Engineering Journeys: Navigating Careers and Opportunities

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Hispanic Access Foundation

What to expect?

01
GET TO KNOW ME

02
GET TO KNOW ABOUT ENGINEERING

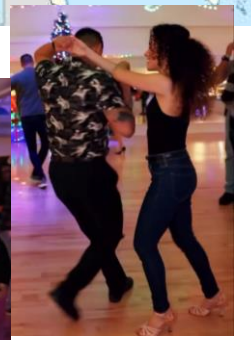
03
ACTIVITY
You will pretend that you are an engineer

04
HAVE FUN

About me...

- Originally from Caguas, Puerto Rico
- BS in Electrical Engineering
  - Minor in Applied Mathematics
- PhD from Michigan State University
- Assistant Professor of Electrical and Computer Engineering at The Citadel
- Love to travel (27 states visited)

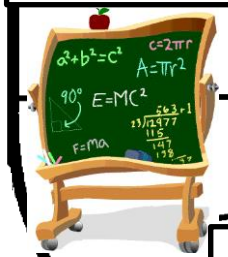
- Love to expend time with my family
- Love to help others succeed
- Love to dance Salsa



The beginning...

Engineers use science, math, and technology to improve society's quality of life

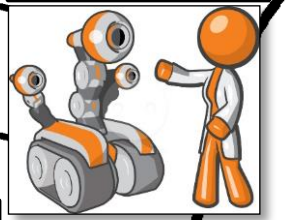
Elementary school



7th grade

Interested in…

High school



College

Raytheon

Electrical Engineer

MITRE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

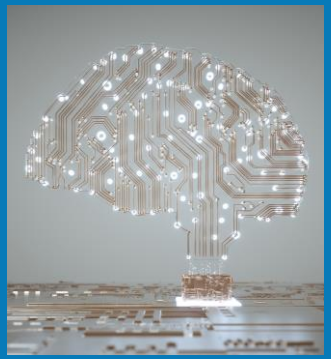
Mentors

Seven Years Later…

Engineering + Pasion

Curiosity

Problem-solving



Innovation

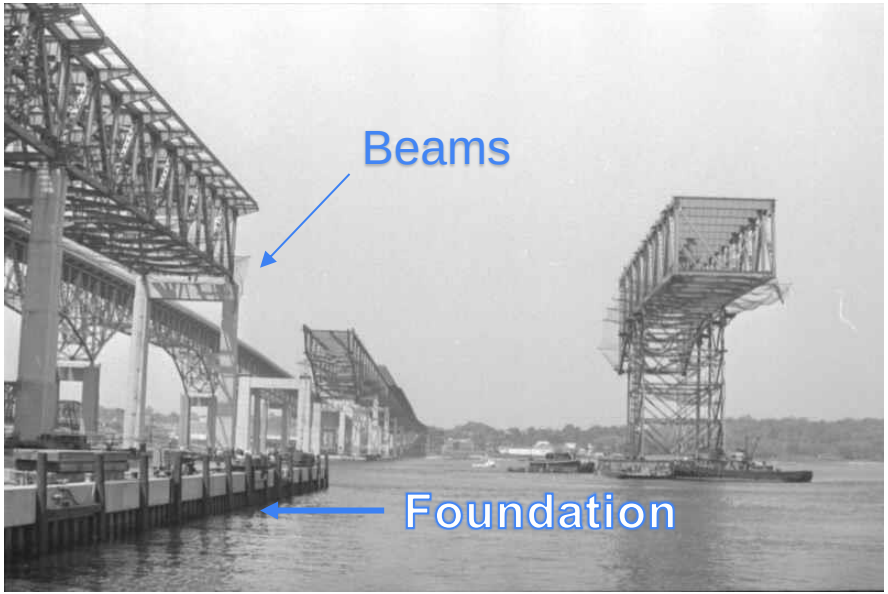
Application

These qualities are not unique to electrical engineering but are at the core of many engineering disciplines.

What are the different fields of Engineering?

Gold Star Memorial Bridge, New London/Groton, CT

Civil Engineering



- Design the bridge's structure
- Make it strong enough for daily use
- Plan where everything goes (foundation and support beams)
- Test the ground

Transportation Engineering

Branch of Civil Engineering

- Plan and design transportation systems
  - Roads
  - Bridges
- Plan the best ways for traffic to flow smoothly into and around the bridge
- Help prevent accidents and reduce delays

Materials Engineering

- Select materials that can withstand New London’s coastal environment
- Develop concrete or use composite materials that resist saltwater corrosion
- Test materials to ensure longevity

Chemical Engineering

- Create special coatings that protect steel and concrete from rust and damage
- Assist in evaluating the environmental safety of chemicals used in bridge construction and maintenance

Environmental Engineering

- Protect the environment
- Keep the river or ocean clean
- Reduce impact on wildlife
- Prevent erosion
- Make sure the bridge is safe for the people and the planet

Mechanical Engineering

- Design moving parts, like expansion joints
- Add helpful systems, like de-icing equipment or maintenance mechanisms for bridge inspections
- Make sure the bridge's parts work smoothly and safely, even in different weather conditions

