

# Saint Patrick High School

## Curriculum Guide

<b>Department:</b>	STEAM	<b>Grade and Level:</b>	Fr/Soph
<b>Class:</b>	Summer STEAM	<b>Term (Semester or Year):</b>	2018-2019

<b>Required Text:</b>	• Assigned articles
<b>Additional Resources (i.e. texts, materials, apps, etc.):</b>	iPad App Floor Planner 3D Printer Google Drive Google Sites

### Course Description

The Intro to STEAM program aims to address content standards in science, technology, engineering, art and math in an incorporated, practical, real world context. Creativity, communication and team building will be integrated throughout each lesson. This is a creative, problem-solving program that teaches students technical skills, independence, leadership, teamwork, organization, time management, and how to “sell” their solutions. Students will take the skills learned in each component of course and apply them to the completion of their final project.

### Academic Standards Addressed (CCSS or equivalent):

#### STEM Learners

**ST1.1** The STEM school/program supports non-traditional student participation through outreach to groups often underrepresented in STEM program areas

**ST1.2** Students work independently and collaboratively in an inquiry-based learning environment that encourages finding creative solutions to authentic and complex problems.

**ST1.3** Students are empowered to personalize and self-direct their STEM learning experiences supported by STEM educators who facilitate their learning.

**ST1.4** Students use technology resources to conduct research, demonstrate creative and critical thinking, and communicate and work collaboratively.

**ST1.5** Students demonstrate their learning through performance-based assessments and express their conclusions through elaborate explanations of their thinking.

## Unit Themes (Table of Contents)

<b>Week 1:</b>	What is STEAM
<b>Week 2:</b>	Budgeting for a design
<b>Week 3:</b>	Creating a model
<b>Week 4:</b>	Design Board

## Agreed Upon Assessments

Forms of assessments may include but are not limited to....

- Group Work
- Individual contributions
- Final Projects
- Readings
- In class assignments

## Research and Writing Expectations

Students will write reflections in relation to the successes and difficulties in executing their art projects.

<b>Unit:</b>	What is STEAM	<b>Duration:</b>	4 days July 9 - 12, 2018 11:45-3:20 pm
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## Essential Questions:

What is technology? What is the difference between technology and science? Why do humans design? What does it mean to be an engineer?

## Content:

Technology history, Different types of engineering, design continuum, design process, design brief, Criteria and constraints,

1. Introduction (video clips)
2. Establishing rules and regulations
3. Team building
4. Terminology
5. What is design/engineering
6. Graphic organizer with design terms: Principles of Visual Design: Balance, rhythm, repetition, unity, harmony, variety, balance
7. Creating a Concept Map/Mind Map
8. Kahoot
9. Keynote: students make teams and construct something Digital portfolio
10. Online: video clips, short article, artwork and identify principles of design. quiz

## Skills:

- Contrast technology and science
- explain the design continuum and show where different types of engineering are on the line of continuum
- use a design brief and develop a design brief
- Strategize to problem solve for an everyday real life problem
- create model or prototype
- teamwork and teamwork role

## Assessment:

- Students will be given a series of real life problems and develop design briefs that follow the “client’s” criteria and constraints.
  - Students will choose one profession of interest on the design continuum and research the education pathway of that profession.
  - Students will be placed on a team and work together following a design brief to produce the client’s product and present it to the class
- Students complete a self-assessment and group assessment each day

## Activity:

New candy bar logo/ design/ product

<b>Unit:</b>	Budgeting a Design	<b>Duration:</b>	4 days July 16 - 19, 2018 11:45-3:20 pm
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### **Overview:**

Students will take on the roles of architectural engineers and designers and work in groups of 3 or 4 to design a new dorm room to be mass produced for a university. Students will learn how to create a scaled blueprint which matches the criteria and does not exceed the construction constraints. Students will develop a proof of concept using Floor Planner, a CAD like software, and present their project to the class on the last day.

### **Essential Questions:**

- What is architectural engineering and design?
- How do criteria and constraints affect the design and optimization of your project?
- For what purposes are we using CAD (floor planner) software?

