

COURSE SYLLABUS FOR STAT 1430H SPRING 2020
HONORS STATISTICS FOR THE BUSINESS SCIENCES

Course Coordinator/Lecturer: Dr. Rumsey Office Hours: 10:15-11:15 M, W Contact: rumsey-johnson.1@osu.edu
TA: Lun Li Office Hours: Contact: li.9515@osu.edu
Meeting times: Lecture: T Th 12:40-1:35 in EA 295 (209 West Avenue Building) Recitation: MW 11:30-12:25 in Baker Systems Engineering 136

Course Description: Statistics 1430H is a calculus-based introduction to probability and statistics, sample statistics, discrete and continuous probability distributions, and sampling distributions for means and proportions, with a special focus on the methodology that underlies the techniques and analyses.

This is a GEC course for Data Analysis. The expected overall learning outcomes are:
Students understand basic concepts of statistics and probability, comprehend methods needed to analyze and critically evaluate statistical arguments, and recognize the importance of statistical ideas.

Prerequisites: The prerequisites for this class are Honors standing, and Math 1131 (132), 1151 (152.xx), 1156, 1161.xx (161.xx), or 1181H (161.xxH); or permission of instructor.

Course Objectives:

- ✓ Learn, understand, and practice statistical concepts and techniques for data exploration and analysis.
- ✓ Apply statistical concepts and techniques to make decisions within a business context.
- ✓ Gain a fundamental understanding of probability.
- ✓ Develop technical writing and oral communication of statistical results.
- ✓ Become well prepared for BM2320.

How Stat 1430H compares to Stat 1430:

- ✓ It covers the same basic material as Stat 1430.
- ✓ Expands the range of problems the student can tackle.
- ✓ It puts special emphasis on oral and written communication skills and presentation.
- ✓ It takes the same statistical concepts of Stat 1430 to a higher level in terms of why and how certain statistical ideas, formulas, and techniques work.
- ✓ The in-class assignments, homework, and exams in Stat 1430H are more challenging than those for Stat 1430 as a result.

Textbook

- **My Stat Lab** is REQUIRED for Stat 1430. It contains a good electronic textbook to use to follow along if you like to have a textbook to accompany your notes. Note MY STAT LAB AND ITS ELECTRONIC TEXTBOOK ARE ALSO REQUIRED FOR BM2320, WHICH FOLLOWS THIS CLASS. So you can buy now, and use them for both courses. This is the least expensive option for getting the book. **The instructions for purchase are under the COURSE INFORMATION MODULE of Carmen.**

Technology

- Calculators are required on the exams if you don't want to do hand-calculations. You are not allowed to use your phone as a calculator during recitation or exams.
- **INSPIRE BRAND CALCULATORS (or equivalent) ARE NOT ALLOWED.**
- **Data Files** will be used in the class during recitation. You can access all data sets through the Stat 1430 Carmen website.
- **Computer Software: StatCrunch. This software is required comes as a part of My Stat Lab. You will need it for recitations and possibly homework.**

Technology:

- ✓ Calculators: A scientific calculator is required in class each day and on all exams.
- ✓ **Stat Crunch is what we are using in class; it is available with the book on MyStatLab, by Pearson.**
- ✓ Be prepared to save work done in class, e.g. bring a USB to class with your or email your work to yourself.
- ✓ In case you want to work outside of class (yourself or with a group), here is the link for locations of Student Computer Centers on campus: <http://ocio.osu.edu/elearning/labs-and-classrooms/labs/locations/>

Carmen Website: New material will be posted as we go along

- ✓ Check frequently. You are responsible for all information posted on Carmen.
- ✓ Course announcements, changes, exam dates and locations and any changes/updates.
- ✓ Course syllabus and schedule, homework, solutions, group postings, etc.
- ✓ Resources, study materials, formula sheet, course information.
- ✓ If you have technical issues with Carmen, contact your TA.

Grade Components: (Points for HW and In-class Assignments will be rescaled to the total points listed below)

In and out of class assignments: Total # assignments TBD – each one is worth the same # of points. We drop the 2 lowest (total) to cover absences due to illness, trips, job interviews, weddings etc. For absence due to university business – see Dr. Rumsey or your TA prior to the absence; bring documentation on OSU letterhead.	20%
Midterm 1 Date TBA	25%
Midterm 2 Date TBA	25%
Final Exam (Comprehensive – more weight on new material after Midterm 1 and new material) Date Friday Apr 24 12:00pm-1:45pm– no early finals, no exceptions!	25%
Final Project	5%

Grading Scale: (no curve, no extra credit or bonus assignments)

		B+	87.0 – 89.9	C+	77.0 – 79.9	D+	67.0 – 69.9
A	93.0 – 100.0	B	83.0 – 86.9	C	73.0 – 76.9	D	60.0 – 66.9
A-	90.0 – 92.9	B-	80.0 – 82.9	C-	70.0 – 72.9	F	below 60.0

Final Project:

- ✓ The final project is an oral Powerpoint presentation and written report from each group whose objective is to convince a panel of 'meeting planners' that their particular airline (assigned at

random) should be chosen as the official airline of the Joint Statistical Meetings two years from now.

