Arts & Sciences
Department of Statistics

THE OHIO STATE UNIVERSITY

STATISTICS: 2450
INTRODUCTION TO STATISTICAL ANALYSIS I
SPRING 2017

Course overview

Instructor & Office Hours

Judit Bach bach.20@osu.edu Office Information & Hours _____

Teaching Assistant (to be completed by student)

_____ _____ _____

Contact Information for other Students and/or Instructors

(Course Coordinator)
_____ _____ Dr. Baker baker.375@osu.edu

Meeting Days/Times

TR 12:40p – 1:35p MacQuigg 264. with recitations on R @ 1:50p or 3p in the EA bldg.

Course description

Calculus-based introduction to statistical data analysis. Includes sampling, experimental design, probability, binomial and normal distributions, sampling distributions, inference, regression, ANOVA, two-way tables. The prerequisite for this 3 credit hour course is differential calculus.

Your Support System

Coordinator & Lecturer	Provide the overarching view of the clusters of concepts.
Recitations	Reinforce and extend content covered in lecture. Students should expect to be active participants in these sessions.
Tutor Hours	Are in Cockins (CH) 132 and provide you with additional support on a walk-in basis M- R 9:10a – 5:20p & Fridays 9:10a – 12:45p.

Primary Course Goal:

- To develop skills in drawing conclusions & critically evaluating results based on data.

Course Objectives:

- To enable you to use statistical tools for presentation and descriptions of data
- To enable you to correctly apply probability rules and counting techniques.
- To enable you to understand the use of sampling distributions as the foundation of inference.
- To enable you to analyze data through linear regression, confidence intervals, and hypothesis tests.
- To enable you to use your knowledge of calculus to conceptually understand its role in computing probabilities.

Course learning outcomes

By the end of this course, students should successfully be able to:

- Understand basic concepts of statistics and probability.
- Comprehend methods needed to analyze and critically evaluate statistical arguments.
- Recognize the importance of statistical ideas.

Dr. Baker's vision for your completion of STAT 2450

- You will become proficient in collecting, organizing, analyzing, and interpreting data
- You will become competent in the use of data analysis software.
- You will conceptually understand situations involving random phenomena.
- You will interpret findings and improve your ability to justify your results.
- Your metacognition & desire to reflect upon what you have learned will be heightened.
- You will respond to a problem by: considering any relevant assumptions, analyzing, and effectively communicating your results.
- You will gain a greater appreciation for statistics (and the underpinning mathematics).
- You will complete the Data Analysis GE requirement.

Personal Vision Statement & Commitment

Personal Vision Statement for STAT 2450:	**Personal Commitment to STAT 2450:**
By successfully completing STAT 2450 I will: • • •	To successfully complete STAT 2450, I must: • • •

Course Materials

Required course materials

- *Introductory Statistics: A Problem-Solving Approach (2nd ed.)* Kokoska.
  ISBN 1464157618 or 19781464157615

This course requires electronic access to the accompanying web-based materials via *LaunchPad*. The ebook, quizzes, and homework assignments are all located within this resource.

It is recommended that you purchase both a text and *LaunchPad*. You may purchase the LaunchPad Activation code with the accompanying loose-leaf textbook from Barnes & Nobles http://ohiostate.bncollege.com/webapp/wcs/stores/servlet/BNCBHomePage?storeId=33552&catalogId=10001&langId=-1 . Learners who pursue this option tend to prefer: using a physical textbook for supplemental annotation, relying on resources that can function independent of the Internet. The cost is $158.50 for a used text; $211.35 for a new one.

Access the *LaunchPad* module within the STAT 1450 Carmen Page for Registration Instructions.

If you have problems registering, purchasing, or logging in, please contact Customer Support. You can reach a representative 24 hours a day, 7 days a week via the online form or by chat. You can reach a representative by phone (800) 936-6899:

- Monday though Thursday 7:00 a.m. to 3:00 a.m., Friday 7:00 a.m. to 11:00 p.m.
- Saturday 11:30 a.m. to 8:00 p.m., Sunday 11:30 a.m. to 11:00 p.m.

