Coconino High School
Weekly Learning Guide

Course	CIT III Engineering	Week Assigned	5/4/20-5/8/20
Lesson Title	Capstone Prototype Problems and Solution Slides		
Teacher(s), Email, & Other Contact Information	Mr. Tessmer dtessmer@fusd1.org All information will be shared through Google Classroom!		
Target Standards	**STANDARD 3.0 APPLY MATHEMATICAL LAWS AND PRINCIPLES RELEVANT TO ENGINEERING AND TECHNOLOGY** **STANDARD 4.0 APPLY FUNDAMENTAL SCIENTIFIC LAWS AND PRINCIPLES RELEVANT TO ENGINEERING AND TECHNOLOGY**		
Learning Goal	1) Solve the next problem in your capstone. 2) Create slides that describe your final product, what is next, citations and conclusion.		
Essential Questions	How can we solve real world problems?		
Learning Activity	This is the final week of lessons - and this is the last part of your presentation. Now that you have done the background, problem and brainstorm, research, process of building and testing - the final piece is your conclusion: ● You should have a slide(s) that explains how far you got on your capstone. This should include pictures and a list of accomplishments toward your goal. If you have any testing that was done on the final product, this would be a great place to put it. ● You should have a slide(s) that explain where you would go from here. I want some specific goals and thoughts here. If you say you want to sell it, then give me details. Most of you will be sharing the steps you were unable to get to - I want the why and how this would happen as best you can explain. Again, add pictures and be as specific as possible here. ● Add your citations. Please use correct format (MLA works great). Do not simply list the URL of your 5 or more resources - that type of citing looks sloppy, lazy, and unprofessional. This slide is really the only slide that does not need any pictures. ● Finally, add a picture of yourself (in your professional dress) and prototype or parts of your prototype (if at all possible) with the words, “Thank you - Any Questions?” to end your slide show. Once done with this, it is time to present. Remember, that in order to earn your sash, you will need to present. This can be done from now until the end of fall semester...but if I were you, get it done early if you can!! Waiting will make this much more of a challenge especially with the unknown of next semester! Any questions, email me or ask in the stream.		

Resources	Google docs, internet
Extension & Enrichment	Continue working on your project..

Course	CIT III Engineering	Week Assigned	5/4/20-5/8/20
Lesson Title	Capstone Prototype Problems and Solution Slides		
Teacher(s), Email, & Other Contact Information	Mr. Tessmer dtessmer@fusd1.org All information will be shared through Google Classroom!		
Target Standards	**STANDARD 3.0 APPLY MATHEMATICAL LAWS AND PRINCIPLES RELEVANT TO ENGINEERING AND TECHNOLOGY** **STANDARD 4.0 APPLY FUNDAMENTAL SCIENTIFIC LAWS AND PRINCIPLES RELEVANT TO ENGINEERING AND TECHNOLOGY**		
Learning Goal	3) Solve the next problem in your capstone. 4) Create slides that describe prototype problems, testing and solutions.		
Essential Questions	How can we solve real world problems?		
Learning Activity	This week, we get into the meat of your presentation. This is why you have taken pictures of your progress on your prototype. These slides should contain your story of your prototype: ● Starting point - how did you begin your solution? Did you work on the frame, or the coding, or the mechanical movement? Using pictures and bullet points, take us through the "building" process. What did you do? Did it work? What were the testing results? How did this change your design or move your project forward? Use as many slides as necessary to share the story of your prototype. I have had students make 20 plus slides to tell this part of their story...it should be a minimum of 3 (details of at least three problems you solved). ● Testing is an important feature of these slides - we want to know how you tested parts of your prototypes and the results you got as you tested. Testing can be as simple as trying to put your frame together and it not holding or putting the mechanical pieces together and they do not rotate as far as you were hoping...then the discussion of how this influenced your design as you went on. ● You might also have had to do more research at certain points due to problems you were trying to solve...if this happened for you, you can add a blank slide and add the research next week. Concentrate on your prototype progress this week.		

	Okay, once you are done with this, keep working on your capstone if you can.
Resources	Google docs, internet
Extension & Enrichment	Continue working on your project..

Course	CIT III Engineering	Week Assigned	4/27/20-5/1/20
Lesson Title	Capstone Background and Problem Slides		
Teacher(s), Email, & Other Contact Information	Mr. Tessmer dtessmer@fusd1.org All information will be shared through Google Classroom!		
Target Standards	**STANDARD 3.0 APPLY MATHEMATICAL LAWS AND PRINCIPLES RELEVANT TO ENGINEERING AND TECHNOLOGY** **STANDARD 4.0 APPLY FUNDAMENTAL SCIENTIFIC LAWS AND PRINCIPLES RELEVANT TO ENGINEERING AND TECHNOLOGY**		
Learning Goal	5) Solve the next problem in your capstone. 6) Create slides that describe the background to your capstone, the actual problem you are trying to solve, and the initial brainstorming for your project.		
Essential Questions	How can we solve real world problems?		
Learning Activity	This week, you will work on the initial problem and brainstorm slides. Remember, this is your presentation of your capstone story. This is where you make a coherent presentation that helps the audience follow you through your capstone adventure. When you start your presentation, you need to hook your audience. They need to know who you are, where did this problem arise, why is this a problem, and then your initial ideas to solve this problem. Depending on your project, it might make sense to add your science research between your problem and the brainstorm which is perfectly acceptable...you will have to figure out what makes the most sense when telling your story. This is what you should focus on completing this week: ● Title Slide - name of capstone and yourself ● Intro to Problem Slide - an introduction/background to your problem...where did your problem come from? Here is an example, instead of simply stating “How do I fix my paper towel holder?” I would begin with the story…”Everyday I am cooking in my kitchen. When I cook chicken, I have to handle the raw chicken and my hands become full of harmful bacteria. This is when I usually reach for the paper towels. As I try to grab one, I have to hold on to the paper towel bar which contaminates the bar. I don’t want to get anyone sick and leave a mess.” I would add pictures of the problem area (my kitchen and paper towel holder).		

