First-Year Seminar Program

J. David Furlow, Ph.D., Program Director


Committee in Charge

Christiana Drake, Ph.D. (Statistics)
James Harding, Ph.D. (Plant Sciences)
Kenneth Hilt, Ph.D. (Molecular & Cellular Biology)
Karma Waltonen, Ph.D. (University Writing Program)

Courses in First-Year Seminar (FRS)

Questions pertaining to the following course should be directed to the instructor or to the First-Year Seminar Office in Undergraduate Education.

Lower Division

1. First-Year Seminar (1) Seminar—1 hour. Open only to: students who have completed fewer than 45 quarter units; transfer students in their first academic year at UC Davis. Investigation of a special topic through shared readings, discussions, written assignments, term papers, and special activities (such as fieldwork, site visits, laboratory work, etc.). Emphasis placed upon student participation in learning. Students may take more than one First-Year Seminar, but may not take more than one in any given quarter. May be repeated for credit if topic differs.—F, W, S. (F, W, S.)

2. First-Year Seminar (2) Seminar—2 hours. Open only to: students who have completed fewer than 45 quarter units; transfer students in their first academic year at UC Davis. Investigation of a special topic through shared readings, discussions, written assignments, term papers, and special activities (such as fieldwork, site visits, laboratory work, etc.). Emphasis placed upon student participation in learning. Students may take more than one First-Year Seminar, but may not take more than one in any given quarter. May be repeated for credit if topic differs.—F, W, S. (F, W, S.)

3. First-Year Seminar (1) Seminar—1 hour. Open only to: students who have completed fewer than 45 quarter units; transfer students in their first academic year at UC Davis. Investigation of a special topic through shared readings, discussions, written assignments, term papers, and special activities (such as fieldwork, site visits, laboratory work, etc.). Emphasis placed upon student participation in learning. Students may take more than one First-Year Seminar, but may not take more than one in any given quarter. May be repeated for credit if topic differs. (P/NP grading only.)—F, W, S. (F, W, S.)

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Food Science

(College of Agricultural and Environmental Sciences)

The Major Program

Food science is a discipline in which biological, physical, and sensory sciences are integrated for the study of foods to ensure their safety, quality, and heathful properties. The food science curriculum encompasses food chemistry and biochemistry, food safety and microbiology, food processing and preservation, and sensory and consumer sciences.

Career Alternatives. Opportunities for employment include positions in the food and allied industries, government agencies, and educational and research institutions. Graduate study for the food science student may lead to the M.S. or Ph.D. degree in food science, or in related fields such as agricultural chemistry, biochemistry, microbiology, and nutrition.

B.S. Major Requirements:

Preparatory Subject Matter..................61

Chemistry 1A-1B-1C......................... 12

Microbiology 1A......................... 5

Physics 8A-8B................................. 8

Biology 1A-1B.............................. 8

Biological Sciences 1A.......................... 5

Computer Science 4A or 4AM............. 4

English 120A or 120B...................... 4

English 125A.................................. 5

In addition to the above, 4 or more units of foreign language

Total Units for the Degree...............132

Food Science (A Graduate Group)

Gary M. Smith, Ph.D., Chairperson of the Group
Group Office, 1204 RMI South Building 530-752-3250; bftvadvising@ucdavis.edu http://www.foodscience.ucdavis.edu

Faculty. Includes members from twelve departments in the Colleges of Agricultural and Environmental Sciences and Engineering, the Schools of Medicine and Veterinary Medicine.

Graduate Study. The interdepartmental Graduate Group in Food Science offers programs of study leading to the M.S. degree and to the Ph.D. degree. Graduate study is available through the Group in Food Science and Technology, the Schools of Medicine and Veterinary Medicine, and the Schools of Engineering. Detailed information regarding graduate study is available through the Group Advisers.

Graduate Advisers. Contact the Food Science Graduate Group office at bftvadvising@ucdavis.edu.

Fisheries

See Animal Science, on page 162; Biological and Agricultural Engineering, on page 191; and Wildlife, Fish, and Conservation Biology, on page 587.

