

Diseases of Warm Water Fish - FAS 5255

1 Overview

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 warm water 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.

- 3 credits
- Summer C
- 100% online
- <http://elearning.ufl.edu/>

Course Prerequisites: none

Instructor: Dr. Ruth Francis-Floyd, rffloyd@ufl.edu, (386) 643.8904.

- Please use the Canvas message/Inbox feature for fastest response.
- Office hours: available by email or phone M-F 8am-5pm; office visits available by appointment.

Co-Instructors: Dr. Roy Yanong, ropy@ufl.edu, (813) 671.5230.

- Please use the Canvas message/Inbox feature for fastest response.
- Office hours: available by email or phone; office visits available by appointment.

Co-Instructor: Dr. Tatiana Weisbrod, tweisbrod@ufl.edu, (352) 294.4342.

- Please use the Canvas message/Inbox feature for fastest response.
- Office hours: available by email or phone; office visits available by appointment.

Guest Lecturers:

Dr. Elizabeth Arnett-Chinn – Exotic Animal Veterinarian, Naples FL

Dr. Stephen Cassle - U.S. Army Veterinary Corps

Dr. Tonya Clauss – Georgia Aquarium

Mr. Blayk Michaels - Bass Pro Shops

Dr. Claire Erlacher-Reid – Sea World of Florida

Dr. Mark Flint – The Ohio State University

Ms. Theresa Floyd-Rump – Kincell Bio

Dr. Kathleen Hartman – USDA-APHIS

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

Dr. Kathy Heym – US Food and Drug Administration

Dr. Sherri Kasper – Gulf Coast Aquatic Veterinary Services, Tallahassee FL and

Florida Department of Environmental Protection, Veterinary Epidemiologist (HABs)

Mr. Jim Kinsler – Sea World of Florida

Dr. Ed Noga – Southeastern Aquatechnologies

Dr. Denise Petty – North Florida Aquatic Veterinary Services

Dr. Felipe Pierezan – University of Florida, College of Veterinary Medicine

Dr. Esteban Soto – University of California - Davis, College of Veterinary Medicine

Dr. Andy Stamper – Disney Animal Programs

Dr. Justin Stilwell – Mississippi State University, College of Veterinary Medicine

Dr. Natalie Stilwell – Mississippi State University, College of Veterinary Medicine

Mr. Craig Watson – Tropical Aquaculture Laboratory, University of Florida

Textbook(s) and/or readings: All students should have access to the required text, and, if at all possible one of the two STRONGLY RECOMMENDED texts listed below. A percentage of assignments require the ability to identify organisms and/ or disease states from images. Noga's text is probably the best resource for this and has been required for many years. It has excellent images and good graphics depicting life cycles. The treatment section is, unfortunately, quite dated at this point. Hadfield and Clayton is recently published and has good images (not as good as Noga in my opinion) but the text is more up to date. Dr. Yanong's book has just been released and is more of a quick reference handbook with a lot of photos and tables for quickly looking things up. It is very up-to-date. If you are purchasing a book, any of these is a good investment. If you stay in the field, you will want these in your personal library.

Required Text:

Yanong, R.P.E. and G.A. Lewbart. 2024. *The Aquarium Fish Medicine Handbook*. CRC Press, 285 pp.

STRONGLY RECOMMENDED:

- Noga, E.J. 2010. *Fish Disease: Diagnosis and Treatment, Second Edition**. Wiley- Blackwell, Ames Iowa. 519 pp.

OR.....

- Hadfield, C. and Clayton, L. (Eds). 2021. *Clinical Guide to Fish Medicine*. Wiley-Blackwell, Ames Iowa. 608 pp.

GREAT RESOURCES:

- *Fish Diseases and Medicine*, S.A. Smith (Editor), 2019, CRC Press, Boca Raton, FL. 397 pp.
- *Fundamentals of Ornamental Fish Health*, H.E. Roberts (Editor), 2010, Wiley-Blackwell, Ames, IA. 229 pp.
- *Merck Veterinary Manual*, Eleventh Edition, S.E. Aiello (Editor-In-Chief), 2016, Merck & Company Inc, Pp 1743-1814.
- *Zoo and Wildlife Medicine, Current Therapy*, Seventh Edition, by E. Miller and M.E. Fowler (Eds), 2012, Elsevier. Pp 170-209.

SUPPLEMENTAL:

- *Bacterial Diseases of Fish*, by Inglis, Roberts and Bromages (Eds). 1993. Blackwell.

- BSAVA Manual of Ornamental Fish, Second Edition, 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 Management and Principal Microbial Diseases of Cultured Fishes, by J.A. Plumb, 1999, Iowa State University Press.

2 Learning Outcomes

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 be expected to develop a basic understanding of zoonotic diseases common in aquarium and cultured fish and to have a fundamental understanding of fish husbandry, and disease prevention. Students should 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.

