

FOOD SCIENCE (FS)

FS 110 Introduction to Food Science (3 credits)

Chemistry, microbiology, and processing of food and food products; concepts of food preservation, packaging and marketing of foods; food additives and regulations; world food problems. Field trip may be required. Cooperative: open to WSU degree-seeking students.

FS 113 Introduction to Vines and Wines (3 credits)

The importance of viticulture (grape growing) and enology (winemaking); wine quality. Typically Offered: Fall. Cooperative: open to WSU degree-seeking students.

FS 201 (s) Science on Your Plate: Food Safety, Risks and Technology (3 credits)

General Education: American Diversity, Natural/Integrated Science
Cross-listed with CORS 232

An interdisciplinary, thematically based course intended to provide the student with the skills to analyze and evaluate scientific claims and to make intelligent scientific and social decisions; among the topics addressed are the impact of science on society and the ethical dilemmas and moral consequences of scientific research; all themes/sections emphasize discussion, collaborative work, and the conduct of science, though not necessarily in a formal lab setting. See www.uidaho.edu/class/general-education for specific course titles and descriptions.

FS 204 (s) Special Topics (1-16 credits)

Credit arranged.

FS 220 Food Safety and Quality (3 credits)

Regulation, safety, and wholesomeness of food products; microbiological, chemical, and physical risks associated with food; hazard analysis as related to food safety, processing and quality; sanitation and pest management principles; methods for analyzing the sensory qualities of food products; problem management associated with food quality assurance. Cooperative: open to WSU degree-seeking students.

FS 299 (s) Directed Study (1-16 credits)

Credit arranged

FS 301 Food Mycology (3 credits)

Survey of the fungi important in food production, storage, and spoilage. Includes two hours of lecture and three hours of lab per week. Cooperative: open to WSU degree-seeking students. Coreq or
Prereqs: BIOL 250 or BIOL 255

FS 302 Food Processing Lab (1 credit)

Application of specialized techniques, concepts and practices of food processing. Field trip required. Typically Offered: Fall.
Coreqs: FS 303 Cooperative: open to WSU degree-seeking students

FS 303 Food Processing (3 credits)

Specialized techniques, concepts and practices of food processing. Cooperative: open to WSU degree-seeking students.
Prereqs: AVS 172 or FS 110; and FS 220; and MATH 160 or MATH 170; and STAT 251
Coreqs: FS 302

FS 304 Cereal Chemistry and Processing (3 credits)

This course has been designed to provide students with a breadth of knowledge in the field of cereal grain science. This course will cover cereal and legume structure, chemistry, and function as it relates to processing and utilization. Cooperative: open to WSU degree-seeking students.
Prereqs: CHEM 275 or CHEM 277.

FS 350 Instrumental and Sensory Analysis of Food (5 credits)

Introduction to the theory, principles, and applications of sensory evaluation techniques and instrumental techniques for the evaluation of the chemical and physical properties of foods. Students will learn basic psychological and physiological processes underlying sensory analysis, sensory testing methodologies, and the perception of appearance, aroma, taste, and texture of foods, basic food analysis methods and the relationship between instrumental and sensory methods of analysis. 3 credit lecture, 2 credit laboratory Cooperative: open to WSU degree-seeking students.

Prereqs: FS 110 or FS 201, FS 302 & FS 303, CHEM 277 and CHEM 278, STAT 251

FS 363 Animal Products for Human Consumption (4 credits)

Cross-listed with AVS 363

The meat, dairy, and egg industries, including product produced, processed, safety (HACCP), nutrition, distribution, quality, quantity, palatability, health, cooking, home storage, and consumer concerns. Special clothing and equipment required. Three lecture credits and one 3-hour lab per week. Recommended Preparation: BIOL 115. Cooperative: open to WSU degree-seeking students.

FS 398 (s) Internship (1-16 credits)

Credit arranged. Supervised professional internship in the food industry; requires formal written plan of activities approved by academic advisor and department head. Final written report and presentation required.

