This is an intermediate course in the materials, processes and techniques for creating 3D mock-ups, models and prototypes used by designers. Students will use plastics, wood, metal and other materials for their presentation displays. Appropriate safety instruction for studio equipment is included. Lectures and demonstrations include advanced techniques in model making and finishing. ADVISORY: Design G105/Art G192

COURSE OUTLINE OF RECORD

Number: DSGN G154  TITLE: Modeling And Prototyping Techniques

ORIGINATOR: Gregory Wight  EFF TERM: Spring 2008
FORMERLY KNOWN AS:

DATE OF OUTLINE/REVIEW: 03-05-2013

CROSS LISTED COURSE:

TOP NO: 0953.00
CID:

SEMESTER UNITS: 3.0
HRS LEC: 36.0  HRS LAB: 54.0  HRS OTHER: 0.0
CONTACT HRS TOTAL: 90.0
STUDY NON-CONTACT HRS RECOMMENDED: 72.0

CATALOG DESCRIPTION:

This is an intermediate course in the materials, processes and techniques for creating 3D mock-ups, models and prototypes used by designers. Students will use plastics, wood, metal and other materials for their presentation displays. Appropriate safety instruction for studio equipment is included. Lectures and demonstrations include advanced techniques in model making and finishing. ADVISORY: Design G105/Art G192

JUSTIFICATION FOR COURSE:

PREREQUISITES:

COREQUISITES:

ADVISORIES:

ASSIGNED DISCIPLINES:

Drafting CADD (computer -aided drafting/ design), CAD (computer- aided design), CAD (computer-aided drafting)
Industrial design

MATERIAL FEE: Yes [X] No [ ] Amount: $18.50

CREDIT STATUS: Noncredit [ ] Credit - Degree Applicable [X] Credit - Not Degree Applicable [ ]

GRADING POLICY: Pass/No Pass [X] Standard Letter [X] Not Graded [ ] Satisfactory Progress [ ]

OPEN ENTRY/OPEN EXIT: Yes [ ] No [X]

TRANSFER STATUS: CSU Transferable[X] UC/CSU Transferable[ ] Not Transferable[ ]

BASIC SKILLS STATUS: Yes [ ] No [X] LEVELS BELOW TRANSFER: Not Applicable

CALIFORNIA CLASSIFICATION CODES: Y - Not Applicable

NON CREDIT COURSE CATEGORY: Y - Not applicable, Credit Course

OCCUPATIONAL (SAM) CODE: C

REPEATABLE ACCORDING TO STATE GUIDELINES: No [X] Yes [ ] NUMBER REPEATS:

REQUIRED FOR DEGREE OR CERTIFICATE: No [X] Yes [ ]

GE AND TRANSFER REQUIREMENTS MET:

COURSE LEVEL STUDENT LEARNING OUTCOME(S) Supported by this course:
1. perform the tasks necessary to pass a safety test and several specialized safety tests.
2. demonstrate the ability to function safely in a design studio through an understanding of safety issues.
3. demonstrate the safe and proper usage of the hand, portable power, and basic stationary power equipment used in the studio la2.
4. combine the most current software and rapid prototyping techniques into their studio projects.
5. demonstrate precision measurement techniques used in the field of design as they apply to the specialized studio modeling equipment, tools, and machinery.
6. demonstrate the technical knowledge, professional attitude, and habits conducive to attaining a successful career as a designer, model maker, technician, or prop maker.
7. demonstrate effective use of specialized materials, processes, and finishing techniques used in the design studio.
8. use their understanding of how to transfer model dimensions from a 2D plan, section or detail drawings or transfer model dimensions to new plans and drawings.
9. generate 3D design projects utilizing the modeling tools and equipment in the studio la2.
10. apply independent design ideas to the required class projects.

COURSE OBJECTIVES:

1. pass a general safety test and several specialized safety tests.
2. function safely in a design studio by demonstrating an understanding of safety issues.
3. demonstrate the safe and proper usage of the hand, portable power and basic stationary power equipment used in the studio lab.
4. utilize precision measurement techniques used in the field of design as they apply to the specialized studio modeling equipment, tools and machinery.
5. develop the technical knowledge, professional attitude and habits conducive to attaining a successful career as a designer, model maker, technician or prop maker.
6. incorporate the most current software and rapid prototyping techniques into their studio projects.
7. demonstrate effective use of specialized materials, processes, and finishing techniques used in the design studio.
8. implement their understanding of how to transfer model dimensions from a 2D plan, section or detail drawings or transfer model dimensions to new plans and drawings.
9. complete 3D design projects utilizing the modeling tools and equipment in the studio lab.
10. apply independent design ideas to the required class projects.

COURSE CONTENT:

LECTURE CONTENT:

1. Orientation to the design studio lab.
2. Studio Lab safety procedures and appropriate campus safety policies.
3. Precision measurement and measuring instruments, both manual and Computer Numerical Control (CNC).
4. Proper use of specialized modeling tools, hand tools, safety and lab protocol.
5. Proper use of portable power equipment.
6. Proper use of stationary power equipment.
DSGN G154-Modeling And Prototyping Techniques

7. Intermediate uses of specialized materials used in various fields of Design.
   a. Interior design-- textiles, tile and other flooring materials, underlayments, granite, etc.
   b. Transportation design-- primarily plastics and metals
   c. Furniture design-- woods, composites, plastics, textiles, metals, etc.
   d. Other design areas as desired by class members

8. Application of more advanced finishing processes used in Design.
   a. Masking techniques for Multi-color
   b. Combination of materials in the substrate
   c. Custom trim techniques and applications

9. Integration of complex and efficient methodology in the planning of the design projects.
   a. Construction of multi-dimensional projects
   b. Incorporation of multiple materials
   c. Incorporation of multiple applications of those materials

10. Creativity and Ideation.
    a. Practice in refining an initial idea to the finished product
    b. Practice in brainstorming "crossover" products to established product lines

11. Acquisition of 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

12. 2D and 3D design software for rapid prototyping and automated techniques
    a. Software for 2D designs
    b. Software for 3D designs
    c. Incorporation of rapid prototyping parts into studio projects

LABORATORY CONTENT:

In the Model Making Studio, students will transform their 2D designs into 3D models or prototypes. Use of precision measurements, specialized materials, finishing techniques, industry standard software and rapid prototyping will be practiced and developed.

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

TEXTS, READINGS, AND RESOURCES:

TextBooks:

Other:
1. Class Syllabus
   Respirator
   Safety glasses
   Project materials
   Project related lab supplies

LIBRARY:
Adequate library resources include:

Comments:

Attachments:
Attached Files