COURSE SYLLABUS
Fall, 2019

Course: ECON 631-600: Advanced Economic Theory

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Lectures: TR 11:30 am–12:35 pm
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Office hours: Wednesday 9:00 am-11:00 am or by appointment
ALLN 3005

Text: The textbooks are: (1) The Theory of Incentives by J. Laffont and D. Martimort; (2) Contract Theory by P. Bolton and M. Dewatripon, and (3) Auction Theory by V. Krishna. The lectures, however, will be mainly based on my book draft: Microeconomic Theory, which can be downloaded from my website at: http://people.tamu.edu/~gtian/teaching_and_class_materials.html

Grade: You will be evaluated on the basis of a series of homework problems, one presentation, and two exams. Homework will be handed out periodically. Your grade will be calculated using the method list below.

Homework: 25%
Presentation: 25%
Exam: 50%

Course Objectives: This is a course in the field of advanced microeconomic theory. The course will study the foundations and recent developments economic theory and their applications to economic organizations. The purpose of this course is to provide students with tools when doing applied work and to find ideas for
their dissertations at the frontier of research in economic theory. The course will cover the topics in mechanism design in general and optimal contract theory and auction theory in particular. The course will provide basic analytical frameworks to study incentive issues under incomplete information and have wide applications to almost all fields of economics. Part I will study the optimal contract theory or so-called the principal-agent theory: one-agent models of hidden characteristics (adverse selection) and hidden action (moral hazard). Part II will study general mechanism design with multi-agents: contract theory and implementation theory. Part III will study auction theory. The course will bring students to the frontier of theoretical research. The course will begin with optimal contract theory, implementation theory, and auction theory, followed by increasingly recent work in dynamic contract theory and dynamic mechanism design, to end with open questions.

**University Education Goal:** Texas A&M University has identified student learning outcomes that describe our institutional commitment to your educational goals. These include the ability to demonstrate critical thinking, effective communication, and social, cultural, and global competence. Please see: [http://provost.tamu.edu/essentials/pdfs/copy_of_UndergraduateLearningOutcomesFinal.pdf](http://provost.tamu.edu/essentials/pdfs/copy_of_UndergraduateLearningOutcomesFinal.pdf).

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confidentiality when it conflicts with their responsibility to report certain issues that jeopardize the health and safety of our community. As the instructor, I must report the following information to other University offices if you share it with me, even if you do not want the disclosed information to be shared:

- Allegations of sexual assault, sexual discrimination, or sexual harassment when they involve TAMU students, faculty, or staff.

These reports may trigger contact from a campus official who will want to talk with you about the incident that you have shared. In many cases, it will be your decision whether or not you wish to speak with that individual. If you would like to talk about these events in a more confidential setting, you are encouraged to make an appointment with the Student Counseling Service (https://scs.tamu.edu/). Students and faculty can report concerning, non-emergency behavior at http://tellsomebody.tamu.edu

**Academic Integrity Statements:** “An Aggie does not lie, cheat, or steal or tolerate those who do.”

**Prerequisites:** ECON 629 and ECON 630 or have the permission from me.

**Tentative Topics Outline:**

Readings: Chapters 1-5 of Laffont and Martimort; Chapters 1, 2, 4 of Bolton and Dewatripon, and Chapters 16-17 of my lecture notes Microeconomic Theory.

Part II Mechanism design with multi-agents – contract theory and implementation theory: incentives and information of an economic system, economic mechanism design, implementation in Nash equilibrium and in Bayesian equilibrium, truth telling and dominant mechanism, the pivot mechanism, and optimal dominant mechanisms.

Readings: Chapters 18-19 of my lecture notes Microeconomic Theory.

Part III. The auction theory: private value auctions, independent private values auctions, revenues equivalence principle, auctions with interdependent values, revenue ranking principle efficiency and the English auction, mechanism design with interdependent values, multiple
object auctions *Auction Theory*.

Readings: Chapters 1-10 of Krishna, and Chapter 21 of my lecture notes *Microeconomic Theory*.

If time permits, we may cover the following materials.

**Part IV Dynamic contract theory**: dynamic contracts under full commitment, dynamic contracts under different commitment power, sequential screening, efficient budget-balanced dynamic mechanism.

Readings: Chapter 20 of my lecture notes *Microeconomic Theory*. 