

Murals Mosaic Sculpture

A secondary course in Art and Technology Education
Farmington High School

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Overview/Course Description

This course is an elective one to two-semester course with an option of repeating. Students may elect to receive either Art or Technology credit. Fundamental Design or Material Engineering is a prerequisite for this course.

In Murals Mosaic Sculpture, students will design and plan projects individually and as a team. Murals, mosaics, and sculptures will be created using a variety of materials including clay, glass, metal, paint, wood and composites. Innovative technological practices will be used to build and install projects of art in public places.

This exciting course brings the best of Art and Technology together through team teaching.

9-12 CONTENT STANDARDS

The Michigan Department of Education has established the following curriculum standards 1995 - 1998. Content area strands and content standards, as they apply to Murals Mosaic Sculpture, are in the subject areas of Art (ART), Technology (TEC), Science (SCI), and Mathematics (MAT).

Visual Arts - *“the aim of art is to represent not the outward appearance of things, but their inner significance.”*

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| Content Standard I | All students will apply skills and knowledge to perform in the arts. |
| Content Standard II | All students will apply skills and knowledge to create in the arts. |
| Content Standard III | All students will analyze, describe and evaluate works of art. |
| Content Standard IV | All students will understand, analyze and describe the arts in their historical, social, and cultural contexts. |
| Content Standard V | All students will understand, analyze and describe connections among the arts; between the arts; between the arts and other disciplines; between the arts and everyday life. |

Technology- *the systematic application of science, knowledge, materials, tools, and skills to extend human capabilities.*

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| Content Standard I | Use and transfer technological knowledge and skills for life roles (family member, citizen, worker, consumer, lifelong learner); |
| Content Standard II | Use technologies to input, retrieve, organize, manipulate, evaluate, and communicate information; |
| Content Standard III | Apply appropriate technologies to critical thinking, creative expression, and decision-making skills; |
| Content Standard IV | Employ a systematic approach to technological solutions by using resources and processes to create, maintain, and improve products, systems, and environments; |
| Content Standard V | Apply ethical and legal standards in planning, using, and evaluating technology; and |
| Content Standard VI | Evaluate the societal and environmental impacts of technology and forecast alternative uses and possible consequences to make informed civic, social, and economic decisions. |

Mathematics

Strand I. Patterns, Relationships and Functions

Content Standard I Students recognize similarities and generalize patterns, use patterns to create models and make predictions, describe the nature of patterns and relationships, and construct representations of mathematical relationships. (Patterns)

Strand II. Geometry and Measurement

Content Standard I Develop spatial sense, use shape as an analytic and descriptive tool, identify characteristics and define shapes, identify properties and describe relationships among shapes.

Content Standard III Students compare attributes of two objects, or of one object with a standard (unit), and analyze situations to determine what measurement(s) should be made and to what level of precision. (Measurement)

Science

Strand I. Construct New Scientific and Personal Knowledge

Content Standard I Ask questions that help them learn about the world; design and conduct investigations using appropriate methodology and technology; learn from books and other sources of information; communicate their findings using appropriate technology; and reconstruct previously learned knowledge.

Strand II. Reflect on the Nature, Adequacy and Connections Across Scientific Knowledge

Content Standard I All students will analyze claims for their scientific merit and explain how scientists decide what constitutes scientific knowledge; how science is related to other ways of knowing; how science and technology affect our society; and how people of diverse cultures have contributed to and influenced developments in science. (Reflecting on Scientific Knowledge)

Strand IV. Use Scientific Knowledge from the Physical Sciences in Real-World Contexts

Content Standard I All students will measure and describe the thing around us; explain what the world around us is made of; identify and describe forms of energy; and explain how electricity and magnetism interact with matter. (Matter and Energy)

Units of Study

The five units of study will be presented as the sequential steps necessary to help students think critically about art, culture, and design, how it is constructed, presented, and interpreted. In addition, students will gain an understanding of the process involved in developing a community mural project that reflects the principles taught in this course.

