

ECON 4930-005 (CRN 84473) – MATHEMATICAL ECONOMICS**ECON 6030-005 (CRN 84490) – INTRODUCTION TO MATHEMATICS FOR ECONOMICS****Semester:** Fall 2007**Time/Place:** 5:30-6:45pm TR, Classroom South 106**Instructor:** Dr. Shelby Frost

Office: Andrew Young School of Policy Studies (AYSPS), room 530 (The AYSPPS building is located at the intersection of Marietta and Peachtree Streets; my office is on the 5th floor – take a right off the elevators.)

Office Hours: 2:30-3:30pm TR; and/or by appointment

Office Phone: 404-413-0155 (email is my preferred method of communication – see note #1 below)

Email Address: sfrost@gsu.edu (or use the email feature in WebCT)

Website: <http://www2.gsu.edu/~ecosdf/>

Prerequisite: Math 1111 or equivalent (basic college algebra), ECON 2105, and ECON 2106, or consent of instructor.

Text/Materials: *Essential Mathematics for Economic Analysis*, 2nd edition, by Knut Sydsaeter & Peter Hammond is required. The textbook website is http://wps.pearsoned.co.uk/ema_uk_he_sydsaeter_essmath_2. A scientific calculator is recommended. Access to a computer and the internet is required – there are many computer labs available on campus – for information about locations and hours see <http://www.gsu.edu/~wwwets/labsclassrooms/computerlabs/locations/index.html>.

We will be using uLearn (formerly known as WebCT vista) for this course, which can be found at <http://ulearn.gsu.edu>. It is a password-protected environment where you can monitor your grades, easily communicate with me and your classmates, and find many useful materials throughout the semester. Please check the uLearn site at least once between each class meeting for announcements, etc. To logon to the system, you need your uLearn ID and your initial password – see the uLearn login page for information about how to login to the system and where to go for help if you have never used WebCT before (otherwise, there should be a link to this course on your existing uLearn page). If you have trouble getting into the uLearn site with your own user ID and password, use *temp.sfrost* as the user ID and *student* as the password (this is my “fake student” account – please do NOT change the password for this account), and please send me an email to let me know that you cannot access the uLearn site so I can try to help you access it. There will be various items available through the internet throughout the semester. You should become familiar with a web browser (such as Netscape or Internet Explorer) and you will need Adobe Acrobat Reader for some items; the reader is available free of charge at <http://www.adobe.com/prodindex/acrobat/readstep.html>. There is a link to the Adobe site on the links organizer page of the uLearn site. If you have not already done so, I highly recommend that you install it on your machine; it should already be installed on any machine you use in a computer lab on campus.

Learning Objectives for ECON 4930/6030:

1. The student should be able to define a function and graph simple functions such as linear functions, quadratic functions, exponential functions, and logarithmic functions.
2. The student should be able to solve basic algebraic equations.
3. The student should be able to identify some basic properties of a function such as continuity, differentiability, concavity, and homogeneity.

4. The student should be able to do elementary matrix operations such as matrix addition, subtraction, and multiplication.
5. The student should be able to solve systems of linear equations using the substitution method, the elimination by addition method, Gauss-Jordan elimination, the matrix inverse method and Cramer's rule.
6. The student should be able to differentiate functions using various differentiation rules (sum, difference, quotient, and chain rule).
7. The student should be able to do partial derivatives and do implicit differentiation.
8. The student should be able to integrate functions and evaluate definite integrals.
9. The student should be able to calculate interest and solve present value problems.
10. The student should be able to identify and characterize extreme values of one-variable and multi-variable functions.
11. The student should be able to solve both unconstrained and constrained optimization problems.

Grading/Make-up Policy: This semester, I will assign grades based upon how much money you earn in this class (please see note #2 below). The more money you earn, the higher the grade you can afford. Note that all classes in the AYSPS are using the new +/- grading system (see http://aysps.gsu.edu/news/release/plusminus_grading.htm for more details). More information about GSU grades can be found at <http://www.gsu.edu/es/grades.html>. Students taking the course for graduate credit (those registered for ECON 6030) will be required to give an in-class presentation (details will be announced in class). The following scale will be used to assign grades:

| Course Grade | Money Earned |
|--------------|------------------------|
| A | \$930,000 or more |
| A- | \$900,000 to \$929,999 |
| B+ | \$870,000 to \$899,999 |
| B | \$830,000 to \$869,999 |
| B- | \$800,000 to \$829,999 |
| C+ | \$770,000 to \$799,999 |
| C | \$730,000 to \$769,999 |
| C- | \$700,000 to \$729,999 |
| D | \$600,000 to \$699,999 |
| F | \$599,999 or less |

How to earn money: The most money can be earned from exams; there will be three one-hour unit exams and a comprehensive two-hour final exam, each worth a maximum \$250,000. Note that there is a total of \$1,000,000 available from exam grades alone, so it is possible for you to afford any grade that you "need" or want, if you perform well enough on the exams. However, as an economist, I believe that people respond to incentives, so there will be other opportunities to earn extra income, related to activities that I believe are associated with your better comprehension of the material. There is a spreadsheet in uLearn that will allow you to easily calculate your grade so that you will always know where you stand in the class and what you need to do to earn enough income for the grade that you want. The following table can be used to get an idea of most of the money that may be earned this semester.

| Your Earnings: | Possible | Date |
|-------------------------------|-------------|-----------------|
| exam 1 | \$ 250,000 | 9/18/07 |
| exam 2 | \$ 250,000 | 10/16/07 |
| exam 3 | \$ 250,000 | 11/8/07 |
| final exam | \$ 250,000 | <u>12/11/07</u> |
| improvement bonus* | \$ - | |
| total exam earnings | \$1,000,000 | |
| | | |
| total extra credit earnings** | \$ 11,000 | |
| | | |

| | |
|----------------|-------------|
| total earnings | \$1,011,000 |
|----------------|-------------|

*If your final exam earnings are better than your lowest unit exam earnings, then you earn the difference between your final exam earnings and your lowest unit exam earnings (called an improvement bonus). This is mathematically equivalent to having your final exam earnings replace your lowest unit exam earnings (when the final exam earnings are the higher of the two).

