

Syllabus Math 592: Introduction to Advanced Mathematics Geometry, Proof and Understanding:

John T. Baldwin

August 17, 2007

Fall 2007

Class meets in 214 Douglas Hall at 5-8 on Monday. Call Number: 24695

Office hours M at 3-4 or W: 11-12 or Th at 4-5 or by appointment in 327
SEO. (Subject to change)

Feel free to e-mail me at jbaldwin@uic.edu or phone to make an appointment
to discuss any difficulties that arise.

Office:327SEO.

Office phone:312-413-2149

e-mail:jbaldwin@uic.edu

WEBSITE: <http://www2.math.uic.edu/~jbaldwin/math592/index>

Most assignments will be made only on the website, so check it frequently.

Text: The Language of First-order Logic by Barwise and Etchmendy avail-
able used on line at Amazon and at

<http://www-csli.stanford.edu/hp/#LOFOL>

Highly recommended: Euclid's elements - Heath translation. Also available
free on-line.

Prerequisites: Approval of the instructor.

Description

Geometry, Proof and Understanding: The goal of this course is to under-
stand the role of 'proof' as an organizing principle to enable secondary students
to retain the diverse content of plane geometry. We will adopt an historical view
of the teaching of geometry with short readings from Euclid, Descartes, Hilbert,
Moise, some notes on the evolution of geometry books in the 20th century and
contemporary secondary geometry textbooks (Glencoe, UCSMP, Discovering

Geometry). Comparison of these readings will demonstrate the immense pedagogical impact of decisions about the exact formalization of geometry adapted in the secondary classroom. We will also analyze the role of discourse in the geometry classroom consulting such mathematics educators as Chval-Khisty, Zalman Usiskin, Harel-Souder, and Ball-Bass. In order to organize this discussion we will consider some basic concepts from mathematical logic using such tools as Barwise-Etchemendy's computer simulation: Tarski's world. The aim will be to understand the complementary role of syntax and semantics and how this is reflected in organizing a geometry course.

Resources Material for this course will be disseminated via the text, the classroom assignments and lectures, doing the problems and exams, and supplemental material handed out in class or on the web. These four modes are supplementary and you are responsible for material presented in any of the forms.

Computer use: Owning a computer is not a prerequisite for this course. But we will be making use of the internet and of some software. If you don't have easy access please let me know and we try to get the appropriate software on some departmental machines. For copyright purposes you should buy a copy of Tarski's World.

214 Douglas Hall is equipped with audio-visual equipment. Any student can log on to the internet with a laptop if they get Odyssey software (free to download at the computer center webpage under networking). Warning: Odyssey will disable your windows software for using other networks. The simplest solution seems to be to turn Odyssey off except when you are at UIC. I hope that several of you can bring laptops (with Tarski's World) and we can just work together for the periods when we want to use that material. 2nd warning: the room is not well-equipped with electrical outlets so charge your laptop first.

Reading Assignments The weekly reading assignment is on the web. You are expected to read the assignment before class and there may be quick quizzes on the reading assignment.

Homework: There will be (weekly?) problem assignments. Some will be graded; others you just will be expected to do. I am willing to check over any of your work.

Grading: Your overall performance will be evaluated by the instructor. Contributing to that assessment, there will be a midterm exam and/or an essay, homework and a final exam.

Students with Disabilities: Students with disabilities who require accommodations for access and participation in this course must be registered with the Office of Disability Services (ODS). Please contact ODS at (312)413-2103 (voice) or (312)413-0123 (TTY).

MSCS POLICY ON INCOMPLETE GRADES: The last day to drop the course without penalty is September 5. Incomplete grades are for hardships that occur at the time of the final. IN grades must be approved by the Department. IN grades are normally made up during the first two weeks of the next semester.

Drop Policy Consult MSCS and grad college.