Degree Applicable

Glendale Community College
March, 2008

COURSE OUTLINE

Architecture 150
Basic Rhinoceros Applications

I. Catalog Statement

Architecture 150 teaches the fundamentals of Rhinoceros software, its use as a design tool, and the ability to digitally fabricate the designs. Topics include freeform modeling in the NURBS (Non-Uniform Rational B-Splines) environment, complex surface editing, digital output, rendering, creating presentations, and integrating Rhinoceros with other CAD programs and into a productive workflow.

Units – 3.0
Lecture Hours – 2.0
Total Laboratory Hours – 4.0
(Faculty Laboratory Hours – 4.0 + Student Laboratory Hours – 0.0 = 0.0 Total Laboratory Hours)

Recommended Preparation: Architecture 101 or Engineering 101 or equivalent.

II. Course Entry Expectations

Skills Level Ranges: Reading 5; Writing 5; Listening/Speaking 5; Math 3.

III. Course Exit Standards

Upon successful completion of the required coursework, the student will be able to:

1. use the Rhinoceros interface;
2. construct complex organic forms in the NURBS environment;
3. construct 2D representational drawings from 3D models;
4. prepare models to be digitally fabricated;
5. customize Rhinoceros to expedite the workflow.

IV. Course Content

A. User Interface — 4 Hours
   1. Menus & toolbars
   2. Model preparation
   3. Viewport navigation
   4. Application settings

B. 2D Drawing — 4 Hours
   1. Creating curves and polylines
   2. Editing curves and polylines
   3. Understanding Cplane & 3D space
   4. Working with multiple viewports

C. Surface Creating — 4 Hours
   1. Lofting and sweeping
   2. Patching and networks
   3. Extruding

D. Surface Editing — 4 Hours
   1. Surface editing tools
   2. Rebuilding and repairing
   3. Extracting information
   4. Surface vs. polysurface vs. mesh
   5. History and surfaces

E. Digital Fabrication — 4 Hours
   1. Introduction to 3D Printing and surface milling
   2. Closing open edges
   3. File types and exporting

F. Generating Drawings — 4 Hours
   1. Working with layers
   2. Sectioning and contouring
   3. Make 2D command

G. Rendering — 4 Hours
   1. Basic Rhinoceros rendering
   2. Introduction to V-Ray and Flamingo

H. Customizing Rhino Workflow — 4 hours
   1. Time saving macros
   2. Introduction to Rhinoscript
   3. Integration with other software

I. Laboratory Application — 64 hours

V. Methods of Presentation

The following instruction methodologies may be used in the course:
a. lecture;

b. multimedia;
c. guest speakers;
d. individual and group projects;
e. field trips.

VI. Assignments and Methods of Evaluation

1. Midterm: Modeling project 1.
2. Midterm: Modeling project 2 w/ digital fabrication component.
3. Final examination: Project w/ digital fabrication and full 2D representation.

VII. Textbook

Cheng, R. Inside Rhinoceros 4. 3rd ed.
New York: OnWord Press. 2007.
10th Grade Textbook Reading Level. ISBN-10: 1418021016.