

Course Title: Designed to STEAM

Instructor: Susan Riley

Course Code: EC002

Course Units: 2.5 CEUs

PD Hours: 25 hours



Course Description

Designed to STEAM explores the natural connections between Science, Technology, Engineering, the Arts, and Mathematics. Learners will discover how to integrate arts standards within the STEM content areas through Project-Based Learning frameworks to truly build an authentic STEAM teaching approach. This moves beyond simply using the design-process to truly being able to integrate all the arts in and through STEM. Learners will walk away with a series of strategies and sequences that will empower them to craft a STEAM initiative that works for their students.

Course Outcomes

- Define the distinct elements of STEM, STEAM, and Integrated studies, including the differences and similarities of each strategy.
- Select objectives from Science, Technology, Engineering, the Arts, and Math that are aligned and enhance each other to increase student engagement in learning.
- Build a series of authentic STEAM lessons that are grade-level appropriate and rigorous in the individual cognitive demand required for students.
- Develop a set of curriculum schema maps that outline a variety of paths students could explore through STEM and STEAM lessons.
- Design multiple assessment examples that measure student mastery of content equitably in each content objective addressed in a STEAM lesson.
- Create data facilitation resources which engage teachers and students in reflections of a STEAM lesson experience and outline next steps for student growth.
- Cite the principles of design and provide examples for ways in which they can be used as a framework for STEAM lesson.

Lesson Outline

Lesson 1: What is STEAM

Objective: Identify the basics of the STEAM approach

Task: Use the STEAM look for list to observe STEAM lessons

Lesson 2: STEAM Lesson Design

Objective: Identify standards alignment

Task: Review lesson exemplars and complete the lesson planner

Lesson 3: STEAM Assessment Design

Objective: Differentiate the different ways to assess a STEAM lesson

Task: Review the resource guide and assessment samples

Lesson 4: Roadmapping for Success

Objective: Define curriculum mapping for STEAM lessons

Task: Complete the STEAM Roadmapping sheet

Lesson 5: Structures & Organization

Objective: Determine the structural supports needed for STEAM to occur

Task: Complete the STEAM Structures Checklist

Lesson 6: The Design Process

Objective: Explore how the design process is used within a STEAM lesson or project

Task: Review the Design Cheatsheet

Lesson 7: Creating Time

Objective: Outline how to find time for integrating with STEAM in your curriculum

Task: Complete the STEAM planner to begin planning your STEAM lesson or project

Lesson 8: Who Does What?

Objective: identify the challenges and barriers to STEAM in your organization

Task: Complete the STEAM task list

Lesson 9: Implementation Steps

Objective: Design a STEAM implementation plan aligned with SMART goals

Task: Use the implementation guidebook to craft a STEAM plan

Lesson 10: Feedback & Adjustments

Objective: Determine ways to ask for review feedback

Task: Review feedback forms and modify to fit individual situations

Lesson 11: Getting Others on Board

Objective: Develop partnerships and model STEAM shifts

Task: Review the partnership Packet and email scripts. Determine potential partners.

Lesson 12: Connecting with Other Initiatives

Objective: Determine ways that STEAM can connect with other initiatives

Task: Choose an idea from the Connections Sheet to use with staff/team

Evaluation

Summative Assessment: Using the STEAM lesson planner and the STEAM lesson template, develop an original STEAM lesson plan that aligns a content standard with an arts standard from a grade level of your choosing. Use the lesson planner to brainstorm your lesson and the lesson plan template to guide your development process to ensure all components are included. Remember that the assessment of learning should be equitable for both standards. Feel free to add your own creativity to the format of your creative product.

Evaluation tool: The following rubric will be used to evaluate your assessment. A score of 70% (70/100points) is required to pass the course and receive your certificate.

	Score	Lesson Plan Includes all (16) of the following:			
Quantitative Compliance	16/16 = 20	<i>Standards & Alignment</i>	<i>Instructional Delivery</i>	<i>Assess & Extend</i>	<i>R e f l e c t i o n Opportunities</i>
	14/16 = 15	<input type="checkbox"/> 1 Content Standard	<input type="checkbox"/> Student Learning Outcome(s)	<input type="checkbox"/> Content Assessment	<input type="checkbox"/> Student Reflection
	12/16 = 10	<input type="checkbox"/> 1 Art Standard	<input type="checkbox"/> Pre-Engagement	<input type="checkbox"/> Arts Assessment	<input type="checkbox"/> Teacher Reflection
		<input type="checkbox"/> Big Idea	<input type="checkbox"/> Focal Lesson	<input type="checkbox"/> Content Extension	
	<i>Less than 12 requires revision</i>	<input type="checkbox"/> Essential Question		<input type="checkbox"/> Arts Extension	
		<input type="checkbox"/> 21st Century Skills			
		<input type="checkbox"/> Vertical Alignment			
		<input type="checkbox"/> Materials			

Qualitative Components	Exceeds Expectations 20	Meets Expectations 15	Below Expectations 10	Request for Revision
Aligned Standards	Clear and intentional aligned standards that are natural and unforced	Alignment of standards is slightly forced and may lead to contrived integration	Alignment of standards are forced making integration difficult	Alignment of standards is missing or lacks comprehension
Lesson Progression	Progression of lesson shows equity of both standards and allows for growth in both areas.	Progression of lesson shows some equity of both standards but does allow for growth in both areas.	Progression of lesson shows little to no equity of both standards and growth in both areas is difficult to ascertain.	Progression of lesson shows no equity of standards and is confusing or disjointed.
Assessments	Assessments explicitly assess both the content and the art standard(s) and may include a description of success	Assessments assess both the content and the art standard(s) and may include a description of success	Assessments indirectly assess both the content and the art standard(s)	Assessments do not assess both the content and the art standard(s)
Professionalism	Lesson plan is organized, user-friendly, grammatically correct, Original Content (cited resources), and aesthetically pleasing.	Lesson plan is mostly organized, user-friendly, grammatically correct, Original Content (cited resources), and aesthetically pleasing.	Lesson plan lacks the following: organization user-friendliness, grammatically correctness, Original Content (cited resources), and aesthetics	Lesson plan is unorganized and difficult to follow with too many errors making it difficult to understand. Content may be copied.

How to submit final assessment

Please save your document in PDF format only. Title your document as follows:

lastname.firstname_DTS

Upload the single PDF to the platform under PD Certificate tab

A score of 70% (70/100 points) is required to earn 25 PD hours and 2.5 CEUs