

Economics 203 Syllabus

Economic Statistics II

Sections AL1, AL2, BL1

Spring 2016

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| Instructor: | Professor Joseph A. Petry | Dr. Zaruhi Sahakyan |
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| Office hours: | M 3:00 – 4:00 | T/Th 12:30 - 1:30 |
| Lecture hours: | M/W 2:00 – 2:50 | M/W 9:00 – 9:50, 10:00 – 10:50 |
| Lecture Section: | BL1 | AL1, AL2 |
| Lecture Location: | 141 Wohlers Hall | 141 Wohlers Hall |

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| Lab Time: | Varies by TA section |
| Lab Days: | Thursday or Friday depending upon TA section |
| Lab Location: | 901 W. Oregon, Room 101 |
| TA Office Hours: | See Compass for schedule |
| TA Contacts: | |

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|-----------------|-------------------|--|
| Head TA (BL1) | Filia Arga | arga2@illinois.edu |
| Head TA (AL1,2) | Juan Munoz | munozmo2@illinois.edu |
| | Nicolas Bottan | bottan2@illinois.edu |
| | James Kelly | jkelly@illinois.edu |
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| | Alexander Stevens | ansteve2@illinois.edu |

Course Website:

<https://compass2g.illinois.edu>

Required Texts / Materials:

Aplia Homework system. (You **must** use the link in compass2g to sign up for Aplia—please do **NOT** sign up directly on the aplia website.)

Petry, *Economics 203 Course Packet*. Spring 2016.

Anderson, Sweeney, Williams, *Modern Business Statistics with Microsoft Office Excel*, 4e. South-Western/Cengage. An e-text version of this text comes automatically with the Aplia homework system. When you purchase Aplia, you will have an e-version of the ASW text. You may also purchase a hard copy from the site if you would like—optional.

Required Materials: Basic financial or statistical calculator. You should ALWAYS bring your calculator to class! We have found that the Texas Instruments BAII Plus is useful, and is often used in other classes. We will provide basic instructions in the use of this calculator in class (and only this calculator). To insure fairness for all students,

calculators with functionality beyond the BAII Plus, will NOT be permitted for use on exams. Graphing calculators therefore will NOT be permitted during exams.

Course Objective: *Statistics helps us make better decisions by extracting information from data.* That's it, nothing more! And yet, by the end of this course you will have spent at least two full semesters learning how to best accomplish this.

A famous statistician once said: "without data, we are just another person with an opinion". Obtaining data, *and* analyzing it properly, can vastly enhance the influence you have in your professional life and community, as well as allow you to make better decisions in both your personal and professional lives. Our own real-world experience has taught us that statistics may be the single most useful tool one can learn as a student, irrespective of your major. As you will find, statistical analysis can be applied to nearly every field of human endeavor.

We have put together a course that we hope will make learning this important material as successful and enjoyable as possible. In designing the specifics of the course, we have laid out four key objectives that we hope to accomplish before the semester ends. These four objectives have guided all our decisions in terms of course structure, content and administration. At the end of this course, students should:

1. Understand the relevance of statistics in their future course-work and professions
2. Be trained to identify the proper statistical technique to apply to a problem
3. Be adept at finding the answers to statistical queries using excel
4. Be able to properly interpret the results of their analysis.

Course Content: Students must have completed a course on probability and statistical analysis before becoming eligible to take Economics 203. The best course to meet this requirement is Economics 202 at the University of Illinois.

Inferential Statistical Analysis is the common thread tying the topics of Economics 203 together. In this course we briefly review single population cases of hypothesis testing and confidence interval formation before extending this analysis to two population cases. We emphasize mean, variance and proportion as the parameters of interest. We also cover single-factor Analysis of Variance. The most significant portion of the course is regression analysis. We cover simple and multiple regression, consider assumption violations and how to handle them as well as qualitative variables, transformations, curvilinear relationships and model building. The course ends with time series analysis.

Course Grade:

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|------------------|-----|-------------|-------|
| Mid-term Exam I | 20% | Project | 10.0% |
| Mid-term Exam II | 20% | Lab Quiz #1 | 5.0% |
| Final Exam | 20% | Lab Quiz #2 | 5.0% |
| Homework | 20% | | |

Grading Scale: The scale used to assign letter grades in the course will be established by the instructor at the end of the semester. A +/- scale will be used. The cut-offs for +/- will also be established by the instructor at the end of the semester. Once the scale is

assigned by the instructor at the end of the course, no exceptions will be made. We do not round grades up.