- ✓ All arguments for your airline must be based on statistics, including 1) descriptive statistics 2) graphical summaries and 3) a statistical analysis using regression and/or confidence intervals.
- ✓ Grade based on choice of data, depth and correctness of statistical analysis, creativity, presentation skills.
- ✓ Presentations will take place during the final days of class. Some class time will be dedicated to the project.

Out of class Work Format Requirements:

- ✓ All homework must be **stapled** with your **name and group number** at the top **typed or written in pen**.
- ✓ All answers must be typed in MS Word with equations/calculations either typed or written neatly in **pencil**.
- ✓ Graphs and tables of descriptive statistics **must be included** when a data set was analyzed using Excel.
- ✓ Graphs and tables must be copy/pasted **in the space provided** for that particular problem. **Do not staple computer output at the end of your HW and expect us to look for it - your future boss won't!**
- ✓ Failure to comply with the above format requirements **will** result in a loss of points.

In-Class Work:

- ✓ In-class assignments will involve work in groups of 2-3 assigned by us. Group members at the tables will be changed around at various times during the quarter.
- ✓ Some assignments will be due at the end of the class period, some may involve 2 class periods to finish. We will let you know in class when each assignment is due.
- ✓ In-class assignments include:
 - Problem solving activities regarding the material covered in class.
 - Data analysis and interpretation, and drawing conclusions. Some activities will require you to collect and/or find appropriate data.
 - Written and oral presentations and technical writing.
- ✓ Focus on solving the problems with the resources available to you, as you would in a job setting. Your primary resources during group work are 1) your notes; 2) Carmen and other on-line materials; 3) the others in your group; 4) others at your table. Your instructors are there to facilitate, but you are in charge.
- ✓ You may have to finish the in-class work out of class if you need more time.
- ✓ **If you create a distraction or don't follow policies during class you will lose points on your assignment. Stay on task, contribute equally to the work, stay off your phone, show up for class, and be on time.**

Cell phones:

- ✓ Cell phones must be either turned off or put on vibrate during class, as cell phones ringing during class disrupt the learning process. Additionally, no cell phone calculators or iPads will be allowed on any exams in the course. Note: this applies also to PDAs with calculator and/or communication capabilities.

Exams:

- ✓ **Number of exams.** There will be two midterm exams and one final exam (see course schedule and course website for details on where and when they are). The final exam will be comprehensive with more emphasis on those topics covered after the second midterm.

- ✓ **Exam Content.** Exam questions will be multiple choice, true false, and short answer/work it out problems with interpretation, as well as some short proofs similar to those done or discussed in class. Computer output will appear on exams and you will be expected to use the output to answer various questions. The first priority is to have a full set of lecture notes and study them very closely. Also, be sure to work as many problems as you can from the resources available on Carmen. There will likely be 30-35 problems (including parts of problems) on each midterm and roughly 40-45 problems (including parts of problems) on the final exam.
- ✓ **Exam materials.** No review/cheat sheets or any other outside materials are allowed on exams. We provide a copy of the Stat 1430H formula sheet attached to each exam. The formula sheet will be posted on the Carmen website well in advance of the first midterm. The same formula sheet will be used on every exam in this class. Statistical tables from the text will also be provided on exams as needed; they are also available on Carmen. Calculators (but no cell phones, PDAs or iPods) may be used on the midterms and final exam.
- ✓ **Question policy during exams.** In fairness to all students, we will no longer be able to answer questions during the exams. If you believe there is an error on the exam, you may bring it to our attention, or write a note to us on the exam. We will make every effort to make sure the questions are clearly written. Be sure to study all of the statistical terms and notation so you can recognize them in an exam question.
- ✓ **Make-up Exams.** If you have an emergency and are going to miss an exam, please notify Dr. Rumsey as soon as possible so arrangements can be made. Please also have documentation (doctor's note, etc.) as to why you missed the exam. Your documentation must be approved prior to your being allowed to take a make-up exam. Missed exams without approved documentation by Dr. Rumsey will receive a zero. No early final exams will be given.

Dropped Assignments/Absences/Make Up Policy:

- ✓ If you have an extended illness and this illness causes you to miss more than the allowed number of dropped assignments, obtain documentation and see Dr. Rumsey immediately. Notification and documentation at the time of illness or within a week of returning will be required. No later.
- ✓ If you will be absent on university approved business (e.g. athletes) or are observing a religious holiday, please make arrangements with your TA in advance to turn in the work you will be missing.
- ✓ We cannot add additional dropped assignments. Save dropped assignments for when you really need them.

Keep track of your grades!!

- ✓ It is your responsibility to check the Carmen website for your grades.
- ✓ If something is wrong or your score is missing you must notify your grader within one week of when the work was returned in class.
- ✓ We can't address problems with missing and/or incorrect grades at the end of the semester.

