

COURSE SYLLABUS

Fall, 2018

Course: ECON 631-600: Advanced Economic Theory

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Lectures: MW 9:55 pm– 11:10 pm
Bush Academic Building West 3095

Office Hours: MW 1:00 pm-2:00 pm or by appointment
Bush Academic Building West 3090

Text: The textbooks are: (1) *The Theory of Incentives* by J. Laffont and D. Martimort; (2) *Contract Theory* by P. Bolton and M. Dewatripon. The lectures on the mechanism design, however, will be mainly based on my lecture notes: *Microeconomic Theory*, which can be downloaded from my website.

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.

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|---------------|-----|
| 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 dynamic contract 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.

ADA Policy Statement: The Americans with Disabilities ACT (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Disabilities Services, currently located in the Disabilities Building at the Student Services at White Creek complex on West Campus or call 979 - 845-1637. For additional information visit <http://disability.tamu.edu>

Title IX and Statement on Limits to Confidentiality Statement:

Texas A&M University and the College of Liberal Arts are committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws provide guidance for achieving such an environment. Although class materials are generally considered confidential pursuant to student record policies and laws, University employees — including instructors — cannot maintain 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 689 or have the permission from me.

Tentative Topics Outline:

Part I. The principal-agent theory: optimal contract design with one-agent, private information, incentive-compatibility, hidden characteristics, adverse selection, hidden action, moral hazard, second best, and revelation principle.

Readings: Chapters 1, 2, 4 of Bolton and Dewatripon, Chapters 1-5 of Laffont and Martimort, Chapters 13-14 of Mas-Colell, Whinston, and Green, and Chapters 13-14 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: Chapter Chapters 1 and 7 of Bolton and Dewatripon, Chapter 23 of Mas-Colell, Whinston, and Green, and Chapters 15-16 of my lecture notes *Microeconomic Theory*.

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

Readings: Chapters 1 and 9 of Bolton and Dewatripon and Chapter 20 of my lecture notes *Microeconomic Theory*.