ST513 Statistics for Management and Social Sciences II Course Outline

COURSE INFORMATION

Course Website: wolfware.ncsu.edu

Course Credit Hours: 3

Course Description: This course introduces regression analysis as a flexible statistical problem solving methodology. Students will learn about regression analysis in some depth from topics on basic regression through more advanced techniques. In addition, aspects of frequentist vs. Bayesian statistical reasoning will be introduced. Students will gain considerable experience working with data. Data from examples and problems in the text. Students will use SAS to do most homework assignments.

Simple linear regression, Regression analysis using linear algebra, multiple linear regression, model building techniques and strategies, variable selection techniques, common pitfalls of regression, residual analysis, frequentist vs. Bayesian statistical reasoning, categorical data analysis, logistic regression.

Prerequisites/Corequisites: ST 513 or equivalent

COURSE DELIVERY AND STRUCTURE

This online course delivers all learning materials, activities and assignments through **Moodle**, a secure and easy-to-use online learning platform. Moodle is a web-based tool (often referred to as a learning management system or LMS) used for web-enhanced and online courses. Instructors use Moodle to facilitate class communication, provide course materials and deliver assignments and other assessments.

Students and instructors use a web browser to access their courses, and no other special hardware or software is required. Courses are provided in a password-protected environment, ensuring student privacy within the class.Students with a UnityID (issued by the University). Click here to learn more about Moodle through a quick training module.

The course is **asynchronous**; students have no real-time class meeting requirements.
Learning materials and activities include:

- **Guided note outlines:** Contain key text and graphics for each topic; some topics may be broken into multiple note outlines. Definitions and examples will be filled in by students with the help of the online lectures. These outlines are a student's major resource in completing the weekly assignments and semester exams.
- **Online lecture videos:** These narrated presentations take the place of face-to-face lecture. Students will use the content in these videos to complete the guided note outlines. These videos are intentionally kept short, so there will be multiple videos for each outline.

- **Weekly assignments:** Administered through the Moodle in the form of quizzes or homework.
- **Mini-projects:** There will be 2 small projects during the semester. These may or may not require collaboration with others.
- **Quizzes/exams**. Information will be provided by your instructor
- **Discussion forums:** Required weekly discussion postings, which help students apply course content while building community.

COURSE LEARNING OUTCOMES

Upon completion of this course, students will be able to:

1. Recognize the differences in categorical and continuous variables and how that impacts modeling and prediction
2. Apply the technique of linear regression analysis
3. Utilize common strategies to build, validate, and predict using linear regression
4. Compare and contrast the Frequentist and Bayesian paradigms in modeling and the inferences gained from those respective models
5. Apply common categorical data analysis techniques
6. Demonstrate proficiency in applying the course methods using software

COURSE TOPICS AND SCHEDULE

Topic List and Schedule

- Review of Concepts
- Simple Linear Regression
- Multiple Linear Regression
- Frequentist vs Bayesian
- Categorical Data Analysis

Please note: course schedule is subject to change.

COURSE MATERIALS

Required Materials

- Textbook: Regression analysis by example. Chatterjee, Samprit. Hoboken, New Jersey: Wiley, [2012]. (ISBN: 9780470905845)
- **SAS Statistical Software:** *No cost.* Students will be exposed to the statistical software SAS, which is widely used in analysis of research data. SOME STATISTICAL SOFTWARE SUCH AS SAS, R, OR PYTHON To access SAS:
    - Students may use SAS in the Virtual Computing Laboratory (VCL). Machines in the VCL are assigned on a reservation basis and may fill up; students should plan accordingly to ensure assignments are completed on time. There is no cost for using the VCL. For more information, note the link "How Do I Get Started" under the "Help

& Documentation" menu of the main VCL page. Questions about the VCL should be addressed to the NCSU Help Desk.
    - Students may request access to the web-based SAS Studio; click this link and follow the instructions for independent learners.
    - Students may install the software on their own machine for free.
        - For information on obtaining SAS for your own machine see software.ncsu.edu/campus/sas/
        - Note that you must install both the software and a license file; for help with either of these, please contact the NCSU Help Desk.
    - Students who are near campus can use SAS at a variety of campus laboratories.
- **Basic calculator:** *Cost varies but should be minimal.* Should have square and square root functions in addition to basic addition, subtraction, multiplication, and division.

Optional Materials

- **TTextbook:** SAS - Statistics by example (ISBN-13: 978-1607648000)

Grading Scale: This course uses the standard NCSU letter grading scale. Percentage cutoffs are firm, and no rounding occurs; for example, a percentage of 86.99 would correspond to a B.

Low(percentage)	Letter
97 ≤	A+
93 ≤	A
90 ≤	A-
87 ≤	B+
83 ≤	B
80 ≤	B-
77 ≤	C+
73 ≤	C
70 ≤	C-
67 ≤	D+
63 ≤	D
60 ≤	D-
0 ≤	F

Exam and Testing Instructions

Exam proctoring: Your instructor may require proctored exams facilitated through DELTA Testing Services. A proctor is an impartial third-party who verifies the identity of the student and ensures the academic integrity of an exam.

1. **Local students** — DELTA Testing Services will offer the exam(s) for this course on campus. Please visit the DELTA Testing Services website for more information about on-campus testing.

    - **Step 1: Make an Appointment**. Exams at the DELTA Test Centers are by **appointment only**. To schedule your appointment, visit go.ncsu.edu/takemytest. Appointments must be made at least 24 hours in advance; however, the sooner – the better.

    - **Step 2: Come Prepared**

        - Bring a photo ID
        - Know your UnityID
        - If you are a DUO user, bring your registered device.
        - Arriving late for an appointment may result in the appointment cancellation; students can sign in for an appointment up to 15 minutes early.

2. **Students with Accommodations**— If you have approved accommodations with NC State's Disability Resources Office (DRO), DELTA Testing Services wants to ensure that you receive the appropriate accommodations when you go to the test center.

    - **Email Testing Services**. Send a PDF copy of your Accommodation Letter to delta_accommodations@ncsu.edu. Once we have received a copy of your accommodation letter, a confirmation email will be sent informing you that your accommodations have been processed. You will *then* be able to schedule an appointment.

3. **Remote students** — DELTA Testing Services will oversee the process of approving a remote proctor, sending all exam materials, and receiving any materials from your proctor (https://testing-services.delta.ncsu.edu/testing-services-remote/off-campus-submit-request/)

    - **Step 1: Submit a Request**. To use a remote proctor for an exam, you must submit an online request and it must be approved by DELTA Testing Services. The request should be submitted at the start of the semester. The approval process takes at least 72 hours.

        - Pre-approved proctors are marked on the map and are selectable in a

drop-down menu in the request form.

- If you do not see a pre-approved option in your area, it is your responsibility to find a proctor who meets the guidelines. When submitting a request, if your proctor is not pre-approved, select “other” and fill in the remote proctor’s information. (Please double-check the email address.)

Please note that the instructor does not communicate directly with proctors. Please refer all questions regarding proctoring to the distance proctoring center via deproctor@ncsu.edu or call 919.513.1513.

This document is an example of course information that will be modified per instructor’s preference.