



THE OHIO STATE UNIVERSITY

# STATISTICS: 1450 INTRODUCTION TO THE PRACTICE OF STATISTICS SPRING 2019

## Course overview

### Instructor & Office Hours

Dr. Jonathan Baker [baker.375@osu.edu](mailto:baker.375@osu.edu) TR 8:30a – 9a before class in lecture (UH 0014)  
R 11a – 12n Cockins 304B; M, T, W by appt.

### Teaching Assistant (to be completed by student)

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### Contact Information for other Students and/or Instructors

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### Coordinator of all STAT 1450 Offerings

Dr. Jonathan Baker [baker.375@osu.edu](mailto:baker.375@osu.edu) (614) 688-4546

### Meeting Days/Times

**Lecture:** TR 9:10 – 10:05a.m. UH 014      **Recitation:** \_\_\_\_\_ at \_\_\_\_\_

### Course description

Algebra-based introduction to data analysis, experimental design, sampling, probability, inference, and linear regression. Emphasis on applications, statistical reasoning, and data analysis using statistical software. This 3-credit hour course expects all students to have completed a baccalaureate-level mathematics course.

## Your Support System

**1450 Coordinator** Dr. Baker, keeps all STAT 1450 students abreast of updates and important developments with the course.

**Lecturers** Provide the overarching view of clusters of concepts.

**Teaching Assistants** Use weekly recitations to reinforce & extend content covered in lecture. Students are expected to be active participants in these sessions that convene every Thursday at either 10:20a or 11:30a..

**Tutors** Offer assistance on a walk-in basis in Cockins (CH) 132.  
The Math/Stat Learning Center (MSLC) is open  
M- R 9:10a – 6:15p & Fridays 9:10a – 1:40p.

## Primary Course Goal:

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

## Course Objectives:

- To introduce you to correct data collection methods through random sampling, experimental design & surveys
- To enable you to use statistical tools for presentation and descriptions of data
- To enable you to understand basic probability rules and 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 evaluate statistical procedures in the context of assumptions, biases, and extrapolation.

## Course learning outcomes

This course satisfies the General Education requirement in Data Analysis.

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 1450

- You will become proficient in collecting, organizing, analyzing, and interpreting data
- You will become competent in the use of data analysis software.
- You will interpret findings and improve in your ability to justify your results.
- Your metacognition and 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 mathematics that underpins our work)
- You will complete the Data Analysis General Education (GE) requirement.

## Personal Vision Statement & Commitment

Personal <u>Vision Statement</u> for STAT 1450:	Personal <u>Commitment</u> to STAT 1450:
By successfully completing STAT 1450 I will: <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> </ul>	To successfully complete STAT 1450, I must: <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> </ul>

# Course Materials

## Required course materials

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

It is recommended that you purchase both a text and *Sapling* (our HW management system).

<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 Internet functionality. The cost is under \$100.

We will be using the 8<sup>th</sup> edition of Intro. to the Basic Practice of Statistics course  
Here is how to access the course online....

### STUDENT REGISTRATION INSTRUCTIONS

The following link includes more detailed instructions on how to register for your course:  
<https://macmillan.force.com/macmillanlearning/s/article/Students-Register-for-Sapling-Learning-courses-via-your-school-s-LMS>

- Log into STAT 1450 through Carmen.
  - Click the MacMillan App in the left navigation panel.
  - Click the Sapling Learning link (note: if you encounter an error message or blank screen, you will need to adjust your browser settings and/or disable pop-up blockers).
  - Agree to Macmillan Learning terms of use and end user agreement.
  - Select your access option (credit card payment, use an activation code, or, request trial access). Click on any Sapling assignment link to launch the assignment.
  - Follow the associated steps and continue to your assignment page.
  - You are now enrolled in the course and can access future assignments through the links on your instructor's course page.
  - To access your ebook click on the image of the cover on the right sidebar of your course site. Create an account or login with an existing Macmillan Learning ebook account.
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- **Need Help?** Our technical support team can be reached by phone, chat, or by email via the Student Support Community. To contact support please open a service request by filling out the webform:  
<https://macmillan.force.com/macmillanlearning/s/contactsupport>.

