



MathArt™ Course Syllabus & Materials List

Instructor Contact Information

Gloria Brooks – contact email is gloriabrooks@naturegloscience.com

Course Pre-requisites

Students should bring a desire to learn about connections with mathematics especially in math history, geometry, the natural world and math as a language of the sciences. Any prior knowledge will be appreciated but not required.

Suggested Ages

Ages 10 - 15. Content is also appropriate for advanced and neurodivergent upper elementary and middle school students either struggling with or excelling at traditional math. Younger and older siblings often join in the lessons with their siblings.

Course Description

MathArt™ includes short pre-recorded lessons enhanced with projects, activities and outdoor experiences focused on studying mathematics history, patterns in nature, famous MathArtists and architects throughout time. Each lesson provides online resources for students to create short or lengthy projects that reinforce areas of personal interest. It's suggested to complete one lesson and project per week.. Lesson completion time can be increased or shortened according to learner interest.

Instructor Office Hours for Student and Parent Support

Asynchronous support is provided via email. Students and parents are encouraged to contact the instructor (gloriabrooks@naturegloscience.com) with questions, course discussion, or to submit one project per semester for personalized instructor feedback. Student project feedback can take up to 1 week. Emails sent on weekdays will typically receive a response within 24 hours. (Emails sent over the weekend or on holidays will be answered on the next business day.) Comprehensive grading services are not offered.

MathArt™ I - Math Connections in the Real World

Lesson 1: Introduction and the History of the Golden Ratio and Fibonacci Numbers. Explore and create projects around the Golden ratio and Fibonacci numbers.

Lesson 2: Phi and the Human Body - Create a project showing the various divine proportions of the human body.

Lesson 3: Intro to the Golden Ratio and Fibonacci Numbers in Art, Architecture and Nature. Create an original project showing the golden ratio and Fibonacci numbers.

Lesson 4: Fibonacci Numbers. Locate examples of Fibonacci numbers in nature.

Lesson 5: The History and Golden Ratio of the Great Pyramid of Egypt - Complete a lapbook project about the phi found in the Great Pyramid of Egypt.

Lesson 6: Phi and Quasicrystals - Create a project that illustrates the mathematics found in quasicrystals.

Lesson 7: The Mathematics of Music. Create an original project showcasing Fibonacci numbers in music.

MathArt™ II: Ancient Cultures

Lesson 1: Ancient Indian MathArt™ - Rangoli. Create a rangoli inspired art piece using colored sand.

Lesson 2: Ancient Babylon - Plimpton 322 tablet & Base 60 Numeral System

Lesson 3: Ancient Greece and the Platonic Solids - Build platonic solids out of nets.

Lesson 4: Ancient Greece: Investigate Pythagoras and Music of the Spheres through fun projects.

Lesson 5: Ancient Maya MathArt™ - Study the ancient Maya calendar and base 60 system. Create an ancient Mayan project of interest.

Lesson 6: Middle Eastern MathArt™ Zellige and Moroccan Tiles - Create a zellige inspired art project.

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MathArt™ III: Arts & Sciences

Lesson 1: The Life and Mathematical Art of Piero della Francesca | Activity: Draw a 3D scene using perspective techniques.

Lesson 2: Australian Aboriginal MathArt™ - Australian Aboriginal MathArt™ | Activity: Create a dot art painting to tell a story.

Lesson 3: Celtic MathArt™. Activity: Weave an intricate Celtic knotwork design.

Lesson 4: Introduction to Patterns in Nature: Go on a backyard scavenger hunt exploring nature's most common patterns through outdoor explorations.

Lesson 5: Fractals in Nature Part I. Activity: Design and draw your own fractal pattern.

Lesson 6 - Fractals in Nature Part II. Activity: Create an artwork of a fractal found in nature.

MathArt™ IV - Patterns in Nature

Lesson 1: Circular Patterns in Nature - Create circular art inspired from patterns in nature exploration.

Lesson 2: The Geometrics of the Universe

Lesson 3: Logarithmic Beauty of the Chambered Nautilus

Lesson 4: Animal Coat Patterns

Lesson 5: Hexagons in Nature

PARENT BONUS #1 - Golden Ratio and Fibonacci Numbers in Nature Unit Study Plan

Explore the world of the Golden Ratio and Fibonacci numbers through stories, projects and interactive online and outdoor activities.

