

## **COURSE OUTLINE** **Math Review for the Sciences**

### **Course Description**

CH 050. Math Review for the Sciences. 1 hour credit. This course will enable the student to apply mathematical concepts in the sciences. The student should realize, however that this course is only a representative sample of the mathematics needed. This course is designed to support Basic and Applied Physics, Geology, Astronomy, Physical Science, Basic Chemistry, Chemistry I and General Physics mathematics.

### **Course Relevance**

The impact of math in everyday life is phenomenal. The ability to see math in action is necessary to develop a fuller knowledge and understanding of the world around us. Math will enrich the student's appreciation of the world and help them better understand the studies of science and the scientific methods.

### **Required Materials**

Computer Access for Learning Management System (LMS)

### **Learning Outcomes**

The intention is for the student to be able to:

1. Use of the scientific method/problem solving.
2. Perform basic math skills.
3. Read, discuss, and understand scientific materials.
4. Apply scientific reasoning to real world problems.

### **Learning PACT Skills that will be DEVELOPED and/or documented in this course**

Through involvement in this course, the student will develop ability in the following PACT skill area(s):

#### **Personal Development Skills**

1. Personal management
  - Through the production of either an essay or questionnaire the student will reflect on his/her personal management skills.

#### **Analytical Thinking Skills**

1. Critical thinking
  - Through the production of mathematical, graphical, experimental, and written assignments the student will demonstrate scientific reasoning.

#### **Technology Skills**

1. General computer use
  - Through the production of electronic-facilitated research, preparing the graphs, and manipulation of data, the student will develop basic computer skills.

### **Major Summative Assessment Task(s)**

These learning outcome(s) and the Learning PACT skill(s) will be demonstrated by

1. Completing a self survey or evaluation.
2. Completing the unit assessments and a comprehensive final.
3. Demonstrating the use of a computer through ANGEL.

### **Course Content**

- I. Skills/Competencies – Actions that are essential to achieve the course outcomes:
  - A. Apply basic mathematical concepts
  - B. Apply scientific methods
- II. Themes – Key recurring concepts that run throughout this course:
  - A. Scientific methods in problem solving
  - B. Scientific reasoning in problem solving
- III. Issues – Key areas of conflict that must be understood in order to achieve the intended outcome:
  - A. The balance between the conceptual and mathematical models
  - B. The cumulative nature of science and the world
- IV. Concepts – Key concepts that must be understood to address the issues:
  - A. Mathematics
  - B. Scientific Method
  - C. Scientific reasoning
  - D. Graphing

### **Learning Units**

- I. Perform simple tasks for rounding numbers to various place values.
- II. Write numbers using scientific notation.
- III. Apply basic rules of significant figures when measurements are being taken.
- IV. Perform simple multiple step addition and subtraction calculations using significant figures.
- V. Perform simple multiple step multiplication and division calculations using significant figures.
- VI. Outline and perform basic operations in the appropriate order applying significant figures.
- VII. Solve ratio, proportions and percent problems.
- VIII. Solve multiple proportions.
- IX. Evaluate and construct graphs.
- X. Manipulate an equation to solve for a given variable.

**Learning Activities**

Independent learning activities will be assigned to achieve the intended course outcomes.

**Grade Determination**

Grade determination will be based on the comprehensive exam. Other methods such as homework may be used at the discretion of the instructor. A departmental comprehensive final will be administered at the end of the semester.