Painting and Design Technologies Standards and Skills

July 2024



**Table of Contents**

[Table of Contents 2](#_Toc171601992)

[Health & Safety Standards 3](#_Toc171601993)

[Standard 1: Safety and Health in a Painting and Design Environment 3](#_Toc171601994)

[Technical & Integrated Academic Standards 4](#_Toc171601995)

[Standard 2: Role of Painting and Design Professionals in Society 4](#_Toc171601996)

[Standard 3: Technical Drawings and Project Management 4](#_Toc171601997)

[Standard 4: Preparation and Application of Finishes 5](#_Toc171601998)

[Standard 5: Drywall Finishing 6](#_Toc171601999)

[Standard 6: Fundamentals of Interior Design 6](#_Toc171602000)

[Standard 7: Decorative Finishes 7](#_Toc171602001)

[Standard 8: Wall Coverings 7](#_Toc171602002)

[Standard 9: Sign Making and Mural Art 8](#_Toc171602003)

[Employability Standards 8](#_Toc171602004)

[Standard 10: Employability Skills 8](#_Toc171602005)

[Entrepreneurship Standards 8](#_Toc171602006)

[Standard 11: Entrepreneurship 8](#_Toc171602007)

[Digital Literacy Standards 9](#_Toc171602008)

[Standard 12: Digital Literacy 9](#_Toc171602009)

## Health & Safety Standards

### Standard 1: Safety and Health in a Painting and Design Environment

Students will be able to demonstrate job site health and safety practices, including management of tools and equipment, safe operation of elevation equipment, use of personal protective equipment (PPE), and adherence to workspace ergonomics.

* Aligned Industry Recognized Credentials: OSHA 10 – Construction, OSHA Lead Safety in the Workplace, OSHA Fall Protection, OSHA Scaffold Safety

#### Skills:

1. Complete lead safety training to identify hazards and protection measures associated with lead coatings.
2. Identify, describe, and demonstrate the effective use of Safety Data Sheets (SDS) to meet documentation requirements.
3. Locate emergency equipment, first aid kit, and emergency action and response plan, including labels and signage that follow OSHA Hazard Communication Program (HAZCOM).
4. Demonstrate safe use, storage, and maintenance of hand tools, power tools, and equipment.
5. Demonstrate safe dress and use of relevant safety gear, personal protective equipment (PPE) and jobsite ergonomics, e.g., safety equipment, gloves, proper footwear, knee pads, earplugs, eye protection, and breathing apparatus.
6. Identify fall hazards, demonstrate ladder safety, scaffold safety practices, and effective use of fall arrest systems.
7. Demonstrate safe body mechanics, including appropriate lifting techniques and ergonomics aimed at minimizing injury.
8. Apply components of the Environmental Protection Agencies (EPA’s) relevant rules, laws, and regulations for painting and design technologies fields.
9. Explain handling, storage, and proper disposal or recycling of hazardous, flammable, and combustible materials, according to EPA, OSHA, and product specifications.

## Technical & Integrated Academic Standards

### Standard 2: Role of Painting and Design Professionals in Society

Students will be able to examine the role of painting and design professionals in society, apply the fundamental concepts of painting and design, and analyze the evolution of design trends, construction methods, and material innovations.

#### Skills:

1. Explain the impact of Massachusetts General Laws and regulations on the painting and design technology industry through identification of key regulations, compliance requirements, and licensing requirements.
2. Examine how modern EPA regulations have changed the painting and design technology industry and evaluate industry best practices employed to address these regulations.
3. Investigate industry trends, new materials, new technologies, and installation techniques to maintain current knowledge and skills.

### Standard 3: Technical Drawings and Project Management

##### Students will be able to read and interpret all aspects of technical drawings, blueprints, and specifications enabling them to plan and execute painting and design projects efficiently.

