Wildlife 311/511 – Quantitative Methods for Wildlife and Fisheries Research and Management

2019 Fall – Tentative Course Syllabus

Professor: Jason Riddle
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Office Hours: Wednesdays 1-3:00pm, or by appointment
Class Meeting Times: Section 1 (Tuesdays and Thursdays 11:00AM-12:15PM TNR 359)
Section 2 (Tuesdays and Thursdays 12:30PM-1:45PM 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.

Prerequisite/Corequisite: MATH 255 – Elementary Statistical Methods. It also will be helpful if you already have taken a Calculus course.

Textbook: The required text book 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

9/3 Introduction to the course

9/5 Why bother with statistics? (Chapters 1 and 2)

Week 2

9/10 Hypotheses, sample collection, and experimental design (Chapters 3 and 4)

9/12 Hypotheses, sample collection, and experimental design (Chapters 3 and 4)

Week 3

9/17 Hypotheses, sample collection, and experimental design (Chapters 3 and 4)

9/19 Data types, visualization, and communication (Chapter 3)

Week 4

9/24 Data types, visualization, and communication (Chapter 3) & Some probability basics (Chapters 6 and 7)

9/26 Exam 1

Week 5

10/1 To be determined

10/3 To be determined

Week 6

10/8 Introduction to Parametric Statistics and descriptive statistics for populations and samples

10/10 Descriptive statistics for populations and samples

Week 7

10/15 Z-tests and t-tests (Chapters 9 and 10)

10/17 Z-tests and t-tests (Chapters 9 and 10)

Week 8

10/22 Single factor ANOVA (Chapter 11)

10/24 Single factor ANOVA (Chapter 11)

Week 9

10/29 Follow-up tests (Chapter 12)

10/31 Two factor ANOVA (Chapter 13)

Week 10

11/5 Two factor ANOVA (Chapter 13)

11/7 Exam 2

Week 11

11/12 Simple linear regression (Chapters 16 and 17)

11/14 Simple linear regression (Chapters 16 and 17)

Week 12

11/19 Introduction to Nonparametric Statistics and Chi-square tests

11/21 Chi-square tests & Mann-Whitney test (Chapter 21)

Week 13

11/26 Mann-Whitney test (Chapter 21) and Kruskal-Wallis test

11/28 Turkey's test with gravy follow-up procedures.

Week 14

12/3 Information-Theoretic approaches

12/5 Information-Theoretic approaches

Week 15

12/10 Undergraduate presentations (Chapter 5)

12/12 Bayesian approaches

Final Exam

Section 1: Thursday, December 19th from 10:15AM to 12:15PM

Section 2: Monday, December 16th from 2:45PM to 4:45PM

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