

## ECN 221 – Business Statistics

Fall 2023 (SLN: 95730)

### Basic Course Information

**Instructor:** Kun Zhang, **Office:** CRTVC 425H

**Email:** [kunzhang@asu.edu](mailto:kunzhang@asu.edu)

**Class Format:** In person

**Location:** BA 257, ASU Tempe Campus

**Class Time:** Tuesday and Thursday, 10:30 AM – 11:45 AM

**Office Hours and Location:**

1. In-person: Tuesday and Thursday, 12:00 PM – 1:00 PM, CRTVC 425H, ASU Tempe Campus
2. Or by appointment via email: both in-person and Zoom options are available

### About Emails:

- When sending me an email, please **include “ECN 221” in the subject line**, and **provide your name in your email**.
- It’s recommended to include a **succinct description of your issue** in the subject line (e.g., “ECN 221 – Chapter 1 question”). This will help me provide timely feedback and make sure the email is not missed.
- I will do my best to respond to emails as quickly as possible (within 24 hours), but response times may vary over weekends/holidays.

### About Office Hours:

- I will hold regular office hours with the time and location provided above.
- **If you are struggling with the course material and/or need additional assistance outside of class, you are highly encouraged to attend my office hours to ask any additional questions you may have. We can work through your questions together, individually (one-on-one), or as a group.**
- You do not need to make an appointment to attend my regularly scheduled office hours – just show up.
- If you are unable/unwilling to attend my scheduled in-person office hours, please contact me by email about scheduling another time (possibly on Zoom).

### Course Description & Objective

Business Statistics is a course that provides you with the basic tools of collecting, analyzing, presenting, and interpreting data for the purpose of making objective business decisions. The particular focus of this class will be on basic descriptive statistics, probability and sampling distributions, hypothesis testing, and simple

regression analysis. Tools taught in Business Statistics can be used to study advertising, finance, marketing, and other business topics.

Learning objectives include students' being able to: identify and interpret graphical displays; calculate descriptive statistics; calculate and interpret probabilities; determine appropriate sampling techniques; construct confidence intervals; conduct hypothesis tests and draw conclusions based on those tests; perform regression analysis and interpret the results.

## W. P. Carey Business School Goals

The W. P. Carey School of Business has established the following learning goals for its graduates:

1. **Critical Thinking**
2. Communication
3. **Discipline Specific Knowledge**
4. Ethical Awareness and Reasoning
5. Global Awareness

Items in bold have significant coverage in this course.

## Detailed Criteria for Learning Goals

The economics department has established the following criteria for the first three undergraduate learning goals:

- Discipline Specific Knowledge
  - Demonstrates knowledge of resource allocation mechanisms and their implications for efficiency, distribution, employment, and growth.
  - **Demonstrates knowledge of the models, methods, and statistical techniques used by economists to study human behavior.**
  - Demonstrates knowledge of the effects of government policies on efficiency, distribution, employment, price stability, and growth.
- Critical Thinking
  - Identifies a question (or problem) and gathers relevant information to analyze it.
  - **Draws inferences that are supported by the data/evidence and the analysis.**
  - Synthesizes analysis and theory to draw conclusions or make recommendations.
- Communication
  - Constructs a logical argument based on economic principles and observed evidence.
  - Effectively communicates in oral form.
  - Effectively communicates in written form.

The items in **bold** have significant coverage in this course.

## Course Learning Goals

At the end of the course, you should be able to:

1. identify graphical displays, select the correct graphical display for data in various settings, and select the correct interpretation of graphical displays.
2. calculate basic descriptive statistics and select the proper conclusions based on those statistics.
3. calculate probabilities and select the appropriate conclusions based on those probabilities.
4. pick the appropriate sampling technique for specified practical situations and pick statements that follow from the Central Limit Theorem.
5. construct and correctly interpret confidence intervals.
6. calculate a t-test statistic, test hypotheses using the test statistic and/or p-value, and correctly choose the interpretation or application of the result of the hypothesis test.

## Course Materials

### Textbook:

- Anderson/Sweeney/Williams/Camm/Cochram/Fry/Ohlmann, *Statistics for Business and Economics, 14<sup>th</sup> edition*, Cengage.
- The **eBook** will be available in WebAssign, which will also be the place where you will find the homework assignments.
- You do not have to get the actual physical text, but WebAssign is required (which includes the e-textbook, homework assignments, and practice questions).

