

PBIS 189Q2
10:20-11:20 MWF
Clow Class 220

Spring Semester 2020
Explore Nature (XM)
Quest II Civic Learning

PBIS: Statistics & Citizenship (3 credits)

Instructor Information

Dr. Kenneth Price holds the title of Professor of Mathematics and serves as Director of the University Studies Program (USP). Dr. Price uses he/him/his pronouns. He can be reached in his office, Pollock House 203, by phone at (920) 424-4233 or by E-mail at pricek@uwosh.edu.

Course Information

We live in a complex world awash in data of all types, from political polls to consumer surveys to medical studies. It is challenging to make sense of all of the information with which we are bombarded daily, but having an understanding of the practice of statistics can help.

In this course, we will explore the world of statistics, learning the basic ideas and techniques of this discipline. Statistics is the discipline that focuses on analyzing data and making decisions based upon data. Good statisticians understand how to properly collect, organize, analyze, and interpret numerical information that comes from data. Because data can arise from so many different sources, applications of statistics show up in almost every field of study, including environmental sciences, business and economics, social sciences, and health sciences.

Course Topics Among the topics we will explore in the course are data distributions, sampling methods, experimental design, summarizing data (i.e. “descriptive statistics”), basic probability, normal distributions, sampling distributions and the Central Limit Theorem, confidence intervals and the essentials of hypothesis testing.

Requirements Eligibility to enroll in PBIS 189 is earned either by a sufficiently high placement exam score or a grade of C or higher in Mathematics 103. Students who complete PBIS 189 with a grade of C or higher are eligible to take a 200-level statistics class.

- The required textbook is *Seeing Through Statistics* (4th edition), by Jessica M. Utts (2014), Cengage Learning.
- A graphing calculator, such as the TI-83 or TI-84, is required. No other calculator will be supported. On exams, students may not use calculators with algebra and calculus applications, such as the TI-89, or calculators on a mobile phone or laptop computer. Students may not share calculators, use cell phones, or use laptop computers during exams.

Problem Based Inquiry Seminar This course is centered on activities to help students discover fundamental statistical ideas for themselves. Everyone will be involved in their own learning through problem solving as well as asking and answering questions. Students should plan to keep up with class activities and be prepared to explain every step of their solutions. Study groups are encouraged.

University Studies Program (USP)

All American universities have a general education program. The name University Studies Program has been chosen for UW Oshkosh general education to convey that this program is intentionally designed to support high impact practices and inclusive excellence. Some of its unique features are small, first-year-experience classes, future-planning, and the community engagement experience that second-year students do. This has all been achieved without adding credits to graduation.

Explore Category PBIS 189 is an “Explore Math” course within the Nature category of USP. It is designed to bring the excitement of contemporary mathematical ideas to the nonspecialist and to help develop the ability to problem solve and to reason mathematically. PBIS 189 is a general education course intended for students whose major program does not require algebra or calculus.

Quest II This section of PBIS 189 is designated as a Quest II course. It continues your orientation to the University by helping you plan your future in college, work, and life. Quest II is typically taken with either a speech course or a writing course, whichever you have not taken yet. Passing this course qualifies you to take Quest III in your second year, a course that introduces a final signature question and engage in a community project.

Ethical Reasoning The ethical reasoning component of Quest II is part of your general education that prompts you to think analytically and with care about others and the world. The following definition comes to us from the *Ethical Reasoning Value Rubric* of the American Association of Colleges & Universities.

Ethical Reasoning is reasoning about right and wrong human conduct. It requires students to be able to assess their own ethical values and the social context of problems, recognize ethical issues in a variety of settings, think about how different ethical perspectives might be applied to ethical dilemmas and consider the ramifications of alternative actions. Students’ ethical self identity evolves as they practice ethical decision-making skills and learn how to describe and analyze positions on ethical issues.

Signature Questions Signature Questions are central to a UW Oshkosh education. Our signature question is “Civic Learning: How do people understand and engage in community life?” The other two signature questions are “Intercultural Knowledge: How do people understand and bridge cultural differences?” and “Sustainability: How do people understand and create a more sustainable world?”

