

Course Syllabus -- WL 440/440L
2 Credit Hours
FISHERIES AND WILDLIFE BIOMETRICS
South Dakota State University
Spring 2009

Instructor: Casey W. Schoenebeck **Email:** D2L
Office hours: SNP 168 by appointment (contact via D2L email or call 688-6121)
Lecture: SNP 103, 10:00-10:50 a.m., Tuesday
Lab: SNF 138: S01 –Wednesday, 9-10:50; S02 – Thursday, 10-11:50

Instructor: Dr. Michael L. Brown **Email:** D2L
Office hours: SNP 141B, by appointment (contact via D2L email or call 688-6121)

Course Description: Analysis and interpretation of fisheries and wildlife data that relate to assessment of research and management activities. Computer software application will be stressed.

The primary focus of this course is to further develop your analytical and interpretive skills in statistics through practical application. This is not an intense course in probability theory or mathematics, but a course designed to expose you to data types routinely collected by practicing professionals, analysis of those data with appropriate procedures, and interpretation of statistical tests. With adequate effort you should gain an appreciation of the role and usefulness of statistics in study and sampling design, analysis, interpreting and presenting fisheries and wildlife data.

Course Prerequisites: Undergraduate statistics (e.g. STAT 281) and a computer course (e.g., CSC 105).

Course Goals and Outcomes: This course fulfills a requirement for the Wildlife and Fisheries Sciences major. Course goals are to improve analytical and critical thinking skills, communication skills (written and electronic information/technology based), and teamwork skills. As a result of taking this course students will:

- i) learn the fundamental importance of study and sampling design;
- ii) understand basic statistical concepts, terminology and techniques; and,
- iii) demonstrate competence in the application of basic statistical tests and interpreting results.

Instructional Method: The primary mode of instruction will be lecture accompanied by visual aids. Lectures will consist of discussions of common statistical topics relevant to our profession. Lecture notes and materials for statistical exercises are provided on D2L. Labs will provide you with the hands-on opportunity to analyze, interpret, and report on data and approaches covered in lecture. The interim period between lecture and lab provides an opportunity for you to evaluate the weekly exercise and gain familiarity with the statistical application (practice data sets will be provided as needed). Please note that distractions such as cell phones (must be off or muted during class), emailing, and text messaging are not allowed in lab or lecture. Failure to comply will result in a loss of attendance points for that class period.

Course Web Site: Online materials (e.g., syllabus, dropbox, evaluation results, topic notes and other class resources) are available at <https://d2l.sdbor.edu/>. You will utilize D2L extensively, and I suggest that you become familiar with this program early in the semester and ask for assistance if you have any questions. The D2L homepage above has very good instructions for first-time users.

Text: No specific text is required, but you should have an introductory statistics book available for general reference. The most common reference used in this course is the introductory text from STAT 281 (i.e., Statistics, by J.T. McClave and T. Sincich).

The following chapters are located under "Content", Unit 2 (Adobe pdf) in the course WebCT site.

Bart, J.R., and W.I. Notz. 2005. Analysis of data in wildlife biology. Pages 72-105 in C.E. Braun, editor. Techniques for wildlife investigations and management, sixth edition. The Wildlife Society, Bethesda, Maryland. (TWIM)

Brown, M.L., and D.J. Austen. 1996. Data management and statistical techniques. Pages 17-62 in B.R. Murphy and D.W. Willis, editors. Fisheries techniques, second edition. American Fisheries Society, Bethesda, Maryland. (FT)

Short readings from these chapters should be read by the assigned date in the reading schedule – pop quizzes may be given. Lecture notes are also provided under "Content", Unit 2.

Attendance Policy: Attendance is required and will represent a portion of your grade. Each student is responsible for all information presented in lecture and lab. Poor attendance by a student is highly noticeable and typically reflects poor performance on graded assignments and quizzes.