### How to register for WebAssign:

Go to Module on Canvas: “Book Purchase and WebAssign Information”

☰ ▾ Book Purchase and WebAssign Information (Please consult the syllabus for the book name and edition)	✓	+	⋮
☰ 🔗 How to Register for WebAssign ↗	✓		⋮
☰ 🔗 Log into WebAssing HERE!	✓		⋮
☰ 🔗 eBook HERE!	✓		⋮

- Please note that you do not need a course key.
- You need to click on WebAssign through Canvas. Here are the instructions/resources:


<https://startstrong.cengage.com/webassign-canvas-ia-yes/>

**Please note:** The required materials for this course will be integrated into Canvas and made available to you at a special discounted price of \$102.00 plus tax. You have the

option to opt out of this program by clicking this link: <https://includedcp.follett.com/1230> but please be advised that WebAssign access is required to take this course, and if you do opt out you will need to purchase elsewhere at current market rates, which will be more expensive. The charge for the materials will appear on your student account under the item type Digital Integrated Course Mtrl after drop/add. If, however, you are a student that has a Cengage Unlimited subscription you can “opt out” at the link provided and simply log into WebAssign with your Cengage credentials.

### Need help with registration, WebAssign, or payments?

Use the information provided on Canvas in Module: “Book Purchase and WebAssign Information” to contact the Cengage support team:

⋮ The above did not work? Need help with the Cengage platform? (Reach out early!)	✓	⋮
⋮  Cengage Technical Support	✓	⋮

**You must complete the registration for WebAssign as soon as possible!** If you run into problems, **reach out early!** You can find the link to Cengage Technical Support in the above module. If you don't get what you need from Cengage Technical Support, reach out to me.

### Canvas:

- **Course materials** for this class, including the syllabus, lecture slides, and links to homework assignments, will be available on our Canvas site.
- All **announcements** will be posted on Canvas: please make sure to check Canvas regularly.

You must **check our course's Canvas page regularly** in order to succeed in the class, as it will be essential to stay informed about upcoming due dates, etc.

You may also receive course correspondence in your email account. **Please check your email regularly as well.**

### Slides:

- I will use slides to present the relevant material in class. I will post the slides before each class.
- It is possible that I update the slides after teaching them (correct typos/add clarifications or notes, etc.).

### Seeking for Help:

- Please, first, read this **course syllabus** carefully.
- **You are always encouraged to talk to me during office hours** (in-person/on Zoom or by appointment via email) – check the contact information on Page 1.
- **Technical Support:**
  - Check the links provided in the “Welcome and Start Here” Module on Canvas:

## Grading Policies and Course Requirements

Component	Weight
Homework in WebAssign (10 total, the two lowest scores will be dropped; 3% each)	24%
Participation	16%
Exams (3 total, 20% each)	60%

### Homework (within WebAssign through Canvas):

There will be 10 homework assignments. They will be completed within WebAssign (access through the link on Canvas). Each homework assignment is equally weighted.

- All assignments are individual work. These homework assignments are meant to offer you critical-thinking exercises through hands-on application.
- You must submit each assignment **on or before 11:59 pm Arizona time** on the scheduled due date to receive credit.
  - Homework submitted after the deadline will receive zero points.
  - Homework does not “auto-submit.” You must use the submit button to turn it in.
- For each homework, you will have **3 attempts**, and the **highest** score will be saved.
  - After your first submission, WebAssign will give you instant feedback (correct/incorrect marks) and hints/links to eBook sections.
  - After the due date, the answer key (and, for some questions, steps to solve the problem) will be provided by WebAssign.
- **Please remember that out of the 10 assignments, the two lowest scores will be dropped. Thus, you may miss two homework assignments without harming your grade.**
  - Therefore, no excuses for missed or late homework will be accepted under any circumstances. This includes hardware and/or software failure/difficulties.
  - For the same reason, make-up assignments will NOT be provided under any circumstances.

### Participation:

There will be short (about 15 minutes) in-class pop quizzes throughout the course. Each quiz is equally weighted.

- They will be **unannounced** and will be taken during class.
- If you miss a quiz then you miss it. There will be no make-up quizzes.
- You will be assigned into groups and complete the quiz together. You are encouraged to discuss it with each other among group members.

- By handing in a quiz during class, you are guaranteed to earn *at least* 95% of the grade for that quiz. The remaining 5% depends on your answers.

### **Exams (during class time, printed):**

There will be 3 closed-book, closed-notes exams: two midterms and one final.