#### Skills:

1. Interpret print terms, abbreviations, symbols, line types, symbols, and notes of technical drawings and blueprints.
2. Explain the basic layout of a set of prints, as well as the importance of the accompanying job specifications documents in determining work requirements.
3. Interpret and follow drawing dimensions using an architect’s scale.
4. Understand how to apply basic building codes and zoning regulations in project planning.
5. Demonstrate the use of drawing to mark reference points on construction materials and substrates to maintain precision and reduce errors.
6. Utilize digital construction software to create and manage project schedules, outlining key tasks and checkpoints from project initiation to completion, while tracking real-time progress and adjusting timelines as needed.
7. Demonstrate the use of digital platforms to document and calculate project bids, including detailed material, labor, contingencies, and overhead costs, improving accuracy and transparency in project management.
8. Calculate the cost of job site or substrate preparation to include in project bid.
9. Explain management roles and responsibility of a job site supervisor/foremen.

### Standard 4: Preparation and Application of Finishes

Students will demonstrate the ability to select appropriate materials, prepare surfaces, and apply finishing products to align with project specifications.

#### Skills:

1. Protect structures and/or surfaces near work areas to avoid damage.
2. Explain properties and function of pigments, resins, solvents, and additives in paints and coatings to enhance product performance and meet industry standards and customer expectations.
3. Identify the appropriate coating product based on a desired sheen, durability, and UV resistance.
4. Evaluate various types of clear finishes, including varnish, polyurethane, lacquer, shellac, acrylic, oil finishes, and wax, identifying their respective advantages and limitations, to enhance the selection process.
5. Describe ideal environmental conditions for paint application to optimize durability.
6. Evaluate surface type and conditions of substrates to ensure structural integrity of project.
7. Identify and demonstrate the use of cleaners and strippers to optimize the refinishing process.
8. Apply caulking, fillers, and patching materials to fill gaps and repair damaged substrates.
9. Demonstrate smoothing surfaces with abrasive materials or tools including abrasive blasting.
10. Demonstrate mixing substances or compounds needed for project finishing.
11. Demonstrate finish application methods using brushes and rollers.
12. Demonstrate painting techniques of various doors and window styles.
13. Demonstrate the selection and setup of various spray equipment and accessories for coating applications.
14. Prepare correct material for different types of spray-painting applications to ensure effective spray coverage.
15. Demonstrate proper use of an airless sprayer and HVLP (High Volume Low Pressure) sprayer, including selecting and installing appropriate spray tips and nozzles based on the coating type, surface, and desired spray pattern, and adjust pressure settings to achieve even coverage with minimal overspray.
16. Evaluate when and why the use of an electrostatic sprayer is the best choice for maximizing job efficiency and execute accordingly.
17. Inspect finished product for coating failures and make corrections as needed.
18. Demonstrate the use of a power washer for pre-painting surface preparation and project cleanup.
19. Demonstrate appropriate methods of paint disposal and cleanup.

### Standard 5: Drywall Finishing

Students will be able to demonstrate the application and finishing of drywall materials.

#### Skills:

1. Develop a surfaces finish schedule, where the most critically-lighted or prominently-exposed surfaces in the building space receive the highest level of finish.
2. Specify an appropriate level of gypsum board finish according to industry standards.
3. Evaluate and select drywall finishing tools and materials to achieve desired quality of drywall surfaces.
4. Demonstrate repair and patch techniques to replace damaged drywall.

### Standard 6: Fundamentals of Interior Design

Students will be able to evaluate clients’ needs, goals, and resources, and create design plans for residential and commercial interiors and furnishings.

#### Skills:

1. Evaluate the factors influencing housing needs and decisions that affect housing choices.
2. Distinguish between several types and styles of housing and identify common architectural features of a home.
3. Explain the types of drawings included in a set of house plans and explain their purposes.
4. Evaluate floor plans for efficiency, safety, and functionality in relationship to family needs including the types of rooms, traffic areas, and special activity areas.
5. Describe the various uses and effects of space, line, shape, form, texture, and color in creating a project plan.
6. Plan and evaluate a room design according to its scale, proportion, balance, emphasis, and rhythm.
7. Draw an interior space to mathematically accurate scale using correct architecture symbols and drafting skills.
8. Demonstrate use of computer-aided interior design software for space planning required to design a residential or commercial space.
9. Analyze concepts pertinent to the selection of furnishings and accessories for interior design projects e.g., functionality, aesthetic compatibility, scale and proportion, budget considerations, ergonomics, and sustainability.
10. Explain factors to consider in the arrangement of furniture to meet clients’ needs.
11. Identify the distinguishing features of period furniture to meet a specific client request.
12. Plan and evaluate the aesthetics and placement of decorative accessories.
13. Describe the various types of textiles and fabrics used in housing.
14. Explain and apply the fundamental principles of color theory, including hue, value, saturation, complementary colors, analogous colors, and color schemes, to complete a design project.
15. Explain how light interacts with objects and why colors appear as they do in different lighting conditions and environments.
16. Demonstrate the various uses of a color wheel to complete a design project efficiently.
17. Explain how the Munsell color system is an essential tool when precise color communication is required, addressing its three main components, hue, value, and chroma.
18. Explore different methods of color matching including visual comparison, colorimeters and spectrophotometers, color matching software, color standards and references, color matching booths, color mixing, and color Swatch books and charts.

