

Fish Diseases in Conservation Biology and Aquaculture

Course Number: FW/MB 491/591

Term Offered: Spring

Credits: 3

Classroom: Nash 033

Instructor name: Jerri Bartholomew

Instructor email: jerribartholomew@oregonstate.edu

Instructor phone: 7-1834

Instructor office: Nash 228

Website: <http://microbiology.science.oregonstate.edu/content/dr-jerri-bartholomew>

Course Description

Prerequisites: 9 credits of upper division fisheries or biology

Course Content: In this course we'll cover a broad array of diseases of marine and freshwater fishes, covering important pathogen groups (viruses, bacteria, parasites, fungi), host/parasite relationships and disease ecology. Diseases important to aquaculture and ornamental industries as well as wild fish populations and conservation programs will be included. The course includes a comprehensive overview of important pathogen groups, host responses to infection (including the role of immune and stress responses), diseases of importance to various aquaculture species, diseases in natural populations, epidemiology and treatments. Guest lectures will cover selected current topics of regional interest, emerging diseases, the effects of climate change and group presentations.

This is a Hybrid Course

This is a hybrid class and incorporates a range of course materials (microlectures, videos, literature, web pages) and an assortment of activities and assignments. Half of the traditional class time is replaced with these online activities.

Class time is for:

- 1) Expanding on the online material to include newer and more advanced information
- 2) Overviewing major concepts, minor points, and how they fit together
- 3) Group discussions
- 4) Guest speakers

Online activities include:

- 1) Pre-lecture quizzes so the instructor knows which topics to concentrate on
- 2) Videos and lectures that provide examples of key concepts
- 3) Study guides
- 4) Peer review of group assignments

This table compares the allocation of time in a hybrid course compared to a traditional 3 credit course

	HYBRID	Traditional
Class meetings per week	1	3
Classroom minutes per week	80 minutes	150 minutes
Required online activity per week	60-120 minutes	0-20 minutes
Recommended study time per week*	6-9 hours	6-9 hours
Total time per week	9-12 hours	9-12 hours

* This is in addition to the class meetings and required online activities. It may include reading text and articles, preparing for exams and reading quizzes, preparing and completing assignments.

Communication

Please post all course-related questions in the Q&A Discussion forum so that the whole class may benefit from our conversation. Please email me for matters of a personal nature. I will reply to course-related questions and email within 24-48 hours.

I encourage you to ask any questions you may have about the course schedule or content, no matter how basic — others may have the same question; but please check the Announcements, General Discussion Forum and read the syllabus first!

In addition to the General Discussion Board, there will be specific Discussion Board conversations developed around particular topics, for which you will receive directions with that week's course material.

Learning Resources

Microlectures (narrated powerpoint), videos, study guides, review papers and relevant journal articles, online Blue Book <http://www.afs-fhs.org/bluebook/bluebook-index.php>, European Fish Pathogens Database <http://www.fishpathogens.eu/>, and Online Hospital http://www.jbl.de/en/online-hospital/text_diag, current newsletters and aquaculture magazines, websites: fishnet.com and <http://fishpathogens.net/>

Canvas

This course will use an online portal where you will interact with your classmates and with your instructor. Within the course Canvas site you will access the learning materials, such as the syllabus, class discussions, assignments, projects, and quizzes.

Measurable Student Learning Outcomes

Undergraduate student learning outcomes:

By the end of this course, students will be able to

1. Describe the different types of pathogens that affect fish in culture and in the wild.
2. Outline important similarities and differences in the pathology, epidemiology, and control and treatment for different pathogens and pathogen groups.
3. Interpret and explain fundamental concepts in host-parasite interactions and disease ecology.
4. Assess a current biological problem and recommend an approach for solving the problem.
5. Communicate scientific concepts and analytical arguments clearly and concisely both verbally and in writing.

Graduate student learning outcomes:

In addition to the above learning outcomes for undergraduate students, by the end of this course, graduate students will be able to

1. Synthesize concepts and demonstrate an understanding of disease interactions at the ecosystem level.
2. Manage group activities and play a leadership role.

Evaluation of Student Performance

Undergraduate students

1 mid-term exam (weeks 1-5 inclusive)	100
1 final exam (cumulative, but focus on weeks 6-10)	100
Small group exercise	150
Contributing to online and classroom discussion	60
Online quizzes and survey	90
Total possible points for 491	500

Graduate students

Graduate students taking the course as 591 will be graded separately and the final exam will be oral. In addition to the above requirements, you will be required to act as leaders of small group exercises. You will also be required to lead 2 discussions (in class and online) sometime during the term.

Group exercise leadership	50
Leading discussions	50
Total possible points for 591	600

Point Distribution

A = 90 - 100%
B = 80 - 89%
C = 70 - 79%
D = 60 - 69%
F = 0 - 59%

I will endeavor to grade assignments within one week.

