

School of Fisheries, Aquaculture and Aquatic Sciences

Fisheries science combines a general foundation in chemistry, mathematics and biological sciences with applied courses in the principles needed to manage fresh and saltwater aquatic resources. The degree is intended to equip students with a broad understanding of fundamental scientific principles needed to develop solutions for the increasing pressures on our aquatic resources and the need to provide safe, reliable food through aquaculture production. Through a sequence of courses, students specialize in emphasis areas of aquatic ecology, fisheries management, marine resources or aquaculture. The FISH pre-vet/pre-professional area of emphasis provides students with a broad base of scientific knowledge necessary for success in the College of Veterinary Medicine, other professional schools, or graduate school. Careers for graduates include work in environmental management, fisheries resource management, extension, and commercial aquaculture production, processing, and marketing.

Majors

- Fisheries, Aquaculture and Aquatic Sciences — Fisheries and Aquaculture Option (http://bulletin.auburn.edu/undergraduate/collegeofagriculture/fisheriesandalliedaquaculturesfish/fisheriesandaquaculture_major/)
- Fisheries, Aquaculture and Aquatic Sciences — Marine Resources Management Option (http://bulletin.auburn.edu/undergraduate/collegeofagriculture/fisheriesandalliedaquaculturesfish/marineresources_major/)
- Fisheries, Aquaculture, and Aquatic Sciences — Pre-Professional Option (http://bulletin.auburn.edu/undergraduate/collegeofagriculture/fisheriesandalliedaquaculturesfish/fisheries_preprofessional_major/)

Minors

- Fisheries, Aquaculture, and Aquatic Science (http://bulletin.auburn.edu/undergraduate/collegeofagriculture/fisheriesandalliedaquaculturesfish/fisheriesandalliedaquacultures_minor/)

Courses

FISH 1100 FISHERIES ORIENTATION (1) LEC. 1. SU. An introduction to the departmental programs and personnel and how to make the most of a future in fisheries.

FISH 1110 DIMENSIONS OF FISHERIES, AQUACULTURE, AND AQUATIC SCIENCES (1) LEC. 1. Consideration of various aspects of fisheries, aquaculture, and aquatic sciences work, career options as related to individual interests, and career planning. Overview of the different research and extension areas of the School.

FISH 2000 GENERAL BIOLOGY OF FISHES AND AQUATIC ORGANISMS (1) LEC. 1. To introduce students to the anatomy and physiology of fishes, crustaceans, and mollusks to better prepare them to take advanced courses in the School of Fisheries, Aquaculture & Aquatic Sciences.

FISH 2020 GLOBAL AND REGIONAL PERSPECTIVES IN FISHERIES, AQUACULTURE, AND AQUATIC SCIENCES (2) LEC. 2. Overview of socioeconomic and ecological aspects of fisheries, aquaculture, and aquatic sciences. The course will cover human dimensions specific to commercial and recreational fisheries, aquaculture species, and the aquatic environment.

FISH 3950 CAREERS IN FISHERIES (1) LEC. 1. SU. Pr. FISH 2100. Consideration of various aspects of fisheries work, career options as related to individual interests, and career planning or departmental approval. Fall.

FISH 4100 INTRODUCTION TO FISHERIES SCIENCES (3) LEC. 2. LAB. 3. Departmental approval. Hands-on field activities and site visits related to aquatic ecology, fisheries biology, and aquaculture.

FISH 4900 DIRECTED STUDIES IN FISHERIES (1-4) IND. SU. Individualized in depth study on a particular subject under the guidance of a professor. May include directed reading and research. Course may be repeated for a maximum of 4 credit hours.

FISH 4920 INTERNSHIP (1-5) INT. SU. Departmental approval. Discipline-related learning while employed with cooperating private industry or public agency. Course may be repeated for a maximum of 5 credit hours.

FISH 4960 SPECIAL PROBLEMS (1-4) LEC. Departmental approval. Individual and group problems investigations in fisheries and allied aquacultures. Course may be repeated for a maximum of 4 credit hours.

FISH 4967 HONORS SPECIAL PROBLEMS (1-4) IND. Pr. Honors College. Departmental approval.. Course may be repeated for a maximum of 4 credit hours.

FISH 4980 UNDERGRADUATE RESEARCH (2-4) IND. Departmental approval. Directed research in the area of specialty within the department. Course may be repeated for a maximum of 4 credit hours.

FISH 4997 HONORS THESIS (1-3) IND. Pr. Honors College. Departmental approval.. Course may be repeated for a maximum of 3 credit hours.

