

ST 542 Course Syllabus

ST 542 – Statistical Practice

Section 601

Spring 2024

3 Credit Hours

Course Description

This course will provide a discussion-based introduction to statistical practice geared towards students in the final semester of their Master of Statistics degree.

Learning Outcomes

Students will practice writing and presenting throughout the semester, gaining soft skills that aren't necessarily covered in their other courses. Students will work in groups on consulting projects provided by the instructor. Students in this course will select projects from a list of projects that were submitted by researchers on campus. All feedback will be provided by the professor, the TA, and peers in the class. Covered topics will include negotiating expectations with clients, technical writing and editing, data cleaning and visualization, and finding research ideas from consulting projects.

Course Structure

This class has weekly material as well as a data analysis project that lasts through the semester. Each week, there are three sets of activities:

1. Weekly Material: This is where we cover the topic(s) for the week. There is typically a forum to discuss the weekly topic and occasionally a homework assignment to go with the topic. There are also readings for you each week.
2. Data analysis project steps: The semester-long data analysis project is broken into weekly steps. There are often forums here to discuss your progress. This is also where you will submit your presentations and written reports.
3. Focus on Communication: One of the goals of this class is to help you polish your statistical communication abilities. In this section, we will have an exercise from the textbook or other source and a forum to discuss that exercise.

Instructions for completing the forum are given in each forum. Most of the time, you must post at least three constructive comments. This can be one discussion post and two replies to other posts, or just three constructive replies to other posts. Forums are evaluated based on participation as well as professionalism. The forums should be completed within the week that the material is posted. Please do not try to work too far ahead or behind.

Course Policies

Students in this course do not attend a typical class period. Instead students will receive course content through online presentations and activities. Students should set aside sufficient time in their schedules to complete these materials.

There will be no late work accepted as a general policy. One homework assignment will be dropped to help mitigate unforeseen circumstances that may impact your ability to turn in an assignment on time. In certain instances an extension may be granted if the instructor is contacted at least 24 hours prior to the assignment due date and time.

Instructors

Dr Dan Harris (doharris) - *Instructor*

Email: doharris@ncsu.edu

Phone: 919-515-1924

Office Location: 4264 SAS Hall

Office Hours:

My office hours are offered via Zoom.

Tu 6:00-7:00pm ET

or by appointment

Samsul Alam (malam3) - *Teaching Assistant*

Email: malam3@ncsu.edu

Phone: N/A

Office Location: SAS Hall

Office Hours:

Office hours are offered via Zoom.

TBD

or by appointment

Course Meetings

There are no formal class meetings. Weekly materials and assignments are posted on Moodle, and the student is expected to view all videos, complete readings and assignments within the appropriate week. There will be Zoom sessions during the semester led by the instructor to review/discuss assigned course materials, and there will also be Zoom meetings held with individual project teams to discuss progress on the semester project.

Course Materials

Textbooks

Becoming an Academic Writer - *Goodson, Patricia*

Edition: 2nd

ISBN: 9781483376257

Cost: softcover: \$45 new, ebook: \$28 to rent

This textbook is required.

Expenses

None.

Materials

None.

Requisites and Restrictions

Prerequisites

None.

Co-requisites

None.

Restrictions

Graduate Students inside the Engineering Program

Transportation

This course will not require students to provide their own transportation.

Safety & Risk Assumptions

None.

Grading

Grade Components

Component	Weight	Details
Assignments	20%	These are the assignments you will submit as part of your weekly materials and data analysis project work.
Discussion Forum Participation	25%	You will have at least one discussion forum every week, with the exceptions of weeks when you will be doing peer reviews.
Written Introduction	10%	The draft of your written introduction you submit during week 5.
Video Introduction	5%	Video introduction you submit during week 5.
Written Methods	10%	Revised introduction and draft methods section you submit during week 8.
Final Report	15%	Final written report you submit during week 15.
Final Presentation	15%	Final video presentation you submit during week 15.
Options Related to COVID-19	N/A	NC State returned to normal class grading beginning Summer 2021. The "enhanced S/U grading" and "late drop" options are no longer available. For more information, visit https://studentservices.ncsu.edu/your-resources/covid-19/spring2020-sat-grading/#return .

Letter Grades

This Course uses Standard NCSU Letter Grading:

97 ≤ **A+** ≤ 100

93 ≤ **A** < 97

90 ≤ **A-** < 93

87 ≤ **B+** < 90

83 ≤ **B** < 87

80 ≤ **B-** < 83

77 ≤ **C+** < 80

73	≤	C	<	77
70	≤	C-	<	73
67	≤	D+	<	70
63	≤	D	<	67
60	≤	D-	<	63
0	≤	F	<	60

Requirements for Credit-Only (S/U) Grading

Performance in research, seminar and independent study types of courses (6xx and 8xx) is evaluated as either "S" (Satisfactory) or "U" (Unsatisfactory), and these grades are not used in computing the grade point average. For credit only courses (S/U) the requirements necessary to obtain the grade of "S" must be clearly outlined.

