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Math 115 – Section # – General Education Statistics

IAI Code: M1 902

Instructors: You can find the final exam and withdrawal date info to include on your syllabus if you look on the PSC website; search for “final exam schedule” and “academic calendar”

### Syllabus – Semester/Year

**Instructor Information**

**Instructor:** YourName **Email**: Your PSC email

**Phone:** ????? (may delete this line if don’t have direct line at PSC)

**Office Hours:** List times available or put “by appointment”; givelocation

**Course Information**

**Class Meetings:** Day/Time **Classroom:** Room #



**Credit Hours:** 3 (Face-to-face lecture) **Contact Hours:** 3

**Text:** *Workshop Statistics: Discovery with Data 4th Edition*

Binder Ready Version or eBook; Rossman & Chance, 2012

ISBN: 9781119438281

**Other Materials:** *Fathom Dynamic Data* (software program) or *RGuroo* (online app)

A scientific or graphing calculator with 2-line or larger display. I highly recommend the Texas Instruments *TI-30X MultiView* (cost is around $20).

**Optional Material:** Access code to Alta online practice

If you do not have the means to purchase the textbook(s) for this class, the Prairie State College Foundation encourages you to visit [www.prairiestate.edu/foundation](https://email.prairiestate.edu/owa/redir.aspx?C=BqMMugfd3bQSke4iL1yE-r47vxn_OSh1HKGoLJGGq_K1zQI0ZwHWCA..&URL=http%3a%2f%2fwww.prairiestate.edu%2ffoundation) to learn if you qualify for scholarship assistance. Simply complete an application and you will be notified, either way, if you can be awarded. Apply today as scholarship applications are reviewed in the order in which they are received. Scholarships are awarded until the funds for the semester are exhausted. For questions, please contact Susan Sebastian at [ssebastian@prairiestate.edu](https://email.prairiestate.edu/owa/redir.aspx?C=AmYDzC-CV5StPyBwLamCtqSe8OJDWU_7eRCapQp1ywK1zQI0ZwHWCA..&URL=mailto%3assebastian%40prairiestate.edu)

Calculators (both the TI-30XS Multiview and the TI-84) can be borrowed from the PSC library for the semester for no charge

**Course Description**: The general education statistics course provides students with an opportunity to acquire a reasonable level of statistical literacy and thus expand their base for understanding a variety of work-related, societal, and personal problems, and statistical approaches to solutions of these problems. The main objective of the course is the development of statistical reasoning. Detailed techniques of statistical analysis and the mathematical development of statistical procedures are not emphasized. The course is intended to meet the general education requirement. It is not intended to be a prerequisite to, nor a replacement for courses in statistical methods for business, social science or mathematical statistics. Students who complete this course cannot also receive credit for BUS 240 or MATH 153.

**Prerequisites:** At least a C in Math 091 (Mathematical Literacy) or Math 095 (Intermediate Algebra) or qualifying score on the Math placement test.

**College-wide General Education Learning Outcomes:** Prairie State College’s general education outcomes encapsulate the core knowledge and skills that we believe equip students to develop personally, as critical thinkers, and as global citizens.

The specific general education learning outcome for this course is:

**Problem Solving:** Students will locate and identify information, determine what problem exists, develop solutions, evaluate results, and extend results to new situations.

**Homework**:

Following the instruction on a given Topic, students should work to further develop their understanding through the Practice Exercises in D2L for each Topic (see listing on last page of this syllabus); occasionally we will also be doing a graded problem out of the book. Credit is earned toward your course grade for successful completion of the exercises, a challenging but very low stakes situation. The D2L exercises are designed to help you learn, so you have unlimited attempts at each exercise, with auto grading and auto feedback provided on your answers to help you figure out mistakes or misunderstandings. Your highest score is what gets recorded for your grade. Repeat the D2L exercises until you’re comfortable and confident in your understanding, and seek help from your instructor and/or a tutor if incorrect answers are indicating something is not making sense to you. Practice Exercises will not have due dates, but it is intended that you complete them during the week they are assigned on the schedule, or you will be behind and possibly unprepared for other graded work that these were designed to help prepare you for, such as quizzes or exams. When book problems are turned in, they will be turned in once for a grade; your instructor may possibly give the opportunity for revision, but that will be at my discretion.

If you purchased access to Knewton Alta, your instructor will let you know how to access this optional practice. Alta will not be part of your grade and it is not required.

Include information here about the number of homework assignments, how they are weighted/points each is worth, and how many (if any) will be dropped. Please talk to Kate or Brian for more information on the D2L homework.

**Quizzes & Tests:** Include information here about the number of quizzes and tests, how they are weighted/points each is worth, and how many (if any) will be dropped

**Final exam**:

The cumulative final exam will be held on Date/Time of final. Add in any additional information about the final.

