

# Syllabus for MTHU115 — Fall 2004

Professor Sherman's Session

## About this course

This is a special section of Applications of Algebra, MTHU115. A grade of *C* or better in this course meets the Category I mathematical proficiency requirement of the College of Arts and Sciences. What makes this section different is two things: students and course content.

Students: you have been selected for this course on the basis of demonstrated math ability. If you are worried either that you may be in over your head or that the course will not sufficiently challenge you, please speak with me before transferring out. I may at least be able to help you find a better fit.

Course content: Mathematically the course is closely related to the standard version of the course, but the material is less likely to be something you have seen before and, I hope, it will be more interesting to you.

The course is built around *game theory*. Game theory plays an important role in contemporary thinking about conflict in many contexts: war, diplomacy, industrial and economic issues, traffic snarls, personal relationships, to name a few. It has attracted the attention of scholars from diverse disciplines: psychology, sociology, political science, philosophy, mathematics, and especially economics.

Mathematically, the topics in the course include probability, trees, matrix algebra, linear programming, fixed-point theory, and of course, combining all these ingredients into a coherent whole, game theory itself.

In spite of its novel content, past experience with the course is that students on average do as well in this version of the course as in the regular version. The main difference is that more students feel this course is likely to be something they will find useful in their other courses, in work, and in life.

## Course materials

The text for the course is a set of Class Notes, available from Gnomon Copy, 325 Huntington Avenue, across the street from the Boston YMCA. Modifications and additional materials may be made available from time to time, including over the course web site, [www.math.neu.edu/~sherman/mthu115.htm](http://www.math.neu.edu/~sherman/mthu115.htm).

## Your professor is

Tom Sherman. My office is 455 Lake Hall. My phone is 617-373-2785. My email is [sherman@neu.edu](mailto:sherman@neu.edu)

You are cordially invited to ask questions, come in for help, bring me your ideas. My office hours are Monday 10:30–1:25, 2:50–4:30 and Tuesday 11:45–1:30, 3:30–5:30. One of the great rewards of teaching is seeing a student, who has had to struggle with an idea, suddenly get it. Consider that by coming in for help you are doing me a favor.

## Grading

There will be regular written homework assignments (worth 10%), quizzes (worth 30%), an hour test (worth 20%) and a final exam (worth 40%). In addition, attendance will be taken. An unexcused absence deducts 1% from your total score. (This is more than it sounds like. The point is that what goes on in class is very important. It is hard to get the material any other way.)

At the end of the course, I will convert your numerical percentage score  $S$  into a letter grade LG according to the following scheme:

For $S \geq$	$93\frac{1}{3}$	90	$86\frac{2}{3}$	$83\frac{1}{3}$	80	$76\frac{2}{3}$	$73\frac{1}{3}$	0
and $S <$	$\infty$	$93\frac{1}{3}$	90	$86\frac{2}{3}$	$83\frac{1}{3}$	80	$76\frac{2}{3}$	$73\frac{1}{3}$
LG is	$A$	$A^-$	$B^+$	$B$	$B^-$	$C^+$	$C$	$U$

Note that a grade below  $C$  is a  $U$ . This is a pass/fail grade standing for Unsatisfactory. The advantage to you of it being Pass/Fail is that it does not effect your grade-point average. If for any reason you would prefer a regular letter grade, please request this in writing before the final exam begins. Also, if you are not an Arts and Science major, you will receive a regular letter grade, not a  $U$ , for any grade below  $C$ . The number-to-letter grade conversion will then proceed according to the pattern of the table above, with  $D$  for  $S$  between  $66\frac{2}{3}$  and  $63\frac{1}{3}$ , and  $F$  for  $S < 60$ .

Makeup policy for quizzes: At the end of the semester there will be an opportunity to make up two quizzes of your choice. The makeup quizzes will resemble, but not be identical to, the original quizzes. Your makeup grade will replace the old grade only if it is better. Use this opportunity to improve your quiz average. There are no other makeups. If you miss a quiz, it will count as a 0, and you will probably have to use up one of your two makeups by retaking it. There is no makeup on either the hour test or final exam, so be sure you get to them!

The grade  $I$  (Incomplete) is rarely given, and then only when a student in good standing ( $C$  or better) is unable to complete a requirement of the course for reasons beyond his or her control. (Typical example: missed final exam due to being hospitalized.) In such cases I should be notified as soon as possible and we should agree on exactly what needs to be done to clear the  $I$ . The  $I$  grade may not be used to rescue a failing grade.

## Course Plan

We will work through the Notes, aiming to complete them by the end of the semester. I expect to reach Section 4 (Matrix Games, Part I) around the end of the fifth week, and then to slow down and work through the concepts more deliberately.