Course Policies

Classroom etiquette & conduct

Classroom etiquette, like marketing, is governed by 4 Ps: *Be prompt, be professional, be prepared, be polite.*

Behavior in class should be professional at all times. Effective learning occurs only when people treat each other with dignity and respect. This includes fellow classmates as well as the instructor and any guest lecturers. To ensure a classroom environment conducive to learning, the following rules are to be observed:

- Students are expected to be on time and stay for the duration of the class. Leaving class should only be done in an emergency, and if you do so, do it discreetly.
- Laptops/tablets should only be used for note taking or to assist in course work, otherwise they should be put away.
- Cell phones, mobile devices, PDAs, etc. should be silenced and put away during class.
- No headphones.
- Unless working in a group setting, side conversations should be kept to a minimum.

Online Netiquette & Participation:

- Discussion Board conversations are public messages, and all writings in this area are viewable by the entire class. Communication intended for the instructor only should be emailed directly to the instructor.
- Posting personal contact information is discouraged (e.g. telephone numbers, address, personal website address).

- All your online communications need to be composed with fairness, honesty and tact. Spelling and grammar are very important in an online course. What you put into an online course reflects your level of professionalism. Here are several references that discuss this: Writing online: <http://www.uiowa.edu/~writingc/writers/handouts/Netiquette.shtml>; Netiquette: <http://www.albion.com/netiquette/corerules.html>
- The Discussion Board is your space to interact with your colleagues related to current topics or responses to your colleague's statements. It is expected that each student will participate in a mature and respectful fashion.
- Participate actively in the discussions - complete the readings and think about the issues.
- Pay close attention to what your classmates write in their online comments. Ask clarifying questions when appropriate. These questions are meant to probe and shed new light, not to minimize or devalue comments.
- Think through and reread your comments before you post them.
- Assume the best of others in the class and expect the best from them.
- Value the diversity of the class. Recognize and value the experiences, abilities, and knowledge each person brings to class.
- Disagree with ideas, but do not make personal attacks. Do not demean or embarrass others. Do not make sexist, racist, homophobic, or victim-blaming comments at all.
- Be open to be challenged or confronted on your ideas or prejudices.

Attendance

Attendance is mandatory and missing/coming late to lectures will result in loss of grade points. Because there are only 10 classes it is critical that you attend and participate.

Discussion Participation

Students are expected to participate in all graded discussions. The schedule for posting discussion comments is in the course schedule.

Makeup Exams (and/or Quizzes)

Makeup exams will be given only for missed exams excused in advance by the instructor or for documented medical excuses or documented other emergencies. Excused absences will not be given for airline reservations, routine illness (colds, flu, stomach aches), or other common ailments. Excused absences will generally not be given after the absence has occurred, except under very unusual circumstances. Makeup exams will have written essays and/or oral components.

Online Exam (and/or Quiz) Time Limits

Exams in this class are timed; if you exceed the time limit on an online exam, you will be assessed a penalty of 10% for every five-minute interval beyond the time limit.

Incompletes

Incomplete (I) grades will be granted only in emergency cases (usually only for a death in the family, major illness or injury, or birth of your child), and if the student has turned in 80% of the points possible (in other words, usually everything but the final paper or final exam). If you are having any difficulty that might prevent you completing the coursework, please don't wait until the end of the term; let me know right away.

Students with Documented Disabilities: Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at

<http://ds.oregonstate.edu>. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

Statement Regarding Religious Accommodation: As instructors we are required to provide reasonable accommodations for sincerely held religious beliefs. It is incumbent on you to make us aware of the request as soon as possible prior to the need for the accommodation. See the [Religious Accommodation of Students Policy](#).

Link to Statement of Expectations for Student Conduct: <https://beav.es/codeofconduct>

Reach Out for Success: University students encounter setbacks from time to time. If you encounter difficulties and need assistance, it's important to reach out. Consider discussing the situation with an instructor or academic advisor. Learn about resources that assist with wellness and academic success at oregonstate.edu/ReachOut. If you are in immediate crisis, please contact the Crisis Text Line by texting OREGON to 741-741 or call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255)

Academic Integrity: Students are expected to comply with all regulations pertaining to academic honesty. For further information, see [Academic or Scholarly Dishonesty](#), or contact the office of Student Conduct and Community Standards (SCCS) at 541-737-3656.

OAR 576-015-0020 (2) Academic or Scholarly Dishonesty:

a) Academic or Scholarly Dishonesty is defined as an act of deception in which a Student seeks to claim credit for the work or effort of another person, or uses unauthorized materials or fabricated information in any academic work or research, either through the Student's own efforts or the efforts of another.

b) It includes:

(i) CHEATING - use or attempted use of unauthorized materials, information or study aids, or an act of deceit by which a Student attempts to misrepresent mastery of academic effort or information. This includes but is not limited to unauthorized copying or collaboration on a test or assignment, using prohibited materials and texts, any misuse of an electronic device, or using any deceptive means to gain academic credit.

