STAT 1350: Elementary Statistics

Spring, 2016

"Statistical thinking will one day be as necessary for efficient citizenship as the ability to read and write."
  --H.G. Wells

Instructors/Lecture Times and Locations	Office Hours and Locations	Email
Dr. Michelle Everson, Course Coordinator (Tuesday/Thursday, 12:40-1:35 p.m., EA160)	To be announced	everson.50@osu.edu
Andrew Bean (Tuesday/Thursday, 8-8:55 a.m., HH0180)	To be announced	bean.243@osu.edu
Michelle Duda (Monday/Wednesday, 5:20-6:15 p.m., EA160)	To be announced	duda.35@osu.edu
Corey Smith (Tuesday/Thursday, 12:40-1:35 p.m., CM0200)	To be announced	smith.9785@osu.edu
Erin Twohy (Wednesday/Friday, 8-8:55 a.m., KN0250)	To be announced	twohy.1@osu.edu

Tutor Room: The Math and Statistics Learning Center (MSLC) will be open beginning Week 2 of the semester (starting on January 19th), in 132 Cockins Hall. Hours are from 9:10 a.m. until 6:20 p.m. Monday through Thursday, and from 9:10 a.m. until 1:40 p.m. on Friday. STAT 1350 teaching assistants will be in this Tutor Room throughout the day if you need help, and we strongly encourage you to stop by with questions! For more details on the Tutor Room schedule, see the Tutor Room link on Carmen. The schedule will be posted on Carmen before January 19th.

Course Goals: This course satisfies the learning goals of the *GE Data Analysis requirement*, which are to develop an understanding of the basic ideas of statistical reasoning, to comprehend methods needed to analyze and critically evaluate statistical arguments, and recognize the importance of statistical ideas. The course seeks to encourage students to actively think about statistical issues arising in real problems and to understand the basic statistical techniques used to generate, summarize, and draw conclusions from data.

<u>**Required Materials:**</u>

> **Texts:** *Statistics Concepts and Controversies* 8th edition by David Moore and William Notz

> **Course Web Site:** Additional materials such as recitation activity handouts, homework assignments, other assignment descriptions, and course announcements will be available on Carmen. Students are expected to check Carmen on a regular basis (https://carmen.osu.edu/). Please visit the following site if you encounter difficulties with Carmen: http://odee.osu.edu/resourcecenter/carmen.

Software: Students in this course will use the JMP software. JMP will <u>not</u> be required outside of class time, but students who wish to use it outside of recitation can find JMP on the computers in the Thompson and 18th Avenue libraries. The **JMP Resources** section of Carmen includes a JMP Reference Guide that you will be expected to refer to when JMP is used during recitation.

Calculator: A simple calculator (with a square root key) will be necessary for STAT 1350.

Top Hat: This semester, we will be using the *Top Hat* software in this course, during lecture, as a way of keeping track of your attendance and class participation. *Top Hat* is a system that allows you to answer questions and participate during lecture by using your computer or smart phone. A little over 5% of your course grade will be based on *Top Hat* participation.

During Week 1, please go to https://resourcecenter.odee.osu.edu/top-hat/using-top-hat-students in order to learn more about *Top Hat* and to make sure you are registered to begin using *Top Hat*. You will also find out information about how you can download a *Top Hat* app to your phone to make it easier for you to use *Top Hat* during class. If you have any difficulties with the registration process, let your instructor know. <u>Each lecturer will set up his or her own Top Hat site, and we will make sure to share information with you about how you can join the site for your lecture section.</u> We will begin testing *Top Hat* during Week 2 and we will start to keep track of your participation during Week 3.

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Adding or Changing Sections

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All <u>add</u> and <u>section time changes</u> are handled by our department staff. The instructor and TAs do not sign paperwork associated with course registration. Students should go to 408A Cockins Hall and speak with Jean Scott (**scott.961@osu.edu**) about this as early as possible in the semester. The Department will begin to give students permission to add classes or do sections changes (provided that there are openings) on a first-come first-serve basis beginning at 7:00 am on **Tuesday, January 19th** in 408A Cockins Hall. Cockins Hall opens by 6am. You may attend the class the first week of the semester provided that you do not take a seat from someone already scheduled into the course. We cannot add students to courses if you have a hold on your record or you do not meet the prerequisites. *It is extremely important that you attend the recitation you are officially scheduled for so that we can keep track of your work and progress in the course.*

Grading

Your final grade in this course will depend on the following.

