



How to Incorporate Art in STEAM/STEM

Course Syllabus

Course Description

This course is intended for K-12 educators looking to begin or enhance a STEM (Science, Technology, Engineering, Math) program by providing the tools and resources needed to incorporate art and design within a STEM curriculum. Learners will gain the knowledge necessary to transform their STEM program into a robust STEAM (Science, Technology, Engineering, Art, Math) program. The course begins with a history of art in STEM, and the importance of artistic thinking in Science, Technology, Engineering, and Math. The course will also include information on how art enhances critical thinking, abstract problem-solving, creativity, collaboration, and communication within STEM/STEAM courses. The course wraps up with an exploration of existing STEM programs, STEAM best practices, resources for makerspaces, and strategies to introduce art into your own STEM classroom.

This course enhances classroom teaching effectiveness and supports improved student outcomes by introducing new knowledge in how to enhance a STEM program by integrating art and design, transforming it into a comprehensive STEAM curriculum. Participants will explore the history and significance of art in STEM education, learn how artistic thinking fosters critical skills like creativity, collaboration, and problem-solving, and discover best practices, resources, and strategies to successfully implement STEAM, including support for SPED and ELL learners.

Training Outcomes

At the end of this course you should be able to:

T.O. 1*: Understand the vital role that art and design have played in advancing education and innovation in science, technology, engineering, and math in the 21st century.

T.O. 2: Identify how art can enhance collaboration and communication in the STEM/STEAM classroom.

T.O. 3: Identify ways art can enhance communication and collaboration skills in the STEAM classroom.

T.O. 4: Understand how art can enhance understanding of abstract STEM problems and concepts for all students, with a special focus on SPED and ELL learners.

T.O.5: Understand how to use art, hands-on projects, and design thinking to foster creativity, problem-solving, and innovation in STEAM classrooms.

T.O. 6: Describe how an educator can create a successful STEAM program through the exploration of existing STEAM programs, standards, and best practices.

*(TO 1) stands for Training Outcome 1. Each module in this course focuses on one of the Training Outcomes.



Modules

- Module 1: The History of Art and Design in Science, Tech, Engineering and Math, Quiz 1
- Module 2: Using Art to Enhance Critical Thinking Skills in the STEAM Classroom, Quiz 2
- Module 3: Fostering collaboration and communication through art in the STEM/STEAM classroom, Quiz 3
- Module 4: Using Art to Illustrate Abstract Concepts for All Students with a Focus on ELL and SPED Learners, Quiz 4
- Module 5: How can a teacher encourage and implement creative processes in the STEM/STEAM classroom?, Quiz 5
- Module 6: What makes a STEAM Program Successful?, Quiz 6

Grading:

Each quiz must be passed at an 80% or higher (three attempts allowed).

Format

This is a self-paced, asynchronous (no required live meetings) course. Throughout the PD course, you will find it helpful to take notes along the way to assist with the quizzes. Within each module, you will find reflection assessments that are not graded but will help in your journey through the course. There is an interactive forum in the course to help you connect with peers and instructors, share ideas, and collaborate on best practices throughout your learning journey.