

# Quantitative Wildlife Ecology (WIS 4601)

Instructor: Miguel A. Acevedo

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TA's Office Hours: W 9:30-10:30am or by app.

TA's Office: NZH 203

Lecture Hours: T and R, period 7 (1:55–2:45pm)

Lecture Room: (T,R) MAT 0010

Lab Hours: F periods 3–4 (9:35–11:30am)

Lab Room: (F) MCCB 3086

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This syllabus is a broad description of course objectives and plan of work; it is subject to change.

1. **Codification:** WIS 4601
2. **Credits:** 3 crds
3. **Pre-requirements:** STA 2023 and WIS 3401
4. **Course Description:** Many ecological, management, and conservation needs for animal populations are related to assessing questions related to “how many, how much, where, and when”. The goal of this course is to provide students with the motivation and training to assess these questions as commonly encountered by natural resource professionals. Upon completing this course, students will be able to formulate hypotheses related to individuals, populations or communities of animals, design studies to test these hypotheses, and analyze actual data sets from different field settings, and present scientific findings following the guidelines for scientific report writing.
5. **Course Objectives:** At the completion of this course, students will be able to:
  - (a) Recognize, compare and contrast concepts and vocabulary related to models in wildlife ecology and conservation.
  - (b) Describe the key attributes of good experimental design
  - (c) Construct testable hypotheses
  - (d) Parameterize models using data and characterize uncertainty
  - (e) Compare fit among models
  - (f) Interpret model output

(g) Develop scientific figures that summarize quantitative information

## 6. Tentative Course Outline:

The weekly coverage might change as it depends on the progress of the class. Notation: BR are background readings, **Lecture 1** are Tuesdays, **Lecture 2** are Thursdays and **Lab** are Fridays. All assignments (except the final exam) are due before 11pm.

Week	Content
Week 1 (Jan 8–12)	<ul style="list-style-type: none"> <li>• <b>Tuesday:</b> Class Introduction</li> <li>• <b>Thursday:</b> Becoming an Ecological Detective</li> <li>• <b>Friday(Lab):</b> Introduction to R</li> <li>• Read: Hilborn 1993</li> </ul>
Week 2 (Jan 16–19)	<ul style="list-style-type: none"> <li>• <b>Tuesday:</b> Experimental Design 1</li> <li>• <b>Thursday:</b> Experimental Design 2</li> <li>• <b>Friday(Lab):</b> Making graphs in R</li> <li>• Read: Ecological Detective Ch 1, Hilborn 1993, Krebs Ch 10, Johnson 2002</li> <li>• <i>Assignments:</i> Quiz 1 and 2, and Lab 1</li> </ul>
Week 3 (Jan 22–26)	<ul style="list-style-type: none"> <li>• <b>Tuesday:</b> Exam 1</li> <li>• <b>Thursday:</b> Summary Statistics</li> <li>• <b>Friday (Lab):</b> Data management</li> <li>• <i>Assignments:</i> Exam 1, Lab 2, Quiz 3</li> </ul>
Week 4 (Jan 29–Feb 2)	<ul style="list-style-type: none"> <li>• <b>Tuesday:</b> Probability distributions I (Exercise)</li> <li>• <b>Thursday:</b> Probability distributions II</li> <li>• <b>Friday (Lab):</b> Probability distributions</li> <li>• Read Bolker 2002 Ch 4, Wildlife Techniques Ch 4</li> <li>• <i>Assignments:</i> Quiz 4, Lab 3</li> </ul>
Week 5 (Feb 5–9)	<ul style="list-style-type: none"> <li>• <b>Tuesday:</b> Parametric tests I</li> <li>• <b>Thursday:</b> Parametric tests II</li> <li>• <b>Friday (Lab):</b> Parametric tests</li> <li>• Read Quinn and Keough p. 32–44; 173–187</li> <li>• <i>Assignments:</i> Quiz 5, Lab 4</li> </ul>
Week 6 (Feb 12–16)	<ul style="list-style-type: none"> <li>• <b>Tuesday:</b> Linear regression I</li> <li>• <b>Thursday:</b> Linear regression II</li> <li>• <b>Friday (Lab):</b> Linear regression</li> <li>• Read Quinnn and Keough p. 78–90</li> <li>• <i>Assignments:</i> Quiz 6, Lab 5</li> </ul>
Week 7 (Feb 19–23)	<ul style="list-style-type: none"> <li>• <b>Tuesday:</b> Generalized Linear Models (GLM)</li> <li>• <b>Thursday:</b> GLM</li> <li>• <b>Friday (Lab):</b> GLM</li> <li>• <i>Assignments:</i> Quiz 7, Lab 6</li> </ul>

