

FLORIDA ATLANTIC UNIVERSITY™

Graduate Programs—NEW COURSE PROPOSAL¹

UGPC APPROVAL _____
 UFS APPROVAL _____
 SCNS SUBMITTAL _____
 CONFIRMED _____
 BANNER POSTED _____
 CATALOG _____

DEPARTMENT: BIOLOGICAL SCIENCES

COLLEGE: COLLEGE OF SCIENCE

RECOMMENDED COURSE IDENTIFICATION:

PREFIX ZOO COURSE NUMBER 6556 LAB CODE (L or C) _____

(TO OBTAIN A COURSE NUMBER, CONTACT MJENNING@FAU.EDU)

COMPLETE COURSE TITLE: **Aquatic Animal Health**

EFFECTIVE DATE

(first term course will be offered)
 FALL 2014

CREDITS²: 3

TEXTBOOK INFORMATION: Fish medicine, 1993, M.K. Stoskopf
 Principal Diseases of Marine Fish and Shellfish, 1990, C.J. Sinderman,

GRADING (SELECT ONLY ONE GRADING OPTION): REGULAR X SATISFACTORY/UNSATISFACTORY _____

COURSE DESCRIPTION, NO MORE THAN THREE LINES: A comprehensive study of basic disease processes in aquatic organisms, with an emphasis on marine fish and invertebrates.

PREREQUISITES*: Graduate Status

COREQUISITES*:

REGISTRATION CONTROLS (MAJOR, COLLEGE, LEVEL)*:

* PREREQUISITES, COREQUISITES AND REGISTRATION CONTROLS WILL BE ENFORCED FOR ALL COURSE SECTIONS.

MINIMUM QUALIFICATIONS NEEDED TO TEACH THIS COURSE: PH.D. IN THE RELEVANT FIELD

Faculty contact, email and complete phone number:
 Dr. Susan Laramore and Dr. Joshua Voss
slaramo1@hboi.fau.edu & jvoss2@fau.edu
 (772) 242-2525(Laramore) (772)242-2538(Voss)

Please consult and list departments that might be affected by the new course and attach comments.³

Approved by:

Department Chair: [Signature]

College Curriculum Chair: [Signature]

College Dean: [Signature]

UGPC Chair: [Signature]

Graduate College Dean: [Signature]

UFS President: _____

Provost: _____

Date:

1/30/14

2/10/14

2/16/14

2/26/14

2/26/14

1. Syllabus must be attached; see guidelines for requirements: www.fau.edu/provost/files/course_syllabus.2011.pdf

2. Review Provost Memorandum: **Definition of a Credit Hour** www.fau.edu/provost/files/Definition_Credit_Hour_Memo_2012.pdf

3. Consent from affected departments (attach if necessary)

Email this form and syllabus to UGPC@fau.edu one week before the University Graduate Programs Committee meeting so that materials may be viewed on the UGPC website prior to the meeting.

Course Syllabus for Aquatic Animal Health

1. Course title/number, number of credit hours

Aquatic Animal Health – ZOO 6556 – 3 credit hours

2. Course prerequisites

Graduate status

3. Course logistics

- a. Fall 2014
- b. Notation if online course – N/A
- c. Class location and time (if classroom-based course) – To be determined

4. Instructor contact information

Lead Instructor:

Dr. Susan Laramore (772-242-2525) slaramo1@hboi.fau.edu
Lab II Building Room #104

Other:

Dr. Josh Voss (772-242-2538) jvoss2@hboi.fau.edu

Instructor Office Hours:

Laramore: Mon 10-11 am, Fri 10-11 am and by appointment

All other instructors by appointment

5. TA contact information (if applicable)

N/A

6. Course description

This course is focused on understanding diseases that are important in natural aquatic environments and artificial situations such as aquaculture operations. This course includes identification, life histories, pathology and control of important pathogenic organisms of fish and invertebrates such as bacteria, protozoans, viruses and fungi.

