

Statistics & Research Methods

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Course Information Sheet 2019

General Information

Course Overview: Statistics and Research Methods covers the content of an undergraduate statistics course with an additional emphasis on research methods. Although valuable for anyone who has passed Math 3, it is geared for students who plan to pursue a social science major in college. It is not intended as a replacement for Math SL for students who want to advance in standard calculus-based math tracks in college. Specifically, it does not cover most material on math placement exams, since those exams tend to be mostly algebra-based.

Units of Study: The course covers research methods, graphs, descriptive statistics, probability, discrete distributions, normal distributions, sampling distributions, confidence intervals, and hypothesis testing with z , t , r , χ^2 , and F .

Calculator: A graphing calculator is required for this course and will be used for most or all future math classes (high school and college) as well. New TI-84 Plus CE calculators are available for around \$140 at local stores or on Amazon. New or used Texas Instruments graphing calculators below the TI-84 Plus CE may not look as nice, but their functionality and syntax are essentially the same, making them perfectly fine for the course yet considerably cheaper. Other brands such as Casio, or more advanced models such as the TI-89, are significantly different and should not be used for this course. Please contact me if acquiring a graphing calculator in the first few weeks of school may present a financial hardship for your family.

Assignments

Work done in class (~25%)

- **Classwork:** A set of problems aligned with each section of notes is done together as a class. In addition, a few points are given periodically for things such as class preparation and in-class practice problems.
- **Reviews:** Reviews are done in self-selected groups of four. Each group gets four different versions of the review that are very similar except for being different levels of difficulty, allowing each student to choose one that is at the level that would most help him or her prepare for the test. Reviews also serve as study guides, and students often take it upon themselves later to print one or more of the other versions at home to practice.
- **Team Quizzes:** Students prepare for each final in teams. This allows for the dual purposes of providing for students struggling on specific concepts to have tutors for these concepts and enabling strong students to solidify their understandings through explaining the concepts to others.

Work done at home (~25%)

- **Online Quizzes:** Each section has a five-question multiple-choice quiz, based directly on the online notes, covering the fundamentals of the section. Online quizzes can be resubmitted until a perfect score is achieved.
- **Homework:** Each chapter has one homework assignment, and each problem is individually selected so that there is no redundancy within assignments. Homework is graded on completeness of work shown and on corrections made in class, but not on accuracy.
- **Projects:** In the fall, students in pairs will design a casino game, calculate expected value, and host a casino as a class for an incoming class of students. In the spring, students in teams may design, carry out, and write up an undergraduate-level social-science research project.
- **Study Guide:** An example of each topic covered in class throughout the semester is included in the study guide. Full solutions and explanations of these are in the online notes.

Quizzes and Tests (~50%)

- **Quizzes:** To help students stay on top of the material, there is a quiz after each section, usually the following day. The material is reviewed explicitly beforehand.
- **Chapter Tests:** Tests cover both conceptual and procedural aspects of the content. Test scores may be increased afterward by test explanations, in which students carefully explain how to do problems they had originally done incorrectly, as if they were teaching someone else.
- **Final:** Each final covers the whole semester and is worth two chapter tests.

Statistics & Research Methods

Course Information Sheet, continued

Course Level

Statistics and Research Methods is a college-level course with a rigorous curriculum. However, many students who have found previous math classes difficult have enjoyed this class because, although it is challenging, it is directly applicable. Most problems from the text, notes, and assignments use real data. More importantly, because Statistics does not build directly on previous mathematical concepts, students who have struggled with algebra are not at a significant disadvantage as they would be in other courses such as Precalculus or Calculus. However, the topics within the course build extensively upon each other, more than in most classes, making it important that students work to get caught up quickly if they miss class or otherwise fall behind.

Things to make life easier

Online Materials: Almost all aspects of the course are available at ewyner.com.

Use of Resources: Notes, book, and all electronic devices may be used on all assignments except some tests.

Working Together: In light of the conceptual nature of the course, students may work with a partner on some tests and most quizzes.

Extensions: Students may request a new due date on any assignment for any reason, so long as the request is made in person before the original due date and the requested due date is before the date of the test.

Late work: Students can turn in late work any time they are ready, up until the day before the test, and it will be marked down only minimally (or not at all if it has an extension). To regain missed points for legitimate excused absences, students can choose to either attach a readmit slip to each assignment when turning it in or to have a total of 20 points added at the end of the semester.

Free C: Students may request a "Free C" on any nontest assignment, in person and prior to the due date, once per grading period. When the assignment is due, it can be turned in normally, or the Free C form can be submitted in its place for a score of 70%.

Score Increases: Any quiz can be retaken. Test scores may be increased through test explanations, in which students carefully explain how to do problems they had originally done incorrectly, as if they were teaching someone else. Quiz retakes and test explanations can be turned in any day before the day of the next test.

Study Sessions: At any point, a group of 4 to 12 students can request a formal teacher-led study session, given availability.

Signatures

We have read and understood this course information sheet.

Parent

Name: _____

Signature: _____

Student

Name: _____

Signature: _____