

SU DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
 SYLLABUS (*Tentative*)
 MATH 144 *Environmental Mathematics*

Objective: To present visual, qualitative, and computational approaches to the solution of environmental problems.

Intended for: Liberal arts and Environmental majors.

Prerequisite: Three years of High School math (including Algebra II).

Text: None. Notes will be used.

<i>Topics</i>	<i>Hours</i>
<i>Environmental News Teaches Mathematics</i>	3
<i>Using Real-World Data to Understand Environmental Challenges</i> Polynomial functions, average rates of change, exponential models, piecewise models.	5
<i>The Price of Power</i> Sulfur dioxide emission, acid rain, acidity of the water in Lonesome Lake, fish.	3
<i>Using Math in Environmental Detective Work</i> Mission profile, groundwater basics, key hydrologic values, groundwater flow direction, estimation of the flow direction, finding the gradient, hydraulic conductivity, Darcy's Law, travel time, velocity.	4
<i>Modeling Ground-level Ozone with Basic Algebra</i> Reading real data, linear relationship, linear model, interpreting models, models' error, health advisory model.	4
<i>Miracles and Mathematical Biology</i> Buffalo slaughter, quantitative analysis of mutation, frequency of albinos, mutation and albinism.	3
<i>Boom! Mathematical Models for Population</i> Related global problems, fertility rate and future population, tree diagram, average number of children, tabular method, related assumptions, zero growth, matrix model, matrix multiplication, generalization.	8
<i>Environmental Economics</i> Travel cost method, acceptable efficiency, conservation, reducing pollution.	5
<i>Lead Poisoning in Humans</i> Construction of the model, running the simulation, lead and the environment.	3
<i>Predicting Weather for Coastal Mountains</i> Real-world problems, problem formulation, models.	3
<i>Test</i>	1

EVALUATION

Homework	25%
Test	50%
Final Exam	25%