**Professor :** Dr. Levent Kutlu

**TA :** Jiayao Ni (jni30@gatech.edu)

**Office hours:** Tue 11:30-13:20

**Class :** TR 1:35-2:55/ IC111

**Office :** Old CE 220

**Email :** levent.kutlu@econ.gatech.edu

**INTRODUCTION AND PURPOSE:** Please carefully read the syllabus. If you still have questions you can ask them before/after the class or you are welcome to visit me during me office hours. Throughout the semester, no student is allowed to ask a personal negotiation on grade (objections to incorrect grading are welcome). The syllabus is subject to change as the semester progresses if I believe that this will enhance student learning and the overall quality of the course. This is a very mathematical course which requires a good command in statistics and math. I will be reviewing statistics parts very quickly. Although the amount of relevant statistics material that I will cover is large, you are not responsible from most of this material directly. But, you should note that you will need many of these for the econometrics part which you are responsible from. You will be using an econometrics software called Stata and will be assigned both theoretical and computational homework. It is your responsibility to learn the channels through which you can access Stata. The university provides all sorts of opportunities for that. One potential option is using computer labs and another is using remote connection to GaTech servers. I will try to facilitate your learning by incorporating some empirical works such as Stata questions in the homework and a project which involves data collection and requires understanding of basics econometrics. This course will give you the opportunity to learn and apply the principles required for econometrics. At the end of the course you will have both theoretical and empirical understanding of econometric techniques; and will be able to apply these via using Stata software.

**Learning Goal:** Student will demonstrate the ability to describe the economic forces that influence social behavior using econometric and statistical tools. This requires understanding of econometric and economic intuition as well as mathematical tools. The students are expected learn Stata software which enable them to apply the theoretical tools that they learn from the course. Moreover, students will be asked to collect real data set and test his/her theory econometrically. Finally, the projects and homework are designed so that students improve their ability to collaborate with others.

**Textbook and Course Materials**

*Introductory Econometrics: A Modern Approach*, 4th edition, by Jeffrey Wooldridge (Southwest-Cengage Publishers). It is essential that in addition to the lectures students keep up with the corresponding book chapters. (It is impossible to cover all details in the lecture.)

**T-Square**

I will use t-square (www.t-square.gatech.edu/portal) to post announcements, distribute class notes and readings, practice quizzes, etc. You need to have a GaTech email account to use T-square. Please verify that you can log on to T-Square and access the information for this class. It is your responsibility to check the T-square on a regular basis.

**Grading**

Attendance 10 points

Homework 15 points

Project 15 points

Midterm 25 points

Final 35 points

**Exams, quizzes, and projects**

Students are required to take one midterm exam. Please inform me as soon as possible if you have a schedule conflict on the exam date for the midterm. Acceptable reasons for missing an exam are: a serious illness or absence due to Georgia Tech business. You have to present a valid proof for any such claim. There will be **NO makeup exam** for the midterm even for excused situations; if you miss the midterm for a valid medical reason (and bring a doctor’s note), then the final exam will worth 60 points. Please do not ask me to change this rule**.** If you miss a test for any other reason than specified above, the missed test will be counted as zero (This includes any kind of family emergencies). Students can submit group homework (max 3 students). Sometimes rather than collecting the homework I will make a quiz relevant to the homework questions. In that case, your specific homework grade will be determined by the corresponding quiz. Hence, you should know what you solved! Also, that will give you incentive to solve all the homework questions. If you left a question unsolved in the homework, then you are likely to get zero from that homework if you are asked that question in the quiz. Whenever I collect a group homework consisting of (exactly) three members, the members are allowed to vote for a group leader who contributes most (members cannot vote for themselves.) If a member gets two votes from homework, this person will get 0.5 points bonus which will be added to the final grade. This is supposed to encourage you to form groups (of size three) and help your friends. In order to vote you must e-mail your TA stating the group members and your vote. You are encouraged to vote as otherwise it would be unfair to the most hardworking member in the group provided that such a member exists. The project will involve data collection and some empirical work that you can apply your econometric skills. Each group will consist of (max) three members. I will provide more information about the project once the semester starts.

The dates for the midterm, the project, and the final are as follows (subject to change):

**Midterm: 2-28-2012**

**Project : 4-20-2012**

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Final Exam: TBA (according to GT final exam schedule)

During exams students **may NOT use a calculator**. Use of electronic devices that permit text storage is strictly forbidden and will result in a failing grade.

**Homework assignments**

All assignments will have a *firm due date.* You can work on the assignment any time before the due date has passed. Once the due date has passed, the grade will be recorded and it will not be possible to change your answers or complete the assignment at this point. In other words, assignments must be completed by the due date. No excuses are allowed (except medical conditions with proof)**.** So even if you had Georgia Tech business you have to submit the homework on time. If you are excused and missed a quiz, I will use the corresponding homework as a proxy. Theseassignments are posted in advance. Do them early to avoid any emergencies preventing your completion before the due date. You are allowed work (only) with your classmates for the homework assignments. You can submit group homework.

