



EFFECTIVE: SEPTEMBER 2005
CURRICULUM GUIDELINES

A. Division: **Science and Technology** Effective Date: **September 2005**

B. Department / Program Area: **Environmental Science** Revision New Course

If Revision, Section(s) Revised:
Date of Previous Revision:
Date of Current Revision: November 2004

C: SCIE 1108 **D: Quantitative Studies for Environmental Science** **E: 3.0**

Subject & Course No.	Descriptive Title	Semester Credits									
<p>F: Calendar Description:</p> <p>This course explores mathematics with applications for environmental science, and related topics in biology and geology. The course will review algebra, and focus on environmental applications of linear and non-linear functions, descriptive statistics, geometry and trigonometry. Problems and cases will illustrate "real world" situations in environmental science.</p>											
<p>G: Allocation of Contact Hours to Type of Instruction / Learning Settings</p> <p>Primary Methods of Instructional Delivery and/or Learning Settings:</p> <p>Lecture, Seminar.</p> <p>Number of Contact Hours: (per week / semester for each descriptor)</p> <p>Lecture: 3 hours/week Seminar: 1 hour/week</p> <p>Number of Weeks per Semester:</p> <p>15 weeks</p>	<p>H: Course Prerequisites:</p> <p>Principles of Math 11 C- or DVST 0411 C- or Math 11 exemption test or equivalent</p>										
	<p>I: Course Corequisites:</p> <p>None</p>										
	<p>J: Course for which this Course is a Prerequisite</p>										
	<p>K: Maximum Class Size:</p> <p>35</p>										
<p>L: PLEASE INDICATE:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: center;"><input type="checkbox"/></td> <td style="width: 20%;">Non-Credit</td> <td></td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>College Credit Non-Transfer</td> <td></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>College Credit Transfer:</td> <td style="text-align: center;">Requested</td> </tr> </table> <p>SEE BC TRANSFER GUIDE FOR TRANSFER DETAILS (www.bctransferguide.ca)</p>			<input type="checkbox"/>	Non-Credit		<input checked="" type="checkbox"/>	College Credit Non-Transfer		<input type="checkbox"/>	College Credit Transfer:	Requested
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M: Course Objectives / Learning Outcomes

At the end of the course, a successful student will be able to:

1. Appreciate the role of mathematics and quantitative analysis in environmental science.
2. Describe the central tendency and dispersion of single variable data.
3. Measure and describe length, area and volume using geometry and trigonometry.
4. Solve problems and equations involving linear equations and functions, and involving systems of linear equations.
5. Solve problems and equations involving exponential, logarithmic, power, and quadratic functions.
6. Derive equations and graph linear and non-linear functions.

N: Course Content:

1. Lecture examples and case studies will utilize environmental science, related life and earth science situations. The course will be instructed and lectured from an applied environmental science perspective.
2. Algebra skills review: Real numbers, polynomials, factoring, rational expressions, integer expressions, rational exponents and radicals, quadratic equations, inequalities, absolute value, graphing.
3. Descriptive Statistics: Populations and samples, measures of central tendency and dispersion.
4. Calculation of distance, area and volume, using lines, rectangles, triangles, polygons, cubes, circles, spheres, and others.
5. Calculation of dimension and angles using trigonometry (sine, cosine, tangent).
6. Description and solution of linear equations, functions, and systems of equations (2 variables), including graphing.
7. Description and solution of non-linear relationships and functions (logarithmic, exponential, power and quadratic), including graphing.
8. Use of scientific calculator, linear, semi-log and log graph paper, scientific notation.
9. Some applications explored during the course may include: surveys of populations of wildlife in a suburban region; volumetric assessment of groundwater contamination; volume and surface area of soil and rock bodies; rate of change in the local environment due to urbanization; growth and decay (of populations, pollutants, bacteria, radioactivity, value of future assets, groundwater flow).

O: Methods of Instruction

Instruction will utilize lectures, and seminars. Text and other readings will be assigned, problem sets will be completed by students. Case studies in environmental science will be used to provide context, and a geometry / trigonometry supplement will be provided. A field trip may be conducted.

P: Textbooks and Materials to be Purchased by Students

1. Blitzer, R.; Thinking Mathematically; Pearson Prentice Hall.
or
Kime, L.A.; Explorations in College Algebra; Wiley.
2. Scientific calculator or graphing calculator.

Q: Means of Assessment

This course evaluation will consist of:

1.	Term exams	40%
2.	Problem sets, cases, reports, presentations	25%
3.	Participation	5%
4.	Final Examination	<u>30%</u>
	TOTAL	100%

R: Prior Learning Assessment and Recognition: specify whether course is open for PLAR

Not applicable.

Course Designer(s): Dave Waddington/Rob McGregor.

Education Council / Curriculum Committee Representative

Dean / Director

Registrar