SCIENTIFIC THINKING IN ECOLOGY (FAS 5901, Section 14245, 2 credits)
Fall Semester 2019
Classroom Section: Wednesdays, Periods 2-3 (8:30–10:25 a.m.) in 3108 McCarty B
Online Sections: TBA

Course Description:
This course examines general philosophical foundations of science, the nature of scientific disputes, and the relevance of these to ecology. Assigned readings, class discussions and essays provide background, tools, opportunities and feedback designed to help students deliberately develop their professional philosophy.  

Prerequisite: One ecology course.

Course Goals:
1. To foster critical thinking while developing each student’s scientific philosophy.
2. To enable students to recognize philosophical differences among scientists, particularly ecologists.
3. To help students place ecological science in the context of intellectual pursuits and human nature.
4. To make explicit for students the foundations of public trust in ecology as a science.

Expected Outcomes:
Upon completion of this course, successful graduate students will be able to:

A. Distinguish ecology from other endeavors and better identify “good” science
B. Formulate and deliver higher quality verbal and written arguments
C. Demonstrate an ability to learn from other fields
D. Interact effectively as a part of a team exploring important issues

Format, Evaluation and Feedback:
Weekly class discussions with Socratic questioning will derive from assigned readings. Students will be asked to lead the weekly discussions. Three essays will be assigned and due as scheduled. Essays will be evaluated by the instructor for critical thinking and intellectual standards, as reviewed at the beginning of the course and throughout the discussions. Regular attendance and participation are expected as discussions cannot be “made up.” Class participation will be reinforced and assessed by student blogs written after each discussion. Blogs will be accepted from students absent from discussions due to illness. Everyone is expected to read everyone else’s blog prior to the next class period; posting comments is encouraged. Essays will be compiled and posted for review.

Grading:  
Class participation 55% (~3.6 pts/class)  
3 Essays @ 15 pts each 45%  
Total 100%

A = 90-100%  C = 70-79  
B = 80-89  D = 60-69  
E = 59 or less

Instructor:
Robert “Rob” Ahrens  
SFRC - Fisheries and Aquatic Sciences  
402 McCarty C  
Office Phone: 352-273-3630  
E-mail: rahrens@ufl.edu  
Office Hours by Appointment
Textbook: Most, though not all, reading materials are online at https://lss.at.ufl.edu/. You will need to obtain a copy of these three books.


Grades and Grade Points:
For information on current UF policies for assigning grade points, see https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Academic Honesty, Software Use, Campus Helping Resources, Services for Students with Disabilities

Academic Honesty
In 1995 the UF student body enacted an honor code and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students.

The Honor 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.

On all work submitted for credit by students at the university, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean, Student Honor Council, or Student Conduct and Conflict Resolution in the Dean of Students Office. *Source: 2012-2013 Undergraduate Catalog*

It is assumed all work will be completed independently unless the assignment is defined as a group project, in writing by the instructor. This policy will be vigorously upheld at all times in this course.

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.

Campus Helping Resources
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.

- *University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu/cwc/*
  - Counseling Services
  - Groups and Workshops
  - Outreach and Consultation
  - Self-Help Library
  - Training Programs
Community Provider Database

- Career Resource Center, First Floor JWRU, 392-1601, www.crc.ufl.edu/

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.

0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/
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<thead>
<tr>
<th>Date</th>
<th>Week</th>
<th>Topics</th>
<th>Readings and Assignments</th>
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<tbody>
<tr>
<td>8/21</td>
<td>1</td>
<td>Course goals, outcomes, evaluation and feedback&lt;br&gt;Critical Thinking and Intellectual Standards</td>
<td>Online Tool linked in Canvas&lt;br&gt;(Paul &amp; Elder. 2001. 19 pp.)</td>
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<td>9/4</td>
<td>3</td>
<td>Distinguishing science (ecology) and religion</td>
<td>Barbour. 1997. Ch. 1-3, pp. 3-74</td>
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<td>9/11</td>
<td>4</td>
<td>Popper’s Contribution</td>
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<td>9/18</td>
<td>5</td>
<td>Strong inference &amp; multiple working hypotheses</td>
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<td>9/25</td>
<td>6</td>
<td>Paradigms and Scientific Revolutions</td>
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<td>10/2</td>
<td>7</td>
<td>Lakatos’ Scientific Research Programs</td>
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<td>10/9</td>
<td>8</td>
<td>Feyerabend’s Anarchism</td>
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<td>10/16</td>
<td>9</td>
<td>Case Study: <em>Night Comes to the Cretaceous</em></td>
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<td>10/23</td>
<td>10</td>
<td>A “Kuhnian” looks at Ecology</td>
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<td>10/30</td>
<td>11</td>
<td>Ecologists look to Philosophy</td>
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<td>11/6</td>
<td>12</td>
<td>Constrained Perspectivism or Ecological Critical Thinking</td>
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<td>11/13</td>
<td>13</td>
<td>Professional ethics, a transition to case studies</td>
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<td>11/20</td>
<td>14</td>
<td>Values in Science and Resource Management</td>
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<td>11/27</td>
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<td>Thanksgiving Holiday</td>
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<td>12/4</td>
<td>15</td>
<td>Case Study: <em>Finding Darwin’s God</em></td>
<td>Miller 1999. Ch. 3-5, pp. 57-164</td>
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1 Dates are for the classroom section; the online section will meet on a different day of the same week, TBD.
2 Readings in parentheses are recommended, not required. For longer reading assignments, you can read pertinent sections, while skipping or only skimming other sections of the text. Readings in **Bold & Underlined** are not on the course website.
References and Reading List