Civic Learning Civic knowledge consists of awareness and understanding of the various political and social processes that impact the nature and quality of life in local, state, national, and global communities. It also encompasses the cultivation of skills that may be useful in public life, like effective communication and ethical reasoning. Civic engagement means having an appreciation for and applying the values gained from civic knowledge in real world settings. Civic knowledge and civic engagement emphasize learning, reflection, and action in order to create better communities.

Liberal Education Liberal Education is an approach to learning that empowers individuals and prepares them to deal with complexity, diversity, and change. It provides students with broad knowledge of the wider world (e.g. science, culture, and society) as well as in-depth study in a specific area of interest. A liberal education helps students develop a sense of social responsibility, as well as strong and transferable intellectual and practical skills such as communication, analytical and problem-solving skills, and a demonstrated ability to apply knowledge and skills in real-world settings. The University Studies Program (USP) is your gateway to a 21st century college education at UW Oshkosh.

Student Resources

Instructor Feedback The instructor will reply the same day to E-mails sent before 5:00 PM.

Students are welcome to stop by Pollock House 203 for office hours on Mondays and Wednesdays from 12:40 PM to 1:40 PM. Feel free to ask questions about anything that has to do with our class such as assigned work, grading procedures, and using your calculator. Ask in person, call, or send E-mail to schedule appointments at other times.

Testing Center Exams Exams will be taken in the testing center, which is in the basement of Polk Library, on the following dates: March 5 or 6, April 9 or 10, and May 15.

CANVAS The following will be posted and regularly updated on CANVAS: syllabus, homework assignments, quiz and exam dates, quiz and exam grades, and slides used in class meetings. The first quiz will be administered on CANVAS.

The Center for Academic Resources provides free tutoring for PBIS 189. A list of tutors is available on their web site: <http://www.uwosh.edu/car>

Early Alert Early Alert is a program that provides you with an early report from your teacher. This report will indicate if you have academic performance or attendance problems and, if so, will help you to remedy these issues. It is common for students to be unaware of their academic performance in classes or even overestimate their performance. This is a check, offered during Week 5, that will help you know if you are on track for passing this class and others.

Accommodation Statement

The University of Wisconsin Oshkosh supports the right of all enrolled students to a full and equal educational opportunity. It is the University's policy to provide reasonable accommodations to students who have documented disabilities that may affect their ability to participate in course activities or to meet course requirements. Students with accommodation plans may confer confidentially with the instructor, preferably in a meeting during office hours, to discuss the accommodation requirements. Information related to an individual's accommodation request and/or arrangements will be confidential and will only be shared with relevant University personnel or offices.

The Accessibility Center is part of the Dean of Students Office and is located in 125 Dempsey Hall. For more information, email accessibilitycenter@uwosh.edu, call 920-424-3100, or visit the Accessibility Center Website. <https://uwosh.edu/deanofstudents/accessibility-center/>

Office of Equal Opportunity and Access

To support the Equal Opportunity and Access statement below, which is copied from the web site at <https://equity.uwosh.edu/about-us/>, Dr. Price has completed SAFE Training as well as an Inclusive Excellence Pedagogy workshop through the Center for Engaged Teaching and Learning.

All members of the University of Wisconsin Oshkosh community must be able to engage in academic pursuits, obtain and maintain employment, and utilize university services without experiencing discrimination based upon race, religion, creed, color, sex, gender identity/expression, ancestry, national origin, age, marital status, relationship to other employees, sexual orientation, disability, veteran's status, membership in the National Guard, state defense force or any other reserve component of the military forces of the United States or this state, arrest or conviction record, political affiliation, or other protected status.

Policies

If any substantive changes are made in this syllabus, such as changes in schedule or assignments, notification will be provided in a timely manner and a revised syllabus made available.

Makeup Policy Plan to take all exams at the scheduled times. Exceptions will be based on the criteria below.

