

SPEA Math Camp - Advanced August 2009

Basic Info

Math Camp	Instructor: Kenneth Richards
August 17-21, 2009	Office: SPEA 410
Time: 9:00am-1:00pm	Phone: 812.855.5971
Time: 4:00pm-6:00pm	E-mail: kenricha@indiana.edu
Room: TBA	

Course Description Fall 2009

Welcome to the SPEA Math Camp - Advanced Class! Your work at the School of Public and Environmental Affairs will require that you have a core competency in mathematics. Like any language, the language of mathematics, expressed in symbols and concepts, can be learned with practice, exposure, and guidance.

This course is designed for all MSES and those MPA Students inclined toward quantitative policy analysis. The SPEA Math Camp – Advanced course will provide an intense review of the mathematical skills – from Algebra to Intermediate Calculus - that you will need for your courses at SPEA. This is an ungraded course that you take purely to prepare you for graduate work. The emphasis will be on identifying your capabilities, comparing those capabilities to the skills that will be required in your course work, and filling in the gaps with instruction, practice and exercises. You will evaluate and monitor your own progress.

The course will be centered on classroom activities from 9:00 to 1:00 each morning, Monday through Friday. Activities will include lectures, projects, worksheets, and guest appearances by faculty members who will discuss mathematical applications in the sciences and social sciences. You will use your afternoons to work on mathematical skills and meet with the instructors during their office hours for individual guidance if needed.

Basic Class Schedule—All sessions 9:00 a.m.-1:00 p.m. are MANDATORY

Monday

8:00-9:00 a.m.	Registration/Welcome breakfast
9:00-10:30 a.m.	Introduction of new material
10:30-11:00 a.m.	Faculty guest speaker
11:00-11:15 a.m.	Break
11:15 a.m.-12:45 p.m.	Lecture and in-class exercises
4:00-6:00 p.m.	TA Office hours and homework help

Tuesday-Thursday

9:00-10:30 a.m.	Introduction of new material
10:30-11:00 a.m.	Faculty guest speaker
11:00-11:15 a.m.	Break
11:15 a.m.-12:45 p.m.	Lecture and in-class exercises

4:00-6:00 p.m.

TA Office hours and homework help

Friday

9:00-10:30 a.m.

Introduction of new material

10:30-11:00 a.m.

Faculty guest speaker

11:00-11:15 a.m.

Break

11:15 a.m.-12:45 p.m.

Lecture and in-class exercises

12:45-2:00 p.m.

Luncheon provided by GPO

4:00-6:00 p.m.

TA Office hours and homework help

Topics Covered

Monday

Factoring polynomials

Solving simultaneous equations

Distance formula and midpoint formula

Functions

Slopes

Equations of lines

Applying linear functions

Percent change

Graphing functions (preliminary)

Tuesday

Unit analysis

Review of exponents

Logarithms

Limits

Difference quotient

Preview of differentials

Wednesday

Differentiation general form

Alternative notation for differentiation

Rules of differentiation

Partial derivatives

Interpreting first, second, and third derivatives

Applications for derivatives

Graphing higher order polynomials

Thursday

Riemann sum

Integrals

Rules for integrals

Initial conditions

Definite integrals

Applications for integrals

Friday

Calculus of trigonometric functions

SPEA applications for calculus

Textbook

There is no required textbook for this class. We will be providing you with a course packet that includes class notes and exercises. These notes will be the foundations for the daily lectures.

If you want to do further reading on the subject, these are some basic textbooks that might be helpful. A few suggestions are below. Or you can just check out a book from the library.

Barnett, Raymond A., Michael R. Ziegler and Karl E. Byleen (2004) *Finite Mathematics for Business, Economics, Life Sciences and Social Sciences* (10th edition), Prentice Hall.

Gaur, Ajai S., Sanjaya S. Gaur. *Statistical Methods for Practice And Research: A Guide to Data Analysis Using Spss*, Sage Publications.

Lial, Margaret L, John Hornsby, and David Schneider. *College Algebra* (9th edition). Addison Wesley.

Sullivan, Michael. *College Algebra* (7th edition). Prentice Hall.

Stewart, James. *Calculus: Early Transcendentals* (Stewart's Calculus Series) (Also, check out the author's excellent website: http://www.stewartcalculus.com/media/4_home.php)

Waner & Costenoble. *Finite Mathematics* (2nd edition). Brooks & Cole.

Calculator

A scientific calculator is strongly recommended for Math Camp. A graphing calculator is not necessary.