UNIT I - From Inspiration to Design

UNIT II - Creating Illusions and Generating Concepts

UNIT III - Materials

UNIT IV - Fabrication to Installation

UNIT V - Final Product Through Exhibit

Each unit is composed of:

Key Concepts that state the major ideas students are expected to comprehend.

Benchmarks are statements of what students will know or are able to do while progressing towards achieving the standards.

Assessment Tasks are suggestions of ways students can demonstrate the degree to which they have reached the Benchmarks.

Opportunities for Integration are connections between concepts with the unit and subject matter from related units or disciplines.

Authentic Application/Career are fields that show where these skills and processes are used in the world beyond school.

Instructional Resources are listed materials that support the teaching of this unit

UNIT I – From Inspiration to Design

Key Concepts

1. Identify design goals, define objectives and requirements.
2. Clarify restrictions that affect the way the design must be conceived and executed.
3. Evaluation of job site is critical in determining appropriate materials application, time and capital estimates.
4. Information access and organization is enhanced and facilitated through appropriate use of technology.

Benchmarks

The students will:

1. Apply organizational principles and functions to solve specific visual art problems. (ART.1.VA.HS.3)
2. Demonstrate an improved ability to integrate structures, characteristics and principles to accomplish commercial, personal, communal, or other purposes of art. (ART.2.VA.HS.5)
3. Retrieve, communicate, organize, evaluate, and manipulate information using a technological system (voice, data, video, graphics, etc). (TEC.2.HS.3)
4. Establish an action plan to solve a technology related problem and assess the plan applying ethical and legal principles. (TEC.5.HS.3)
5. Propose, research, and justify the introduction of new technologies. (TEC.6.HS.10)
6. Study and employ mathematical models of patterns to make inferences, prediction and decisions. (MAT.I.1.HS.3)
7. Justify plans or explanations on a theoretical or empirical basis. (SCI.II.1.HS.1)

Assessment Tasks

Assessment is a continuous process in the classroom that includes one or more of the following activities: monitoring the work in progress, questioning and clarification to check for understanding, peer observations, group critiques during the process, journal or sketchbook activities, and peer/teacher feedback. Evaluation of work is based upon concept, originality, skill, progress, craftsmanship, and classroom participation. Assessment may include the use of rubrics, tests, portfolios, self-assessments, critiques, presentations and exhibits.

Examples

Students will:

1. Identify and target considerations about function, space requirements, and theme preferences.
2. Analyze environmental factors such as physical location and climate.
3. Investigate psychological and sociological considerations in design suggestions demonstrating awareness of how the implied message affects the way people feel.
4. Determine date by which project should be completed.

Integration

Business, Marketing
Social Studies- History
Science - Physical
Psychology
English- Writing, Public Speaking

Authentic Applications

Planner
Developer
Designer
Public Relations
Field Inspector
Bidder
Teacher

Unit II – Creating Illusions and Generating Concepts

Key concepts

1. Design solutions as initial sketches, consist of finding fitting responses to a specific set of circumstances.
2. All projects are influenced by specific historic, cultural and geographic contexts.
3. Creating visual concepts requires organization of the elements and principles of design, including perspective, light and shadow, texture, unity, pattern, movement and color schemes.
4. Understanding design revision is key to necessary local code restrictions, estimating costs and scheduling constraints.

Benchmarks

The students will:

1. Reflect on how the subjects, ideas, and symbols of artworks differ visually, spatially, temporally, and functionally with respect to history and culture.(ART.4.VA.HS.1)
2. Analyze the effectiveness of selections in communicating ideas and reflect upon the effectiveness of choices. (ART.3.VA.HS.1)
3. Describe the origins of specific images and ideas and explain why they are of value in their artwork and in the work of others. (ART.2.VA.HS.3)
4. Apply organizational principles and functions to solve specific visual arts problems. (ART.1.VA.HS.3)
5. Analyze resources and processes to choose the best combination to create a technological solution to a problem. (TEC.4.HS.9)
6. Given a scenario, develop multiple options and present the solutions using a variety of technologies. (TEC.2.HS.2)
7. Apply a systematic approach to design solutions to technological problems using investigation, analysis and idea development, proposals, planning, making a prototype of the solution, testing and evaluation of the prototype, and self assessment. (TEC.4.HS.7)
8. Create working drawings from sketches to meet appropriate industrial standards. (TEC.4.HS.2)
9. Use shape, shape properties and shape relationships to describe the physical world and to solve problems. (MAT.II.1.HS.7)

