

The Learning Blade STEM Toolbox

The Learning Blade toolbox is organized by 12 major “Missions” that challenge students through social-centered grand challenges. Each Mission contains a full set of online and offline activities.

- **Full Missions** each include 40 interdisciplinary online STEM and computer science lessons, and takes approximately 8-10 hours to complete.
- **Express Missions** are shortened versions of each full Mission, including 10 interdisciplinary online lessons, and takes approximately 2 hours to complete.

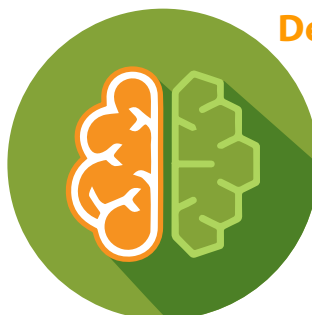
In addition to the robust online lessons, each Mission includes the following ready-to-use activities:

Interactive Lessons



Over 400 online lessons connect more than 100 STEM careers and technologies to students' academic skills, demonstrating real-world problem solving.

Design Thinking



Students use Design Thinking methodology to solve complex problems through brainstorming, collaboration, and the creative exploration of new possibilities.

Challenge Projects



Simple hands-on activities emphasize problem solving, critical thinking, teamwork and communication using readily-available materials.

3D Printing Activities



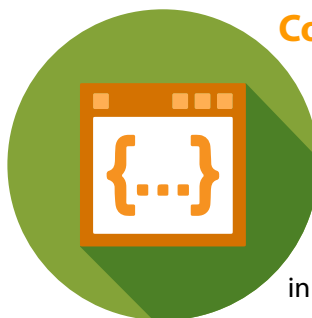
3D printing experiments and projects demonstrate STEM principles and provide students experience turning 3D designs into physical items.

Career Videos



Each STEM career addressed in our online lessons also includes a career introduction video presenting the career and its education pathway.

Coding Activities



Fun, interactive coding lessons introduce students to computer science and the development of problem-solving skills, logic, and creativity needed for success in career paths.

Parent Discussions



Parent-ready handouts stimulate STEM conversations at home, help fill ESSA requirements for parental involvement, and encourage research and simple at-home experiments.

Papercraft Figures



Each STEM career and technology is accompanied by a 3D papercraft figure students can assemble, helping internalize a knowledge of 3D shapes and offer a tangible reminder of the careers and technologies.

Learning Blade Missions

Mission	Description	Career Clusters
Dolphin Rescue	Help rescue rehabilitate an injured dolphin, including creating an artificial prosthetic tail	Biomedical, Veterinary Medicine
Energy Sources	Evaluate alternative or upgraded energy sources for a city that currently has an old coal-fired power plant	Energy, Environment
Entrepreneurship	Set up a new business with a focus on entrepreneurship	Finance, Business, Resource Management
Flu Outbreak	Look at how health and IT professionals can use data warehousing and analysis to predict flu outbreaks using GIS and social media data	Information Technology, Disease Management
Fresh Food	Consider methods to increase production of local foods in a community	Agricultural Science
Hack Attack	Learn about methods to create and protect a website, apps and social media after a school's website and media are hacked	Computer Science, Communications
Haiti Orphanage	Design and build an environmentally-sound orphanage for children left homeless by an earthquake in Haiti	Civil Engineering Sustainability
Heart Surgery	Conduct heart surgery and therapy for a child with a heart defect; evaluate the use of artificial hearts or heart components	Medicine, Healthcare
Intro to Computer Science	Learn about some of the most in-demand computer science careers and technologies.	Computer Science, Information Technology
Lightweight Aircraft	Design a lightweight and easily maintained aircraft for multiple roles and mission distances.	Metallurgy, Recycling, Manufacturing
Manufacturing a Concept Car	Use modern manufacturing techniques to design and build a new concept car	Advanced Manufacturing, Industrial Engineering
Rescue Robots	Explore technology and techniques used for robotics design, such as sensors, electrical circuits, industrial design and computers	Electronics, Computer Science
Transportation Congestion	Evaluate new transportation methods for a city with traffic congestion problem	Transportation, Mechanical Engineering

Each online portion of the mission introduces the student to the **Careers (Teammates)** and **Technologies (Tools)** that would be used to solve these challenges in real life.

