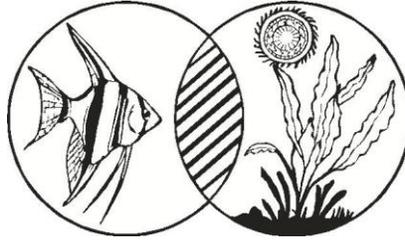


Diseases of Warm Water Fish



Graduate Students: FAS 5225C (3 credits)

Veterinary Students: VEM 5374 (3 credits)

Diseases of Warm Water Fish is designed to provide instruction in the methodology of diagnosis, treatment and management of parasitic, bacterial, viral, nutritional, and environmental diseases of warmwater food fish and aquarium species. This course is open to graduate and veterinary students, veterinarians, fisheries biologists, aquaculturists, and professional aquarists. The course is designed to provide basic instruction in fish biology and general husbandry, aquatic systems and water quality management, identification and interpretation of infectious agents impacting fish health, development of responsible and effective treatment plans, and consideration of biosecurity, quarantine and regulatory issues relevant to fish health.

Course Coordinators:

Dr. Ruth Francis-Floyd

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Dr. Francis-Floyd will be available via e-learning web mail, M-F 8 am to 5 pm. She will also be available during discussion sections, and by appointment. She will make every effort to respond to your emails within 24-48 hours.

Course Faculty:

Dr. Elizabeth Arnett-Chinn – University of Florida

Dr. Stephen Cassle – University of Florida and U.S. Army Veterinary Corps

Ms. Debbi Crain – Bass Pro Shops

Dr. Claire Erlacher-Reid – University of Florida

Dr. Mark Flint – University of Florida

Ms. Theresa Floyd – University of Alaska, Fairbanks and U.S. Geological Survey

Dr. Ruth Francis-Floyd – University of Florida

Dr. Kathleen Hartman – USDA-APHIS

Dr. Jeff Hill – Tropical Aquaculture Laboratory, University of Florida

Dr. Kathy Heym – Florida Aquarium
Mr. Jim Kinsler – Sea World of Florida
Dr. Ed Noga – South Eastern Aquatechnologies
Dr. Daryl Parkyn - University of Florida
Dr. Denise Petty – North East Florida Aquatic Veterinary Services
Ms. Debbie Pouder – Tropical Aquaculture Laboratory, University of Florida
Dr. Andy Stamper – Disney Animal Programs
Dr. Natalie Steckler – University of Florida
Mr. Craig Watson – Tropical Aquaculture Laboratory, University of Florida
Dr. James Wellehan – University of Florida
Dr. Roy Yanong – Tropical Aquaculture Laboratory, University of Florida

Faculty Assistant:

Dr. Claire-Erlacher-Reid – University of Florida
erlacherc@ufl.edu

Teaching Assistant:

Ms. Theresa Floyd – University of Alaska, Fairbanks and USGS, Gainesville FL
tpfloyd@alaska.edu

Course Goal:

The goal of this class is to introduce students to basic concepts of fish health management including diagnosis of common infectious and non-infectious diseases, strategies for control of infectious disease and preventive health care for captive fish populations. Students will also be expected to develop a basic understanding of zoonotic diseases common in aquarium and cultured fish. Students will be expected to have a fundamental understanding of fish husbandry, disease prevention, be able to interpret findings of infectious disease, be familiar with regulated diseases of fish, understand principles of biosecurity and quarantine, and appropriate treatment management, including regulations pertaining to use of drugs and chemicals by the time they complete the class. This on-line course will focus on delivery of didactic information using recorded lectures, discussion sections, assigned readings and projects. A second class is under development that will provide students exposure to the hands-on techniques described here. The new course is expected to be available in the summer of 2015.

Course Objectives:

1. Students will learn basic families of fish, and will be expected to understand their importance to the aquaculture or aquarium industries. Further, they should have an appreciation for diseases that may be of concern to specific fish families.
2. Students will be expected to have a basic understanding of fish biology and physiology. They will be expected to understand how disease may alter normal physiologic processes.
3. Students will be expected to know normal anatomy for common families of fish. This may include radiological interpretation of key anatomical characteristics.

4. Students will learn basic diagnostic techniques for common fish diseases. They should understand biopsy and basic microbial culture techniques and be able to identify common parasites of warm water fish.
5. Students will be expected to know anatomic locations used for blood collection in common fish families.
6. Students will be expected to be familiar with important infectious agents that cause disease in fish. These will include parasitic, bacterial, viral and fungal agents. Students will be expected to know clinical signs associated with specific diseases and understand what steps will be required to confirm a diagnosis.
7. Students will learn basic water quality management and key components of aquatic system design. They should be able to interpret data provided from water quality tests. They should be able to identify and develop management recommendations for common environmental diseases.
8. Students will be expected to be able to construct a problem list in which they define multiple factors contributing to a fish disease outbreak. They should be able to rank these factors in terms of the threat they pose to the affected population.
9. Students will be expected to understand regulations that pertain to the use of drugs and chemicals to treat fish disease in the United States. They should be familiar with resources that provide current information in this rapidly changing area. They should understand proper use of drugs and chemicals and be able to develop appropriate treatment protocols for management of simple fish disease scenarios.
10. Students will learn regulations that pertain to infectious diseases of fish including species of concern, screening techniques, and required reporting.
11. Students will learn basic biosecurity and quarantine protocols for fish holding facilities.
12. Students will develop a basic understanding of zoonotic diseases of concern for aquarium and cultured warm water fish. They will understand basic principles of personal protection.

