Cerro Coso College

Course Outline of Record Report

12/06/2021

INDEC060 : Mathematical Applications For Trades

General Information

Author:	• David Villicana • Dorrell, Mike • Lee, Travis
Course Code (CB01) :	INDEC060
Course Title (CB02) :	Mathematical Applications For Trades
Department:	Industrial Arts
Proposal Start:	Summer 2021
TOP Code (CB03) :	(0956.00) Manufacturing and Industrial Technology
SAM Code (CB09) :	Clearly Occupational
Distance Education Approved:	No
Course Control Number (CB00) :	CCC000562786
Curriculum Committee Approval Date:	11/20/2020
Board of Trustees Approval Date:	03/11/2021
External Review Approval Date:	03/11/2021
Course Description:	This course introduces the practical mathematical skills needed in a wide variety of trade and technical areas. Basic use of scientific calculators to aid in solving real-world problems is included as well as how to use measuring instruments such as calipers, micrometers, and meters.
Submission Type:	Add Distance Education This course is being revised in order to offer it online. This course was scheduled to be assessed in Spring of 2020, however, it was not due to Covid. This course will be assessed in Spring 2021
Author:	• David Villicana • Dorrell, Mike • Lee, Travis

Faculty Minimum Qualifications

Master Discipline Preferred:	• Industrial Technology (Foundry occupations) • Welding
Alternate Master Discipline Preferred:	No value
Bachelors or Associates Discipline Preferred:	• Welding
Additional Bachelors or Associates Discipline Preferred:	• Welding

Course Development Options

Basic Skills Status (CB08)

Course is not a basic skills course.

Allow Students to Gain Credit by Exam/Challenge

Rationale For Credit By Exam/Challenge

No value

Course Support Course Status (CB26)

Course is not a support course

Course Special Class Status (CB13)

Course is not a special class.

Allowed Number of Retakes

0

Retake Policy Description

Type:|Non-Repeatable Credit

Grade Options

- Letter Grade Methods

Course Prior To College Level (CB21)

Not applicable.

Allow Students To Audit Course

Associated Programs

Course is part of a program (CB24)

Associated Program	Award Type	Active
CC Welding Technology	A.S. Degree Major	Summer 2018
Industrial Process Technician	Certificate of Completion	Fall 2021

Transferability & Gen. Ed. Options

Course General Education Status (CB25)

Y

Transferability

Not transferable

Transferability Status

Not transferable

Units and Hours

Summary

Minimum Credit Units (CB07)	3
Maximum Credit Units (CB06)	3
Total Course In-Class (Contact) Hours	54

Total Course Out-of-Class Hours	108
Total Student Learning Hours	162
Faculty Load	0

Credit / Non-Credit Options

Course Credit Status (CB04)

Credit - Degree Applicable

Course Non Credit Category (CB22)

Credit Course.

Non-Credit Characteristic

No Value

Course Classification Status (CB11)

Credit Course.

Funding Agency Category (CB23)

Not Applicable.

☐ Cooperative Work Experience Education Status (CB10)

☐ Variable Credit Course

Weekly Student Hours

	In Class	Out of Classs
Lecture Hours	3	6
Laboratory Hours	0	0
Activity Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	54
Course In-Class (Contact) Hours	
Lecture	54
Laboratory	0
Activity	0
Total	54
Course Out-of-Class Hours	
Lecture	108
Laboratory	0
Activity	0
Total	108

Time Commitment Notes for Students

No value

Faculty Load

Extra Duties: 0

Faculty Load: 0

Units and Hours - Weekly Specialty Hours

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

Pre-requisites, Co-requisites, Anti-requisites and Advisories

No Value

Entrance Skills

Entrance Skills	Description
No value	No value

Limitations on Enrollment

Limitations on Enrollment	Description
No value	No value

Specifications

Methods of Instruction

Methods of Instruction	Audiovisual
Rationale	Synchronous video training aids
Methods of Instruction	Problem Solving
Rationale	Students will be given mathematical problems that they may be faced with on the job site that require problem solving.
Methods of Instruction	Instruction through examination or quizzing
Rationale	Students will be given quizzes throughout the course.

Methods of Instruction	Lecture
Rationale	Videos of lectures will be recorded and able to view in the Canvas shell.

Assignments

Students will complete textbook exercises on mathematical concepts like the following examples: What is the circumference of 8" schedule 80 pipe? How much material is needed to make a concentric reducer that has a diameter of 12" on one end, 8" on the opposite end, and is 16" in length?

Methods of Evaluation	Rationale
Homework	Example: Students convert angular measurements from degrees, minutes, and seconds to decimal degrees.
Tests	Example: Students take an exam demonstrating the ability to solve a problem using algebra. E.g., A pair of belted pulleys have diameters of 20 inches and 16 inches respectively. If the larger shaft turns at 2000 rpm, how fast will the smaller pulley turn?
Other	Classroom assignments. Example: If you have 20' of 8" schedule 80 pipe, how many 11" pieces can be made? Note: the kerf of your blade is 1/8".