- Learning Blade “**Teammates**” (**green circles**) are STEM and computer science careers that work to solve each mission. Teammates are also featured in our Career Videos, providing students an easy way to see many careers in action.
- Learning Blade “**Tools**” (**orange circles**) are STEM and computer science technologies that are utilized in solving each mission.

Details of the online lessons for these Missions are shown in the following diagrams.

Dolphin Rescue

Help rescue and rehabilitate an injured dolphin, including creating an artificial prosthetic tail.

Career Emphasis:

Biomedical, Veterinary Medicine



Biomedical Engineer

Physics of Swimming (Math)
Students Driving Change (English)
The Bionic Man (Science)
What is a Biomedical Engineer (Social Studies) ●
Biomedical Engineers Use Technology To Improve Our Health (Video) ●



Machinist

3D Printing Technology (Math)
A Day in the Life of a Machinist (Social Studies) ●
Getting Into Shape (Science)
Modern Machining Technology (English)
Machinists Craft Our Modern World (Video) ●



Marine Biologist

A Day in the Life of a Marine Biologist (English) ●
Jacques Cousteau (Social Studies)
Lessons from the Gulf Oil Spill (Math)
Whale Hunting (English)
Marine Biologists Preserve Our Aquatic Environments (Video) ●



SCUBA Diver

Aquarius Underwater Laboratory (Science) ●
A Day in the Life of an Aquarium Diver (Math)
Diving in Warfare (Social Studies)
Observing Sea Life in a Submarine (English)
Commercial Divers go to Great Depths (Video) ●



Veterinarian

Advanced Surgical Care in Pets: (Social Studies)
Calculating a Diet for a Captive Dolphin (Math) ●
Modern Advances in Veterinary Care (Science)
The Perfect Habitat (English)
Veterinarians Care for Our Animal Friends (Video) ●

● ● Express missions only include these lessons.



Antibiotics

Antibiotics in Livestock (English)
History of Antibiotics (Social Studies)
How Antibiotics Work (Science)
The Right Dose (Math) ●



Artificial Limbs

History of Prosthetics (Social Studies)
Measuring Up (Math)
Should Amputees with Prosthetics Compete in Sports? (English)
Strength of Limbs (Science) ●



Cell Phone

Cell Phone - Help When You Need It (English)
Designing Cell Network (Math) ●
Effects Cell Phones Society (Social Studies)
Inside Cell Phone (Science)



Radio Tracking

An Overview of GIS (Social Studies)
Privacy Issues of Radio Tracking (English)
Radio Tracking in Conservation (Science) ●
Whale Tracking with GPS (Math)



Diving Gear

Breathing Under Pressure (Science)
Diving in Warfare (Social Studies)
Observing Sea Life in a Submarine (English) ●
Timing Your Dives (Math)

Energy Sources

Evaluate alternative or upgraded energy sources for a city that currently has an old coal-fired power plant.

Career Emphasis:

Energy, Environment



Economist

A Day in the Life of an Economist (English)
Economic Impacts of Global Warming (Science)
The Great Energy Debate (Social Studies) ●
To Build or Not to Build (Math)
Economists Affect the Bottom Line (Video) ●



Environmental Engineer

A Day in the life of an Environmental Engineer (English) ●
Can the Color of Your House Reduce Your Energy Bill? (Science)
Electrical Energy Cost Calculator (Math)
History of Coal Fired Power Plants (Social Studies)
Environmental Engineers Keep Our World Clean and Healthy (Video) ●



Environmental Protection Specialist

Fuels – Coal, Oil, and Natural Gas (Science)
How to Become an Environmental Protection Specialist (English)
Keeping It Clean (Math)
Renewable Energy vs. Fossil Fuels (Social Studies) ●
Environmental Protection Specialists Give Good Stewardship (Video) ●



Nuclear Engineer

Benefits and Uses of Nuclear Power (English)
How a Nuclear Power Plant Works (Science) ●
The Cost of Nuclear Power (Math)
Top Nuclear Power Disasters (Social Studies)
Nuclear Engineers Provide the Power (Video) ●



Power Engineer

History of Oil Exploration (Social Studies)
Is Renewable Energy the Answer? (English)
Oil and Gas Exploration (Math) ●
What is Power and Energy? (Science)
Power Engineers Get Energy (Video) ●

● ● Express missions only include these lessons.