Assignment	Points
Homework assignments (10 points each for 80 points ; lowest will be dropped)	70 points
Lab activities (10 points each for 120 points; lowest will be dropped)	110 points
Statistics Journal Assignment	36 points
Course Participation (using Top Hat)	25 points
Midterm Exam #1 (**Monday, February 22nd, 2016, 5:20-6:15 p.m.**)	50 points
Midterm Exam #2 (**Monday, March 28th, 2016, 5:20-6:15 p.m.**)	50 points
Final Exam (**Friday, April 29th, 2016, 6-7:45 p.m.**)	100 points
Total	**441 points**

More Details about Required Course Assignments:

Homework: Homework assignments are posted on the Carmen course site, in the **Homework** section. Each homework assignment consists of 10 multiple-choice questions. Each question is worth 1 point, and you will complete these assignments through Carmen by the appropriate deadline. Although the assignments are set up using the Quiz tool in Carmen, they are not technically quizzes. You can have as much time as you need to complete assignments before the deadline (i.e., you can start answering questions and then return later to finish or change your answers), but once you submit your work to be graded, you cannot change any of your answers, and you only get one attempt to submit each homework assignment. Please refer to the document "**READ FIRST Completing Homework Assignments and Reviewing Feedback**" in the Homework Assignments section of the Carmen course website (within the Content area) for details on how you can see feedback on your homework assignment. If you do not attempt to complete a homework assignment, you will not have any access to assignment feedback or to the correct answers for each homework question. For this reason, it's strongly encouraged that you at least open and attempt every single homework assignment. Once the deadline has passed, the assignment will be automatically graded and you will receive instant feedback. Most homework assignments will be due on **Sundays** by **11:55 p.m.** The homework assignments you complete before each midterm exam will be due on **Friday** by **11:55 p.m.** so as to allow you time to contact your instructor or teaching assistant if you want to discuss your performance before the exam. **The lowest homework score will automatically be dropped from your grade.** *Note that if you add the course late and miss the first homework assignment as a result, this is the homework score that will be dropped from your grade WITHOUT EXCEPTION.*

Lab activities: During recitation sessions, you will participate in activities to supplement and extend the lecture material. These activities will be handed out in recitation and the answer keys will be posted on Carmen (in the **Lab Activities** section) by the time the lab activities are graded and returned to you. Lab activities will include opportunities for you to work with your peers and take an active role in the learning process. You will complete and submit most lab activities during recitation. The exception to this is the

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first and last lab activity, both of which will be submitted online (and worked on outside of recitation time). Information about the online quizzes that comprise Lab Activity #1 can be found below; information about the final online lab (Lab Activity #12) will be shared in recitation and on Carmen toward the end of the semester. Note that for the lab activities you complete and submit during recitation, we will choose some questions at random from each lab to grade for correctness. Thus, even if you attend recitation and complete the lab activity, you will not get full credit if you have not followed directions, or if some of your answers are incorrect. It is for this reason that you need to ask questions when you are in recitation so that you can earn as much credit as possible! **The lowest lab activity score will be dropped from your grade.** *Note that if you add the course late and miss the first graded lab activity as a result, this is the lab activity that will automatically be dropped from your grade WITHOUT EXCEPTION.*

IMPORTANT clarification about Lab Activity #1:

Although most lab activities will be completed during recitation, Lab Activity #1 consists of two distinct online quizzes that you will need to complete no later than **Tuesday, January 19th**, at **11:55 p.m.** The first quiz is our **STAT 1350 Pre-assessment**. We want you to take this short 10-item quiz so that we can get a better sense of what you might already know about statistics. We will not penalize you if you miss any questions on this quiz, but it's important that you try your best and attempt to answer all questions on the pre-assessment. You can find this quiz on the Carmen course site by going to the Activitie**s** tab, selecting Quizzes, and then clicking on the link for the STAT 1350 Pre-assessment. You will have only one attempt at completing the pre-assessment, and you should try to complete it within 30 minutes. The second quiz you will need to complete is a **Syllabus Quiz**. You can again find the syllabus quiz by going to the Activities tab, selecting Quizzes, and clicking on the Syllabus Quiz link. The syllabus quiz also consists of 10 questions. You will get credit for each question you get right on the syllabus quiz, but, again, you will have only one attempt to complete the quiz and submit your work no later than Tuesday, January 19th, at 11:55 p.m. We encourage you to carefully read through this syllabus (or have it handy) before taking the syllabus quiz to ensure that you get the best possible score on this quiz.

