

STEAM: Beyond Escher's Universe (Grades 4-8)

Program Description:

M.C. Escher was many things: an artist, an astronomer, a mathematician, a traveler. *Escher's Universe* in the Chaffee Planetarium explores Escher's continuous search for knowledge and his unique ability to join science, math, and art. Following this one-of-a-kind art documentary, students will find inspiration throughout GRPM exhibits to create their own versions of Escher's most iconic works, tessellations.

What content standards align with this program?

Michigan K-12 Mathematics Standards for Geometry: 4th and 8th grade

Michigan Merit Curriculum Arts Education: Visual Arts, Standard 2: Apply Skills and knowledge to create in the arts.

Museum Program Strand:

1. *Empower individuals to use observations and inquiry to understand arguments and design creative solutions.*

This program is aligned with the following Museum Learner Outcomes:

Holders of Foundational Knowledge	Masters of Fundamental Literacies	Original Thinkers in an Uncertain World	Generous Collaborators for Tough Problems	Learners For Life	
X		X		X	

What will students know and be able to do after completing this program?

- Students will be able to identify concepts and methods explored by M.C. Escher through his work.
- Students will make observations and record examples of geometric patterns found throughout GRPM exhibit spaces.
- Students will be able to transform a rectangle into a more interesting shape and create a tessellation-based art design.
- Students will gain an understanding of various design principles, such as balance, rhythm, unity, proportion, repetition, symmetry.

What questions will students answer?

- Who was M.C. Escher?
- What were some common themes, concepts, methods, and mediums used by M.C. Escher in his artwork?
- What is a tessellation?
- Where do geometric designs appear in everyday life? In the GRPM?
- How can geometric patterns be repeated and transformed to create beautiful artistic designs?

Key Vocabulary

Tessellation
Geometry

Transformation
Inspiration
Repetition
Balance
Symmetry

Materials List and Setup:

- Index cards (3" x 5", cut in half)
- Drawing paper, 9" x 12"
- Pencils
- Scissors
- Tape
- Drawing/coloring supplies

Program Activities: 90 minutes (45 minute show + 45 minute guided program)

1. Watch *Escher's Universe* in Chaffee Planetarium
2. Explore 2nd floor GRPM exhibits for Escher-inspired imagery. Suggested exhibits:
 - Q is for Quilts
 - O is for Oddities
 - Steam Engine
 - Furniture City
 - M is for Money
 - General GRPM architecture (perspective lines, floor tiles)
3. Tessellation activity in Demo Lab.
 - In this activity, students will transform a rectangle into a more interesting shape, then create a tessellation-based art design.
4. Wrap up
 - Discussion about various design principles such as balance, rhythm, unity, and symmetry.