FS 400 (s) Seminar (1-16 credits)

Credit arranged

FS 401 Industrial Fermentations (3 credits)

Science and technology associated with industrial-scale food fermentations. Cooperative: open to WSU degree-seeking students.
Prereqs: BIOL 250 and BIOL 300

FS 402 Ciders and Other Fermented Foods (3 credits)

Chemistry, microbiology, and technology associated with the production of cider, beer, and other food fermentations. Two half-day field trips required. Typically Offered: Spring.
Prereqs: FS 304; FS 465 Cooperative: open to WSU degree-seeking students.

FS 403 (s) Workshop (1-16 credits)

Credit arranged. Workshops focusing on Food Science.

FS 404 (s) Special Topics (1-16 credits)

Credit arranged. Special topics related to Food Science.

FS 405 (s) Professional Development (1-16 credits)

Credit arranged

FS 406 Evaluation of Dairy Products (2 credits)

Identifying attributes of different dairy products caused by production, processing, and storage issues; determining probable cause of those attributes and how to reduce their occurrence. Recommended Preparation: FS 329, FS 429, and FS 430. Cooperative: open to WSU degree-seeking students.

FS 407 Evaluation of Dairy Products Lab (1 credit)

Identifying defects in dairy products and intense training for Collegiate Dairy Products Evaluation Competition. One 3-hour lab per week. Cooperative course available to WSU degree-seeking students. Graded Pass/Fail.
Coreqs: FS 406

FS 416 Food Microbiology (3 credits)

Purpose for enumeration, detection, and identification of microorganisms in food products; physical, chemical, and environmental factors influencing growth and survival of foodborne microorganisms; pathogenic and spoilage microorganisms in food and their control. Cooperative: open to WSU degree-seeking students.

Prereqs: BIOL 250 and BIOL 255

FS 417 Food Microbiology Laboratory (2 credits)

Methods for enumeration, detection, and identification of spoilage and pathogenic microorganisms in foods. Two 3-hour labs per week. Cooperative: open to WSU degree-seeking students.

Prereqs or Coreqs: FS 416

FS 418 Oral Seminar in Food Science (1 credit)

Development of skills and communication tools and techniques for oral presentations of current food science research. Typically Offered: Fall.

Prereqs: FS 110 or FS 220; and junior standing; and major in Food Science. Cooperative: open to WSU degree-seeking students.

FS 429 Dairy Processing (3 credits)

Joint-listed with FS 529

Basic dairy chemistry, microbiology, and processing from cow to consumer; dairy quality, safety, and sanitation; milk components, fluid milk, concentrated milk, cream, butter, ice cream, fermented milk, cheese, and dairy powders. Additional projects/assignments required for graduate credit. Recommended Preparation: FS 110, FS 113. Typically Offered: Fall.

Prereqs: BIOL 300 or BIOL 380, PHYS 111

Coreqs: FS 430 Cooperative: open to WSU degree-seeking students

FS 430 Dairy Processing Lab (1 credit)

Joint-listed with FS 530

Hands-on training in processing of various dairy products (e. g. , fluid milk, butter, ice cream, cheese, and yogurt); milk pick-up and raw milk quality; cleaning and sanitation of dairy plants. Additional projects/ assignments required for graduate credit. Cooperative: open to WSU degree-seeking students.

Prereqs or Coreqs: FS 429 or FS 529

FS 432 Food Engineering (3 credits)

Fundamentals of food engineering for improving the efficiency of food processing operations and the quality of processed food. Principles of heat transfer, steam, air-vapor mixtures, refrigeration and fluid flow as applied to food processing and storage. Recommended preparation: PHYS 111. Cooperative: open to WSU degree-seeking students.

Prereqs: FS 302 and FS 303

Coreqs: FS 433

FS 433 Food Engineering Lab (1 credit)

Enhances the learning experience of the students taking FS 432 through laboratories, problem sessions and group discussions. Cooperative: open to WSU degree-seeking students.