### **Affirmation Statements:**

- I will be able to draw a scaled model of a design with a paper, pencil, and protractor.
- I will be able to create and manipulate a budget sheet that meets project's criteria and abides by its constraints.
- I will be able to render our project using software (floor planner) for a more compelling visual aid.
- I will be able to communicate the priorities we choose and defend the decisions we made that ultimately produced our end result.

### **Common Assessments:**

- Logo Design
- Scaled drawing worksheet
- Budgeting worksheet
- Constraints and trade-off worksheet
- One room floorplanner model
- Project poster
- Presentation

# Day 1

Daily Routine	Skills / Content / Objectives	Resources	Standard
Begin (11:45 - 12:45)	<ul style="list-style-type: none"> <li>Name tent (circle, square, triangle, or Z)</li> <li>Ice Breaker (communication/solve a problem)</li> <li>Preview Engineering and architecture (video)</li> <li>Describe project</li> <li>Create company logo and name</li> </ul>	<ul style="list-style-type: none"> <li><a href="https://www2.cortland.edu/dotAsset/c1a635f6-a099-4ede-8f15-79b86e315088.pdf">Name Tent</a> activity, page 99</li> <li><a href="https://www.discoverdesign.org/challenges/rapid-design-charrette">Ice Breaker link</a></li> <li><a href="https://www.youtube.com/watch?v=-8sucrV14_c&amp;t=111s">Video link</a></li> </ul>	ST1.2
Break (12:45 - 1:00)			
Middle (1:00 - 2:00)	<ul style="list-style-type: none"> <li>Scaled Drawing activity: create 3 scaled drawing which increase in complexity</li> <li>Resource matching: identify how scale affects resources, stone, metal, glass, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Scaled drawing worksheet</li> <li>Resource matching worksheet</li> </ul>	ST1.5
Break (2:00 - 2:15)			
Last (2:15 - 3:20)	<ul style="list-style-type: none"> <li>Showcase some finished examples</li> <li>Discuss how to use the packet of information.</li> </ul>	<ul style="list-style-type: none"> <li>Design a dorm room information packet</li> </ul>	N/A

## Footnotes

- Students need a writing instrument at all times.
- Begin with prayer to St. Thomas: patron saint of architects.

## Day 2

Daily Routine	Skills / Content / Objectives	Resources	Standard
Begin (11:45 - 12:45)	<ul style="list-style-type: none"> <li>Listening and speaking in groups presentation.</li> <li>Budget video</li> <li>Budgeting vocabulary</li> </ul>	<ul style="list-style-type: none"> <li><a href="https://youtu.be/NXN4S5nGqFc">Budget video</a> https://youtu.be/NXN4S5nGqFc</li> <li><a href="http://www.speaking.pitt.edu/student/groups/smallgroupbehavior.html">Group work norms</a> http://www.speaking.pitt.edu/student/groups/smallgroupbehavior.html</li> </ul>	ST1.1
Break (12:45 - 1:00)			
Middle (1:00 - 2:00)	<ul style="list-style-type: none"> <li>Bean Budgeting game</li> <li>Making trade-offs activity</li> </ul>	<ul style="list-style-type: none"> <li><a href="http://financeintheclassroom.org/downloads/BeanGameExtension.pdf">Bean Activity</a> http://financeintheclassroom.org/downloads/BeanGameExtension.pdf</li> <li>Trade-off worksheet</li> </ul>	ST1.3
Break (2:00 - 2:15)			
Last (2:15 - 3:20)	<ul style="list-style-type: none"> <li>Start Teaching how to use floor planner with guided notes</li> <li>Students sign-up and create an account with sphs email</li> </ul>	<ul style="list-style-type: none"> <li><a href="https://youtu.be/njJID65eJI">Floor planner video #1</a> https://youtu.be/njJID65eJI</li> <li><a href="https://youtu.be/_9Mq1BHyHfw">Floor planner video #4</a> https://youtu.be/_9Mq1BHyHfw</li> </ul>	ST1.4 ST1.5

### Footnotes

- Begin with special prayer for architects ([link](#))

