

ECN 320, Gamw theory, information, and contracts Department of Economics and Finance, Fall 2018

I. COURSE INFORMATION

Instructor:	Luca V.A. Colombo
Instructor's Email	lcolombo@fus.edu
Office Hours:	We. 14:00 – 16:00; 18:45 – 20:45; and by appointment
Class location	Kaletsch Campus Bldg., Room 5
Class meeting times	We. 10:00-12:45

II. COURSE DESCRIPTION

The course investigates in a simple but rigorous way some of the fundamental issues of modern Microeconomics, exploring the main concepts of Game Theory, as well as the basic elements of the Economics of Information, and of Contract Theory. The course will discuss the notions of strategic behavior and rationality, derive equilibrium concepts for normal form games with perfect information, as well as study dynamic games focusing on backward induction, sub-game perfection and renegotiation. Furthermore, games with incomplete information, and in particular reputation and signaling games, will be introduced and analyzed. Finally, in the last part of the course, the fundamental issues of contract design will be discussed, both under the assumption of symmetric information, and under that of asymmetric information.

III. RATIONALE

This course is designed to provide students with a consistent set of tools allowing a systematic analysis of a variety of issues where strategic reasoning and choice interdependencies matter.

IV. COURSE GOALS

A solid background on the topics covered in the course is essential to the investigation of strategic decision-making, the assessment of the relevance of asymmetric or incomplete information in decision processes, and the design of contracts. These, in turn, are among the most important issues that firms and individuals commonly need to face in all situations in which the consequences of individual decisions are likely to depend on the strategic interactions among agents' actions, and on the signaling value of information.

V. SPECIFIC LEARNING OUTCOMES

Proceeding from intuition to formal analysis, the course investigates the methodological approach of game theory – allowing for a systematic analysis of

strategic interaction – and the main concepts of the Economics of Information – permitting to assess the effects of asymmetric or incomplete information on agents' decisions. Further, it combines both Game Theory and the Economics of Information to provide an introduction to the essential elements of Contract Theory.

VI. REQUIRED TEXTS AND MATERIALS

The instructor class notes will be the essential reference for the entire course.

For the part of the course in Game Theory the following textbook is strongly recommended:

Martin J. Osborne (2004). *An Introduction to Game Theory*. New York: Oxford University Press.

A useful, although relatively advanced, reference for the part of the course dealing with Contract Theory is:

Macho-Stadler I., J.D. Pérez-Castrillo (1997). *An Introduction to the Economics of Information: Incentives and Contracts*. Oxford: Oxford University Press.

VII. ASSESSMENT

The final grade will be based on class participation and on a student's performance in three graded problem sets (additional problem sets may be assigned every week, but not formally graded), a midterm exam, and a final exam. The final exam will include all the material covered in the course. The weights of each of the above components in the computation of the final grade is the following:

Class participation and homeworks	30%
Midterm exam	30%
Final examination	40%

VIII. GRADING POLICIES AND EXPECTATIONS

At the end of the semester, a student's total points will be translated into the final grade as determined by the following grading scale: 90-100=A; 80-89=B; 70-79=C; 60-69=D; 0-59=F (plus/minus when applicable).

IX. HOW TO DO WELL IN THIS COURSE (POLICIES / REQUIREMENTS)

Attendance is essential to perform well in the course. Absences may lower the course grade. **Announcements that are made during lectures will carry the full force of assignments and instructions contained in this syllabus.** New material introduced in lectures will be covered in subsequent exams. Students are responsible for any missed information. Extended absences may result in the student being dropped from the class roll.

Absences from exams and delays in handing in homeworks will only be excused if due to student's illness or family emergency. In the case a student can anticipate that she (he) will miss an exam, she (he) is required to make every effort to notify the instructor in advance of the exam to be missed by phone, email, or with a message to reception. In case of a severe emergency that precludes advance notice, this contact must be made as soon as possible after the absence. A condition of illness or serious family emergency forcing a student to miss an exam needs to be

formally certified. **No exceptions will be made.** Make-up examinations will normally be given during the final exam week.

X. ACADEMIC INTEGRITY: STATEMENT ON CHEATING AND PLAGIARISM

Cheating and plagiarism are very serious offences that reflect negatively on one's personal integrity. As a member of a community committed to academic integrity and honesty, it is your responsibility to become familiar with the Franklin University [Statement on Cheating and Plagiarism](#)

See the Academic Catalog for full statement (page 199): https://www.fus.edu/images/pdf/FUS_ACADEMIC_CATALOG_2018_2020_web.pdf

In particular, all work submitted must be a student's own work. During tests, students are not allowed to use notes, cell phones, talk with other students, or copy their work. In case of a violation a student will get 0 points for the assignment and be reported to the Dean of Academic Affairs.

XI. RESOURCES AVAILABLE

Writing and Learning Center: For all writing and learning support issues (time management, study skills, preparing for exams, reading and presentation skills, and all steps of the writing process from brainstorming a paper to outlining, editing to proofreading) schedule an appointment with a tutor by going to the website wlc.setmore.com. Drop-in assistance 10am-5pm (Fridays only 10am-3pm). Tutors can give you individual one-to-one support in all of these areas. For further inquiries, contact Ann Gardiner, WLC Director (agardiner@fus.edu) or Olivia Della Croce, WLC Assistant Director (odellacroce@fus.edu).

Honors Society: This offers an added opportunity for students seeking to pursue their academic interests. The program is especially suitable for students contemplating graduate study after Franklin. Contact Professor Marcus Pyka (mpyka@fus.edu), LAC 12.

XII. COURSE SCHEDULE

	SUBJECT	READING ASSIGNMENTS
AUG. 29	Normal form games and perfect information	O1, O2
SEPT. 5	Strategic behavior and rationality: dominant strategies	O2
SEPT. 12	Strategic behavior and rationality: iterated deletion of strictly dominated strategies	O2
SEPT. 19	Strategic behavior and rationality: Nash equilibrium	O2, O4
SEPT. 19	FIRST PROBLEM SET ASSIGNED (DUE ON SEPT. 26)	
SEPT. 26	<i>Review Session</i> Applications of the Nash equilibrium in pure strategies	O3
OCT. 3	Further applications of the Nash equilibrium in pure strategies	O3
OCT. 10	Mixed strategy equilibrium	O4
OCT. 17	MIDTERM EXAMINATION	
NOV. 7	Extensive form representation of a game and dynamic games.	O5, O6
NOV. 14	Backward induction and credible threats. Sub-game perfect Nash Equilibrium	O5, O6
NOV. 14	SECOND PROBLEM SET ASSIGNED (DUE ON NOV. 21)	
NOV. 21	<i>Review Session</i> Static and dynamic games of incomplete information: Perfect Bayesian Nash equilibrium	O9, O10
NOV. 28	Reputation and signaling games	O9, O10
NOV. 28	THIRD PROBLEM SET ASSIGNED (DUE ON DEC. 5)	
DEC. 5	<i>Review Session</i> An introduction to contract theory: Contract design under symmetric and asymmetric information	M-S_P-C and class notes
DEC. 12	FINAL EXAM (11:00 – 13:00)	