PH 792: Epidemiology and Evolutionary Thinking (1 credits)
Spring 2015

Instructor:

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Office hours: By appointment only

Course Description:

This is a graduate seminar course that will explore several aspects of human health through the perspective of how natural selection and evolution influence risk for infectious, chronic and psychological diseases and disorders, and how a better understanding of these relationships may improve treatment and prevention of such disorders. More specifically, we will explore how evolution affects both pathogen and host adaptations, how ancestral environments and lifestyles selected for both genetic and epigenetic metabolic adaptations, and how evolutionary forces have influenced cultural adaptations and how these adaptations affect both physical and mental health in the modern social, economic and political environment. Finally, we will also explore how evolutionary thinking can better inform epidemiological methodology, clinical medicine, public health interventions and health policy.

Required Text: No textbook will be used. Course readings will require about 1-2 hours per week outside of class, and will include readings from selected journal articles.

Description of Course Assignments:
Grading will be based on:

60%: one term paper, Vancouver format, (15-20 pages double spaced): 20% for initial abstract and outline, 20% for rough draft, 20% for final draft, to be completed in successive months

40%: class participation and in-class critical analyses of readings. I expect regular attendance, knowledge of assigned readings, active participation and intellectual engagement, and well-prepared presentations concerning the readings.

There will be no exams!

Grading Scale for Class Assignments: An example
<table>
<thead>
<tr>
<th>Grading Points</th>
<th>Total Points</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Class participation and attendance</td>
<td>40</td>
<td>40%</td>
</tr>
<tr>
<td>Initial abstract and outline</td>
<td>20</td>
<td>20%</td>
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<td>Rough draft</td>
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<td>20%</td>
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<tr>
<td>Final draft</td>
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<td>20%</td>
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Grading Scale: **You must indicate whether or not you are using the “+ -“ grading system**

Grading Scale: This class will NOT be using the “plus/minus” grading system.
- The grading scheme is as follows:
  - A – 90 points or greater
  - B – 80-89 points
  - C – 70-79 points
  - D – 65-69 points
  - F – < 65 points

Proposed Course Topic Schedule:

Week 1 - Review of principles of natural selection and evolutionary theory
Weeks 2 – History of evolution in biology and medicine
Weeks 3 and 4 – Host/pathogen interaction and adaptation
Weeks 5 and 6 – Evolution, social and environmental change and emerging pathogens
Week 7 – Evolution and cancer
Weeks 8 and 9 - Ancient diet and lifestyle
Week 10 –Genetics and epigenetics, the risk for chronic diseases and what it means to be “thrifty”
Week 11 - Evolution, Society and Life Course Epidemiology (how adaptation becomes maladaptive)
Weeks 12 and 13- Evolutionary psychology
Weeks 14 and 15 – How evolutionary thinking can be applied to disease prevention and treatment.

Course Policies:
- Class papers/projects must be received **when due** to receive full credit.
- Students must attend class and participate in class discussions.
- Plagiarism will result in a failing (“F”) grade for the assignment. Students should familiarize themselves with the university of Hawai‘i Student Conduct Code.
- No extra credit assignments given.
- Final grades are based on completed assignments, class attendance, and participation. All assignments must be completed for a passing grade.
• Appropriate citations and references are expected (specify reference style if appropriate).

**Suggested Prerequisites:**
To take this course, you should have taken any introductory course in epidemiology, and you should know something about evolutionary principles: helpful prerequisites could include any undergraduate or graduate course in evolutionary biology, animal behavior, biological anthropology, or evolutionary psychology.

**Competencies:**
1) Epidemiology Competencies:

Apply the basic terminology and definitions of epidemiology used to identify patterns of disease and injury in human populations and apply epidemiological methods to the identification and control of health problems.

Public Health Biology Competencies:

Discuss how public health biology – the biological and molecular context of public health – impacts public health practice.

**Criteria:**
- Explain the role of biology in the ecological model of population-based health
- Apply biological principles to the development and implementation of disease prevention, control and evaluation.

**Readings:**


