Fall 2022 - 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 23 and Thursday, August 25

- Syllabus and Schedule Review
- Introduction-to-STEM-Education PP
- Candidate Sticks/Nametags
- Challenge (at-home) – YouTube Introduction Assignment
- Weekly Reading Assignment - Introduction and Background and History of the STEM Movement in The Overlooked STEM Imperatives
- Complete Reading Reflection/Review
- Challenge (in-class) – Engineering Design Challenge – Teacher Trophy Challenge
- Challenge (in-class) – Earth-ball Challenge
- Weekly Reading Assignment - Standards for Technological and Engineering Literacy and STEM Education article
    - Complete Reading Reflection/Review

Week 2

Tuesday, August 30 and Thursday, September 1

- Reading Review
- Measuring: Materials, Tools, and Processes PP
- Challenge (in-class) – Tool Building Challenge
- Challenge (in-class) - Space Frame Building Challenge
- Weekly Reading Assignment - Chapter 2 – Power and Promise of STEM Education in the *The Overlooked STEM Imperatives* and Reading Review
- Weekly Reading Assignment - A Framework for STEM Problem Solving and Reading Review

Week 3

Tuesday, September 6 and Thursday, September 8

- Reading Review
- The Design Loop PP
- Major Assignment – Creating a Design Loop
- Template and Challenge
- Invention Challenge - The Most Magnificent Thing
- Challenge (in-class) – Engineering Design Challenge
- Weekly Reading Assignment - Integrating Literacy and Engineering Instruction for Young Learners and Reading Review

Week 4

Tuesday, September 13 and Thursday, September 15

- Design Loop Presentations
- The Quick Challenge PP
- Character Card (Story Grammar) (in-class) Quick Challenge
- Major Assignment – Quick Challenge Project
- Quick Challenge Development and Peer Review
- Weekly Reading Assignment - Integrating Literacy and Engineering Instruction for Young Learners and Reading Reflection

***The Amazeum's NWA Maker Meetup – September 13**

Week 5

Tuesday, September 20 and Thursday, September 22

- Reading Review
- Curriculum Design and Assessment PP
- Major Assignment - Literature-based Curriculum Assignment
- Finding a good book – library resources – STEM lab book check-out
- Literature-based Design Challenge Development
- Weekly Reading Assignment - Writing a STEM Design Brief and Reading Reflection

Week 6
Tuesday, September 27 and Thursday, September 29

- Reading Review
- Literature-based Curriculum Development Ideas and Ideation Presentations
- Scope and Sequence PP
- Weekly Reading Assignment - Performance-Based Assessment Guide and Reading Reflection
- Literature-based Curriculum Peer Review – submit to Blackboard

Week 7
Tuesday, October 4 and Thursday, October 6

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

Week 8
Tuesday, October 11 and Thursday, October 13

- Construction Block Ideation
- Computer Programming and Computational Thinking
    - Scratch and Pencil Code
- Weekly Reading Assignment – 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 (in-class) - Scratch Programming and Reflection
- Challenge (in-class) – Hexbug Challenge

Week 9 - Fall Break – October 17-18
Thursday, October 20

- Construction Blocks Curriculum Project Presentations
- Technical Procedural Problem-Solving PP

Week 10
Tuesday, October 25 and Thursday, October 27

- Major Assignment- Technical Procedural Curriculum
- Challenge (in-class) – Lego Back-to-back Challenge
- Challenge (in-class) - Teacher Geek
- Weekly Reading Assignment – Writing a Technical Procedural STEM Problem
- Technical Procedural Curriculum Development

Week 11
Tuesday, November 1 and Thursday, November 3

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

Week 12
Tuesday, November 8 and Thursday, November 10

- Electricity Curriculum Project Development

Week 13
Tuesday, November 15

- Electricity Curriculum Project Development

Thursday, November 17 – NO CLASS - Mississippi Valley Technology Teacher Education Conference

Week 14
Tuesday, November 22

- Electricity Curriculum Project Presentations

Thanksgiving Break – November 23-25

Week 15
Tuesday, November 29 and Thursday, December 1

- Cooperative and Collaborative Learning PP
  - 21st Century Skills
- Weekly Reading Assignment - Cooperative and Collaborative Learning Readings and Reflection
- Cooperative and Collaborative in STEM Education
- Challenge (in-class) – Spy Game
- Challenge (in-class) – Green and White/Gutterball/Crazy Forts

Week 16
Tuesday, December 6 and Thursday, December 8

- Paper Engineering PP
- Challenge (in-class) – Pop-Up Card Quick Challenge
- Paper Engineering (cont.)
- Challenge (in-class) - MakeDo

December 9 – Dead Day

Final Exams

T/TH – 9:30-10:45 – Tuesday, December 13 – 8:00 – 10:00am

T/TH – 12:30-1:45 - Tuesday, December 13 – 12:45 – 2:45pm

T/TH – 2:00-3:15 – Thursday, December 15 - 12:45 – 2:45pm

T/TH – 3:30-4:45 – Tuesday, December 13 – 3:00 – 5:00pm