COLLEGE OF THE DESERT

Course Outline of Record

1. Course Code: DRA-011
2.   a. Long Course Title: Introduction To Sketchup and Revit
     b. Short Course Title: INTRO SKETCHUP/REVIT
3.   a. Catalog Course Description:

     This course covers the basic principles of 3-dimensional CAD modeling from a conceptual stage to a transitional architectural design and documentation platform built on Building Information Modeling (BIM) using SketchUp and Revit software respectively

     b. Class Schedule Course Description:

     This course covers the basic principles of 3-dimensional CAD modeling using SketchUp and Revit software

     c. Semester Cycle (*if applicable*): Once a year
     d. Name of Approved Program(s):
        - ARCHITECTURAL TECHNOLOGY
        - GENERAL DRAFTING
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: 29   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. Tickoo, S. (2014). *Autodesk Revit Architecture* Purdue University Calumet. ISBN: 9781936646494

        College Level: Yes

        Flesch-Kincaid reading level: 12.

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. The Basics
i. Tour of SketchUp
ii. Viewing tools
iii. Shortcut keys
iv. Drawing tools
v. Manipulation tools
vi. Annotation tools
b. Intersect and Follow Me
i. Follow me
ii. Intersect with model
iii. Combining intersect with Follow me
c. Making Multiple Copies
i. Basic move and copy
ii. Multiple linear copies
iii. Multiple rotated copies
d. Working with Roofs
i. Using offset for roofs
ii. Resolving sloping roofs
iii. Overhangs
e. Groups and Components
i. Components versus groups
ii. Introduction to groups
iii. Using groups for cutting
iv. Unsticking objects from a group
v. Introduction to components
vi. Cutting openings
f. Painting Materials and Textures
i. Overview of materials
ii. Applying materials
iii. Materials transparency
iv. Texture positioning
v. Using pictures to create realistic objects
vi. Alpha transparency
g. Sectioning
i. Sectioning overview
ii. Using sections for interior design and presentation
iii. Copying section planes for floor plans
iv. Simultaneous section cuts
h. Presentation
i. Layers
ii. Setting up the model
iii. Pages
iv. Walk and look around
v. Position camera
vi. Updating pages
vii. Tour guide/slideshow
viii. Shadows

Revit
a. The Basics
i. Introduction to Revit
ii. Creating basic floor plans
iii. Setting up levels and grids
b. Making Design Changes
i. Modifying specific objects
ii. Editing tools
c. Views and Components
i. Creating views of the model

ii.   Adding components
d.   Modeling Tools
i.   Floors and ceilings
ii.   Roofs
iii.   Stairs, railings and ramps
iv.   Curtain walls
e.   Sheets, annotation and Detailing
i.   Sheets and printing
ii.   Annotation
iii.   Detailing in Revit

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

1. Basic exercises in mass modeling using tools such as extrude, standard views, and shades and shadows.
2. Draw basic floor plan using BIM strategies.
3. Draw basic exterior elevations.
4. Draw basic building sections
5. Extract exterior 2-point perspective including all necessary entourage.
6. Extract interior 1-point perspectives of building.

9. Course Student Learning Outcomes:

1.
Draw the CAD three dimensional conceptual model of a design using the SketchUp software.

2.
Draw the CAD three dimensional photo-realistic model of a design using the Revit software.

10. Course Objectives: *Upon completion of this course, students will be able to:*
   a. Compare traditional methods of presentations with the presentation capabilities of SketchUp and Revit
   b. Recognize the fundamental similarities and differences of the two softwares
   c. Demonstrate basic drawing and editing features, as well as rendering and presentation tools.
   d. Identify basic components of the SketchUp and Revit software in order to develop problem solving techniques

11. Methods of Instruction: *(Integration: Elements should validate parallel course outline elements)*
   a. Demonstration, Repetition/Practice
   b. Discussion
   c. Laboratory
   d. Lecture
   e. 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: 90.00
   Outside Class Hours: 72.00
   a. 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.

   b. In-class Assignments

1. Basic exercises in mass modeling using tools such as extrude, standard views, and shades and shadows.
2. Draw basic floor plan using BIM strategies.
3. Draw basic exterior elevations.
4. Draw basic building sections

> 5. Extract exterior 2-point perspective including all necessary entourage.
> 6. Extract interior 1-point perspectives of building.
> 7. Demonstrate new skills learned through textbook problems

13. Methods of Evaluating Student Progress: *The student will demonstrate proficiency by:*
    - Written homework
      Drawing Assignments
    - Critiques
    - 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 Assesment Information:

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 research, evaluate, analyze, and synthesize information.
    PO-BS Critical Thinking
      Assess relevant information and come to thought-out conclusions and solutions.
    IO - Aesthetics
      Apply imagination to artistic expression.
      Value appearance in terms of how pleasing it is in movement, form, and function.

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 review (2-year)
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]: CCC000446287
       b. T.O.P. Code [CB03]: 95300.00 - Drafting Technology
       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]: 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)*: _ARCHITECTURAL TECHNOLOGY,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: _21_

Third Year: _29_

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 _03/05/15_