Fall 2021 - STEM 4033 Introduction to STEM Education Tentative Schedule

*Please keep in mind that this is a tentative schedule. All course content can be found on my website: http://www.uastem.com/stem-4033/. All assignments will be submitted through the course Blackboard page. Please check the http://www.uastem.com website for updates.

Week 1

Tuesday, August 24 and Thursday, August 26

- Introduction activity – The Earth Ball
- Syllabus and Schedule Review
- Introduction to STEM Education PP
- Reading Review
- Challenge 1 (at-home) – YouTube Video Introduction
- Challenge 2 (in-class) – Engineering Design Challenge
- Weekly Reading Assignment 1 - Ch. 1 - Introduction and Background and History of the STEM Movement in The Overlooked STEM Imperatives and Reading Review
- Weekly Reading Assignment 2 – The Nature of Interdisciplinary STEM Education and Reading Review
- STEM Kids Video

Week 2

Tuesday, August 31 and Thursday, September 2

- Reading Review
- Measuring: Materials, Tools, and Processes PP
- Space Frame Video and Activity
- Challenge 3 (in-class) – Tool Building Challenge
- Challenge 4 (in-class) - Space Frame Building Challenge
- Weekly Reading Assignment 3 - Chapter 2 – Power and Promise of STEM Education and Chapter 3 – The 'T' and 'E' in STEM Education and Reading Review
- Weekly Reading Assignment 4 - A Framework for STEM Problem Solving and Reading Review

Week 3

Tuesday, September 7 and Thursday, September 9

- Reading Review
- The Design Loop PP
- Major Assignment 1 – Creating a Design Loop
- Template and Challenge
- Challenge 5 (in-class) – Engineering Design Challenge
- Weekly Reading Assignment 5 - Stories of design: Using books to unpack the engineering design process and Integrating Literacy and Engineering Instruction for Young Learners and Reading Review

Week 4

Tuesday, September 14 and Thursday, September 16

- Reading Review
- Design Loop Presentations
- 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 Standards for Technological and Engineering Literacy and STEM Education and Reading Review

Week 5

Tuesday, September 21 and Thursday, September 23

- Reading Review
- Literature-based Curriculum Development Ideas and Ideation Presentations
- Scope and Sequence PP
- Literature-based Curriculum Peer Review – submit to Blackboard
- Video - Building the Perfect Squirrel Proof Bird Feeder
- Weekly Reading Assignment 7 - Performance-Based Assessment Guide and Reading Review

Week 6

Tuesday, September 28 and Thursday, September 30

- Reading Review
- Literature-based Curriculum Presentations
- Construction Block PP
- 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 Review
- Challenge 6 (in-class) - Keva Maze Design Challenge and Video
- KEVA Resources
- Construction Block Ideation Guide

Week 7

Tuesday, October 5 and Thursday, October 7

- Reading Review
- Construction Blocks Curriculum Ideation Presentations
- 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

Week 8

Tuesday, October 12 and Thursday, October 14

- 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

Week 9

Tuesday, October 19 and Thursday, October 21

- Technical Procedural Curriculum Development

Week 10

Fall Break – October 25-26

Thursday, October 28

- The Quick Challenge PP
- Major Assignment 2 – Quick Challenge Project

Week 11

Tuesday, November 2 and Thursday, November 4

- Reading Review
- Quick Challenge Peer Review
- 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

Week 12

Tuesday, November 9 and Thursday, November 11

- Electricity Curriculum Project Development

Week 13

Tuesday, November 16

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

Thursday, November 18 – NO CLASS - Mississippi Valley Technology Teacher Education Conference

Week 14

Tuesday, November 23

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

Thanksgiving Break – November 24-26

Week 15

Tuesday, November 30 and Thursday, December 2

- Paper Engineering PP
- Challenge 12 (at-home) – Pop-Up Card Quick Challenge
- Challenge 13 (in-class) - MakeDo

Week 16

Tuesday, December 7 and Thursday, December 9

- Automata – Final Project

December 10 – Dead Day

Final Exams

T/TH – 9:30-10:45 – Thursday, December 16 – 8:00 – 10:00am
T/TH – 2:00-3:15 – Tuesday, December 14 - 12:45 – 2:45pm