- Midterm exam will be taken during class time.
- The two midterm exams will mostly cover the material from the last 4-5 weeks, but due to the nature of the class, some contents may be cumulative.
- Exams are to be done individually. If you are caught cheating, you get a zero on the exam and referred to the office of academic integrity.
- The final exam will be **comprehensive** (i.e., the final exam will cover all material from the course).
- Each midterm exam will be 75 minutes and consists of 25 questions (multiple choice; true or false). The final exam will be 110 minutes and consists of 30 questions (multiple choice; true or false).
- A calculator is allowed. But a cell phone or a computer is NOT allowed. Cell phones may NOT be used in place of standard calculators.
- More details about exams will come before the exam date.

### **Grade Scale:**

The numerical course grade will be converted to a letter grade according to the following scales:

**Your letter grade will be the *HIGHER* one of the two grades calculated below.**

<b>1. Grade Based on Overall %</b>		<b>2. Grade Based on Class Rank</b>	
<b>Overall %</b>	<b>Assigned Grade</b>	<b>Cutoff for Class Rank</b>	<b>Assigned Grade</b>
97.0 or more	A+	Rank 1 <sup>st</sup>	A+
93.0-96.99	A	Top 15% (85 <sup>th</sup> percentile)	A
90.0-92.99	A-	Top 25% (75 <sup>th</sup> percentile)	A-
87.0-89.99	B+	Top 35% (65 <sup>th</sup> percentile)	B+
83.0-86.99	B	Top 45% (55 <sup>th</sup> percentile)	B
80.0-82.99	B-	Top 55% (45 <sup>th</sup> percentile)	B-
77.0-79.99	C+	Top 65% (35 <sup>th</sup> percentile)	C+
70.0-76.99	C	Top 80% (20 <sup>th</sup> percentile)	C
60.0-69.99	D	-	-
59.99 or less	E	-	-

- Please note: **Grades will be posted on Canvas.** Your total grade will be calculated *after* the final exam, when the class rank becomes available.
- For any grade posting, students have **seven days** to report any mistakes. Grade errors will *not* be addressed after seven days. Therefore, **please check Canvas regularly.**

- I do hope you all get an A! That said, please remember that **grades are earned, not given**. Please do not ask me to add points to your grade (unless there was a grading error - see the previous bullet point); it would be unethical of me!
- I reserve the right to adjust the *course grade scale* (upwards only, i.e., you will *not* get a worse letter grade after the adjustment). If done, this will apply to **everyone** in the class.
  - I will only decide this *after* the final exam based on the performance of the whole class.
- **The Y option is not offered in this course**. Moreover, any requests at the end of the course to switch to the Y option will result in an email referring you to this syllabus.

If you wish to appeal your grade or have another concern with the course, contact the Assistant Chair of the Department of Economics, Professor Cara McDaniel, at [Cara.McDaniel@asu.edu](mailto:Cara.McDaniel@asu.edu). Concerns elevated to higher levels at the university are automatically referred back to the department for resolution.

## Tentative Course Schedule

**Please note:** This is the intended schedule. Topics covered may be adjusted, but *exam dates will not change*.

Meeting Dates	Topic	Assignments/Exam
8/17	Introduction/Syllabus, Data & Statistics (Chapter 1)	
8/22, 8/24	Data & Statistics and Descriptive Statistics (Chapter 1 and 2)	<b>Homework 1 (Ch.1&amp;2) due 8/27 Sun</b>
8/29, 8/31	Descriptive Statistics (Chapter 3)	<b>Homework 2 (Ch. 2&amp;3) due 9/3 Sun</b>
9/5, 9/7	Introduction to Probability (Chapter 4)	<b>Homework 3 (Ch. 3&amp;4) due 9/10 Sun</b>
9/12, 9/14	Introduction to Probability (Chapter 4) Review on Thursday 9/14	<b>Homework 4 (Ch. 4) due 9/17 Sun</b>
9/19, 9/21	Start Discrete Distributions (Chapter 5) on Thursday 9/21	<b>Midterm 1 on Tuesday 9/19</b> Class time
9/26, 9/28	Discrete Distributions (Chapter 5)	<b>Homework 5 (Ch. 5) due 10/1 Sun</b>
10/3, 10/5	Continuous Distributions (Chapter 6)	
10/12	<b>No class on 10/10 due to Fall Break</b> Continuous Distributions (Chapter 6)	<b>Homework 6 (Ch. 6) due 10/15 Sun</b>
10/17, 10/19	Sampling (Chapter 7)	<b>Homework 7 (Ch. 7) due 10/22 Sun</b>
10/24, 10/26	Review on Tuesday 10/24	<b>Midterm 2 on Thursday 10/26</b> Class time
10/31, 11/2	Confidence Intervals (Chapter 8)	
11/7, 11/9	Confidence Intervals and Hypothesis Testing (Chapter 8 and 9)	<b>Homework 8 (Ch. 8) due 11/12 Sun</b>