Lesson 1: Math - Watch NatureGlo's warm introductory videos showcasing the Golden ratio and Fibonacci numbers found in nature with follow up videos.

Lesson 2: Science - Explore the science aspects of the Golden ratio and Fibonacci numbers through Leonardo of Pisa's Rabbit Problem and the Golden Ratio found in your backyard and even in our own bodies!

Lesson 3: Art - Explore the Golden Ratio and Fibonacci numbers through backyard photography and mandala creation and two STEAM projects.

Lesson 4: Literature - Enjoy several story read aloud books investigating the Golden ratio and Fibonacci numbers.

Lesson 5: History - Explore an interactive Golden ratio and Fibonacci **numbers history timeline.**

BONUS #2 - Bubbleology

Lesson 1: Bubbleology Part I with NatureGlo
Lesson 2: Bubbleology Part II with NatureGlo
Lesson 3: Bubbleology Quizlet Games

BONUS #3: The Geometry of Physical Form – Polygons, Solids, and the Architecture of the Universe

Lesson 1: 13 Archimedean Solids Part I with NatureGlo
Lesson 2: 13 Archimedean Solids Part II with NatureGlo
Lesson 3: Archimedean Solids Interactive: Manipulate each of the digital solids.
Lesson 4: Creating the 13 Archimedean Solids
Lesson 5: Polyhedra in History, Art and Nature

BONUS #4: Phi and the Human Body Unit Study

Lesson 1: Phi and the Human Body Part I
Lesson 2: Phi and the Human Body Part II
Lesson 3: Quizlet Games
Lesson 4: Going Beyond - Projects, Activities and Videos enhancing lessons.

NatureGlo's eScience MathArt™ and Marine Biology Online Course Mega-Bundle

NatureGlo's eScience Mega-Bundle includes BOTH the MathArt™ (ages 10 - 15) and Marine Biology (ages 10 - 18) Full year PLUS summer learning (and beyond) online course programs. See the Mega-Bundle Bonuses Below. Lifetime access!

Mega-Bundle MathArt™ BONUS #1 - Exploring MathArt

Lesson 1: Exploring Math Art Part One with NatureGlo
Lesson 2: Exploring Math Art Part Two with NatureGlo
Lesson 3: Exploring Math Art Part Three with NatureGlo
Lesson 4: Playing with Fibonacci Numbers
Lesson 5: Drawing the Golden Rectangle
Lesson 6: MathArt™ Project - Create a Bean Mosaic
Lesson 7: How to Create a Warli Painting

Mega-Bundle MathArt™ BONUS #2 - MathArt™ Intro: Nature's Numbers, Patterns & Beyond

Lesson 1: Patterns and Shapes in Nature Part One with NatureGlo

Lesson 2: Patterns and Shapes in Nature Part Two with NatureGlo

Lesson 3: Explore and Create Fractals Using Visnos Fractal Creator

Lesson 4: Create a Fractal Watershed MathArt™ Project

Lesson 5: Explore Patterns in Nature using the Backyard Patterns in Nature Treasure Hunt Templates

Mega-Bundle MathArt™ BONUS #3 - The Geometry of Genius – Unlocking the Mathematical Art of Leonardo da Vinci & M.C. Escher

Lesson 1: Life and Mathematical Artwork of Leonardo da Vinci Part I

Lesson 2: Life and Mathematical Artwork of Leonardo da Vinci Part II

Lesson 3: Life and Mathematical Artwork of M.C. Escher Part I

Lesson 4: Life and Mathematical Artwork of M.C. Escher Part II

Mega-Bundle MathArt™ BONUS #4 - Concentric Rings in Nature, Art and Beyond Parent/Teacher Resource (no pre-recorded video lesson)

- **Concentric Rings** Mini Unit Study Quick Start Guide
- NatureGlo's Concentric Rings PowerPoint Presentation

Student Learning Objectives/Outcomes

- Keep a student journal – make sketches, journal about patterns found in nature with a mathematical correlation, attach optional photos and other artistic expressions.
- Keep a hard copy portfolio (folder) of student's best work.
- Keep a student paper journal.
- Complete each weekly student activity guide.
- Complete a project of interest per module.

Suggested Student Assignments: Student chosen activities, projects and experiences

Each week's suggested activities including investigations, experiments and or journaling instructions are found in NatureGlo's eScience course content. Upon enrollment, you'll receive the login credentials and instructions via email.