FISH 5210 PRINCIPLES OF AQUACULTURE (3) LEC. 3. Pr. BIOL 1030 or BIOL 1037. Principles underlying aquatic productivity and levels of management as demonstrated by present practices of aquaculture around the world.

FISH 5215 MARINE AQUACULTURE (2) LEC. 1. LAB. 2. Departmental approval. Introduction to culture of marine species with emphasis in nutrition and feeding, reproductive biology, production techniques, processing, marketing and economics. Taught at the Dauphin Island Sea Lab.

FISH 5220 WATER SCIENCE (3) LEC. 3. Pr. CHEM 1040. Properties of water, the water cycle, basic water chemistry and water quality with emphasis on water in managed ecosystems.

FISH 5230 CONSERVATION ECOLOGY OF FRESHWATER INVERTEBRATES (4) LEC. 3. LAB. 1. Foundational knowledge, ecological theory, and illustrative case-studies on conservation issues and solutions for freshwater invertebrates.

FISH 5240 HATCHERY MANAGEMENT (4) LEC. 2. LAB. 8. Pr. FISH 5210 or FISH 6210. Study of warm-water hatchery techniques and application of those techniques in the field.

FISH 5245 SHELLFISH AQUACULTURE IN THE GULF OF MEXICO (2) FLD. 40. One year of college-level Biology or departmental consent. Overview of the various types of shellfish aquaculture practiced in the Gulf of Mexico, and an understanding of the implications for both for public stock enhancement and private production. Taught at Dauphin Island Sea Lab. May count either FISH 5245 or FISH 6245.

FISH 5250 AQUACULTURE PRODUCTION (4) LEC. 3. LAB. 4. Pr. FISH 5210. Factors affecting growth and yield of aquacultural species, with implications toward farming commonly cultured species. Production techniques for commercially important finfish are discussed.

FISH 5320 LIMNOLOGY (3) LEC. 3. Pr. CHEM 1040 and (BIOL 1030 or BIOL 1037). Limnology is the study of the chemical, physical, geological, biological, and ecological processes that influence the structure and function of freshwater communities.

FISH 5321 LIMNOLOGY LABORATORY (1) LAB. 4. Pr. (BIOL 1030 or BIOL 1037) and CHEM 1040 and (P/C FISH 5320 or P/C FISH 6320). Limnology is the study of the chemical, physical, geological, biological, and ecological processes that influence the structure and function of aquatic communities. May count either FISH 5321 or FISH 6321.

FISH 5380 GENERAL ICHTHYOLOGY (4) LEC. 3. LAB. 6. Pr. BIOL 1030 or BIOL 1037. Survey of the biodiversity of world and local fishes, with an overview of ecology, behavior, biology and conservation of fishes.

FISH 5410 INTRODUCTION TO FISH HEALTH (3) LEC. 3. Pr. BIOL 1030 or BIOL 1037. Introduction to parasitic, bacterial and viral pathogens of wild and cultured finfish and shellfish.

FISH 5440 FISH ANATOMY AND PHYSIOLOGY (4) LEC. 3. LAB. 4. Gross and microscopic fish anatomy.

FISH 5510 FISHERIES BIOLOGY AND MANAGEMENT (4) LEC. 3. LAB. 4. Pr. BIOL 1030 or BIOL 1037. This course provides a general overview and introduction to fisheries management with emphasis on freshwater examples. The laboratory will provide hands-on field experience. Credit will not be given for both FISH 5510 and FISH 6510.

FISH 5520 SMALL IMPOUNDMENT MANAGEMENT (3) LEC. 5. LAB. 10. Pr. BIOL 1030 or BIOL 1037. Major aspects of primarily recreational fishing pond management, including construction, stocking, water quality management, harvest strategy, diagnosis of problems and communication of analyses.

FISH 5630 FACILITIES FOR AQUACULTURE (3) LEC. 2. LAB. 4. Pr. (BIOL 1030 or BIOL 1037) and CHEM 1040. Principles and practice of site selection, design and construction of aquacultural facilities, with emphasis on impoundments and ponds.

FISH 5670 FISHERIES AND AQUACULTURES EXTENSION METHODS (2) LEC. 2. Pr. BIOL 1030 or BIOL 1037 and CHEM 1040. Concepts and practices pertaining to aquacultural extension organization, administration, program development and implementation.

FISH 5710 AQUATIC MICROBIOLOGY (3) LEC. 3. Pr. BIOL 1030 or BIOL 1037. Departmental approval. Overview of the diversity, genetics, physiology, and ecology of aquatic microorganisms, with an emphasis on bacteria, archaea and viruses.