Prereqs or Coreqs: FS 432

FS 436 Principles of Sustainability (3 credits)

Cross-listed with SOIL 436

Joint-listed with FS 536, SOIL 536

Presented as online doculectures, covering topics such as origins of sustainability, standards of sustainability, culture of waste, built environment, industrial sustainability, energy sustainability, water resources, measuring sustainability, sustainable impact assessment, and our sustainable future. Readings and homework are assigned with each topic. Learning assessment will be from homework, exams and written papers. Additional work is required for graduate credit. Typically Offered: Fall and Spring.

Prereqs: Junior standing or higher Cooperative: open to WSU degree-seeking students.

FS 464 Food Toxicology (3 credits)

Cross-listed with SOIL 464

Joint-listed with FS 564 and SOIL 564

General principles of toxicologic evaluation of chemicals, which intentionally or unintentionally enter the food chain. Toxicology of food additives, colors, preservatives, drugs, pesticides and natural toxins in foods and risk characterization. Additional projects/assignments required for graduate credit. Cooperative: open to WSU degree-seeking students.

Prereqs: BIOL 300 or BIOL 380

FS 465 Wine Microbiology and Processing (3 credits)

Joint-listed with FS 565

Technical principles related to the processing and fermentation of wines with an emphasis on microbiology. Additional projects/assignments required for graduate credit. Cooperative: open to WSU degree-seeking students.

Prereqs: BIOL 250 and BIOL 300

FS 466 Wine Microbiology and Processing Lab (1 credit)

Hands-on winemaking; application of chemical microbiological methods for wine analysis. Field trip required. Typically Offered: Fall.

Prereqs or Coreqs: FS 465 Cooperative: open to WSU degree-seeking students

FS 475 Quality Management Tools for Food Products (3 credits)

Describe fundamental concepts for quality management and improvement of biomanufactured goods. Apply principles of statistical process control in a variety of situations and systems. Cooperative: open to WSU degree-seeking students.

Coreqs: FS 302 and FS 303; STAT 251 or permission from instructor

FS 489 Food Product Development (3 credits)

General Education: Senior Experience

Course serves as a capstone experience for food science seniors, and will require the application of food chemistry, food processing/engineering, and microbiology course knowledge in formulating a new food product. Cooperative: open to WSU degree-seeking students.

Prereqs: FS 302, FS 303, FS 416, and FS 460; and Senior standing

FS 498 (s) Internship (1-16 credits)

Credit arranged. Supervised professional internship in the food industry; requires formal written plan of activities approved by academic advisor and department head. Final written report and presentation required. Cooperative: open to WSU degree-seeking students.

Prereqs: Department Permission

FS 499 (s) Directed Study (1-16 credits)

Credit arranged. Cooperative: open to WSU degree-seeking students.

FS 500 Master's Research & Thesis (1-16 credits)

Credit arranged

FS 501 (s) Seminar (1-16 credits)

Credit arranged

FS 502 (s) Directed Study (1-16 credits)

Credit arranged

FS 503 (s) Workshop (1-16 credits)

Credit arranged. Workshops focusing on Food Science.

FS 504 (s) Special Topics (1-16 credits)

Credit arranged. Topics in Food Science.

FS 509 Principles of Environmental Toxicology (3 credits)

Cross-listed with ENVS 509, SOIL 509

Joint-listed with SOIL 409

Fundamental toxicological concepts including dose-response relationships, absorption of toxicants, distribution and storage of toxicants, biotransformation and elimination of toxicants, target organ toxicity and teratogenesis, mutagenesis, and carcinogenesis; chemodynamics of environmental contaminants including transport, fate, and receptors; chemicals of environmental interest and how they are tested and regulated; risk assessment fundamentals. Graduate students are required to prepare an additional in-depth report. Recommended Preparation: BIOL 102 or BIOL 115, CHEM 111, CHEM 112, CHEM 275, and STAT 251. Typically Offered: Varies. Cooperative: open to WSU degree-seeking students.