# Day 3

Daily Routine	Skills / Content / Objectives	Resources	Standard
Begin (11:45 - 12:45)	<ul style="list-style-type: none"><li>• Discuss project requirements and set priorities: wants vs needs</li><li>• Layout space of design in floor planner.</li></ul>	<ul style="list-style-type: none"><li>• iPad / <a href="https://floorplanner.com/">Floorplanner</a> https://floorplanner.com/</li></ul>	ST1.2 ST1.3 ST1.4
Break (12:45 - 1:00)			
Middle (1:00 - 2:00)	<ul style="list-style-type: none"><li>• Add surface materials and furniture.</li><li>• Update budget sheets</li></ul>	<ul style="list-style-type: none"><li>• iPad / <a href="https://floorplanner.com/">Floorplanner</a> https://floorplanner.com/</li></ul>	ST1.2 ST1.4
Break (2:00 - 2:15)			
Last (2:15 - 3:20)	<ul style="list-style-type: none"><li>• Start applying trade-off scenarios to optimize design.</li><li>• Prep for presentation</li></ul>	<ul style="list-style-type: none"><li>• Scratch budget sheets</li><li>• Poster board</li></ul>	ST1.3 ST1.4

## Footnotes

- St. Joseph Prayer for Carpenters ([link](#))

# Day 4

Daily Routine	Skills / Content / Objectives	Resources	Standard
Begin (11:45 - 12:45)	<ul style="list-style-type: none"><li>Finalize the end product</li><li>Prep for presentation.</li></ul>	<ul style="list-style-type: none"><li>iPad / <a href="https://floorplanner.com/">Floorplanner</a> <a href="https://floorplanner.com/">https://floorplanner.com/</a></li><li>Poster</li><li>Budget plan</li></ul>	ST1.3 ST1.4
Break (12:45 - 1:00)			
Middle (1:00 - 2:00)	<ul style="list-style-type: none"><li>Give presentations</li><li>Get Feedback</li></ul>	<ul style="list-style-type: none"><li>Presentation rubric</li></ul>	ST1.5
Break (2:00 - 2:15)			
Last (2:15 - 3:20)	<ul style="list-style-type: none"><li>Extension<ul style="list-style-type: none"><li>What else could be build</li><li>How would it compare or contrast</li><li>Get started, layout a plan</li></ul></li></ul>	<ul style="list-style-type: none"><li>iPad / <a href="https://floorplanner.com/">Floorplanner</a> <a href="https://floorplanner.com/">https://floorplanner.com/</a></li></ul>	ST1.2 ST1.3

## Footnotes

- Prayer for Gratitude ([link](#))



<b>Unit:</b>	3D Printing for Manufacturing	<b>Duration:</b>	4 days July 23 - 26, 2018 11:45-3:20 pm
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### Essential Questions:

- What is a CAD program? How do you design a model to be printed on a 3-D printer?

### Day 1 (Write and repeat this process for four days)

Daily Routine	Skills / Content / Objectives	Resources	Standard
Prayer	St. Albert the Great Patron Saint of Scientists	<a href="http://catholicgo.org/prayer-to-saint-albert-the-great/">http://catholicgo.org/prayer-to-saint-albert-the-great/</a>	
Group Activity	Spaghetti/Marshmallow Tower Spaghetti and Marshmallow Team Building Design Activity (Foster Collaboration)	Spaghetti and marshmallows <a href="https://youthgroupgames.com.au/games/680/spaghetti-and-marshmallows/">https://youthgroupgames.com.au/games/680/spaghetti-and-marshmallows/</a>	
Video/Discussion	Intro to 3D Printing	Introduction to 3D Printing (3 ½ min) <a href="https://www.youtube.com/watch?v=Ev-MM9cGKiQ">https://www.youtube.com/watch?v=Ev-MM9cGKiQ</a>	
All-Group Discussion/Concept Map	<b>Vocab Terms for the week:</b>  CAD Additive Manufacturing Filament PLA Desktop 3D printing Material Extrusion  Introduction to Tinkercad Sign up for Tinkercad account Complete 6 Intro Tutorials	Library Laptops	
Break			
Design and Manufacturing	How will students plan out their design? What considerations do they need to make? Consider scale, patterns, etc.  Discuss design	13 Things I wish I knew about 3D printing <a href="https://www.youtube.com/watch?v=Sqh3FM12KVg">https://www.youtube.com/watch?v=Sqh3FM12KVg</a>  Engineering Design Tips for 3D printing <a href="https://www.youtube.com/watch?v=pUUG3L8NPOk">https://www.youtube.com/watch?v=pUUG3L8NPOk</a>	

