Syllabus
MAR 384 - DISEASES OF AQUATIC ORGANISMS
(3 credits)
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Office Hours (Dana Hall 155): TBA

COURSE DESCRIPTION
Host-pathogen associations are recognized as one of the most important selective forces shaping evolutionary tracks on earth. This course is designed to expose students to fundamental and current issues pertaining to host/pathogen interactions in marine environment. By the end of this course, students should have a basic understanding of disease processes in aquatic organisms; knowledge of the tools used for disease diagnosis; and an appreciation of disease management tools available today. This course will emphasize the role of the environment as an important player in infectious and non-infectious diseases. The specific subjects that will be covered are listed on the last page.

COURSE PREREQUISITES
BIO 202 and/or 203

COURSE LEARNING OBJECTIVES
- Expand knowledge about natural processes to provide students with additional skills, beyond the skills they learned in their Versatility courses, needed to apply scientific concepts to the in depth study of the natural world
- Gather and assess scientific information and understand the value and application of scientific data, concepts, and models to evaluate factors dictating the occurrence and spread of disease epizootics
- Understand the methods scientists use to explore symbiotic associations in animals including observation, experimentation and evaluation of evidence
- Make informed decisions on contemporary issues pertaining to factors affecting disease spread and local adaptations affecting host-pathogen interactions
- Evaluate causes and consequences of variability in biological interactions
- Assess management options for mitigation and prophylaxis of infectious and non-infectious diseases of marine animals

These objectives will be attained through participation in lectures, reading assigned course material and completing written assignments. The assimilation of the information will be assessed through class discussions and performance on three examinations.

READINGS
There is no applicable textbook (course relatively broad) but reading material will be posted online (Blackboard), distributed in class, or made available on reserve in the library. Readings include but are not limited to:

Diseases of Fish, 2001. R.B. Moeller
Fish Disease Diagnosis and Treatment, 1996. E.J. Noga (selected chapters).
CLASS AND ASSIGNMENTS
Weekly classes will involve two 80 min lectures. An assignment will also be requested on a hot topic in the field of Aquatic Animal Health; topic lists will be distributed by the instructors. The report will be broken down into 2 submissions. The first, draft, will be marked and returned to the students with constructive criticism on how to improve the overall report. The final report will be evaluated based on the overall document, as well as the incorporation of the instructors’ suggestions. The students will also give an oral presentation after submission of the final report. Overall, students will be encouraged to provide critical evaluation of the subject matter and identify areas where additional scientific knowledge could or should be generated by research. Note for students whose majors are either ATM, ENS, MAR or MVB: the term paper can be submitted as one of the two SoMAS Upper-Division Writing Requirements (UDWR). Please see the UDWR instructions on Blackboard in the assignment folder for instructions pertaining to submission and requirements.

ATTENDANCE AND ASSIGNMENTS DEADLINES
For the benefit of all, students are expected to attend all lectures and lab sessions. A signature sheet will be circulated at the beginning of each lecture. Assignment deadlines are also enforced and any unjustified delay will result in grade penalties.
EXAMS AND GRADING

Assessment breakdown:
Exam 1: 20%
Exam 2: 20%
Exam 3: 20%
Hot topic draft 15%
Hot topic final report 15%
Oral presentation 10%

Grade Lowest Cutoff
A 93
A- 90
B+ 87
B 83
B- 80
C+ 77
C 73
C- 70

UNIVERSITY POLICIES:
● Academic Progress & Standing Policy
  http://sb.cc.stonybrook.edu/bulletin/current/policiesandregulations/policies_expectations/academic_standing.php
● Academic Integrity
  http://sb.cc.stonybrook.edu/bulletin/current/policiesandregulations/policies_expectations/responsibilities_integrity.php
● Minimal Instructional and Student Responsibilities
  http://sb.cc.stonybrook.edu/bulletin/current/policiesandregulations/policies_expectations/min_instructional_student_resp.php
● Student Educational Records and Family Educational Rights and Privacy Act (FERPA)
  http://sb.cc.stonybrook.edu/bulletin/current/policiesandregulations/policies_expectations/student_educational_records.php
● Student Participation in University-Sponsored Activities
  http://sb.cc.stonybrook.edu/bulletin/current/policiesandregulations/policies_expectations/participation_univsponsered_activities.php
● Equivalent Opportunity/Religious Absences
  http://sb.cc.stonybrook.edu/bulletin/current/policiesandregulations/policies_expectations/equivopportunity_religiousabsences.php
● Disability support services (DSS)
  http://studentaffairs.stonybrook.edu/dss/tips_howto.shtml
TOPICS COVERED

Class orientation, Introduction to disease, Basic disease terminology
The disease triad (Host/Pathogen/Environment)
Introduction to pathogenic agents
Introduction to Epidemiology
Diagnostic tools (microscopy, immuno-detection and DNA/RNA techniques)
Invertebrate defense system
Vertebrate immunity
Diseases of bivalve mollusks
Bivalve case studies: bacterial diseases
Bivalve case studies: protozoan parasites
Lab 1: Bivalve necropsy and innate immunity
Viral pathogens of finfish and crustaceans
Lab 2: Diagnostic of marine diseases
Viral diseases 2
Protozoan and Myxozoa parasites of finfish and crustaceans
Bacterial pathogens of finfish and crustaceans
Metazoan Parasites of finfish and crustaceans
Tumors and cancers of aquatic organisms
Diseases of marine mammals and turtles
Lab 3: Marine mammal necropsy
Coral diseases
Advances in aquatic animal disease (vaccination, probiotics, selective breeding, genetic engineering)
Aquatic diseases and public health
Student projects presentations

There will be no final cumulative exam.