

# **FDNS 4650/6650**

## **Experimental Study of Food**

### **Spring, 2004**

**Course Description:** Functional and nutritional properties of components in food products. Techniques to evaluate food products for consumer acceptability including individual and group laboratory experimentation; computer applications.

**Course Credit:** 4 hrs

**Course Prerequisites:** FDNS 2100 and FDNS 3600/3600L and STAT 2000 or 2210; pre- or co-requisite: CHEM 2100/2100L or CHEM 2211/2211; or permission of the department

**Course Objectives:**

1. to identify and describe the major food components in food commodities and ingredients available to consumers and/or food service industry;
2. to identify the functions of the major food components in the production of desirable and acceptable foods at home or in food service facilities;
3. to examine the differences in functionality due to market forms of the ingredients in complex food systems;
4. to modify common food products to meet needs of individuals on modified diets;
5. to identify the effects of product modification on nutritional characteristics of the products;
6. to evaluate food products with sensory and objective methods;
7. to understand the research process as it applies to recipe modification;
8. to become acquainted with major scientific journals in the field of consumer foods.

**Instructor:** Dr. Ruthann Swanson, 174 Dawson Hall, 542-4834, [rswanson@fcs.uga.edu](mailto:rswanson@fcs.uga.edu)

**Class meets:** MWF 11:15-12:05  
T (lab) 2:00-6:15

**Honesty policy:** All academic work must meet the standards contained in “*A Culture of Honesty*.” Each student is responsible for informing him/herself about those standards before performing any academic work.

**Primary text:** McWilliams, M. 2001. Foods Experimental Perspectives, 4<sup>th</sup> ed., Prentice Hall, Upper Saddle River, New Jersey.

*Reading assignments unless otherwise specified will be from McWilliams. Other unassigned sections of this book will be helpful as you plan your individual project and work on lab reports.*

**Supplementary text:** Penfield, MP. And Campbell, AM. 1990. Experimental Food Science, 3<sup>rd</sup> ed., Academic Press, Inc., San Diego.

*Reading assignments from Penfield and Campbell are indicated by authors (P&C) and the appropriate chapter number. Copies of this chapter will be found in the reading file in the hallway. This book is an excellent source of additional information on many topics covered in class. It is also a good source of ideas for student-planned projects.*

**Supplementary text:** Bennion, M. 1999. Introductory Foods, 11<sup>th</sup> ed. Merrill, Englewood Cliffs, NJ.

*Bennion was the text used in FDNS 3600. Sections of this book will be helpful as you think about standard products, mixing methods, product form, etc.*

**Non-test assigned reading:** *Typically these are articles from the recent literature that receive limited coverage in the text; they provide needed background for the writing of lab reports. These articles can be found in the reading file in the hallway.*

**Calculator:** A scientific calculator that can do means and standard deviations is required. If you don't have one, (be sure that you can find the instruction booklet) a Texas Instrument (TI-30IIX) is recommended. This calculator is among the easiest to use and is relatively cheap. It will save you hours of frustration, I promise.

**4650-6650 Grading: There are no exams in this class.**

Components...

<i>Assignments</i>	325 pts.
<i>Lab reports</i>	475 pts.
<i>Individual project</i>	325 pts.

Grading Scale...

<u>Scale</u>	<u>Point range</u>	<u>% range</u>
A	1103-1225	90-100
B	980-1102	80-89
C	856-979	70-79
D	735-855	60-69
F	Below 735	Below 60%

**Assignments:** During the semester, assignments (both in- and out-of-class activities) will be made. These will be due as indicated when the assignments are made. The objective of the assignments is to facilitate student synthesis and application of material presented in class. Grades on assignments turned in late will be lowered by 5% per day.

**Laboratories:** Laboratory handouts will be distributed no later than the lecture period prior to that in which the lab is held. Students are expected to have the handout in a three-ring notebook in lab and to record all data on the forms provided. Student planned laboratories are the exceptions; data will be recorded on forms developed by the student.