	strategies, preparation work, scaling objects		
Small-Group Discussion	<p>Teams decide what piece of furniture they want to create. Each team member creates their own version (properly scaled) of the item. Teams will vote tomorrow which member's design is printed.</p> <p>Each member works out a rough sketch of their furniture piece.</p>		
Break			
3D Design	Using Tinkercad, begin designing 1 piece of furniture for dorm room model		
Wrap-up	Reflection on Tinkercad experience. Questions? What did you discover about using Tinkercad that may be useful to the others to know?	Homework: Finish your furniture piece for tomorrow morning.	

## Day 2 What Can I Do with 3D Printing?

Daily Routine	Skills / Content / Objectives	Resources	Standard
Prayer	St. Patrick Patron Saint of Engineers	<a href="https://www.catholic.org/prayers/prayer.php?p=302">https://www.catholic.org/prayers/prayer.php?p=302</a>	
Group Activity	<p>Students will finish furniture design and vote on which team member's design will be printed.</p> <p>Live tutorial on Makerbot Print, rafts, supports, etc.</p> <p>Begin printing on Makerbot Replicator</p>		

Video Clip	<p>Student helper will be in charge of changing out print jobs.</p> <p>STEAM students will view and discuss Ted Talk video</p> <p>Concept map for video vocabulary listed below</p>	<p>Introduction to 3D printing in manufacturing and engineering (Ted Talk by Aaron Jenings TedxVarna)  <a href="https://www.youtube.com/watch?v=hHQCKSSKs_Q">https://www.youtube.com/watch?v=hHQCKSSKs_Q</a></p> <p>Video of 3D printed car jack as mentioned in Aaron Jenings' Ted Talk  <a href="https://www.youtube.com/watch?v=KNyueiXe-r0">https://www.youtube.com/watch?v=KNyueiXe-r0</a></p>	
All-Group Discussion/Concept Map	<p>CAD</p> <p>Additive Manufacturing</p> <p>stereolithography</p> <p>Optical fabrication</p> <p>Filament</p> <p>PLA</p> <p>FDM (Fusion deposit machining)</p> <p>Subtractive Manufacturing</p> <p>CNC milling</p> <p>Desktop 3D printing</p> <p>Binder jetting</p> <p>Direct energy depositing</p> <p>Material jetting</p> <p>Material Extrusion</p> <p>Design for Manufacturing (DFM)</p>	<p>What impact has 3D printing had on the manufacturing industry? What future implications (positive or negative) do you see for manufacturing as a result of the growth of 3D printing?</p>	
Break			
3D Printing	<p>Finish printing designs if needed.</p> <p>Teams present Concept Maps</p> <p>Read and discuss articles about 3D printing in manufacturing</p>	<p>Read article about 3D printing in manufacturing</p>	
Break			
Team design evaluation and discussion/problem solving	<p>Teams evaluate their furniture design.</p> <p>What worked?What didn't work? What needs to be fixed? How do we fix it?</p>		
	<p>Go back to original design as a team and help fix/adjust design for re-printing</p>		

## Day 3 Careers in Manufacturing: 3D Printing in Industry

Daily Routine	Skills / Content / Objectives	Resources	Standard
Prayer	<a href="#">St. Isidore Patron Saint of Computer users and programmers</a>	<a href="https://www.catholicculture.org/culture/liturgicalyear/prayers/view.cfm?id=1276">https://www.catholicculture.org/culture/liturgicalyear/prayers/view.cfm?id=1276</a>	
Group Activity	Bags for bags game (Foster problem-solving)  Reprint 2nd draft of first design		
Break			
Reading and video	Careers in Manufacturing	How is 3D printing being used in various fields? <a href="https://www.youtube.com/watch?v=HR4KVhzgnfM">https://www.youtube.com/watch?v=HR4KVhzgnfM</a> (3D limbs and hearts) <a href="https://www.youtube.com/watch?v=-RgI_bcETkM">https://www.youtube.com/watch?v=-RgI_bcETkM</a> (Printing skin) <a href="https://www.youtube.com/watch?v=UXG2LWggIcQ">https://www.youtube.com/watch?v=UXG2LWggIcQ</a> (Mathematical Impressions) <a href="https://www.youtube.com/watch?v=R8qFFGfVHks">https://www.youtube.com/watch?v=R8qFFGfVHks</a> (Additive manufacturing in Aerospace eng.)	
Small-Group Discussion/Concept Map	The impact of 3D printing on our lives today		
Break			
Group Discussion	Share Concept Maps and discuss the impact 3D printing will have on jobs, personal lives, etc.		
Wrap-up Written Reflection	How is 3D printing changing the industry in both positive and negative ways? Which industry do you see 3D printing having the biggest impact?		

