AGEC 8690 – Microeconometrics II

Spring 2019 Syllabus

Class Schedule	TR 12.30–1.45pm, Comer Hall 204
Professor	Emir Malikov
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Office Hours	By appointment

COURSE DESCRIPTION

This course is second in the Microeconometrics sequence. It deals with various parametric (both linear and nonlinear) and nonparametric estimation methods for microeconometric models using cross-sectional and panel data.

TEXTBOOKS

The required textbooks for this course are *Microeconometrics: Methods and Applications* by Cameron and Trivedi and *Applied Nonparametric Econometrics* by Henderson and Parmeter.

You might also find the following supplementary textbooks quite useful throughout the course: (i) *Econometric Analysis* by Greene, *Econometrics* by Hayashi, *Econometric Analysis of Cross Section and Panel Data* by Wooldridge, *Econometrics* by B. Hansen and *Mostly Harmless Econometrics* by Angrist and Pischke for general references; (ii) *Econometric Analysis of Panel Data* by Baltagi, *Panel Data Econometrics* by Arellano and *Analysis of Panel Data* by Hsiao for panel data methods; (iii) *Generalized Method of Moments* by Hall and *Limited-Dependent and Qualitative Variables in Econometrics* by Maddala for special topics; (iv) *Nonparametric Econometrics* by Li and Racine for nonparametric methods; (v) *Introduction to Spatial Econometrics* by LeSage and Pace for spatial data models; (vi) *Causal Inference for Statistics, Social, and Biomedical Sciences* by Imbens and Rubin for causal inference.

GRADING & ASSIGNMENTS

Your course grade is made up of the following components:

Component	*Weight*
Class Participation	10%
Homeworks	10%
Exams (×2)	55%
Project	25%

At the end of the course, your score on each of the above components will be converted to a 100 point based scale. Your final score in the class will be a weighted average of these points. I will then map your final score (also on a 100 point based scale) to the grade you will receive in the course using the following rule: 90–100 is an A, 80–89 is a B, 70–79 is a C, 60–69 is a D, and any

score below 60 is an F.

Requests to revise grades on exams, homeworks or other assignments are accepted *in writing only*. Please compose a brief letter argumentatively explaining (point by point) why you think your grade should be changed, then turn in this letter along with the original assignment back to me. You may contest your grade within 2 weeks from the date your graded assignments was returned to you.

Attendance. While attendance is not required, it is however very highly recommended. Clearly, attendance is necessary for class participation for which you earn credit. Also, please note that I would *not* provide private one-on-one "lectures" during my office hours to cover whatever material you missed in the skipped class.

Class Participation. I expect you to come to class prepared and willing to substantively contribute to the class discussion, which constitutes a part of your course grade. Hence, make sure to keep up with the material as well as to never be shy to ask questions or to share your thoughts. This is an easy way to earn points, so do not miss out.

Homeworks. There will be 4–5 or so problem sets assigned throughout the semester. The assignment will include both the analytical/quantitative problems, which you will need to solve "by hand", as well as assignments that will require R programming. Homeworks are challenging, and I therefore advise you to start working on them as soon as they are assigned. It is likely that I will only grade a selection of the assigned problems; the remaining questions will be graded on the basis of attempted completion.

All assignments are due at the beginning of class. You must hand in a hard copy containing the solutions and any output from software, supplemented with an electronic copy of your R code submitted via email before the class. Late submissions will be accepted (for half credit) only if the solution key has not been posted yet. The homework assignment must be typed; hand-written submissions will not be accepted. If more than one sheet of paper is required, make sure to staple them together with your name on each sheet. Unstapled assignments will not be accepted. Lastly, I give no make-up homework assignments.

You are encouraged to work out the problems in a group with your classmates. However, each of you must submit a separate work of your own. I recommend that you complete the final draft of your homework on your own, but do include the names of all your group mates. If I suspect that two or more students have turned in substantially identical work, I will ask the academic honor council to determine if academic dishonesty has occurred. If they deem that academic dishonesty has occurred on the homework I will recommend an F for your final grade.

Midterm and Final Exams. While the exams will generally focus on the material most recently covered in class, please expect the final exam to be somewhat comprehensive. The date for midterm exam is to be determined depending on the flow of the class. You should expect it in late March. I will announce the exact date at least one week in advance. The final is on Wednesday, 5/1 @ noon–2:30pm. No make-up exams.

