

**EXAM INFORMATION****Items**

39

Points

55

Prerequisites

NONE

Grade Level

11-12

Course Length

ONE SEMESTER

Career ClusterARCHITECTURE AND CONSTRUCTION
ARTS, A/V TECHNOLOGY AND
COMMUNICATION**Performance Standards**

INCLUDED

Certificate Available

YES

DESCRIPTION

This instructional course prepares individuals to apply technical knowledge and skills to develop and create concepts that optimize the function, value, and appearance of products for the benefit of both user and manufacturer. (IDSA)

EXAM BLUEPRINT**STANDARD****PERCENTAGE OF EXAM**

| | |
|-----------------------------------|-----|
| 1- Industrial Design & Profession | 5% |
| 2- Apply Design Process | 11% |
| 3- Design Elements & Principles | 25% |
| 4- Human Factors & Design | 9% |
| 5- Conceive and Create Product | 4% |
| 6- Present Ideas | 11% |
| 7- Computer Technology | 24% |
| 8- Ethical & Legal Issues | 7% |
| 9- Safe Practices | 2% |
| 10- Profession Skills | 2% |



STANDARD 1

STUDENTS WILL DEMONSTRATE KNOWLEDGE OF INDUSTRIAL DESIGN AND PROFESSION

- Objective 1** Students will demonstrate knowledge of the industrial design profession, job standards, professional development, and explore higher education and career opportunities.
- Objective 2** Students will understand the relationship of industrial design to other design and related professions.
1. Graphic designers
 2. Interior designers
 3. Architects
 4. Engineers
- Objective 3** Students will explore careers and opportunities in industrial design
1. Salary/hours/working conditions
 2. Work expectations
 3. Freelance conditions
 4. Post-secondary education

Standard 1 Performance Evaluation included below (Optional)

STANDARD 2

STUDENTS WILL UNDERSTAND AND BE ABLE TO APPLY THE DESIGN PROCESS TO PRODUCTS AND SYSTEMS

- Objective 1** Students will understand principles of design research in relation to problem finding and problem solving.
1. Observation
 2. Experience
 3. Inquiry
 4. Data synthesis
 5. Target audience
- Objective 2** Students will understand and be able to apply principles for ideation and divergent thinking (brainstorming).
1. Explore ideas.
 2. Question
 3. Make Connections
 4. Validate an idea
 5. Develop the concept based upon validation
- Objective 3** Students will understand and use the workflow process.
1. Research
 2. Thumbnails
 3. Sketches
 4. Full color rendering
 5. Digital rendering
 6. Mock-up



7. Model

Standard 2 Performance Evaluation included below (Optional)

STANDARD 3

STUDENTS WILL DEMONSTRATE KNOWLEDGE OF INDUSTRIAL DESIGN AND PROFESSION

- Objective 1** Students will be able to render an idea utilizing the elements of design.
1. Lines in space (Chaos and order)
 2. Surface
 3. Form/volume
 4. Structure
 5. Value
 6. Color (Color themes, theory, and wheel)
 7. Texture
- Objective 2** Students will demonstrate an ability to utilize principles of 3D design in form development.
1. Balance (visual)
 2. Unity/Variety
 3. Contrast
 4. Emphasis
 5. Direction and Movement
 6. Repetition
 7. Proportion
- Objective 3** Students will interpret and critique artistic use of design elements and principles in product design.
1. Form vs. Function
 2. Physical balance

Standard 3 Performance Evaluation included below (Optional)

STANDARD 4

STUDENTS WILL DEMONSTRATE KNOWLEDGE OF HUMAN FACTORS RELATED TO DESIGN

- Objective 1** Students will understand how human anatomy, physiology, and psychology apply to product development.
- Objective 2** Students will be able to demonstrate the application of human factors in product design.
1. Ergonomics
 2. Aesthetics
 3. Haptic
- Objective 3** Students will be able to demonstrate knowledge of the impact of design and technology has on the individual, society, and the environment.
1. Social sustainability
 2. Environmental sustainability
 3. Cultural sustainability



STANDARD 5

STUDENTS WILL CONCEIVE AND CREATE A PRODUCT

- Objective 1 Conceive and develop a mockup of the product.
1. Quick 3D rough draft.
- Objective 2 Build a model of the product.
1. Refined 3D example.

STANDARD 6

STUDENTS WILL UNDERSTAND AND DEMONSTRATE THE ABILITY TO PRESENT IDEAS.

- Objective 1 Students will be able to use multiple techniques, tools, and processes to develop compelling 2D and 3D product concept presentations and articulating the process used in their form development.
- Objective 2 Students will understand the importance of working individually or as a team in developing effective presentations.
1. Visual presentation of the product (PowerPoint, presentation board, 3D model)
 2. Student presence (posture, communication, body language, dress)
 3. Presentation of idea, sell the product's functionality, aesthetics, and sustainability.

