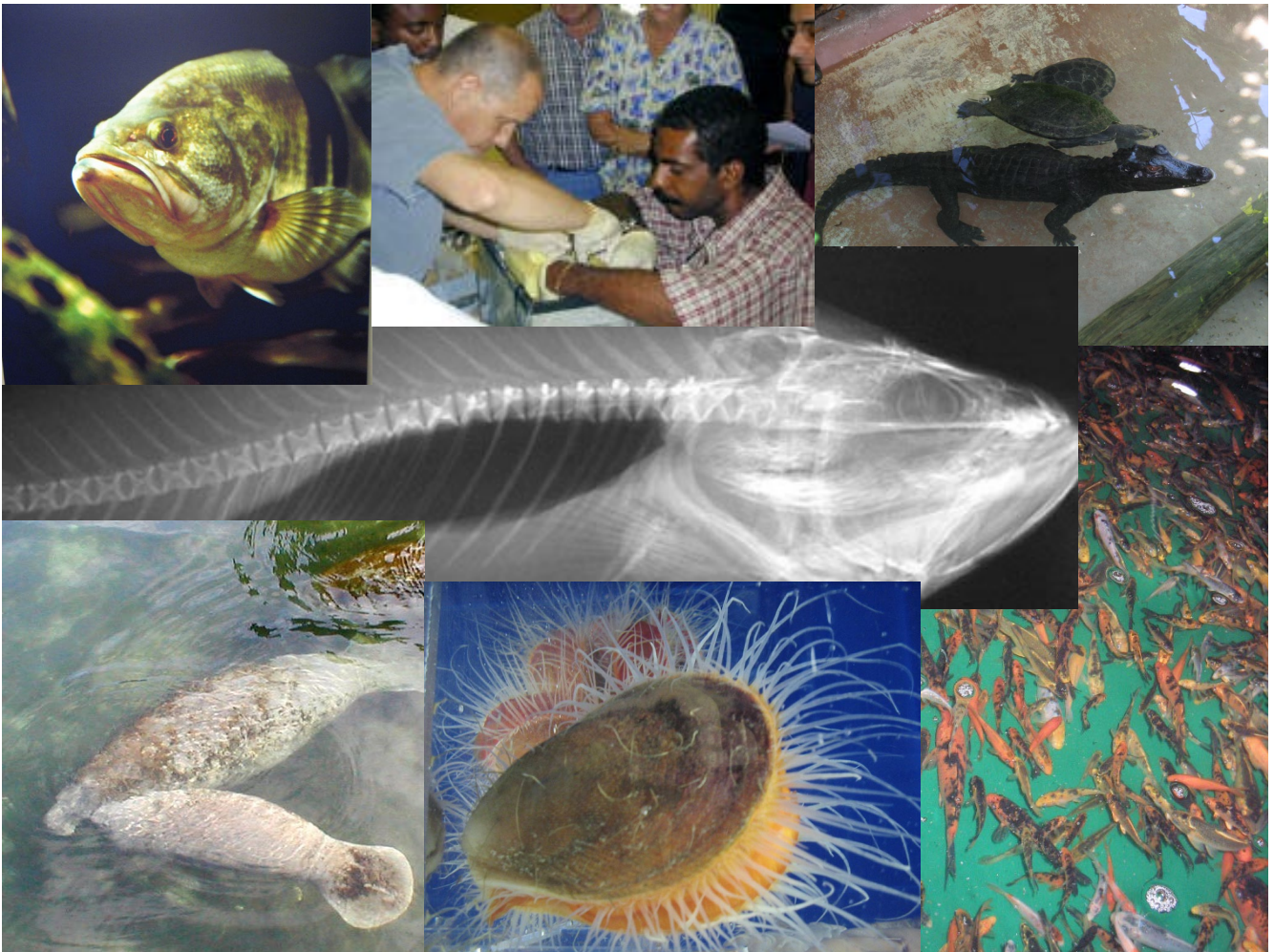


UF | College of
Veterinary Medicine
UNIVERSITY of FLORIDA

**University of Florida
College of Veterinary Medicine
Certificate in Aquatic Animal Medicine**



Certificate in Aquatic Animal Medicine

The University of Florida has a very active aquatic animal health program that is a collaborative effort between the College of Veterinary Medicine, the Whitney Laboratory for Marine Bioscience, the Program in Fisheries and Aquatic Sciences (School of Forest Resources and Conservation, College of Agriculture and Life Sciences) and the Biology Department (College of Liberal Arts and Sciences). Partnerships with federal and state agencies, and other public and private aquatic institutions throughout the state further enhance the scope of the program, including USDA-APHIS-Veterinary Services, the Florida Fish and Wildlife Research Institute, Disney's Animal Kingdom, SeaWorld, the Florida Aquarium, and commercial aquaculture facilities, just to name a few. Florida's unique and diverse ecosystems, and broad academic programs, create a unique opportunity for veterinary students to receive specialized and directed training within the veterinary curriculum. The purpose of this certificate program is to identify and recognize veterinary students with an interest in aquatic animal health and provide guidance to them during their veterinary studies to help them develop a knowledge base in this specialty.