Energy Conservation

Carbon Footprint (Math)
Great Inventors (Social Studies)
Saving Energy at Home (Science) ●
What is Clean Energy (English)



Emission Controls

Emission Releases (Math)
Hazardous Air Pollutants (Social Studies) ●
The (Science) Behind Emissions (Science)
What are Emissions (English)



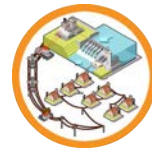
Environmental Protection Agency

Climate Change (Science) ●
What is the Energy Star Program (English)
How Clean is the Energy You Use (Math)
What is EPA? (Social Studies)



Renewable Energy

Geothermal Heating and Cooling (Science)
Hydroelectric Power (Social Studies)
Calculations for Solar Energy Systems (Math) ●
Wind Energy (English)



The Power Grid

Blackout (Social Studies)
How Much Power Do You Need (Math)
The Power Grid (Science)
The Smart Grid (English) ●

Entrepreneurship

Set up a new business with a focus on entrepreneurship.



Accountant

Account for This (Social Studies)
Count on This (Math)
Is This the Best Way? (English)
Just Graph It (Science) ●
Accountants Monitor the Bottom Line (Video) ●



Business Consultant

Is Your Plan Ready (English) ●
Looking at Finances (Math)
Management Principles (Social Studies)
Systematically Scientific Problem Solving (Science)
Business Consultants Provide Leadership (Video) ●



Data Scientist

AI vs IQ (English)
Female Firsts (Social Studies) ●
It's All in the Stats (Math)
Mining For More Than Gold (Science)
Data Scientists are Statisticians (Video) ●



Industrial Engineer

Control It (Science)
Maximize This (English)
What Does It Cost (Math)
What is an Industrial Engineer? (Social Studies) ●
Industrial Engineers See the Big Picture (Video) ●



Investor

Stocks Equity or Cash (Social Studies) ●
The (Science) of Investing (Science)
What are Stocks? (Social Studies)
Which Investor (English)
Investors Manage Vital Resources (Video) ●

● ● Express missions only include these lessons.

Career Emphasis:

Finance, Business, Resource Management



Cyber Security

Are You A Target (Social Studies)
Breaking the Language (English)
The Business of Security (Science)
The (Math) of Security (Math) ●



Database

Find the Info (Math)
Getting Information Efficiently (Science)
Really Amazing Data (Social Studies)
Store This (English) ●



Spreadsheets

Calculators to Spreadsheets (Social Studies)
Mean Median and Mode in Spreadsheets (Math) ●
Spread the Info (English)
The (Science) of Spreadsheets (Science)



Word Processing

A Proposal – Using Words – Creating Action (English)
How Do Word Processors Work (Science) ●
How Does It Look (Math)
Typewriters to Word Processors (Social Studies)



Workspace

Green the Office (Science)
Plan the Space (Math) ●
The 9 to 5... Does It Still Work? (Social Studies)
Where Do We Work? (Math)

Flu Outbreak

Learn how health and IT professionals use data and GIS and social media data analysis to predict flu outbreaks.

