COLLEGE OF THE DESERT

Course Code ARCH-010

Course Outline of Record

1. Course Code: ARCH-010
2. a. Long Course Title: Environmental Control Systems
   b. Short Course Title: ENVIRON CONTROL SYS
3. a. Catalog Course Description:
   This course is an introduction to the physical relationships between people and their environment. It includes a study of the physical phenomena of heat, light, and sound. This course also examines the climatological relationship between vernacular building solutions and the natural conditioning systems of architecture.
   b. Class Schedule Course Description:
   This course examines the climatological relationship between vernacular building solutions and the natural conditioning systems of architecture
   c. Semester Cycle (*if applicable*): Fall semester
   d. Name of Approved Program(s):
   - ARCHITECTURAL TECHNOLOGY AS Degree and Transfer Preparation
4. Total Units: 3.00 Total Semester Hrs: 90.00
   Lecture Units: 2 Semester Lecture Hrs: 36.00
   Lab Units: 1 Semester Lab Hrs: 54.00
   Class Size Maximum: 26 Allow Audit: No
   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)
   Prerequisite: ARCH 002
6. Textbooks, Required Reading or Software: *(List in APA or MLA format.)*
   a. Lechner, N. (2015). *Heating, Cooling, Lighting Design Methods for Architects* Wiley & Son, Inc. ISBN: 9781118582428
   College Level: Yes
   Flesch-Kincaid reading level: 12.4
7. Entrance Skills: *Before entering the course students must be able:*
   a. Select appropriate building materials based on design, climate and site conditions
   - ARCH 002 - Compare the thermal properties of various building materials.

   b. Compare the thermal properties of various building materials.
   - ARCH 002 - Explain the principles, and performance characteristics of common building materials, i.e.: concrete, wood, masonry products, steel, glass and thermal insulation.

   c. Design building sections and evaluate their performance based on climate.
   - ARCH 002 - Select appropriate building materials based on design, climate and site conditions.
   - ARCH 002 - Compare the thermal properties of various building materials.
   - ARCH 002 - Explain the principles, and performance characteristics of common building materials, i.e.: concrete, wood, masonry products, steel, glass and thermal insulation.

   d. Explain the principles, and performance characteristics of common building materials, i.e.: concrete, wood, masonry products, steel, glass and thermal insulation.
   - ARCH 002 - Select appropriate building materials based on design, climate and site conditions.
   - ARCH 002 - Compare the thermal properties of various building materials.

8. Course Content and Scope:

Lecture:

a. Introduction to Environmental Tempering
b. Influences of the physical environment on architectural form
c. Quantification of desirable conditions of the internal physical environment
d. Principles of environmental control systems in architecture
e. Need and requirements for control systems
f. Micro-computer applications as a design tool
g. Thermal properties and characteristics of building materials
h. Development of student 'Design Manual'

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

a. Information research b. Data gathering, analysis and implementation c. Research on "green" material and methods of construction

9. Course Student Learning Outcomes:

1.
Analyze climate data to determine architectural design strategies. (Cognitive)

2.
Identify and evaluate architectural responses to issues of climate, site resources, energy, comfort and aesthetic quality. (Cognitive)

3.
Validate the significance of climate adapted architecture. (Affective)

10. Course Objectives: *Upon completion of this course, students will be able to:*

a. Cite the role of the built environment in the global view, national and regional
b. Demonstrate an understanding of the statutory requirements for energy conserving architecture in the State of California.
c. Demonstrate an understanding of how sustainable architecture can be achieved in the 4-climate zones
d. Cite examples of how heat, light, and sound contribute to the experience and comfort in architectural spaces
e. Discuss the significance of climate adapted architecture.
f. Demonstrate the principles of heat, light, and sound and how they affect architectural form and human comfort.
g. Research and analyze climate data to determine architectural design strategies.
h. Identify and evaluate critical climate, resource and comfort issues for thermal, lighting, and acoustic environments.
i. Evaluate and choose appropriate architectural responses to issues of climate, site resources, energy, comfort and aesthetic quality.

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

a. Discussion
b. Lecture
c. Observation

Other Methods:

a. Lecture, films, slides, overhead projections b. Weekly, group 'pin ups' with critiques c. Classroom discussions based on reading assignments d. Demonstrations of micro-computer applications of appropriate software e. Demonstrate Title 24 State of California Energy Compliance f. Critique of student presentations g. Design Manual as a student reference

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

In Class Hours: 90.00
Outside Class Hours: 72.00

a. In-class Assignments

1. Reading assignment from required text and/or instructor “handouts”
2. Prepare for classroom discussions on environmental control strategies
3. Prepare for critiques of weekly design “problems”
4. Complete Title 24 Energy Compliance projects/problems
5. Develop and maintain a Design Manual as a weekly reference

b. Out-of-class Assignments

1. Reading assignment from required text and/or instructor “handouts”
2. Prepare for classroom discussions on environmental control strategies
3. Prepare for critiques of weekly design “problems”
4. Complete Title 24 Energy Compliance projects/problems
5. Develop and maintain a Design Manual as a weekly reference

13. Methods of Evaluating Student Progress: *The student will demonstrate proficiency by:*
    - Critiques
      Desk Critique and class Critique
    - Computational/problem solving evaluations
    - Presentations/student demonstration observations
    - Self/peer assessment and portfolio evaluation

14. Methods of Evaluating: Additional Assessment Information:

    a. Weekly assignments b. Clarity and usefulness of Student Design Manual c. Mid-term project d. Participation in studio and classroom discussions e. Final project f. Written assignments

15. Need/Purpose/Rationale -- *All courses must meet one or more CCC missions.*
    PO - Career and Technical Education
    Fulfill the requirements for an entry- level position in their field.
    Apply critical thinking skills to execute daily duties in their area of employment.
    Apply critical thinking skills to research, evaluate, analyze, and synthesize information.
    Exhibit effective written, oral communication and interpersonal skills.
    Transfer to a higher level learning institution
    IO - Critical Thinking and Communication
    Apply principles of logic to problem solve and reason with a fair and open mind.
    Summarize, analyze, and interpret oral and written texts, with the ability to identify assumptions and differentiate fact from opinion.

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)*: *N/A*

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

22. MIS Course Data Elements
    a. Course Control Number [CB00]: CCC000261348
    b. T.O.P. Code [CB03]: 20100.00 - Architecture and Architec
    c. Credit Status [CB04]: D - Credit - Degree Applicable
    d. Course Transfer Status [CB05]: B = Transfer CSU
    e. Basic Skills Status [CB08]: 2N = Not basic skills course
    f. Vocational Status [CB09]: Advanced 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)*: ARCHITECTURAL TECHNOLOGY
    Attach listings of Degree and/or Certificate Programs showing this course as a required or a restricted elective.)

23. Enrollment - Estimate Enrollment
    First Year: 26
    Third Year: 26

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