Aquatic animal medicine is a rapidly expanding specialty of veterinary medicine within the American College of Zoological Medicine (ACZM). Aquatic animal medicine emerged as a veterinary discipline in 1968 when the International Association for Aquatic Animal Medicine had its organizational meeting in Menlo Park, California. Since then the discipline has expanded considerably and today includes aspects of food supply veterinary medicine through aquaculture practice, zoological medicine with aquatic display animals, companion animal and wildlife medicine. Some training in aquatic animal medicine has been available to veterinary students at the University of Florida since the College of Veterinary Medicine accepted its first class in 1976. The program has experienced significant growth since 2000 when programs in marine mammal health, aquaculture and fish health were merged into a comprehensive aquatic animal health program. The certificate program described here is a broad educational program that gives veterinary students a unique opportunity to nurture their interest in this exciting and diverse field. This certificate program is the first of its kind and faculty members are anxious to work with motivated students to help them meet their career goals.

Students who successfully complete this program will receive a certificate that documents their concentrated training in aquatic animal medicine during their DVM curriculum. This certificate will identify the newly graduated veterinarian as an employment prospect for an entry level position in aquaculture, or a veterinary practitioner able to provide basic medical care to aquatic animals as part of a companion animal practice. Post-DVM training may include continued graduate education working towards a Masters or PhD degree, internships residencies or specialized clinical training in zoological medicine. Guidance from faculty can help veterinary students clarify career goals and pursue appropriate paths to achieve these goals.

The successful student in this program will be required to complete a total of 15 credits, which includes 9 credit hours of a core curriculum in aquatic animal medicine: Diseases of Warmwater Fish (VEM 5374, 3 credit hours), Sea Vet Clinical Training (VME 5378, 3 credit hours), Topics in Aquatic Animal Health (VEM 5931, 1 credit hour) and an externship (VEM 5892, 2 credit hours). In addition, the student must complete 6 credit hours from a list of elective courses (included below). The student will be assigned a mentor from the aquatic animal health program faculty who will work with the student to select the elective courses most appropriate given the student's interests and career goals. Students who enter the veterinary program with undergraduate or graduate course work relevant to aquatic animal medicine may petition the faculty education committee within the program for up to 4 credits towards their certificate from some of their previous work. They may do so by submitting a formal letter to our program education committee, describing in detail the related work, any supporting information or letters of support, how it pertains to aquatic animal medicine and why these credits are needed to supplement course credits currently available through the program.

To participate in the aquatic animal medicine certificate program veterinary students must be in good academic standing and maintain a 3.0 GPA in the veterinary curriculum. If a student falls below a 3.0 GPA, his or her ability to participate in this program will be curtailed until the period of academic probation has been completed in a satisfactory manner. Applications for admission to the certificate program will be accepted no earlier than the spring semester of your freshman year in vet school, once fall grades of the previous semester have been released. Program applications can be found on our web page:

<http://aquatic.vetmed.ufl.edu/education/programs/aah-certificate/> . You will also need to fill out the application on the UF applications site: <https://admissions.ufl.edu/apply/certificates> . Go down the page until you see the Certificate options and choose “Currently Enrolled App”. Follow the prompts to fill out information. This will put you into the UF ISIS system.

The Core Curriculum in Aquatic Animal Medicine

The core curriculum consists of entry level courses in fish and marine mammal medicine. These are Diseases of Warmwater Fish (VEM 5374, 3 credit hours) offered online during the summer C term and Sea Vet Clinical Training (VEM 5378, 3 credit hours) offered during the summer each year. Students who enter the College of Veterinary Medicine as freshman in the fall will be able to take these courses at the end of their freshman year. Online courses, such as Diseases of Warmwater Fish, will also be accepted the summer prior to entering the veterinary curriculum. Topics in Aquatic Animal Health is required as part of the core curriculum to cover critical evaluation and review of scientific literature within the field and is offered each fall and spring semester. In addition to this core course work, students will be expected to complete an externship (VEM 5892, 2 credit hours). An example template for completing course work is provided below.

