns.

COURSE SCHEDULE:
SEMESTER COURSE OUTLINE:

1/19/2016 (Meyers/ Rokosz)
Lecture: Introductions, Review of Syllabus and Online Course References
1: Nutraceuticals in Functional Foods, Herbal products and Dietary Supplements (Meyers)
2: Nutrigenomics and Nutrigenetics in Functional Foods and Personalized Nutrition (Rokosz)

1/26/2016 (Meyers)
Lecture: 3: Nutraceuticals in Fruits and Vegetables and their Health Benefits
4: Nutraceuticals in Nuts and Grains and their Health Benefits

2/2/2016 (Rokosz)
Lecture: 5: Introduction to Nutrigenetics and Nutrigenomics (Chapter 1)
6: Utilization of Micronutrients (Chapter 2)

2/9/2016 (Meyers)
Lecture: 7: Nutraceuticals in Herbal Products and the Impact on Health
8: Nutraceuticals and Cancer Protection
2/16/2016 (Rokosz)
Lecture: 9: Good fats, bad fats. How they promote/protect from inflammatory diseases (Chapter 3)
10: The Nutrigenomic tool kit (Chapter 4)

2/23/2016 (Meyers)
Lecture: 11: Anti-Inflammatory Nutraceuticals, Herbals and Digestive Aids
12: Herbals for Diabetes, Arteriosclerosis and other Maladies

3/1/2016 (Rokosz)
Lecture: 13: Modulating the risk of cardiovascular disease through Nutrigenetics (Chapter 5)
14: Modulating the risk of obesity and diabetes through Nutrigenetics (Chapter 6)
Select topic for written Nutrigenomics report (individual). (Exam Review)

3/8/2016 (Meyers)
Mid-Term Exam #1 (Lectures 1-14)
Lecture: 15: Vitamins, Minerals and Dietary Supplements for Optimal Health
16: Herbs and Nutraceuticals for Impotence and Sexual Performance
Guest Speaker: Dr. Apostolos Pappas from Johnson & Johnson.
“Skin Nutrition”

3/15/2016 Spring Recess – No Class

3/22/2016 (Rokosz)
Lecture: 17: Crohn’s Disease and Inflammatory Bowel Diseases (Chapter 7-9)
18: Data Mining and Metabolomics (Chapters 10, 11)

3/29/2016 (Meyers)
Lecture: 19: Nutraceuticals for Weight Loss, Anxiety, Insomnia and Depression
20: Functional Food Development and Processing—Fate of Nutraceuticals
Class Team Presentation selection of topics due

4/5/2016 (Rokosz)
Lecture: Written Nutrigenomics report due
21: Epigenetics – Your DNA sequence is not the only thing that drives your Biology (Chapter 12)
22: Foodomics: A Proof of Principal Study (Chapter 13)
Guest Speaker (Speaker To Be Confirmed)

4/12/2016 (Meyers)
Lecture: 23: Regulatory Aspects and DSHEA
24: Qualified Health Claims
Teams work on PowerPoint Presentations

4/19/2016 (Rokosz)

Comment [LR1]:
Lecture:  
25: Commoditizing Nutrigenomics (Chapters 15, 16 and 17)  
26: Sharing Nutrigenomics with Health professionals (Chapter 18)  
(Exam Review)

4/26/2016 (Meyers/Rokosz)
Lecture:  
Final Exam#2 (Lectures 15-26)  
Team Project Presentations

5/3/2016
Optional extra day if too many snow days  
(Buffer day for presentation or guest speakers/snow day)