- Provide a written explanation. Phone messages and E-mail do not count.
- The reason for a makeup should be documented, verifiable, and beyond your control.
- Make arrangements in advance whenever possible.

Late Policy Students are expected to complete all work on time. Late work will count for at most half of the points possible. Any work that is not submitted more than three calendar days after the due date will not be accepted and scored as a 0.

Communication Points We must all be able to explain our solutions. Simply stating an answer with no additional explanation is not sufficient for full credit.

Smart Phone, Tablet, and Laptop Policy During class phones, tablets, or laptop computers can only be used for course-related activities. Do not use these items to listen to music, watch videos, text, or engage in other activities that distract from the learning environment.

Attendance Policy Plan to be at every class, participate in activities, ask questions, contribute to discussions, and stay until the end of the period.

Academic Integrity

Academic Integrity is critical to the mission of the University of Wisconsin Oshkosh. All members of the University community play a role in fostering an environment in which student learning is achieved in a fair, just and honest way. Students are expected to uphold the core values of academic integrity which include honesty, trust, fairness, respect and responsibility. These core values, combined with finding one's purpose and passion and applying them in and out of classroom learning, produce students who become extraordinary citizens.

Examples of academic misconduct include submitting others' work as your own, cheating on an exam, tampering with the work of others, and intentionally assisting another student in any of these activities. The UW Oshkosh Student Discipline Code provides standards of academic integrity for everyone. The explanation below is copied from Section 14.01 of these guidelines, which is available at <https://www.uwosh.edu/stuaff/images/Chapter%20UWS%2014.pdf>.

Students are responsible for the honest completion and representation of their work, for the appropriate citation of sources, and for respect of others' academic endeavors.

Consumer Protection

Students are advised to see the URL below for disclosures about essential consumer protection items required by the Students Right to Know Act of 1990.

<https://uwosh.edu/financialaid/consumer-information>

Explanation of Grading

Final grades are determined by Quest II, Quiz, and Exam components.

Quest II Components are worth 10 percent of your final grade.

The Quest II activities are centered on planning your future in college, work, and life.

Required Office Visit = 5 pts. By March 2 you must meet individually with your professor by dropping in during office hours or at a time you arranged to meet with him. This is worth 5 points.

Campus Engagement = 10 pts. Drop by any of the following events: Taste of UW Oshkosh on February 12, Shamrock Shuffle on March 14, or a social justice week or a spring sporting event such as a basketball game, a wrestling meet, or a gymnastics competition. There will also be great event options during Black History Month (February) and social justice week (April 13-17). Other possible events will be discussed in class meetings and suggestions are welcome.

Participation in the event is expected. Please do not be disruptive. *Submit a brief half-page description and evidence you attended the event for 10 points.* Typically, the evidence will be a picture of yourself at the event.

Academic Open House Week = 15 pts. This event is held during the third week of the semester. It is a chance to chat with faculty, lecturers, and fellow students in any department or program. You will learn about opportunities available through your favorite departments or programs: cool new courses, scholarships, internships, study abroad/away trips, minors, certificates, emphases, research or creative opportunities, careers, etcetera. Provide evidence of visiting at least three open houses. Each open house is worth 5 points, so this assignment is worth 15 points total.

Celebration of Scholarship and Creative Activity (COSCA) = 10 pts. The COSCA event is April 30. More information is available on the website <https://osrca.uwosh.edu>.

- Attend a poster presentation that includes either a statistical analysis or survey data. Then summarize the data and the type of analysis used. What conclusions were drawn? Was their analysis correct? This assignment will be collected through CANVAS and is worth 10 points.

Career & Professional Development = 20 pts. A career advisor will visit our class on two Fridays during the semester: February 28 and April 3. The first visit is to talk about networking skills, which you will be able to apply when you attend a career fair on campus. Participating in one of these career fairs listed is a Quest II requirement: *Career Fair on the Fox, Creating Connections*, and the *Education Career Fair*.

