COURSE TITLE: **S.T.E.A.M. : Curriculum Integration Including Arts & Design**

WA CLOCK HRS: **20**
OREGON PDUs: **20**
NO. OF CREDITS: **2 QUARTER CREDITS** **PENNSYLVANIA ACT 48:** **20**
[semester equivalent = 1.33 credits]

INSTRUCTOR: **Debora Supplitt**
supplitt@comcast.net

COURSE DESCRIPTION:
This course meets OSPI's STEM requirements

S.T.E.A.M. is an educational approach towards learning that integrates two or more areas of study Science, Technology, Engineering, the Arts and Math-as entry points for guiding student inquiry, dialogue, and critical thinking. This course addresses how to blend these content areas to enhance learning across the curriculum. Studies of differentiated instruction show that S.T.E.A.M. pushes curriculum forward providing momentum that may result in students taking thoughtful risks, engaging in experiential learning, persisting in problem-solving, embracing collaboration, and exploring the creative process.

With S.T.E.A.M. lessons, students begin to dabble and experiment as innovators, peer educators, classroom leaders, and 21st-century learners. Participants will design a S.T.E.A.M. curriculum

for their particular discipline, locate and adapt available cross-curricular lessons, and seek content area resources that will provide that extra push for S.T.E.A.M. thinking.

S.T.E.A.M. curriculum provides creativity, supports problem-solving, activates the memory system and connects to analytical skills. This course is an excellent resource for a collaborative group or staff book study. Become the S.T.E.A.M. leader who recognizes and discovers ways in which art-related skills support, complement and enhance skills that students need to become successful across the core-curriculum. Add a little S.T.E.A.M. to your curriculum witness your student's "blasting off" towards their learning success. Appropriate for grades K-12. Used Amazon text about $22.

LEARNING OUTCOMES: Upon completion of this course, participants will have:

- Gained S.T.E.A.M. experiences that involves two or more standards from Science, Technology, Engineering, Math and the Arts.
- Explored process-based learning.
- Developed lessons aligned with S.T.E.A.M.

COURSE REQUIREMENTS:
Completion of all specified assignments is required for issuance of hours or credit. The Heritage Institute does not award partial credit.

The use of artificial intelligence is not permitted. Assignment responses found to be generated by AI will not be accepted.

HOURS EARNED:
Completing the basic assignments (Section A. Information Acquisition) for this course automatically earns participants their choice of CEUs (Continuing Education Units), Washington State Clock Hours, Oregon PDUs, or Pennsylvania ACT 48 Hours. The Heritage Institute offers CEUs and is an approved provider of Washington State Clock Hours, Oregon PDUs, and Pennsylvania ACT 48 Hours.

UNIVERSITY QUARTER CREDIT INFORMATION

REQUIREMENTS FOR UNIVERSITY QUARTER CREDIT
Continuing Education Quarter credits are awarded by Antioch University Seattle (AUS). AUS requires 75% or better for credit at the 400 level and 85% or better to issue credit at the 500 level. These criteria refer both to the amount and quality of work submitted.

1. Completion of Information Acquisition assignments 30%
2. Completion of Learning Application assignments 40%

3. Completion of Integration Paper assignment 30%

CREDIT/NO CREDIT (No Letter Grades or Numeric Equivalents on Transcripts)
Antioch University Seattle (AUS) Continuing Education Quarter credit is offered on a Credit/No Credit basis; neither letter grades nor numeric equivalents are on a transcript. 400 level credit is equal to a "C" or better, 500 level credit is equal to a "B" or better. This information is on the back of the transcript.

AUS Continuing Education quarter credits may or may not be accepted into degree programs. Prior to registering, determine with your district personnel, department head, or state education office the acceptability of these credits for your purpose.

ADDITIONAL COURSE INFORMATION

REQUIRED TEXT
Sousa, D.A. and Pilecki, T. From Stem to Steam: Using Brain-Compatible Strategies to Integrate The Arts. Second Edition. Corwin Publishing, 2018, paperback 248 pages, ISBN-10: 1452258333 or ISBN-13: 978-1452258331.

