Department of Nutrition  
University of North Carolina at Chapel Hill

NUTRITION 650/650L  
Food Science and Culinary Arts  
Spring 2015

I  Lecture: Wednesday, 10:10 AM-12:05 PM  
241 Rosenau Hall, Nutrition Conference Room  
Gillings School of Global Public Health

Lab: Wednesday, 1:25-4:25 PM  
241 Rosenau Hall, Kitchen/Nutrition Conference Room  
Gillings School of Global Public Health

II  Professor: Susan Wyler, MPH, RDN, LDN, wyler@email.unc.edu.  
Scheduled appointments: Wednesday 12:15 to 1:15

Lab Assistant: Jessie Lillian McGinty, jess20@live.unc.edu.

III  Course Description
This graduate course is a core requirement for the combined dietetics program.  
It introduces the principles of food science and food safety in the public marketplace, in healthcare institutions and in the kitchen. It describes government regulations and regulatory agencies. Students will learn the physiology and psychology of taste, the physical and nutrient composition of foods and the chemical changes that occur during food production, storage, and meal preparation, with emphasis on how these factors influence the quality, taste and nutrient content of the final product.

The labs will teach culinary techniques and creativity, while students learn general principles of choosing, storing and preparing different categories of food in appropriate and appetizing ways, always with an eye to nutrition whether in a clinical healthcare, public health, or home setting. The goal is to offer some idea of the tremendous possibilities we have in the dietetics profession for using food to promote health and healing as well as to provide comfort and pleasure.

At the same time, students will preform comparative physical and sensory tests that illustrate the principles of product development and quality evaluation. Nutrient composition and cost/benefit analysis will be considered.
IV. Course Objectives
The Accreditation Council for Education in Nutrition and Dietetics (ACEND) has identified foundation knowledge and skills that all entry-level dietitians should know no matter which didactic program they complete. The Foundation Knowledge and Skills incorporated into this course are:

1. lay and technical writing
2. media presentations
3. interpersonal communication skills
4. concepts of group dynamics
5. the scientific method
6. culinary techniques
7. food and nonfood procurement
8. food and nutrition laws, regulations and policies
9. applied sensory evaluation of food techniques
10. tools used to calculate and interpret nutrient composition of foods
11. functions of various ingredients in foods

By the end of this course, students will have demonstrated the ability to:
1. prepare basic foods and present them appropriately
2. use current information technologies
3. work effectively as a team member
4. use nutrient analysis tools to calculate and interpret the composition of foods
5. modify a recipe for nutritional or dietary purposes
6. apply appropriate techniques to conduct sensory evaluation of foods
7. understand basic culinary terms and techniques
8. use oral and written communication skills in preparing and presenting an education session (poster) for the rest of the class

V. Course Guidelines and Classroom Behavior
Attendance is mandatory for both lectures and labs; 10 points will be deducted for each missed class unless the absence is excused by the professor. Students will be expected to have read required material for lecture ahead of time and to have prepared for labs in advance. Cell phones must be silent during class.

In lab, students are expected to work quietly and congenially in their assigned groups, showing respect for each other in an attempt to excel at the assigned tasks and complete the lab assignments on time. Long hair should be pulled back or secured with a scarf or cap. Aprons, lab coats or chef jackets are required as are closed-toe shoes. Unless someone has a diagnosed food allergy or religious prohibition, all dishes must be tasted, even if they are not swallowed. Since sharp knifes and hot surfaces will be used, it is imperative that everyone pays attention and keeps conversation at a minimum, focused on the work at hand.
Each station will work together throughout the semester to develop a nutritionally enhanced food product, with criteria to be determined in advance, accompanied by an extended abstract that details the scientific process with appropriate support materials to substantiate the premise.