- The career fair requirement is worth 10 points, with the first 5 points are for providing evidence of attending the fair and the remaining 5 points are for submitting a reflection on the experience to Canvas. This is due by April 22.
- The April 3 class visit will be about resumes. You will create your own resume, submit it to VMock by April 17 for 5 points. Upload your resume to Handshake by April 24 for 5 more points. The resume assignment is worth 10 points total.

Attendance = 10 pts. Plan to be at every class. Please contact the instructor if you need to miss class. Consult the makeup policy for all missed assessments.

Quizzes are worth 30 percent of your final grade.

Quizzes are each worth 10 points. There will be a total of ten quizzes, but only the top eight will count into the final grade calculation. Missed quizzes score 0 points.

- Quiz 1 will cover this syllabus and be administered on CANVAS.
- Quizzes 2 through 9 will be based on homework problems assigned on Canvas. The dates for these quizzes are February 14, 21, & 28, March 20, April 3 & 22, and May 1 & 8.
- Your written comments will be collected on a regular basis in a written student response. These five student responses are worth ten points total, which counts as your quiz 10 grade.

Exams are worth 60 percent of your final grade.

Exam percentage is determined by the total number of points earned divided by total points possible on all exams. Study guides will be provided at least one week before the exam.

- You may take Exam 1 on March 5 or 6.
- You may take Exam 2 on April 9 or 10.
- You may take Exam 3 on May 15.

Exams will be taken in the testing center, which is in the basement of Polk Library. Plan to bring your student id, calculator, and pencil to take the exam. Show up early and leave yourself plenty of time to answer every question carefully. It is much better to be careful than fast.

Calculating your final grade.

Use the formula below to determine your percentage earned.

$$\left(\begin{array}{c} \text{Quest II} \\ \text{\%-age} \end{array} \right) \times 0.10 + \left(\begin{array}{c} \text{Quiz} \\ \text{\%-age} \end{array} \right) \times 0.30 + \left(\begin{array}{c} \text{Exam} \\ \text{\%-age} \end{array} \right) \times 0.60 = \begin{array}{c} \text{Percentage} \\ \text{Earned} \end{array}$$

$$(\text{_____}) \times 0.10 + (\text{_____}) \times 0.30 + (\text{_____}) \times 0.60 = \text{_____}$$

Your final grade is based on percentage earned according to the following scale:

A	at least 93.0%	C	73.0% to 76.9%
A-	90.0% to 92.9%	C-	70.0% to 72.9%
B+	87.0% to 89.9%	D+	67.0% to 69.9%
B	83.0% to 86.9%	D	63.0% to 66.9%
B-	80.0% to 82.9%	D-	60.0% to 62.9%
C+	77.0% to 79.9%	F	below 60%

Learning Outcomes

PBIS 189 has course objectives related to our signature question on Civic Learning. There are many ways to approach this signature question; we will focus on the social construct of knowledge. With that in mind, course objectives related to Civic Learning include the following:

- Recognition that knowledge is dynamic, changing, and consistently re-evaluated.
- Developing adeptness at critical thinking, conflict resolution, and cooperative methods
- Developing skills in deliberation, dialogue, and community building

Students will be engaged in the process of ethical reasoning by identifying situations with a significant ethical component and determining their own course of action. Some of our goals for the ethical component are listed below.

- To broaden students' thinking beyond the details of statistical studies, to consider ethical treatment of human and animal participants.
- To familiarize students with the steps taken to provide informed consent and other safety measures for human participants.
- To illustrate steps some agencies take to assure data quality.
- To demonstrate some ways in which subtle experimenter bias can enter into studies through decisions that are made about the conduct and analysis of a study.
- To show some examples of questionable conduct and reporting of studies, and help students think about what constitutes fair reporting.