Career Emphasis:

Information Technology, Disease Management



Anthropologist

Evolution of an Outbreak (English)
Germs and Their Interactions (Science)
Learning to Count – The History of (Math) (Math)
What is Cultural Anthropologist? (Social Studies) ●
Anthropologists Provide Insight Into Our Humanity (Video) ●



Computer Programmer

Bits and Bytes (Science)
A Day in the Life of a Computer Programmer (English)
Programming Logic (Math) ●
The Information Age (Social Studies)
Computer Programmers - Writing the Future (Video) ●



Database Administrator

A Day in the Life of a Database Administrator (English) ●
Adding It Up With a Program (Math)
Computer Languages (Social Studies)
Small Bytes - How Does a CD Work? (Science)
Database Administrators Keep Track of Critical Information (Video) ●



Epidemiologists

History of Health Records (Social Studies)
How Does the Flu Spread? (Math)
Preventive Methods Treatments Flu (Science)
What is an Epidemiologist? (English) ●
Epidemiologists Make the World Safer (Video) ●



Statistician

Day Life of Statistician (English)
Mean Median and Mode (Math) ●
What is Statistical Modeling? (Science)
Stimulating Statistical Standards (Social Studies)
Statisticians Work as Data Scientists (Video) ●

● ● Express missions only include these lessons.



Big Data

Big Data Technology (Science) ●
Examining Data - Exponentially Expanding Exabytes (Math)
They are Watching - How Social Media Gathers Data (Social Studies)
What is Big Data? (English)



Computer Data

Charles Babbage Father of Computing (English)
Chart It Up - The Best Way to Display Data (Math) ●
The Computer Age (Social Studies)
What is a CPU? (Science)



GIS - Geographic Information Systems

Geographic Approach (Science)
An Overview of Geographic Information Systems (Social Studies) ●
Spatial (Math) (Math)
Tracking Yourself with GPS (English)



Social Media

Changing the Way We Communicate (English)
Extra! Extra! Read All About It (Social Studies)
Predicting the Future with Social Media (Math) ●
Social Media Networks (Science)



Vaccines

Calculating the Appropriate Dose (Math)
How to Create a Vaccine (Science) ●
The History of Polio (Social Studies)
What is a Vaccine? (Science)

Fresh Food

Consider methods to increase production of local foods in a community.

Career Emphasis: Agricultural Science



Agricultural Engineer

By the Light of the Moon (Social Studies)
Grinding the Grain (Science)
Growing Green (English) ●
Why Waste Energy (Math)
Agricultural Engineers Help Feed the World (Video) ●



Agronomist

Around the Ground Crop Rotation (Science) ●
Criss Cross Hybrid Crops (Social Studies)
A Day in Life of Agronomist (English)
Time is Money (Math)
Agronomists Make Food Better (Video) ●



Food Assurance Technician

Better Building Blocks (Science)
It's Found in Food (Social Studies)
Making Right Choice (English)
You Are What You Eat (Math) ●
Food Assurance Technicians Keep Us Healthy and Safe (Video) ●



Microbiologist

Finding Your Fit (Social Studies)
Microbes and Disease - The Study of Microbiology (Science)
Tiny Dangers - To Eat or Not to Eat (Math)
When Food Goes Bad (English) ●
Microbiologist Focus on the Details (Video) ●



Veterinarian

Antibiotics in Livestock (English)
A Day in Life of Large Animal Vet (Social Studies) ●
Getting it Right - Caring for Large Animals (Math)
Health Benefits of Humane Animal Treatment (Science)
Veterinarians Care for Our Animal Friends (Video) ●

● ● Express missions only include these lessons.



Farming Equipment

A Day to Pick a Day to Plant (English) ●
From Farm to Glass (Science)
My Tractor My Friend (Social Studies)
Water Your Work (Math)



Hydroponics

Building Hydroponic Garden (Math) ●
Explaining Hydroponics (Science)
Growing Our Lunch (English)
History of Hydroponics and its Benefits (Social Studies)



Living Livestock

Farm Fresh Fish (Science) ●
Free the Beef (Social Studies)
Room to Farm (Math)
The Food that Moos (English)



Improving Crop Yield

Composting (Social Studies)
Growing Needs (Math)
Jack and the Beanstalk (Science)
Pesticide Use - Advantages and Disadvantages (English) ●



Organic Farming Methods

Designer Plants - Plant Genetics (Science)
Entomologists - Ladybugs Best Friend (Social Studies) ●
Maximum Efficiency, Minimum Space (Math)
Organic Food Argument (English)

Hack Attack

See how web development, apps and social media expert restore a school's website and media after being hacked.

