**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<br><br>14/16 = 15<br><br>12/16 = 10<br><br>*Less than 12 requires revision* | *Standards & Alignment*<br><br>❏ 1 Content Standard<br>❏ 1 Art Standard<br>❏ Big Idea<br>❏ Essential Question<br>❏ 21st Century Skills<br>❏ Vertical Alignment<br>❏ Materials | *Instructional Delivery*<br><br>❏ Student Learning Outcome(s)<br>❏ Pre-Engagement<br>❏ Focal Lesson | *Assess & Extend*<br><br>❏ Content Assessment<br>❏ Arts Assessment<br>❏ Content Extension<br>❏ Arts Extension | *Reflection Opportunities*<br><br>❏ Student Reflection<br>❏ Teacher Reflection |

| 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