

## Spring 2021 - STEM 4043/5023 Creativity and Innovation - T/TH - 9:30-10:45 - 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 12**

- Introductions and Syllabus Review
  - Making and Tinkering Toolbox
- Video – [The ‘T’ and the ‘E’ in STEM](#)
- Assignment 1 – Using Simple Tools and Materials – Catapult Design (Due – 1-28)
- Reading: Introduction and Chapter 1 – STEAM Makers: Fostering Creativity & Innovation in the Elementary Classroom Imperatives – Complete reading review

#### **Thursday, January 14**

- Reading Review
- Creativity (Torrance Creativity Test), Fluency and Flexibility
- Number Sense and Measurement - Catapult Design Challenge
- Reading: Remaking Literacy - Introduction and Chapter 1 – What the Research Says – Complete reading review

### Week 2

#### **Tuesday, January 19**

- Reading Review
- Making and Tinkering Toolbox (cont.) – Reexamining the Paperclip
- Tool Usage and Material Selection
- Reading: [Safer Tool Usage: Enhancing the Technology and Engineering in Elementary Classrooms](#) and Chapter 3 – The ‘T’ and ‘E’ in STEM in the Overlooked STEM Imperatives – Complete reading review

#### **Thursday, January 21**

- Children’s Engineering: Beyond the Basics - Getting Started with Simple Mechanisms
- Assignment – Complete the Geometric Creatures Design Challenge in the Children’s Engineering Book (you may choose your own shapes). (Due – 1-26)
- Reading: Remaking Literacy - Chapter 2 – Creative Pathways to Learning – Complete reading review

### Week 3 -

#### **Tuesday, January 26**

- Reading Review
- Making and Tinkering Toolbox (cont.)
  - Geometric Creatures as a method for storytelling
- Using <https://vectr.com/> - CorelDRAW & CO2 Laser – The Basics – Designing a Project to be Cut or Engraved on the VersaLASER
- Continue Catapult Design
- Assignment – Set up Remote Lab Virtual Desktop - - to use CorelDRAW to redesign your Geometric Creature
  - Install VMware Horizon Client - <https://its.uark.edu/printing-labs/computer-labs/download-vmhorizon.php>
  - Go to: <https://its.uark.edu/printing-labs/computer-labs/remote-labs-virtual-desktops.php>
  - EDHP-STEM – Click on CorelDRAW
    - Things to remember
      - The first time you use your virtual desktop, it will take several minutes (15-30) to set everything up
      - When CorelDRAW opens, you can click ‘SKIP’, you do not create an account
      - Always log off the remote site to save your content

#### **Thursday, January 28**

- Catapult Design Due
- Using the CO2 Laser
  - Continue working to redesign your geometric creature to be cut on the laser
- Reading: Remaking Literacy - Chapter 3 – Thinking and Designing – Complete reading review
- Assignment – This is Not a Box - Paper Engineering Design Challenge Assignment (Due February 11)

## Week 4

### **Tuesday, February 2**

- Reading Review
  - Character Cards
- Using the CO2 Laser

### **Thursday, February 4**

- Using the CO2 Laser
- Reading: Remaking Literacy - Chapter 4 – Low Tech Making – Complete reading review
- Assignment – [Create a TinkerCAD account](#) - Working with TinkerCAD

\*Children's Engineering Conference – <https://childrensengineering.org/Convention/> - February 2-4-2021

## Week 5

### **Tuesday, February 9**

- Reading Review
- Working with TinkerCAD
- Using Cura 3D Printing Slicing Software
- [3D Printing Technology Design Challenge](#)

### **Thursday, February 11**

- This is Not a Box - Paper Engineering Design Challenge Presentations
- LittleBits STEAM Design Challenge – Doodle Wizard
- The Frugal Teacher STEAM Design Challenge (Due March 2)
- Reading: Remaking Literacy - Chapter 5 – Remaking with Maker Tech

## Week 6

### **Tuesday, February 16**

- Reading Review
- LittleBits STEAM Design Challenge – The Launcher
- The Frugal Teacher STEAM Design Challenge – Development
  - Team selection/assignment
  - Project development
- 3D Printing Technology Design Challenge

### **Thursday, February 18**

- Frugal Teacher STEM Challenge Project Development
- Reading: Remaking Literacy - Chapter 6 – Guidance for Implementation – Complete reading review

## Week 7

**February 22 – 23 – No Class – Spring Break**

### **Thursday, February 25**

- Reading Review
- Frugal Teacher STEM Challenge Project Development
- Introduction to Magnetic Levitation Design Challenge (Due March 10) – [Moving Along the Tracks Unit](#)
- Reading: Remaking Literacy - Epilogue/Appendices A-B and [Moving Along the Tracks Unit](#) – Complete reading review

## Week 8

### **Tuesday, March 2**

- Reading Review
- Frugal Teacher STEM Challenge Presentations
- Magnetic Levitation Design Challenge

### **Thursday, March 4**

- Magnetic Levitation Design Challenge

## Week 9

### **Tuesday, March 9**

- Magnetic Levitation Project Due - MagLev Race
- Introduction to Makey Makey and [Scratch Programming](#)

- Homework: Read Ch. 1 – Getting Started (pgs. 1-24) in the Learn to Program with Scratch book. You will need to set up a [Scratch account](#) and complete each of the activities. Then customize your game with your own Sprites and Costumes. Be prepared to demonstrate your ‘pong’ game to the class on Tuesday.

**Thursday, March 11**

- MaKey MaKey Design Challenge Project Development

**Week 10**

**Tuesday, March 16**

- MaKey MaKey Design Challenge Project Development

**Thursday, March 18**

- MaKey MaKey Design Challenge Project Development

**Week 11**

**Tuesday, March 23**

- MaKey MaKey Design Challenge Presentations

\*International Technology and Engineering Educators Conference <https://www.iteea.org/Activities/Conference/ITEEA2021.aspx> - March 22-27, 2021

**March 25-26 – No Class – Spring Break**

**Week 12**

**Tuesday, March 30**

- Assignment: Engineering a Play Design Challenge
- The influence of theatre experiences in academic and social and emotional learning

**Thursday, April 1**

- Assignment: Engineering a Play Design Challenge
- Engineering a Play Design Challenge - Storyboard and script development
- Engineering a Play - Puppet Pal Prototype Development

**April 2 – No Class – Spring Break**

**Week 13**

**Tuesday, April 6**

- Engineering a Play Design Challenge - Storyboard and script development
- Engineering a Play - Puppet Pal Prototype Development

**Thursday, April 8**

- Engineering a Play Design Challenge – Puppet Pal Prototype Videos Due

**Week 14**

**Tuesday, April 13**

- Maker Tech

**Thursday, April 15**

- Maker Tech

**Week 15**

**Tuesday, April 20**

- Introduction to Robotics and Drones Programming Challenges

**Thursday, April 22**

- Robotics, Drones, and Programming Design Challenges

**Week 16**

**Tuesday, April 27**

- Robotics, Drones, and Programming Design Challenges

**Thursday, April 29**

- Robotics, Drones, and Programming Design Challenges

**April 30 – Dead Day**

**Final Exam**

**Tuesday, May 4, 2021 – 8:00 – 10:00 – Remaking Literacy Project Presentation**