In case you run into any difficulty, here is the essential information:
Your course URL: http://www.macmillanhighered.com/launchpad/introstats2e/4868561
School: Ohio State University - Main
Course Title: Statistical Analysis I – Spring 2017
Course Number: STAT 2450
Course Section: Spring 2017

Top Hat

We will use the *Top Hat* software to elicit student responses during lectures. Students will use their smart phones to text responses to questions posed. Please use the following information and the Student Quick Start Guide that is posted on Carmen to complete the registration process. Your username must be name# (e.g. obama.3).

Top Hat course name: **STAT 2450 SP 17**
Direct Link: TBD 6-digit course code: TBD

Required supplemental materials

JMP is the statistical software for this course. JMP is free for you per your LaunchPad purchase.

Click on www.jmp.com/macmillan .
Enter SE146414253X as the 12-digit authorization code.
Proceed to download and install JMP-Student Edition.

Highly recommended materials

Texas Instruments 83 Plus (or higher) Graphing Calculator.

Grading

Grades

Assignment or category (Wild 'n Out Wednesdays)	Percentage	Your Grade
Exam 1 (Tuesday, February 16th, during lecture)	**20%**	
Exam 2 (Tuesday, April 12th, during lecture)	**20%**	
Final Exam (Wednesday, Dec. 14th 2 p.m. - 3:45 p.m.)	**30%**	
Homework Assignments (7 total, 1.43% each, none are dropped)	**10%**	
Quizzes (7 total, 1.67% each, 1 is dropped)	**10%**	
Attendance & Participation (Combined For Lecture & Recitation)	**10%**	
Total	**100**	

The exact due dates are included in the calendar at the end of this document.

Grading scale

93–100: A
90–92.9: A-
87–89.9: B+
83–86.9: B
80–82.9: B-
77–79.9: C+
73–76.9: C
70 –72.9: C-
67 –69.9: D+
60 –66.9: D
Below 60: E

Additional Policies, Resources, & Information

Instructor feedback and response time

Grading and feedback

Midterm examinations will be available within **2 recitations**.

E-mail

All course e-mail correspondence must be done through a valid OSU name.n account.
Expect a 24-hour response time when communicating with TAs and lecturers.
We are here to support you, but just not quite in a true "on-demand" sense**.**

Student participation and responsibility

We expect you to be actively engaged in the learning process. You are responsible for your learning. Schedule a minimum of 6 hours to prepare for this course. This equates to 9 hours weekly when the 3 hours for lecture and recitation attendance are included. Successful students perform a variety of positive academic behaviors like: reviewing the Carmen page, downloading notes, being proactive in contacting a TA or classmate as necessary, etc.. Please seek assistance in managing any non-academic responsibilities prior to any potential for under-performance.

Electronic devices

As a courtesy to fellow classmates, all cellular phones and other electronic devices must be silenced during lectures and recitations. Your engagement with the class will require an attentiveness for note-taking. If necessary, TAs and lecturers can request that students place these devices out of plain view if their usage is deemed irrelevant to instruction.

Academic integrity policy

A guiding principle is that, if you are considering doing something that might be unethical, then **"Don't do it!!"** This mantra applies to both academic and non-academic settings.

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct http://studentlife.osu.edu/csc/.

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the University, or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the

University's *Code of Student Conduct* is never considered an "excuse" for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct. http://studentlife.osu.edu/csc/.

If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University. In short, if you are considering doing something that might be unethical, then resist and refrain from pursuing it. This will help you in college and well-beyond.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me. Other sources of information on academic misconduct (integrity) to which you can refer include:

- The Committee on Academic Misconduct web pages (COAM Home)
- *Ten Suggestions for Preserving Academic Integrity (Ten Suggestions)*
- *Eight Cardinal Rules of Academic Integrity* (www.northwestern.edu/uacc/8cards.htm

Grade Appeals

Your TAs are highly capable and follow established rubrics in evaluating your work. Only in the rarest of cases will an exam grade need to be appealed. In these situations:

a) (within 1 week of receipt of your assessment) Inform your TA of the issue in writing
b) Attach a statement of the issue at-hand to your work and submit to Dr. Baker.

Course Registration and Completion

Students will be able to work with department staff on any ADD and SECTION changes. Students can begin communicating with Jean Scott (Cockins Hall 408A), Tuesday, January 16th.

