

talkSTEM @ Duke UNIVERSITY

THROUGH AN ENGINEERING LENS

Scan the QR codes below to watch short videos providing a fascinating look into the engineering design process here at Duke University.



Introduction
to the Engineering
Design Process

Capacity and
Design at the
Bryan Center Plaza



The Design Pod:
What is a
Makerspace?

Investigating
the Duke
Engineering Quad



Dorm Architecture
in the East Campus

Designing Games
at the Cameron
Indoor Stadium's
Basketball Court



Scan here to view
the entire playlist
of videos from
talkSTEM@Duke !

WalkSTEM@Duke Activity Sheet

Intro to Duke and Design

Many of the original buildings on Duke's campus, including the Duke Chapel, were designed by African-American architect Julian Abele. Use the QR code to learn about Mr. Abele and the buildings he designed. After exploring Duke's architectural style, draw



your own addition to campus. Will it be a building? A statue of you? Be creative!

<https://spotlight.duke.edu/abele/>

Bryan Center Plaza

Practice brainstorming solutions to encourage social distancing on the BC plaza. What other materials could be used? Does it need to be a physical solution?

Come up with as many ideas as possible in 5 minutes. Then find a partner and share. See if you can combine any of your ideas with your partners and come up with more! The goal is to come up with lots of ideas, not one perfect idea.

Engineering Quad

Duke offers degrees in five types of engineering, but there are dozens of different kinds of engineering! Use the link below to discover some of the ways that engineers change the world. Maybe you'll decide that you want to be an engineer, too!



<https://www.nacme.org/types-of-engineering>

The Design Pod

Use your mini-makerspace to build something! Use your creativity and come up with something on your own, or complete one of these design challenges:

Grades 3-5:

Grades 6-8:



[3-5 pdf link here](#)

[6-8 pdf link here](#)

East Campus

Think of a numerical question you have about your home or classroom. Which time of day is busiest for your refrigerator?

How many times do you sharpen your pencil every day?

Collect a data set to help answer your question and create a graph to display it. What type of graph is best? A bar graph? Pie chart?

Cameron Indoor Stadium

Create a new game with some or all of these materials: a jump rope, tennis rackets, a basketball, hula hoops, Monopoly money, and a blindfold

Write down the rules of your game and give it a name. Then try to play it! You may need to *iterate* and add some new rules as you play.

WalkSTEM@Duke Activity Sheet: Tips for Educators

<p>Duke Chapel (Intro Video)</p> <ul style="list-style-type: none"> There are many different representations of the design process (that can be found online) to compliment this tour's version I recommend showing some architectural/ engineering drawings before the activity and identifying some of the elements (dimensions, labels, etc.) 	<p>Bryan Center Plaza</p> <ul style="list-style-type: none"> This is a good Think-Pair-Share activity Notecards are great to separate ideas during brainstorming. It also makes counting ideas easy <p>Post-COVID: Instead of brainstorming about social distancing, have students think about problems/things to improve in the cafeteria or another communal space at school.</p>	<p>Engineering Quad</p> <ul style="list-style-type: none"> The deliverables for this activity are very flexible. <p>Options include:</p> <ul style="list-style-type: none"> Presentation on a type of engineering Looking at majors offered by different universities Interviewing an engineer
<p>The Design Pod</p> <ul style="list-style-type: none"> A great youtube video about making a low-cost mini-makerspace: https://youtu.be/kKaHAWhcMGw <p>Design challenges are about quick thinking, building things, and having fun!</p>	<p>East Campus</p> <ul style="list-style-type: none"> This activity explores the world via numerical modeling A great way to teach the different types of graphs and when to use them <p>This could also be a project for the whole classroom where every student helps with data collection</p>	<p>Cameron Indoor Stadium</p> <ul style="list-style-type: none"> This activity is a fun way to incorporate kinesthetic learning and communication skills Documenting and interpreting game rules could constitute an activity like this pb&j instructional challenge: https://youtu.be/ysOxrAYRv5M