Statistics Journal Assignment: Statistical information is all around us, all the time. The purpose of this assignment is for you to keep track of information you are seeing outside of class that relates to important course content. In particular, we would like for you to keep a journal where you write about examples you are finding in the media where statistics is being used and discussed.   You can write about news articles that report the results of studies, poll results, blog posts, interesting graphical displays of data, or other appropriate examples. Please see the handout on Carmen, in the **Statistics Journal Assignment** section, for more details about this assignment. Details will also be shared with you during recitation. To get full credit, you will need to complete six journal entries. Each entry will involve a description of your chosen item, a discussion of how the item relates to something you learned through your textbook reading or through lecture, and a critique of the item.   You will submit three of your journal entries the week before Midterm Exam #1, and you will submit the remaining three entries soon after Midterm Exam #2.

Course Participation: From our experience, skipping lecture can put you at a severe disadvantage when it comes to completing lab activities and other course assignments. To encourage attendance in lecture, we will be keeping track of your participation using *Top Hat*. It is for this reason that it is critical for you to take the time to make sure you are registered—during Week 1—to use *Top Hat*, and that you have access to the *Top Hat* site for your particular lecture section. You will earn points toward your participation grade whenever you use *Top Hat* during lecture. If documented reasons keep you from attending lecture, or if you encounter difficulties using *Top Hat* in lecture, please talk to your lecturer immediately.

Exams: This course has two midterm exams and a <u>cumulative</u> final exam.   Each exam will consist of multiple-choice and short-answer questions. It is important that you make preparations to be available during the exam times listed above (in the **Grading** section). Please note, however, that we recognize it's not possible for all students to be available at those times, and we do offer several make-up times for each exam. Prior to each exam, we will share make-up exam times that you can sign up for in the event that you have unavoidable conflicts with the scheduled exam time. It is <u>your responsibility</u> to make sure that you sign up for one of the make-up times in a timely manner, especially since our make-up locations are typically limited in terms of seating. All exams are closed book. For each midterm exam, students may use <u>one</u> 8.5 inch x 11 inch page of notes (front and back). For the final exam, students may use <u>two</u> 8.5 inch x 11 inch pages of notes (front and back). You should also bring a calculator and a photo ID to each exam. Devices such as cell phones with calculator *and* communication capabilities are not allowed. Devices such as iPods or watches that allow you to text or take photos are also prohibited during the exam.

Policy on Late and Missed Assignments

You should allow sufficient time to complete all required assignments so that you can get help if you need it. You should also plan to be in recitation every week so you can complete lab activities. Computer failures, lost files and other technical difficulties are not valid excuses for submitting an assignment late. It is for this reason that we do allow you to drop one homework assignment and one lab activity from your grade. **No matter what the reason, the first lab activity and the first homework assignment you miss will be considered your dropped assignments, so please do not ask to make up these assignments.** If you have to miss subsequent work beyond the lab and homework assignments that are dropped from your grade, and you have documented reasons for missing this work, we will consider allowing you to make up that work. You will need to contact the course coordinator, Michelle Everson (everson.50@osu.edu), as soon as possible, to discuss making up missed work.

A students who is unable to attend an exam for a legitimate unavoidable reason may take a make-up exam only if the student provides suitable documentation of the absence and takes the make-up in a timely manner. It is serious if you fail to show up to an exam without contacting us ahead of time, and, if this happens, you will need to contact us immediately. We will only allow you to make up the missed exam if we are provided with appropriate documentation.

Disputes about Grades

If you feel that any course assignment has been graded incorrectly or unfairly, you must speak with your recitation instructor or the course coordinator within <u>one week</u> of getting your grade on that assignment. We will not re-grade assignments at the end of the semester if you are not satisfied at that time with your final course grade.

Addressing Issues of Differing Abilities

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; http://www.ods.ohio-state.edu/.

Grading Scale

Final grades in the course will be determined based on the following scale, and based on the percentage of total points that you earn during the semester.

Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	E
Min %	93%	90%	87%	83%	80%	77%	73%	70%	67%	60%	≤59%

Course Outline

The following is a general outline of the course, and it is subject to change at the discretion of the course coordinator. Any changes will be announced in lecture and on the Carmen course site. Ideally, you should attempt to complete readings before the start of a new week so you can bring questions to class. Some topics will be supplemented with course handouts.

