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Economics 3G03: Introduction to Advanced Economic Theory
Winter Term 2022

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Course Outline

- **Instructor**: Rumen Kostadinov

- **e-mail**: `kostadir@mcmaster.ca`

  - Please use your *McMaster email account* and include the course number in your emails. Please do not use the email function within Avenue. These emails go to a separate inbox on Avenue, which I do not check.

- **Office**: KTH 417

- **Office hours**: email me to set up an appointment

- **Lectures**:

  - The university has moved to online teaching, currently scheduled until February 7. During the online period, prerecorded lectures will be uploaded to the Avenue webpage and office hours will be virtual.

  - Once the online teaching period is over, the course will proceed in a blended format. Prerecorded lectures will be uploaded on Monday introducing new concepts with accompanying examples. Then there is an in-person class on Friday 9:30–10:50 in PC335, where the primary objective is to apply the new material through problem solving. Between Monday and Friday you are expected to study the new material, contacting me for clarification if necessary. Keeping up with the lectures is crucial to making the most out of the problem solving class on Friday.

Objective

This course is an introduction to the mathematical methods commonly used in economic theory. The purpose of the course is to make students comfortable with the application of mathematics to economic theory and therefore, prepare them for their third- and fourth-year economic courses. The course will review and cover topics in linear algebra and calculus leading to a detailed study of constrained optimization. Other topics such as differential equations will be covered if time permits. The emphasis of the course will be on problem solving with illustrative examples taken from various fields of economic study.

Textbook

"Fundamental Methods of Mathematical Economics" Alpha C. Chiang and Kevin Wainwright, 4th edition, McGraw Hill

Older editions are fine as well, but the numbering of exercises assigned as practice problems may be different.

Schedule

- *Introduction*
  Equilibrium Analysis in Economics, Chapter 3.

- *Review of Linear Algebra*
  Linear Models and Matrix Algebra, Chapters 4 and 5.

- *Competitive Static Analysis*
  Comparative Statics and the Concept of Derivative, Chapter 6.
  Rules of Differentiation and Their Use in Comparative Statics, Chapter 7.
  Comparative-Static Analysis of General Function Models Chapter 8

- *Optimization Problems*
  Optimization: A Special Variety of Equilibrium Analysis, Chapter 9.
  The Case of More than One Choice Variable, Chapter 11.
  Optimization with Equality Constraints, Chapter 12.
  Further Topics in Optimization Chapter 13.

- *Dynamic Analysis* (time permitting)
  Economic Dynamics and Integral Calculus, Chapter 14.
  Continuous Time: First-Order Differential Equations, Chapter 15.
  Discrete Time: First-Order Difference Equations, Chapter 17.
  Simultaneous Differential Equations and Difference Equations, Chapter 19.

Exams

There will be two 2-hour term tests and a 2.5-hour final exam. It is your responsibility to inform the lecturer of any timetable conflicts *within the first week of classes*. The tentative term test schedule is:

- Test 1: February 11, 9:30 - 11:30

- Test 2: March 25, 9:30 - 11:30

- Final Exam: TBA

Currently, the exams are planned to be in person, as in-person teaching is scheduled to resume on February 7.

Each term test will receive a weight of 30%, and the final exam will receive a weight of 40%. If a student gets higher marks in the final exam than the average marks of the term tests, the final exam will receive a weight of 80% and the term tests will receive a total weight of 20%.

No make-up exams are provided. Students who miss a midterm are directed to take their documentation to their faculty's associate dean's office. They will be given permission to use a "special" MSAF where they can correctly fill in the weight of the missed test. Once I receive the MSAF with the correct weights the weight of the missed midterm will be shifted to the final examination. A regular, self-submitted MSAF is not sufficient, as the weight on the midterms is 30%.

University Policies

- **Academic Intergrity**: You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity. **It is your responsibility to understand what constitutes academic dishonesty.**

  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 behaviour 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. 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:

    - plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.

    - improper collaboration in group work.

    - copying or using unauthorized aids in tests and examinations.

- **Conduct Expectations**: As a McMaster student, you have the right to experience, and the responsibility to demonstrate, respectful and dignified interactions within all of our living, learning and working communities. These expectations are described in the *Code of Student Rights & Responsibilities* (the "Code"). All students share the responsibility of maintaining a positive environment for the academic and personal growth of all McMaster community members, **whether in person or online**.

  It is essential that students be mindful of their interactions online, as the Code remains in effect in virtual learning environments. The Code applies to any interactions that adversely affect, disrupt, or interfere with reasonable participation in University activities. Student disruptions or behaviours that interfere with university functions on online platforms (e.g. use of Avenue 2 Learn, WebEx or Zoom for delivery), will be taken very seriously and will be investigated. Outcomes may include restriction or removal of the involved students' access to these platforms.

- **Academic Accommodation of Students with Disabilities**: Students with disabilities who require academic accommodation must contact *Student Accessibility Services* (SAS) at 905-525-9140 ext. 28652 or sas@mcmaster.ca to make arrangements with a Program Coordinator. For further information, consult McMaster University's *Academic Accommodation of Students with Disabilities* policy.

- **Requests for Relief for Missed Academic Term Work:**

  McMaster Student Absence Form (MSAF): In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar "Requests for Relief for Missed Academic Term Work".

- **Academic Accommodation for Religious, Indigenous and Spiritual Observances (RISO)**: Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the *RISO* policy. Students should submit their request to their Faculty Office normally within 10 working days of the beginning of term in which they anticipate a need for accommodation or to the Registrar's Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.

- **Copyright and Recording:** tudents are advised that lectures, demonstrations, performances, and any other course material provided by an instructor include copyright protected works. The Copyright Act and copyright law protect every original literary, dramatic, musical and artistic work, **including lectures** by University instructors

The recording of lectures, tutorials, or other methods of instruction may occur during a course. Recording may be done by either the instructor for the purpose of authorized distribution, or by a student for the purpose of personal study. Students should be aware that their voice and/or image may be recorded by others during the class. Please speak with the instructor if this is a concern for you.

- **Extreme Circumstances:** The University reserves the right to change the dates and deadlines for any or all courses in extreme circumstances (e.g., severe weather, labour disruptions, etc.). Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, A2L and/or McMaster email.

- **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.

COURSES WITH AN ON-LINE ELEMENT
Some courses may use on-line elements (e.g. e-mail, Avenue to Learn (A2L), LearnLink, web pages, capa, Moodle, ThinkingCap, etc.). Students should be aware that, when they access the electronic components of a course using these elements, 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 a course that uses on-line elements will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.