Math 230 Course Content and Objectives

COURSE CONTENT AND SCOPE	Hours Per Topic	COURSE OBJECTIVES
- Outline the topics included in the lecture portion of the course		-

theorem. Circles. Volumes. Transformational geometry, symmetry, and tessellations. The Mobius strip and Klein bottle. Non-Euclidean geometry and fractal geometry.		congruent. Compute the area and perimeter of a polygon. Compute the volume and surface area of solid shapes. Apply Euler's polyhedron formula to polyhedra. Perform transformational operations on plane figures. Create unique tessellations from a square, equilateral triangle or a hexagon. Make a Mobius strip. Determine whether two shapes are topologically equivalent. Calculate the genus of a solid object. Discuss non-Euclidean geometry in terms of the fifth axiom of geometry. Create fractals.
Mathematical systems, groups, properties of groups, finite mathematical systems, clock arithmetic, modulo m systems, and modular arithmetic.	6	Determine whether a mathematical system is a group. Perform clock arithmetic. Perform modular arithmetic.
Consumer mathematics, percent increase and decrease, simple interest, compound interest, present value, fixed and open-ended installment loans, mortgages, annuities, sinking funds, and retirement investments.	7	Calculate the percent change, percent markup and percent markdown. Apply the simple interest formula to installment buying. Apply the United States rule and the banker's rule to repayment of a loan. Apply the compound interest formula to a savings account. Determine the present value of a future amount. Determine the finance charge and the monthly payment of a fixed installment loan. Apply the actuarial method for unearned interest. Calculate the minimum monthly payment of an open-end installment loan. Determine the finance charge on an open-end loan using the unpaid balance method or the average daily balance method. Create an amortization schedule for a mortgage. Calculate the accumulated amount or future amount of an annuity by the ordinary annuity formula. Apply the sinking fund payment formula to find the payment needed to reach a future amount.
Graph theory, graphs, paths, circuits, the Konigsberg bridge problem. Euler paths and Euler circuits. Hamilton paths and Hamilton circuits, Traveling salesman problems, brute force method, nearest neighbor method. Trees, spanning trees, and minimum-cost spanning trees.	6	Define a graph. Represent a map by a graph. Determine Euler paths and circuits on a graph. Determine Hamilton paths and circuits on a graph. Use the brute force method or the nearest neighbor method to solve the traveling salesman problem. Define a tree. Determine spanning trees from graphs. Solve the minimum-cost spanning tree problem by Kruskal's Algorithm.