SPEA MATH CAMP – ADVANCED

SYLLABUS

Basic Information

<table>
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<tr>
<th>Math Camp – Advanced</th>
<th>Instructor: Kim Novick</th>
<th>TA: Nic Bussberg</th>
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<td>August 11-15, 2014</td>
<td>E-mail: <a href="mailto:knovick@indiana.edu">knovick@indiana.edu</a></td>
<td>E-mail: <a href="mailto:nbussber@indiana.edu">nbussber@indiana.edu</a></td>
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<tr>
<td>Class start: 8:30 am</td>
<td>Office: MSBII 322</td>
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<td>Class end: 12:30 pm</td>
<td>Phone: 812.855.3010</td>
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Course Description

Welcome to SPEA’s 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 un-graded 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 8:30 to 12:30 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.

Topics

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
Definite integrals
Applications for integrals

**Friday**
Calculus of trigonometric functions
SPEA applications for calculus

**Materials**

**Calculator**
A scientific calculator is strongly recommended for math camp. A graphing calculator is not necessary.

**Textbook**
There is no required textbook for this class. We will provide you with a course packet that includes class notes and exercises. These notes will be the foundational material for daily lectures.

If you are interested in additional reading materials, below are basic textbooks that might be helpful. You can also check out a book from the library.


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)