

Fall 2024 - STEM 40303 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 20 and Thursday, August 22

- 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 27 and Thursday, August 29

- Reading Review
- Measuring: Materials, Tools, and Processes PP
- Challenge (in-class) – Tool Building Challenge
- Challenge (in-class) - Space Frame Building Challenge
- Weekly Reading Assignment - The Nature of Interdisciplinary STEM Education and Reading Reflection
- Weekly Reading Assignment - A Framework for STEM Problem Solving and Reading Reflection

Week 3

Tuesday, September 3 and Thursday, September 5

- 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 10 and Thursday, September 12

- 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
- Weekly Reading Assignment - Connecting Compassion: Empathy's Role in STEM and Literacy Integration

Week 5

Tuesday, September 17 and Thursday, September 19

- Major Assignment - Construction Blocks Curriculum Project
- 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
- Reading Review

Week 6

Tuesday, September 24 and Thursday, September 26

- Construction Block Ideation

- 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 7

Tuesday, October 1 and Thursday, October 3

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

Week 8

Tuesday, October 8 and Thursday, October 10

- Literature-based Curriculum Presentations
- 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 Programming Challenge

Week 9

Fall Break – October 14-15

Thursday, October 17

- Challenge (in-class) – Hexbug Engineering Design Challenge
- Technical Procedural Problem-Solving PP

Week 10

Tuesday, October 22 and Thursday, October 24

- 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 29 and Thursday, October 31

- 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 5 and Thursday, November 7

- Electricity Curriculum Project Development

Week 13

Tuesday, November 12

- Electricity Curriculum Project Development

November 14-15 – NO CLASS - 1909 Conference

Week 14

Tuesday, November 19 and Thursday, November 21

- Electricity Project Presentations
- Cooperative and Collaborative Learning PP
 - 21st Century Skills
- Weekly Reading Assignment - STEM Practices that Promote 21st Century Outcomes and Reading Reflection
- Cooperative and Collaborative in STEM Education
- Challenge (in-class) – Spy Game
- Challenge (in-class) – Green and White/Gutterball/Crazy Forts

Week 15

Tuesday, November 26

- Introduction to Paper Engineering
- Paper Engineering PP

Thanksgiving Break – November 27-29

Week 16

Tuesday, December 3 and Thursday, December 5

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

December 6 – Reading Day

Final Exams

T/TH – 9:30-10:45 – TBA

T/TH – 3:30-4:45 – TBA