Requirements for Auditors (AU)

Information about and requirements for auditing a course can be found at <http://policies.ncsu.edu/regulation/reg-02-20-04>.

Policies on Incomplete Grades

If an extended deadline is not authorized by the Graduate School, an unfinished incomplete grade will automatically change to an F after either (a) the end of the next regular semester in which the student is enrolled (not including summer sessions), or (b) by the end of 12 months if the student is not enrolled, whichever is shorter. Incompletes that change to F will count as an attempted course on transcripts. The burden of fulfilling an incomplete grade is the responsibility of the student. The university policy on incomplete grades is located at <http://policies.ncsu.edu/regulation/reg-02-50-03>. Additional information relative to incomplete grades for graduate students can be found in the Graduate Administrative Handbook in Section 3.17.G at <http://www.ncsu.edu/grad/handbook/index.php>

Late Assignments

All due dates are firm and no late work will be accepted, unless arrangements are made with the instructor prior to the time assignments are due. Computer failures, lost files, and sickness (other than COVID-19) or other difficulties are not generally valid excuses for submitting an assignment late. Exceptions to this policy may be made in the event a student is quarantined because of COVID-19; please inform the instructor as soon as possible to make arrangements for any necessary alterations to assignment schedules.

Attendance Policy

For complete attendance and excused absence policies, please see <http://policies.ncsu.edu/regulation/reg-02-20-03>

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Absences Policy

None.

Makeup Work Policy

Moodle work will be due by 11:59pm on the day it is due. This class relies on your engagement with me, each other, and the material. Deadlines are set to help keep you on track with assignments and the overall course load. The

deadlines also keep group work on pace to be completed by the end of the semester and allow you to get feedback in a timeline manner. However, these deadlines should not be a source of undue stress. If you need a deadline extension, please ask (if possible, ask before the deadline, not after). You do not need to provide an explanation or detailed health information.

Additional Excuses Policy

If you become ill with or otherwise need to miss due dates because you have been advised that you may have been exposed to COVID-19, you should not be penalized regarding class participation. However, you will be expected to develop a plan to keep up with your coursework during any such absences. Please contact the instructor to agree on an appropriate plan.

Academic Integrity

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Violations of academic integrity will be handled in accordance with the Student Discipline Procedures (NCSU REG 11.35.02) (<https://policies.ncsu.edu/regulation/reg-11-35-02/>).

Academic Integrity: Students are required to comply with university policy on academic integrity found in the Code of Student Conduct found at <http://policies.ncsu.edu/policy/pol-11-35-01>.

Academic Honesty: See <http://policies.ncsu.edu/policy/pol-11-35-01> for a detailed explanation of academic honesty.

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None.

Honor Pledge

Your submission via Moodle on any assignment indicates "I have neither given nor received unauthorized aid on this test or assignment."

Digital Course Components

Students may be required to disclose personally identifiable information to other students in the course, via digital tools, such as email or web-postings, where relevant to the course. Examples include online discussions of class topics, and posting of student coursework. All students are expected to respect the privacy of each other by not sharing or using such information outside the course.

Digital Course Components: Students are required to use Moodle and may be required to use Zoom. The Zoom meetings will not be recorded, and comments made via email or web-postings will not be disseminated outside of the class. Students may be required to disclose personally identifiable information to other students in the course, via electronic tools like email or web-postings, where relevant to the course. Examples include online discussions of class topics, and posting of student coursework. All students are expected to respect the privacy of each other by not sharing or using such information outside the course.

Accommodations for Disabilities

Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with the Disability Resource Office at Holmes Hall, Suite 304, 2751 Cates Avenue, Campus Box 7509, 919-

515-7653. For more information on NC State's policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation (NCSU REG 02.20.01) (<https://policies.ncsu.edu/regulation/reg-02-20-01/>)

Non-Discrimination Policy

NC State provides equal opportunity and affirmative action efforts, and prohibits all forms of unlawful discrimination, harassment, and retaliation ("Prohibited Conduct") that are based upon a person's race, color, religion, sex (including pregnancy), national origin, age (40 or older), disability, gender identity, genetic information, sexual orientation, or veteran status (individually and collectively, "Protected Status"). Additional information as to each Protected Status is included in NCSU REG 04.25.02 (Discrimination, Harassment and Retaliation Complaint Procedure). NC State's policies and regulations covering discrimination, harassment, and retaliation may be accessed at <http://policies.ncsu.edu/policy/pol-04-25-05> or <https://oied.ncsu.edu/divweb/>. Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the Office for Institutional Equity and Diversity (OIED) at 919-515-3148.