Exams: There will be three exams (two midterms and a final) given during the semester. Each mid-term will only cover the material since the last exam. The final exam will be comprehensive. Basic calculators will be permitted, and you will be provided with a formula sheet identical to the one at the back of your course-packet for use during the exams.

Students are required to have their University of Illinois Student ID with them to take their exam. Students who do not have their ID with them for the exam may not be allowed to take the exam. This policy is necessary for us to insure the integrity of the exams.

We only offer conflict exams if a student qualifies for such an accommodation under university guidelines. The university policy is stated in the [Student Code](#). If a student is unable to attend the conflict exam, then the weight of the missed exam will be added to the weight of the final exam at the end of the semester. If you believe you are eligible for a conflict exam, you must notify your TA in writing during the first week of class. If you do not notify your TA in a timely fashion, you may not be eligible for the conflict.

Homework: Statistics can only be learned one way--doing a lot of problems. As a result, homework represents an important part of this course. You will be assigned homework after nearly every lecture. Each homework is to be turned in electronically using Aplia. Homework is due no later than 3:00am, the Monday morning of the week following the lecture. Late homework is not accepted. If you are having trouble with your homework, please check the Compass Discussion Board for assistance, it is monitored closely by our TAs for this purpose. You must use your university issued email address when registering for Aplia, and also provide your net-ID when requested to receive credit.

Emergencies, illness and the like do occur for even the best students, so to account for this, we will drop your two lowest homework scores at the end of the semester. There will be NO make-up homework as a result however. This policy will apply even if your absence was excused.

Project: There is a semester long project that is an integral part of this course. You will be doing it independently. You will be selecting your own topic, finding data and presenting your analysis and conclusions in a 5-10 page paper. You and your fellow students will be responsible for peer reviewing each other's work. The details, including 6 project checkpoints you should follow along the way are provided in the project link available in the course compass site.

Excel Lab Quizzes: Based on student requests, we have moved 10% of your final grade from exams to excel lab quizzes. There will be two quizzes given during the semester, each worth 5% of your grade. The dates are provided in the schedule at the end of the syllabus. The purpose of these quizzes is to make sure that you are learning how to apply the statistical tools using excel. The quizzes will be given during your regular lab sessions and will involve using excel as a means of solving problems. You must go to your lab session to take these quizzes and you must take the quizzes in the actual lab to receive credit.

Class Participation: There is no such thing as a stupid question. Dialogue is not only strongly encouraged, it is critical to your understanding of the material. Vocalizing your questions often helps you solidify what you do and do not understand. It also provides your instructors important feedback on the areas in which we need to spend more time. This can be a challenge in a large lecture. As in all things, we do the best we can under the circumstances. During lecture, we will encourage questions and we will solicit input. If we call on you, please relax, we are NOT trying to intimidate you or embarrass you in any way--far from it. We are trying to encourage active listening, and to keep you engaged in the course. This will greatly assist you in learning the material. If you do not know the answer, we will move on to another student, no worries.

Compass Discussion Board: Illinois Compass will be used to post announcements, as well as to give you an opportunity to ask questions online about course content using the Discussion Board. This is also a great source of help on your homework. Our TAs are diligent in answering student questions on the Discussion Board, so please take advantage of this resource. *You are responsible for checking for announcements on Compass before each class session.*

Other Resources: Online videos of class lectures are available through a link on the compass homepage.

Excused Absences: On occasion, an emergency may arise which prevents you from taking an examination or otherwise performing in the course. To be considered for an excused absence, you must provide the proper documentation explaining your absence. This is done by providing verification through the Office of the Dean of Students. The Office of the Dean of Students is located in the Turner Student Services Building, 610 E. John Street, Champaign, 333-0050. Providing a McKinley Health Center Visit Record is NOT acceptable verification for an absence. Upon obtaining the letter or email from the Emergency Dean, this information must be provided to your Instructor and TA. At this point, the Instructor and TA will determine whether an accommodation is appropriate.

