Course Syllabus: Math 250 - Intuitive Geometry
Fall 2011 - MTRF 8:00 to 8:50 AM - Hertz 120

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Office Hours: MF: 10-10:50 AM, TR: 1-1:50 PM
Prerequisites: Math 164
Textbook:

Problem Solving Approach to Mathematics for Elementary School Teachers
Billstein, Libeskind, and Lott

Course Description

The purpose of this course is to enable certification candidates to develop a solid knowledge of geometrical and statistical applications. Powers of abstract reasoning, spatial visualization and logical reasoning patterns are improved through this course through the study of points, segments, triangles, polygons, circles, solid figures, and their associated relationships as a mathematical system. Students study properties and construction of figures, proofs and theorems, history of geometry, transformations, logic, and problem solving.

Supplies

Students are responsible their own writing materials such as pencil, colored pens, protractor, compass, highlighter, stapler, glue, ruler and paper (plain, grid, and lined). Maintain your supplies, notes, homework, and examinations organized in a portfolio. Bring textbook and supplies to class each day.

Homework:

Homework exercises should be written with attention to detail, correct spelling, complete sentences, and flow. Pictorial representations for manipulatives should be neat, accurate, and typed or written in pencil. Homework is due, at the beginning of class, the second class period after it is assigned. **No homework assignments will be accepted after class on the day it is due.**

Teaching Philosophy

Teaching and learning involves an inherent contract. Students must agree to take responsibility for their learning in order to engage, and teachers must be willing to be engaged, as well. When students are so engaged, their learning is not solely dependent upon the rate of the delivery of lectures. Part of the contract involves the completion of homework assignments and complementary reading so that classroom periods can be used for enrichment and other activities that involve students and encourage their learning from each other. I believe that a teacher is not a giver of knowledge but rather a facilitator or a guide for the student. As a guide, it is my responsibility to find or create alternate presentations of the material that I feel help clarify key points.

Learning Outcomes

Each student will...

• Use a variety of tools, physical models, and appropriate technology to develop an understanding of geometric concepts and relationships and their use in describing the world in which we live.
• Derive formulas for perimeter and area of plane figures and surface area and volume of solid figures.
• Interpret measurements of many kinds of two- and three-dimensional objects.
• Identify properties, patterns, and families of geometric figures.
• Formulate and solve problems whose solutions involve spatial sense.
• Identify symmetries in the plane.
• Perform constructions with compass and straightedge and other informal techniques of paper folding.
• Perform transformations in the plane and understand their characteristics.
• Acquire appropriate vocabulary (population, sample, census, parameter, statistic) and notation.
• Learn some general guidelines for collecting data.
• Be able to correctly plot and describe statistical data.
• Be able to correctly interpret statistical plots.
• Understand the importance of measures of center and variation and when to report what type of measure.
• Understand basic probability concepts and be able to use them accordingly.
• Gain appreciation for the importance of statistics in everyday life.
• Calculate the volume and surface area of basic polyhedra.
• Know the effect of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections.
• Know and be able to use angle and side relationships in problems with special right triangles.
• Prove Pythagorean theorem.
• Determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.
• Commit to memory the formulas for prisms, pyramids, and cylinders.
• Write geometric proofs, including proofs by contradiction.
• Construct and judge the validity of a logical argument and give counterexamples to disprove a statement.
• Prove basic theorems involving congruence and similarity.
• Prove that triangles are congruent or similar and they are able to use the concept of corresponding parts of congruent triangles.
• Use theorems involving the properties of parallel lines cut by a transversal, the properties of quadrilaterals and the properties of circles.
• Define sets and explore notation of set theory.
• Model logic problems using Venn diagrams.

Grading

Everyone is graded the same way. Letter grades A/A-/B+/B/B-/C+/C/C-/D+/D/D-/F are based on a strict 93-100/90-92.9/87-89.9/83-86.9/80-82.9/77-79.9/73-76.9/70-72.9/67-69.9/63-66.9/60-62.9/BELOW 60 cutoff. Grades are not curved, or rounded either up or down. An estimate of the course grade is available at the class Blackboard website and can also be calculated at any time using a weighted average with the following proportions:

$$\begin{aligned} Homework(30 \times 5) &\longrightarrow 150 points \\ Quizzes(30 \times 10) &\longrightarrow 300 points \\ Exams(3 \times 100) &\longrightarrow 300 points \\ OnlineInstruction &\longrightarrow 50 points \\ Final &\longrightarrow 200 points \end{aligned}$$

Exams:

Exams are comprehensive and cover all material discussed in class since the previous exam. Completing the exam in the time allotted is part of the exam. Taking an exam is an important part of the course. Nevertheless, scheduling complications sometimes occur. An alternate procedure for taking an exam due to a scheduling complication must be arranged in advance.

Online Experience:

Students will be asked to complete one session of online instruction and scoring. Assessment will be based on ability to communicate effectively, accuracy, and response time.

Final Exam

The final MUST be taken to pass the course. The final is comprehensive, covers all material discussed in class, and is to be taken at the time scheduled by the University. Completing the final in the time allotted is part of the final. The final exam for Fall 2011 is Friday December 9 from 8:00 AM to 10:00 AM.

Academic Integrity

Cheating, plagiarism, and copying material that is copyrighted will not be tolerated. Disciplinary action will be taken for any of these wrong doings.

Special Needs Statement

As soon as possible, students with disabilities who wish to set up academic adjustments in this class should provide a copy of their "Confirmation of Eligibility for Academic Adjustments". Eligible students without this form should contact the Disability Support Services Office by visiting Bouillon 205, emailing dssrecept@cwu.edu, or calling the phone number 509-963-2171.