Film Studies

See Cinema and Digital Media, on page 207.

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2. First-Year Seminar (2) Seminar—2 hours. Open only to: students who have completed fewer than 45 quarter units; transfer students in their first academic year at UC Davis. Investigation of a special topic through shared readings, discussions, written assignments, term papers, and special activities (such as fieldwork, site visits, laboratory work, etc.). Emphasis placed upon student participation in learning. Students may take more than one First-Year Seminar, but may not take more than one in any given quarter. May be repeated for credit if topic differs.—F, W, S. (F, W, S.)

3. First-Year Seminar (1) Seminar—1 hour. Open only to: students who have completed fewer than 45 quarter units; transfer students in their first academic year at UC Davis. Investigation of a special topic through shared readings, discussions, written assignments, term papers, and special activities (such as fieldwork, site visits, laboratory work, etc.). Emphasis placed upon student participation in learning. Students may take more than one First-Year Seminar, but may not take more than one in any given quarter. May be repeated for credit if topic differs. (P/NP grading only.)—F, W, S. (F, W, S.)

4. First-Year Seminar (2) Seminar—2 hours. Open only to: students who have completed fewer than 45 quarter units; transfer students in their first academic year at UC Davis. Investigation of a special topic through shared readings, discussions, written assignments, term papers, and special activities (such as fieldwork, site visits, laboratory work, etc.). Emphasis placed upon student participation in learning. Students may take more than one First-Year Seminar, but may not take more than one in any given quarter. May be repeated for credit if topic differs. (P/NP grading only.)—F, W, S. (F, W, S.)
Food Science and Technology

1. Principles of Food Science (3)
   Lecture—2 hours; discussion—1 hour. Food science fundamentals. Fresh and processed food technologies; world food problems; food composition; food microbiological and toxicological safety; food laws; evaluation of food safety and nutritional value. Not open for credit to students who have completed any Food Science and Technology course except course 100. GE credit: SciEng | SE, VL. —W. (W.)

2. Introduction to Brewing and Beer (3)
   Lecture—4 hours. Basic description of brewing and associated raw materials to final product; history of brewing and brewing science; history of beer; the modern American brewing industry. GE credit: SciEng | SE, VL. —W. (W.)

3. Food Science, Folklore and Health (3)
   Lecture—3 hours. Ancient and modern food folklore in relation to health and well-being. Food safety, organic food, health preservation, food preservation, and nutritional enhancement. Not open for credit to students who have completed course 2. GE credit: SciEng or SocSci | SE, SS, VI, VL, WC.—F. W. S. (F, W. S.) Bamforth

4. Food Analysis (4)
   Lecture—4 hours; demonstrations and a field trip. In-depth analysis of foods and beverages. Modern analytical techniques are stressed. GE credit: SciEng | QL, SE, VL. —F. (F.)

5. Food Analysis, Laboratory (2)

6. Food Microbiology (3)
   Lecture—3 hours. Prerequisite: Biological Sciences 2A, Biological Sciences 103, Microbiology 102, Microbiology 103; Microbiology 103 required in food safety, spoilage, and production. Foodborne disease agents and their control. Growth parameters of food spoilage agents. Destruction and control of foodborne pathogens. GE credit: SciEng | QL, SE, VL. —W. (W.)

7. Food Sensory Science (4)
   Lecture—2 hours; laboratory—2 hours. Prerequisite: Chemistry 2A, Biological Sciences 2A, 103. Cultural and morphological characteristics of microorganisms involved in food spoilage, in foodborne disease, and food fermentation. Analysis of microbiological quality of foods. GE credit: SciEng | QL, SE, VI, WE. —S. (S.) Young

8. Food Science, Folklore and Health (3)
   Lecture—2 hours; laboratory—1 hour. Prerequisite: Statistics 100 or course 117. Critical examination of techniques and theories of sensory measurement of food; measures of consumer perception and acceptability. An introduction to the sensory and cognitive systems associated with the perception of food. Not open for credit to students who have completed course 107A. GE credit: SciEng | QL, SE, VL. —F. (F.) O'Mahony

9. Principles of Quality Assurance in Food Processing (3)
   Lecture—2 hours; discussion—1 hour. Prerequisite: Mathematics 16A, 16B, 16C or the equivalent. Application of the conservation of mass and energy to food processing. Elements of engineering thermodynamics, fluid mechanics, heat and mass transfer. Quantitative analysis through problem solving and simulation. Not open for credit to students enrolled in College of Engineering. GE credit: SciEng | QL, SE, VL. —F. (F.)