VI  Grading
Grading will consist of approximately 60% for lectures and 40% for labs, with a total of 1575 points, broken down as follows:

Lectures (935 pts):
Attendance – 5 points per class for 15 classes = 75 points
3 Exams based on the lectures = 560 points. Exams will be multiple choice.
Students are expected to know the Honor Code and to abide by it during exams.
Exam 1—January 28 = 160 points
Exam 2 – February 25 = 160 points
Exam 3 (final) –April 27 = 240 points
and
3 Assignments, worth 100 points each = 300 points
1) Write a Recipe/ Make It Your Own (100 pts); deadline 1/17 by midnight
2) Menu and recipes for a SNAP supper (100 points): 2/14 by midnight
3) Powerpoint on Dietary Choices/ Nutritional Consequences (100 pts);
deadline 3/28 by midnight

Food Labs (640 points):
Lab attendance – 5 pts per class for 15 classes = 75 pts
Tasting sheet with hedonic rating and critique of recipe chosen by professor
explaining how you might change or improve recipe for taste or nutritional purposes (20 pts per sheet) 1 sheet per class for 14 classes = 280 pts
Clean kitchen end of class (graded by JM) – 5 pts per class, 14 classes = 75 points

Food science project and abstract: 200 points  Due 4/22 by 10: AM
Originality of product = 50 pts
Nutritional benefit of product for targeted population = 50 pts
Taste and appetizing quality of product as judged by a panel of peers and instructor = 50 pts
Abstract writing and support materials = 50 pts

Critique of peers: required/ 10 bonus points

Note: The extra grading weight given to lecture is because many of the principles of the lectures are illustrated in the labs; so the multiple choice tests are the best measures of comprehension of the subject matter.
Grading Scale:
1480 to 1575     H
1260 to 1479     P
945 to 1259      L
Below 945        F

VII The Honor Code
“The Campus Code requires students to conduct themselves so as not to impair significantly the welfares or the educational opportunities of others in the University Community. As a student at UNC-CH, you have accepted a commitment to the Honor Code and the Campus Code and the principles of academic integrity, personal honesty and responsible citizenship, upon which they were founded more than 100 years ago. Academic dishonesty in any form is unacceptable, because it circumvents the purpose of the University.”

The Honor Code is in effect in this class and all others at the University. As a faculty member, I am committed to treating Honor Code violations seriously and urge all students to become familiar with its terms as set out at - http://instrument.unc.edu. If you have questions, it is your responsibility to ask me about the Code’s application. All exams, written work and other projects must be submitted with a statement or initials indicating you have complied with the requirements of the Honor Code in all aspects of the submitted work.

Please note that conduct impairing the welfare and classroom learning experiences of fellow students is a violation of the Honor Code. Disrespectful behaviors include intrusive noise and conversation, rudeness or lack of conversational manners, criticisms of people themselves rather than ideas you disagree with, or leaving the room before the end of class.

Course Schedule and Calendar follow:
### NUTR 650/650L SCHEDULE, Spring 2015

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<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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| 1/9  | **Lecture #1:**  
Course introduction  
About me  
About you  
Review of syllabus  
Psychology and Physiology of Taste  
How to Write a Recipe  
**Reading:** Bennion & Scheule, Chap. 5, pp. 80-83  
Chap. 1 |
| 1/14 | **Lecture #2:**  
Food Composition  
All about the Egg  
**Readings:** Bennion & Scheule, Chaps 9 and 24  
**Lab #2**  
Evaluation of food products and recipes  
Sensory grading of products with hedonic scale  
Egg cookery |
| 1/17 | **Assignment #1 due by midnight:** Write a recipe/ Make it your own. |
| 1/21 | **Lecture #3:**  
Starch, Pasta, Whole Grains and Flours  
Seasonings, Flavors and Food Additives  
**Readings:** Bennion & Scheule, Chaps. 8, 13, and 14  
**Lab #3:**  
Sauces thickened with roux; discussion of beurre manié, slurry, arrowroot  
Line test to measure thickness of sauce  
Whole Grain and Pasta dishes |
Date | Topic
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1/28 | Exam #1
   | Lecture #4:
   | Plant Proteins and Vegetarian Diets
   | Food economics and convenience
   | Cooking on a Budget
   | **Readings:** Bennion & Scheule, Chap.2, Chap 20, pp. 338-344
   | Lab #4
   | Cooking beans
   | Homemade soups and stews