Students also are expected to be familiar with the laboratory procedure prior to the laboratory. Missed laboratories cannot be made-up.

For each lab, all data or personal observations should be recorded on the lab sheet (in ink) as collected in lab (eg not written in from scratch paper after the lab; no white-out is allowed on lab sheets). In the event an error is made, cross-out the error and write-in the correct data or observation. Non-text reading specific to each lab will be assigned.

**Written lab reports will be required.** Due dates are indicated on the course syllabus. Grades on lab reports turned in late will be lowered by 5% per day.

**Laboratory report evaluations** will be based on accuracy and completeness of content, use of references, adherence to format and clarity and quality of writing. In general, use a technical writing style—avoid the use of first person, contractions, colloquial and literary styles. **It is assumed that you can perform simple statistical analyses**— frequency, means, and standard deviations. Instruction and assistance will be provided for more complicated statistical analyses by the TA. In some cases, statistical analyses will be performed for you. **BUY A SCIENTIFIC CALCULATOR!!!**

The **required general outline is attached**; any deviation will be indicated on the lab handout— follow the deviations specified.. The ability to follow the guidelines will be important to you as a professional and will influence your grade in this course.

**The text of the written reports must be computer-generated, and double spaced in font size 12. Tables and figures may be handwritten.** Appropriate word processing software is available in the computer lab in Dawson.

Computer lab hours: M-R 8am-7pm  
F 8am-5pm

Computer lab software contains both grammar and spell-check programs. **USE THEM!!!** These programs do not catch everything and some suggestions made may be inappropriate; however, they are extremely helpful. They will help you identify strengths and weaknesses in your writing. Hopefully, they will help you improve your writing. Reports with major problems will be returned for rewriting prior to grading.

**Individual Project:** This is really just a lab experience that you plan and conduct. You will repeat it twice. The final paper is simply an additional lab report (see format attached). You will also be required to do a 15 min oral presentation. In the presentation, you should identify the problem area, your objectives, methods and present your results. A brief discussion of the results is required. Allow about 5 min for questions. Transparencies or Powerpoint visuals are required. Quality of visuals is important!!

# FDNS 4650/6650 Tentative Schedule Spring, 2004

\* preceding the date indicates that something is due; in general assignments are not included but are assigned as appropriate based on lecture content; due dates are indicated when the assignments are made.

\*\* preceding the date indicates a change in location

Non-text readings that provide additional information related to the labs will be assigned when the labs are done; these will be helpful in writing the lab reports.

<b>Date</b>	<b>Topic</b>	<b>Reading assignment and/or location</b>
Jan 9	Introduction	
Jan 12 Jan 13 Jan 14 Jan 16	Research/Dev Process <i>Lab</i> – Food attributes Research/Dev Process Research/Dev Process	Chapters 1 & 2 Chapters 1 & 2 Chapters 1 & 2
Jan 19 Jan 20 Jan 21 *Jan 23	HOLIDAY <i>Lab</i> – Writing the lab report Sensory analyses Sensory analysis <i>Due: Food attributes</i>	Chapter 5 (P&C) Chapter 3 Chapter 3
Jan 26 Jan 27  Jan 28 *Jan 30	Sensory analyses <i>Lab</i> – Data summary exercise  Sensory analyses Sensory analyses <i>Due: Data summary exercise</i>	Chapter 3 Chapter 5 (P&C), pp.401-410 Chapter 3
Feb 2  Feb 3 Feb 4 **Feb 6	Instrumental evaluation  <i>Lab</i> – Sensory Instrumental evaluation Statistical analyses with Margaret Kabahanda	Handout; Chapter 4 pp.401-409  Chapter 4 <i>Dawson Computer Lab,</i> SPSS Handout