Assessment Tasks

Assessment is a continuous process in the classroom that includes one or more of the following activities: monitoring the work in progress, questioning and clarification to check for understanding, peer observations, group critiques during the process, journal or sketchbook activities, and peer/teacher feedback. Evaluation of work is based upon concept, originality, skill, progress, craftsmanship, and classroom participation. Assessment may include the use of rubrics, tests, portfolios, self-assessments, critiques, presentation and exhibits.

Examples

Students will:

1. Research possible themes, brainstorm ideas, collect images.
2. Examine historic and contemporary mural, mosaic or sculpture designs to inform and support their sketches.
3. Outline a project plan and develop a proposal.
4. Analyze the effectiveness of ideas to determine the best solution to the problem.
5. Develop working drawings into a final presentation.

Integration

CAD Design
Architecture
Math
- Pattern Attributes
- Problem Solving
Language Art & Literature
Visual Imaging

Authentic Application

Architect
Interior Designer
Industrial Designer
Technical Illustrator
Teacher
Artist
Graphic Artist

UNIT III – Materials

Key Concepts

1. Materials are the elements that give form and detail to the design.
2. Possible materials used may include; steel, copper, brass, ceramic, glass, paint and composites.
3. Students develop innovative ways to exploit the potential of materials and technologies.
4. Investigate the characteristics, limitations and processes of using the designated materials necessary for completion.

Benchmarks

The students will:

1. Apply materials, techniques, media technology, and processes with sufficient skill, confidence, and sensitivity that personal intentions are carried out in artworks. (ART.1.VA.HS.1)
2. Intentionally use art material and tools effectively to communicate ideas. (ART.1.VA.HS.2)
3. Evaluate alternative long-range plans for resource use and by-product disposal in terms of environmental and economic impact. (SCI.II.1.HS.5)
4. Describe how common materials are made and recycled. (SCI.IV.2.HS.4)

Assessment Tasks

Assessment is a continuous process in the classroom that includes one or more of the following activities: monitoring the work in progress, questioning and clarification to check for understanding, peer observations, group critiques during the process, journal or sketchbook activities, and peer/teacher feedback. Evaluation of work is based upon concept, originality, skill, progress, craftsmanship, and classroom participation. Assessment may include the use of rubrics, tests, portfolios, self-assessments, critiques, and exhibits.

Examples

Students will:

1. Present research on past and current uses of a material through web search, published reference media and experimentation.
2. Practice fabrication and processing techniques of materials.
3. Use common materials in conventional as well as unusual applications.

Integration

CAD Design
Architecture
Math
- Pattern Attributes
- Problem Solving
Language Art & Literature
Visual Imaging
Science
- Chemistry
- Earth
-Physical

Authentic Application

Architect
Interior Designer
Industrial Designer
Technical Illustrator
Teacher
Artist
Graphic Artist

UNIT IV – Fabrication to Installation

Key Concepts

1. Designs require scaling to size for fabrication through transferring, enlargement, pattern making, modeling and/or prototyping.
2. Fabrication with a variety of materials utilizes tools and equipment that require knowledge and respect.
3. A variety of techniques are used in the shaping, cutting and general manipulation of material for an intended effect.
4. Understand applicable terminology and safety practices.
5. Practice assembly and layout of components to insure accurate fit and installation.
6. Preparation of site for installation.
7. On site installation varies based on fabrication application.