Descriptions of Core Courses:

Diseases of Warmwater Fish (VEM 5374, 3 credit, letter grade) to be offered summer C, *fully online and asynchronous*. Diagnosis and management of diseases of warmwater fish. Emphasis on ornamental and display fish production with consideration of food and game fish, and fish health management within public aquaria. The course is intended for students in veterinary medicine and related disciplines as well as graduate veterinarians, aquaculturists, professional biologists and aquarists. It is excellent preparation for the American College of Zoological Medicine Day 1 examination in aquatic animal medicine.

SeaVet Clinical Training (VEM 5378, 3 credit, pass/fail; additional lab fees apply) offered in summer (best time is first summer between Fr. and So. yr), this is a training program in marine mammal science and medicine. The curriculum will emphasize species native to Florida such as the manatee and small cetaceans. A segment on sea turtles, fish and sharks will also be included. The course is intended to serve as an introduction to aquatic animal medicine and husbandry, clinical techniques, and stranded animal management. Common health concerns of both free-ranging and captive populations will be discussed with emphasis on management and disease prevention. The course is intended for veterinary students and veterinarians with an interest in marine mammal medicine.

Topics in Aquatic Animal Health (VEM 5931, 1 credit, pass/fail; **max 3 credits**) Spring and fall semesters (best time to schedule spring of Jr. yr or fall of Sr. yr), one hour a week, 15 weeks. Presentation/discussion by students of selected articles relating to aquatic animal health, including both vertebrates and invertebrates; plus a monthly one hour seminar.

Externships (VEM 5892, 2 credit, Pass/Fail; **max 6 credits**) Students spend a minimum of two weeks in a clinical or biomedical research experience at an approved aquatic animal facility. (best time to schedule is summer between Jr. & Sr. yr, and during 2 wk blocks within Jr. clinics May – Dec). If you have more than 2

weeks at an aquatics facility, the additional credits may counts towards your elective credits. If you are attending a zoological externship, where there is a mixed collection that includes terrestrial species, students will need to keep a journal of their time working on aquatics cases. Forty hours of aquatics case work is reflective of 1 academic credit. The journal must be signed by the mentoring veterinarian at the facility and submitted to the program Director. Funding may be available for externships focused primarily on marine mammals. You can find the application at the bottom of the AAM Certificate page:

<http://aquatic.vetmed.ufl.edu/education/programs/aah-certificate/>

Note that completing a research project (VEM 5991), publishing it and presenting it at a scientific meeting is **STRONGLY RECOMMENDED** for those students who may want to pursue a career in the zoo and public aquarium industry. The best time to do this work is during the first summer between freshman and sophomore year.

Certificate Timeline:

There is plenty of flexibility in how the requirements can be fulfilled throughout the four years. The table below is just an example. It is not recommended to take any electives during your classes freshman year or more than 1 credit during classes sophomore year. The best time to take externships is from junior spring semester through senior fall semester.

Example Time-Line for Students Entering the Veterinary Curriculum in Fall Freshman Year:

	2024			2025			2026			2027			2028			
	Fr			So			Jr			Sr						
Core Courses	F	Sp	Sm	F	Sp	Sm	F	Sp	Sm	F	Sp	DVM Credits	Certificate Credits			
SeaVet, VEM 5378			●									Elective 3	3			
Diseases of Warmwater Fish, VEM 5374									●			3	3			
Externship, VEM 5892									●			2	2			
Topics in Aq. An. Hlth, VEM 5931								●				1	1			
Elective Courses																
Marine Mammal Medicine, VEM 5377											●	Elective 1	1			
Aquatic Wildlife Health Issues VEM 5372								●				2	2			
Individualized Investigation, VEM 5991			●									2	2			
Externship, VEM 5892											●	2	2			
IAAAM conference								●				0	1			
Total Credits												14	15			

*Note – Fr = Freshman, So = Sophomore, Jr = Junior, Sr = Senior, F = Fall, Sp = Spring, and Sm = Summer.

Elective Classes in Aquatic Animal Medicine

A broad range of elective course work is available from within the College of Veterinary Medicine as well as from other units on campus. The student and his or her mentor should work together to identify elective classes that are consistent with the student's interests and career goals. A list of potential elective courses is provided below. Approval of aquatic animal health program faculty may be sought for relevant courses not on this list.

Descriptions of Potential Elective Classes:**PROFESSIONAL LEVEL** (on campus)

Through the College of Veterinary Medicine, we offer: the courses listed below as well as some new ones that are currently under development. Veterinary students would not normally be required to pay additional tuition to participate in these courses.

Marine Mammal Medicine (VEM 5377, 1 credit, pass/fail) Fall of Senior year, to educate students in the basic science, husbandry, medicine and surgery of marine mammals. To understand the classification of mammals, special husbandry issues and management of species including medicine surgery and anesthesia. Course coordinator – Dr. Mike Walsh.