Additional NC State Rules and Regulations

Students are responsible for reviewing the NC State University Policies, Rules, and Regulations (PRRs) which pertain to their course rights and responsibilities, including those referenced both below and above in this syllabus:

Equal Opportunity and Non-Discrimination Policy Statement
<https://policies.ncsu.edu/policy/pol-04-25-05> with additional references at <https://oied.ncsu.edu/divweb/policies/>

Code of Student Conduct <https://policies.ncsu.edu/policy/pol-11-35-01>.

Course Schedule

NOTE: The course schedule is subject to change.

Week 1 – 01/08/2024 - 01/14/2024

Topic: Welcome and Introduction

Weekly material: Introduce yourself, fill out office hours/Zoom session preferences

Data analysis projects: Indicate meeting time availability, select projects

Communications forum: Countering stereotypical views of statisticians with discussion forum

Week 2 – 01/15/2024 - 01/21/2024

Topic: Structuring and Holding Meetings

Weekly material: Read Derr Ch. 2 and Ch. 2 from Cabrera and McDougall

Data analysis projects: Turn in data of first meeting, forum to discuss considerations for first meeting

Communications forum: Videos on defining roles/scope of work and ending a meeting effectively, discussion fora on both

Week 3 — 01/22/2024 - 01/28/2024

Topic: Communication

Weekly material: Barry Nussbaum's collaboration webinar and discussion forum

Data analysis projects: Reflection on first meeting discussion forum, turn in notes from first meeting

Communications forum: Video on discussion about a realistic timeline for work with forum, also read Chs. 1 and 2 in Goodson with forum

Week 4 — 01/29/2024 - 02/04/2024

Topic: How to give Good Presentations

Weekly material: Read JSM's presentation guidance and article Effective Communication: Excellence in a Technical Presentation

Data analysis projects: Keep working on project, turn in update, receive instructions and rubric for intro and intro video

Communications forum: Video on using statistical results to identify questions of interest with discussion forum

Week 5 — 02/05/2024 - 02/11/2024

Topic: Statistical Ethics

Weekly material: Read articles including a NYT article about GSK, a doctor and warring statisticians from Gelman's blog; discussion forum; reflection assignment

Data analysis projects: Written introductions and 3-5 minute intro video are due

Communications forum: Video on pseudoreplication and refusal to use a statistician's advice with discussion forum

Week 6 — 02/12/2024 - 02/18/2024

Topic: Peer Review

Weekly material: Peer review other groups' video intros

Data analysis projects: Meet with instructor via Zoom to discuss project

Communications forum: none

Week 7 — 02/19/2024 - 02/25/2024

Topic: The p-Value

Weekly material: Editorial and TAS issue, pick two articles that look interesting and discuss in forum, also written reflection

Data analysis projects: Work on analysis plan, turn in outline

Communications forum: Video on navigating requests related to p-hacking and survey validation with discussion forum

Week 8 — 02/26/2024 - 03/03/2024

Topic: Methods Section and Analysis Plan

Weekly material: Find two articles that use statistics; as a class work up list about what goes in a methods section with a how-to-write-it guide

Data analysis projects: Introduction and proposed methods section due

Communications forum: Video on advocating for data visualization with discussion forum

Week 9 — 03/04/2024 - 03/10/2024

Topic: Peer Feedback and Polishing Your Writing

Weekly material: Read Derr Ch. 7 and watch the related videos, with discussion forum

Data analysis projects: Peer review other groups' methods drafts

Communications forum: none

Week 10 — 03/11/2024 - 03/17/2024

Spring Break

Week 11 — 03/18/2024 - 03/24/2024

Topic: Communicating Results

Weekly material: Read Ch. 5 of Cabrera and McDougall with discussion forum about their sample report

Data analysis projects: Exercises 42, 43, 44 from Goodson's book (writing results), meet with instructor via Zoom to discuss project

Communications forum: Video on statistically significant vs. practically meaningful with discussion forum

Week 12 — 03/25/2024 - 03/31/2024

Topic: The Value of a Statistician

Weekly material: Derr Ch. 7 with discussion forum

Data analysis projects: Draft final report due

Communications forum: Read "Twenty-Five Analogies for Explaining Statistics" and discuss in forum

Week 13 — 04/01/2024 - 04/07/2024

Topic: Thinking Critically about Statistics

Weekly material: Two of blog posts from Critical Inference: Assumptions are not Free and Fact Detector? It is Not, along with a discussion forum

Data analysis projects: Refine final report

Communications forum: Discussion forum on editing your own work and their own common mistakes from mistakes table in Goodson

Week 14 — 04/08/2024 - 04/14/2024

Topic: Work Week

Weekly material: none

Data analysis projects: Final presentations due

Communications forum: none

Week 15 — 04/15/2024 - 04/21/2024

Topic: Peer Review

Weekly material: Peer review final presentations

Data analysis projects: Final report due with relevant files

Communications forum: Written reflection on semester/program