FISH 5725 MARINE ICHTHYOLOGY (6) LEC. 6. Pr. BIOL 3060. Departmental approval. General background in the biology of marine fishes and their taxonomy. Offered only at the Gulf Coast Research Laboratory, Ocean Springs, MS. Summer. Admission to the Gulf Coast Research Laboratory.

FISH 5970 TOPICS IN FISHERIES AND ALLIED AQUACULTURES (1-4) LEC. Instruction and discussion in a selected current topic in Fisheries, Aquaculture or Aquatic Sciences. Course may be repeated for a maximum of 4 credit hours.

FISH 6210 PRINCIPLES OF AQUACULTURE (3) LEC. 3. Graduate level standing in FISH or departmental approval. Principles underlying aquatic productivity and levels of management as demonstrated by present practices of aquaculture around the world.

FISH 6215 MARINE AQUACULTURE (2) LEC. 1. LAB. 2. Departmental approval. Introduction to culture of marine species with emphasis in nutrition and feeding, reproductive biology, production techniques, processing, marketing and economics. Taught at the Dauphin Island Sea Lab.

FISH 6220 WATER SCIENCE (3) LEC. 3. Properties of water, the water cycle, basic water chemistry and water quality with emphasis on water in managed ecosystems.

FISH 6230 CONSERVATION ECOLOGY OF FRESHWATER INVERTEBRATES (4) LEC. 3. LAB. 1. Foundational knowledge, ecological theory, and illustrative case-studies on conservation issues and solutions for freshwater invertebrates.

FISH 6240 HATCHERY MANAGEMENT (4) LEC. 4. Study of warm-water hatchery techniques and application of those techniques in the field.

FISH 6245 SHELLFISH AQUACULTURE IN THE GULF OF MEXICO (2) FLD. 40. This course will provide students with an overview of the various types of shellfish aquaculture practiced in the Gulf of Mexico, and an understanding of the implications for both for public stock enhancement and private production. Taught at Dauphin Island Sea Lab. May count either FISH 5245 or FISH 6245.

FISH 6250 AQUACULTURE PRODUCTION (4) LEC. 4. Factors affecting growth and yield of aquacultural species, with implications toward farming commonly cultured species. Production techniques for commercially important finfish are discussed.

FISH 6320 LIMNOLOGY (3) LEC. 3. Graduate level standing in FISH or departmental approval. Limnology is the study of the chemical, physical, geological, biological, and ecological processes that influence the structure and function of freshwater communities.

FISH 6321 LIMNOLOGY LABORATORY (1) LAB. 4. Pr. (P/C FISH 5320 or P/C FISH 6320). Graduate level standing in FISH or departmental approval. Limnology is the study of the chemical, physical, geological, biological, and ecological processes that influence the structure and function of aquatic communities. May count either FISH 5321 or FISH 6321.

FISH 6380 GENERAL ICHTHYOLOGY (4) LEC. 3. LAB. 6. Graduate level standing in FISH or departmental approval. Survey of the biodiversity of world and local fishes, with an overview of ecology, behavior, biology and conservation of fishes.

FISH 6410 INTRODUCTION TO FISH HEALTH (3) LEC. 3. Introduction to parasitic, bacterial and viral pathogens of wild and cultured finfish and shellfish.

FISH 6425 MARINE FISH DISEASES (4) LEC. 4. Introduction to diseases of marine finfish and shellfish and practical techniques used to isolate and identify diseases.

FISH 6440 FISH ANATOMY AND PHYSIOLOGY (4) LEC. 4. Gross and microscopic fish anatomy.

FISH 6510 FISHERIES BIOLOGY AND MANAGEMENT (4) LEC. 4. This course provides a general overview and introduction to fisheries management with emphasis on freshwater examples. The laboratory will provide hands-on field experience. Credit will not be given for both FISH 5510 and FISH 6510.

FISH 6520 SMALL IMPOUNDMENT MANAGEMENT (3) LEC. 3. Major aspects of primarily recreational fishing pond management, including construction, stocking, water quality management, harvest strategy, diagnosis of problems and communication of analyses.

FISH 6630 FACILITIES FOR AQUACULTURE (3) LEC. 2. LAB. 4. Principles and practice of site selection, design and construction of aquacultural facilities, with emphasis on impoundments and ponds. Odd years.

FISH 6650 FISH AND SEAFOOD PROCESSING TECHNOLOGY (3) LEC. 3. Graduate level standing in FISH or departmental approval. Emphasis on important species, market forms, preservation techniques, and rules and regulations of the seafood industry.