Individualized Investigation (VEM 5991, 2 credit, letter grade) Students individually prepare an oral and written report on an aquatic animal health related research or clinical topic. (best time to schedule is first summer between Fr. and So. yr)

PROFESSIONAL LEVEL: (off campus/online)

Externships (VEM 5892, 2 credit, Pass/Fail; **max 6 certificate credits**) Students spend 2-6 weeks at an approved aquatic animal facility. A list of approved externships is available on the College of Veterinary Medicine web site. Approval of aquatic animal health faculty is required for the externship to count towards the certificate, and for students to apply for financial support from the aquatic animal health faculty.

Aquatic Animal Conservation Issues (VEM 5371, 2 credit, letter grade) - to be offered Fall semester annually, *all on-line, asynchronous*. The goals of this course are to introduce students to some of the controversial issues surrounding the conservation of aquatic animal species ranging from invertebrates to marine mammals, with some emphasis on marine mammals, but including sea turtles, fisheries and marine ecosystems. Format includes heavy reading, discussion, homework assignments, and review of a journal articles.

Aquatic Wildlife Health Issues (VEM5372, 2 credit, letter grade) – to be offered Spring term annually, *all on-line, asynchronous*. This course will introduce veterinary students to natural history, anatomy, physiology, behavior and health issues of aquatic wildlife, such as: marine mammals, sea turtles, crocodilians, fish and invertebrates. Students should be able to describe and differentiate between normal/unhealthy animals, and have a working knowledge of common health issues.

Manatee Health and Conservation (VEM5373, 2 credit, letter grade) - to be offered Summer C annually, *all online, asynchronous*. The focus is to introduce veterinary students to manatee natural history, anatomy, physiology, behavior, conservation and health issues. Students will be exposed to these topics, introduced to current experts in these fields, be able to evaluate and describe common health and mortality issues, and explain current management strategies.

Sea Turtle Medicine & Rehabilitation (VME6015, 3 credit, letter grade) to be offered Spring term annually, students will gain foundational knowledge in sea turtle biology, anatomy, and physiology and how these factor into the clinical care and management of sea turtles during rescue events and in rehabilitation settings. Relevant case studies will be used to supplement each learning module topic to provide students with real-world examples of clinical applications in sea turtle medicine.

Aquaculture I (FAS5015/VME-request #, 3 credit, letter grade) to be offered Fall term annually, this course is an introductory course designed to provide an overview of the field of aquaculture and the common groups cultured in the United States. It is designed for students who want a foundation in aquaculture principles to (1) apply towards more advanced coursework in aquaculture or other aquatic sciences or (2) to prepare for graduate research or a career in aquaculture.

Introduction to Fish and Aquatic Invertebrate Histology (FAS6256/VME-request #, 3 credit, letter grade) to be offered Spring term of odd years (2025, 2027...), this course teaches basic interpretation of the normal histology (fixed tissue microanatomy and physiology) of fish, bivalves, and corals and introduces common histopathologic (disease) findings.

Scientific Conferences (max 2 credits) conference must be approved by the Aquatic Animal Health program education committee and include: International Association of Aquatic Animal Medicine (IAAAM), the Society for Marine Mammalogy Biennial Conference on the Biology of Marine Mammals, Eastern Fish Health Conference, Florida Marine Mammal Health Conference, etc... You may receive 1 certificate credit for attendance to a conference (15 hr lectures or more) for no more than two conferences or 2 certificate credits for attendance (15 hr lectures or more) and an oral or poster presentation at a conference. Ideally the timing of the conference should not overlap with any other DVM courses. However, if there is overlap the student must receive approval from all impacted course coordinators to miss class for conference attendance.

ADDITIONAL COURSES:

Students may apply for certificate credit for courses they have taken as an undergraduate or graduate that may be relevant to aquatic animal health. Students who enter the veterinary program with undergraduate or graduate course work relevant to aquatic animal medicine may petition the faculty education committee within the program for up to 4 credits towards their certificate from some of their previous work.

Other courses may be appropriate, and students are encouraged to discuss their academic background and professional goals with Aquatic Animal Health faculty when selecting electives for this certificate program.

Contact Information:

Dr. Iske V. Larkin, Ph.D.

Senior Lecturer & Education Coordinator
Aquatic Animal Health Program Director

Large Animal Clinical Sciences
University of Florida
2015 SW 16th Ave.
CVM - PO Box 100136
Gainesville, FL 32610
USA

Phone (352) 294-4095
Cell (352) 494-1742
Fax (352) 392-8289
e-mail: IVLarkin@ufl.edu

Program Web Site: <http://aquatic.vetmed.ufl.edu/>