Week 8 (Feb 26–Mar 1)	<ul style="list-style-type: none"> <li>• <b>Tuesday:</b> Exam 2</li> <li>• <b>Thursday:</b> Uncertainty</li> <li>• <b>Lab:</b> Work on group projects</li> <li>• <i>Assignments:</i> Quiz 8, Lab 7</li> </ul>
Week 9 (Mar 4 –8)	<ul style="list-style-type: none"> <li>• <b>Tuesday:</b> Detectability/Quadrat and Line transect</li> <li>• <b>Thursday:</b> Detectability and Distance sampling</li> <li>• <b>Friday (Lab):</b> Distance sampling</li> <li>• Read Caughley 1974; Le Resche and Rausch 1974</li> <li>• <i>Assignments:</i> Quiz 9, Group projects</li> </ul>
Week 10 (Mar 11–15)	<b>Spring Break</b>
Week 11 (Mar 18–22)	<ul style="list-style-type: none"> <li>• <b>Tuesday:</b> Abundance Estimation</li> <li>• <b>Thursday:</b> Abundance Estimation (class demonstration)</li> <li>• <b>Friday (Lab):</b> Lincoln-Petersen I</li> <li>• Read Pollock et al. 1990</li> <li>• <i>Assignments:</i> Quiz 10, Lab 8</li> </ul>
Week 12 (Mar 25–29)	<ul style="list-style-type: none"> <li>• <b>Tuesday:</b> Capture models</li> <li>• <b>Thursday:</b> Open models I (CJS)</li> <li>• <b>Friday (Lab):</b> Lincoln-Petersen II</li> <li>• <i>Assignments:</i> Quiz 11, Lab 9</li> </ul>
Week 13 (Apr 1–5)	<ul style="list-style-type: none"> <li>• <b>Tuesday:</b> Open models II (CJS and Robust Design)</li> <li>• <b>Thursday:</b> Open models III (Known fates, recovery)</li> <li>• <b>Friday (Lab):</b> CJS</li> <li>• Read Karanth and Nichols 1998</li> <li>• <i>Assignments:</i> Quiz 12, Lab 10</li> </ul>
Week 14 (Apr 8–12)	<ul style="list-style-type: none"> <li>• <b>Tuesday:</b> Occupancy I</li> <li>• <b>Thursday:</b> Occupancy II</li> <li>• <b>Friday (Lab):</b> Occupancy</li> <li>• Read MacKenzie 2002</li> <li>• <i>Assignments:</i> Quiz 13, Lab 11</li> </ul>
Week 15 (Apr 15–19)	<ul style="list-style-type: none"> <li>• <b>Tuesday:</b> Habitat relationships</li> <li>• <b>Thursday:</b> Community/diversity metrics</li> <li>• <b>Friday (Lab):</b> Diversity</li> <li>• <i>Assignments:</i> Quiz 14, Lab 12</li> </ul>
Week 16 (Apr 22–24)	<ul style="list-style-type: none"> <li>• <b>Tuesday:</b> Review</li> </ul>
Week 17 (May 1–5)	<ul style="list-style-type: none"> <li>• <b>Final Exam:</b> May 2, 2024</li> </ul>

7. **Educational Strategies:** We follow an active learning framework that include inquire-based lectures, analysis of the primary literature, computer exercises, group projects and group discussions

8. **Minimum resources available:** Lecture room, Computer lab, audio-visual equipment.

	Quizzes	10%
	Lab exercises	58%
9. <b>Evaluation strategies:</b>	Group projects	14%
	Exams	18%

	>= 93.00 %	A	90.00–92.99	A-
	87.00–89.99	B+	83.00–86.99	B
	80.00–82.99	B-	77.00–79.99	C+
10. <b>Grading:</b>	73.00–76.99	C	70.00–72.99	C-
	67.00–69.99	D+	63.00–66.99	D
	60.00–62.99	D-	< 59.99	E

Information on current UF grading policies is available at <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.

11. **Textbook:** None, course packet will be available electronically via CANVAS that contains required weekly readings, lecture, and lab information.
12. **Class attendance and demeanor policy:** All students are expected to attend every class and lab sessions. Students are responsible for the materials and information presented. Students who miss class for a UF approved reason (<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>) will be able to make-up exams and quizzes from that day. Unexcused late assignments will have 10% of the point total for that assignment deducted for each day late. Late assignments will not be accepted beyond 3 days post-due date. A professional attitude is expected in all lectures and labs. Please do not disturb your fellow students by talking during class. Please minimize electronic distractions by silencing cell phones and eliminating electronic distractions during class and lab. While we will actively use computer resources in class and lab, it is strongly recommended that students focus on course material and minimize distractions from e-mail and social networking sites. Make-up exams or assignment/homework/quiz problems will not be given for unexcused absences. An acceptable excuse (meeting guidelines from the UF handbook) must be submitted to be eligible for a make-up exam.
13. **Rights of students with special needs:** The University of Florida meets all federal and state laws regarding discrimination including the American Disabilities Act (ADA Law). Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <http://www.dso.ufl.edu/drc/>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.
14. **Student evaluations:** Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

15. **Academic honesty:** As a result of completing the registration form at the University of Florida, every student has signed the following statement: “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.”
16. **UF counseling services:** The University of Florida provides excellent resources on campus for students having personal problems or seeking additional career and academic assistance to help them realize their full potential. The University cares about you and your well-being. These resources include:
- (a) U Matter, We care:  
If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) or 352 392- 1575 so that a team member can reach out to the student.
  - (b) Counseling and Wellness Center:  
<https://counseling.ufl.edu/>, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.
  - (c) Sexual Assault Recovery Services (SARS)  
Student Health Care Center, 392-1161.
  - (d) University Police Department, 392-1111 (or 9-1-1 for emergencies).  
<http://www.police.ufl.edu/>
17. **Academic Resources**
- (a) E-learning technical support, 352-392-4357 (select option 2) or e-mail to [Learning-support@ufl.edu](mailto:Learning-support@ufl.edu).  
<https://lss.at.ufl.edu/help.shtml>.
  - (b) Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling.  
<http://www.crc.ufl.edu/>
  - (c) Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.
  - (d) Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.  
<http://teachingcenter.ufl.edu/>
  - (e) Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <http://writing.ufl.edu/writing-studio/>
  - (f) Student Complaints On-Campus:  
<https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>
  - (g) On-Line Students Complaints: <http://distance.ufl.edu/student-complaint-process/>

18. **Software use:** All faculty, staff and students of the University are required 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.