

### Important Information about Time

- All times indicated in this syllabus are Eastern Time—the local time in Syracuse, NY.
- You can always check the current time here: <https://www.timeanddate.com/worldclock/usa/syracuse>.
- Please keep in mind also that Daylight Saving Time in this time zone is scheduled to end on Sunday, November 1, on which day clocks are turned back one hour.
- Many of you are located in a variety of different time zones due to travel restrictions and safety concerns. Accordingly, this course is specifically designed with as much flexibility as possible to accommodate your needs. Nonetheless, **it is your responsibility to abide by all deadlines according to local Syracuse time**. Time-zone differences will be no excuse for missed deadlines and late submissions.

### Course Format

Out of an abundance of caution, **this course will be taught fully online** in the Fall 2020 semester in the wake of the ongoing COVID-19 crisis.

### Contact Information

Instructor	Áron Tóbiás
Email	<a href="mailto:adtobias@maxwell.syr.edu">adtobias@maxwell.syr.edu</a>
Virtual office	<a href="https://us.bbcollab.com/guest/d378b0cb65d4494e8ca407e256ae329d">https://us.bbcollab.com/guest/d378b0cb65d4494e8ca407e256ae329d</a>
Online office hours	Tuesday and Thursday 12:45 P.M.–1:45 P.M.
Teaching Assistant	Nam Seok (Nammy) Kim
Email	<a href="mailto:nkim15@syr.edu">nkim15@syr.edu</a>
Virtual office	<a href="https://us.bbcollab.com/guest/d378b0cb65d4494e8ca407e256ae329d">https://us.bbcollab.com/guest/d378b0cb65d4494e8ca407e256ae329d</a>
Online office hours	Monday 9 A.M.–10 A.M. (morning) Wednesday 9 P.M.–10 P.M. (evening)

### Text

- Michael Hoy, John Livernois, Chris McKenna, Ray Rees, and Thanasis Stengos (2011): *Mathematics for Economics*, Third Edition, Cambridge: The MIT Press, ISBN: 9780262015073.
- **Lecture slides and video lectures** will also be posted on Blackboard: <https://blackboard.syracuse.edu>, which follow the material covered in the textbook.

## Prerequisites

The following courses are prerequisites for ECN 505:

- either ECN 301 or ECN 311; and
- MAT 295; and
- MAT 296.

Prior exposure to and familiarity with the following concepts from calculus are assumed: sequences, limits, continuity, differentiation.

## Course Description

ECN 505 is intended to serve as an introduction to the use of basic mathematical techniques in economic analysis. The ultimate goal of this course is to develop the theory of constrained optimization and to endow students with the ability to apply this theory to a variety of problems in both microeconomics and macroeconomics.

## Evaluation

The final grade will consist of three components:

<b>30%</b>	<b>problem sets</b>	<b>assigned every two weeks;</b>
<b>35%</b>	<b>midterm exam</b>	<b>Thursday, October 15, 11 A.M.–12:20 P.M.;</b>
<b>35%</b>	<b>final exam</b>	<b>Tuesday, December 8, 12:45 P.M.–2:45 P.M.</b>

Percentages are converted to letter grades based on the following table:

92–100	A	72–75	C+
88–91	A-	68–71	C
84–87	B+	64–67	C-
80–83	B	60–63	D
76–79	B-	0–59	F

In case the overall class score is lower than expected, this grading scale will be adjusted via grading on a curve. Under no circumstances will the above grading policy change to your disadvantage.

## Policies

- Problem sets will be announced and posted approximately every two weeks. You will have one week to submit your solution to each problem set.
- You are allowed to work together on problem sets in groups, but each of you is expected to submit a *complete and independent* write-up. Please refrain from mindlessly copying solutions from each other.

- Both exams will be conducted online. The exams will be open-book: you *may* use the lecture slides, your notes, the textbook, and a calculator. However, you *may not* communicate or collaborate with, seek help from, or provide any kind of information about the exam to anyone else while working on it. You must complete your work individually.
- The two exams are non-cumulative. This means that the final exam will cover only the second half of the course material. However, please do not be tempted to interpret this as a free pass to “forget” the first half after the midterm, as the concepts we cover in the second half of the course crucially build on those covered in the first half.
- Problem sets and exams must be submitted through Blackboard. Follow these instructions to submit your work electronically: <https://answers.syr.edu/display/blackboard01/Submitting+a+Blackboard+Assignment>. Please *do not email* your submission.
- Submitted problem sets and exams must satisfy the following criteria: (1) your scanned or photographed images must be legible; (2) multiple pages must be bunched together in one single file (think of it as an electronic version of stapling); and (3) the format of that single file must be .PDF.
- Late submissions of problem sets and exams will incur steep score penalties. Please make every effort to submit all your work on time.
- Requests for makeup exams will be granted *only* under the following circumstances: (i) religious holiday observances (see below); or (ii) medical emergencies, provided that absence is advised by a health-care provider. You will need to submit written documentation issued by a health-care provider. If this documentation is not written in the English language, it must be translated into English and the translation must be submitted along with the original. Makeup exams will *not* be provided under any other circumstances.
- As much as I regret any inconvenience this may cause to you, requests for time-zone adjustments will *not* be considered. As a general rule, all students are expected to complete each exam at the exact same time, irrespective of any time-zone differences.
- While I am committed to assisting you with administrative inquiries through email within a reasonable time frame, I will be generally unable to answer emails containing questions about the course material itself. The same applies to the teaching assistant. With such questions, please visit either of us during our respective online office hours.