Textbook can be purchased on Amazon for around $27 in Paperback

Or

Used test about $23 (second edition)

Or

Kindle Download $24

- ***From STEM to STEAM: Brain-Compatible Strategies and Lessons That Integrate the Arts***
  ISBN# 150632245X
  by Sousa, David A., Pilecki, Thomas J.
  Corwin

  Buy from Amazon

MATERIALS FEE
None

ASSIGNMENTS REQUIRED FOR HOURS OR UNIVERSITY QUARTER CREDIT

A. INFORMATION ACQUISITION
Assignments done in a course forum will show responses from all educators who have or are taking the course independently. Feel free to read and respond to others' comments.
Group participants can only view and respond to their group members in the Forum.

Assignment #1: Getting To Know You; Introduction

- Write a 250-500 word response to the following and post it in the online response box.
  - Please introduce yourself (i.e. teaching assignment, location, level, etc.).
  - Discuss why you chose this course?
  - What is your background?
  - Describe your previous experience, if any, with S.T.E.A.M.
  - Describe your classroom or home based setting, what ages or grades you work with and finally, the disciplines for which you would like to integrate and develop your lessons and unit plan.

Post to the response prompt box.

Assignment #2: Read Text
In *From STEM to STEAM* read:
Introduction, Chapter 1, 2, 3, 4 & 5, pgs. 67-98.

- Write a 2-3 page word document identifying four to six (4-6) important ideas or concepts on how and/or why S.T.E.A.M. could be integrated into the classroom curriculum. Include other thoughts or ideas for S.T.E.A.M. inclusion.
- Post or attach document to the response prompt box.

Assignment #3: Read Text: Grade Specific Chapters
Select and read one of the following depending upon your setting:

- Chapter 6: Implementing Arts Integration in the Primary Grades K-4, pgs. 99-121
- Chapter 7: Implementing Arts Integration in the Intermediate Grades 5-8, pgs. 123-150
- Chapter 8: Implementing Arts Integration in the High School Grades 9-12 pgs. 151-170

Plus

- Write a 1-2 page word document discussing your chosen grade level, how educators or administrators could organize their classroom or site, planning to include arts-related activities for establishing programming and curriculum development.

Post or attach document to the response prompt box.

Assignment #4: Read and Develop a S.T.E.A.M. Science Lesson

- Read Chapter 9. Choose the level that best meets your interest or setting.
    - Kindergarten; My World Through My Eyes pg. 173
    - 1st-5th; Habitat, pg. 174
    - 3rd-9th; Digest a Fabric, pg. 176
    - 3rd-12th; Using Drama in Science Lessons pg. 178
    - 5th-9th; Cell Creation, pg. 181
    - 9th-12th; Learning About NatureThrough Watercolor, pg. 183
- Develop an infused S.T.E.A.M. Lesson using Science and one other areas technology, engineering and/or Math (T.E.&M.). Included in this lesson will be a Visual Arts component.
- Include All Core area (Science, Technology, Engineering, Art and/or Math) grade level benchmarks, EALR's, and/or state standards for the lesson and any areas that are chosen, plus the art benchmark addressed within the lessons.
- Access the following lesson plan template or use one of your own choice: http://www.geneseo.edu/~stuteach/lesplan.html

Also

- Write a 1-2 page paper outlining a plan to develop a S.T.E.A.M. infusion for Science.
- Include within your paper which two areas, (example: Science, plus Technology and Art) S.T.E.A.M. you choose to focus on.
- Discuss how S.T.E.A.M. Science differs from S.T.E.M. education. What are the possible positive benefits and/or results that a S.T.E.A.M. program can provide to Science curriculum.
- Explain how a S.T.E.A.M. Science program can easily be adapted into the classroom and/or setting.
- Within this paper include any facts, concepts or new and creative ideas you may have.

Post and attach the two lesson plans and paper to the response prompt box.

