COLLEGE OF THE DESERT

Course Code DRA-002

Course Outline of Record

1. Course Code: DRA-002
2. a. Long Course Title: AutoCAD
   b. Short Course Title: AUTOCAD
3. a. Catalog Course Description:
   This course covers the basics of computer aided drafting and design including hardware, software, operating systems and development of skills for creating and plotting, simple technical and architectural drawings using AutoCAD software
   b. Class Schedule Course Description:
   This course covers the basics of computer aided drafting and design using AutoCAD software.
   c. Semester Cycle (*if applicable*): Every semester
   d. Name of Approved Program(s):
   - GENERAL DRAFTING Certificate of Achievement
4. Total Units: 4.00 Total Semester Hrs: 126.00
   Lecture Units: 2.5 Semester Lecture Hrs: 45.00
   Lab Units: 1.5 Semester Lab Hrs: 81.00
   Class Size Maximum: 28 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)
   Advisory: DRA 001 and
   Advisory: CIS 010
6. Textbooks, Required Reading or Software: *(List in APA or MLA format.)*
   a. Leach, James A. (2017). *AutoCAD 2018 Instructor* (2018/e). Mission, KS SDC Publications. ISBN: 1-63057-115-6
   College Level: Yes
   Flesch-Kincaid reading level: 12.3
7. Entrance Skills: *Before entering the course students must be able:*
   a. Explain basic computer concepts, terms, and definitions
   - CIS 010 - Using computers effectively requires that students can express their instructions in a form that the computer program can understand and execute.
   - DRA 001 - Identify terms and concepts used such as Plan, Section and Detail.
   - CIS 010 - Students must understand what they want to accomplish, what logical steps are required to accomplish the objective, and how to submit instructions to the computer to achieve the required objective.
   - DRA 001 - Define the meaning of basic symbols used in construction documents.
   - CIS 010 - Explain basic computer concepts, terms and definitions.
   - CIS 010 - Describe and use Windows options and features.
   - CIS 010 - Demonstrate skills in disk and file management.
   - CIS 010 - Define, understand, explain, and demonstrate basic INTERNET concepts.
8. Course Content and Scope:

Lecture:

a. Ground Work
   i. Tour of AutoCAD
   ii. User Interface
   iii. Entering Commands
   iv. Basic Objects
   v. Object Selection
   vi. Securing Help
   vii. File Maintenance
b. Drawing Aids and Controls
   i. Object Snap
   ii. Helpful Drawing Features
   iii. Construction Aids
   iv. AutoCAD's Modifying Glass
   v. Panning and Viewing
c. Drawing and Editing
   i. Solid and Curved Objects
   ii. Adding and altering
   iii. Moving and Duplicating Objects
   iv. Modifying and Maneuvering
   v. Notes and Specifications
   vi. Text Editing and Spell Checking
   vii. Hatching and Sketching
d. Preparing and printing a Drawing
   i. Drawing Set Up
   ii. Layers and Linetypes
   iii. Plotting and Printing
e. Dimensioning and Tolerances
   i. Basic Dimensioning
f. Dimensioning and Tolerances
   i. Advanced Dimensioning
   ii. Calculating Strategy
g. Symbols and Groups
   i. Groups
   ii. Building Blocks
   iii. Symbol Libraries
   iv. Attributes
   v. Bill of Materials
h. 3D Drawing and Modeling
   i. Isometric Drawing
   ii. The Third Dimension
   iii. Point Filters
   iv. User Coordinate System
j. Surface Remodeling and Rendering
   i. 3D Surface, Revolutions
   ii. Advanced Surfaces
   iii. Surfaces, 3D Primitives
   iv. Shading and Rendering
   v. Advanced Rendering
k. Solid Remodeling
   i. Solid Regions
   ii. Solid Primitives
   iii. Basic Solid Modeling
   iv. Boolean Operations
   v. Tailoring Solid Models
   vi. Downstream Benefits
   vii. Documenting Solid Models
l. Slides and Scripts

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

Follow step-by-step directions to solve and complete assigned exercise questions from specific chapters of the textbook.