**Grades**: Grades will be determined using the following (a points system may be used as long as the percentages fall within the allowed ranges)

Homework At least one of Homework/Quizzes/Projects must be part of the grade

and these 3 should account for 15 – 45%

Quizzes

Other

Tests (must be between 40-60%)

Final (must be between 15-25%)

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Total

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Grading Scale:** | 90%-100%  A | 80%-89%  B | 70%-79%  C | 60%-69%  D | 0%-59%  F |

Grades will be rounded to the nearest whole percent.

**Drop Deadline**: The last day to drop this class for a “W” grade is Drop deadline.

**Fathom/RGuroo:** **Select *one* of these to use all semester, not both.** Both are data analysis programs that we will use to open data files, create graphs, and perform statistical calculations. Course videos and in-person instruction will support both apps.

***Fathom*** is currently available at <http://concord.org/fathom-dynamic-data-software> for $5.25 for a 1-year license for Windows. Fathom will not run on macOS 10.15 and above. Fathom cannot be installed on netbooks, tablets, or smartphones. A fully functional Windows PC is required to use Fathom.

***Rguroo*** is available at <https://www.rguroo.com/register> for $11.99 for a 6-month subscription. Rguroo is browser-based so it will function on macOS and other mobile devices.

**Class Policies and Keys to Success**

**Keys To Success In This Course**: *Assuming that you have the prerequisites knowledge for this course*, your success depends on your willingness to exert sufficient effort. **This means a minimum of 6 hours of study (outside of class) per week**. Specifically, to succeed in this course you must:

1. Attend every class (arrive on time, and remain engaged in the class for the entire time)
2. Take notes
3. Participate in every class in ways that are beneficial to your learning
4. Work on your homework every day
5. Help your peers
6. Communicate with me when there is a problem
7. Seek help as soon as the need arises

**Assistance:** Numerous resources are available to assist you. These include your textbook, your study group, other class members, and the Student Success Center (located in **Room 2629**). You can schedule a **FREE** tutoring appointment by going to Room 2643 or calling Hattie at 708-709-3663 or Lisa at 708-709-3507.

**Group Participation Goals (*recommended statement if using group work)****:* The format of this class includes the use of small group problem solving activities. While students are in small groups, the following behaviors are expected:

* Work together to develop a solution.
* Have a solution that makes sense to you.
* Explain your thinking to your partner.
* Listen to each other and try to understand your partner’s solutions.
* Ask questions of each other when you do not understand or do not agree.
* Record your solution so that others will know what you did.

**Respect**: (***Recommended statement)*** Please conduct yourself in a way that is respectful of your fellow classmates and of your instructor. Respectful behavior allows the class to function effectively and encourages student success. If a student disrupts the class, everyone loses valuable class time. Violations will be reported to the Dean of Counseling.

**Cell Phones/Electronic Devices**: (***Recommended policy)*** When you come to class, cell phones should be silenced and all electronic devices, including tablets, should be put away. **Cell phones may not be used as a calculator on exams and quizzes**.

**Attendance**: (***Recommended policy-add policy on accepting late work/missed quizzes/exams)*** I trust you understand that regular class attendance is an essential component of successful learning. Students who miss class are responsible for content covered and for any information given out in class; please consult the class schedule to find out what you missed.

**Accommodations:** Your success is important to me. If you have a disability (learning, physical, psychological, or other) that may require some accommodations, please see me early in the semester. I can refer you to the Disability Services Office (**Room 1200**) to register and arrange reasonable accommodations. All discussions are confidential.

Pregnant and parenting students attending Institutions of Higher Education have rights under the Title IX of the Education Amendments of 1972 (Title IX) 20 U.S.C. 1681 et seq. This is a federal civil rights law that prohibits discrimination on the basis of sex – including pregnancy and parental status in educational program and activities. All public and private schools, school districts, colleges and universities receiving any federal financial assistance must comply with Title IX. For assistance regarding pregnant and parenting accommodations, please contact the Title IX Coordinator, Tiffany Brewer at [tbrewer1@prairiestate.edu](mailto:tbrewer1@prairiestate.edu), or 708-709-3653, office number 2143. The full policy is located on the Prairie State College website at: prairiestate.edu/assets/global/pdf/sexdiscmharabooklet.pdf

**Academic Honesty**: All students are expected to adhere to the PSC academic honesty expectations: http://[prairiestate.edu/academics/acadhonest.aspx](http://prairiestate.edu/academic/acadhonest.aspx). In a Math class, it is extremely important that the work you present to your instructor is genuinely something that you have produced.  Relying heavily on other people and/or technology can create a false sense of achievement that ultimately leads to failure on quizzes and tests when those resources are no longer available.  Part of my role as instructor is to communicate to you in what situations use of technology, such as a calculator, website or app, is acceptable, and when it is not.  In general, the use of any technology that allows students to simply type in a problem and have the entire problem solved for them is prohibited. You can add to the statement here. Make sure you spell out exactly what your expectations are for your particular class and what the penalty is for breaking them.

**Religious Observance**: Prairie State College is required to excuse students who need to be absent from class, examinations, study, or work requirements because of their religious beliefs, and provide students with a make – up opportunity, unless to do so would unreasonably burden the institution. Students must notify their instructor well in advance of any absence for religious reasons. If you require special accommodation for observance of a religious holiday, please let me know during the first week of the semester.

