

COURSE OUTLINE

FDSC 4114 & 4110L: Food Analysis and Laboratory

Spring 2008

Instructor: Ya-Jane Wang, Ph.D.
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Office hours: You may make an appointment or just drop in.

Catalog Description: FDSC 4114 - Food Analysis (SP) Methods of analysis, instrumentation, and laboratory techniques for measuring the chemical composition of raw and value-added products. Lecture 3 hours, laboratory 3 hours per week. Corequisite: FDSC 4110L - Laboratory exercises providing students with experience of analytical techniques and instrumentation used in food analysis. Laboratory exercise in Food Analysis. Prerequisite: CHEM 1123 and CHEM 1121L and CHEM 2613 and CHEM 2611L.

Textbook: FDSC 4114 Course Package
FDSC 4110L Lab Manual Package

References: 1. Nielsen, S.S. (ed.) 2003. "Food Analysis" 3rd Ed. Kluwer Academic Publishers. ISBN: 0306474956.
2. Official Methods of Analysis – AOAC.

Course Objectives:

1. To learn the basic principles of gravimetric, colorimetric, titrimetric, chromatographic and spectrometric analyses as applied to foods
2. To gain knowledge about food constituents and characteristics important in quality control and research laboratories
3. To acquire laboratory skills required for performing a range of chemical analyses of food components
4. To gain experience in searching the literature, evaluating data, problem-solving and writing scientific reports as related to food composition and analysis

Class Procedure: Two 80-min lectures per week (T Th 2:00-3:20 PM) in Room N221. One 3-hour laboratory per week (Wed 1:30-4:20 PM) in Room C5.

Assignments: Students will be assigned homework problems to reinforce discussions. Students are encouraged to work with other students in the class.

Evaluation Methods: All assignments, laboratory reports, and exams will be expected to be professional quality. No late work will be accepted without prior approval from the instructor. No make-up exams will be given unless if there is advanced permission and justifiable reason for missing the exam. Make-up exam will be comprehensive and taken during the final week. The grade for this course will be mainly determined as the follows. However, changes may be made to accommodate additional assignments.

<u>Composite Score</u>	<u>Grade</u>
93-100	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
67-69	D+
63-66	D
60-62	D-
Below 60	F

	<u>Category</u>	<u>Weight</u>
Undergraduate:	2 midterm exams – 20% each	40%
	Final exam – comprehensive	30%
	Homework, participation & attendance	10%
	Laboratory	20%
Graduate:	2 midterm exams – 20% each	40%
	Final exam – comprehensive	20%
	Homework, participation & attendance	10%
	Laboratory	20%
	Teaching assignment	10%

Graduate Students: Graduate students taking this course for graduate credits will be required to work on an additional assignment. Each graduate student will be required to teach a topic from a list of lecture topics.

Attendance: Every student is expected to attend and participate in class. Attendance strongly affects class performance and will be checked. One point will be deducted from the final grade for each unexcused absence up to 10 points. The student is responsible for obtaining notes and materials for the class he/she missed.

Class cancellation: Class will be cancelled as a result of inclement weather if the University is closed. If other emergencies occur, students will be notified as soon as possible. You can contact Dr. Ya-Jane Wang by calling 575-3871 (work) or by e-mail at yjwang@uark.edu.

Academic honesty: The University policy for academic honesty will be followed. It is our intention that no student will receive a credit if a dishonest act on his or her part is evident relative to the work assigned. Students are expected to work independently on term papers.

Students with disability: If you need an accommodation due to a disability, please make arrangements to discuss this with me during the first two weeks of the semester.

Lecture and Lab Topics and Tentative Schedule:

Week	Lecture Topics	Laboratory Topics
1 Jan. 14	Course overview Introduction to food analysis Sampling and sample preparation Evaluation of analytical data	Lab overview: guidelines, safety, and report Introduction of lab facility
2 Jan. 21	Standard solution Moisture analysis	Lab 1: Review of basic operation
3 Jan. 28	Moisture analysis Titratable acidity and pH	Lab 2: Moisture analysis
4 Feb. 4	Ash Mineral analysis	Lab 3: Acids, bases, pH, and titratable acidity
5 Feb. 11	Mineral analysis and review Protein analysis	Lab 4: Mineral analysis
6 Feb. 18	Exam 1 Protein analysis	Lab 5: Protein analysis
7 Feb. 25	Lipids analysis Carbohydrate analysis	Lab 6: Lipids analysis
8 Mar. 3	Carbohydrate analysis Fiber analysis	Lab 7: Carbohydrate analysis
9 Mar. 10	Vitamin analysis Enzyme-catalyzed reaction Review	Lab 8: Total dietary fiber
10 Mar. 17	Spring break	Spring break
11 Mar. 24	Exam 2 Spectroscopy	Lab 9: Vitamin C analysis
12 Mar. 31	Spectroscopy	Lab 10: Analysis of pigments by UV/Vis infrared spectroscopy
13 Apr. 7	Chromatography	Lab. 11 Analytical lab tour
14 Apr. 14	Chromatography	Lab. 12 Problem solving in food analysis – Team project
15 Apr. 21	Chromatography	Lab. 12 Problem solving in food analysis – Team project
16 Apr. 28	Review & Oral presentation of the team project	
17 May 4	Final Exam (~60% new materials after Exam 2 and ~40% materials from Exams 1 & 2)	