9. Course Student Learning Outcomes:
   1. Recognize the Cartesian Coordinate System, drawing setup, and pull-down menus associated with the AutoCAD software. (Psychomotor Domain)
   2. Apply basic drawing tools, editing features, and function keys. (Cognitive Domain)
   3. Display problem-solving techniques related to two & three dimensional CAD projects. (Affective Domain)

10. Course Objectives: *Upon completion of this course, students will be able to:*
    a. Identify the various components that make-up a CAD workstation
    b. Create, save and properly exit a drawing session on the computer
    c. Define the operation of the function keys
    d. Navigate through AutoCAD's screen and pull-down menus and dynamic dialog boxes
    e. Recognize the Cartesian Coordinate System and how it relates to Absolute, Relative and Polar Coordinates
    f. Identify drawing setup with the UNIT, LIMITS, SNAP and GRID.
    g. Identify the basic drawing tools such as Line, Arc, Rectangle, Donut point, Dline, Circle and Polylines.
    h. Create selection sets for editing.
    i. Demonstrate basic editing features, objects snap modes, inquiry commands, and display aids.
    j. Apply advanced computer aided designing techniques using the AutoCAD software
    k. Develop problem-solving techniques related to CAD projects
    l. Communicate more effectively in a technological society through the use of CAD.
    m. Use advanced components of the AutoCAD software in order to independently analyze a design project and formulate solutions

11. Methods of Instruction: *(Integration: Elements should validate parallel course outline elements)*
    a. Demonstration, Repetition/Practice
    b. Discussion
    c. Laboratory
    d. Lecture

12. Assignments: *(List samples of specific activities/assignments students are expected to complete both in and outside of class.)*
    In Class Hours: 144.00
    Outside Class Hours: 72.00
    a. In-class Assignments
       1. Answer questions at the end of each chapter relating to materials presented.
       2. Demonstrate new skills learned through textbook problems
       3. Develop final project using comprehensive and accurate CAD.
       4. Periodic test on assigned chapters
    b. Out-of-class Assignments
       1. Answer questions at the end of each chapter relating to materials presented.
       2. Develop final project using comprehensive and accurate CAD.

3. Drawing assignments

13. Methods of Evaluating Student Progress: *The student will demonstrate proficiency by:*
    - Written homework
      Drawing Assignments
    - Presentations/student demonstration observations
      Presentation of Projects
    - True/false/multiple choice examinations
    - Mid-term and final evaluations
    - Student participation/contribution
      Classroom Participation

14. Methods of Evaluating: Additional Assessment Information:

15. Need/Purpose/Rationale -- *All courses must meet one or more CCC missions.*
    PO - Career and Technical Education
    Apply critical thinking skills to research, evaluate, analyze, and synthesize information.
    IO - Critical Thinking and Communication
    Apply principles of logic to problem solve and reason with a fair and open mind.

16. Comparable Transfer Course

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:

    Periodic Course Review

20. a. Cross-Listed Course *(Enter Course Code)*: *N/A*
    b. Replacement Course *(Enter original Course Code)*: DRA-008,DRA-009

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

22. MIS Course Data Elements
    a. Course Control Number [CB00]: CCC000570133
    b. T.O.P. Code [CB03]: 95300.00 - Drafting Technology
    c. Credit Status [CB04]: D - Credit - Degree Applicable
    d. Course Transfer Status [CB05]: A = Transfer to UC, CSU
    e. Basic Skills Status [CB08]: 2N = Not basic skills course
    f. Vocational Status [CB09]: Clearly 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]: Y = Not Applicable
    m. Program Status [CB24]: 1 = Program Applicable

Name of Approved Program *(if program-applicable)*: GENERAL DRAFTING
Attach listings of Degree and/or Certificate Programs showing this course as a required or a restricted elective.)

23. Enrollment - Estimate Enrollment
    First Year: 28
    Third Year: 28

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 Donbert M. Bitanga Origination Date 04/22/18