Benchmarks

The student will:

1. Intentionally use material and tools effectively to communicate ideas. (ART.1.VA.HS.2)
2. Be involved in the process and presentation of a final product or exhibit. (ART.1.VA.HS.4)
3. Investigate, analyze, and assess potential safety hazards, establish guidelines for safe behavior, and adhere to common safety practices while around or participating in the technological solution to a problem. (TEC.4.HS.6)
4. Transfer measurements within appropriate tolerances for the purposes of producing and evaluating technological solutions to problems. (TEC.4.HS.4)
5. Use industrial tools, materials, equipment, and processes to design and produce products addressing given technological problems. (TEC.4.HS.5)
6. Apply a systematic approach to design solutions to technological problems using investigation, analysis and idea development, proposals, planning, making a prototype of the solution, testing and evaluation of the prototype, and self assessment. (TEC.4.HS.7)
7. Select and use appropriate tools; make accurate measurements using both metric and common units, and measure angles in degrees and radians. (MAT.II.3.HS.1)

Assessment Tasks

Assessment is a continuous process in the classroom that includes one or more of the following activities: monitoring the work in progress, questioning and clarification to check for understanding, peer observations, group critiques during the process, journal or sketchbook activities, and peer/teacher feedback. Evaluation of work is based upon concept, originality, skill, progress, craftsmanship, and classroom participation. Assessment may include the use of safety tests, self-assessments, written reflection, critiques, and exhibits.

Examples

Students will:

1. Layout and enlarge design for transfer prior to fabrication.
2. Perform written test on tool safety procedures.
3. Demonstrate correct use and safety procedures when using tools and equipment.
4. Demonstrate proper fabrication techniques.
5. Layout and assemble components prior to installation.
6. Prepare and install completed design on site.

Integration

CAD Design
Architecture
Math
- Pattern Attributes
- Problem Solving
Language Art & Literature

Authentic Application

Architect
Interior Designer
Industrial Designer
Technical Illustrator
Teacher
Artist

UNIT V – Final Product Through Exhibit

Key Concepts

1. The process of resolution involves a final critique leading to a final punch list and invoicing.
2. Completion of a successful design requires a cyclical process of refining and adjustments until the plan is fully resolved.
3. Proper resolution involves product warranty and requires the achievement of client satisfaction.
4. The dedication of the project involves a celebration with the community and acts as a source of potential future projects.

Benchmarks

The students will:

1. Analyze the effectiveness of selections in communicating ideas and reflect upon the effectiveness of choices. (ART.3.VA.HS.1)
2. Speculate and analyze how future technologies may impact art in everyday life. (ART.5.VA.HS.1)
3. Evaluate decisions using technology. (TEC.3.HS.3)
4. Frame and support a position confirming that a technological application is safe and appropriate for individuals and society in general. (TEC.6.HS.7)

Assessment Tasks

Assessment is a continuous process in the classroom that includes one or more of the following activities: monitoring the work in progress, questioning and clarification to check for understanding, peer observations, group critiques during the process, journal or sketchbook activities, and peer/teacher feedback. Evaluation of work is based upon concept, originality, skill, progress, craftsmanship, and classroom participation. Assessment may include the use of rubrics, portfolios, self-assessments, critiques, and exhibits.

Examples

Students will:

1. Evaluate results adding finishing touches and details to refine the design.
2. Complete all items on the punch list and balance the budget for invoicing.
3. Obtain all product warranties and guarantee personal workmanship.
4. Conduct critiques that will encourage students to explain their ideas and solicit feedback from the client.
5. Send invitations to all interested community members and organize and set up a final exhibit celebration.