11/14, 11/16	Hypothesis Testing (Chapter 9)	<b>Homework 9 (Ch. 9) due 11/19 Sun</b>
11/21	Regression (Chapter 14) <b>No class on 11/23 due to Thanksgiving</b>	
11/28, 11/30	Regression (Chapter 14) Review on Thursday 11/30	<b>Homework 10 (Ch. 14) due 12/3 Sun</b>
12/5 (Tuesday)	Final Week	<b>Final Exam: 12/5, 9:50 - 11:40 AM Location: BA257 (usual classroom)</b>

I reserve the right to alter the course schedule details as the course proceeds.

On a regular basis, I will post announcements on Canvas regarding logistical matters, such as deadline reminders. **Please make sure to check Canvas regularly.**

**Other important dates** (full academic calendar available at <https://students.asu.edu/academic-calendar>):

1. Last day to drop the class without receiving a grade of 'W' (withdrawal) on your transcript: August 30, 2023.
2. Course withdrawal deadline: November 1, 2023.
3. Complete Session Withdrawal Deadline: December 1, 2023.

## Attendance

Sixteen percent of your grade is from class participation in the form of in-class quizzes. Therefore, I strongly encourage consistent attendance.

This course is an in-person course. Remote attendance is not available.

## Makeup Policy

There **will not** be make-up homework assignments or participation under any circumstances.

Make up exams will be administered in the following cases:

- 1) University sanctioned activities. If you are participating in a university-sanctioned activity, please contact me at least two weeks prior to the scheduled exam with a travel letter or documentation of your activity
- 2) Accommodations for religious practices. Please let me know at the start of the semester (by the end of the second week of class) if one of scheduled exams conflicts with an observance of a religious holiday. Starting from the third week, such requests will not be accepted.
- 3) Active military duty. Please follow the policy SSM 201–18 and notify me as soon as possible if this applies to you.
- 4) The Economics Department provides make-up midterm exams for students who experience serious, unforeseen situations beyond their control such as a family or medical emergency.



All requests require supporting documentation such as a doctor's note with verifiable contact information. Requests must also be made in a timely manner. To request a make-up exam, please use the form located at the top of the "Modules" page or access the form [here](#).

All requests are reviewed by the Assistant Chair of the Department of Economics and administered on Friday, October 20<sup>th</sup> 3:00 – 4:15 PM for Midterm 1 or Friday, December 1<sup>st</sup> from 3:00 – 4:15 PM for Midterm 2. Final exam cannot be given early or rescheduled without approval from the Senior Associate Dean of Undergraduate Programs at W.P. Carey.

Please note that job interviews and work and school schedule conflicts are not part of the reasons above. If you miss a midterm exam for reason other than above, the other midterm and final will count 30% each; the final exam is required.

### **Classroom Policies**

You may use mobile devices, laptops, notebooks, or tablets for taking notes or following the material; however, if your usage of such devices is distracting to the class participants or involves other students, I will ask you to turn them off and put them away.

Distracting or disrupting the class may result in a lowering of your grade; in extreme cases, a student may be removed from the class. See ASU policy at <https://www.asu.edu/aad/manuals/ssm/ssm201-10.html>.

### **Academic Integrity and Ethical Behavior**

The W. P. Carey School takes academic integrity very seriously. Therefore, unless otherwise specified, it is imperative that you do your own work. Any suspected violations of academic integrity will be taken seriously and result in the following sanctions:

- A minimum of zero on the assignment AND
- A reduced grade in the course OR
- A failure in the course OR
- An XE which denotes failure due to academic dishonesty on the transcript OR
- Removal from the W. P. Carey School of Business.