Electrical Engineering

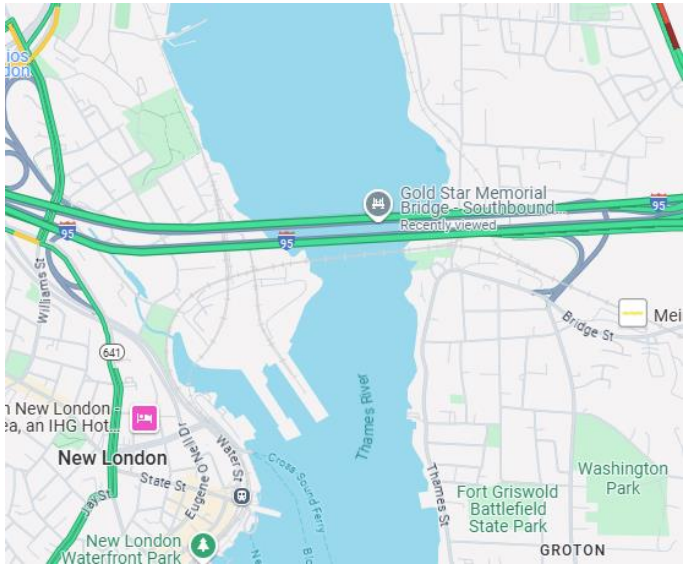
- Set up lighting and power
- Use sensors to monitor the bridge

- Help keep the bridge safe and powered for everyone

Computer Engineering

- Design and set up traffic monitoring and automated toll systems

Software Engineering



- Develop applications for bridge monitoring, traffic control, and maintenance scheduling
- Create user-friendly interfaces for public transportation

Other Engineering Fields

- Industrial Engineering
- Aerospace Engineering
- Petroleum Engineering
- Nuclear Engineering
- Biomedical Engineering

Related Technical Careers

- Electronics Technician Certification
- Associate Degrees
  - Computer Engineering Technology
  - Environmental Engineering Technology
  - Nuclear Engineering Technology
  - Computer Engineering Technology
  - There are many more…!

Related Technical Careers in CT STATE COMMUNITY COLLEGE

Programs

- Biomedical Engineering Technology, AS (BMDT-AS)
- Computer Engineering Technology, AS (CETC-AS)
- Electronic Engineering Technology, AS (ELET-AS)
- Electronics Technician Certificate (ELTC-CC)
- Engineering Science, AS (ENSC-AS-COT)
- Environmental Engineering Technology, AS (EVET-AS)
- Environmental Engineering Technology: Environmental Health & Safety Management Certificate (EHSF-CC)
- Mechanical Engineering Technology, AS (MCET-AS)
- Nuclear Engineering Technology, AS (NENT-AS)
- Plastic Injection Molding Technology Certificate (PMTC-CC)
- Plastic Injection Molding Technology, AS (PMTC-AS)
- Quality Control Certificate (QUAL-CC)
- Technology Studies, AS (TCHS-AS-COT)
- Technology Studies: Advanced Manufacturing Machine Technology Certificate Option 1 (AMC1-CC-COT)
- Technology Studies: Advanced Manufacturing Machine Technology Certificate Option 2 (AMC2-CC-COT)
- Technology Studies: Advanced Manufacturing Machine Technology Option 1 (AMT1-AS-COT)
- Technology Studies: Advanced Manufacturing Machine Technology Option 2 (AMT2-AS-COT)
- Technology Studies: Artificial Intelligence, AS (ARIN-AS-COT)
- Technology Studies: Biomolecular Sciences, AS (BIMO-AS-COT)
- Technology Studies: CAD User Certificate (CADU-CC-COT)
- Technology Studies: Computer Engineering Technology, AS (CETC-AS-COT)
- Technology Studies: Energy Management Certificate (ENMC-CC-COT)
- Technology Studies: Energy Management, AS (ENMG-AS-COT)
- Technology Studies: Engineering Technology, AS (ENTE-AS-COT)
- Technology Studies: Environmental Science, AS (ENVS-AS-COT)
- Technology Studies: Industrial Technology, AS (INTC-AS-COT)
- Technology Studies: Manufacturing Engineering Technology, AS (MENT-AS-COT)
- Technology Studies: Mechanical CAD Certificate (CADM-CC-COT)
- Technology Studies: Mechatronics Automation Technician (MTCH-AS-COT)
- Technology Studies: Mechatronics Automation Technician Certificate (MATC-CC-COT)
- Technology Studies: Precision Manufacturing Certificate (PRMC-CC-COT)
- Technology Studies: Precision Manufacturing, AS (PRMN-AS-COT)
- Technology Studies: Robotics and Mechatronics Technician Certificate (RMTC-CC-COT)
- Technology Studies: Robotics and Mechatronics Technician, AS (RMTH-AS-COT)
- Technology Studies: Technology and Engineering Education, AS (TEED-AS-COT)
- Technology Studies: Welding & Fabrication (WFBT-AS-COT)
- Technology Studies: Welding and Fabrication Technologies Certificate (WFBC-CC-COT)

https://catalog.ctstate.edu/content.php?catoid=19&navoid=2066

What can you do with as an Engineer?