Assessment Procedures for Lab Assignments and Quizzes: Lab assignments and associated data sets are located on D2L (under "Content", Units 3 and 4). Upon completion of each assignment you will turn in an electronic copy of your summary due by the beginning of the following weeks lab to the "Dropbox" located within D2L. These summaries must include all of the details specified in the corresponding lab assignment. Generally, key information required for most of the latter written assignments is a summary of the statistical procedure (e.g., statements for the null and alternate hypotheses, test statistic and assumption(s), and rejection region), primary output from the test, and your interpretation and conclusion. The written portion of these summaries must be in paragraph form, composed of complete sentences (pay attention to grammatical details). These exercises are evaluated for appropriate data and statistical procedure descriptions, analyses, interpretation and conclusion, and grammar. A 10% daily reduction is applied to the assignment score for late submissions. All assignments are to be your original work (see academic dishonesty policy below).

Five scheduled quizzes (50 points each) and pop quizzes, as needed, will be given to gauge your comprehension of course topics. Lab assignments will compose most of the remainder of the grade (20 to 40 points each). Lab attendance will constitute the remaining 50 points. Make-up quizzes are **discouraged**, but will be given on a scheduled make-up date. To be eligible to take the make-up exam, you must contact me or the department secretary (605 688-6121) **before** the scheduled exam **and** provide evidence of a University Approved Absence. Final grades will be assigned according to the standard scoring system as follows:

	<u>Points</u>	<u>% range</u>	<u>Letter grade</u>
Quizzes (5@50 pts)	250	90 - 100%	A
Lab reports (~8@25pts)	200	80 < 90%	B
Lab Attendance (~10@5pts)	<u>50</u>	70 < 80%	C
	500	60 < 70%	D
		< 60%	F

Reading Schedule and Lecture topics:

Read by:	Topic*	TWIM, 6th ed.	TWIM, 5th ed.	FT
		<i>pages</i>	<i>pages</i>	<i>pages</i>
Jan 20	Introduction to fisheries and wildlife biometry	---	---	---
27	Study and sampling design	---	---	---
Feb 3	Data types, characteristics, measurement scales and bias	77	---	27-30
**10	Descriptive statistics	79-80	28-31	30-34
17	Sampling distributions and data transformations			34-35, 54
24	Dakota AFS – no class	---	---	
**Mar 3	Sample size estimation	---	---	---
10	Spring Break (Mar 9 – 13)	---	---	---
17	Data description and summarization: Graphics	72-76	24-28	22-27
24	Hypothesis formulation, testing, and power	---	4-6, 10-11	41-45
** 31	Intro to model selection procedures	---	---	---
Apr 7	Parametric two-sample tests	83-84, 86	39-41	46-49
**14	Nonparametric two-sample tests	86	42 (Box 8)	49
21	Parametric and nonparametric analysis of variance	84-85	---	---
**28	Simple linear regression and correlation	86-91	44-46	50-54

* additional notes on D2L

** quiz date

Lab Assignment Schedule:

Week	Date	Lab Assignment (Assignments & data on D2L)
1	Jan 21, 22	No lab
2	28, 29	Overview of analytical software
3	Feb 4, 5	# 1. Determine data types, measurement scales
4	11, 12	# 2. Produce and interpret descriptive statistics
5	18, 19	# 3. Assess data distributions and perform transformations
6	25, 26	Dakota AFS – no lab
7	Mar 4, 5	# 4. Sample size determination
8	11, 12	Spring Break (March 9 - 13)
9	18, 19	# 5. Graphics development
10	25, 26	# 6. Hypothesis testing & power analysis
11	Apr 1, 2	#12 Introduction to model selection procedures
12	8, 9	# 7. Conduct two-sample tests and interpret results
13	15, 16	# 8. Conduct simple nonparametric tests and interpret results
14	22, 23	# 9. Conduct one-way analysis of variance and interpret results
15	29, 30	#11. Conduct simple regression and correlation analyses

Academic Freedom and Responsibility Policy:

Freedom in learning. Students are responsible for learning the content of any course of study in which they are enrolled. Under Board of Regents and University policy, student academic performance shall be evaluated solely on an academic basis and students should be free to take reasoned exception to the data or views offered in any course of study. Students who believe that an academic evaluation is unrelated to academic standards but is related instead to judgment of their personal opinion or conduct should first contact the instructor of the course. If the student remains unsatisfied, the student may contact the department head and/or dean of the college which offers the class to initiate a review of the evaluation.