## 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. You may download the Top Hat app, or, use the direct link below. Your username must be your name.# (e.g., carter.5).

Top Hat course name: **STAT 1450 SP 19 TR Morn**

Direct Link: <https://app.tophat.com/569915>    6-digit course code: 569915

## Required supplemental materials

JMP is the statistical software for this course. JMP is free.

Click on [www.jmp.com/macmillan](http://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 84 (or higher) Graphing Calculator.

## Make-Up Mid-term Examinations

The established exam dates and times are a priority for both students and university officials. Valid and documented absences during exam dates require final pre-approval from Dr. Baker. In requesting a make-up exam you must communicate with both your TA and Dr. Baker. Your performance on the final exam items most associated with the missed exam will count as the missed exam grade with up to an additional 10% point deduction. If you miss an exam because of an emergency, contact Dr. Baker immediately to request a makeup exam. You'll need to provide evidence of need for rescheduling this exam. These exams will be offered at 7a & 3p.

# Grading and faculty response

## Grades

Assignment or category	Percentage	Your Grade
<b>Exam 1</b> (Mon., Feb. 18 <sup>th</sup> , 5:20 p.m.; Hitchcock 131)	<b>20%</b>	
<b>Exam 2</b> (Mon., Mar. 25 <sup>th</sup> , 5:20 p.m.; Sullivant 220)	<b>20%</b>	
<b>Final Exam</b> (Mon., April 29 <sup>th</sup> , <u>8:00 p.m.</u> ; Sullivant 220)	<b>25%</b>	
<b>Quizzes</b> (11 total, 1.25% each, 1 is dropped)	<b>12.5%</b>	
<b>Homework Assignments</b> (11 total, 1.25% each, 1 is dropped)	<b>12.5%</b>	
<b>Attendance &amp; Participation</b> (5% for Lecture, 5% for Recitation)	<b>10%</b>	
<b>Total</b>	<b>100</b>	

*Homeworks are due by 11:59 p.m. on Fridays. Quizzes are due by 11:59 p.m. on Mondays. The exact due dates are included with the section calendar.*

*Make-up Exams (with appropriate documentation, see pg.7) will be offered:*

*Tuesday, February 19<sup>th</sup> 7a (TBD) or 3p (TBD)*

*Tuesday, March 26<sup>th</sup> 7a (TBD) or 3p (TBD)*

*The Final Exam is comprehensive.*

*Alternate offerings of the Final Exam will be determined before Spring Break.*

## Late assignments

Late submissions will not be accepted.

## 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, August 28<sup>th</sup>.

Date	Event
Friday, January 11 <sup>th</sup>	The last day to add the course without instructor permission.
Friday, January 18 <sup>th</sup>	The last day to register and avoid additional fees. <i>*Please note that students who are dropped for non-payment are not guaranteed re-enrollment.*</i>
Friday, February 1 <sup>st</sup>	The last day to drop without a 'W' appearing on your record.
Friday, March 22 <sup>nd</sup>	The last day to drop the course without petitioning.

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

## 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

## 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.

## Additional Policies, Resources, & Information

### 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

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](http://www.northwestern.edu/uacc/8cards.htm))

## Accommodations for accessibility

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: [slds@osu.edu](mailto:slds@osu.edu); 614-292-3307; [slds.osu.edu](http://slds.osu.edu); 098 Baker Hall, 113 W. 12<sup>th</sup> Avenue.

## 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



## Other Student Resources (Including: Mental Health, Relationship Violence & Diversity)

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 or someone you know are 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](http://ccs.osu.edu) or calling [614-292-5766](tel: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](tel:614-292-5766) and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-800-273-TALK or at [suicidepreventionlifeline.org](http://suicidepreventionlifeline.org).

**Title IX** makes it clear that *violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race)*. If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at <http://titleix.osu.edu> or by contacting the Ohio State Title IX Coordinator, Kellie Brennan, at [titleix@osu.edu](mailto:titleix@osu.edu). 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>.

The Ohio State University affirms the importance and value of **diversity** in the student body. *Our programs and curricula reflect our multicultural society and global economy and seek to provide opportunities for students to learn more about persons who are different from them.* We are committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among each member of our community; and encourages each individual to strive to reach his or her own potential. Discrimination against any individual based upon protected status, which is defined as age, color, disability, gender identity or expression, national origin, race, religion, sex, sexual orientation, or veteran status, is prohibited.

