This course will focus on both the pattern and process of evolution. It will consider explanations for patterns of diversity and for the apparent "good fit" of organisms to the environment. Topics covered include phylogenetic classification, the processes of evolutionary change, concepts of fitness and adaptation, speciation, and macroevolutionary pattern.

**Lectures:** TR 9:45-11:15, 201 Irving I Building  

**BIOL 481 Labs:** W 2:15 – 5:15, BUNN 409  
R 2:00 – 5:00, BUNN 409  

**BIOL 681 Lab:** T 2:00 – 5:00, IRVI 208

**Instructor:** Dr. Pat Doak  
415B Irving I  
474-6449  
ffpd@uaf.edu

**Office Hours:** Wed 12 – 130pm and by appointment

**T.A.s:**  
Keiko Akasofu fnka@uaf.edu  
Mac Campbell fsmac30@uaf.edu


**Prerequisites:** BIOL 271, BIOL 362, STAT 200

**Course Goals**  
Biol 481 is the ‘capstone’ course for UAF biology majors, and Biol 681 provides a foundation in evolutionary theory for graduate studies. The biological disciplines are unified by underlying evolutionary processes. This course presents an overview of the field of evolutionary biology. It will draw on the information you have gained in other courses and should also assist you in finding links between seemingly disparate fields of biology. You may find the study of evolution to be more conceptual than some of your earlier biology courses. This is both the nature of the discipline and also the nature of more advanced learning in any field – the material turns from concrete facts to more abstract concepts. Therefore another goal of this course is to expose UAF biology students to a more advanced level of study and prepare them to go on in biology-related fields.

**Student Learning Goals**  
The successful student will complete this course with a variety of new knowledge and skills. I always stress that at the very least, everyone should come away understanding the four forces of microevolution and how they interact to bring about evolutionary change or to perpetuate stasis. In addition, students should gain an understanding of the manner in which organisms are phylogenetically classified, the major modes of speciation, patterns of macroevolution and the importance of evolutionary thinking in other fields of biology (including medicine and agriculture).

**Expectations of Students**  
In addition to completing all graded work, you are expected to:

- Attend lectures and labs.
- Arrive on time and wait until the end of lecture/lab to depart.
- Pay attention and think about the material.
- Ask questions.
- Let the professor/TA know when a concept or assignment is not clear.
- Read lab materials carefully prior to lab.
- Turn all work in on time and take all exams as scheduled.
COURSE MECHANICS

Grading

BIOL 481 Grading
Breakdown:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam 1</td>
<td>10%</td>
</tr>
<tr>
<td>Exam 2</td>
<td>10%</td>
</tr>
<tr>
<td>Exam 3</td>
<td>10%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>15%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>10%</td>
</tr>
<tr>
<td>Lab Assignments</td>
<td>45%</td>
</tr>
<tr>
<td>Lab Attendance &amp; Journal Articles*</td>
<td>10%</td>
</tr>
</tbody>
</table>

**Your final course grade will be adjusted based on your lab attendance. Three unexcused absences will equal a drop of one letter grade (i.e., B becomes C). Arriving late or leaving before the lab is over will also contribute to your attendance grade. Two unexcused late arrivals and/or early departures will equal one absence (i.e., six late arrivals will result in the drop of one letter grade).

BIOL 681 Grading
Breakdown:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam 1</td>
<td>12%</td>
</tr>
<tr>
<td>Exam 2</td>
<td>12%</td>
</tr>
<tr>
<td>Exam 3</td>
<td>12%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>18%</td>
</tr>
<tr>
<td>Lab presentations and discussion</td>
<td>46%</td>
</tr>
<tr>
<td>Lab Attendance**</td>
<td>12%</td>
</tr>
</tbody>
</table>

**Your final course grade will be adjusted based on your lab attendance. Three unexcused absences will equal a drop of one full letter grade. Arriving late or leaving before the lab is over will also contribute to your attendance grade. Two unexcused late arrivals and/or early departures will equal one absence.

Overall course grades will be assigned on the following scale:

<table>
<thead>
<tr>
<th>Numerical Score</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90.0-100%</td>
<td>A</td>
</tr>
<tr>
<td>80.0-89.9</td>
<td>B</td>
</tr>
<tr>
<td>70.0-79.9</td>
<td>C</td>
</tr>
<tr>
<td>60.0-69.9</td>
<td>D</td>
</tr>
<tr>
<td>below 60</td>
<td>F</td>
</tr>
</tbody>
</table>

Blackboard Site

This course has a Blackboard site. Your grades will be recorded on this site and we encourage you to check that all grades are entered here and in agreement with those on your returned work. Copies of the course syllabus, lecture and lab schedules, old exams, and exam keys will also be posted on this site.

BIOL 481/681 Exams

Exams will consist primarily of short essay questions, but will also include short answer or longer essay questions and quantitative problems. They will cover lecture material, assigned readings (text and journal articles), and lab material. The final exam will be cumulative.

BIOL 481 Quizzes

Quizzes will take place in lab and will cover material from the previous week’s lectures (if there was only a single lecture the previous week, then the quiz will cover just that one lecture). The purpose of the quizzes is to get you to look over your lecture notes on a regular basis and to clear up things you don’t understand in a timely manner. At the beginning of each lab section, you will have a chance to ask questions about lecture material. The quiz will directly follow this question and answer period. Quizzes cover material from the previous week’s lectures. There will be 12 graded quizzes during the semester. The two lowest grades will be dropped and each of the 10 remaining quizzes is worth one percentage point of your course grade for a total of 10% of your grade.

BIOL 481 Lab Assignments

Lab assignments will include quantitative problem sets, short written assignments, and in-class exercises. In lab next week you will receive a detailed schedule and list of assignments.
**BIOL 681 Lab**
The BIOL 681 lab will be run as a seminar with most of the time spent reading and discussing journal articles. Students are expected to read the assigned articles and participate in discussions. Each student will be in charge of presenting a number of articles during the semester.

**Course Policies**

**Lectures and Readings**
I do not teach directly from the text and purposely use many examples that are not covered in the text. I think that you will find that attending lectures is important and hopefully also interesting. I encourage you to use the text to help solidify the topics covered in lectures and labs. If you must arrive late to a lecture please be courteous and sit towards the back of the lecture hall.

**Exam Re-grades**
Written requests for re-grades, justifying why the grade was incorrect, must be submitted within one week of the return of an exam.

**Late Assignments**
Late assignments will **not** be accepted unless the student has received written approval from the course instructor.

**Students with Disabilities**
Any student needing accommodation of a disability should provide me with a letter from the Office of Disability Services. The Office of Disability Services also requires students contact them at least 3 days in advance of any exam for which they need special arrangements.

**UAF Student Code of Conduct**
Cheating, plagiarism and fabrication of data are unacceptable practices both in this course and in science more generally. All of your work should be your own and only your own unless it is explicitly assigned and completed as a group. Cheating, plagiarism or data fabrication will result in a course grade of F and possible referral to the University Disciplinary and Honor Code Committee. Also see p.83 of the 2008-2009 UAF Catalog to review the UAF Student Code of Conduct or http://www.uaf.edu/catalog/current/academics/regs3.html. If you have any doubt about whether a particular action constitutes cheating, plagiarism or fabrication of data, please seek clarification from your TA or the course instructor.