STANDARD 7

STUDENTS WILL CONCEIVE AND CREATE A PRODUCT

- Objective 1 Students will demonstrate knowledge of basic computer vocabulary and techniques.
1. Tools and shortcuts
 2. Color modes
 3. Vectors vs raster qualities and advantages
 4. Adobe software terminology i.e. guides, strokes.
- Objective 2 Students will understand file types and use them appropriately.
1. Print applications TIFF, JPG, etc.
 2. Web applications PNG, WMF, etc.
 3. File Transfer IGES, STL, PDF, etc.
 4. Resolution and how it is used.
- Objective 3 Students will use appropriate software for design communication and implementation for job/project completion.
1. Adobe Illustrator
 2. Adobe Photoshop
 3. Others (Autodesk software, CAD, etc.)
- Objective 4 Know the appropriate color mode in computer applications
1. CMYK
 2. RGB



Standard 7 Performance Evaluation included below (Optional)

STANDARD 8

STUDENTS WILL UNDERSTAND BASIC ETHICAL AND LEGAL ISSUES INVOLVED IN DESIGN

- Objective 1 Define ways to protect your ideas.
- Objective 2 Discuss types of patent and their merits.
- Objective 3 Students will practice ethics and rules governing industrial design.

Standard 8 Performance Evaluation included below (Optional)

STANDARD 9

STUDENTS WILL DEMONSTRATE SAFE PRACTICES

- Objective 1 Know and apply basic safety rules for working with tools, machines, and materials.
- Objective 2 Know and apply the basics for keeping machines and tools in good working order.
- Objective 3 Know and apply basic safety procedures when working with computers and electronic devices and understanding archiving process for digital files
- Objective 4 Clean and maintain an orderly work area.

STANDARD 10

STUDENTS WILL ENHANCE THEIR UNDERSTANDING OF INDUSTRIAL DESIGN AS A PROFESSION AND WILL DEVELOP PROFESSIONAL SKILLS FOR THE WORKPLACE

- Objective 1 As a participating member of the SkillsUSA student organization, complete the SkillsUSA Level 2 Professional Development Program.
 1. Measure/modify short-term goals.
 2. Identify stress sources.
 3. Select characteristics of a positive image.
 4. Demonstrate Government awareness.
 5. Demonstrate awareness of professional organizations.
 6. Apply team skills to a group project.
 7. Observe and critique team skills at a local professional meeting.
 8. Demonstrate business meeting skills.
 9. Explore workplace ethics: codes of conduct.
 10. Demonstrate social etiquette.
 11. Complete survey for employment opportunities.
 12. Review a professional journal and develop a three- to five-minute speech.
 13. Complete a job application.
 14. Assemble an employment portfolio.
 15. Explore supervisory and management roles in an organization.
 16. Conduct a worker interview.
 17. Perform a self-evaluation of proficiency in program competencies.
- Objective 2 Serve in the school's SkillsUSA chapter as a committee member.



- Objective 3 As a participating member of the SkillsUSA student organization, complete the SkillsUSA Level 3 Professional Development Program.
1. Evaluate your career and training goals.
 2. Market your career choice.
 3. Develop personal financial skills
 4. Serve as a volunteer in the community.
 5. Plan and develop a business.
 6. Conduct a worker interview.
 7. Develop a résumé and write a cover letter.
 8. Demonstrate interviewing skills.
 9. Understand the cost of customer service.
 10. Identify and apply conflict resolution skills.
 11. Demonstrate evaluation skills.
 12. Examine workplace ethics: the role of values in making decisions.
 13. Perform a skill demonstration.
 14. Learn what is contained in Material Safety Data Sheets (MSDS).
 15. Perform a self-evaluation of proficiency in program competencies.
 16. Participate in an actual or simulated job interview.
- Objective 4 Serve as an officer in the school's chapter of SkillsUSA
- Objective 5 Participate in an authorized SkillsUSA drafting competition.
- Objective 6 Display a professional attitude toward the instructor and peers.
- Objective 7 Students will demonstrate knowledge of professional work standards.
1. Professionalism; punctuality, dependability, and engagement
- Objective 8 Students will create a portfolio of their design work

Standard 10 Performance Evaluation included below (Optional)



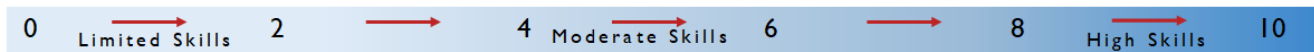
Industrial Design Performance Standards (Optional)

Performance assessments may be completed and evaluated at any time during the course. The following performance skills are to be used in connection with the associated standards and exam. To pass the performance standard the student must attain a performance standard average of **8 or higher** on the rating scale. Students may be encouraged to repeat the objectives until they average **8 or higher**.

Students Name _____

Class _____

PERFORMANCE RATING SCALE



STANDARD 1 Industrial Design & Profession

Score:

- Demonstrate knowledge of commercial art and advertising professional standards.
- Understand basic hand tools, fasteners, and shop equipment.

STANDARD 2 Apply Design Process

Score:

- Demonstrate knowledge of advance design elements and principles.

STANDARD 3 Design Elements & Principles

Score:

- Demonstrate advanced layout and composition techniques in diverse media.
- Demonstrate advanced color theory.
- Critique illustration, advertising and design.

STANDARD 7 – Computer Technology

Score:

- Understand and demonstrate advanced typography.
- Demonstrate an advanced knowledge of computer technology.

STANDARD 8 – Ethical & Legal Issues

Score:

- Learn and practice copyright laws, ethics and legal issues dealing with photography.

STANDARD 10 – Professional Skills

Score:

- Understand the importance of employability and professional work habits.

PERFORMANCE STANDARD AVERAGE SCORE: