

Fall 2023 - 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 22 and Thursday, August 24

- Syllabus and Schedule Review
- Introduction-to-STEM-Education PP
- Candidate Sticks/Nametags
- Challenge (at-home) – Video Introduction Assignment
- Weekly Reading Assignment - Introduction and Background and History of the STEM Movement in The Overlooked STEM Imperatives and complete Reading Reflection
- 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 and complete Reading Reflection
- Measure of Problem-Solving Fitness (MPSF)

Week 2

Tuesday, August 29 and Thursday, August 31

- 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 Reflection
- Weekly Reading Assignment - A Framework for STEM Problem Solving and Reading Reflection

Week 3

Tuesday, September 5 and Thursday, September 7

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

Week 4

Tuesday, September 12 and Thursday, September 14

- Design Loop Presentations
- The Quick Challenge PP
- Character Card (Story Grammar) (in-class) Quick Challenge
- In-class Assignment – Quick Challenge Project
- Quick Challenge Development Project

Week 5

Tuesday, September 19 and Thursday, September 21

- 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 26 and Thursday, September 28

- 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 3 and Thursday, October 5

- 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 10 and Thursday, October 12

- 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 16-17

Thursday, October 19

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

Week 10

Tuesday, October 24 and Thursday, October 26

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

Week 11

Tuesday, October 31 and Thursday, November 2

- 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
- Challenge (in-class) – Simple Circuit with Switch
- Weekly Reading Assignment - Chapter 1: http://www.allaboutcircuits.com/vol_1/index.html
- Electricity Curriculum Project Development

Week 12

Tuesday, November 7 and Thursday, November 9

- Electricity Curriculum Project Development

Turnbow Elementary School STEM Night in Springdale – 6-8pm

Week 13

Tuesday, November 15

- Electricity Curriculum Project Development

Thursday, November 16 – NO CLASS - 1909 Conference

Week 14

Tuesday, November 21

- Electricity Curriculum Project Presentations

Thanksgiving Break – November 23-25

Week 15

Tuesday, November 28 and Thursday, November 30

- 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 5 and Thursday, December 7

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

December 9 – Reading Day

Final Exams

T/TH – 9:30-10:45 – Thursday, December 14 – 8:00 – 10:00am

T/TH – 12:30-1:45 - Thursday, December 14 – 12:45 – 2:45pm

T/TH – 3:30-4:45 – Thursday, December 14 – 3:00 – 5:00pm