Assignment #5: Read and Develop a S.T.E.A.M. Math Lesson
Read Chapter 9 Mathematics. Pick your grade level and read:

- Grades 2nd-3rd; Ocean of Time, pgs. 185-186
- Grades 3rd-6th; Introducing Artists in Mathemeatics Lessons, pgs. 185-187
- Grades 6th-8th; Fave Films and Probability pgs. 187-188
- Grades 9th-12th; Millennium Mural, pg. 191

Plus

- Major Points to Ponder pg. 194

Develop an infused S.T.E.A.M. Lesson using Math and one other area (S.T.E.). Also include a Visual Arts component in this lesson.

Include All Core area (Science, Technology, Engineering, Art and/or Math) grade level benchmarks, EALR's, and/or state standards for the lesson and any areas that are chosen, plus the art benchmark addressed within the lessons.

Access the following lesson plan template or use one of your own choice: http://www.geneseo.edu/~stuteach/lesplan.html

Plus

Write a 1-2 page paper outlining a plan to develop a S.T.E.A.M. infusion for Math. Include within your paper what two areas, (example: Math, plus Technology and Art) of S.T.E.A.M. you choose to focus on. Also address:

- How S.T.E.A.M. Math differs from S.T.E.M. education.
- What possible positive benefits and/or results a S.T.E.A.M. program can provide to Math curriculum.
- Explain how a S.T.E.A.M. Math program can easily be adapted into the classroom,assigned subject area and/or setting.

ADDITIONAL ASSIGNMENTS REQUIRED FOR UNIVERSITY QUARTER CREDIT

B. LEARNING APPLICATION
In this section, you will apply your learning to your professional situation. This course assumes that most participants are classroom teachers who have access to students. If you do not have a classroom available to you, please contact the instructor for course modifications. Assignments done in a course forum will show responses from all educators who have or are taking the course independently. ?Feel free to read and respond to others' comments. Group participants can only view and respond to their group members in the Forum.

Assignment #6: Lesson Development
Option A)

Read: Chapter 10: Putting it All together pgs. 195-211

- Adapt/create two lessons reflecting what you've learned in this course, including an art component with two other subjects (i.e. science & math, science & history)
- Implement your lesson with students in your classroom.
- Write a 250-500 word commentary on what worked well and what could be improved.
- Include any student feedback or noteworthy student products.
- Submit your lesson to your instructor via the lesson tab below.
- Share what you've learned with other teachers taking our courses by checking the lesson library box when you submit your lesson.
- You may download a copy of THI's lesson plan template here.

OR

Option B)
Use this option if you do not have a classroom available.

Read: Chapter 10: Putting it All together pgs. 195-211.

- Adapt/create a lesson to reflect what you've learned in this course integrating an art component with two other subjects, (Do not implement it.)
- Write a 500 word article/essay about any STEM to STEAM success during developing lessons, assignments, readings or activities you've discovered during this course.
- Please refer to the guidelines for our blog What Works: Teaching at its Best prior to writing your article.
- When you submit your article to your instructor, please also email a copy to Yvonne Hall THI blog curator and media specialist.
- Indicate whether or not you are OK with having your article considered for publishing on our website.
- Submit your article to your instructor via Response field and the modified lesson via Submit Lesson.
- As you submit your lesson, consider sharing it with other teachers taking our courses by checking the lesson library box.

Assignment #7: Develop a S.T.E.A.M. Unit plan

- Outline a simple unit plan enhanced with at least two core areas of S.T.E.A.M. and Visual Arts. Include STEM/STEAM career options from the core areas of choice.
- Post either a 2-3 page Word document, a mind map, a Prezi, and/or a Haiku Deck presentation of your unit plan.

Assignment #8: (500 Level ONLY)
In addition to the 400 level assignments, complete one of the following:

Option A)
Conduct online research for seven articles that point to the advantages and challenges of using S.T.E.A.M. infused instruction, and summarize your findings in a 2-3 page paper.

OR

Option B)
Prepare and present your unit of study from assignment #9 in a Power Point, Prezi, or Haiku Deck format to your faculty, collaborative group, or to a colleague. Accompany your presentation with a 1-2 paper, in which you discuss any comments, adjustments, or ideas that may have been generated by your presentation.

OR

Option C)
Another assignment of your own design with the instructor's prior approval.

Post in the online response box.

