



THE OHIO STATE UNIVERSITY

# STATISTICS: 2450 INTRODUCTION TO STATISTICAL ANALYSIS I AUTUMN 2017

## Course overview

### Instructor & Office Hours

Colby Long

[long.1579@osu.edu](mailto:long.1579@osu.edu)

M & Th 9a-10a

Jennings (JE)

JE380

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

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

(Course Coordinator)

Dr. Baker [baker.375@osu.edu](mailto:baker.375@osu.edu)

### Meeting Days/Times

MW 1:50p – 2:45p Campbell 200. with recitations on F @ 11:30a,12:40p,or1:50p 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

<b>Coordinator &amp; Lecturer</b>	Provide the overarching view of the clusters of concepts.
<b>Recitations</b>	Reinforce and extend content covered in lecture. Students should expect to be active participants in these sessions.
<b>Tutor Hours</b>	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

<b>Personal <u>Vision Statement</u> for STAT 2450:</b>	<b>Personal <u>Commitment</u> to STAT 2450:</b>
By successfully completing STAT 2450 I will:	To successfully complete STAT 2450, I must:
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# Course Materials

## Required course materials

- *Introductory Statistics: A Problem-Solving Approach (2<sup>nd</sup> 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 2450 Carmen Page for Registration Instructions.

The *LaunchPad* course management system that stores your homeworks and quizzes is ready for student registration. Follow these steps to get started.

1. **Access:** <http://www.macmillanhighered.com/launchpad/introstats/6071793>  
*Statistical Analysis I – Autumn 2017*
2. Bookmark the page to make it easy to return to.
3. Enroll in our course using one of the following options:
  - a. If you have an access code, select “I have a student access code,” enter the code exactly as it appears on the card, and click Submit.
  - b. If you don’t have an access code, either purchase a text package that includes one OR click “I want to purchase access” and follow the instructions.
  - c. If you need to start working but can’t purchase right away, select “I want temporary access” and follow the instructions for a free 21 day trial.

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 through 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/introstats/6071793>

**School:** Ohio State University – Main – Columbus, OH

**Course Title:** Statistical Analysis I – Autumn 2017

**Course Number:** STAT 2450

**Course Section:** 20533

## 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 2450 AU 17**

Direct Link: <https://app.tophat.com/e/127655> 6-digit course code: 127655

## 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](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 83 Plus (or higher) Graphing Calculator.

# Grading

## Grades

Assignment or category	Percentage	Your Grade
<b>Exam 1</b> <span style="background-color: yellow;">Wednesday</span> (October 4 <sup>th</sup> , during lecture)	<b>20%</b>	
<b>Exam 2</b> <span style="background-color: yellow;">Wednesday</span> (November 15 <sup>th</sup> , during lecture)	<b>20%</b>	
<b>Final Exam</b> ( <u>Wednesday</u> , December 13 <sup>th</sup> , 2 p.m. - 3:45 p.m.)	<b>30%</b>	
<b>Homework Assignments</b> (7 total, 1.43% each, none are dropped)	<b>10%</b>	
<b>Quizzes</b> (7 total, 1.67% each, 1 is dropped)	<b>10%</b>	
<b>Attendance &amp; Participation</b> (Combined For Lecture & Recitation)	<b>10%</b>	
<b>Total</b>	<b>100</b>	

*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](http://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), Monday, August 28<sup>th</sup>.

Date	Event
Friday, August 25 <sup>th</sup>	The last day to add the course without instructor permission.
Friday, September 1 <sup>st</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, September 15 <sup>th</sup>	The last day to drop without a 'W' appearing on your record.
Friday, October, 27 <sup>th</sup>	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. 12<sup>th</sup> Ave.**; telephone 292-3307, TDD 292-0901; email [ods@osu.edu](mailto: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](tel:614-292-3307) or [ods@osu.edu](mailto: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>.



## Autumn 2017 STAT 2450 Calendar

### Lecture Schedule:

<i>Mondays</i>	<i>Wednesdays</i>
<b>August 21</b> No Lecture - Autumn Semester Eve	<b>August 23</b> Chp.1 An Intro. to Statistics & Statistical Inference
<b>August 28</b> 2.1–2.3 Types of Data, Bar Charts, Pie Charts, Stem-and-Leaf Plots	<b>August 30</b> <u>HW 1 Due F 9/1 Qz.1 Due Su 9/3</u> 2.4 Frequency Distributions and Histograms
<b>September 4</b> No Lecture – Labor Day	<b>September 6</b> 3.1,3.2 Measures of Central Tendency& Variability
<b>September 11</b> 3.3 Empirical Rule, Measures of Position, Box Plots	<b>September 13</b> <u>HW 2 Due F 9/15 Qz.2 Due Su 9/17</u> 4.1 Experiments, Sample Spaces, Events
<b>September 18</b> 4.2 An Introduction to Probability 4.3 Counting Techniques	<b>September 20</b> 4.4 Conditional Probability 4.5 Independence
<b>September 25</b> 5.4 The Binomial Distribution (with ref. to 5.1)	<b>September 27</b> <u>HW 3 Due F 9/29 Qz.3 Due Su 10/1</u> 6.2 The Normal Distribution (with ref. to 6.1)
<b>October 2 Short Exam Review</b> 6.3 Checking the Normality Assumption	<b>October 4</b> <b>Exam 1 (Chps. 1 – 4)</b>
<b>October 9</b> 7.1 Statistics, Parameters&Sampling Distributions 7.2 Sampling Distribution of the Sample Mean	<b>October 11</b> <u>HW 4 and Qz .4 Due M 10/16</u> 7.3 Distribution of the Sample Proportion (Fall Break Eve)
<b>October 16</b> 8.1 Point Estimation	<b>October 18</b> 8.2 Conf. Int. for a Pop. Mean when $\sigma$ is Known (z)
<b>October 23</b> 8.3 Conf.Int.for a Pop.Mean when $\sigma$ is Unknown (t)	<b>October 25</b> <u>HW 5 Due F 10/27 Qz.5 Due Su 10/29</u> 8.4 Confidence Interval for a Population Proportion
<b>October 30</b> 9.1, 9.2 Parts of a Hypothesis Tests & Errors	<b>November 1</b> 9.3 Hypothesis Tests for a Pop. Mean when $\sigma$ is Known(z)
<b>November 6</b> 9.4 P-Values 9.5 Hypothesis for a Pop. Mean when $\sigma$ is Unknown(t)	<b>November 8</b> <u>HW 6 Due F 11/10 Qz.10 Due Su 11/12</u> 9.5 Hypothesis for a Pop. Mean when $\sigma$ is Unknown(t) 9.6 Hypothesis Tests for a Population Proportion
<b>November 13 Short Exam Review</b> 11.1 One-Way ANOVA	<b>November 15</b> <b>Exam 2 (Chps. 5 – 9)</b>
<b>November 20</b> 12.1 Simple Linear Regression	<b>November 22</b> <b>No Lecture – Thanksgiving Break</b>
<b>November 27</b> 12.2 Hypothesis Tests and Correlation	<b>November 29</b> <u>HW 7 Due F 12/1 Qz.11 Due Su 12/3</u> 13.1 Univariate Categorical Data
<b>December 4</b> 13.2 Bivariate Categorical Data	<b>December 6 Short Exam Review</b> 13.2 Bivariate Categorical Data <b>(Final Exam Wednesday, December 13<sup>th</sup> 2:00p – 3:45p)</b>