## Religious Holiday Observances

Syracuse University does not set aside days for any religious holiday. **Students are expected to notify instructors by the end of the second week of classes for regular session classes if and when they will be observing their religious holiday(s).** Students will have access to an online notification form through MySlice for two weeks beginning on the first day of class.

Syracuse University's Religious Observances Policy, found at <https://policies.syr.edu/policies/university-governance-ethics-integrity-and-legal-compliance/religious-observances-policy/>, recognizes the diversity of faiths represented in the campus community and protects the rights of students, faculty, and staff to observe religious holy days according to their tradition. Under the policy, students have an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance provided they notify their instructors no later than the end of the second week of classes for regular session classes and by the submission deadline for flexibility formatted classes. Student deadlines are posted in MySlice under Student Services/Enrollment/My Religious Observances/Add a Notification.

## Academic Integrity

Syracuse University's Academic Integrity Policy reflects the high value that we, as a university community, place on honesty in academic work. The policy defines our expectations for academic honesty and holds students accountable for the integrity of all work they submit. Students should understand that it is their responsibility to learn about course-specific expectations, as well as about university-wide academic integrity expectations. The policy governs appropriate citation and use of sources, the integrity of work submitted in exams and assignments, and the veracity of signatures on attendance sheets and other verification of participation in class activities. The policy also prohibits students from submitting the same work in more than one class without receiving written authorization in advance from both instructors. Under the policy, students found in violation are subject to grade sanctions determined by the course instructor and non-grade sanctions determined by the School or College where the course is offered as described in the Violation and Sanction Classification Rubric. Syracuse University students are required to read an online summary of the University's academic integrity expectations and provide an electronic signature agreeing to abide by them twice a year during pre-term check-in on MySlice. For more information about the policy, see <https://class.syr.edu/academic-integrity/policy/>.

All academic integrity expectations that apply to in-person exams also apply to online exams. In this course, all work submitted for exams must be yours alone. Discussing exam questions with anyone during the exam violates academic integrity expectations for this course. Using websites that charge fees or require the uploading of course material to obtain exam solutions or assignments completed by others and presenting

the work as your own violate academic integrity expectations in this course.

The Violation and Sanction Classification Rubric establishes recommended guidelines for the determination of grade penalties by faculty and instructors, while also giving them discretion to select the grade penalty they believe most suitable, including course failure, regardless of violation level. Any established violation in this course may result in course failure regardless of violation level.

### Accommodations for Students with Disabilities

Syracuse University values diversity and inclusion; we are committed to a climate of mutual respect and full participation. If there are aspects of the instruction or design of this course that result in barriers to your inclusion and full participation, I invite you to meet with me to discuss strategies and/or accommodations (academic adjustments) that may be essential to your success and to collaborate with the Center for Disability Resources (CDR) in this process.

If you would like to discuss disability accommodations or register with CDR, please visit their website at <https://disabilityresources.syr.edu>, call (315) 443-4498, or email [disabilityresources@syr.edu](mailto:disabilityresources@syr.edu) for more detailed information.

CDR is responsible for coordinating disability-related academic accommodations and will work with you to develop an access plan. Since academic accommodations may require early planning and generally are not provided retroactively, please contact CDR as soon as possible to begin this process.

### Course Outline

The following table provides an overview of the topics we are going to cover in this course along with the corresponding chapters in the textbook.

Topic	Textbook reading
Review of fundamentals (optional)	Chapter 2
Sequences, series, and limits	Chapter 3
Continuity	Chapter 4
Differentiation and derivatives	Chapter 5
Univariate optimization	Chapter 6
Systems of linear equations	Chapter 7

Matrices	Chapter 8
Determinants and inverses	Chapter 9
Eigenvalues and quadratic forms	Chapter 10
Multivariate calculus	Chapter 11
Multivariate optimization	Chapter 12
Constrained optimization	Chapter 13
Comparative statics	Chapter 14
Concave programming and Kuhn – Tucker conditions	Chapter 15