FS 517 Scientific Writing (2 credits, max 4)

Planning, writing, reporting, reviewing and evaluating current food-related research. Cooperative: open to WSU degree-seeking students. Preference will be given to graduate students in their second year or higher of study.

FS 518 Oral Seminar (1 credit)

Development of skills and communication tools and techniques for oral presentations of current food science research. Additional projects/assignments required for graduate credit. Cooperative: open to WSU degree-seeking students. Preference will be given to graduate students in their second year or higher of study.

FS 521 Food Rheology (3 credits)

Rheology is the study of flow, deformation and friction. This course will cover the fundamentals of rheology, including stress, strain, flow behaviors, pipe flow, viscoelasticity, and tribology. In the lab component, we will learn how to correctly set up and run tests. Both the lecture and the lab will focus on sound application of rheological principles for interpretation of rheological data. Cooperative: open to WSU degree-seeking students.

FS 525 Engineering Principles for Foods (3 credits)

Engineering principles of mass and energy balances, fluid flow, heat transfer, mass transfer, psychrometrics, refrigeration, and drying are applied to processing of food products. The engineering problem-solving method is emphasized in determining solutions to application problems. Cooperative: open to WSU degree-seeking students.

Prereqs: FS 303, PHYS 111, and MATH 160 or MATH 170

FS 529 Dairy Processing (3 credits)

Joint-listed with FS 429

Basic dairy chemistry, microbiology, and processing from cow to consumer; dairy quality, safety, and sanitation; milk components, fluid milk, concentrated milk, cream, butter, ice cream, fermented milk, cheese, and dairy powders. Additional projects/assignments required for graduate credit. Recommended Preparation: FS 110, FS 113. Typically Offered: Fall.

Coreqs: FS 430 Cooperative: open to WSU degree-seeking students

FS 536 Principles of Sustainability (3 credits)

Cross-listed with SOIL 536

Joint-listed with FS 436, SOIL 436

Presented as online doculectures, covering topics such as origins of sustainability, standards of sustainability, culture of waste, built environment, industrial sustainability, energy sustainability, water resources, measuring sustainability, sustainable impact assessment, and our sustainable future. Readings and homework are assigned with each topic. Learning assessment will be from homework, exams and written papers. Additional work is required for graduate credit. Typically Offered: Fall and Spring. Cooperative: open to WSU degree-seeking students.

FS 564 Food Toxicology (3 credits)

Cross-listed with SOIL 564

Joint-listed with FS 464, SOIL 464

General principles of toxicologic evaluation of chemicals, which intentionally or unintentionally enter the food chain. Toxicology of food additives, colors, preservatives, drugs, pesticides and natural toxins in foods and risk characterization. Additional projects/assignments required for graduate credit. Typically Offered: Fall. Cooperative: open to WSU degree-seeking students.

FS 575 Food Quality Management (3 credits)

Discuss the principles and practices of commonly used quality management systems used to maintain and improve the quality of their products and services. Use statistical tools to monitor and assess quality. Cooperative: open to WSU degree-seeking students.

Prereqs: STAT 251, FS 302 and FS 303

FS 583 Advances in Cereal Chemistry and Technology (3 credits)

This course provides in-depth information on wheat chemistry and technology as well as chemistry and uses of other cereal grains and legumes. Emphasis will be given to composition and functionality of wheat as related to processing and product quality, along with reviews of recent advances in cereal chemistry and technology. Cooperative: open to WSU degree-seeking students.

FS 588 Food Science Teaching Practicum (1-3 credits)

Supervised teaching in a university setting. Cooperative: open to WSU degree seeking students.

Prereqs: Admission to graduate program and Permission

FS 598 (s) Internship (1-16 credits)

Credit arranged

FS 599 Non-thesis Master's Research (1-16 credits)

Credit arranged

FS 600 Doctoral Research & Thesis (1-45 credits)

Credit arranged