Upon successful completion of the course, students are expected to have the ability to:

- Identify and classify variables, identify research questions in a study. Identify confounding variables and identify sampling biases in observational studies.
- Construct and interpret bar graphs and dot plots. Calculate and interpret measures of center and spread.
- Explain and implement a random sampling scheme, and understand random assignment. Explain and calculate probabilities from normal distributions.
- Produce and interpret two-way tables from categorical data. Produce and interpret stemplots and histograms from quantitative data.
- Understand and describe the principle of sampling variability. Understand basic probability concepts such as sample space, and empirical estimates.
- Perform simulation analyses to understand the sampling distribution of the mean. Perform and interpret calculations based on the Central Limit Theorem.
- Calculate and interpret a confidence interval for a population proportion. Calculate and interpret a confidence interval for a population mean.
- Explain the reasoning and perform the calculations for a test of significance for a population proportion. Explain the reasoning and perform the calculations for a test of significance for a population mean.
- Conduct all aspects of a t-test of significance for a population mean.

Course Schedule

Week One: February 3–7

- Chapter 1 The Benefit and Risks of Using Statistics
- Complete Quiz 1 on Canvas

Week Two: February 10–14

- **Quiz 1 is due on Canvas by February 10**
- *Suggested attendance* at Taste of UW Oshkosh Involvement Fair from 3:00 – 5:00 PM on February 12 in Reeve Union
- Chapter 2 Reading the News

Week Three: February 17–21

- **Attend at least 3 academic open houses** this week (attend the one for your major, for something you can see taking a minor in, and a field that you would never major or minor in)
- Chapter 3 Measurements, Mistakes, and Misunderstandings
- Chapter 4 How to Get a Good Sample

Week Four: February 24-28

- *Career & Professional Development* class visit on February 28
- **AOHW Forms are due on February 24**
- Chapter 5 Experiments and Observational Studies

Week Five: March 2–6

- **Visit office hours by March 2**
- **Check your Early Alert**
- Chapter 26 Ethics in Statistical Studies
- *Career Fair on the Fox* - March 4, 2019 - 12:00 to 4:00 PM - Kolf Sports Center Upper Gym
- **First exam** on March 5 or 6

Week Six: March 9–13

- Chapter 7 Summarizing and Displaying Measurement
- Chapter 8 Bell-Shaped Curves and Other Shapes
- *Alumni class visit* on March 13

Week Seven: Week of March 16-20

- Chapter 10 Relationships Between Measurement Variables

Week Eight: March 23–27 No Class — Enjoy Spring Break

Week Nine: March 30 – April 3

- Chapter 11 Relationships Can Be Deceiving
- *Career & Professional Development* class visit on April 3

Week Ten: April 6–10

- Chapter 12 Relationships Between Categorical Variables
- *Creating Connections* - April 8, 2019 - 5:00 to 6:30 PM - Reeve Union (Note: Creating Connections is a structured event that connects students with organizations to engage in conversation to explore opportunities, learn career options, and meet professionals. Students will need to be present for the whole duration of this event.)
- **Second exam** on April 9 or 10

Week Eleven: April 13–17

- Chapter 14 Understanding Probability and Long-Term Expectations
- **Vmock upload due on April 17**

Week Twelve: April 20–24

- Chapter 17 When Intuition Differs from Relative Frequency
- Chapter 19 The Diversity of Samples from the Same Populations
- **Career Fair Reflection due on April 22**
- **Resume on Handshake due on April 24**

Week Thirteen: April 27 through May 1

- Chapter 20 Estimating Proportions with Confidence
- Chapter 21 The Role of Confidence Intervals in Research
- **Celebration of Scholarship & Creative Activity** on April 30 in Reeve Union

Week Fourteen: May 4–8

- Chapter 22 Rejecting Changes – Testing Hypotheses in Research
- Chapter 23 Hypothesis Testing – Examples and Case Studies
- **COSCA Evaluation** due May 6
- *Suggested attendance* at Bye Gosh Fest from 3:30 to 7:30 PM on May 9 in Kolf Lot #13

Week Fifteen: May 11–15

- Chapter 24 Significance, Importance, and Undetected Differences
- **Third exam** on May 15