## Day 4 Lending a Global Hand: Social Justice with 3D Printing

Daily Routine	Skills / Content / Objectives	Resources	Standard
Prayer	St.Hubertus patron saint of mathematicians	<a href="http://www.prayerscapes.com/prayers/children/math_prayer.html">http://www.prayerscapes.com/prayers/children/math_prayer.html</a>	
Ice Breaker Group Activity	Thinking Outside of the Box design and building activity (Foster Creative Thinking)	<a href="https://www.trainingcoursematerial.com/free-games-activities/creative-thinking-activities/25-objects-game">https://www.trainingcoursematerial.com/free-games-activities/creative-thinking-activities/25-objects-game</a>	
Video Clip			
All-Group Discussion/Concept Map	Vocab Terms		
Break			
Reading			
Small-Group Discussion			
Break			
Wrap up Discussion	What impact do students see 3D printing having on our society and in various aspects of people's lives? In what ways is 3D printing shaping the different industries that use it? What future ideas do you have about 3D printing and how it might be used?		

<b>Unit:</b>	What is Design? Use Design to create an organized composition	<b>Duration:</b>	4 days July 30 - August 2, 2018 11:45-3:20 pm
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### Essential Questions:

- What is the design process?
- What hand rendering skills do engineers use/need when designing?
- What are the roles of a successful team?

### Affirmation Statements:

Students will be able to...:

- Identify the Elements of Art
- Identify the Principles of Design
- Demonstrate that a composition is created when the principles organize the elements

### Common Assessments:

- Formative Assessments
  - Observations
  - Questioning
  - Discussion
  - Peer/Self Assessments
- Summative Assessments
- Class participation in critiques and demonstrations
- Ability to follow sequential steps, focus, initiative, time-on-task
- Use of art vocabulary, identification of tools and processes
- Clean-up, organization and care of materials
- Think-talk-Write
- Peer Editing: Praise, Question, Polish
- Critique: Notice, Like, Wonder
- Student led critique

### Day 1: Identifying the Elements of Art and Principles of Design

Daily Routine	Skills / Content / Objectives	Resources	Standard
Prayer	The Designer's Prayer	<a href="https://www.johnsonbanks.co.uk/thoughts/the-designers-prayer">https://www.johnsonbanks.co.uk/thoughts/the-designers-prayer</a>	
Ice Breaker Group Activity	Bubble gum artist	<a href="http://www.signupgenius.com/school/icebreaker-activities-middle-school-high-school.cfm">http://www.signupgenius.com/school/icebreaker-activities-middle-school-high-school.cfm</a>	ST1.2
Teacher Intro	The Elements of Art Where they are found Who uses them Introduce the term: graphic organizer		