At the end of this course, each student will be able to:

- Recognize normal and abnormal appearance of common families of warm water fish
- Understand common disease processes in major families of warm water fish, with emphasis on freshwater species.
- Understand basic physiologic processes of fish and how these may be altered by a diseased state.
- Evaluate normal anatomy (internal and external) of common species of warm water fish.
- Understand normal radiographic anatomy of common species of warm water fish.
- Apply diagnostic techniques used for basic examination of fish. This will include physical examination as well as routine tissue biopsies (gill, skin and fin) and techniques for microbial culture.
- Remember anatomical sites used for blood collection in common species of fish.
- Calculate proper treatment dosages for treating common fish diseases.
- Identify common fish parasites.
- Understand common bacterial, fungal and viral diseases of warm water fish.
- Create reasonable management and treatment plans to prevent or mitigate disease processes.
- Understand the basic components of a biosecurity program and apply these to quarantine protocols.
- Analyze water quality testing data.

- Create 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.
- Understand regulations that pertain to use of drugs and chemicals for treatment of fish diseases in the United States. This includes familiarity with the Food and Drug Administration’s web-bases resources that support U.S. aquaculture industries.
- Understand regulations that pertain to infectious diseases of fish including species of concern, screening techniques, and required reporting.
- Remember zoonotic diseases of concern for aquarium and cultured warm water fish. They will also understand basic principles of personal protection.

3 Course Logistics

The on-line course will focus on delivery of didactic information using recorded lectures, discussion sections, assigned readings and projects. Lecture and course materials will be available on the course E-learning website.

Technology Requirements:

- A computer or mobile device with high-speed internet connection.
- A headset and/or microphone and speakers; a web cam is suggested.
- Latest version of web browser. Canvas supports only the two most recent versions of any given browser. [What browser am I using?](#)

3.1 Assignments & Deliverables

The course has been divided into six modules. There will be required homework and discussion sections for students along the way. There will be a quiz at the end of each module, and a final comprehensive exam at the end of the course. All assignments are open-book.

Homework

- There are 10 total homework assignments, two for modules 2-5, and one each for the first and last modules. Homework is due in the second week of each module to give students time to review video and supplemental materials. Problems consist of a mixture of multiple choice, true/ false and short answer including math problems. Students are encouraged to open assignments when they open each module and work through them as they familiarize themselves with the material provided.

Discussion Participation

- There is one “live discussion” for each module. Each “live discussion” is two hours and includes review of assignments, general discussion of material, and a short image quiz embedded in the program. Students are not required to participate “live” though it is recommended. The session is recorded, and students unavailable to participate live can watch the recording and submit answers to the embedded assignment to Dr. Francis-Floyd.

Quizzes & Exams

- There is one quiz included at the end of each of the first five modules. All quizzes are open-book.
- There is a final comprehensive assignment that has been divided into three independent quizzes: one multiple choice, one image, and one short answer and problem solving. Each of these is open-book, however these three assignments are timed.

3.2 Grades & Grading Scale

30% Homework

10% Discussion Participation

30% Quizzes

Final Exam:

- Multiple choice exam (10%)
- Image exam (10%)
- Short answer and problem solving exam (10%)

Grading Scale (%)

90 % or higher = A

85.5 – 89.99% = B+

79.5 – 85.49% = B

75.5 – 79.49% = C+

69.5 – 75.49% = C

65.5 – 69.49% = D+

59.5 – 65.49% = D

< 59.5% = E

4 Course Content

Learning Modules

Module 1: Anatomy, Physiology and Taxonomy May 13-26, 2024

- Welcome and Introductions (via zoom) – Ruth Francis-Floyd, 3 pm May 13, 2024 (Session will be recorded for those unable to attend live)
- Voicethread introduction due May 19, 2024
- Homework 1 due May 20, 2024
- Live Discussion May 23, 2024, 3-5 pm; Asynchronous assignment (for students unable to participate in the live discussion) due May 26, 2024.
- Quiz 1 due May 28, 2024

Module 2: Treatment Options and Management Plans May 27- Jun 9, 2024

- Homework 2 due June 3, 2024
- Homework 3 due Jun 9, 2024
- Discussion Jun 6, 2024: 3-5 pm; Asynchronous assignment due Jun 9, 2024
- Quiz 2 due Jun 11, 2024

Module 3: Water Quality Analysis and Aquatic Systems Jun 10-23, 2024

- Homework 4 due Jun 17, 2024
- Homework 5 due Jun 23, 2024
- Discussion Jun 20, 2024: 3-5 pm, Asynchronous assignment due Jun 23, 2024
- Quiz 3 due Jun 23, 2024

Summer Break: Jun 24-Jun 28, 2024

Module 4: Nutrition, Husbandry and Biosecurity Jul 1-14, 2024

- Homework 6 due Jul 8, 2024
- Homework 7 due Jul 14, 2024
- Discussion Jul 11, 2024 3-5 pm; Asynchronous assignment due Jul 14, 2024
- Quiz 4 due Jul 16, 2024

