Spring 2022 - STEM 4033 Introduction to STEM Education - T/TH – 4:35 – 5:50 - Tentative Schedule

***Please keep in mind that this is a tentative schedule. Please check the http://www.uastem.com website for updates.**

Week 1

Tuesday, January 18

- Introduction activity – The Earth Ball
- Syllabus and Schedule Review
- Introduction to STEM Education PP
- Challenge 1 (at-home) – YouTube Video Introduction
- Weekly Reading Assignment 1 - Ch. 1 - Introduction and Background and History of the STEM Movement in The Overlooked STEM Imperatives and Reading Review

Thursday, January 20

- Reading Review
- Challenge 2 (in-class) – Engineering Design Challenge
- Weekly Reading Assignment 2 - A conceptual framework for integrated STEM education and Chapter 1. Why Project Based Learning? (pgs. 1-23) in the PBL text and Reading Reflection

Week 2

Tuesday, January 25

- Reading Review
- Measuring: Materials, Tools, and Processes PP
- Space Frame Video and Activity
- Challenge 3 (in-class) – Tool Building Challenge
- Weekly Reading Assignment 3 - Chapter 2 – Power and Promise of STEM Education in the *The Overlooked STEM Imperatives* and Reading Reflection

Thursday, January 27

- Reading Review
- Challenge 4 (in-class) - Space Frame Building Challenge
- Weekly Reading Assignment 4 - A Framework for STEM Problem Solving and Reading Reflection

Week 3

Tuesday, February 1

- Reading Review
- The Design Loop PP
- Major Assignment 1 – Creating a Design Loop
- Template and Challenge

Wednesday, February 2 – Turnbow Elementary STEAM Night – 5:30-8:30pm

Tuesday, February 3

- Challenge 5 (in-class) – Engineering Design Challenge

Week 4

Tuesday, February 8

- Design Loop Presentations
- The Quick Challenge PP
- Major Assignment – Quick Challenge Project

Thursday, February 10

- Quick Challenge Development and Peer Review
- Weekly Reading Assignment 5 - Integrating Literacy and Engineering Instruction for Young Learners and Reading Reflection

*Children's Engineering Conference – https://childrensengineering.org/Convention/ - February 8-10-2022

Week 5

Tuesday, February 15

- Reading Review
- Curriculum Design and Assessment PP
- Major Assignment 3 - Literature-based Curriculum Assignment
- Finding a good book – library resources – STEM lab book check-out
- Weekly Reading Assignment 6 - Writing a STEM Design Brief and Toward Narrative-Centered Learning Environments and Reading Reflection

Thursday, February 17

- Reading Review
- Literature-based Design Challenge Development

Week 6

Tuesday, February 22

- Reading Review
- Literature-based Curriculum Development Ideas and Ideation Presentations
- Scope and Sequence PP
- Weekly Reading Assignment 7 - Performance-Based Assessment Guide and Reading Reflection

Thursday, February 24

- Reading Review
- Literature-based Curriculum Peer Review – submit to Blackboard

Week 7

Thursday, March 1

- Reading Review
- Literature-based Curriculum Presentations
- Major Assignment 4 - Construction Blocks Curriculum Project
- Discuss working in teams on major projects
- Weekly Reading Assignment 8 - Using Block Play and Blocks as a Tool for Learning and Reading Reflection
- Challenge 6 (in-class) - Keva Maze Design Challenge and Video
- KEVA Resources

Thursday, March 3

- Reading Review
- Construction Block PP
- Construction Block Ideation/Guide

Thursday, March 3– Decatur Elementary STEM Night 6:00-7:30

Week 8

Tuesday, March 8

- Construction Block Ideation

Thursday, March 10

We will not officially meet for class, as I will be traveling to the International Technology and Engineering Educators Conference (ITEEA) Conference (March 9-12)

Friday, March 11 – 71st Annual University of Arkansas Regional Science and Engineering Fair – contact Shawn Bell - seb010@uark.edu

Week 9

Tuesday, March 15

- Construction Block Ideation
- Computer Programming and Computational Thinking
  - Scratch and Pencil Code
- Weekly Reading Assignment 9 – Computer Science in the Elementary Classroom – Preview the K-4 and 5-8 Arkansas Computer Science Standards - https://dese.ade.arkansas.gov/Offices/ar-comp-sci-initiative/computer-science-standards-and-courses
- Challenge 7 (at-home) - Scratch Programming and Reflection

Thursday, March 17

- Construction Blocks Curriculum Project Presentations

Week 10

No classes - Spring Break – March 21-25

Week 11

Tuesday, March 29

- Technical Procedural Problem-Solving PP
- Major Assignment 5 - Technical Procedural Curriculum
- Challenge 8 (in-class) - Teacher Geek
- Weekly Reading Assignment 10 – Writing a Technical Procedural STEM Problem

Thursday, March 31

- Technical Procedural Curriculum Development

Week 12

Tuesday, April 5

- Introduction to Electricity - Building electrical circuits to demonstrate transfer of energy
- Major Assignment 6 - Electricity Curriculum Project
- Challenge 9 (in-class) – Paper Circuit
- Weekly Reading Assignment 9 - Chapter 1: http://www.allaboutcircuits.com/vol_1/index.html

Thursday, April 7

- Electricity Curriculum Project Development

Thursday, April 7 – Center-Gamble Elementary STEM Night (TBD)

Week 13

Tuesday, April 12

- Electricity Curriculum Project Development

Thursday, April 14

- Electricity Curriculum Project Development

Week 14

Tuesday, April 19

- Electricity Curriculum Project Presentations
- Cooperative and Collaborative Learning PP
    - 21st Century Skills
- Weekly Reading Assignment 10 - Cooperative and Collaborative Learning Readings and Reflection

Thursday, April 21

- Cooperative and Collaborative in STEM Education
- Challenge 10 (in-class) – Spy Game
- Challenge 11 (in-class) – Green and White/Gutterball/Crazy Forts

Week 15

Tuesday, April 26

- Paper Engineering PP
- Challenge 12 (at-home) – Pop-Up Card Quick Challenge

Thursday, April 28

- Paper Engineering (cont.)
- Challenge 13 (in-class) - MakeDo

Week 16

Tuesday, May 3

- Automata – Final Project

Thursday, May 5

- Automata – Final Project

Friday, May 6 – Dead Day

Final Exam

Thursday, May 12 – 3:00 – 5:00 – Final Project Due