Integration

CAD Design
Architecture
Math
- Pattern Attributes
- Problem Solving
Language Art & Literature
Visual Imaging
Art and Design

Authentic Application

Architect
Interior Designer
Industrial Designer
Technical Illustrator
Teacher
Artist
Graphic Artist
Engineering
Construction
Entrepreneur
Business Owner
Public Relations
Attorney
Promotions

Instructional Resources

Resources may include:

1. Michigan Art Education Association and National Art Education Association publications
2. Visit local public murals, mosaics and sculpture such as:
 - Chelsea, Michigan, Timbertown Park site of glass mosaic mural
 - Northville, Michigan, Northville High School site of carved brick mural and Pewabic tile mural
 - Brummer Elementary School, site of ceramic tile mural
3. Videos of various artist's work
4. Internet websites: www.mocah/artworkz.htm : Artworkz, a public art program, Museum of Cultural Arts
www.gophila.com/murals/ : Philadelphia Department of Recreation Mural Arts
www.sparcmurals.org : Los Angeles based mural organization
www.muralroutes.com :site designed to promote and facilitate creation of public murals
5. The Art of Mosaic Design, by JoAnn Locktov and Leslie Clagett
6. Mosaics, Kaffe Fassett & Candace Bahouth
7. The Complete Pebble Mosaic Handbook, Maggy Howarth
8. Large Scale Ceramics, Jim Robison
9. Paint Techniques, David Japp
10. How to Start a Faux Painting or Mural Business, Rebecca Pittman
11. Material Engineering Science, Jim Jacobs
12. Delphi, stained glass supplier, Lansing, MI
13. Virginia Tile, ceramic and glass tiles, setting material, Farmington Hills, MI
14. Contractors Steel, Livonia, MI

Career Pathways

Career Pathways are careers that are grouped together because many of the people in them share similar interests and strengths. All pathways include a variety of occupations that require different levels of education and training. Selecting a Career Pathway provides a *focus* into which one can begin directing energies and determining a *tentative* career "fit " though it is always acceptable to change one's mind. By identifying with a pathway students are aided in selecting courses, extra-curricular activities and part-time employment. Career Pathways provide a plan for all students regardless of their interests, abilities, talents, or desired levels of education. *All pathways have equal dignity.* The following six (6) Career Pathways have been developed by the state of Michigan:

Arts and Communications - careers related to humanities and the performing, visual, literary and media arts.

Business, Management, Marketing & Technology - careers related to all aspects of business including accounting, business administration, finance, information processing and marketing.

Engineering, Manufacturing and Industrial Technology - careers related to technologies necessary to design, develop, install or maintain physical systems.

Health Sciences - careers related to the promotion of health as well as the treatment of injuries and disease.

Human Services - careers in childcare, civil service, education, hospitality and the social services.

Natural Resources and Agriscience - careers related to natural resources, agriculture and the environment.

The accompanying *Murals Mosaic Sculpture curriculum* falls within the **ARTS AND COMMUNICATIONS Pathway** and the **Engineering, Manufacturing and Industrial Technology Pathway**.

Within this course of study students will be exposed to and should gain career and employability skills entailing:

1. Apply basic communication skills (e.g., reading, writing, speaking, and listening), apply scientific and social studies concepts, and perform mathematical processes in work-related situations;
2. Demonstrate the ability to combine ideas or information in new ways, make connections between seemingly unrelated ideas, and organize and present information in imaginative and creative ways;
3. Make decisions and solve problems by specifying goals, identifying resources and constraints, generation alternatives, considering impacts, choosing appropriate alternatives, and evaluating results;
4. Display personal qualities such as responsibility, self-expression, self-management, ethical behavior, and respect for self and others;
5. Identify, organize, plan, and allocate resources (such as time, money, materials, and human resources) efficiently and effectively;
6. Work cooperatively with people of diverse backgrounds and abilities and contribute to a group process with ideas, suggestions, and efforts;
7. Communicate ideas to support a position and negotiate to resolve divergent interests; and
8. Understand complex systems, including social and technical systems, and work with a variety of technologies.

Examples of additional careers that fall under these pathways include:

Advertising Agent
Public Relations Specialist
Actor/Actress
Painter
Broadcast Technician
Bookbinder
Advertising Copywriter
Audio – Visual
Commercial Artist
Technical Illustrator

Interior Designer
Radio and Television Announcer
Photo Process Worker
Archivist and Curator
Author and Sculpturer
Historian
Photographer
Merchandise Displayer
Technician
Set Decorator

M2

