Courses are subject to revision and final approval.

FISHERIES AND WILDLIFE

877*. Fish Population Dynamics Fall of even-numbered years. 3(3-0)
P: FW 479
Quantitative analysis of fish populations. Evaluation, causes and impact of the rates of change in survival, growth, reproduction and recruitment for fish populations and their yield.
QA: FW 877

878*. Dynamics of Trace Contaminants in Aquatic Systems Spring of even-numbered years. 5(3-4)
P: Calculus, Computer Science
Chemical and environmental parameters which control the movement and disposition in aquatic environments. Use of fate models.
QA: FW 878

879*. Advanced Limnology Spring of odd-numbered years. 3(3-0)
Physical, chemical and biological processes that affect productivity of aquatic ecosystems.
P: FW 477
QA: FW 874 FW 875

891*. Advanced Topics Fall, Spring, Summer. 2 to 4 credits. May reenroll for a maximum of 10 credits.
In depth study of advanced topics in fisheries and wildlife.
QA: FW 902

892*. Seminar in Fisheries and Wildlife Fall, Spring. 1(1-0) May reenroll for a maximum of 7 credits.
Study and research in advanced problems and current development in Fisheries and Wildlife.
QA: FW 901

898*. Master's Research Fall, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 10 credits.
R: 6 19 25
Master's degree Plan B research paper

899*. Master's Thesis Research Fall, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 24 credits.
R: 6 19 25
P: Admission to doctoral program in Fishery and Wildlife; 7 College of Agriculture and Natural Resources - Fisheries and Wildlife.
QA: FW 999

FOOD ENGINEERING FE

329*. Fundamentals of Food Engineering Spring. 3(4-0) Interdepartmental with the Department(s) of Food Science, P: MTH 124, PHY 231, FSC 211 R: Juniors and above
Unit operations in the food industry including: fluid mechanics, heat transfer, rate processes, refrigeration, freezing, and dehydration. Thermal process calculations.
QP: PHY 237 FSC 211MTH 1090RMTH 111
QA: ATM 329 FSC 439

381*. Food Process Engineering I Fall. 3(3-0)
P: CHE 311 or CE 321 or ME 332 R: Juniors and above Engineering
Mechanics and basic engineering principles of heat and mass transfer.
QP: CHE 340 CHE 340RCE 3210R QA: FE 475

433*. Food Dehydration Spring. 3(3-0)
P: CHE 321 or ME 410 R: Engineering majors
Dehydration of food and agricultural products, including milk, fruit, vegetable, spray, microwave, and solar drying of food products.
QP: AE 362 FSC 363 QA: FE 433

453*. Food Process Engineering II Fall. 3(3-0)
P: CHE 321 or ME 410 R: Engineering majors
Kinetics of biological and food reactions, analysis and evaluation of biological reactors, thermal processing, microbial death kinetics, sterilization and pasteurization, thermal process evaluation, food processing and equipment design.
QP: CHE 340 FE 475CEM 365MPH 300 QA: FE 477

465*. Food Process Engineering III Fall. 3(3-0)
P: CHE 321 or ME 410 R: Engineering majors
Diffusion, mass transfer coefficients, separations, freezing, dehydration, process integration and design concepts.
QP: CHE 340 FE 475ME 361FE 477 QA: FE 433

487*. Food Engineering Design Project Spring. 4(2-4)
P: CHE 321, FSC 365 R: Seniors and above
FE
QP: AE 465 FE 477 QA: FE 497

490*. Directed Study Fall, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 9 credits.
P: FSC 211 or MMM 211 or MTH 225
R: Open only to Engineering majors. Approval of department; application required.
Supervised individual student research and study in food engineering.
QP: MTH 310 OR FSC 241 QA: FE 480

491*. Special Topics in Food Engineering Fall, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 9 credits.
P: FSC 211 or MMM 211 or MTH 225
R: Open only to Engineering majors. Approval of department; application required.
Supervised individual student research and study in food engineering.
QP: MTH 310 OR FSC 241 QA: FE 480

330*. Food Processing: Fruits and Vegetables Fall. 2(3-0)
P: MTH 116, FSC 211 R: Sophomores and above
Fruit and vegetable composition and quality index. Harvest and post harvest technology. Preservation systems: canning, freezing and specialized techniques.
QP: MTH 108 AND MTH 1090RMT 111 QA: FSC 460

331*. Food Processing: Cereals Fall. 2(3-0)
P: MTH 116, FSC 211 R: Sophomores and above
Classification and composition of cereals, milling processes, and cereal product manufacture.
QP: FSC 211 MTH 108AND MTH 1090RMT 111 QA: FSC 470

332*. Food Processing: Dairy Foods Spring. 2(2-6)
P: MTH 116, FSC 211 R: Sophomores and above
QP: MTH 108 AND MTH 1090RMT 111 QA: FSC 400 FSC 405

333*. Food Processing: Meat, Poultry and Fish Products Spring. 2(5-6)
P: MTH 116, FSC 211 R: Sophomores and above
Meat animal, muscle foods and egg processing technology, product formulation and quality control, Manufacturing practices and principles of fresh, frozen and cured meats, sausages and processed products.
QP: MTH 108 AND MTH 1090RMT 111 QA: FSC 446

401*. Food Chemistry Fall. 3(3-0)
P: FSC 211, CEM 251 R: Not open to freshmen and sophomores. Not open to students with credit in HNF 300.
Chemical properties of food constituents. Chemical changes in foods during processing and storage affecting texture, color, flavor, stability, and nutritive quality.
QP: FSC 211 CEM 241 QA: FSC 333 FSC 402

402*. Food Chemistry Laboratory Fall. 1(0-3)
P: FSC 401 or concurrently. R: Open only to majors in Food Science, Foods: Technology and Management, and Food Engineering.
Chemical changes in food constituents which affect stability of food products and properties such as color, flavor and texture.
QP: FSC 333 QA: FSC 333L

421*. Food Laws and Regulations Spring. 3(3-0)
P: HNF 150 or HNF 311 or FSC 211 R: Not open to freshmen and sophomores.
Adoption, implementation and enforcement of laws and regulations governing food processing and foodservice systems. Impact of regulation on food production, availability, marketing and safety.
QP: HNF 102 OR FSC 215RHF 110RNF 501 QA: FSC 205

432*. Advanced Food Processing: Dairy Foods Fall of odd-numbered years. 3(3-2)
P: FSC 332 R: Juniors and above
Advances in Food Science. An introduction to the principles of the manufacture of cheese, frozen desserts, butter and powders. Concentration and fractionation techniques for producing liquid ingredients for food systems.
QP: FSC 300 QA: FSC 305

Courses with an asterisk (*) have not been approved by the University Committee on Curriculum.