** The total extra credit earnings will most likely increase some from the \$11,000 listed in this table, but I will reveal to you on the first day of class how you may be able to earn an extra \$11,000 in total from various activities throughout the semester. There may be other opportunities that arise throughout the semester too, so \$11,000 is the minimum amount of extra income that can be earned.

More about exams: All exams will be similar to the homework problems that will be assigned everyday. After the exam is over, I will post the answers to the exam in uLearn so you can see the correct solutions. In a few days, the official scores will be posted in uLearn and the exams will be returned in class so that you can verify that your grade is recorded correctly. If you suspect that there is an error in your exam grade, please send me an email ASAP so that we can determine the problem and get it corrected right away. The coverage of each exam can be found on the uLearn calendar. The final exam will cover new material and previous material. Each exam is worth a maximum of \$250,000. The spreadsheet in uLearn will help you calculate your earnings on any given exam based on your raw score. There will be absolutely **NO MAKE-UP EXAMS!** If you miss an exam, then you will earn \$0 for that exam. While it is difficult to recover from missing an exam, it is possible to replace a missed unit exam (or any other terrible exam earnings) by taking the final exam and earning an improvement bonus. Note that you do not earn an improvement bonus if you do not take the final exam. All exam dates (including the final exam) are posted on the calendar in uLearn, as well as in the table above. My advice to you is to clear your calendar for those four days this semester and plan to be in class to take all exams – and allow yourself plenty of time to prepare for them so that you can earn the maximum income possible from them.

Attendance Policy: Attendance will be taken daily. Attendance does not factor directly into your grade, but attending class is important and that is why I take roll everyday. If you miss class, you are responsible for finding out what you missed. Note that some opportunities to earn extra income will require your presence in class – missed opportunities for extra income **CANNOT** be made up! Consult the uLearn calendar to see what we are scheduled to cover each day. It represents a tentative course outline, but we will try to stick to it as closely as possible (please see note #7 below). Please make note of the exam dates!

Notes:

1. When sending me an email to frost@gsu.edu, be sure to send it from your official GSU student email address because my email program frequently blocks emails from external email accounts (such as yahoo, gmail, etc.). I will send emails to you either via uLearn or using your official GSU email account (so you need to check those regularly – see <http://www.gsu.edu/ist/21804.html> for the GSU policy on communications via GSU email accounts).
2. I am not really paying you money; this is just for illustrative purposes. When I say “money”, I mean hypothetical classroom dollars, which are used to assign your grade in the course.
3. If you require special accommodations for exams (e.g., "time and a half"), you **MUST** provide documentation from [GSU Disability Services](#) and make arrangements with me **PRIOR** to the exam dates.
4. Incompletes will only be given to students who are **PASSING** the course, and even then, only in very special circumstances. In the case where an incomplete is awarded, it **MUST** be removed by the end of the **NEXT** term that the student is enrolled (and within **TWO** terms regardless of whether or not the student is enrolled) or it will automatically turn into an F. See <http://www.gsu.edu/es/20471.html> for more information on GSU's policy on removal of Incompletes.
5. Students who withdraw after the midpoint of each term will not be eligible for a "W" except in cases of hardship. A student who withdraws after the midpoint of the term is assigned a grade of "WF," except in those cases in which (1) hardship status is determined by the [Office of the Dean of Students](#) because of emergency employment, or health reasons, and (2) the student is doing passing work, as determined by the student's instructor(s). Effective Fall 2006, students are limited to a total of six withdrawals during their academic

- career... see <http://www.gsu.edu/es/20399.html> for more information on the new University policy.
6. All students are responsible for knowing and adhering to [GSU's Policy on Academic Honesty](#) as published in *On Campus: The Undergraduate Co-Curricular Affairs Handbook*.
 7. This course syllabus provides a general plan for the course; deviations may be necessary. Important University dates can be found at http://www.gsu.edu/es/calendars_and_schedules.html.
 8. This syllabus is for this particular section of ECON 4930/6030 only. See the GSU Economics Department generic course description for ECON 4930 at <http://aysps.gsu.edu/academics/courses/econ4930.htm>. See the GSU Economics Department generic course description for ECON 6030 at <http://aysps.gsu.edu/academics/courses/econ6030.htm>.
 9. Students are expected to behave properly in class – so as not to interfere with the learning environment of others in the classroom. This includes showing up for class on time, not leaving early (or at least being quiet if either of those do happen), not talking to neighbors in class, not using cell phones during class, etc. **All cell phones and other noise-making devices must be turned off during exams! You may NOT use your cell phone, PDA, or laptop as a calculator on exams – only standard calculators (without communication access) are allowed on exams.** Students not adhering to these rules/guidelines may be asked to leave the class and may be subject to an administrative withdrawal (depending on the severity of the infraction). See http://www2.gsu.edu/%7Ewwwdos/codeofconduct_adminpol_a.html for more information on GSU's policy on disruptive student behavior in the classroom.