**Professor Kim**

**Fall 2017**

**ECONOMICS 220-002 (2600)**

**Probability & Statistics for Economists**

**Instructor Information:**

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Office Hours: Tuesday, Wednesday & Thursday from 3:00 pm to 6:00 pm, or by appointment

**Class Information:**

Classroom: White Hall 103

Class Dates: Tuesday & Thursday

Class Meeting Time: 8:30 AM – 9:45 AM

**Description & Goals of Economics 220:** Economic inference, hypothesis testing, and forecasting are essential parts of applied economics. The probability and statistics theory provides useful tools for carrying this task. The rational is that economic phenomena can be viewed as the realization of underlying stochastic processes. The nature and property of a stochastic process can be described by its probability law, which can be inferred by appropriate statistical methods in application to the observed data.

Economics 220 is the first course providing theoretical tools for the advanced courses such as *Empirical Methods in Economics* (Economics 221), *Econometrics* (Economics 420), and *Economics Forecasting* (Economics 422). Economics 220 introduces basic concepts and theory in probability and statistics. Throughout the course, *rigorous quantitative analysis* will be emphasized, although economic motivations and intuitions will be provided as well. Students are required to have a good command of algebra, especially differentiation and integration.

**Course Information:**

**Prerequisite**: Econ101 and Math 111 (Calculus) or permission by the instructor

**Required Textbooks**: (*i*) Sanjiv Jaggia and Alison Kelly (JK), 2015. Business Statistics: Communication with Numbers (ISBN-13: 978-0078020551) McGraw-Hill Education, 2nd edition.

(*ii*) William H. Sandholm and Brett A. Saraniti (SS), 2017. Vital Statistics: Probability and Statistics for Economics and Business\* (ISBN-13: ) Oxford University Press, 1st edition. \*This textbook will be available three weeks later only in the campus bookstore.

Students can download online resources – data files and answers to selected odd-numbered exercises from **CONNECT** at [www.](http://www.)mheducation.com/highered/product/. If students purchase the access card/code, they will be provided with a direct access to the online resources as well as interactive tutorial exercises.

**Statistical Software**: We will use **R**, a free software package suitable for data analysis and graphical representation. It is very flexible and highly customizable. Excellent graphic tools make R an ideal environment for data analysis. There are versions for Unix, Windows, and Mackintosh. All of them are free, and Window version is downloadable at:

<http://www.r-project.org>

**Unannounced Quizzes:** An unannounced quiz will be given at the end of class. This quiz will consist of similar questions from examples in the previous class, examples and exercises from the textbooks and be counted as a bonus to each test.

**Exams and Grade Policy:**

Assignments: 20%

Midterm Exam #1: 20%

Midterm Exam #2: 20%

Comprehensive Final Exam: 40%

Attendance & Class Participation\*\*: 10%

The following grades are guaranteed: **A**(≥ 94%), **A-**(94% > A- ≥ 90%), **B+**(90% > B+ ≥ 87%), **B**(87% > B ≥ 84%), **B-**(84% > B- ≥ 80%), **C+** (80% > C+ ≥ 77%), **C**(77% > C ≥ 74%), **C-**(74% > C- ≥ 70%), **D**(70% > D ≥ 60%), and **F (<** 60%).

\*If any student(s) is being caught with putting a smart phone, ipad, or a notebook computer on the desk, or chatting with classmates in class, two points will be deducted from the test.

\*\*Your class attendance and participation is highly encouraged in class and is very critical to your grade for the course. If you miss more than four classes over the semester, you would ‘*not*’ get any point in attendance and class participation.

**Make-up Quiz or Make-up Exam:** There is “*no*” make-up quiz regardless of the student’s situations – sickness, absence, family vacation or other imaginable cases – because two or three lowest quiz scores will be dropped. There is also “*no*” make-up exam. If students miss the test for any reasons, the comprehensive final exam will be counted twice.

**Attendance Policy:** Attendance is *not* *required*. I cannot emphasize enough the need for consistent attendance. Many materials will not be contained in the texts and also I will not follow the textbooks section by section. If you do not attend a class on a regular basis, it will affect your performance in the course and you should hold the responsibility for the materials you would miss because of absence.

