LILIE, LLC Course Information

**More detailed course curriculum, including graduate level, alignment with standards, culturally responsive practices, assessments and resources, can be provided upon request*

Title of Course: STEM & The New Generation

Course Description: The NGL Standards have placed a great emphasis on Mathematics and English Language Arts with STEM in the US receiving greater attention as the nation continues to be a major competitor in the world economy and in the research and development of new technologies. Students must be able to see in themselves the potential to pursue STEM interests and careers by having the instruction embrace the diversity that comprises the typical classroom; this means becoming culturally competent. This course provides a general overview of the three initiatives that will drive the curriculum across all areas of K-12 education. The course starts with an overview and a brief history of STEM initiatives as well as the reasons why these subject areas are critical to the success of all students, most notable reaching those historically underrepresented and underserved being seen and included. Participants will gain a deeper understanding of the importance of these critical areas and their role in promoting the tenents of SYEM while meeting student needs. Participants will have an opportunity to conduct in-depth analysis and review of the Next Generation Science Standards and how these will direct K-12 education in the 21st century. While learning how to create an engaging STEM classroom, participants will simultaneously learn the importance for students need to see in themselves the potential to pursue STEM interests and career through culturally responsive practice within their instruction. Participants will also research and utilize STEM, culturally responsive resources and lesson plans for their own classrooms. During the course a pedagogical analysis of STEM standards will permit participants to examine how courses in specific content areas can complement and support STEM education to further prepare students for college and competitive careers.

Instructor Consultation and Interaction

The course is an asynchronous online course that is available for instructor and student participation 24/7. The four-week duration of the class is broken down into four weekly sections each comprised of lecture in the form of instructor created articles and content, web links to academic and professionally reviewed articles in the discipline of general education, and instructor created discussion questions which are, in and of themselves, formative assessments to determine the extent to which the enrollees have comprehended and mastered the skills and information and begun to apply it to their personal teaching practices. The answers to these questions are the basis for the class interaction, as enrollees are required to respond to each other within the classroom.

Proof of Course Completion

LILIE, LLC is committed to assuring that enrollees fully participate in and receive the educational benefits provided by the course. Enrollees must demonstrate participation by making detailed postings designed to foster dialogue among colleagues and instructor that reflect the content, skills/ strategies learned and assessments covered in course. These enrollee postings must be made six times each week, in separate sessions, and including a minimum of 4 academic posts and at least 2 peer-peer comments of others' postings and possible shared assignments. Enrollees are required to submit a detailed reflective feedback n in combination with the archived work. Attempts to falsify record or discussion board entries will result in denial of credit and a report to the enrollee's employer.

Scope & Sequence/Weekly Topics and Objectives

Session I

Objectives	Educators will: 1. Articulate the philosophy of STEM-based education; explain the research behind why STEM is being incorporated in classrooms 2. Examine and understand the objective and benefits of embracing a culturally responsive STEM classroom 3. Understand the goals of STEM- based education and its integration into the classroom according to the NYS CCLS and other sources. 4. Participants will research college readiness reports and understand the importance of STEM for the future generations.
Topics	• Personal introductions • Culturally responsive Practices can lead to a diverse and culturally sound lesson plan. • Equity in education • The Marginalized and Underrepresented • Definitions and principles of STEM and New Generation • Benefits of cultivating STEM
Application to Instruction & Student Learning	• Participants will familiarize themselves with the history and principles behind STEM and the impact such has on their instruction. • Assess participants' definition of STEM. • Build classroom rapport and the mindset of both critical consciousness and cultural responsiveness to engage learners and provide meaningful instruction and feedback. • Create a culture of brave learning within their classrooms/ school

Session II

Objectives	1. Identify what the NGSS are. 2. Discuss how NGSS is linked to STEM 3. Participants will research how to incorporate STEM in the elementary schools. 4. Participants will learn what a diversified classroom is. 5. Participants will research how to incorporate STEM in the middle levels among various content areas. 6. Participants will construct culturally responsive practices to allow students to create and actively engage in opposite learning community that leads to students' cultural awareness. 7. Cultivate brave learning culture
Topics	During week, 2 participants will learn about the NGSS (Next Generation Science Standards) and its implementation into current curriculum. Discuss the link between NGSS and STEM. Through readings and postings, we will learn how other educators have implemented STEM activities into their own practice as well as how to incorporate STEM into elementary and middle levels, while also demonstrating culturally responsive practices to engage all students.

Application to Instruction & Student Learning	• Participants will gain understanding about NGSS • Participants will review resources about NGSS and STEM and discuss the links between them. • Teach students how effectively communicate in diverse situations • Participants will explain how NGSS and STEM support a diversified classroom by explaining how multiple perspectives and cultural differences are discussed and encouraged in the classroom environment. • Reflect upon their current teaching practices and how they embody this mindset specific area for improvement.

Session III

Objectives	• Colleges and Universities, how are the majors and degrees changing for students, what colleges have STEM programs? • Participants will research the benefits of getting a STEM education and the current job market for STEM occupations. • Begin planning and sharing with colleagues through discussion board, the preliminary activities or activities that promote STEM based education. • How can you incorporate STEM in to your educational environment? Briefly explain and begin the creation of a lesson
Topics	During week 3, we will explore the changes occurring in colleges and universities in regards to STEM majors and programs. We will research the benefits of STEM education. Research and discuss the current job market for STEM occupations. Begin designing lesson plans to incorporate STEM into the classroom.
Application to Instruction & Student Learning	Participants will be able to: • identify STEM standard/goals. • relate the STEM standards into education and explain the benefits of STEM today. • research STEM education in college and the job market. • practice on using flexible and diverse responses based upon varied student needs and cultural expectations. • implement strategies to create a brave and safe learning atmosphere that encourages positive risk-taking that will benefit a student's overall success.

Session IV

Objectives	1. Participants will design lessons plans as per their subject area and incorporate it into the classroom. 2. Critically read and assess other teacher's plans and results as a way to further expand your own understanding and expose students to STEM based activities/lessons and apply learned information, skills and understanding through effective feedback. 3. Modify plans if applicable for individual grade level and content area using results of lessons, feedback from peers and instructor and post any modifications with explanation.
Topics	Research and use of STEM in the classroom and individual lesson plans. Final
Application to Instruction & Student Learning	Participants will • conduct research and lesson plan design to be incorporated into the classroom that reflect not only tenets of STEM but also culturally responsive practices • evaluate other colleague's lessons plans practicing brave learning • reflect and post the success of lesson plan, discussing successes and areas that needs revision so that instructor and peers may both learn from and offer insight • educators that are not currently teaching conceptualize the factors that may need further improvement in the lesson plan and ways to incorporate the particular subject area. make connections between critical consciousness, culturally responsiveness to the New Generation

	Learning Standards and the Danielson Framework.