This course is an introduction to PC based 2D and 3D software used by designers. Lectures, demonstrations and coursework allow students to develop professional-quality, original artwork and digital images. This hands-on course focuses on introducing students to the basic tools and techniques used for creating and editing digital photographs and images. Students will be able to generate virtual 2D and 3D projects and subsequently utilize rapid prototyping techniques for making solid models. ADVISORY: Design G150

COURSE LEVEL STUDENT LEARNING OUTCOME(S) Supported by this course:
1. demonstrate safe techniques for using rapid prototyping machines in a laboratory setting.
2. demonstrate the ability to think in three dimensions.
3. apply appropriate digital refinements to improve existing 2D and 3D original artwork.
4. demonstrate the technical knowledge, professional attitude, and habits conducive to attaining a successful career as a designer, CAD, or rapid prototype technician.
5. combine a comprehensive group of materials and processes into a finished project.
6. demonstrate the ability to use different software used by designers.
7. manage drawing data using tool palettes, fields, and drawing sets.
8. create scripts, fonts, and custom linetypes.
9. use digital software to compile projects for the portfolio.
10. demonstrate proficiency in the use of Computer Aided Design (CAD) menus and files.
11. create and render 3D virtual models.
12. apply independent design ideas to the required class projects.

COURSE OBJECTIVES:
1. demonstrate safe techniques for using rapid prototyping machines in a laboratory setting.
2. demonstrate the ability to think in three dimensions.
3. apply appropriate digital refinements to improve existing 2D and 3D original artwork.
4. develop the technical knowledge, professional attitude and habits conducive to attaining a successful career as a designer, CAD or rapid prototype technician.
5. integrate a comprehensive group of materials and processes into a finished project.
6. demonstrate the ability to use different software used by designers.
7. manage drawing data using tool palettes, fields and drawing sets.
8. create scripts, fonts, and custom linetypes.
9. create and render 3D virtual models.
10. demonstrate proficiency in the use of Computer Aided Design (CAD) menus and files.
11. utilize digital software to compile projects for the portfolio.
12. apply independent design ideas to the required class projects.

COURSE CONTENT:

LECTURE CONTENT:
1. Orientation to the design studio labs.
2. Studio Lab safety procedures and appropriate campus safety policies.
3. Technical sketching as it applies to digital and portfolio projects.
4. Proper use of specialized rapid prototyping software and equipment, safety and lab protocol.
5. Precision digital measurement and measuring instruments in computer aided design (CAD).
6. Exploded and Assembly drawings with animation.
7. Digital camera techniques for scanning and copying
8. Digital software skills and techniques in 2D and 3D formats

10. Blueprint reading skills

11. Set-up and operation of desktop CNC machines.
   a. Conversion of CAD files into DXF and CAM files for CNC

12. Set-up and operation of 3D printer rapid prototype machines.
   a. Conversion of CAD files into DXF files for rapid prototype 3D printer machines.

13. Technical knowledge, attitudes, and habits conducive to attaining a successful career in design.
   a. Time management
   b. Ability to work independently and efficiently
   c. Safe work habits
   d. Maintenance of current issues and practices in the field of design
   e. Presentation Skills including use of presentation software

14. Composition and presentation techniques in a virtual format.

LABORATORY CONTENT:

In the Digital Studio, students will transform their 2D designs into 3D virtual models or prototypes via the 3D printer or Computerized Numerical Control (CNC) Machines. Use of precision measurements, specialized materials, industry standard software and rapid prototyping will be practiced and developed. In addition, students will practice transforming digital images into display presentations.

METHODS OF INSTRUCTION:

A. Lecture:

B. Lab:

C. Independent Study:

INSTRUCTIONAL TECHNIQUES:

COURSE ASSIGNMENTS:

Reading Assignments

Lecture notes and instructor prepared handouts
Textbook

Out-of-class Assignments

Students will use the Research Library Media Center and or the Internet.

Writing Assignments

Complete assigned projects and present them to the class.
Critique projects and presentations of other students.
Demonstrate skills through the safe and proper use of digital equipment, tools and equipment in the studio lab.
Compile projects and preparation for portfolio and design student show.

METHODS OF STUDENT EVALUATION:

Midterm Exam
Final Exam
Short Quizzes
Written Assignments
Projects (ind/group)
Problem Solving Exercises
Oral Presentations
Skills Demonstration
Demonstration of Critical Thinking:
Students will analyze, apply, and solve specialized design problems requiring the knowledge, skills and techniques covered in class lectures, demonstrations, activities and research. The student will apply critical thinking/problem solving skills to their class projects.

Required Writing, Problem Solving, Skills Demonstration:
Complete assigned projects and present them to the class.
Critique projects and presentations of other students.
Demonstrate skills through the safe and proper use of digital equipment, tools and equipment in the studio lab.
Compile projects and preparation for portfolio and design student show.

TEXTS, READINGS, AND RESOURCES:

TextBooks:

LIBRARY:
Adequate library resources include:

Comments:

Attachments:
Attached Files