**\*If you miss a class more than eight times, automatic F will be given to you.**

**\*Do not enter the classroom if you are late to the class more than five minutes. Every time you enter the classroom five minutes late, five points will be deducted from your test.**

**Classroom Culture**: If you would rather be sleeping, reading the newspaper, listening to your ipod or shopping on the internet, I’d suggest that you do that somewhere much more comfortable than the classroom. Please make sure to bring a sharp and attentive mind to class as well as a printed lecture note posted on the Blackboard.

**Important Dates for Fall 2017**

**Midterm Exam #1 on October 5th (Thursday)**

**\*Fall break from October 9th to October 10th: No classes**

**Midterm Exam #2 on November 16th (Thursday)**

**\*Thanksgiving Break from November 22nd to November 24th: No classes**

**Final Exam: December 13th (Wednesday) from 8:00 AM to 10:30 AM**

**ECONOMICS 220: Tentative Course Schedule**

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| **Week** | **Topic** | **Textbook** | **Lecture Note** |
| Week 1 | Basic concepts: Descriptive statistics | Chap. 1 (SS) | Lecture note #2 |
| Week 2 | Measure of relationships  between variables |  | Lecture note #3 |
| Week 3 | Theory of probability | Chap.2: Sec 2.1, 2.2, 2.3, 2.4 & 2.5 (SS) | Lecture note #4 |
| Week 4 | Counting techniques | Chap. 5: Sec 5.3 (SS) | Lecture note #5 |
| Week 5 | Bayes’ Theorem | Chap. 2: Sec 2.4.4 (SS) | Lecture note #6 |
| Week 6 | Random variables: Discrete & Continuous | Chap. 3: Sec 3.1 (SS)  Chap. 6: Sec 6.1 & 6.2 (SS) | Lecture note #7 |
| Week 7 | Joint random variables  & Change of Variables | Chap. 4: Sec 4.1 (SS) | Lecture note #8 |
| Week 8 | Expectations including conditional expectations | Chap. 3: Sec 3.2, 3.3 & 3.4 (SS)  Chap. 4: Sec 4.2, 4.3, & 4.4 (SS) | Lecture note #9 |
| Week 9 | Expectation including conditional expectations | Chap. 3: Sec 3.2, 3.3 & 3.4 (SS)  Chap. 4: Sec 4.2, 4.3, & 4.4 (SS) | Lecture note #9 |
| Week 10 | Moment of Generating Function |  | Lecture note #10 |
| Week 11 | Discrete distributions | Chap. 5: Sec 5.1, 5.2 5.4 (SS)  Chap. 8: Sec 8.1 | Lecture note #11 |
| Week 12 | Continuous distributions | Chap. 6: Sec 6.3, 6.4, 6.5, 6.6 (SS)  Chap. 8: Sec 8.2 & 8.3 (SS) | Lecture note #12 |
| Week 13 | Sampling distributions | Chap. 7 (SS) | Lecture note #13 |
| Week 14 | Hypothesis Testing | Chapter 16 (SS) | Lecture note #14 |

**Ground Rules for Success in Econ220:**

• Practice at solving statistical problems cannot be overemphasized. Feel free to solve additional problems from the textbooks and problem sets.

• If there are difficulties solving problems, feel free to visit the professor during office hours or make an appointment.

• Feel free to use email to contact the professor to ask questions.

• Please pay attention to your academic progress in the course and take remedial action before it is too late.

• All forms of academic dishonesty will be dealt with “by the book.” **No Excuse Is Acceptable.**

**•** If the professor has made any mistake in grading the test or the quiz, a student must correct it “***within 48 hours***” after he/she receives it. Otherwise, it can’t be corrected.

**“The best way to attain a good grade is not to make a good grade your *direct end*, but to fix your mind on something else – a joy of learning.”**

Academic misconduct is an offense generally defined as any action or inaction which is offensive to the integrity and honesty of the members of the academic community. This offense includes, but is not limited to, the following:

(a) Seeking, acquiring, receiving, or giving information about the conduct of an examination, knowing that the release of such information has not been authorized;

(b) Plagiarizing;

(c) Seeking, using, giving, or obtaining unauthorized assistance or information in any academic assignment or examination;

(d) Intentionally giving false information to professors or instructors for the purpose of gaining academic advantage;

(e) Breach of any duties prescribed by this Code;

(f) Intentionally giving false evidence in any Honor Council hearing or refusing to give evidence when requested by the Honor Council.

