

Spring 2019 – STEM 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 15

- Introductions and Syllabus Review
- Video – [The ‘T’ and the ‘E’ in STEM](#)
- Assignment 1 – Using Simple Tools and Materials – Catapult Design (Due – 1-31)
- Assignment – [Create a TinkerCAD account.](#)
- Reading – Part I of the Children’s Engineering Book – pages 1-15 and – [Enhancing the Technology and Engineering in Elementary Classrooms](#)
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Thursday, January 17

- Reading Review
- Children’s Engineering – Creativity (Torrance Creativity Test), Fluency and Flexibility
- Continue Catapult Design
- Reading – [Art courses could help medical students become better clinical observers](#)

Week 2

Tuesday, January 22

- Reading Review
- Tool Usage and Material Selection
- Reading – Part II of the Children’s Engineering Book – pages 17-50.

Thursday, January 24

- Reading Review
- Complete Catapult Design
- Assignment – Reading in the Beyond the Basics Book -Getting Started With Simple Mechanisms – pages 45- 51 and complete the Geometric Creatures Design Challenge on Pg. 13 in the Children’s Engineering Book (you may choose your own shapes).

Week 3– Computer Lab

Tuesday, January 29

- Using CorelDRAW & CO2 Laser – The Basics – Designing a Project to be Cut or Engraved on the VersaLASER
- [STEM 5023 Resources](#)
- Paper Engineering Design Challenge – Due
- Assignment – redesign your Geometric Creature using CorelDRAW
- Assignment – Reading Handout - Creative Techniques for Young Inventors

Thursday, January 31

- Using CorelDRAW & CO2 Laser
- Complete Geometric Creature redesign using CorelDRAW & CO2 Laser
- Assignment – Reading in the Beyond the Basics Book – Building Background and Integrating Children’s Engineering Into Elementary Lessons – pages 1-23 and complete teaching model for the Paper Engineering Design Challenge.

Week 4 – Computer Lab

Tuesday, February 5

- Using CorelDRAW - <https://www.coreldraw.com/en/pages/raster-to-vector/>
- Assignment – Reading in the Beyond the Basics Book – pages 24-44 and Paper Engineering Design Challenge – Teacher’s Guide.

Thursday, February 7

- Computer file management – Using Dropbox
- Using CorelDRAW
- Introduction to TinkerCAD – 3D Printing Technology Design Challenge
- Assignment – Working with TinkerCAD

Week 5 – Computer Lab

Tuesday, February 12

- Presentations of Paper Engineering Design Challenge
- Working with TinkerCAD – exporting .STL files
- Using Cura 3D Printing Slicing Software
- [3D Printing Technology Design Challenge](#)

- Reading – [3D printing in technology and engineering and](#)
- [How 3D Printers Support Teaching in Engineering, Technology and Beyond](#)

Thursday, February 14

- LittleBits STEAM Design Challenge – Doodle Wizard
- The Frugal Teacher STEAM Design Challenge
- Readings: Prospective of an ‘A’ in STEAM

Week 6

Tuesday, February 19

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

Thursday, February 21

- 3D Printing Design Challenge Presentations
- Frugal Teacher STEM Challenge Project Development

Week 7

Tuesday, February 26

- Frugal Teacher STEM Challenge Project Development
- Final Project – STEM-Lab-Design-Assignment
- Readings

Thursday, February 28

- Frugal Teacher STEM Challenge Presentations
- Homework: Engineering a Play article and Engineering a Play Design Challenge Assignment

Week 8 – iPad Cart

Tuesday, March 5

- The influence of theatre experiences in academic and social and emotional learning
- Engineering a Play Design Challenge - Storyboard and script development

Thursday, March 7

- Engineering a Play Design Challenge - Complete storyboard and script development – Begin Puppet Pal Prototype Development

Week 9 – iPad Cart

Tuesday, March 12

- Engineering a Play - Puppet Pal Prototype Development

Thursday, March 14

Engineering a Play – Puppet Pal Presentations

Week 10

No Class - Spring Break – March 18-22

Week 11 – iPad Cart

Tuesday, March 26

- Introduction to Magnetic Levitation Design Challenge – [Moving Along the Tracks Unit](#)

Thursday, March 29

- **(ITEEA Conference, Atlanta)** Magnetic Levitation Design Challenge

Week 12

Tuesday, April 2

- Complete Magnetic Levitation Design Challenge

Thursday, April 4

- MagLev Race
- Introduction to Makey Makey and [Scratch Programming](#)
- MaKey MaKey Design Challenge – Due April 16

- 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. Be prepared to demonstrate your ‘pong’ game to the class on Thursday.

Week 13

Tuesday, April 9

- Makey Makey and [Scratch Programming](#)

Thursday, April 11

- Makey Makey and [Scratch Programming](#)

Week 14

Tuesday, April 16

- Makey Makey Project Presentations
- Lego NXT Software Walk-Through and Installations

Thursday, April 18

- Continue Lego Mindstorms NXT Robotics Technology Challenges

Week 15

Tuesday, April 23

- Continue Lego Mindstorms NXT Robotics Technology Challenges

Thursday, April 25

- Continue Lego Mindstorms NXT Robotics Technology Challenges

Week 16

Tuesday, April 30

- Final Project – STEM-Lab-Design-Assignment Development

Thursday, May 2

- Final Project – STEM-Lab-Design-Assignment Development

Friday, May 3 - Dead Day

Final Exams

STEM 5023

- T/TH - 9:30-10:45 - Thursday, May 10, 2018 – 8:00 – 10:00 - STEM-Lab-Design Presentation