Module 5: Parasitic Diseases Jul 15-28, 2024

- Homework 8 due Jul 22, 2024
- Homework 9 due Jul 28, 2024
- Discussion Jul 25, 2023: 3-5 pm; Asynchronous assignment due Jul 28, 2024
- Quiz 5 due Jul 30, 2024

Module 6: Bacterial and Viral Diseases Jul 29-Aug 9, 2024

- Homework 10 due Aug 4, 2024
- Discussion Aug 5, 2024, 3-5 pm; Asynchronous assignment due Aug 8, 2024
- Final (comprehensive) multiple choice quiz due Aug 9, 2024
- Final (comprehensive) image quiz due Aug 9, 2024
- Final (comprehensive) short answer and problem solving quiz due Aug 9, 2024

NOTE: For the Live Discussion sessions: if you participate in the live discussion, sign in via the chat and participate in the discussion, you do not need to turn anything in. If you are not able to participate in the live session you must turn in answers to the quiz discussed at the end of the session. This can be turned in through canvas or to Dr. Francis-Floyd via email (rffloyd@ufl.edu). Due dates for the asynchronous assignments are listed above but only apply to students who are unable to participate in the live session.

5 Policies and Requirements

This syllabus represents current plans and objectives for this course. As the semester progresses, changes may need to be made to accommodate timing, logistics, or to enhance learning. Such changes, communicated clearly, are not unusual and should be expected.

5.1 Late Submissions & Make-up Requests

It is the responsibility of the student to access on-line lectures, readings, quizzes, and exams and to maintain satisfactory progress in the course.

Assignments turned in late lose 10% per day for 3 days, 50% at a week, and are not accepted after one week except as provided by University policy. Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>. Arrangements for late submission without penalty are routinely offered, but must be negotiated in advance and on a case-by-case basis with Dr. Francis-Floyd.

Computer or other hardware failures, except failure of the UF e-Learning system, will not excuse students for missing assignments. Any late submissions due to technical issues MUST be accompanied

by the ticket number received from the Helpdesk when the problem was reported to them. The ticket number will document the time and date of the problem. You **MUST** e-mail your instructor within 24 hours of the technical difficulty if you wish to request consideration.

For computer, software compatibility, or access problems call the HELP DESK phone number—352-392-HELP = 352- 392-4357 (option 2).

5.2 Semester Evaluation Process

Student assessment of instruction is an important part of efforts to improve teaching and learning.

At approximately the mid-point of the semester, the School of Forest, Fisheries and Geomatic Sciences will request anonymous feedback on student satisfaction on various aspects of this course. These surveys will be sent out through Canvas and are not required, but encouraged. This is not the UF Faculty Evaluation!

At the end of the semester, students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

5.3 Netiquette: Communication Courtesy

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats. Failure to do so may result in loss of participation points and/or referral to the Dean of Students' Office. <http://teach.ufl.edu/wp-content/uploads/2012/08/NetiquetteGuideforOnlineCourses.docx>

5.4 Academic Honesty Policy

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: *"We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity."*

You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: *"On my honor, I have neither given nor received unauthorized aid in doing this assignment."*

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct or appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated.

Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: <http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>.

5.5 Inclusive Learning Environment

This course embraces the University of Florida's Non-Discrimination Policy, which reads,

The University shall actively promote equal opportunity policies and practices conforming to laws against discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans' Readjustment Assistance Act.

If you have questions or concerns about your rights and responsibilities for inclusive learning environment, please see the instructor or refer to the Office of Multicultural & Diversity Affairs website: <http://multicultural.ufl.edu>.

5.6 Services for Students with Disabilities:

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. 0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/

5.7 Software Use

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

6 Campus Helping Resources

For issues with technical difficulties for e-learning in Canvas, please post your question to the Technical Help Discussion in your course, or contact the UF Help Desk at:

- Learning-support@ufl.edu | (352) 392-HELP - select option 2 | <http://elearning.ufl.edu>
- Library Help Desk support <http://cms.uflib.ufl.edu/ask>
- SFRC Academic Hub <https://ufl.instructure.com/courses/303721>

6.1 Student Life, Wellness, and Counseling Help

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on

campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- Counseling and Wellness resources <http://www.counseling.ufl.edu/cwc/>
- U Matter, We Care <http://www.umatter.ufl.edu/>
- Career Connections Center <http://career.ufl.edu/>
- Other resources are available at <http://www.distance.ufl.edu/getting-help> for online students.

6.2 Student Complaint Process

The School of Forest Resources & Conservation cares about your experience and we will make every effort to address course concerns. We request that all of our online students complete a course satisfaction survey each semester, which is a time for you to voice your thoughts on how your course is being delivered.

If you have a more urgent concern, your first point of contact should be the SFRC Academic Coordinator or the Graduate/Undergraduate Coordinator for the program offering the course. You may also submit a complaint directly to UF administration:

- Students in online courses: <http://www.distance.ufl.edu/student-complaint-process>
- Students in face-to-face courses: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>