Career Emphasis: Computer Science, Communications



Data Scientist

AI vs IQ (English)
Female Firsts in Computer Engineering (Social Studies) ●
It's All in the Stats (Math)
Mining For More Than Gold (Science)
Data Scientists are Statisticians (Video) ●



Information Security Analyst

Don't Open The Door (Science)
If I Were a Hacker (English) ●
It Could Happen To You (Social Studies)
Spreading the Bugs (Math)
Information Security Analysts Secure Our Future (Video) ●



Software Engineer

Pushing the Limit (Science)
The Journey of 1000 Miles Begins with a Line of Code (Math) ●
The Language of Code (English)
The Power of Possibilities (Social Studies)
Software Engineers Make the Future Possible (Video) ●



UI-UX Designer

Creating a Visual Interface (Science) ●
Getting The Message Write (English)
Sizing Up the Competition (Math)
Translating our Meaning (Social Studies)
UI/UX Designers Create Digital Experiences (Video) ●



Web Developer

Oh Sweet Phi (Math) ●
The First Website (Social Studies)
The Story of a Site (English)
The Three Second Rule (Science)
Web Developers Build Our Digital Experiences (Video) ●

● ● Express missions only include these lessons.



Cloud Computing

How Big is Big (Math)
It's Not Just a Nimbus (English)
The History of Cloud Computing (Social Studies)
Protecting the Cloud (Science) ●



Cybersecurity

Are You A Target (Social Studies)
Breaking the Language (English)
The Business of Security (Science)
The Math of Security (Math) ●



Mobile Applications

Design Your App (Science)
DIY App (Math) (Math)
Hot Spots Are Not (English)
Misdirection (Social Studies) ●



Robot Development Kit

Controlling Your World (Social Studies)
If You Build It (English) ●
Sensory Overload (Math)
Simple and Compound Machines (Science)



Social Media

Check Yourself (Science)
Driving The Traffic (Math) ●
To the Ends of the Earth (English)
Who is Watching You (Social Studies)

Haiti Orphanage

Design and build an environmentally-sound orphanage for children left homeless by an earthquake in Haiti.

Career Emphasis:

Civil Engineering Sustainability



Architect

A Day in the Life of an Architect (English)
Amazing Architectural Art (Social Studies)
Designing an Orphanage (Math)
What Hurricane Can Do To a Building (English) ●
Architects Design the Cities of the Future (Video) ●



Civil Engineer

Builder of a Civilized World (English)
Stand Your Ground with Surveying (Math) ●
The Best Type of Bridge (Science)
Wonders of the Modern World (Social Studies)
Civil Engineers Design our World (Video) ●



Electrician

A Day in the life of an Electrician (English)
Designing Electric Circuits (Math) ●
Electrifying Rivals Edison vs Tesla (Social Studies)
Energy Use in the Home (Social Studies)
Electricians Bring the Power (Video) ●



Environmental Engineer

A Day in the Life of an Environmental Engineer (English) ●
Monitoring Our Air (Science)
Supplying Clean WaterV
Trash Troubles (Social Studies)
Environmental Engineers Keep Our World Clean and Healthy (Video) ●



Nurse

Calculating Antibiotic Doses for Children (Math)
Preventative Medicine for Children (Science) ●
Providing Medical Care in the 3rd World (Social Studies)
To Vaccinate or not to Vaccinate (English)
Nurses Deliver Care (Video) ●

● ● Express missions only include these lessons.



