



(Document approved by FAVS faculty in May, 2006)

College of the Environment and Life Sciences
Expected Undergraduate Student Outcomes

Aquaculture and Fisheries Technology Major

KNOWLEDGE

DEPTH AND APPLICATION OF KNOWLEDGE – acquire knowledge and skills necessary to obtain or pursue a professional position or graduate training in aquaculture and fisheries science and technology. By the time you complete your education you will have

(Aquaculture track)

knowledge of:

- basic biology of aquaculture organisms, including finfish, shellfish and aquatic plants
- aquaculture practices for major aquaculture species worldwide and locally
- aquaculture systems for major aquaculture species worldwide and locally
- principles of health management for aquaculture species and facilities
- aspects of nutrition important to growth and health of aquaculture organisms
- elements of water quality important to aquaculture
- impacts of aquaculture activities on society, the economy, and the natural environment
- basic principles of fishery science and technology
- basic principles of marketing and food science

ability to:

- culture several species of finfish, shellfish and aquatic plants
- measure and manage water quality in aquaculture systems
- design culture systems for fish, including consideration of size and shape of containment system, flow rates, pumping requirements, proper siting, etc.
- assess the growth and health status of fish and shellfish in culture
- evaluate the risks and benefits of aquaculture operations

(Fisheries track)

knowledge of:



- basic marine and freshwater environmental science
- navigation, seamanship, and personal safety at sea
- basic biology of aquatic living resources
- fish catching methods of the world
- effects in fishing on habitat
- interactions between fisheries and protected species
- basic principles of fishery science
- design and performance evaluation of fishery resource harvesting and scientific sampling gears
- concepts of fish stock assessment
- basic principles of aquaculture

ability to:

Collect, process, and analyze data that support the development of a fish stock assessment, as this is the basic scientific contribution to the management of a fishery.

- collect biological samples and environmental data on fishery resources in the field on board research vessels
- collect fishery data on board commercial and recreational vessels
- process biological samples in the laboratory, and conduct the analyses of the resulting data to quantify fish population dynamics
- interpret the results of the analyses so as to predict the trend in fish abundance resulting from alternative management strategies

QUANTITATIVE COMPETENCE – identify and use appropriate quantitative methods to analyze physical, biological, or social phenomena. By the time you complete your education you will:

- Understand and use basic mathematical concepts and methods (i.e., algebra, geometry, calculus) to solve quantitative problems
- Understand and use basic statistical concepts and methods to analyze data
- Use computer software to implement statistical analyses and graphical representation of data
- Read and interpret current research

METHODS OF INQUIRY – understand and use methods of inquiry appropriate to fisheries and aquaculture. By the time you complete your education, you will have:

knowledge of:

- The scientific method



- Sampling methods
- Modeling approaches

ability to:

- Observe natural phenomena in a fisheries or aquaculture context
- Develop testable hypotheses based on your observations
- Test hypotheses through experimentation, sampling or simulation
- Identify the limitations of the methods used

PROBLEM-SOLVING – use acquired knowledge, skills, and ingenuity to solve complex problems. By the time you complete your education, you will be able to:

- Recognize the existence and scope of a problem
- Use existing information to develop problem-solving strategies
- Choose and implement an appropriate strategy
- Evaluate results and refine the strategy accordingly
- Draw and communicate conclusions

COMMUNICATION

INFORMATION MANAGEMENT – gather and interpret information from diverse sources. By the time you complete your education, you will be able to:

- Locate, compile and organize information from both print and electronic media for a research paper on an important issue or topic in aquaculture or fisheries
- Critically evaluate the quality of the information you obtain from media sources, including any sources of bias, facts vs. opinions, etc.

COMMUNICATION – communicate clearly and effectively using a variety of methods. By the time you complete your education, you will be able to:

- Orally present your knowledge and ideas effectively to your peers and faculty members
- Write logically and effectively for diverse audiences
- Use graphic communications methods appropriate to fisheries and aquaculture audiences
- Listen effectively to your peers and faculty members and respond appropriately

MULTIDISCIPLINARY PERSPECTIVE – recognize the value of, and participate in, multidisciplinary teams. By the time you complete your education, you will:

- Understand the perspectives and scope of related disciplines, especially resource economics and coastal policy



- Work effectively as a team member, e.g., in a class with students from other majors
- Interact effectively with peers and professional in other fields

PERSONAL GROWTH

ETHICAL PRINCIPLES – understand and apply ethical principles to issues, problems, and professional practices. By the time you complete your education, you will:

- Develop a personal environmental ethic
- Be conversant in the ethical standards of the American Fisheries Society
- Understand the FAO Code of Conduct for Responsible Fisheries

GLOBAL AWARENESS – develop an awareness of global community and ecology in their physical, biological, and social dimensions. By the time you complete your education you will:

- Become familiar with Earth systems and the manner in which they have been modified by human activity over time, especially with regard to fisheries and aquaculture
- Recognize and appreciate the diversity of human cultures and their relationships to local and global ecosystems

PERSONAL DEVELOPMENT – develop a sense of responsibility to self, community, and society. By the time you complete your education, you will:

- Use reflection and self-evaluation to set goals for personal improvement
- Recognize the value and benefits of being a contributing member of your community and society
- Understand and respect differences among diverse populations