Public Sector

Graduate Studies

Private Sector

Post-Bac Studies

Non-profit Sector

Fellowships I applied to…

$20,000

$4,000

~$54,000

$20,000

~$138,000

What do we own to Engineering?

Engineering Challenge

Work in groups of at least three participants

Cards to the Lighted Sky

The Problem

The Things of Yesterday Society (TOYS) currently lacks a means to effectively observe and enjoy the scenic views of the ocean around Waterford Beach Park. They need a solution that provides a safe, portable, and elevated viewing platform to enhance their experience.

Cards to the Lighted Sky

Introduction

Your engineering firm (New London Engineering, Inc.) has a contract with the Things of Yesterday Society (TOYS) to design and build the community's first portable elevated viewing platform to give the TOYS a great view of the ocean near Waterford Beach Park.

Cards to the Lighted Sky

- The top of the structure must have a platform that will allow TOYS to look around at the views of the region.
- The platform should be illuminated.
- The platform height should be at least 12 inches above the ground level to provide a great view.
- The structure must remain standing in high winds (created by a fan at close proximity).

Construction Materials

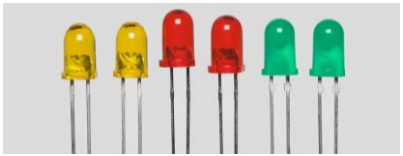
- One box of standard playing cards

- One roll of cellophane tape

- Scissors (be careful)

- A ruler

- LEDs



- Copper tape

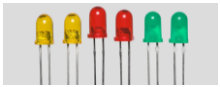
- Batteries

Illumination – Paper Circuit

Circuits conduct electricity!

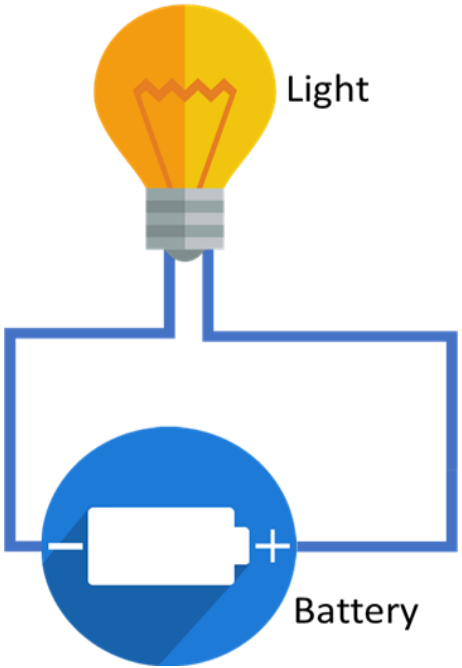
We need a power source

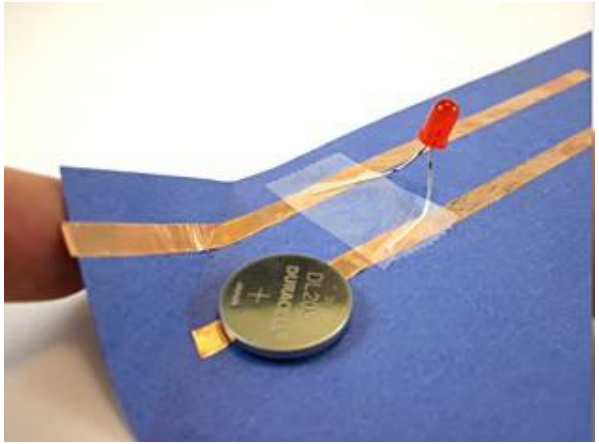
We need to loop back to the source



We need components that consume the electrical charge provided by the power source

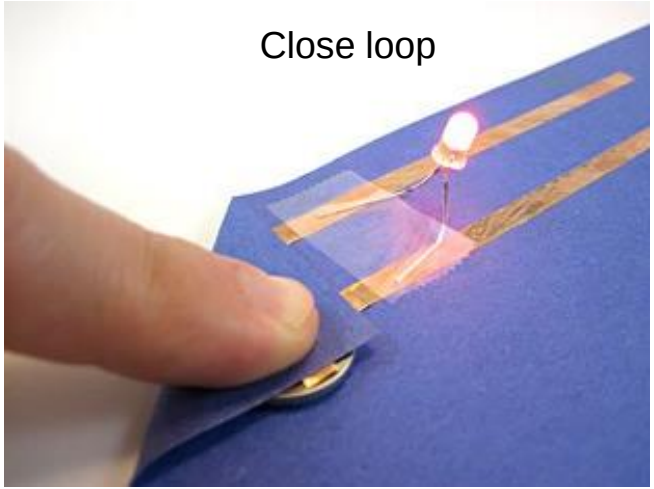
Illumination – Paper Circuit





Open loop

Close loop



Activity reference: https://www.sciencebuddies.org/stem-activities/paper-circuit

Activity time!

20 minutes

Let’s Test!