	Review what has been learned about STEAM and formulate questions about the 'A'		
Video Clips	<p>Elements of Art Videos</p> <p>In small groups, students will watch each of these videos and work together to construct graphic organizers for each element of art. Groups will continue to expand understanding by adding additional ideas to each board.</p>	<p>7 Elements of Art (5:36)  <a href="https://www.youtube.com/watch?v=BwNQkhKg2Iq&amp;t=9s">https://www.youtube.com/watch?v=BwNQkhKg2Iq&amp;t=9s</a></p> <p>Line (3:26)  <a href="https://www.youtube.com/watch?v=BDePyEFT1gQ&amp;index=1&amp;list=PLiOil1qP-cMURN_8baOr3QWfySmljqKlj">https://www.youtube.com/watch?v=BDePyEFT1gQ&amp;index=1&amp;list=PLiOil1qP-cMURN_8baOr3QWfySmljqKlj</a></p> <p>Shape (3:22)  <a href="https://www.youtube.com/watch?v=bJzGkZwkHt4&amp;index=2&amp;list=PLiOil1qP-cMURN_8baOr3QWfySmljqKlj">https://www.youtube.com/watch?v=bJzGkZwkHt4&amp;index=2&amp;list=PLiOil1qP-cMURN_8baOr3QWfySmljqKlj</a></p> <p>Form (2:58)  <a href="https://www.youtube.com/watch?v=9DIPs3T2dQk&amp;index=3&amp;list=PLiOil1qP-cMURN_8baOr3QWfySmljqKlj">https://www.youtube.com/watch?v=9DIPs3T2dQk&amp;index=3&amp;list=PLiOil1qP-cMURN_8baOr3QWfySmljqKlj</a></p> <p>Value (3:37)  <a href="https://www.youtube.com/watch?v=AAwYHNo31ZQ&amp;index=5&amp;list=PLiOil1qP-cMURN_8baOr3QWfySmljqKlj">https://www.youtube.com/watch?v=AAwYHNo31ZQ&amp;index=5&amp;list=PLiOil1qP-cMURN_8baOr3QWfySmljqKlj</a></p> <p>Color (4:43)  <a href="https://www.youtube.com/watch?v=wWWW_UbrkBEw&amp;list=PLiOil1qP-cMURN_8baOr3QWfySmljqKlj&amp;index=6">https://www.youtube.com/watch?v=wWWW_UbrkBEw&amp;list=PLiOil1qP-cMURN_8baOr3QWfySmljqKlj&amp;index=6</a></p> <p>Texture (4:09)  <a href="https://www.youtube.com/watch?v=YoOb3JSDAUo&amp;index=4&amp;list=PLiOil1qP-cMURN_8baOr3QWfySmljqKlj">https://www.youtube.com/watch?v=YoOb3JSDAUo&amp;index=4&amp;list=PLiOil1qP-cMURN_8baOr3QWfySmljqKlj</a></p> <p>Space (4:54)  <a href="https://www.youtube.com/watch?v=U11B_0FCn6o&amp;index=7&amp;list=PLiOil1qP-cMURN_8baOr3QWfySmljqKlj">https://www.youtube.com/watch?v=U11B_0FCn6o&amp;index=7&amp;list=PLiOil1qP-cMURN_8baOr3QWfySmljqKlj</a></p> <p>Extra Resources:  <a href="https://www.youtube.com/watch?v=ZK86XQ1iFVs">https://www.youtube.com/watch?v=ZK86XQ1iFVs</a>  <a href="https://www.youtube.com/watch?v=2SP_Qg1w_J8">https://www.youtube.com/watch?v=2SP_Qg1w_J8</a></p>	ST1.4
Break			
Student Led	<ul style="list-style-type: none"> <li>Assign groups a single element</li> <li>Determine how to best present</li> </ul>	<p>Provide Examples of graphic organizers</p> <p>Students will be working with their technology</p>	ST1.3 ST1.4

	<p>materials: concept map, graphic organizer</p> <ul style="list-style-type: none"> <li>• Oversee progress</li> <li>• Present</li> </ul>		
Break			
<p>Group Celery experiment:  <a href="https://www.coffeecupsandcrayons.com/celery-science-experiment-kids/">https://www.coffeecupsandcrayons.com/celery-science-experiment-kids/</a></p> <p>Think like a scientist and record changes in the plants daily</p>			
Small-Group Activity	Checking understanding	<p>Teacher demo first...</p> <p>Using magazines, students will work together to select advertisements that demonstrate each design term. Students will tape their ad to the corresponding board. Groups will each have a turn to explain their contribution.</p>	ST1.5
Share and Reflect	Written student reflection: "We collaborate...."		ST1.4