**Participation and Attendance**

Your success in the course will depend on your class participation and fulfillment of out of class readings and assignments. It is important that students contribute to the discussion. During the semester, I will take attendance on randomly selected dates. Many of the times I will take attendance whenever the attendance is lower than usual. Also, it is your responsibility to sign the attendance sheet. That is, it is not being present in the class but signing the attendance sheet gives you the credit. So forgetting to sign the attendance sheet would lead to zero point for that particular attendance. Also, I might take the attendance in the middle or at the end of the class time. Hence, even if you attend 90% of the class time and then leave the class, your attendance will not be counted if you do not sign the sheet. Moreover, if you miss a class due to an acceptable reason: a serious illness or absence due to Georgia Tech business, you have to provide a valid proof so as to be exempted from that attendance. Leaving the class after attending only 10-20 minutes or so is considered a disrespectful attitude and I hear complaints about such behavior from your fellow friends. Without my warning you should be aware that you are not welcome to do this. I keep my right to not count your attendance/signature in such cases.

**Bonus:** Selected students will be given a participation bonus up to 3 points. The bonus will depend on class participation and other factors that show the interest of the student to the class. You should note that an average student’s expected bonus is zero. So you should show some extra performance to get some bonus and only an extraordinary participation will get full bonus. This bonus is added after the grade letters are calculated. Hence, this is a real bonus.

**Course Outline**

The following is a rough course outline. The timing and material we cover is subject to change.

**Topic & Reading**

1. Introduction and Background (W 1, W Appendices A, B, and C)
2. What is econometrics?
3. Types of economic data
4. Causality vs. correlation
5. Math Review
6. Probability and Statistics Review
7. The simple regression model (W 2.1-2.5)
8. Model and assumptions
9. Ordinary least squares (OLS) estimator
10. Goodness-of-fit and R-squared
11. Logarithmic transformations
12. Properties of OLS
13. The multiple regression model (W 3)
14. How do the simple regression results extend?
15. Omitted variables bias
16. Multicollinearity
17. Gauss-Markov theorem: efficiency of OLS
18. Statistical inference (“finite sample”) for OLS (W 4)
19. Confidence intervals
20. Single parameter tests: “t test”
21. Two-sided versus one-sided test
22. P-values
23. Multiple restriction tests: “F test”
24. Asymptotic (“large sample”) theory for OLS (W 5.1-5.2)
25. Additional issues in regression analysis
    1. Functional forms and selection of regressors (W 6.2-6.3)
    2. Dummy explanatory variables (W 7.1-7.4)
    3. The linear probability model (W 7.5)
    4. Heteroskedasticity and weighted least squares (W 8.1-8.4)
    5. Measurement error (9.4)
26. Time series analysis
    1. Times series regression and autocorrelation (W 10.1-10.4)
    2. Trends and seasonality (W 10.5)
    3. The AR(1) and MA(1) models (W 11.1-11.2)
    4. Testing and correcting serial correlation (W 12.1-12.3)
27. Instrumental variables (W 15.1-15.3)
    1. Endogeneity
    2. Two-stage least squares estimation
28. Panel data (W 13, 14.1) [If we have time]
    1. Pooled cross sections
    2. Fixed effects model

**Conclusion:** We are about to embark on a comprehensive study of econometrics. This is an exciting subject that requires understanding of both theoretical and empirical tools. Hard work, combined with a sincere effort to learn, will help you master this important subject.

**Class Conduct**

Please turn off all pagers, music players, cell phones, and laptops during class. If you must leave early or arrive late, please sit in one of the two back rows in order to avoid inconveniencing others. If you are found listening to music, watching a movie, playing a videogame or any such activity that may distract other students you will be asked to leave the class. For every two times you were asked to leave the class during the semester, your grade will be lowered to the next grade level, for example, from an A to a B level.

**Academic Misconduct:** All students are expected to comply with the Georgia Tech Honor Code. Any evidence of cheating or other violations will be referred to the Dean of Students with a recommendation that the penalty be an award of zero points for the graded requirement, and a one letter grade reduction in the course. Cheating includes, but is not limited to: using unauthorized references or notes; copying directly from any source, including friends, classmates, tutors, or a solutions manual; allowing another person to copy your work; taking an exam or handing in a graded requirement in someone else’s name, or having someone else take an exam or hand in a graded requirement in your name; or asking for a re-grade of a paper that has been altered from its original form. Whenever anyone of these academic misconduct rules contradict with the earlier statements in this syllabus they are not in effect.

**Special Accommodations**

Students requesting academic accommodations based on a documented disability are required to register with the Access Disabled Assistance Program for Tech Students (ADAPTS). Please obtain a form from the ADAPTS office and turn it in to me during my office hours in the beginning of the semester.

The ADAPTS Office is located in the Smithgall Student Services Building, Suite 220. The phone number is 404-894-2563 (V). http://www.adapts.gatech.edu/index.html

**Academic Integrity**

You are encouraged to work together with other students on the homework. Exams are taken individually, without any help from other students or any resources. Each student is expected to maintain academic integrity and to report violations to me or to the office of the Dean of Students.