(ii) FABRICATION - falsification or invention of any information including but not limited to falsifying research, inventing or exaggerating data, or listing incorrect or fictitious references.

(iii) ASSISTING - helping another commit an act of academic dishonesty. This includes but is not limited to paying or bribing someone to acquire a test or assignment, changing someone's grades or academic records, taking a test/doing an assignment for someone else by any means, including misuse of an electronic device. It is a violation of Oregon state law to create and offer to sell part or all of an educational assignment to another person (ORS 165.114).

(iv) TAMPERING - altering or interfering with evaluation instruments or documents.

(v) PLAGIARISM - representing the words or ideas of another person or presenting someone else's words, ideas, artistry or data as one's own, or using one's own previously submitted work. Plagiarism includes but is not limited to copying another person's work (including unpublished material) without

appropriate referencing, presenting someone else's opinions and theories as one's own, or working jointly on a project and then submitting it as one's own.

c) Academic Dishonesty cases are handled initially by the academic units, following the process outlined in the University's Academic Dishonesty Report Form, and will also be referred to SCCS for action under these rules.

Student Evaluation of Teaching

Course evaluation results are extremely important and are used to help me improve this course and the learning experience of future students. For information about the OSU electronic Student Evaluation of Teaching (eSET), see [Student Information](#) and [FAQs](#). Course evaluation results are not made available to instructors until after grades are posted.

Course Schedule

Week	Topic	Online Learning Activities	Assignments Due Wed prior to class at 5 pm	Thurs Classroom Learning Activities
1 March 30 – April 2	Introduction, disease transmission, host-pathogen relationship	Prezi: Overview of course Microlecture: Basics of the host-pathogen relationship Prezi: Disease transmission	Quiz 1 (Online) Assignment 1 Disease Transmission	Discussion of course expectations and additional topic background Group exercises on disease transmission
2 April 3-9	Bacterial pathogens - <i>provide list of pathogens</i> Immunology	Microlecture: bacterial pathogens Bacterial pathogens video Immunology review paper	Quiz 2 (O) Assignment 2 Population-Level Characteristics of Disease Assignment 3a Describe a bacterial pathogen	Group discussion: characteristics of bacterial pathogens How the host fights back – Brian Dolan, immunologist
3 April 10-16	Viral pathogens - <i>provide list of pathogens</i>	Microlecture: viral pathogens Viral pathogens video	Quiz 3 (O) Assignment 3b Describe a viral pathogen	Group discussion: characteristics of viral pathogens ODFW: Melissa White on IHNV epidemiology
4 April 17-23	Protozoan parasites - <i>provide list of pathogens</i> Treating diseases in hatcheries	Microlecture: protozoan parasites Protozoan pathogens video Prezi: Group projects	Quiz 4 (O) Assignment 4a Protozoan Parasites	Group discussion: characteristics of protozoan pathogens Treating diseases – ODFW – Sarah Bjork Group Projects
5 April 23-30	Myxzoan and Metazoan parasites - <i>provide list of pathogens</i>	Myxozoan pathogens microlecture Review paper Other metazoan parasites microlecture	Quiz 5 (O) Assignment 4b Myxozoan and Metazoan parasites Group project assignment 1 (Due at 11:59 PM)	Group discussion: characteristics of myxozoan and metazoan parasites Mid-term Review

6 May 1-7	Midterm Myxozoan disease in wild populations	Midterm	Midterm(O) (Due at 11:59 PM) Group project assignment 2 (Due at 11:59 PM)	Myxozoan disease in Yellowstone Park – Julie Alexander Disease in the Klamath River – Sascha Hallett
7 May 8-14	Disease in warmwater aquaculture	Warmwater aquaculture lecture	Quiz 6 (O) Discussion board – what is an emerging pathogen Group project assignment 3 (Due at 11:59 PM)	Group discussion of how disease differs between coldwater and warmwater aquaculture Disease in ornamentals – Aimee Reed
8 May 15-21	Disease in the marine fish	Disease in wild marine fish microlecture Review paper Current press on disease interactions	Quiz 7(O) Discussion board – how big are the disease risks from aquaculture? Group project assignment 4 (Due at 11:59 PM)	Discussion on hatchery-wild interactions Disease in netpens – Mike Kent
9 May 22-28	Climate change and effects of stressors on disease	Climate change microlecture Review paper	Quiz 8 (O) Discussion board- Comment on another group's biosecurity plan Group project assignment 5 (Due at 11:59 PM)	Discussion on the variables that will affect disease under changing climate Carl Schreck – disease, stress and prespawn mortality
10 May 29-June 4	Group presentation		Course survey	Group presentations
Finals Week June 8				