

COURSE NAME and ID Number

STEM Integration for PreK-6, ID# 412

DOMAIN

SOEE Directed Study Portfolio

COURSE STATEMENT

Investigate the impact of STEM education in order to develop and deliver effective STEM lessons and share this information with others to expand STEM methods in your school or school district.

COURSE DESCRIPTION

In this course you will discover how STEM education is impacting learning in K-12 classrooms. You will expand your knowledge of how science, technology, engineering, and math can be taught in exciting, exploratory ways. Unlike traditional math and science lessons, STEM lessons are often open-ended activities where students collaborate to design or develop systems to solve problems with real-life applications. As a new trend in education, STEM lessons are numerous and readily available, however, not all STEM lessons are created equal. As you grow your knowledge of STEM education through this course, you will be able to select or create high quality STEM lessons. As a culminating activity, you will create a presentation to showcase the benefits of STEM, share a lesson you have prepared and taught, and teach other stakeholders in your community about why students should engage in STEM education and also how to implement it.

LEARNING OBJECTIVES

Upon successful mastery of this course, you will be able to:

- Identify the rationale for STEM/STEAM education in K-12 classrooms.
- Identify how Project Based Learning can be considered an extension of STEM learning.
- Analyze a STEM lesson in comparison to a traditional math or science lesson and in relation to the Next Generation Science standards.
- Evaluate possible STEM lessons for their effectiveness in teaching science, technology, engineering, and math.
- Adapt or design a STEM/STEAM lesson for use in a PreK-6 classroom which incorporate procedures to ensure strong classroom management and lesson delivery.

DEMONSTRATING MASTERY: A TWO-STEP PROCESS**Step One: Learning and Understanding**

This course is broken down into **Learning Objectives** and related **Topics**. For each objective, you will participate in Learning Activities designed to enhance and reinforce

understanding. **Learning Activities** include Interactive Discussions, readings, video and audio clips, slide presentations, Discussion Board prompts, Learning Journal prompts, practice exercises, demonstrations, as well as links to web and library resources.

Competency Structure

The table below details the Learning Objectives along with their corresponding Topics.

Module	Topics
Building Background in STEM Education	<ul style="list-style-type: none"> ● The Rationale for STEM Learning in the K-12 Education System ● Project-Based Learning and its Similarities to STEM Education
Evaluating and Implementing STEM Lessons	<ul style="list-style-type: none"> ● Aligning STEM to the Standards ● Determining Quality STEM Lesson Materials ● Planning for Implementation – Adapt or Design a STEM Lesson
Preparing the STEM Presentation	<ul style="list-style-type: none"> ● Teaching your STEM Lesson and Collecting Artifacts ● Planning the Presentation

Step Two: Final Assessment

Once you have successfully progressed through the Learning Activities, you are ready to demonstrate that you have mastered the course. In order to demonstrate mastery, you must be evaluated as proficient or exemplary on each rubric category for the corresponding performance-based assessment (paper, presentation, project, etc.). Please note that submissions may be checked for plagiarism.

STUDENT RESOURCES

Brandman Online Library Resources

Brandman University provides comprehensive online library services including access to books, journals, databases, and other resources. Librarians are available via email and phone to provide support. Students can access the library directly when logged into their courses.

Writing and Math Help

Brandman's Online Writing and Math Center (OWMC) offers subject-specific tutoring services, live workshops, video tutorials, tutorial office hours, and links to top academic sites in order to ensure student success. Students can access the OWMC directly when logged into their courses.

Netiquette

Communicating in an efficient and respectful manner is critical to the learning process. Please view the following clip which provides netiquette guidelines:

http://www.youtube.com/watch?feature=player_embedded&v=6dRoClqDJh0

Standards of Academic Integrity

Academic integrity is a core Brandman University value which insures respect for the academic reputation of the University, its students, faculty and staff, and the degrees it confers. Students are required to read, understand, and apply the standards set forth concerning academic integrity found in the policy link below.

<http://www.brandman.edu/current-students/resources/catalogs>

Americans with Disabilities Act Statement

Brandman University is committed to ensuring equal educational access and opportunity for all members of our academic community. Students will be provided timely, efficient, and equitable accommodations and services that are in compliance with Section 504 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 (ADA)/Americans with Disabilities Act Amendments Act of 2008 (ADAA). More details are available in the current Brandman University Academic Catalog.

<http://www.brandman.edu/current-students/resources/catalogs>