Wildlife 311/511 – Quantitative Methods for Wildlife and Fisheries Research and Management
2020 Spring – Tentative Course Syllabus

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Office Hours: Wednesdays 12-1:50pm, or by appointment
Class Meeting Times: Section 1 (Tuesdays and Thursdays 12:30PM-1:45PM TNR 352)
Section 2 (Tuesdays and Thursdays 2:00PM-3:15PM   TNR 352).

Learning Outcomes: I don't want you to be afraid of statistics. I want you to love them and understand how they can help you as a natural resource manager/scientist. Students who satisfactorily complete this course should be able to:

1) Define what statistics are and why we need them;
2) Recognize different data types and choose appropriate graphing techniques for each type;
3) Apply and communicate some basic fundamentals of sampling and experimental design;
4) Recognize the close relationship between management and experimentation;
5) Design your own simple experiments and critique other's experimental design;
6) Select the most appropriate parametric and non-parametric tests for a particular hypothesis; and
7) Communicate some of the current and future trends in Wildlife statistics.

Prerequisites/Co-requisite: MATH 255 – Elementary Statistical Methods. It also will be helpful if you already have taken a Calculus course.

Textbook: The required textbook for this course is McKillup (2011) *Statistics Explained: An Introductory Guide for Life Scientists*, 2nd Edition, Cambridge University Press. The book is available as a rental, but I highly recommend that you purchase a copy of your own.

Canvas: Most course material and your grades will be available on Canvas.

Classroom Climate: It is critical that you feel comfortable exploring your own ideas and asking questions in this class. Please help me to create a classroom that facilitates questions and conversations about the material.

Course Schedule:
Week 1

  1/21   Introduction to the course
  1/23   Why bother with statistics? (Chapters 1 and 2)

Week 2
  1/28   Hypotheses, sample collection, and experimental design (Chapters 3 and 4)
  1/30   Hypotheses, sample collection, and experimental design (Chapters 3 and 4)

Week 3
  2/4   Hypotheses, sample collection, and experimental design (Chapters 3 and 4)
  2/6   Hypotheses, sample collection, and experimental design (Chapters 3 and 4)

Week 4
  2/11   Data types, visualization, and communication (Chapter 3)
  2/13   Data types, visualization, and communication (Chapter 3) & Some probability
         basics (Chapters 6 and 7)

Week 5
  2/18   Exam 1
  2/20   Introduction to Parametric Statistics and descriptive statistics for populations
         and samples

Week 6
  2/25   To Be Determined
  2/27   Descriptive statistics for populations and samples

Week 7
  3/3   Z-tests and t-tests (Chapters 9 and 10)
  3/5   Z-tests and t-tests (Chapters 9 and 10)

Week 8
  3/10   Z-tests and t-tests (Chapters 9 and 10)
  3/12   Single factor ANOVA (Chapter 11)

Week 9
  3/17   SPRING BREAK
  3/19   SPRING BREAK

Week 10
  3/24   Single factor ANOVA (Chapter 11)
  3/26   Follow-up tests (Chapter 12)

Week 11
  3/31   Two factor ANOVA (Chapter 13)
  4/2   Two factor ANOVA (Chapter 13)

Week 12

    4/7   Exam 2

    4/9   Simple linear regression (Chapters 16 and 17)

Week 13

    4/14   Simple linear regression (Chapters 16 and 17)

    4/16   Introduction to Nonparametric Statistics and Chi-square tests

Week 14

    4/21   Chi-square tests & Mann-Whitney test (Chapter 21)

    4/23   Mann-Whitney test (Chapter 21) and Kruskal-Wallis test

Week 15

    4/28   Information-Theoretic approaches

    4/30   Information-Theoretic approaches

Week 16

    5/5   Undergraduate presentations (Chapter 5)

    5/7   Bayesian approaches

Final Exam

Section 1: Tuesday, May 12th from 8:00AM to 10:00AM

Section 2: Thursday, May 14th from 8:00AM to 10:00AM

Assignments and Scoring:

Written Assignment   50pts

Exam 1   100pts

Exam 2   100pts

Group Project   150pts

Problem Sets   250pts

Final Exam   200pts

       Total   **850pts**

Grade	%
A	93+
A-	90-92
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	60-66
F	≤ 59