ADA and Academic Dishonesty Policies:

Students are entitled to 'reasonable accommodations' under the provisions of the *Americans with Disabilities Act* (ADA). Information concerning the provisions of the ADA of 1990 and Section 504 of the Rehabilitation Act are available from the Office of Disability Services located in 145 Binnewies Hall. The telephone number is (605) 688-4504, (605) 688-4394 TTD.

Any form of academic dishonesty will not be tolerated. You are subject to the academic dishonesty policy in the following section.

Department of Wildlife and Fisheries Sciences Academic Dishonesty Policy (Revised Nov. 2000)

The Department and the University have taken a strong and clear stand regarding academic dishonesty. We believe that it is unethical and unprofessional to present work done by others in a manner indicating that the student/s is/are presenting material as his/her original ideas or work; such activity is academic dishonesty. Plagiarizing or knowingly assisting others in plagiarizing on tests, quizzes, problems, assignments, research papers, theses, dissertations, or other academic activities is unacceptable behavior. All academic work completed by students is expected to be the original work of that individual student, unless permission is specifically granted beforehand by the faculty member for some form of team effort or other format. If students are unsure if a particular activity may be regarded as a form of academic dishonesty they should consult the faculty member before undertaking such an activity.

The University has a policy on academic honesty, procedures for academic grade and dishonesty appeals, and sanctions for such activities (see Student Code). The Student Code has **different** procedures for undergraduate and graduate students.

The Department policy described in this handout is intended to attempt to address perceived academic dishonesty violations between the faculty member/s and student/s **before** Student Code procedures are implemented. This is done because under Student Code procedures the **minimum** penalty for academic dishonesty is Disciplinary Probation. These added Department steps (Steps 1, 2, and 3 of the Undergraduate Student and Graduate Student Procedures) should not be construed as an attempt to circumvent the Student Code system; both students and/or the faculty member have the option to go directly into that system. The Department procedures portion of this policy are only available to a student one time; any second perceived offense will immediately follow the Student Code procedures.

Undergraduate Student Procedure

1. When a student/s is/are determined to have broken the Academic Dishonesty Policy, he/she will be notified **verbally** by the faculty member involved as to the problem and sanction selected. This is similar to procedures 02:02:01:03 and 02:02:01:04 in the Student Code. The faculty member will do this immediately after the perceived violation occurs. Sanction options available to the faculty member are as follows:
 - a. provide the student/s a grade of zero or some other score on the test, quiz, problem, assignment, or other academic endeavor involved;
 - b. provide the student/s a grade of “F” in the course;
 - c. request that the student/s withdraw from the course;
 - d. request that the student/s change the grading for the course to an “audit”; or
 - e. immediately refer the case to the Student Code procedures.

The sanction selected is at the discretion of the faculty member, based on the seriousness of the situation.

2. If the student/s agrees to the sanction proposed by the faculty member the process is completed.
3. If the student/s does not agree to the sanction proposed by the faculty member, he/she has the right to appeal the faculty member’s decision. This **Informal Phase Appeal** should be made directly (**both verbally and in writing**) to the faculty member involved within 5 class days of notification or within 7 calendar days of notification, if the incident is at the end of the semester.

The faculty member may then modify or leave unchanged the sanction proposed in step 1. A copy of the student’s **written appeal** and the faculty member’s **written response** will be sent to the Department Head so that a confidential record to protect the student/s and the faculty member is established. The student/s written appeal and faculty member written response will be secured in the student’s file until graduation or he/she leaves the program; if no further perceived violations have occurred these materials will be purged from the student’s file.

4. If the student/s is/are still dissatisfied with the decision he/she can appeal to the Department Head. This **Informal Phase Appeal** should be made **verbally**. The Department Head will utilize this verbal appeal and the written student appeal and faculty written response described in step 3 to reach a decision. (These are steps 02:02:01:05, 02:02:01:06, and 02:02:01:07 in the **Informal Phase Appeal** process described in the Student Code).
5. If the student/s and faculty member agree with the Department Head’s decision, the process is completed. Up to this point, no one other than the student/s, faculty member, and Department Head has been made aware of the situation.
6. If the student/s or faculty member is/are dissatisfied with the Department Head’s decision they can enter the **Formal Phase** of the Student Code process (Student Code 02:02:02). It is the responsibility of the faculty member and student/s to be aware of the procedures and penalties involved.

¹The student’s advisor **may** be included because items other than class work could be involved.