Date	Event
Friday, January 13th	The last day to add the course without instructor permission.
Friday, January 20th	The last day to register and avoid additional fees.
Please note that students who are dropped for non-payment are not guaranteed re-enrollment.	
Friday, February 3rd	The last day to drop without a 'W' appearing on your record.
Friday, March 24th	The last day to drop the course without petitioning.

FYI, Incompletes will only be awarded when 70% of the coursework has been completed.

Accommodations for accessibility

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated and should inform the instructor of their needs as soon as possible. The Office for Disability Services is located in **098 Baker Hall, 113 W. 12th Ave.;** telephone 292-3307, TDD 292-0901; email ods@osu.edu; http://www.ods.osu.edu/

Requesting accommodations

If you would like to request academic accommodations based on the impact of a disability qualified under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, please contact the Office for Disability Services at 614-292-3307 or ods@osu.edu to register for services and/or to coordinate any accommodations you might need in your courses at The Ohio State University. Go to http://ods.osu.edu for more information.

OSU accessibility resources

Further information and links regarding accessibility at OSU can be found here: http://ada.osu.edu/resources/Links.htm

Other Student Resources

Students can find information about academic services available at OSU on this website: http://artsandsciences.osu.edu/current-students/university-resources, and about general student services on this website: http://ssc.osu.edu.

Spring 2017 STAT 2450 Calendar

Lecture Schedule:

Tuesdays	*Thursdays*
January 10 Chp.1 An Intro. to Statistics & Statistical Inference	**January 12** 2.1–2.3 Types of Data, Bar Charts, Pie Charts, Stem-and-Leaf Plots
January 17 2.4 Frequency Distributions and Histograms	**January 19** HW 1 Due F 1/20 Qz.1 Due Su 1/22 3.1,3.2 Measures of Central Tendency& Variability
January 24 3.3 Empirical Rule, Measures of Position, Box Plots	**January 26** 4.1 Experiments, Sample Spaces, Events
January 31 4.2 An Introduction to Probability 4.3 Counting Techniques	**February 2** HW 2 Due F 2/3 Qz.2 Due Su 2/5 4.4 Conditional Probability 4.5 Independence
February 7 5.4 The Binomial Distribution (with ref. to 5.1)	**February 9** 6.2 The Normal Distribution (with ref. to 6.1)
February 14 Happy Valentine's Day!! 6.3 Checking the Normality Assumption 7.1 Statistics, Parameters&Sampling Distributions	**February 16** HW 3 Due F 2/17 Qz.3 Due Su 2/19 **Short Exam Review** 7.2 Sampling Distribution of the Sample Mean
February 21 **Exam 1 (Chps. 1 – 4)**	**February 23** 7.3 Distribution of the Sample Proportion
February 28 8.1 Point Estimation	**March 2** HW 4 Due F 3/3 Qz.3 Due Su 3/5 8.2 Conf. Int. for a Pop. Mean when σ is known (z)
March 7 8.3 Conf.Int.for a Pop.Mean when σ is Unknown (t)	**March 9** 8.4 Confidence Interval for a Pop. Proportion
March 14 Spring Break (no lecture)	**March 16 Spring Break (no lecture)**
March 21 9.1, 9.2 Parts of a Hypothesis Tests & Errors	**March 23** HW 5 Due F 3/24 Qz.5 Due Su 3/26 9.3 Hypothesis Tests for a Pop. Mean when σ is Known(z)
March 28 9.4 P-Values 9.5 Hypothesis for a Pop. Mean when σ is Unknown(t)	**March 30** 9.5 Hypothesis for a Pop. Mean when σ is Unknown (t) 9.6 Hypothesis Tests for a Pop. Proportion
April 4 11.1 One-Way ANOVA	**April 6** HW 6 Due F 4/7 Qz.6 Due Su 4/9 12.1 Simple Linear Regression **Short Exam Review**
April 11 **Exam 2 (Chps. 5 – 9)**	**April 13** 12.2 Hypothesis Tests and Correlation
April 18 13.1 Univariate Categorical Data	**April 20** HW 7 Due F 4/21 Qz.7 Due Su 4/23 13.2 Bivariate Categorical Data **Short Exam Review** **(Final Exam Thursday, April 27th 2:00p – 3:45p)**