COLLEGE OF THE DESERT

Course Code ESYS-004

Course Outline of Record

1. Course Code: ESYS-004
2.   a. Long Course Title: Industrial Calculations
     b. Short Course Title: INDUSTRIAL CALC
3.   a. Catalog Course Description:

     This contextualized math course provides CTE specific applications of basic math skills. It is intended for CTE students seeking a certificate. Topics include adding, subracting, multiplying, and dividing rational numbers, percentages, ratios and proportions, measurement, and career applications.

     b. Class Schedule Course Description:

     This contextualized math course provides CTE specific applications of basic math skills. It is intended for CTE students seeking a certificate.

     c. Semester Cycle (*if applicable*): Each semester
     d. Name of Approved Program(s):
              ● AIR CONDITIONING AND REFRIGERATION AS Degree for Employment Preparation
4. Total Units: 3.00   Total Semester Hrs: 72.00

   Lecture Units: 2.5   Semester Lecture Hrs: 45.00

   Lab Units: 0.5   Semester Lab Hrs: 27.00

     Class Size Maximum: 32   Allow Audit: Yes

     Repeatability No Repeats Allowed

     Justification 0
5. Prerequisite or Corequisite Courses or Advisories:
Course with requisite(s) and/or advisory is required to complete Content Review Matrix (CCForm1-A)
N/A
6. Textbooks, Required Reading or Software: *(List in APA or MLA format.)*
     a. Carman, R. Saunders, H. (2015). *Mathematics for the Trades* (10/e). New Jersey Pearson. ISBN: 9780321945297
     College Level: Yes
     Flesch-Kincaid reading level: 11
7. Entrance Skills: *Before entering the course students must be able:*

8. Course Content and Scope:

  Lecture:

     1. Basic number facts.
     2. Addition, subtraction, multiplication, and division of rational numbers.
     3. Natural number exponents and the order of operations.
     4. Methods of finding the least common multiple using prime factorizations.
     5. Reducing proper and improper fractions.
     6. Addition and subtraction of fractions including those with unlike denominators.
     7. Addition and subtraction of fractions and mixed numbers.
     8. Decimal notation and place value, including comparing, ordering, estimating, and rounding decimals.
     9. Rounding and estimation.
    10. Converting between decimals, fractions, and percents.
    11. Ratios and the concept of proportions.
    12. Solving percent problems using an equation or a proportion.
    13. Practical measurement applications including, but not limited to, linear, pressure, fluid, and electrical measurements.

Lab: *(if the "Lab Hours" is greater than zero this is required)*

1. Contextualized assignments specific to a cross section of CTE areas i.e. Auto, Construction, Horticulture, HVAC, Drafting, Digital Design, Culinary etc.
2. Participate in discussion of lectured material through question and answer format to improve understanding of new concepts.
3. Participate in skill lab by working on either paper or web based worksheets to practice skills learned in lectures.
4. Receive academic assistant from instructor on individual basis.
5. Design and build project. To be determined by student CTE area of interest.
6. Use mathematical concepts and measuring technics to the design/ build projects.

9. Course Student Learning Outcomes:

1.

Demonstrate number sense, which is characterized by the ability to judge relative sizes of numbers, perform computations with numbers in different representations, and assess the reasonableness of results.

2.

Use the information contained in application problems to identify and execute methods of solution that involve arithmetic skills, and evaluate the reasonableness of the results obtained.

3.

Demonstrate the use of proportional reasoning in the solution of application problems.

4.

Apply practical measurement techniques.

10. Course Objectives: *Upon completion of this course, students will be able to:*
   a. Demonstrate proficiency in basic number facts (addition, subtraction, multiplication, division).
   b. Compute using the four basic operations of addition, subtraction, multiplication, and division on the rational numbers.
   c. Compute the value of expressions containing natural number exponents.
   d. Apply the order of operations to simplify expressions involving several operations.
   e. Apply the basic operations to solve application problems.
   f. Comprehend the concept of a fraction as a part of a whole.
   g. Convert between improper fractions, mixed numbers, and decimals.
   h. Apply prime factorization to simplify fractions and find least common multiples.
   i. Use the fundamental property of fractions and prime factorizations to write equivalent fractions.
   j. Employ decimal notation and place value to compare, order, and round numbers.
   k. Use rounding and estimation skills to solve problems.
   l. Use the concept of ratio to determine the solution to a proportion problem.
   m. Convert units within the US and metric systems and between the US and metric system units using unit fractions.
   n. Apply methods of conversion between percentages, decimals, and fractions.
   o. Determine the solution to equations involving percentages by deductive reasoning.
   p. Use unit measure appropriately in applications.
   q. Locate rational numbers on the real number line.