FISH 6670 FISHERIES AND AQUACULTURE EXTENSION METHODS (2) LEC. 2. Concepts and practices pertaining to aquacultural extension organization, administration, program development and implementation.

FISH 6710 AQUATIC MICROBIOLOGY (3) LEC. 3. Overview of the diversity, genetics, physiology, and ecology of aquatic microorganisms, with an emphasis on bacteria, archaea and viruses.

FISH 6725 MARINE ICHTHYOLOGY (6) LEC. 6. General background in the biology of marine fishes and their taxonomy.

FISH 6970 TOPICS IN FISHERIES AND ALLIED AQUACULTURES (1-4) LEC. Instruction and discussion in a selected current topic in Fisheries, Aquaculture or Aquatic Sciences.

FISH 7100 ADVANCED PARASITE TAXONOMY (6) LEC. 2. LAB. 16. Departmental approval. This is a lab-based course for practicing parasitologists. The course instructs students on how to describe a metazoan parasite species.

FISH 7200 MARINE PARASITOLOGY (6) LEC. 2. LAB. 16. Departmental approval. This is an intensive lab-based course for marine parasitologists. Students will collect and identify marine/estuarine parasites of aquatic animals.

FISH 7230 WATER AND SEDIMENT QUALITY MANAGEMENT IN AQUACULTURE (4) LEC. 3. LAB. 3. Pr. FISH 6220. Departmental approval. Advanced treatment of water and sediment quality management in aquaculture. Analytical methods for soil and water quality.

FISH 7240 RESOURCE USE AND ENVIRONMENTAL ISSUES IN AQUACULTURE (2) LEC. 2. Resource use, environmental effects, and sustainability of aquaculture with emphasis on approaches to improving efficiency and reducing negative environmental effects.

FISH 7270 CRUSTACEAN AND MOLLUSCAN AQUACULTURE (4) LEC. 3. LAB. 3. Departmental approval. General biology and culture techniques of the major shrimp, crawfish and shellfish species cultured throughout the world.

FISH 7300 PATHOLOGY OF AQUATIC ORGANISMS (6) LEC. 2. LAB. 16. Departmental approval. Students gain appreciation for histopathological techniques and recognize basic pathological changes to tissues in aquatic organisms.

FISH 7330 RESERVOIR LIMNOLOGY (3) LEC. 2. LAB. 5. Departmental approval. Consideration of the ecological characteristics of reservoirs as they relate to modern concepts of ecosystem management. Even years.

FISH 7340 FISH ECOLOGY (3) LEC. 2. LAB. 3. Graduate level standing in FISH or departmental approval. Study of interactions among fish and their environment. Laboratory will emphasize critical literature reading and experimental approaches.

FISH 7350 META-ANALYSIS (3) LEC. 3. Meta-analysis is a quantitative approach for synthesizing results from diverse research studies (ecology, psychology, medicine, and education) that address a similar hypothesis. Effect sizes calculated from individual studies are combined to elucidate general patterns across studies.

FISH 7360 MANAGEMENT OF AQUATIC FLORA IN FISHERIES AND AQUACULTURE (4) LEC. 3. LAB. 6. Graduate level standing in FISH or departmental approval. Role of aquatic vegetation in fish production, its utilization and control.

FISH 7380 ECOLOGY AND MANAGEMENT OF RIVERINE SYSTEMS (4) LEC. 3. LAB. 3. River systems within a landscape ecology and ecosystem management context. Laboratory sessions stress techniques for assessment and management. Even years.

FISH 7410 MOLECULAR DIAGNOSIS: PRINCIPLES AND APPLICATIONS (3) LEC. 3. Introduction to molecular biology techniques currently used in disease diagnosis.

FISH 7420 FISH DISEASES (3) LEC. 3. Pr. BIOL 3200. Viral, bacterial, fungal and parasitic diseases of fishes, including etiologic agents, geographical ranges, species susceptibility, clinical signs, clinical pathology, epidemiology and management.

FISH 7450 FISH PATHOLOGY (3) LEC. 2. LAB. 3. Departmental approval. Morphological and physiological changes in fish with infectious or non-infectious diseases. Even years.

FISH 7460 CLINICAL FISH DISEASE DIAGNOSIS (1-3) DSL/LEC. Pr. FISH 6410 or FISH 7420. Practical experience in necropsy of diseased fish. Identification of causative agents and prescription of appropriate disease control.

FISH 7530 FISH POPULATION DYNAMICS (3) LEC. 2. LAB. 4. Departmental approval. Derivation of fish population estimates, growth, recruitment and mortality; use of modeling techniques to assess exploited fish populations. Even years.