Academic Integrity: Violations of academic integrity as given in the Code on Campus Affairs will be taken extremely seriously. Students found cheating in the course (or helping others to cheat) will be penalized according to the Code's guidelines.

| Lecture | Date | Topic / Event | Homework |
|-----------|---------------|---|----------------------|
| 1 | Jan 20 | Course Introduction. | Rev#1; Rev#2 |
| 2 | Jan 25 | Overview of Inference. Hypothesis testing Review. | HW#2 |
| 3 | Jan 27 | Confidence Interval Review. | HW#3 |
| 4 | Feb 1 | Single Population Variance. | HW#4 |
| 5 | Feb 3 | Two Population Difference in Means, Independent Samples, Population Variances Known. | HW#5 |
| | Feb 8 | Project Checkpoint 1 due no later than 3am | |
| 6 | Feb 8 | Two Populations Difference in Means, Population Variances Unknown (assumed equal, assumed unequal). | HW#6 |
| 7 | Feb 10 | Two Population Means, Matched Pairs. | HW#7 |
| 8 | Feb 15 | Two Population Difference in Proportions. | HW#8 |
| 9 | Feb 17 | Two Population Ratio of Variances. | HW#9 |
| | Feb 18 / 19 | Excel Lab Quiz #1 | |
| | Feb 22 | Project Checkpoint 2 due no later than 3am | |
| 10 | Feb 22 | One-Way ANOVA. | HW#10 |
| 11 | Feb 24 | Question Soup. Review as possible. | HW#11 |
| | Feb 28 | Exam I Review Session. | |
| 12 | Feb 29 | Exam I. 7:00 - 9:00 pm. No Lecture today. | |
| 13 | Mar 2 | Simple Linear Regression. Estimating Model Coefficients. | HW#13 |
| 14 | Mar 7 | Simple Linear Regression. SST, SSR, SSE, S_e , R^2 | HW#14 |
| 15 | Mar 9 | Simple Linear Regression. Significance Tests | HW#15 |
| | Mar 14 | Project Checkpoint 3 due no later than 3am | |
| 16 | Mar 14 | Simple Linear Regression. Model Assumptions | HW#16 |
| 17 | Mar 16 | Simple Linear Regression. Confidence and Prediction Intervals | HW#17 |
| | Mar 19 – 27 | Spring Break!! | |
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| 18 | Mar 28 | Multiple Regression. Regression Diagnostics. Assumptions 1, 2, 3 | HW#18 |
| 19 | Mar 30 | Multiple Regression. Assumption 5 | HW#19 HW#19b-data |
| | Apr 4 | Project Checkpoint 4 | |
| 20 | Apr 4 | Multiple Regression. Modelling Process. Adjusted R^2 | HW#20 |
| 21 | Apr 6 | Multiple Regression. Partial and Overall F-tests. Coefficient t-test | HW#21 |
| 22 | Apr 11 | Multiple Regression. Curvilinear Relationships, Dummy Variables | HW#22 |
| 23 | Apr 13 | Flex day. Review as possible. | HW#23-data |
| | Apr 17 | Exam II Review Session. | |
| 24 | Apr 18 | Exam II. 7:00 – 9:00 pm. No Lecture today. | |
| 25 | Apr 20 | Time Series. Components, Moving Averages and Exp. Smoothing | HW#25 |
| | Apr 21 / 22 | Excel Lab Quiz #2 | |
| | Apr 25 | Project Checkpoint 5 | |
| 26 | Apr 25 | Time Series. Trend and Cyclical Effects | HW#26 |
| 27 | Apr 27 | Time Series. Seasonal Effects | HW#27 |
| | May 2 | Project Checkpoint 6 due no later than 3am | |
| 28 | May 2 | Time Series. Forecasting | HW#28 |
| 29 | May 4 | Flex day. Last day of classes. | |
| | May 5 | Project Peer Grading due no later than 3am | |
| | May 5 | Reading Day. | |
| | | Final Exam Review Session (Optional). Time/place TBD. | |
| | | Final Exam Review Session (Optional). Time/place TBD. | |
| | | Final Exam for Lecture AL1. | |
| | | Final Exam for Lecture AL2. | |
| | | Final Exam for Lecture BL1. | |