NatureGlo's Worldview Commitment:

NatureGlo provides a respectful, neutral learning environment focused on the wonder of science and mathematics. Our instruction is non-faith-based and does not address the topic of origins. While some supplemental videos may reflect various perspectives, they are chosen for their academic value and are presented without dogma or persuasion. We invite students of all backgrounds to join us in exploring the beauty of the natural world in a space that honors diverse viewpoints and focuses on our shared curiosity.

Grading Policy

Course work completion is optional between parents and students and is monitored by parents. Whole family participation is greatly appreciated. Parents can use the activity guides, journal, blog, hard copy portfolio, projects or activities for grading.

Estimated Instructional Hours & Curriculum Value

NatureGlo's MathArt™ is a comprehensive, multi-disciplinary program designed to provide a full year of enrichment. For students aged 10-15, this course offers approximately 120 to 150 total instructional hours, depending on the depth of the student's chosen projects and outdoor explorations.

Breakdown of Learning Hours:

Core Instruction: 31+ hours of pre-recorded video lessons and math history exploration.

Project-Based Learning: 60+ hours of hands-on art, geometry constructions, and research projects.

Journaling & Field Work: 30+ hours of nature patterns treasure hunts and mathematical journaling.

Interactive Engagement: 10+ hours of digital manipulatives and educational games.

Curriculum Application:

This program can be used to fulfill a full year of Middle School Math Enrichment or integrated STEAM (Science, Technology, Engineering, Art, and Math) credits. It is an ideal fit for families needing to document rigorous, interest-led learning for state portfolios or ESA/EFA funding requirements.

Student Certificate of Completion

For students to earn the student certificate of completion, they need to watch all of the lesson video lessons with NatureGlo, complete each lesson's study guide and at least one major project per module. This is an honors system monitored by the parent or teacher.

About the Teacher

Gloria Brooks, aka Natureglo, is founder and lead educator of NatureGlo's eScience, an online course and curriculum provider that serves homeschoolers, schoolers and teachers. She holds a BA in K-12 education and certificates for completing the Kamana I and II programs from the Wilderness Awareness School. She teaches from a neutral worldview. Her non-faith based courses welcome families from all faiths and worldviews. She has been teaching K-12 since 1996 and outdoor education since 2003. Gloria is a progressive, alternative educator using project-based, hands-on unit study, and experiential learning techniques.



NatureGlo's eScience:

MathArt™ Master Manipulatives & Materials List

Academic Year: 2026-2027

Courses: MathArt™ & Marine Biology (K-12)

Status: Required Instructional Materials for Project-Based Learning (PBL)

I. Geometric & Mathematical Modeling (MathArt™)

- 3-ring binder
- Colored pencils
- Colored markers
- Crayons
- Camera or phone with camera
- Precision Measurement & Construction: Ruler, compass, and protractor (essential for constructing Archimedean solids and Phi-based spirals).
- Spatial Modeling Media: Cardstock, recycled cardboard, and household adhesives (used for 3D polyhedra construction).
- Phyllotaxis Observation Specimens: Pinecones, sunflowers, or succulents (required for observing and mapping Fibonacci spiral patterns).
- Ancient Seed Art (Bean Mosaics): Assorted dried legumes (beans, lentils, peas) used as tesserae to model geometric tessellations and historical mosaic techniques.
- Bubbleology Lab Components: Dish soap, water, and wire/string loops (used to study minimal surfaces, surface tension, and the geometry of soap films).

Ready to get started with MathArt™? 

Whether you are using state funding or self-paying, we've made enrollment fast and seamless.

- For ClassWallet Marketplace Users (AL & AR): We are a fully integrated direct-pay vendor! Do not submit manual invoices. Simply log into your state ClassWallet portal, open the official Marketplace, search for NatureGlo's eScience, and check out directly using your digital wallet allocation.
- For Pending State Families (AZ, NH, & SC): Our marketplace onboarding is currently processing with our account representative. In the meantime, you can seamlessly secure your spot using our standard checkout.
- For Self-Pay Families: Standard checkout is available at the same link. Your student can start their math art adventure immediately!

👉 ([CLICK HERE](#) to Explore MathArt™ for Self-paying Parents)

Got questions? I'm here to help.

✉ Email Gloria A. Brooks: gloriabrooks@naturegloscience.com

💬 Messenger: [<https://www.facebook.com/gloria.a.brooks>]