Equipment

No Value

Textbooks

Author	Title	Publisher	Date	ISBN
No Value	No Value	No Value	No Value	No Value

Other Instructional Materials

No Value

Materials Fee

No

Learning Outcomes and Objectives

Course Objectives

No value

CSLOs

Use a scientific calculator to calculate ratios, solve proportions, and solve problems involving proportions. Expected SLO Performance: 70.0

Demonstrate proper use of measuring instruments such as micrometers and calipers to determine the precision and accuracy of measurements.

Solve trade-related word problems using algebra, geometry, and trigonometry. Expected SLO Performance: 70.0Expected SLO Performance: 70.0

Outline

Course Outline

A. Ratio, Proportion, and Percent
- 1.Special applications of ratios and proportions
- 2.Introduction to Percent
- 3. Percent Problems
- 4.Special Applications for Percent Calculations
- 5.Using Calculators

B. Measurement
- 1.Working With Measurement Numbers
- 2.English Units and Unit Conversions
- 3.Metric Units
- 4.Direct Measurements
- 5.Using Fractional and Decimal Rules and Tapes
- 6.Understanding Vernier Scales
- 7.Using Vernier and Dial Calipers
- 8.Using Micrometers
- 9.Using Protractors
- 10.Digital Micrometers and Calipers
- 11.Meters and Meter Ranges

C. Algebra
- 1.Addition and Subtraction of Signed Numbers
- 2.Multiplication and Division of Signed Numbers
- 3.Exponents and Square Roots
- 4.Algebraic Language and Formulas
- 5.Adding and Subtracting Algebraic Expressions
- 6.Solving Simple Equations
- 7.Solving Two Step Equations
- 8.Solving Word Problems
- 9.Multiplying and Dividing Algebraic Expressions
- 10.Scientific Notation

D. Practical and Plane Geometry
- 1.Angle Measurement
- 2.Area and Perimeter of Polygons
- 3.Triangles, Regular Hexagons, and Irregular Polygons
- 4.Circles

E. Solid Figures
- 1.Cylinders
- 2.Spheres

F. Triangle Trigonometry
- 1.Angles and Triangles
- 2.Trigonometric Ratios
- 3.Solving Right Triangles

Delivery Methods

Delivery Method: Please list all that apply -Face to face -Online (purely online no face-to-face contact) -Online with some required face-to-face meetings (“Hybrid”) -Online course with on ground testing -iTV – Interactive video = Face to face course with significant required activities in a distance modality -Other

- Face to face
- Online (purely online no face-to-face contact)
- Online with some required face-to-face meetings (“Hybrid”)

Rigor Statement: Assignments and evaluations should be of the same rigor as those used in the on-ground course. If they are not the same as those noted in the COR on the Methods of Evaluation and out-of-class assignments pages, indicate what the differences are and why they are being used. For instance, if labs, field trips, or site visits are required in the face to face section of this course, how will these requirements be met with the same rigor in the Distance Education section? Describe the ways in which instructor-student contact and student-student contact will be facilitated in the distance ed environments.

This course will have the same rigor as an on-ground course. All class materials will be available to students in their Canvas shells. Recorded lectures, Zoom meetings, and discussion boards will be available. The instructor will be required to give feedback in a timely manner to students through discussion boards, phone conferences, emails, zoom, etc. There will also be a discussion board in which students can communicate with each other and the instructor. The instructor will monitor this discussion board.

Good practice requires both asynchronous and synchronous contact for effective contact. List the methods expected of all instructors teaching the course. -Learning Management System -Discussion Forums -Message -Other Contact -Chat/Instant Messaging -E-mail -Face-to-face meeting(s) -Newsgroup/Discussion Board -Proctored Exam -Telephone -iTV - Interactive Video -Other

- Discussion Forums
- Message
- Chat/Instant Messaging
- E-mail
- iTV - Interactive Video

Software and Equipment: What additional software or hardware, if any, is required for this course purely because of its delivery mode? How is technical support to be provided?

No Value

Accessibility: Section 508 of the Rehabilitation Act requires access to the Federal government's electronic and information technology. The law covers all types of electronic and information technology in the Federal sector and is not limited to assistive technologies used by people with disabilities. It applies to all Federal agencies when they develop, procure, maintain, or use such technology. Federal agencies must ensure that this technology is accessible to employees and the public to the extent it does not pose an "undue burden". I am using -iTV—Interactive Video only -Learning management system -Publisher course with learning management system interface.

- Learning management system

Class Size: Good practice is that section size should be no greater in distance ed modes than in regular face-to-face versions of the course. Will the recommended section size be lower than in on-ground sections? If so, explain why.

45

Emergency Distance Education Options The course will operate in remote delivery mode when all or part of the college service area is under an officially declared city, county, state, or federal state of emergency, including (check all that apply) - Online including all labs/activity hours - Hybrid with online lecture and onsite lab/activity hours - Correspondence education in high school and prison facilities - None. This course will be cancelled or paused if it cannot be held fully onsite.

- Online including all labs/activity hours