10. Food Chemistry (4)
    Lecture—3 hours; discussion—1 hour. Prerequisite: Chemistry 8B, Biological Sciences 2A recommended. Chemical aspects of food composition. Emphasis on the components and chemical reactions of the major components of foods: carbohydrates, lipids, proteins, and water. GE credit: SciEng | SE, VL. —F. (F.)

11. Food Chemistry Laboratory (2)
    Lecture/laboratory—3 hours; discussion—1 hour. Prerequisite: course 100A, Chemistry 8B; consent of instructor. Sensory quality, chemical and microbial safety, and nutritional properties of foods. Effects of food processing and preparation on these properties. Selected properties of common foods. GE credit: SciEng | QL, SE, VL. —W. (W.)

12. Food Processing (4)

13. Food Chemistry Laboratory (2)
    Lecture—2 hours; laboratory—2 hours. Prerequisite: course 102A, Chemistry 2C. Open to seniors only in Fermentation Science or Food Science and Technology. Provides practical working knowledge of analytical methods used in testing and evaluating food materials and processes, by analysis of samples that illustrate the range of values experienced in practice and pilot scale brewing. GE credit: SciEng | QL, SE, VL. —W. (W.)

14. Food Science, Folklore and Health (3)
    Lecture—2 hours; discussion—1 hour; laboratory—3 hours. Prerequisite: Chemistry 2C and 8B, Biological Sciences 103, 107. Revealing the fundamentals of foods. Modern separation and instrumental analysis techniques are stressed. GE credit: SciEng | QL, SE, VL. —W. (W.)

15. Food Science, Folklore and Health (3)
    Lecture—3 hours. Prerequisite: course 123L concurrent. Principles of physical, chemical and catalytic properties of enzymes and their importance. Purification, characterization, and quantitative evaluation of reaction conditions on activity are stressed. Specific
ity and mechanism of action illustrated by use of selected enzymes. (Former course Biochemistry and Biophysics 122L) GE credit. SciEng | QL, SE, VL—S (J.) G. Smith

123L. Enzymology Laboratory (2) Lecture—1 hour; laboratory—3 hours. Prerequisite: Biological Sciences 103, course 123 (concurrently). Laboratory—1 hour; discussion—2 hours. Principles of enzyme action, determination and characterization of enzymes. (Former course Biochemistry and Biophysics 123L) GE credit. SciEng | QL, SE, VL, WE—S (J.) G. Smith

127. Sensory Evaluation of Foods (4) Lecture—3 hours; laboratory—3 hours. Prerequisite: course 117. A critical examination of methods of sensory measurement applied to food and beverage systems; descriptive analysis and consumer tests and their application to quality assurance, product development and optimization. GE credit. SciEng | QL, SE, WE—W, (J.) Guinard

128. Food Toxicology (3) Lecture—3 hours. Prerequisite: Biological Sciences 102, 103. Chemistry and biochemistry of toxins occurring in foods, including plant and animal toxins, intentional and unintentional food additives. The assessment of food safety and toxic hazards. (Same course as Environmental Toxicology 128.) GE credit: SciEng | SE—S (J.) Oakwood


151Y. Food Freezing (1) Discussion—1 hour; web virtual lecture. Prerequisite: course 110A or the equivalent. Mechanisms of ice crystallization, interpretation of freezing diagrams, and modes of heat transfer. Food properties at sub-freezing temperatures, refrigeration requirements, and estimation of freezing times. Industrial systems used in freezing foods. GE credit: SciEng | QL, SE.