Additional information on ASU's academic integrity policy may be found at [ASU Academic Integrity Policy](#)

You can also find the W.P. Carey School Undergraduate Honor Code here:

<https://students.wpcarey.asu.edu/resources/honor-code>

You can find the Professionalism Policy which you are expected to abide by here:

<https://students.wpcarey.asu.edu/resources/professionalism-policy>

### **Use of Generative AI**

Artificial Intelligence (AI), including ChatGPT, are being used in workplaces all over the world to save time and improve outcomes by generating text, images, computer code, audio, or other media. Use of AI tools is generally welcome in this class with attribution

aligned with disciplinary guidelines. Any submitted course assignment not explicitly identified as having used generative AI will be assumed to be your original work. Using AI tools to generate content without proper attribution will be considered a violation of the [ASU Academic Integrity Policy](#), and students may be sanctioned for confirmed, non-allowable use. If at any point you have questions about what is permitted, contact the instructor to discuss *before* submitting work.

## **Prohibition Against Discrimination, Harassment, and Retaliation**

Title IX is a federal law that provides that no person be excluded on the basis of sex from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity. Both Title IX and university policy make clear that sexual violence and harassment based on sex are prohibited. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can seek support, including counseling and academic support, from the university. If you or someone you know has been harassed on the basis of sex or sexually assaulted, you can find information and resources at <https://sexualviolenceprevention.asu.edu/faqs>.

As a mandated reporter, I am obligated to report any information I become aware of regarding alleged acts of sexual discrimination, including sexual violence and dating violence. ASU Counseling Services, <https://eoss.asu.edu/counseling>, is available if you wish to discuss any concerns confidentially and privately.

## **Threatening Behavior Policy**

The university takes threatening behavior very seriously and these situations will be handled in accordance with the Student Services Manual, SSM 104-02 <http://www.asu.edu/aad/manuals/ssm/ssm104-02.html>.

## **Students with Disabilities**

If you need accommodation for a disability, you must register with the Student Accessibility and Inclusive Learning Services (SAILS): <https://eoss.asu.edu/accessibility>. Only requests sent via SAILS will be granted.

Flexible deadlines, as disability accommodation, are to be determined, as appropriate, on a case-by-case basis and cannot result in a fundamental alteration in the course.

## **Honor Code and Professionalism Policy**

All students are expected to abide by the honor code and the WPC Professionalism Policy. There is a copy of both on Canvas and a link below to the undergraduate honor code. Undergraduate Honor Code:

<https://students.wpcarey.asu.edu/resources/honor-code>

<https://students.wpcarey.asu.edu/resources/professionalism-policy>

## Instructor Absence

Per ACD 304-10: “In the event the instructor fails to indicate a time obligation, the time obligation will be 15 minutes for class sessions lasting 90 minutes or less, and 30 minutes for class sessions lasting more than 90 minutes. Students may be directed to wait longer by someone from the academic unit if they know the instructor will arrive shortly.”

## Tutoring

The **W. P. Carey School of Business provides free tutoring** in BA 201 for a number of undergraduate business classes, including ECN221. Assistance with writing is also provided. More information regarding courses offered and hours are available here: <https://students.wpcarey.asu.edu/resources/student-success-centers>.

In addition to the W. P. Carey Student Success Center, Arizona State University provides writing assistance through multiple platforms – including in class workshops (within your course!). More information can be found here: <https://tutoring.asu.edu/student-services/writing-centers>. Moreover, university tutoring services have tutoring available for this course. Please refer to <https://tutoring.asu.edu/>.

Furthermore, Statistics is offered in many different departments. Any statistics tutor may be of assistance to you, not just those who have taken ECN 221.

The W. P. Carey School of Business provides a variety of support services to our international students at the Global Education Center in BAC 119. More information can be found here: <https://students.wpcarey.asu.edu/resources/international-students/cultural-events>.

## Technical Support

For technical support, please contact the University Technology Office (UTO) directly: <https://tech.asu.edu/contact>. Or get in touch with the Technology Strategy and Operations (TSO) team of W. P. Carey: <https://wpcarey.asu.edu/technology-services>.

Visit <https://contact.asu.edu> for frequently visited links and requested information, or call ASU directly for assistance (to contact the help desk, call toll-free at 1-855-278-5080, available 24/7).

## Copyright Material

Students must refrain from uploading to any course shell, discussion board, or website used by the course instructor or other course forum, material that is not the student’s original work, unless the students first comply with all applicable copyright laws. The instructor reserves the right to delete materials on the grounds of suspected copyright infringement.

**Information contained within this syllabus, such as the course schedule details, is subject to change.**