Antibiotics

Antibiotics in Livestock (English)
How Antibiotics Work (Science)
The History of Antibiotics (Social Studies)
Calculating Antibiotic Doses for Children (Math) ●



Cell Phone

Cell Phone Help When You Need It (English) ●
Designing Cell Network (Math)
Effects Cell Phones Society (Social Studies)
Inside Cell Phone (Science)



Earthquake Science

An Earthquake Strikes Haiti (Social Studies) ●
Earthquake Safe Buildings (Science)
Measuring Earthquakes - The Richter Scale (Math)
The Great Alaskan Earthquake (Social Studies)



Green Buildings

Advancements in Green Building Technology (English)
Efficient Building Construction (Social Studies) ●
Energy Conversion Rates for Solar Panels (Math)
Geothermal Heating and Cooling (Science)



Water Purification

Determining Water Safety (Science) ●
Making Clean Drinking Water (English)
Natural Disasters and Disease in Haiti (Social Studies)
The Water Cycle (Science)

Heart Surgery

Understand heart surgery techniques and therapy used to treat a child's heart defect.

Career Emphasis:

Medicine, Healthcare



Biomedical Engineer

How Big is My Heart (Math)
Keep It Level - Sensors for Diabetic Patients (Science)
Students Driving Change (English) ●
What is a Biomedical Engineer? (Social Studies)
Biomedical Engineers Use Technology To Improve Our Health (Video) ●



Doctors

Ethics and Modern Medicine (English)
Great Doctors in History (Social Studies)
Knowing your Numbers - Diagnostic Testing (Math) ●
The Respiratory System (Science)
Doctors Improve Quality of Life (Video) ●



Nurses

Blood - It's Chemistry (Science) ●
Nurse Counseling (Social Studies)
Pediatric Nursing Care (English)
You Are What You Eat (Math)
Nurses Deliver Care (Video) ●



Paramedics

Day in Life of A Paramedic (Social Studies)
Race Against the Clock (Math) ●
The Golden Hour (Science)
When Seconds Count (English)
Paramedics Provide Critical Response (Video) ●



Therapists

Make it Move - Physical Therapy (Math)
Meeting Ralph - Dog Therapy (English)
Take a Swim - Aquatic Therapy (Science)
Work it Out - Occupational Therapy (Social Studies) ●
Physical Therapists Bring Healing and Recovery (Video) ●

● ● Express missions only include these lessons.



Air Ambulance

A Bird with One Wing - How Helicopters Fly (Science) ●
Air Ambulance - Getting Off the Ground (Math)
Air EMT (English)
History of the Air Ambulance (Social Studies)



Body Imaging

CAT Scans - Looking Inside You (Science)
Industrial Uses of Medical Imaging (Science)
Magnetic Resonance Imaging (English) ●
X-Rays - The Inside View (Social Studies)



Heart Repair

History of Artificial Heart
Keep up the Pace (Science)
Our Incredible Heart (Math) ●
Putting Your Heart at Risk (English)



Medical Technology

Anesthetics (Math)
How Antibiotics Work (Science)
New Discoveries in Medicine (English)
Robotic Surgery (Social Studies) ●



Organ Transplants

Artificial Organs (Social Studies) ●
Foreign Bodies (Science)
We Got the Beat - Heart-Lung Machines (Math)
Organ Donation - Myth vs Fact (English)

Lightweight Aircraft

Design a lightweight and easily maintained aircraft for multiple roles and mission distances.

Career Emphasis:

Metallurgy, Recycling, Manufacturing



Industrial Designer

The Material Difference - New Materials in Product Design (Science)
Day Life Industrial Designer (Social Studies) ●
Balancing Form and Function (English)
3D Modeling (Math)
Industrial Designers Develop Amazing Things (Video) ●



Machinist

3D Printing Technology (Math)
A Day in the Life of a Machinist (Social Studies) ●
Getting Into Shape (Science)
Modern Machining Technology (English)
Machinists Craft Our Modern World (Video) ●



Manufacturing Technician

Communication in Manufacturing (English)
Get It Right – Calibration (Science)
Meeting Demand (Math) ●
Quality Assurance (Social Studies)
Learn About a Manufacturing Technician (Video) ●



Mechanical Engineer

Simple and Compound Machines (Science)
Mechanical Advantage and Efficiency (Math)
How Machines Advance Civilization (Social Studies)
Day Life Mechanical Engineer (English) ●
Mechanical Engineers Design Tools (Video) ●



Welder

Arcs to Sparks (Science) ●
Artistic License (English)
Cost of Design (Math)
Forging Ahead (Social Studies)
Welders Assemble Our World (Video) ●

● ● Express missions only include these lessons.