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 2019 STAT 1450 TR 910a Calendar *Major Monday Assessments*

Date & Time	Location	Assessment (Grade)
Monday, February 18 <sup>th</sup> 5:20p – 6:25p	Hitchcock 131	1 <sup>st</sup> Midterm ( )
Monday, March 25 <sup>th</sup> 5:20p – 6:25p	Sullivant Hall 220	2 <sup>nd</sup> Midterm ( )
Monday, April 29 <sup>th</sup> 8:00p – 9:45p	Sullivant 220	Final Exam ( )

### *Lecture Schedule:*

<i>Tuesdays</i>	<i>Thursdays</i>
<b>January 8</b> Chp.1 Picturing Distributions with Graphs	<b>January 10</b> Chp.2 Describing Distributions with Numbers (thru 2.4)
<b>January 15</b> Chp. 2 Describing Distributions with Numbers	<b>January 17</b> <u>HW 1 Due F 1/18 Qz.1 Due M 1/21</u> Chp. 3 The Normal Distribution (thru 3.4)
<b>January 22</b> Chp. 3 The Normal Distribution	<b>January 24</b> <u>HW 2 Due F 1/25 Qz.2 Due M 1/28</u> Chp. 4 Scatterplots & Correlation
<b>January 29</b> Chp. 5 Regression (thru 5.2)	<b>January 31</b> <u>HW 3 Due F 2/1 Qz.3 Due M 2/4</u> Chp. 5 Regression
<b>February 5</b> Chp. 6 Two-Way Tables	<b>February 7</b> <u>HW 4 Due F 2/8 Qz.4 Due M 2/11</u> Chp. 8 Producing Data: Sampling
<b>February 12</b> Chp. 9 Producing Data: Experiments	<b>February 14</b> <u>HW 5 Due F 2/15 Qz.5 Due M 2/18</u> <i>Covering Chapters 1-6, 8, &amp; 9</i> Chp. 12 Introducing Probability
<b>February 19</b> Chp. 13 General Rules of Probability	<b>February 21</b> Exam 1 Review Chp.15 Sampling Distributions
<b>February 26</b> Chp. 16 Confidence Intervals: The Basics	<b>February 28</b> <u>HW 6 Due F 3/1 Qz.6 Due M 3/4</u> Chp.17: Tests of Significance: The Basics
<b>March 5</b> Chp.18: Inference in Practice	<b>March 7</b> <u>HW 7 Due M 3/18 Qz.7 Due M 3/18</u> Chp. 20 Inference about a Population Mean(thru 20.4)
<b>March 12</b> Spring Break (no lecture)	<b>March 15</b> Spring Break (no lecture)
<b>March 19</b> Chp. 20 Inference about a Population Mean	<b>March 21</b> Exam 2 Review <i>Covering Chapters 12,13,15,16-20</i> Chp. 21 Two Means (thru 21.3)
<b>March 26</b> Chp. 21 Two Means	<b>March 28</b> <u>HW 8 Due F 3/29 Qz.8 Due M 4/1</u> Chp.22 Inference about a Pop. Proportion (thru 22.3)
<b>April 2</b> Chp. 22 Inference about a Pop. Proportion	<b>April 4</b> <u>HW 9 Due F 4/5 Qz.9 Due M 4/8</u> Chp. 23 Comparing Two Proportions (thru 23.3)
<b>April 9</b> Chp. 23 Comparing Two Proportions	<b>April 11</b> <u>HW 10 Due F 4/12 Qz.10 Due M 4/15</u> Chp. 25 Two Categorical Variables (thru 25.3)
<b>April 16</b> Chp. 25 Two Categorical Variables	<b>April 18</b> <u>HW 11 Due F 4/19 Qz.11 Due M 4/22</u> Review for a manageable cumulative final exam. <b>(Final Exam Monday, April 29<sup>th</sup>)</b>

### **Closing Comments:**

- Topics scheduled the day of a campus closure will be postponed to the next lecture.
- Tutoring, Carmen, & other resources will still be available the week of April 23<sup>rd</sup>.