2/4 | Lecture #5
   | Oils, Fats and Emulsions
   | Seafood
   | Food Safety
   | **Readings:** Bennion & Scheule, Chaps. 3, 10, and 27
   | Health benefits of seafood—Is it just the fatty acids? E.K. Lund. [http://dx.doi.org/10.1016/j.foodchem.2013.01.034](http://dx.doi.org/10.1016/j.foodchem.2013.01.034)
   | Lab #5:
   | Oils and Emulsion sauces (vinaigrette, mayonnaise, Hollandaise)
   | Broiled, baked, braised and steamed fish

2/11 | Lecture #6:
   | Poultry
   | Food Regulations and Standards,
   | **Readings:** Bennion & Scheule, Chaps. 4 and 25
   | Lab #6:
   | Chicken around the world
   | How to carve a bird

2/14 | Assignment #2: SNAP menu and recipes due by midnight

2/18 | Lecture: #7
   | Cakes and Cookies
   | Quick Breads and Biscuits
   | Heat Transfer
   | **Readings:** Bennion & Scheule, Chaps. 6, 16, and 18
   | Lab #7:
   | Layer Cake, Cup Cakes, Loaf breads
   | Exploring “crumb”; how to avoid common mistakes
Date   Topic

2/25  Exam #2
Lecture #8
Dairy: Milk, butter, yogurt and cheese
Dairy substitutes
Food labeling and data banks
Microwave cooking
Readings: Bennion & Scheule, Chaps. 7 and 23
Lab #8:
Tasting of different milks and milk substitutes

3/4  Lecture #9
Batters and Doughs
Yeast Breads
Guest lecturer: Chicken Bridge Bakery
Reading: Bennion & Scheule, Chaps. 15, 17
Lab #9:
Pizza

3/11  Spring Break

3/18  Lecture #10
Sugar and other sweeteners, syrups and crystals
Beverages
Readings:
Bennion & Scheule, Chaps. 11 and 28
“Not so sweet—artificial sweeteners can cause glucose intolerance by affecting the gut microbiota” by Claire Greenhill. Nature Reviews Endocrinology 10, 637 (2014).
Lab #10:
Sugar and artificial sweetener taste evaluation
Syrups
Crystallization

3/25  Lecture #11
Bennion & Scheule, Chaps. 7, 19, 29
Pastry
Food Preservation and Packaging
Microwave cooking
Lab: #11
Flaky pastry, filo, puff pastry
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<td>3/28</td>
<td>Assignment #3 due by midnight. Powerpoint on Dietary Choices/Nutritional Consequences</td>
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<td>4/1</td>
<td>Lecture #12:</td>
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<td>Meat, fresh, cured and processed</td>
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<td>Food Preservation and Packaging</td>
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<td><strong>Readings:</strong> Bennion &amp; Scheule, Chaps. 25 and 29</td>
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<td><strong>Lab:</strong> #12</td>
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<td>Fast and slow meat cookery</td>
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<td>Beef, pork and lamb</td>
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<td>4/8</td>
<td>Lecture #13</td>
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<td>Fruits and Vegetables</td>
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<td>Guest lecturer on polyphenols: Dr. John B. Anderson</td>
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<td><strong>Readings:</strong> Bennion &amp; Scheule, Chaps. 20 and 21</td>
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<td></td>
<td>Diet and the Bone Marrow Niche for Stem Cell Recruitment. Xiaowei</td>
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<td>29, No. 5, May 2014, pp 1041–1042 DOI: 10.1002/jbmr.2234</td>
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<td><strong>Lab #13:</strong></td>
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<td>Compare fresh, frozen and canned</td>
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<td>Compare steamed, boiled, microwaved, and roasted vegetables</td>
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<td>Effects of acid and alkaline influences on color and texture</td>
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<td>Lecture #14</td>
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<td>Frozen Desserts</td>
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<td>Freezing and Canning</td>
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<td><strong>Readings:</strong> Bennion &amp; Schuele, Chaps. 12 and 30</td>
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<td><strong>Lab #14</strong></td>
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<td>Assembled frozen desserts</td>
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<td>Ice cream beverages</td>
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<td>4/22</td>
<td>Review for final</td>
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<td>Prep for recipe presentation</td>
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<td><strong>Lab:</strong></td>
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<td><strong>Assignment:</strong> Food Product Abstract due</td>
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<td>Presentation of developed recipes and abstracts in lab</td>
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<td>4/27</td>
<td>FINAL EXAM at 8:00 AM</td>
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