### Standard 7: Decorative Finishes

Students will be able to apply concepts and practices fundamental to decorative finishes and their overall impact on visual aesthetics and functionality of a project.

#### Skills:

1. Explore the diverse applications and benefits of faux finishes for elevating project aesthetics.
2. Select and use appropriate tools and materials used to create desired faux finishing effects.
3. Demonstrate the use of faux painting techniques to make a polished stone using clay.
4. Demonstrate the steps required to create a wood grain faux finish.
5. Demonstrate preparation of a custom mix glaze for a given surface.
6. Apply wall glazing techniques using a variety of tools to improve aesthetics.
7. Apply a decorative pattern to a project using a stencil.

### Standard 8: Wall Coverings

Students will be able to demonstrate selection and installation of wallcovering materials to meet project goals.

#### Skills:

1. Apply terminology, product characteristics, and ratings used to categorize the basic types of wallcoverings.
2. Demonstrate use of appropriate tools and equipment required to install wallcoverings.
3. Calculate the amount of wall coverings needed for a given area and create a cost estimate.
4. Demonstrate proper techniques to install wallcoverings.
5. Inspect for wallcovering failure and make corrections where needed.

### Standard 9: Sign Making and Mural Art

Students will be able to demonstrate sign-making techniques and mural art practices utilizing industry standard software and equipment.

#### Skills:

1. Create a sign layout using appropriate fonts and color selection to meet project specifications.
2. Demonstrate application of vinyl lettering to various substrates.
3. Install diverse types of signage in accordance with the requirements of the project.
4. Apply various methods for transferring mural graphics based on project requirements and constraints.
5. Demonstrate use of a stencil graphic to construct components of a mural.
6. Demonstrate methods of producing lines and stripes in a mural.

## Employability Standards

### Standard 10: Employability Skills

Students will understand and demonstrate the roles of professional communication, critical thinking, problem solving, professionalism, teamwork, and collaboration within the context of painting and design technologies.

#### Skills:

1. Apply the concept of teamwork to a commercial painting project to improve outcomes.
2. Demonstrate effective communication with clients, contractors, and other tradespeople to understand project requirements, address concerns, and deliver satisfactory outcomes.

## Entrepreneurship Standards

### Standard 11: Entrepreneurship

Students will be able to describe opportunities for entrepreneurship and be able to evaluate the value proposition of business ownership in the painting and design technologies field.

#### Skills:

1. Understand different employment arrangements for commercial and construction painters, including W-2 employment, self-employment, and union membership.
2. Evaluate a painting project plan to find opportunities to improve profitability.
3. Evaluate the licensing, regulatory, and tax implications of self-employment and business ownership as a painting and design technologies professional compared to W-2 employment.

## Digital Literacy Standards

### Standard 12: Digital Literacy

Students will be able to demonstrate the use of common software and information technology in a modern painting and design technologies work environment.

#### Skills:

1. Apply common software and technological solutions, including 3D modeling software, to the work of a painting and design professional.
2. Use digital construction management software, such as Procore, to interpret print terms, symbols, and line types, ensuring accuracy in reading and sharing technical drawings and blueprints across teams.
3. Demonstrate the use of digital construction management software to manage painting and design projects, track job progress, communicate with team members, and update job site information, ensuring streamlined workflows and accurate project documentation.
4. Understand where to find online resources that support effective painting and design work, and how to be a safe and ethical consumer and creator of digital content.
5. Apply strategies for using digital tools and technology to drive business and commerce.