Math for Construction

Course Outline Cover Sheet

CIP No. VCARP 060

Math for Construction

Course Description

Covers all mathematics and mathematical manipulations required for a construction worker to successfully complete his assigned activities. Teaches students to read and utilize properly measurement tools and to manipulate and interpret the readings, as well as to employ algebra and geometry needed to transfer written or verbal instructions into a finished project.

Course prepared by: STEM Department May 2011

<table>
<thead>
<tr>
<th>Hours per Week</th>
<th>Number of Weeks</th>
<th>Total Hours</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Lecture</td>
<td>4</td>
<td>16</td>
<td>64</td>
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Total Credit Hours: 3

Purpose of Course: Degree Requirement x

Degree Elective
Certification
Developmental
Other

Prerequisite(s)

Signature, Curriculum and Assessment Committee Chairperson

Signature, Dean of Academic Affairs

Signature, Vice President for Academic and Student Affairs

Last date reviewed or revised:
II. Course Objectives

General Learning Outcomes

Upon completion of this course, the student will be able to:
1. Use Algebraic techniques to complete mathematical calculations (VCARP 1)
2. Appropriately measure and interpret blueprint or to-scale drawings (VCARP 1, 5)
3. Recognize and convert between different measurement systems and apply to construction measuring instruments (VCARP 1)
4. Recognize, name and accurately manipulate geometric shapes and relationships relative to the construction industry (VCARP 1)

Student Learning Outcomes

Upon completion of this course, the student will be able to:
1. Manipulate and conceptualize real numbers
   a. Add, subtract, multiply and divide whole numbers with and without a calculator
   b. Add, subtract, multiply and divide fractions
   c. Add, subtract, multiply and divide decimals numbers.
   d. Convert decimals to fractions, and fractions to decimals
2. Manipulate and set up ratios and proportions
   a. Convert decimals and fractions to percents, and percents to decimals and fractions.
   b. Use proportion and ratio to interpret scale drawings and blueprints
   c. Use proportion and ratio to determine lengths, widths, and heights.
   d. Use proportion and ratio to solve problems.
3. Read and understand measuring tools and different measuring systems used in construction
   a. Convert from Metric to Standard measuring units of length, weight, volume and temperature.
   b. Accurately read and use an Architect’s Scale, Engineer’s Scale, tape measure, metric measure stick, Standard measure stick and rulers, and other weight, volume and temperature measuring tools typically used in Construction.
4. Use geometric knowledge to solve construction problems
   a. Recognize some of the basic shapes used in construction and apply basic geometry to measure them.
   b. Accurately discover the measurement of corresponding parts of similar shapes.
   c. Use geometric knowledge to solve real world construction problems.
III. Course Content
This course teaches the student basic mathematics that are needed to be successfully employed in the Construction Industry, and applicable trade vocabulary used in measuring, building, and designing.
1. Whole numbers
2. Working with length measurements
3. The measuring tape (standard and metric)
4. Other types of scales
5. Fractions
6. Decimals
7. Conversions
8. Construction geometry

IV. Methods of Instruction
1. Cooperative groups
2. Modeling and supervised class practice
3. Projects

V. Equipment and Materials
1. Chalkboard
2. Overhead projector
3. Pencils and paper
4. Standard Ruler
5. Metric Ruler
6. Tape Measure
7. Architect’s Scale
8. Engineer’s Scale
9. Protractor, compass

VI. Suggested Methods of Evaluation
1. Classwork, class participation, homework
2. Quizzes, tests
3. Pre-test and post-test
4. Project completion

Passing this course requires at least a 70% course score. Letter grades are assigned of A, B+, B, C+, C or NP according to the CMI catalogue.