Subjects to be Covered:

- Fish Biology, Anatomy and Physiology
- Freshwater and Marine Systems Design
- Water Quality Analysis and Interpretation
- Common Environmental Diseases of Warm Water Fish
- Diagnostic Procedures
- External Biopsy Techniques
- Necropsy Procedures
- Sterile and Microbial Techniques
- Treatment Protocols and Strategies
- Drug and Chemical Regulations for Fish
- Biosecurity and Quarantine Procedures
- Regulated Diseases
- Fish Parasitology, Identification of Common Parasites, Understanding Common Parasitic Diseases
- Introduction to Bacterial, Viral and Mycotic Diseases of Fish
- Managing Mycobacterium

- Preventive Medicine and Disease Control Strategies
- Common Zoonotic Diseases of Concern and Management Strategies
- Development of Fish Health Management Programs

Grading: <http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html>

The course has been divided into six sections. There will be required homework and discussion sections for students along the way. There will be a quiz at the end of each of the sections and a final, comprehensive examination at the end of the course. Grading will be based on homework (20%), participation in discussion sections (20%), quizzes (30%), and a comprehensive final exam (30%).

89.5% or higher = A
 85.5 – 89% = B+
 79.5 – 85% = B
 75.5 – 79% = C+
 69.5 – 75% = C
 65.5 – 69% = D+
 59.5 – 65% = D
 < 59.5% = E

For veterinary students at the University of Florida, the course is only available as a pass/fail option in 2014. A passing grade will be 69.5% or above.

If the class is not being taken for a grade, 24 continuing education units have been requested from the Florida Board of Veterinary Medicine. A certificate of completion will be provided upon completion of the course if a passing grade is earned (69.5% or higher).

E-Learning and Course Materials:

Lecture and course materials will be available on the course E-Learning website. To access the site, go to <http://lss.at.ufl.edu>, click on the “e-Learning Login” on the left side and log in with your Gatorlink username and password. All students are strongly encouraged to purchase Dr. Noga’s text, listed below.

Required Texts:

1. *Fish Disease: Diagnosis and Treatment* 2nd ed, by E.J. Noga, 2010. Wiley-Blackwell, Ames, IA.
2. *Fundamentals of Ornamental Fish Health*, H.E. Roberts (Editor), 2010. Wiley-Blackwell, Ames, IA.

Supplemental Texts:

Bacterial Diseases of Fish, by Inglis, Roberts and Bromage (Eds) (1993) Blackwell
BSAVA Manual of Ornamental Fish, 2nd ed, by Wildgoose (Ed) (2002), Wiley (for British Small Animal Veterinary Association).
Fish Diseases and Disorders, Volume 1: Protozoan and Metazoan Infections, by Woo (Ed) (1995) CAB International
Fish Diseases and Disorders, Volume 2: Non-Infectious Diseases, by Leatherland and Woo (Eds) (1998) CAB International

Fish Diseases and Disorders, Volume 3: Viral Bacterial and Fungal Infections, by Woo and Bruno (Eds) (1999) CAB International)

Fish Medicine, by Stoskopf (Ed) (1993), Saunders

Health Maintenance and Principal Microbial Diseases of Cultured Fishes, by J.A. Plumb (1999), Iowa State University Press

Merck Veterinary Manual, 10th ed (FISH), by Kahn and Line (Eds) (2010), Wiley

Zoo and Wildlife Medicine, Current Therapy, 7th ed. E. Miller and M.E. Fowler (Eds). 2012.

Policies:

Honesty Policy:

All students registered at the University of Florida have agreed to comply with the following statement: "I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University." In addition, on all work submitted for credit the following pledge is either required or implied: "On my honor I have neither given nor received unauthorized aid in doing this assignment." To review the student honor code please visit:
<http://www.dso.ufl.edu/judicial/honorcodes/honorcode.php>

Student Evaluation of Instruction:

Evaluations are performed electronically at the end of the course. To evaluate the instructors, visit the UF Evaluation site at: <https://evaluations.ufl.edu/evals/>. We know these are tedious to complete, but because of their importance we ask you to take them seriously. Many aspects of the course have been adapted based upon prior student's comment and we find all feedback to be helpful.

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc/) by providing appropriate documentation.

Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester

Policy Related to Make-Up Exams or Other Work:

Because of the applied nature of this class regular student participation is expected, implying that make-up quizzes and exams are not normally administered.