FSHN 784
Dietary Fiber, Bioactive Food Components and Health
Spring 2010
3 Credits

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Office hours: by appointment

Meeting location: 220 Agricultural Sciences Bldg

Course description:
FSHN 784 - Dietary Fiber, Bioactive Food Components and Health is a 3 credit, graduate level, lecture/discussion course designed to enhance students’ knowledge of the chemistry, nutrition, physiological function and health benefits of dietary and functional fiber, and how gut bacteria and food components that do not fit into classical nutrient categories (i.e. bioactive food components) impact human health.

Prerequisites:
FSHN 485 and FSHN 486 (or equivalent nutritional biochemistry courses), Statistics, Physiology, or instructor consent.

Course objectives:
- Understand gut physiology and immune function of the gut
- Identify types of dietary fiber and understand the definitions of fiber
- Compare the physiological effects and microbial metabolism of fibers
- Describe the role of fibers, gut microbiota, prebiotics and probiotics in promoting gut and overall health
- Identify types of and evaluate the role of phytochemicals/bioactive food components in promoting health
- Identify sources of fiber and bioactive food components in culturally diverse diets including Hawaiian and Pacific foods
- Present scientific literature in a clear, concise manner.
- Critically evaluate scientific literature in this field.

Course text:
This course will use recently published (within the last 5 years) review and primary research articles to present course topics. All articles will be available through the UH-Manoa library system. Citations for the articles will be announced in class and also posted on Laulima. Students will be required to print or photocopy their own copies of the articles.

Course format:
Typically, 1-2 review articles and 1-2 research/discussion articles will be assigned each week. The review article will support the lecture material. The research articles will be
presented by students and discussed in detail during class. Students are suggested to read the review article before reading the discussion article to aid in understanding. Students are required to read the discussion article before attending class. In addition, a research paper critique (a written summary and evaluation of 1 article selected by the student) is required.

This course meets two times per week for 75 minutes. Each class session will consist of 50 minutes of lecture and 25 minutes of student-led research paper presentation and class discussion. Students will be assigned articles at the beginning of the semester (see Research paper presentation below). Depending on enrollment, students will present 2-3 papers during the semester. At least one paper will be presented in small groups.

This class is worth 3 credits, so students are expected to spend approximately 9 hours/week outside of class working on class material. Weekly course load will vary slightly, and effort outside of class will depend on students’ reading ability.

Course attendance:
Attendance is mandatory. Because this course is partly discussion-based, students who miss class sessions must make up their missed discussion. If you have a planned absence, please see Dr. Stewart as soon as possible. Arrangements to make up missed work must be made within one week of the missed class. Possible make-up assignments are out-of-class discussions with Dr. Stewart or a written discussion/critique of the papers presented in during the missed class.

Course grade:
Student knowledge and effort will be evaluated based on the following items:

<table>
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<th>Item</th>
<th>Points</th>
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<tr>
<td>Class participation</td>
<td>15</td>
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<tr>
<td>Research paper presentations</td>
<td>30</td>
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<tr>
<td>Research paper critique</td>
<td>30</td>
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<tr>
<td>Exam 1</td>
<td>30</td>
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<tr>
<td>Exam 2</td>
<td>50</td>
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Final grades will be based on the percentage of total points obtained during the semester. The following scale will be used to assign grades:
90-100% = A
80-89% = B
70-79% = C
60-69% = D
59% or lower = F

Class participation:
Students are expected to contribute to class discussions. Understandably, some students are more willing to contribute than others. Students who do not voluntarily contribute to discussions will be “called on” to answer questions or give their opinion on a specific topic.
Paper presentation and discussion:
Students will present primary research papers during class that relate to lecture topics. Papers will be assigned by the instructor at the beginning of the semester. Presentations should be 7-10 minutes long and include the following aspects:
- Background
- Methods
- Results and Implications
- Critique
Following the presentation, students will lead the class in a 10-15 minute discussion of their paper. Discussion topics could include strengths, weaknesses, avenues of future research, alternative hypotheses etc.

Research paper critique
The paper critique is a written summary and evaluation of 1 article selected by the student. The paper selected may not be presented in class, but the topic should relate to course material. The paper critique should be less than 5 pages double spaced. Students will describe the strengths and weaknesses of the article through evaluation of study design, research methods, results and interpretations. Students will also describe improvements to the study design, methods, or interpretation of the results, and provide recommendations for future research (beyond what is suggested in the selected article).

Exams:
Exam 1 will cover topics addressed during weeks 1-6 of class. The Exam 2 will cover topics addressed during weeks 7-15 and comprehensive material. Exams will be essay format, open book/open notes.

Suggested background reading:
Students are expected to have basic background knowledge of the digestive system and dietary fiber. If you are unsure about your background knowledge, the following reading are suggested in Gropper, Smith, and Groff. Advanced Nutrition and Human Metabolism. 5th Ed, Wadsworth (earlier editions are satisfactory as well, but page or chapter numbering may differ)
- Digestive system: Chapter 2 pgs 33-61
- Dietary fiber: Chapter 4 pgs 107-121
Similar chapters from other advanced nutrition texts should be sufficient as well.
Semester Schedule

<table>
<thead>
<tr>
<th>Week #</th>
<th>Date</th>
<th>Topic</th>
<th>Assignment/Comments</th>
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<tbody>
<tr>
<td>1</td>
<td></td>
<td><strong>This is the PROPOSED schedule for the semester. We may deviate from this schedule. Revisions to the schedule will be announced in class and also posted on Laulima.</strong></td>
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</table>
| 1      |      | Introduction  
Critically reading scientific articles  
Gut physiology | Student research paper presentations will be assigned |
| 2      |      | Gut microbes | |
| 3      |      | Immunity and the gut | |
| 4      |      | What is fiber? Types and sources of fiber | |
| 5      |      | Fiber fermentation, Prebiotics | |
| 6      |      | Probiotics | |
| 7      |      | Exam 1, n-3 fatty acids | |
| 8      |      | Phytochemicals-general | |
| 9      |      | Phytoestrogens and other polyphenols | |
| 10     |      | Impact of foods on digestive health part I | |
| 11     |      | **No class**  
Spring Break | |
| 12     |      | Impact of foods on digestive health part II | Select paper for paper critique |
| 13     |      | Impact of foods on digestive health part III | |
| 14     |      | Impact of foods on chronic disease part I | |
| 15     |      | Impact of foods on chronic disease part II | |
| 16     |      | Supplements, Consumer awareness | Paper critique due |
| 16     |      | Exam 2 | |