C. INTEGRATION PAPER
Assignment #9: (Required for 400 and 500 Level)

SELF REFLECTION & INTEGRATION PAPER
(Please do not write this paper until you've completed all of your other assignments)

Write a 400-500 word Integration Paper answering these 5 questions:

1. What did you learn vs. what you expected to learn from this course?
2. What aspects of the course were most helpful and why?
3. What further knowledge and skills in this general area do you feel you need?
4. How, when and where will you use what you have learned?
5. How and with what other school or community members might you share what you learned?

INSTRUCTOR COMMENTS ON YOUR WORK:
Instructors will comment on each assignment. If you do not hear from the instructor within a few days of posting your assignment, please get in touch with them immediately.

QUALIFICATIONS FOR TEACHING THIS COURSE:
Debora Supplitt M.F.A-A.Ed./M.Ed. received her Masters (M.Ed.) and Bachelor of Art (B.A.) degree from San Francisco State University and Masters of Fine Arts in Art Education (M.F.A.-A.Ed,) from Boston University. She has worked with students of all levels, including preschool, elementary, middle school, high school and professional educators, since 1980. She is certified in Washington, Oregon and California in Pre/K-12-Adult Special and Elementary Education and is highly qualified in the core areas of Art, Music, Reading, and Special Education as well as being a trained Intervention Specialist. Debora knows the importance of providing a creative environment where all students and teachers can thrive. Presently she is working in her dream position as a full time middle school Art Teacher. Debora provides classroom teachers with the tools and resources needed to integrate art into the daily curriculum and is always busy developing new, creative and fun workshops for teachers. She is passionate about providing exciting, meaningful, useful and fun filled continuing education for all teachers.

BIBLIOGRAPHY

S.T.E.A.M. : Curriculum Integration Including Arts & Design

Donovan, L. and Pascale, L., *Integrating the Arts Across the Content Areas*, Shell Publishing, 2012, paperback 224 pages, ISBN-10: 142580845X. This book has arrived at a time when teachers need it most. Schools across the country are currently focusing all their efforts on teaching to meet the new Common Core Standards. Integrating the Arts Across the Content Areas re-assures teachers that they can meet the standards and teach creatively at the same time, all the while addressing needs for differentiated instruction and thematic learning.

Edutopia, *Resources for S.T.E.A.M.* 2016, Accessed on: 3/24/2017 from: https://www.edutopia.org/article/STEAM-resources. Information, examples, and tools related to incorporating aspects of the arts, design, and the humanities into STEM-based school activities.

Robelen, E. *STEAM: Experts Make Case for Adding Arts to STEM,* 2011. Educational Weekly Online: Vol. 31, Issue 13, Page 8 Accessed on: 3/24/2017 from:http://www.edweek.org/ew/articles/2011/12 /01/13steam_ep.h31.html . Primary focus is on Art Education across the curriculum of which educational organizations bridge STEM and the Arts together creating S.T.E.A.M.

Roe, C. and Smith, B., *Bridging STEM to STEAM: Building New Frameworks For Art/Science Pedagogy.* 2011. Retrieved 3/24/17 from: http://cjvrose.com/wp-content/uploads/2012/03/stem-to-steam-report.pdf . This article is an overview of Bridging Stem to Steam: Building New Frameworks for Art/Science Pedagogy workshop that brought together leading thinkers from differing fields to share their insights, discover connections and explore potential collaborations among art and design, and sciences in support of interdisciplinary STEAM learning, research and pedagogy. This report outlines the activities, findings, outreach activities and recommendations stemming from the workshop.

Sousa, D.A. and Pilecki, T. *From Stem to Steam: Using Brain-Compatible Strategies to Integrate The Arts*, Second Edition. Corwin Publishing, 2018, paperback 248 pages, ISBN-10: 1452258333 or ISBN-13: 978-1452258331. This book should be a required reading for all teachers! This book is completely informative with a practical and authentic approach to changing STEM to STEAM as Arts Integration. The authors, David A. Sousa and Tomas J. Pilecki are brilliant in their analysis of why, what, and how Arts Integration works without a doubt.