Feb 9	Physical and Chemical Nature of Food	Chapter 5
Feb 10	<b>Lab</b> – Rheology <i>or</i>	Dawson Computer Lab (Individual)
Feb 11	<b>Lab</b> – Individual/Group Statistics Problem Set	Chapter 5; pp.104-119
* **Feb 13	Physical and Chemical Nature of Food <b>Library Tour</b> with Diana Hartle <b>Due: Sensory Lab</b>	Science Library
**Feb 16	<b>Library Assignment Workday</b>	Science Library (Individual)
Feb 17	<b>Lab</b> – Rheology <i>or</i>	Dawson Computer Lab (Individual)
*Feb 18	<b>Lab</b> – Individual/Group Statistics Problem Set	Handout; Chapter 4
*Feb 20	Instrumental Assessment <b>Due: Library Assignment</b> Protein Overview <b>Due: Statistics Problem Set</b> <b>Due: Proj– Tentative Problem Approval/Contract</b>	Chapter 13
Feb 23	Eggs	Chapter 16
**Feb 24	<b>Tour</b> – USDA Sensory and Food Analyses Lab with Brenda Lyon <b>Due: Data Summary Exercise</b>	USDA Russell Research Center
*Feb 25	Eggs	Chapter 16
*Feb 27	Milk <b>Due: Rheology Lab</b>	Chapter 14
Mar 1	Milk	Chapter 14
*Mar 2	<b>Lab</b> – Nature of Foods <b>Due: Individual Problem ID</b>	
Mar 3	Legumes	pp.339-343
**Mar 5	<b>Project Workday</b> (Formula/Market Order for Preliminary Ind Proj Lab)	Library
Mar 8-12	SPRING BREAK	
Mar 15	Legumes/Flour	pp.338-343, Chapter 17
*Mar 16	<b>Lab</b> – Controls Assignment Protein Lab Planning Day <b>Due: Nature of Food Lab</b>	AACC Method
Mar 17	Protein Lab Workday/ Final Approval	Chapter 11
*Mar 19	Fats Overview <b>Due: Formula/Market Order for Preliminary Ind Proj Lab</b>	

Mar 22 Mar 23 Mar 24 **Mar 26	Fats Lab–Protein Lab Fats Protein Lab Data Analysis/ Write-up Workday	Chapters 11 & 12  Chapter 11 &12 Appt with Margaret Kabahanda
*Mar 29  Mar 30  *Mar 31  **Apr 2	Fats <b>Due: Protein Lab</b> <b>Lab–</b> Preliminary Fat/Sweetener Project Lab Day Carbohydrate overview <b>Due: Ind Proj– Experimental Plan/ Final Market Order</b> Project Workday (Sensory Form Approval; Data Collection Sheet Preparation; Human Subjects Form Due)	Chapter 12  Lab will be open all day  Chapter 7
Apr 5 Apr 6 Apr 7 **Apr 9	<b>Lab–</b> Prep for Rep I–Fats <b>Lab–</b> Fats Rep I Sweeteners Paper Analysis Work Day	Chapter 8 Library (individual)
Apr 12 Apr 13 Apr 14 Apr 16	Lab– Prep for Rep I–CHO Lab– CHO Rep I Sweeteners Gum/Starches	Chapter 8 pp.193-205
Apr 19 Apr 20 Apr 21 *Apr 23	<b>Lab–</b> Prep for Rep II–Fats <b>Lab–</b> Fats Rep II Starches Starches <b>Due: Paper Analysis</b>	Chapter 9 Chapter 9
Apr 26 Apr 27 Apr 28  **Apr 29 (UGA Monday)  APR 30	Lab– Prep for Rep II–CHO Lab– CHO Rep II Guidelines– Final Paper Presentation Data Analysis Data Analysis/. Report Writing/ Presentation Preparation  READING DAY	Handouts Chapter 5 (P&C)  Appt with Margaret Kabahanda as needed
MAY 3– 12-3 pm EXAM PERIOD	Final Paper Due Oral Presentations	