**Information on Office for Undergraduate Education:**

• The Office for Undergraduate Education (OUE) central office is located in White Hall 300

• Please visit or call 404.727.6069 with questions about academic affairs, concerns or policies.

• All Emory College of Arts and Sciences policies may be found in the College Catalog: <http://college.emory.edu/home/academic/catalog/index.html>

• For a full list of Religious Holidays can be found here:   
http://www.religiouslife.emory.edu/pdf/Religious%20Holidays%202013-14.pdf

**Academic Advising and Class Deans:**

If you have any academic concerns or questions about Emory College of Arts and Sciences policies, you should first meet with an OUE academic adviser. If an academic adviser is unavailable to meet with you, you may meet with an OUE dean during open hours.

• OUE Academic Adviser appointments: Visit White Hall 300 or call 404.727.6069

• Deans’ Open Hours: <http://college.emory.edu/home/administration/office/undergraduate/hours.html>

**Academic Support:**

There are a range of resources available to Emory undergraduates designed to enrich each student’s educational experience.

• Visit <http://college.emory.edu/advising> for a list of support programs and appointment directions

**Access and Disability Resources:**Students with medical/health conditions that might impact academic success should visit Access, Disability Services and Resources (ADSR formerly the Office of Disability Services, ODS) to determine eligibility for appropriate accommodations. Students who receive accommodations must present the Accommodation Letter from ADSR to your professor at the beginning of the semester, or when the letter is received.

**Attendance Policies (Absences and Absences from Examinations):**

**•** Absences: Students should understand that they are responsible for the academic consequences of absence and that instructors may set specific policies about absence for individual courses.

**•** Absences from Examinations: A student who fails to take any required midterm or final examination at the scheduled time may not make up the examination without written permission from a dean in the Office for Undergraduate Education. Permission will be granted only for illness or other compelling reasons, such as participation in scheduled events off-campus as an official representative of the University. A student who takes any part of a final examination ordinarily will not be allowed to defer or retake that final. Deferred examinations must be taken during the student’s next semester of residence by the last date for deferred examinations in the academic calendar or within twelve months if the student does not re-enroll in the college. Failure to take a deferred examination by the appropriate deadline will result automatically in the grade IF or IU.

**The Honor System in Emory College**

Exams:

If the instructor sees suspicious behavior during an exam, he/she is entitled to intervene, by asking the student to move to another seat or change places with someone in a different part of the room. The instructor is also entitled to specify where students shall sit, and to require them to clear their desks of all materials except those directly related to taking the exam.

Plagiarism:

Plagiarism is a violation of the Honor Code whether it is intentional or not. Nevertheless, students accused of plagiarism, especially those from abroad, regularly plead ignorance. The instructor is, therefore, strongly encouraged to go over with his/her class the rules relating to originality, footnoting, and avoidance of plagiarism when giving writing assignments.

Collaboration:

Many honor council cases relate to collaboration. If the instructor requires students to collaborate on, for example, a laboratory experiment, but then require each to submit his or her own written report on the experiment, please go over the rules carefully beforehand to minimize ambiguities.

Emory University’s Honor Code

“The honor code is in effect throughout the semester. By taking this course, you affirm that it is a violation of the code to cheat on exams, to plagiarize, to deviate from the teacher’s instructions about collaboration on work that is submitted for grades, to give false information to a faculty member, and to undertake any other form of academic misconduct. You agree that the teacher is entitled to move you to another seat during examinations, without explanation. You also affirm that if you witness others violating the code you have a duty to report them to the honor council.”

Students should be fully aware, from the beginning of the semester, of the code and its provisions, and that they explicitly agreed to these provisions.

The code itself can be found here, and you are strongly encouraged to learn its rules:

[http://college.emory.edu/home/academic/policy/honor\_code.html](https://owa.emory.edu/owa/redir.aspx?C=I9AHHGA22Ui2A4IQI-rIDssW_ztQss8Ii_0UF8C7iy1HM68_5teKulQs7mFQgLsLW-_jEbMITdA.&URL=http%3a%2f%2fcollege.emory.edu%2fhome%2facademic%2fpolicy%2fhonor_code.html). More information about the investigation and hearing process can be found at the Honor Council website: <http://college.emory.edu/home/academic/honor-council/index.html>.