159. New Food Product Ideas (3) Lecture—3 hours. Prerequisite: course 50; Biological Sciences 2A, 2B, 2C, Physics 7A, 7B, 7C and Chemistry 2A, 2B. Create, refine, test and present viable ideas for new food products. Activities include trend monitoring, consumer research, idea generation, market analysis, planning, and new product concept presentations. GE credit: ArtHum or SocSci | AH or SS, OL, WE—F (P.) Billekoff

160. Food Product Development (4) Lecture—1 hour; discussion—1 hour; laboratory—6 hours. Prerequisite: courses 50, 103, 104, 110. Product implementation stage of food product development including preliminary product description, prototype development, product testing, and formal presentation of a new food product development. GE credit: SciEng | QL, SE, VL—S (J.) Lange

190. Senior Seminar (1) Seminar—1 hour. Prerequisite: senior standing or consent of instructor. Selected topics presented by students on recent courses in food science and technology. Reports and discussions concerning oral and written presentations, literature sources and career opportunities. GE credit: SciEng | QL, SE—S (J.) Young

192. Internship for Advanced Undergraduates (1-12) Internship—3.36 hours. Prerequisite: consent of instructor. Work experience on or off campus in the practice of advanced food science. (P/NP grading only.) GE credit: SE.

198. Directed Group Study (1-5) Prerequisite: consent of instructor. (P/NP grading only.) GE credit: SE.

199. Special Study for Advanced Undergraduates (1-5) (P/NP grading only.) GE credit: SE.

Graduate

201. Food Chemistry and Biochemistry (4) Lecture—4 hours. Prerequisite: undergraduate courses in organic and biochemistry; undergraduate course in food chemistry is recommended. Restricted to graduate standing or consent of instructor. Advanced topics in food chemistry and biochemistry; principles of chemistry and biochemistry in food composition, properties, preservation and processing. Chemical structures, interactions, reaction mechanisms and experimental methods are stressed. —F (F.) Barile

202. Chemical and Physical Changes in Food (4) Lecture—3 hours; term paper. Prerequisite: Biological Sciences 101, 103. Principles of chemistry and physics are applied to a study of changes in water binding properties and activity, changes in proteins, nutrients, toxic constituents, and other compounds during storage, heating, freezing, dehydrating, and concentrating of food materials. —S (S.) Dungan

203. Food Processing (4) Lecture—3 hours; discussion—1 hour. Prerequisite: course 110A, Physics 5C or 7C, Chemistry 107B, or consent of instructor. Principles of food engineering applied to food processing. Relationship of Newtonian and non-Newtonian fluid properties to heat and momentum transfer, the role of mass transfer in controlling kinetics and quality changes of foods. —W (W.) Nittin

204. Advanced Food Microbiology (3) Lecture—3 hours. Prerequisite: Biological Sciences 1C, 103, course 104 or a course in microbiology. Principles of and recent developments in food microbiology, including food pathogen virulence and detection, parameters of microbial growth in food, and the microbiology of food and beverage fermentations. —S. (S.) Marco

205. Industrial Microbiology (3) Lecture—3 hours. Prerequisite: Biological Sciences 1A, 102, 103, Microbiology 130A-130B or Biological Sciences 101 recommended. Use of microorganisms for producing substances such as amino acids, peptides, enzymes, antibiotics and organic acids. Emphasis on metabolic regulation of pathways leading to fermentation products, host fermentations, and on genetic manipulations (including recombinant DNA techniques) of industrial microorganisms.

207. Advanced Sensory-Instrumental Analyses (3) Lecture—2 hours; laboratory—3 hours. Prerequisite: course 107 and consent of instructor. Basic principles of measurement of color, texture, and flavor of foods by sensory and instrumental methods. Advanced quantitative determination of colorimetry, texturometry, and chemistry of volatile compounds to perception of appearance, texture, flavor.