##### **Student Veterans:** Veterans and those currently serving in the Armed Services may be eligible for various benefits.  Information and support are available in the Student Veterans Center (Room1240) or go to:  <http://prairiestate.edu/student-services/veterans-services/index.aspx>.

**Course Objectives:**

Upon successful completion of this course students will:

1. Define the common descriptive statistics/parameters and state their properties, relationships, and

uses.

2. Describe the features of a data distribution (including shape, center, spread, as well as the

underlying variable and observational unit) and construct appropriate graphical representations to illustrate the important features.

3. Describe and critique ways to gather data through various methods of sampling, designs for

experiments, or probability simulations.

4. Interpret statistics/parameters, the features of a data distribution, and results of inference

procedures, in the context of the situation from which the data was gathered.

5. Explain probability as a long term relative frequency, determine the probability of an event using

empirical and/or theoretical probability, and interpret the likelihood of the occurrence of the

event (likely, rare, unlikely, etc.).

6. Determine probabilities of events using the standard rules of probability (addition rule,

conditional probability, etc.).

7. State the Central Limit Theorems for proportions and means, and use them to calculate the

probabilities of events from sampling distributions.

8. Use inference procedures to construct confidence intervals and perform hypothesis tests, and

explain their properties and relationships.

9. Compare/contrast variables and their distributions, and calculate and interpret correlation

between variables.

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| **Date** | **Sections** | **HW Assigned (D2L)** |
|  | Topic 1: Collecting Data/Drawing Conclusions | 1-6, 1-7, 1-9, 1-12, 1-13 |
|  | Topic 2: Data and Distributions | 2-7, 2-10, 2-12, 2-17 |
|  | Finish Topic 2  Topic 3: Drawing Conclusions From Studies | 3-8, 3-9, 3-10, 3-16, 3-18, 3-19,  3-20, 3-23, 3-26 |
|  | Finish Topic 3  Start Topic 4: Random Sampling | --- |
|  | Topic 4: Random Sampling | 4-6, 4-9, 4-15, 4-22, 4-25 |
|  | Topic 5: Designing Experiments | 5-7, 5-9, 5-12, 5-14, 5-28 |
|  | Finish Topic 5  Topic 6: Two-Way Tables | 6-12, 6-13, 6-14, 6-21, 6-22 |
|  | Finish Topic 6  Review | --- |
|  | Topic 7: Displaying and Describing Distributions | 7-12, 7-13, 7-16, 7-21, 7-24, 7-25  + bookwork: 7-17 |
|  | **Test on Topics 1 – 6** | --- |
|  | Finish Topic 7  Topic 8: Measures of Center | 8-9, 8-11, 8-15, 8-18, 8-28 |
|  | Finish Topic 8 | --- |
|  | Topic 9: Measures of Spread | 9-7, 9-10, 9-11, 9-14, 9-18, 9-27 |
|  | Finish Topic 9 | --- |
|  | Topic 10: More Summary Measures and Graphs | 10-6, 10-19, 10-21, 10-27  + bookwork: 10-20 |
|  | Finish Topic 10  Topic 11: Probability | 11-6, 11-7, 11-8, 11-10, 11-12, 11-19, 11-25, T11 Extra Question #1, T11 Extra Question #2 |
|  | Finish Topic 11 | --- |
|  | Topic 12: Normal Distributions | 12-5, 12-6, 12-9, 12-18, 12-19 |
|  | Topic 12  Review | --- |
|  | **Test on Topics 7 – 12** | --- |
|  | Topic 13: Sampling Distributions: Proportions  Topic 14: Sampling Distributions: Means | 13-5, 13-6, 13-7, 13-8, 13-15, 13-19  14-7, 14-10, 14-12 |
|  | Finish Topic 14  Topic 15: Central Limit Theorem and Statistical Inference | 15-5, 15-6, 15-7, 15-12, 15-14, 15-19 |
|  | Finish Topic 15 | --- |
|  | Topic 16: Confidence Intervals: Proportions | 16-8, 16-12, 16-14, 16-18, 16-23, 16-30 |
|  | More Topic 16 | --- |
|  | Topic 17: Tests of Significance: Proportions | 17-6, 17-7, 17-8, 17-11, 17-12, 17-23, 17-26 |
|  | Finish Topic 17 | --- |
|  | Topic 19: Confidence Intervals: Means  Topic 20: Tests of Significance: Means  Review | 19-7, 19-8, 19-9, 19-11, 19-12, 19-24, 19-26, 19-30  20-8, 20-10, 20-15, 20-17 |
|  | Topics 26 – 28: Regression | 26-10, 26-11, 26-20, 26-28, 26-31  27-9, 27-12, 27-20, 27-21, 27-22  28-12S |
|  | **Test on Topics 13 – 20** | --- |
|  | Review for Final | --- |
|  | **Final Exam** | --- |