11. Methods of Instruction: *(Integration: Elements should validate parallel course outline elements)*
   a. Activity

    b. Collaborative/Team
    c. Experiential
    d. Laboratory
    e. Lecture
    f. Participation
    g. Technology-based instruction

12. Assignments: *(List samples of specific activities/assignments students are expected to complete both in and outside of class.)*

In Class Hours: 72.00

Outside Class Hours: 90.00

    a. Out-of-class Assignments
        1. Reading textbook and supplementary assignments.
        2. Completing daily assigned homework and complete pretests.
    b. In-class Assignments
        1. Participate in discussion groups to review, analyze, diagnose, and evaluate various methods of solution used on homework.
        2. Complete examinations involving problems that require the application of studied principles and skills to new situations as well as problems that mimic those done on homework and in class.

13. Methods of Evaluating Student Progress: *The student will demonstrate proficiency by:*
- Written homework
  Homework assigned from text and worksheets.
- Laboratory projects
  Worksheets and activities related to CTE discipline of student.
- Computational/problem solving evaluations
- Mid-term and final evaluations
- Student participation/contribution
  Participation in lab groups and classroom discussion.

14. Methods of Evaluating: Additional Assessment Information:

15. Need/Purpose/Rationale -- *All courses must meet one or more CCC missions.*

PO-GE C4.b - Language & Rationality (Communication & Analytical Thinking)
   Gather, assess, and interpret relevant information.
   Apply logical and critical thinking to solve problems; explain conclusions; and evaluate, support, or critique the thinking of others.

PO - Career and Technical Education
   Apply critical thinking skills to execute daily duties in their area of employment.

PO-BS Problem Solving
   Restate (formulate) a problem mathematically.

IO - Scientific Inquiry
   Analyze quantitative and qualitative information to make decisions, judgments, and pose questions.

IO - Critical Thinking and Communication
   Apply principles of logic to problem solve and reason with a fair and open mind.

IO - Global Citizenship - Scientific & Technological Literacy
   Utilize quantitative expression in a variety of contexts. These would include units of measurement, visual representations, and scales and distributions.
   Synthesize, interpret, and infer, utilizing information, data, and experience to solve problems, innovate, and explore solutions.

16. Comparable Transfer Course

ESYS 004-Industrial Calculations

University System	Campus	Course Number	Course Title	Catalog Year

17. Special Materials and/or Equipment Required of Students:

18. Materials Fees: ☐ Required Material?

Material or Item	**Cost Per Unit**	**Total Cost**

19. Provide Reasons for the Substantial Modifications or New Course:

   Course update: update textbooks and remove entry skills.

20.   a. Cross-Listed Course *(Enter Course Code)*: *N/A*
          b. Replacement Course *(Enter original Course Code)*: *N/A*

21. Grading Method *(choose one)*: Letter Grade Only

22. MIS Course Data Elements
          a. Course Control Number [CB00]: CCC000554899
          b. T.O.P. Code [CB03]: 94610.00 - Energy Systems Technology
          c. Credit Status [CB04]: D - Credit - Degree Applicable
          d. Course Transfer Status [CB05]: C = Non-Transferable
          e. Basic Skills Status [CB08]: 2N = Not basic skills course
          f. Vocational Status [CB09]: Possibly Occupational
          g. Course Classification [CB11]: Y - Credit Course
          h. Special Class Status [CB13]: N - Not Special
          i. Course CAN Code [CB14]: *N/A*
          j. Course Prior to College Level [CB21]: Y = Not Applicable
          k. Course Noncredit Category [CB22]: Y - Not Applicable
          l. Funding Agency Category [CB23]: A = Fully Economic Development funds
          m. Program Status [CB24]: 1 = Program Applicable
   Name of Approved Program *(if program-applicable)*: AIR CONDITIONING AND REFRIGERATION
   Attach listings of Degree and/or Certificate Programs showing this course as a required or a restricted elective.)

23. Enrollment - Estimate Enrollment
   First Year: 64
   Third Year: 128

24. Resources - Faculty - Discipline and Other Qualifications:
          a. Sufficient Faculty Resources: Yes
          b. If No, list number of FTE needed to offer this course: *N/A*
25. Additional Equipment and/or Supplies Needed and Source of Funding.
   N/A
26. Additional Construction or Modification of Existing Classroom Space Needed. *(Explain:)*
   N/A
27. FOR NEW OR SUBSTANTIALLY MODIFIED COURSES
   Library and/or Learning Resources Present in the Collection are Sufficient to Meet the Need of the Students Enrolled in the Course: Yes

28. Originator Ramiro Galicia   Origination Date 03/17/16