FISH 7540 QUANTITATIVE TECHNIQUES IN FISHERY ASSESSMENT (3) LEC. 2. LAB. 4. Departmental approval. Quantitative techniques to assess and manage fish populations in freshwater. The laboratory will analyze actual fisheries data using SAS on personal computers. Odd years.

FISH 7640 FISH NUTRITION (3) LEC. 3. Fundamental and applied aspects of fish nutrition, including nutrient requirements, physiology of food assimilation, feed preparation, and practical feeding.

FISH 7650 TRADITIONAL APPROACHES TO FISH GENETIC ENHANCEMENT (2) LEC. 2. Graduate level standing in FISH or departmental approval. This course is intended to teach the philosophy of fish, shellfish and crustacean genetics, selective breeding, genetic management and inheritance.

FISH 7660 MOLECULAR GENETICS AND BIOTECHNOLOGY (4) LEC. 3. LAB. 3. Graduate level standing in FISH or departmental approval. Principles and application of DNA fingerprinting technologies, gene mapping, genetic information and analysis using internet tools, transgenic technologies.

FISH 7715 ADVANCED MARINE ECOLOGY (2) LEC. 2. Departmental approval. Mechanisms that control distribution of plants and animals at scales ranging from individual organism to ecosystem

FISH 7725 MARINE BIOGEOCHEMICAL PROCESSES (2) LEC. 2. Departmental approval. Marine biogeochemical cycling of carbon, nitrogen, sulfur, phosphorus and metals, with emphasis on estuarine systems.

FISH 7750 BIOTECHNOLOGICAL APPROACHES TO FISH GENETICS (2) LEC. 2. Pr. FISH 7650. Departmental approval. This course is intended to teach the philosophy of fish, shellfish and crustacean genetics, genetic management genetic engineering, genomic manipulation and genetic biotechnology.

FISH 7785 PHYSICAL OCEANOGRAPHY (4) LEC. 4. Departmental approval. Describes observed physical setting of the marine environment, and qualitatively explains how and why observed physical phenomena occur.

FISH 7800 PRINCIPLES OF ECOTOXICOLOGY (3) LEC. 3. Ecotoxicology-an interdisciplinary science studies the impacts of pollutants upon the structure and function of ecological systems. The broad scope of ecotoxicology requires a multidisciplinary approach of a variety of specialties, such as ecology, environmental chemistry, and applied biology.

FISH 7900 DIRECTED STUDIES IN FISHERIES I (1-4) IND. SU. Individualized in-depth study on a particular subject under the guidance of a professor. May include directed readings and research. Course may be repeated for a maximum of 4 credit hours.

FISH 7920 INTERNSHIP IN FISHERIES AND AQUACULTURE (1-10) INT. SU. Departmental approval. Field experience in aquaculture, fisheries or aquatic resource management on farm or with research, extension or aquatic management agency. Course may be repeated for a maximum of 10 credit hours.

FISH 7930 GRADUATE SEMINAR SERIES (1) LEC. 1. SU. Acquaint students with current research and related activities.

FISH 7950 GRADUATE RESEARCH SEMINAR (1) SEM. 1. SU. Departmental approval. Oral presentation and discussion of research in the field of specialization.

FISH 7960 SPECIAL PROBLEMS IN FISHERIES, AQUACULTURE, AND AQUATIC SCIENCES (1-4) IND. Individual or group project and research in consultation with faculty member on problem in fisheries, aquaculture, and/or aquatic sciences. Course may be repeated for a maximum of 9 credit hours.

FISH 7990 RESEARCH AND THESIS (1-10) MST. Course may be repeated with change in topics.

FISH 8900 DIRECTED STUDIES IN FISHERIES II (1-4) IND. SU. Individualized in-depth study on a particular subject under the guidance of a professor. May include directed readings and research. Course may be repeated for a maximum of 4 credit hours.

FISH 8930 GRADUATE SEMINAR SERIES (1) LEC. 1. SU. Acquaint students with current research and related activities.

FISH 8950 GRADUATE RESEARCH SEMINAR (1) SEM. 1. SU. Departmental approval. Acquaint students with current research and related activities.

FISH 8960 SPECIAL PROBLEMS IN FISHERIES, AQUACULTURE, AND AQUATIC SCIENCES (1-4) IND. Individualized work and research in consultation with faculty member on problem in fisheries, aquaculture, and/or aquatic sciences. Course may be repeated for a maximum of 9 credit hours.

FISH 8990 RESEARCH AND DISSERTATION (1-10) DSR. Course may be repeated with change in topics.