## Day 2: Exploring Color Theory

Daily Routine	Skills / Content / Objectives	Resources	Standard
Prayer	Prayers to ignite creativity	<a href="http://www.beliefnet.com/inspiration/galleries/prayers-to-ignite-creativity.aspx?p=3">http://www.beliefnet.com/inspiration/galleries/prayers-to-ignite-creativity.aspx?p=3</a>	
Ice Breaker Group Activity	Team Building: Construct a marble run with your team using paper towel rolls	Paper towel rolls marbles	ST1.2
Video Clip	Seeing color	Radiolab.org Rippin' the Rainbow <a href="https://www.wnycstudios.org/story/rippin-the-rainbow-an-even-newer-one">https://www.wnycstudios.org/story/rippin-the-rainbow-an-even-newer-one</a>	
Break			
Individual Student Activity	Identifying the primary colors Identifying color harmonies Mixing colors to create a	Paint examples Tempera paint Paint materials Design Boards	ST1.2 ST1.5



	color wheel Mixing colors to create secondary and tertiary colors Students to create a color wheel for their assignment and select a color harmony for their project board: Wallpaper, carpeting, building materials		
Break			
Teacher Introduction	The Principles of Design	Vocab Terms Rhythm, repetition, movement, unity, harmony, variety, proportion, balance, emphasis	
Student Activity	Create a Zine to demonstrate understanding of terminology	Zine examples	ST1.3
Share and Reflect	"I communicate with my art..."		ST1.5

### Day 3: Investigating the Design Principles

Daily Routine	Skills / Content / Objectives	Resources	Standard
Prayer	Prayer for class	<a href="http://www.lords-prayer-words.com/family/prayer_before_class.html">http://www.lords-prayer-words.com/family/prayer_before_class.html</a>	
Ice Breaker Group Activity	Architect	<a href="https://www.icebreakers.ws/active/team-architect.html">https://www.icebreakers.ws/active/team-architect.html</a>	ST1.2
Video Clip	Building a design board	<b>TED Talk</b> <a href="https://www.youtube.com/watch?v=9uOMectkCCs">https://www.youtube.com/watch?v=9uOMectkCCs</a>	
Break			
Reading	What is design? Vocab Terms: balance, proximity, alignment, repetition, contrast and space.	Textbook	ST1.3
All-Group Discussion/Concept Map	Create a concept map with examples from magazines	Magazines	ST1.4
Share and Reflect	"I developed my artmaking		ST1.5

	skills...”		
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## Day 4: Creating a Composition

Daily Routine	Skills / Content / Objectives	Resources	Standard
Prayer	Trust	<a href="https://prayer.knowing-jesus.com/Prayers-for-Trust">https://prayer.knowing-jesus.com/Prayers-for-Trust</a>	
Ice Breaker Group Activity	Blindfolded self-portraits	<a href="https://www.signupgenius.com/school/ice-breaker-activities-middle-school-high-school.cfm">https://www.signupgenius.com/school/ice-breaker-activities-middle-school-high-school.cfm</a>	ST1.2
Video Clip	Creating a 3-dimensional space	One-point perspective drawing and creating a one-point perspective drawing using tape	ST1.2 ST1.3
Break			
Activity	Completing the Design Board with all artifacts <ul style="list-style-type: none"> <li>● Color Wheel</li> <li>● Color Harmony for project</li> <li>● 2 vocab graphic organizers</li> <li>● Artifacts from previous weeks</li> </ul>		ST1.3 ST1.4 ST1.5
Break			
Share and Reflect	“I take risks with my art....”		ST1.5

## Appendix

### **CCSS Resources**

Common Core Website: <http://www.corestandards.org/read-the-standards/>

### **Illinois State Standards for Fine Art**

[http://www.isbe.net/ils/fine\\_arts/standards.htm](http://www.isbe.net/ils/fine_arts/standards.htm)

### **STEM State Standards**

[http://www.advanc-ed.org/sites/default/files/documents/state-resources/STEM%20Standard\\_web-ready.pdf](http://www.advanc-ed.org/sites/default/files/documents/state-resources/STEM%20Standard_web-ready.pdf)

### **Essential Questions**

Essential Questions help structure and plan an academic unit. For information regarding developing Essential Questions, please refer to the file shared with you on Google Drive.

### **Affirmation Verbage (Action Words)**

Examples of Action Verbs:

Discuss, recall, state, measure, identify, collect, create, hypothesize, analyze, identify, define, describe