

ECON 3M03 – C01: INTRODUCTION TO GAME THEORY

Winter 2020

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Office Hours: Monday 1: 00 pm -2: 00 pm & Friday 2: 30 pm -3: 30 pm

Lecture: Monday & Wednesday & Thursday 4:30 pm – 5:20 pm in T13 107

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COURSE DESCRIPTION

This is a standard introductory Game Theory course. We examine strategic situations, in which each agent's behavior generally affects the well-being of the other agents. Game theory is a technical framework for rigorously analyzing decision-making in such settings. This course will be problem driven. The mathematics required for this course does not go beyond calculus. Students should be comfortable with set notation, algebraic manipulation, and basic probability theory. An ability to think logically will be a great asset.

PREREQUISITES

ECON 1B03 (or ARTSSCI 2E03); and MATH 1K03 (or equivalent). Not open to students with credit in ECON 3Y03 if the topic was Introduction to Game Theory.

COURSE MATERIALS AND TEXTS

- Watson, Joel **Strategy: An Introduction to Game Theory**, 3rd edition, published by W.W. Norton & Company, 2013.

AVENUE TO LEARN

Course materials (e.g. lecture slides, announcements, etc.) will be posted on the Avenue to Learn website <http://avenue.mcmaster.ca>

The Avenue site is down occasionally. Save the course materials to your computer as soon as they are posted. You are responsible for making yourself aware of any changes made to the course by checking Avenue daily.

Students should be aware that, when they access the electronic components of this course, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in this course will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.

COURSE EVALUATION – OVERVIEW

1. Quiz 1 – 2.5 %
2. Quiz 2 – 2.5 %
3. Team Competition - 15%
4. Midterm (March 5, in class)- 30%
5. Final Exam - 50%

COURSE EVALUATION – DETAILS

Quiz 1 (Jan 23, in class, 2.5%)

Quiz 2 (Feb 13, in class, 2.5%)

The format for the quizzes will be multiple-choice questions. Coverage of the quizzes will depend on the pace of the class to that point in the term. Marks will be posted on Avenue.

Team Competition (15%)

Students will be broken into teams. Team members will be assigned by the instructor. We will run a course-long competition between the teams. This competition is fun, and is mainly for sharpening the students' problem solving skills. Team members will need to sit together during class to facilitate cooperation and discussion to solve contest problems.

Consider each class as the competition window. I may select any time during the class to give contest problems. There are two types of contest problems:

1. **Questions assigned to a particular team:** I will randomly call a team (e.g. team 2) to solve a problem. Within the assigned time, if team 2 cannot solve this problem or if none of team 2's members are in the classroom, team 2 receives a grade of 0 for this contest. If team 2's answer is wrong, then team 2 receives 1 mark. If team 2 solves the problem successfully, then team 2 receives 2 marks. Each team will be called multiple times during the semester.
2. **Questions open to all teams:** Once I announce "Start", the team that first solves the problem and raises hand will be asked to present the answer. The team that is the first to successfully solve the problem receives 2 marks.

Team competition status will be posted on Avenue and will be updated biweekly. In the last class, each team is required to submit a peer-evaluation form. A student's grade depends on both the team performance and the individual contribution.

Midterm (30%), March 5th, 2020 (Thursday) during class time

No make-up midterm and **No early writes** are provided. The format for the midterm exam will be multiple-choice questions and short answer questions. Coverage of the midterm will depend on the pace of the class to that point in the term. Midterm marks will be posted on Avenue.

Final Exam (50%)

The final exam will include multiple choice questions and short answer questions. Final exam is cumulative. Only the Registrar's Office can issue final grades. Please visit the following website for details: <http://registrar.mcmaster.ca/exams/requirements/>

Please note: travel plans are NOT a sufficient reason to have a final exam deferred.

The Deferred Exam Policy is listed on the following website at:

<http://registrar.mcmaster.ca/exams/deferred/>

COURSE POLICIES

Grades

Grades will be based on the McMaster University grading scale:

MARK	GRADE
90-100	A+
85-90	A
80-84	A-
77-79	B+
73-76	B
70-72	B-
67-69	C+
63-66	C
60-62	C-
57-59	D+
53-56	D
50-52	D-
0-49	F

Grade Adjustment Techniques

Combination of particular distribution and absolute measures will be used to determine the course grades. The university grading system will be relied on as benchmark.