7. Course objectives/student learning outcomes

This course aims to introduce students to the fundamental and current issues as they pertain to host/pathogen interactions in aquatic environments.

Students will understand the basic disease processes in aquatic organisms and become familiar with tools used for disease diagnosis and ways in which disease is managed in aquatic environments with emphasis on aquaculture operations.

8. Course evaluation method

There will be a midterm exam, accounting for 30% of the student's cumulative performance, a final exam that accounts for 30% of the cumulative performance, a term paper that accounts for 20% of the cumulative performance and the remaining 20% will be based on class presentations and paper discussions. The overall grade in the course is derived from the cumulative performance according to the following table.

9. Course grading scale

Cumulative Performance	Grade
>94%	A
>90% - 94%	A-
>87% - 90%	B+
>83% - 87%	B
>80% - 83%	B-
>75% - 80%	C+
>65% - 75%	C
>60% - 65%	C-
>57% - 60%	D+
>53% - 57%	D
>50% - 53%	D-
<50%	F

10. Policy on makeup tests, late work, and incompletes

If a student cannot attend an exam or hand in a homework project on time due to circumstances beyond their control then the instructor may assign appropriate make-up work. Students will not be penalized for absences due to participation in University-approved activities, including athletic or scholastics teams, musical and theatrical performances, and debate activities. These students will be allowed to make up missed work without any reduction in the student's final course grade. Reasonable accommodation will also be made for students participating in a religious observance. Also, note that grades of Incomplete ("I") are reserved for students who are passing a course but have not completed all the required work because of exceptional circumstances. A grade of "I" will only be given under certain conditions and in accordance with the academic policies and regulations put forward in FAU's University Catalog. The student must show exceptional circumstances why requirements cannot be met. A request for an incomplete grade has to be made in writing with supporting documentation, where appropriate.

11. Special course requirements (if applicable): N/A

12. Classroom Etiquette Policy: University policy on the use of electronic devices states: "In order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular telephones and pagers, are to be disabled in class sessions." You may be asked to leave the class session for noncompliance.

13. Student Honor Policy: Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty, including cheating and plagiarism, is

considered a serious breach of these ethical standards, because it interferes with the University mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the University community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001 at http://www.fau.edu/ctl/4.001_Code_of_Academic_Integrity.pdf

Cheating is a serious offense. If you are caught cheating, you will receive an F in the course. In addition, you will be referred to the Dean of Student Services and charged with an academic crime. Test procedures and rules will be stated at the beginning of each exam.

14. Disabilities Policy: In compliance with the Americans with Disabilities Act (ADA), students who require special accommodation due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) -- in Boca Raton, SU 133 (561-297-3880); in Davie, MOD 1 (954-236-1222); in Jupiter, SR 117 (561-799-8585) and follow all OSD procedures.

15. Required texts/readings

There is no required textbook.

Reading assignments related to the topics under discussion will be drawn from the current scientific literature and will form the basis of classroom discussions. A list of reading assignments, including the following are provided, but are not inclusive. Readings will also include chapters from the following texts:

Fish medicine, 1993, M.K. Stoskopf
Principal Diseases of Marine Fish and Shellfish, 1990, C.J. Sinderman,

Week 1:

Stentiford et al. 2012. Disease will limit future food supply from the global crustacean fishery and aquaculture sections. *Journal of Invertebrate Pathology* 110 (2): 141-157.

Week 2:

Kennedy-Stoskopf. 1993. Immunology, Part 1, Chapter 11, in Stoskopfs Fish Medicine p 149-159.

Ellis et al. 2011. Immunological function in marine invertebrates. Responses to environmental perturbation. *Fish and Shellfish Immunology* 30 (6):1209-1222.

Sutherland, K., Porter, J. W. & Torres, C. Disease and immunity in Caribbean and Indo-Pacific zooxanthellate corals. *Marine Ecology Progress Series* 266, 273–302 (2004).

Week 3:

Lightner, et al. 2012. Historic emergence, impact and current status of shrimp pathogens in the Americas. *Journal of Invertebrate Pathology* 110 (2): 174-183.