Show your work:

- ✓ You must show justification for all work turned in for a grade in this class except for MC/TF.
- ✓ Answers (even correct ones!) without work may **not** receive credit.

Regrade policy for exams and assignments:

- ✓ If you have a question about the grading of an exam, you may file an appeal with Dr. Rumsey.
- ✓ An appeal consists of a short neatly written or typed note on 8.5 x 11 paper attached to your quiz or exam that explains what she should consider. Do not write anything on your exam.
- ✓ Appeals must be limited to 2 sentences per problem – just alert her to which problem to regrade and why. Dr. Rumsey will look at all regrades at the same time, make final decisions, and return them to you.
- ✓ All exam appeals must be filed in writing within **one week** after exams are returned in class.
- ✓ Do not appeal an excess of problems. This may result in a regrade of your entire exam.

- ✓ If you have a question about the grading of an in or out of class activity you may file an appeal as well. Follow the same procedures as for an exam regrade (above).

Statistics Help Room:

- ✓ There is free help and study space available in Cockins Hall Room 132 on Mondays through Thursdays from 9:10 AM to 6:20 PM and Fridays from 9:10 AM to 1:40 PM.
- ✓ The busiest days are exam days. To avoid the rush, try to visit before exam day; even one or two days before the exam makes a big difference.
- ✓ For more information on the help room see <http://www.mslc.ohio-state.edu>.

General Statement on Academic Misconduct:

- ✓ Please help us to maintain an academic environment of mutual respect, fair treatment, and personal growth.
- ✓ You are expected to produce original and independent work for exams and to have no contact with any other student or other resource materials during an exam.
- ✓ Academic misconduct **will not be tolerated** and will be dealt with procedurally in accordance with University Rule 3335-31-02. (This policy can be found at <http://oaa.osu.edu/procedures/1.0.html>.)

Specific Academic Integrity Policies:

- ✓ In-class assignments: can be done together and the same answers can be turned in by all in the group.
- ✓ Homework: You may work on homework with others but your final answers have to be your own, written in your own words. Any answers that are copied verbatim (or close enough to be suspicious) are considered to be academic misconduct and will automatically be reported by Dr. Rumsey to the OSU Committee on Academic Misconduct – no questions asked. TAs are trained to look for and report suspicious papers.
- ✓ Exams: No review materials are allowed. During an exam you are absolutely not allowed to make your work accessible anyone else, have any conversations with anyone else (even about calculators!) or to look at anyone else's paper for any reason. Make sure your work is covered for your protection and report any suspicious activity to us during the exam.

OSU Policy on Email Correspondence: In order to protect your privacy, all course e-mail correspondence **must** be done through a valid OSU name.number account. Your email will be returned if this policy is not followed.

Addressing Issues of Differing Abilities:

Any student who feels they may need an accommodation based on the impact of a disability should contact the instructor privately to discuss your specific needs. Students with documented disabilities should also contact the Student Life Disability Services (SLDS) in 098 Baker Hall (phone: 292-3307) to coordinate reasonable accommodations for the course. SLDS forms must be given to the course coordinator (Dr. Rumsey) as early in the quarter as possible to be filled out and returned to you to insure accommodations can be set up.

Section Changes, Unpaid Fees: *The instructor and TA will not under any circumstances sign paperwork regarding section changes.* See Jean Scott in the Statistics Office (408A Cockins Hall) for the policy on section changes. If your fees are unpaid, you should not be attending class. Anyone with unpaid fees at the time of the midterm will not be allowed to take the midterm exam. In fact, you will be dropped from the course. However, if there is a valid reason for your fees being unpaid (e.g., financial aid hasn't gone through), submit this in writing (with documentation) to Dr. Rumsey as soon as possible so that we allow you to take the midterm exam and do not drop you from the course.

PLEASE TAKE CARE OF YOURSELF (OSU Mental Health Statement):

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student’s ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing.

If you are or someone you know is suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life’s Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614--292--5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on-call counselor when CCS is closed at 614-292-5766.

If you are thinking of harming yourself or need a safe, non-judgmental place to talk, or if you are worried about someone else and need advice about what to do, 24 hour emergency help is also available through the Suicide Prevention Hotline (Columbus: 614-221-5445 / National: 800-273-8255); or text (4hope to 741741); or at suicidepreventionlifeline.org

Course Topics List

Data Collection: Surveys and Experiments
Organizing Data with Graphs
Organizing Data with Descriptive Statistics
Correlation and Regression
Two-way Tables and Independence
Probability Rules
Conditional Probability
Random Variables: Discrete
Random Variables: Continuous
Binomial Distribution
Normal Distribution
Sampling Distribution for the Sample Mean
Confidence Intervals for the Population Mean (sigma known)
T-distribution; CI and HT with sigma unknown
Hypothesis Tests for the Population Mean (sigma known); TYPE I, II errors
Confidence Intervals and Hypothesis Tests for the Population Proportion