Project. For you project, you will work on extending/generalizing a published paper of your choice (subject to my approval) in a novel/original way, with the ultimate goal of producing a short note that can be sent off to *Economics Letters*. Some examples of publishable extensions/generalizations include assessing the robustness of the original findings to different estimation methods, identification strategies, newer data, different model specifications, etc. Ideally, you will continue working on the same paper that you had replicated for the AGEC7690 class. The selected paper must use either cross-sectional or panel data. In the end, you are required to write a short ($\leq$ 2000 words) journal-submission-ready paper. I advise you take this project seriously and be prepared to spend a lot of time on it.

The deadline is the last day of classes, Friday 4/26. Besides the write-up, you also need to email the code and the data you used for the project, so that I can run your program on my computer. No late papers will be accepted and no extensions will be given.

ANNOUNCEMENTS

All announcements (including homework assignments) as well as supplementary material will be posted on *Canvas*. It is your responsibility to check for announcements at least once a day.

OFFICE HOURS / EMAIL

I do not have posted office hours for this course. If you would like to meet, please email me for an appointment and we will make it work. If you cannot make it to see me in my office, feel free to email me with any questions — I will be happy to help. However, please keep in mind that it is nearly impossible to meaningfully answer conceptual questions via email. In such instances, I will customarily ask you to see me in person in order to get your question answered/explained.

STATISTICAL SOFTWARE

In this class, you are required to use R (or R-Studio, if you fancy a better interface) for all computational assignments including homeworks and the replication project. The software is free and can be easily downloaded from the web. Learning to code in R is your own responsibility; I will not teach it in class. There is an immense amount of tutorials, books, videos and free courses available online, so Google is your best friend here. Also, see the official "Contributed Documentation" CRAN website for a voluminous list of freely available R guides and tutorials. In my own experience, the most effective way to learn R is by example following other people's code and, more generally, by tinkering with R on one's own. Also, always remember that 99% of questions you will ever have about coding in R most probably had already been asked by someone else and answered on numerous R-help forums.

ACADEMIC HONOR POLICY

Auburn University expects students to pursue their academic work with honesty and integrity. Violations of this principle may include:

- The possession, receipt or use of any material or assistance not authorized in the preparation of any essay, laboratory report, examination or class assignment to be submitted for credit as part of course or to be submitted in fulfillment of a University requirement. The possession, receipt or use of unauthorized material while an exam or quiz is in progress, or cheating of any other nature, will be a violation of the Code;
- Knowingly giving assistance to another in such preparation;
- Selling, giving, lending or otherwise furnishing to any other person any material that can be shown to contain the questions or answers to any examination scheduled to be given at some subsequent date in any course of study, excluding questions and answers from tests previously administered and returned to a student by the instructor;
- Altering or attempting to alter an assigned grade on any official University record. This violation may also be subject to review and action by the Student Disciplinary Committee;
- An instructor may delineate in advance other actions he or she considers a violation of the Code. For example, the teacher may consider it dishonest or unethical to submit the same

paper for credit in more than one course unless specific permission has been given in advance.

For more, please consult the university's *Student Academic Honesty Code*.

STUDENTS WITH DISABILITIES

Students who need accommodations should electronically submit their approved accommodations through AU Access and then arrange a meeting during office hours to discuss your accommodations. If you have a conflict with my office hours, email me to arrange an appointment at different time. If you have not established accommodations through the Office of Accessibility, but need accommodations, make an appointment with the Office of Accessibility, 1228 Haley Center, 844-2096 (V/TT).

COURSE OUTLINE

This course outline is tentative and subject to change as the semester progresses.

- Quantile regressions, non-crossing quantiles, IV-QR and estimation of quantiles via moments
- Resampling methods: bootstrap and jackknife
- Fixed effects, random effects, correlated random effects (linear) panel-data models
- Hausman-Taylor estimator, dynamic panel data models, system GMM
- Nonlinear panel-data models: limited-dependent-variable panel-data models, conditional maximum likelihood, panel-data sample-selection models, panel-data quantile regressions
- Non/semiparametric (kernel and sieve) methods
- Models of spatial dependence, peer effects
- Causal inference: propensity score matching, difference-in-difference, synthetic controls, regression discontinuity and kink design, etc.