ArmchairEdClockHours
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Overview:
ArmchairEdClockHours.com currently provides continuing education to educators, using Educational Leadership magazine and premiere published books on cutting-edge educational themes and topics.

Course Goals and Objectives:
As a result of these courses, the student will be able to:

1. Select and adapt quality existing STEM lessons that present authentic problems
2. Allow for creative approaches, and engage students in meaningful teamwork
3. Create your student-centered STEM lessons based on the Engineering Design Process
4. Assess students' understanding of basic STEM concepts, their problem-solving abilities, and their level of engagement with the material;
5. Teach STEM in after-school programs to further build on concepts covered in class;
6. Empower girls to aspire to careers in STEM and break down the barriers of gender bias

The following published books are currently being used as a text for the ArmchairEdClockHours course:

STEM By Design

Jolly, A. (2017). *Stem by design: strategies and activities for grades 4-8*. Routledge.

How do you create effective STEM classrooms that energize students, help them grow into creative thinkers and collaborators, and prepare them for their futures? This practical course has all the answers and tools you need to get started or enhance your current program. *STEM by Design* reveals the secrets to successful lessons in which students use science, math, and technology to solve real-world engineering design problems. You'll learn how to:

- Select and adapt quality existing STEM lessons that present authentic problems, allow for creative approaches, and engage students in meaningful teamwork;
- Create your own student-centered STEM lessons based on the Engineering Design Process;
- Assess students' understanding of basic STEM concepts, their problem-solving abilities, and their level of engagement with the material;
- Teach STEM in after-school programs to further build on concepts covered in class;
- Empower girls to aspire to careers in STEM and break down the barriers of gender bias;
- Tap into STEM's project-based learning style to attract and engage all students.

Credit Options:

The course will be offered for 15 clock hours, based on the length and substance of the books, and related activities. **The course will include 15 multiple-choice questions and one required essay.**

Grading Rubric:
Pass/Fail Coursework must be passed with 70% criterion. All coursework must be completed.

Essay scoring rubric: One essay 4-5 pages Single spaced, 10 to 12 size font Use of introduction and summary statement (even when a unit is developed) Demonstration of grammar, spelling and writing skill Demonstration of applied knowledge
Required essay:

Create a STEM unit, using Chapter 8 as a guide.

1. The unit must incorporate at least two of the 4 STEM elements.
2. There must be evidence of resources outside the text used to create the unit.
3. The unit must provide examples of STEM-related career choices.
4. Summarize the essay with a description of the impact on students, using Design Tool 8.5 on page 109 of the text.

Essay Scoring Rubric:

Four to five pages,
Single spaced, 10 to 12 size font
Use of introduction and summary statement (even when a unit is developed)
Demonstration of grammar, spelling and writing skill
Demonstration of applied knowledge

- **You must download the coursework before starting this course.**
- **Submit all coursework at the same time.**
- **All essays must be fully completed and the rubric followed to receive a grade. Essays not completed to required length will not be processed and revisions will be required.**