Johnson et al. 2011. The ecology and emergence of disease in freshwater. *Freshwater Biology* 56(4):638-657.

Week 4:

Plumb, 1995. Practical considerations on the application of diagnostic procedures to aquaculture health management. In *Aquaculture Health Management Strategies for Marine Fishes*, (Main and Rosenfeld, ed) p. 183-194.

Reddington, 1995. Potential applications of agricultural diagnostic techniques to aquaculture health management. In *Aquaculture Health Management Strategies for Marine Fishes*, (Main and Rosenfeld, ed) p. 195-208.

Week 5:

Select readings from Sindermanns text (Chapters 3, volumes 1 (fish) and 2 (shellfish))

Select readings from Stoskopfs text (Chapters 24, 67, 78)

Wang. 2011. Bacterial disease of crabs: A review. *Journal of Invertebrate Pathology* 106(1): 18-26.

Bourne, D. G. et al. Microbial disease and the coral holobiont. Trends in microbiology 17, 554–562, doi:10.1016/j.tim.2009.09.004 (2009).

Week 6:

Select readings from Sindermanns text (Chapters 2, volumes 1 and 2)

Select readings from Stofkopfs text (Chapters 26, 69, 80,88)

Week 7:

Select readings from Sindermanns text (Chapters 5,6 and 7 volumes 1 and 2)

Select readings from Stofkopfs text (Chapters 27, 70, 81,89)

Week 8:

Select readings from Sindermanns text (Chapters 4 and 8, volumes 1 and 2)

Select readings from Stofkopfs text (Chapters 25, 28, 68, 71, 79, 82, 90)

Week 9:

Select readings from Sidermanns text (Chapter 17, volumes 1 and 2).

Morley 2010. Interactive effects of infectious diseases and pollution in aquatic mollusks. Aquatic Toxicology 96 (1): 27-36.

Week 10:

Harvel et al. 2009. Climate change and wildlife diseases: When does the host matter the most? Ecology 90:912-920.

Burge et al. 2014. Climate change influences on marine infectious diseases: Implications for management and society. Annual Review of Marine Science (6): TBD. Currently found online

Week 11:

Bibby et al. 2008. Effects of ocean acidification on the immune response of the blue mussel *Mytilus edulis*. Aquatic Biology 2:67-74.

Anthony et al. 2011. Ocean acidification and warming will lower coral reef resilience. Global Change Biology 17 (5):1798-1808.

Week 12:

Select readings from Sidermanns text (Chapters 19, volume 1 and Chapter 17, volume 2).

Select readings from Stofkopfs text (Chapter 17)

Week 13:

Mitchell, 1995. Practical Considerations in developing and using efficacious vaccines for aquaculture with lessons from agriculture. In Aquaculture Health Management Strategies for Marine Fishes, (Main and Rosenfeld, ed) p. 171-182.

Lerebours et al. 2013. Advanced diagnostics applied to fish liver tumors: Relating pathology to underlying molecular aetiology. Marine Pollution Bulletin 72 (1): 94-98.

Week 14:

Select readings from Stofkopfs text (Chapter 21, 65,75)

Week 15:

Select readings from Stofkopfs text (Chapter 22, 76,87)

Week 16:

Student papers presented

16. Supplementary/recommended readings (optional)

17. Course topical outline

Week 1: Introduction to disease/pathology

Week 2: Immunology of fishes and invertebrates

Week 3: Introduction to Epidemiology

Week 4: Diagnostic Tools

Week 5: Bacterial Diseases

Week 6: Viral Diseases

Week 7: MidExam; Protozoan Diseases

Week 8: Fungal Diseases, Neoplasias

Week 9: Pollution associated diseases
Week10: Diseases and Climate Change
Week 11: Disease Resistance and Ocean acidification
Week 12: Aquatic Diseases and public Health
Week 13: Advances in Aquatic Medicine
Week 14: Water Quality Diseases
Week 15: Nutritional Diseases
Week 16: Papers due; Final Exam