Date	Week	Topic	Readings	Assignments due*
1/11-1/17	1	Data/Samples	Chapters 1 and 2	
1/18-1/24	2	More on Sampling/Surveys	Chapters 3 and 4	Lab 1 (online—due by 11:55 p.m. on Tuesday, January 19th)/Lab 2/Homework 1 (1/24)
1/25-1/31	3	Experiments/Measuring	Chapters 5, 6, and 8	Lab 3
2/1-2/7	4	Do numbers make sense?/Graphs	Chapters 9 and 10	Lab 4/Homework 2 (2/7)
2/8-2/14	5	Graphs/Summary Statistics	Chapters 11 and 12	Lab 5
2/15-2/21	6	Summary Statistics	Chapter 12/Review	Statistics Journal (Part 1)/Homework 3 (2/19)
2/22-2/28	7	**Midterm 1 (Monday, 2/22, at 5:20 p.m.)** /Normal Distributions	Chapter 13	Lab 6
2/29-3/6	8	Correlation/Regression	Chapters 14 and 15	Lab 7/Homework 4 (3/6)
3/7-3/13	9	Regression/Probability	Chapters 15 and 17	Lab 8/Homework 5 (3/13)
		HAPPY SPRING BREAK!!!! (3/14-3/20)		
3/21-3/27	10	More Probability and Review	Chapter 18 (up through page 427)/Review	Homework 6 (3/25)
3/28-4/3	11	**Midterm 2 (Monday, 3/28, at 5:20 p.m.)**/Confidence Intervals	Chapters 18 and 21	Lab 9
4/4-4/10	12	More Confidence Intervals/Hypothesis Testing	Chapters 21 and 22	Lab 10/Statistics Journal (Part 2)
4/11-4/17	13	More Hypothesis Testing	Chapters 22 and 23	Lab 11/ Homework 7 (4/17)
4/18-4/24	14	More Hypothesis Testing/Review		Lab 12 (online—due 4/22 at 11:55 p.m.)/Homework 8 (4/24 at 11:55 p.m.)
4/25-5/1	15	More Review: Last day of instruction is April 25th/**Final Exam** is **Friday, April 29th** at **6 p.m.**	Review	

*Lab activities (except for Lab 1 and Lab 12) and the Statistics Journal Assignment will be submitted during recitation; most homework assignments are due Sunday at 11:55 p.m. and will be completed through Carmen. Labs 1 and 12 will be completed online through Carmen. Homework #3 and Homework #6 will be due on Friday at 11:55 p.m.

Academic Misconduct

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/.

We take academic misconduct very seriously in this course. If you are suspected of behaving dishonestly during an exam (e.g., copying from another student's exam, allowing another student to copy from your exam, using materials or devices that are prohibited) or when completing any other required course assignment, this is grounds for us to file a report with the Committee on Academic Misconduct (COAM), and this may result in a failing grade in this course or an even more severe penalty.

Creating a Respectful and Safe Class Environment

We want STAT 1350 to be an environment where you can feel safe to express your thoughts and ideas about what you are learning about. You can expect fair, consistent, and respectful treatment from the entire STAT 1350 teaching team. We expect all students to treat fellow students, recitation instructors, and lecturers, with respect in your behavior, attitude and communications, be they in-person discussions or email. The OSU Code of Student Conduct, is at http://studentlife.osu.edu/csc/

Email Correspondence: In order to protect your privacy, all course e-mail correspondence *must* be done through a valid OSU name.number or Buckeyemail account. If you have not activated your OSU email account, you can activate your account at https://acctmgt.service.ohio-state.edu. Note that it is your responsibility to make sure that any email messages you send (to a recitation instructor, lecturer, or course coordinator) are received.

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.

Tips for Success in the Course

- This is NOT a math class. This is a critical thinking class. Our goal is to help you make wise and educated decisions at work and in life. We recognize that some of you might be nervous about the course, but we want you to know that we are here to help you. The TAs and some lecturers hold office hours in CH 132 in the Math/Stat Learning Center, starting the second week of classes and ending the day of the final exam. Specific hours (beginning Week 2) will be listed under the **Tutor Room** link on the Carmen course website. Please take advantage of opportunities to meet with the recitation instructors and lecturers if you need extra help.
- Your peers can be an excellent source of information. We encourage you to collaborate with your peers on different assignments (e.g., homework, lab activities, the Statistics Journal Assignment) and to help each other, but keep in mind that you must submit your own individual work, and you must work independently on all exams. Collaboration on exams is NOT allowed!

- We strongly encourage you to avoid working on assignments until the very last minute. We want to help you if you run into problems, and it can be challenging for us to help if you do not ask questions in a timely manner. Note a **General Questions** discussion forum has been set up on Carmen for you to post questions outside of class time if you need extra help.
- Do not assume the recitation instructors will re-teach the material that is covered during lecture. The recitation instructors assume you have attended lecture, and if you have to miss a lecture, it is up to you to get notes from a classmate. Recitation is not a time for lecture but a time for you to apply what you have learned in lecture and to ask questions about material that is confusing or unclear.
- Part of your grade depends on being present during recitation sessions and during lecture. Please do not skip recitation or lecture!
- Material will get more challenging as we go through the semester. Because of this, you may need to spend more time studying material that is covered later in the semester versus material covered earlier in the semester.