	• Problem - State your problem clearly so that your audience knows what you are trying to solve. Continuing with my example, “My capstone goal is to create an automatic paper towel dispenser.” Or you can state it as a question, “What kind of device can I create that will automatically dispense paper towels when I need them?” Either one works. You should include any specific criteria for your project here in bulleted form. So, if I need the paper towel dispenser to be a certain size to fit on my counter, then I need to state this here. • Brainstorm - I am hoping you kept your brainstorm...this is where you would give the audience your initial idea(s). If you have a legitimate brainstorm, you can share the top few ideas and then explain why you chose your initial idea. If you do not have a brainstorm, you can go into detail about your initial solution and how you thought it might solve the problem. If you need multiple slides to explain each part, then use multiple slides. You don’t have to fit each part on one slide! Also, make sure every slide has relevant pictures!! We like visual presentations - that means pictures are super important. Okay, once you are done with this, keep working on your capstone if you can.
Resources	Google docs, internet
Extension & Enrichment	Continue working on your project..

Course	CIT III Engineering	Week Assigned	4/20/20-4/24/20
Lesson Title	Capstone Progress Week of April 20 - April 24		
Teacher(s), Email, & Other Contact Information	Mr. Tessmer dtessmer@fusd1.org All information will be shared through Google Classroom!		
Target Standards	**STANDARD 3.0 APPLY MATHEMATICAL LAWS AND PRINCIPLES RELEVANT TO ENGINEERING AND TECHNOLOGY** **STANDARD 4.0 APPLY FUNDAMENTAL SCIENTIFIC LAWS AND PRINCIPLES RELEVANT TO ENGINEERING AND TECHNOLOGY**		
Learning Goal	7) Solve the next problem in your capstone or start a new mini-capstone project. 8) Communicate results of this week’s capstone progress.		
Essential Questions	How can we solve real world problems?		
Learning Activity	Capstone work week - move forward on your old capstone or start a new mini-capstone. Starting a new “mini” capstone? If you are unable to finish your capstone because it is at school or you do not have the correct tools or		

	supplies, maybe it is time to find a new problem you have encountered and want to try solving with materials and tools that you do have. Coding, game creation, organizational tools, garage projects, bedroom lighting...there are so many things you could work on! Don't sit around playing games or being bored all day - get up and try problem solving and getting into a new problem! You have time...probably too much time at this point! In order to earn points, resubmit your "Capstone Progress Documentation" here. Remember that I am looking for a detailed list of what you were able to accomplish this week, documentation of these accomplishments (pictures, research, etc), and your new objectives. Next week, we will add another part of your presentation documentation (background).
Resources	Google docs, internet
Extension & Enrichment	Continue working on your project..

Course	CIT III Engineering	Week Assigned	4/13/20-4/17/20
Lesson Title	Capstone Research Presentation		
Teacher(s), Email, & Other Contact Information	Mr. Tessmer dtessmer@fusd1.org All information will be shared through Google Classroom!		
Target Standards	**STANDARD 3.0 APPLY MATHEMATICAL LAWS AND PRINCIPLES RELEVANT TO ENGINEERING AND TECHNOLOGY** **STANDARD 4.0 APPLY FUNDAMENTAL SCIENTIFIC LAWS AND PRINCIPLES RELEVANT TO ENGINEERING AND TECHNOLOGY**		
Learning Goal	9) Students will edit their research presentation using comments/suggestions given by the teacher. 10) Students will create mp3 or wav audio files to present each slide. 11) Students will import audio into their research slides and submit their final product.		
Essential Questions	How can we use scientific or mathematical theory to assist with design of a real world application?		
Learning Activity	Students will edit their slides and then use online and app resources to record audio for each of their slides. They will submit their final presentation in google classroom of their capstone research.		
Resources	Google Slides, other audio recording apps.		

Extension & Enrichment	Continue working on project at home if possible.

Course	CIT III Engineering	Week Assigned	4/6/20-4/10/20
Lesson Title	Connecting Capstone with Research		
Teacher(s), Email, & Other Contact Information	Mr. Tessmer dtessmer@fusd1.org All information will be shared through Google Classroom!		
Target Standards	**STANDARD 3.0 APPLY MATHEMATICAL LAWS AND PRINCIPLES RELEVANT TO ENGINEERING AND TECHNOLOGY** **STANDARD 4.0 APPLY FUNDAMENTAL SCIENTIFIC LAWS AND PRINCIPLES RELEVANT TO ENGINEERING AND TECHNOLOGY**		
Learning Goal	12) Students will research and explain the relevant scientific or mathematical laws associated with their individual capstone. 13) Students will create a google slides presentation describing the relevant mathematical or scientific laws associated with their individual capstone project. 14) Students will cite their sources they have used to conduct their research.		
Essential Questions	How can we use scientific or mathematical theory to assist with design of a real world application?		
Learning Activity	Students will use the online research to determine and explain the scientific/mathematical theory behind their project.		
Resources	Google Slides		
Extension & Enrichment			