Department of Agricultural, Environmental, and Development Economics
Pre-Matriculation Mathematics Review for Incoming Graduate Students
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Mathematics Review for Incoming MS Students

The AED Economics MS program requires students to achieve a level of mathematical competency that exceeds that expected in most undergraduate Economics programs. In order to best prepare for the challenges of the AED Economics MS program, MS core course instructors encourage incoming MS students to review basic mathematics prior to entering the program in the fall. Specifically, the instructors recommend that students acquire

> Dowling, Edward T. (2001) *Schaum's Outline of Introduction to Mathematical Economics, 3rd Edition*. McGraw-Hill.

This inexpensive paperback covers virtually all of the mathematical principles and methods you will be expected to master to successfully complete the AED Economics MS program. The text may be purchased from any major on-line book seller, including Amazon.com (click here). Students are encouraged to read and work selected problems in Chapters 1-5, 7-8, 10, and 14-15. Motivated students are further invited to review Chapters 6, 9, and 13. Students may skip Chapters 11-12 and 16-18, since these chapters cover material that is beyond the scope of the AED Economics MS program.

Do not be overly concerned if some of the recommended material is not familiar to you. Keep in mind that your first MS core course, AED Econ 711, will provide weekly mathematical review sections taught by advanced doctoral students and that other MS courses will provide short reviews of mathematical concepts that are especially useful in those courses. However, you should have a sound understanding of basic differential and integral Calculus and matrix algebra upon entering the MS program, and the more comfortable you are with the required mathematics, the easier it will be for you to progress through the MS program.

Mathematics Review for Incoming PhD Students

The PhD program in AED Economics requires students to achieve a mastery of mathematics that substantially exceeds that expected in undergraduate Economics programs. The Math Camp offered by the Department of Economics prior to the beginning of classes in the fall of the first year is designed to review fundamental mathematical concepts and methods and to introduce students to some of the higher mathematics that will be used in economic theory and statistical methods courses. However, incoming PhD students are expected to have a sound understanding of basic differential and integral Calculus and matrix algebra upon entering Math Camp.

In order to best prepare for the mathematical rigors of the PhD program, incoming PhD students are strongly encouraged to review undergraduate-level mathematics prior to the beginning of Math Camp. In order to identify and remove deficiencies in their mathematical preparation, incoming PhD students are encouraged to acquire

> Dowling, Edward T. (2001) *Schaum's Outline of Introduction to Mathematical Economics, 3rd Edition*. McGraw-Hill.

This inexpensive text covers most of the basic mathematical principles and methods that incoming PhD students are expected to have mastered prior to entering the PhD. program. The text may be purchased from any major on-line book seller, including Amazon.com (click here). Incoming PhD students are very strongly encouraged to read Chapters 1-10 and 13-16 and to work through some of the solved problems in the sections that contain material with which they are unfamiliar or uncomfortable.

Motivated incoming PhD students that wish to achieve a higher level of mathematical preparation are encouraged to acquire

> Simon, Carl P. and Lawrence E. Blume (1994) *Mathematics for Economists.* W. W. Norton & Company.

This text, which is available in paperback, covers much of the material covered in Dowling, but at a higher level, and further covers some of the higher mathematics that will be introduced to in Math Camp. The text may be purchased from any major on-line book seller, including Amazon.com (click here).

In particular, Chapters 1-11 and 13-15 in Simon and Blume provide very good reviews of Calculus and Linear Algebra; Chapters 16-19 cover optimization; and Chapters 12 and 29 provide an introduction to Real Analysis. Working through these chapters, along with Chapters 17 and 21 in Dowling, will present a challenge to most of you. However, an investment in working through these advanced readings prior to entering Math Camp, though not essential for success, should pay dividends as you face the demands of the doctoral program.