Equipping All Students for Success in STEM

Course Description:

Over the last decade, new vigor and vitality has been focused on students succeeding in science, technology, engineering, and mathematics (STEM) courses. With a desperate need for the United States to stay competitive in an increasingly globalized economy, more resources are being poured into educational and training programs to increase the number of qualified STEM professionals. Historically, women and marginalized community groups have accounted for a small portion of those pursuing STEM careers. However, more effort is being utilized to address this.

This course will examine the best practices to make STEM courses accessible to at-risk students and marginalized populations. Topics will include white privilege in science, barriers for marginalized populations, and strategies for making the content accessible for all students. In will include best practices for differentiating content for students of color, women, English learners, and students with disabilities. At the end of this course, participants will reflect on new learning in this course and develop an implementation plan to utilize in their work.

Clock Hours / Continuing Education Units: 10

Learning Objectives:

- Understand, analyze, and explain the historical dominance of white males in STEM fields and the historical bias of how STEM fields can be taught to students.
- Understand how white privilege and microaggressions in STEM education can hinder the experience of marginalized students.
- Identify key differentiation strategies to provide an accessible education to students from marginalized communities students, specifically highlighting English Language Learners and students with Individual Education Plans
- Develop new lessons that can be used in the classroom and professional development setting

Course Requirements: To receive full credit for the course, participants must complete ALL assignments. Failure to complete all assignments will result in a non-passing grade

Getting Started:

- After registering for the course, you will be sent an email with the website address, password and course key you need to access your online course, along with login instructions.
- Access each assignment through the course home page. All assignments will be submitted through the Moodle platform on each respective assignment page.
- Please save a backup copy of all course assignments and completed work.

Course Outline:

Lesson Number	Lesson Description	Clock Hours
1	**Introductions and Overview:** Take the time to get to know the class layout, read over the Help section, and review any other materials present in the class to get started. Take your time!	0.2 Hours
2	Discussion: Privilege in Science – Participants will understand the driving forces behind expanding STEM education and training. Participants will also understand the demographics of people who traditional enter STEM professions. After reviewing materials, participants will reflect on the ramifications of these issues in their classrooms and society.	0.85 Hours

3	Discussion: Historical Bias – Participants will analyze materials that discuss the bias for how history is recorded. Participants will reflect on how these biases may affect how STEM curricula are taught in the classroom.	0.85 Hours
4	Discussions: Microaggressions – Participants will read articles on the concept of microaggression, and how it links to STEM classrooms and careers. They will share their understanding in a discussion post.	0.85 Hours
5	Discussion: STEM and Women – Participants will analyze the barriers that exist for females in STEM classes and careers.	0.85 Hours
6	Discussion: STEM and Racial/Ethnic Minorities – Participants will analyze the barriers that exist for racial and ethnic minorities who pursue STEM classes and careers in several articles and videos.	0.85 Hours
7	Discussion: STEM and English Language Learners – Participants will analyze the unique barriers for English Language Learners in STEM classrooms. They will review research-based teaching strategies to help assist them learn.	0.85 Hours
8	Discussion: STEM and Individuals with Disabilities – Participants will review articles that outline best practices for teaching STEM courses to individuals with disabilities.	0.85 Hours
9	**Discussion: STEM and LGBTQ Youth -** Making our classrooms inclusive for LGBTQ students in incredibly important, even in our STEM classrooms. This section will address the barriers affecting LGBTQ individuals in STEM fields and the supports educators can provide in make their classrooms more inclusive.	0.85 Hours
10	**Course Reflection:** In this lesson, participants will write a summary of their reflections throughout the course, including new learnings	1.00 Hours
11	**Implementation Plan:** For this final portion of the course, participants will develop a lesson that can be utilized in the classroom, homeroom period, or professional development training that encompasses the new learnings within this course.	2.00 Hours
	TOTAL HOURS	10 Hours

Student Requirements and Assessment: No outside materials will be required for the completion of this course. Participants will be assessed in three different ways:

1. **Quizzes:** Participants are required to complete a series of electronic quizzes to assess their understanding. Participants can earn up to 64 points total for the course. Each quiz may be taken up to three times, with the highest score recorded in the final grade. All quizzes must be completed in order to earn credit.
2. **Course Reflection:** Participants will be required to write a reflection summarizing their new learnings within the course. Participants can earn up to 10 points total for the reflection. The reflection will be graded using the following rubric:

Grading Rubric for Discussion Forums		
		Points
Critical Thinking	Makes connections to the other content and real-life that are supported by reference(s) and/or example(s)	2
	Offers new ideas, connections, or applications	1
	Expresses and justifies personal opinion	1
Assignment Specific Criteria	Addresses all parts of the reflection	6
Total Points Possible		10

3. **Implementation Plan:** Participants will construct an implementation plan for how their new knowledge can be directly implemented into the classroom, training setting, or professional development environment. Implementation plans will be graded using the following rubric:

Grading Rubric for Implementation Plan		
		Points
Background Information	Lesson / Title Identified	1
	Target Audience and Subject/Course Setting Identified	1
	Learning Goals are measurable objectives students are expected to meet by the end of the lesson.	2
	Lesson Ties to Specific State Standards for Students, Educators, or Professionals	2
	Materials Listed	1
Lesson Plan	*Engage:* Lesson hooks audience and introduces lesson effectively.	5
	Explore and Explain: Lesson actively engages participants in learning new material using best practices.	5
	Evaluate: Lesson effectively assesses participant understanding.	5
Implementation	Writing is clear, well developed, and organized. No or few grammar and spelling errors	2
	Is realistic in their approach – understands limitations may exist	2
Total Points Possible		26

Grading Scale:

100-80% (80-100 Points)	Pass
79%-Below (<80 points)	No Pass

Americans with Disabilities Act: If you are a student with a disability and require any auxiliary aids, services, or other accommodations for this class, please email academy@iowasafeschools.org or call 515.381.0588.

Professional Development: Prior to purchasing a course registration, it is your responsibility to ensure that National Safe Schools Convening Online Academy coursework satisfies the license renewal requirements for your state and/or district.