Absences, Missed Work, Illness (MSAF)

Please note the MSAF regulations have changed beginning Spring/Summer 2015. The timeframe within which the MSAF is valid has been reduced from 5 days to 3 days.

– The upper limit for when an MSAF can be submitted has been reduced from ‘less than 30%’ to ‘less than 25%’ of the course weight (i.e., 24% and less)

– The ‘one MSAF per term’ limit is retained.

<https://socialsciences.mcmaster.ca/current-students/absence-form>

You cannot use the MSAF reporting system for a missed midterm as it is worth 30% toward your final grade. In the event that a student is unable to write the midterm on the scheduled date, a medical certificate should be submitted within 5 days. With valid documentation, the 30% of total course grade from the missed mid-term will be re-assigned to the final examination. In the absence of valid documentation, a grade of zero will be assigned for the missed mid-term exam.

Calculators

Use of Casio FX-991 MS or MS Plus calculator only is allowed.

UNIVERSITY POLICIES

Academic Integrity Statement

You are expected to exhibit honesty and use ethical behavior in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behavior can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty please refer to the [Academic Integrity Policy](#).

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one's own or for which credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations.

Academic Accommodation of Students with Disabilities

Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements. Academic accommodations must be arranged before classes or academic work begins, and for each term of study. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or e-mail sas@mcmaster.ca. For further information, consult McMaster University's Policy for [Academic Accommodation of Students with Disabilities](#).

Academic Accommodation for Religious, Indigenous and Spiritual Observances

Students who require academic accommodation due to an Observance must submit a RISO form to their Faculty office, electronically or in person, normally within ten working days from the beginning of each term in which they are anticipating a need for Accommodation. For further information, consult McMaster University's [Policy on Academic Accommodation for Religious, Indigenous and Spiritual Observances](#).

Faculty of Social Sciences E-mail Communication Policy

Effective September 1, 2010, it is the policy of the Faculty of Social Sciences that all e-mail communication sent from students to instructors (including TAs), and from students to staff, must

originate from the student's own McMaster University e-mail account. This policy protects confidentiality and confirms the identity of the student. It is the student's responsibility to ensure that communication is sent to the university from a McMaster account. If an instructor becomes aware that a communication has come from an alternate address, the instructor may not reply at his or her discretion.

Put "ECON 3M03" in the subject line and include your full name and student ID in the message. Please do **not** use the mail function within Avenue.

Course Modification

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check his/her McMaster email and course websites weekly during the term and to note any changes.

COURSE SCHEDULE

Category	Topic	Chapter s
A. Representing Games	Introduction, extensive form, strategies, normal form	1-3
	Beliefs and mixed strategies	4-5
B. Analysis of Static Settings	Best response, rationalizability, applications	6-8
	Equilibrium, applications	9-10
	Other equilibrium topics	11-12
C. Analysis of Dynamic Settings	Backward induction, subgame perfection, and applications	14-17
	Repeated games, and applications	22-23
D. Information	Random events and incomplete information	24
	Bayesian equilibrium, and applications	26-27
	Perfect Bayesian equilibrium, and applications	28-29* (if time allows)

OTHER NOTES

Electronic Device Policy

Cell phones must be turned off or muted for the duration of the lecture. Laptop/tablet may only be used to view lecture material.

Attendance Policy

Class attendance is an integral part of your educational experience. It is an important factor in ensuring your complete understanding of the material presented. You are responsible for all material presented in the scheduled lecture periods whether you choose to attend lectures or not.

Students Writing with SAS

Students registered with SAS must book time to write the midterm tests with SAS. **You may only write on the same day as the rest of the class.** Tests written on any other day will not be accepted and a grade of zero will be assigned.

Classroom Protocols

The highest level of courtesy and professional behaviour are expected from every student. In particular, be punctual and turn off all audible ringers on all devices during class. As a courtesy to the custodial staff, if you have coffee, water, etc., please dispose of your garbage when you leave the classroom.