211. Lipids: Chemistry and Nutrition (3) Lecture—3 hours. Prerequisite: Biological Sciences 103, Chemistry 107B, 128B. Chemistry of lipids as it pertains to research in food and nutrition. Relations between lipid structures and physical properties in tissues and foods. Regulation of absorption, transport, and metabolism of lipids. Implications of dietary fats and health. —W (W.) German

213. Flavor Chemistry of Foods and Beverages (3) Lecture/discussion—3 hours. Prerequisite: Chemistry 8B, Viticulture and Enology 123, Viticulture and Enology 123L or course 103 or consent of instruc-

Food Service Management

Students will become familiar with basic principles of flavor chemistry, analysis, and formation in fresh and processed foods. Students will be required to read and critically evaluate flavor chemistry literature. (Same course as Viticulture and Enology 213.)—S (S.) Ebeler, Heymann

217. Advanced Food Sensory Science (3) Lecture—3 hours. Prerequisite: course 107 (may be taken concurrently) or consent of instructor. Advanced study of the techniques and theory of the sensory measurement of food as an analytical tool and as a measure of consumer judgment and acceptance. Advanced examination of the sensory and cognitive systems associated with the perception of food.—F (F.) O’Mahony

219. Biochemistry, Microbiology, and Technology of Cheese of the World (4) Lecture—4 hours. Prerequisite: course 119 and Biological Sciences 103 or course 100A, 123, Biological Sciences 103, Chemistry 107B, 128B or consent of instructor. Principles to be applied to student level studies or senior undergraduate students with appropriate background in biochemistry and microbiology. Compositional and physico-chemical aspects of milk and their implications on cheesemaking; enzymatic, microbiological and physical aspects of cheesemaking; cheese as a biological composite; designing cheese quality attributes; cheese aging. Cheese from all over the world will be studied and discussed. Offered in alternate years.—S (J.) Rosenberg

227. Food Perception and the Chemical Senses (2) Lecture—2 hours. Prerequisite: course 107B (may be taken concurrently), or consent of instructor. Examination of the anatomy and physiology of the chemical senses (taste, smell, and the trigeminal senses) and how they are involved in the perception of food and food intake.—W (W.) Guinard

290. Seminar (1) Seminar—1 hour. May be repeated for credit. (S/U grading only)—F, W, S (F, W, S.)

290C. Advanced Research Conference (1) Discussion—1 hour. Prerequisite: graduate standing and consent of instructor. Critical presentation and evaluation of original research by graduate students. Planning of research programs and proposals. Discussion led by individual major instructors for their research groups. (S/U grading only)—F, W, S (F, W, S.)

291. Advanced Food Science Seminar (1) Seminar—1 hour. Prerequisite: completion of at least one quarter of course 290. Oral presentation of student’s original research in advance, and critical evaluation. (S/U grading only)—S (S.)

298. Group Study (1-5) (S/U grading only)

299. Research (1-12) Prerequisite: graduate standing. (S/U grading only)

Professional

396. Teaching Assistant Training Practicum (1-4) Prerequisite: graduate standing. May be repeated for credit. (S/U grading only)—F, W, S (F, W, S.)

Food Service Management

(Continued from Agricultural and Environmental Sciences)

Fall 2011 and on Revised General Education (GE) AE=Arts and Humanities; SE=Science and Engineering; SS=Social Sciences; AC=American Cultures; DL=Domestic Diversity; DV=Diversity; VL=Visual; WC=World Cultures; WE=Writing Experience

Pre-Fall 2011 General Education (GE) AE=Arts and Humanities; SE=Science and Engineering; SS=Social Sciences; Div=Diversity; WE=Writing Experience

Quarter Offered: F=Fall, W=Winter, S=Spring, Su=Summer; 2017/2018 offering in parentheses

The Major Program and Graduate Study, Food Service Management, and the major of Clinical Nutrition. If you are interested in preparing for a career in commercial organizations such as hotels, restaurants, industrial cafeterias, or contract food services, as well as in public or private institutions such as hospitals, correctional institutions, schools, or colleges, consult the Department of Nutrition.