Aircraft

As the Crow Flies (Math)
Silent Flight (English)
Solar Impulse (Social Studies) ●
The Plane Truth About Planes (Science)



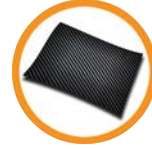
Automation Mechatronics

Digital Decision Making (Math)
Jack of All Trades (English)
Real Life Autobots (Science)
Why Now for Mechatronics? (Social Studies) ●



Metals and Alloys

How Much Metal is There (Math)
How to Make it with Metals (Science)
Out of the Iron Age - The History of Metals (Social Studies) ●
The Rarest of Metals (English)



Modern Innovative Materials

Fabric 2.0 (English)
Flying Farther (Math) ●
Wear and Tear (Math)
Who's Your Alloy (Science)



Recycling

Making Argument Recycling (English) ●
Save the Earth Through Recycling (Math)
Where Does Your Can Go (Science)
Who Recycles the Most (Social Studies)

Manufacturing a Concept Car

Use modern manufacturing techniques to design and build a new concept car.

Career Emphasis:

Advanced Manufacturing, Industrial Engineering



Automotive Designer

Groundbreaking Design (Social Studies) ●
If You Can Dream It (English)
Making It Go How an Engine Works (Science)
The Great Shape-Up (Math)
Automotive Designers Invent the Future of Transportation (Video) ●



Manufacturing Technician

Communication in Manufacturing (English) ●
Get It Right – Calibration (Science)
Meeting Demand (Math)
Quality Assurance (Social Studies)
Learn About a Manufacturing Technician (Video) ●



Mechanical Drafter

Aerodynamics in Action (Science) ●
From the Page to the Track (Social Studies)
Reality – The Simulation (English)
The Magic Number (Math)
Mechanical Drafters Work Through the Details (Video) ●



Safety Administrator

Anatomy of an Accident (Science)
Crash Test Dummies (English)
Roof Strength Test (Math) ●
Safety in the Factory (Social Studies)
Safety Administrator Keeps You Safe (Video) ●



Welder

Arcs to Sparks (Science) ●
Artistic License (English)
Cost of Design (Math)
Forging Ahead (Social Studies)
Welders Assemble Our World (Video) ●

● ● Express missions only include these lessons.



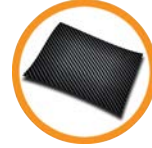
Assembly Lines

Assembly Lines and Industrial Revolution (Social Studies)
Making your Quota (Math)
Control It (Science)
Assemble Something Different (English) ●



Automation Mechatronics

Digital Decision Making (Math)
Jack of All Trades (English)
Real Life Autobots (Science) ●
Why Now for Mechatronics (Social Studies)



Innovative Materials

Fabric 2-0 (English)
Rubber Meets the Road (Social Studies) ●
Unbreakable (Science)
Wear and Tear (Math)



Paint Technology

By the Bucket (Math) ●
Color Your World (English)
Perfect Coat (Science)
Rust and Society (Social Studies)



Test Track

Design Matters (Science) ●
Length vs Speed (Math)
Start Your Engines (English)
Test Track Disney Style (Social Studies)

Rescue Robot

Explore technology and techniques used in robotics design, such as sensors, circuits, industrial design and computers.

Career Emphasis:

Electronics, Computer Science



Computer Programmer

Bits and Bytes (Science)
A Day in the Life of a Computer Programmer (English)
Programming Logic (Math)
The Information Age (Social Studies) ●
Computer Programmers: Writing the Future (Video) ●



Drone Operator

Getting It Under Control (Science) ●
A Day in the Life of a Drone Operator (English)
The Right Tool for the Job – Drone Features (Math)
It's Automatic - History of Automated Machines (Social Studies)



Electrical Technician

A Day in the Life of an Electrical Technician (English) ●
Electric Circuits (Science)
Ohm's Law (Math)
Throwaway and Repairable Electronics (Social Studies)
How Electrical Technicians Power the World (Video) ●



Industrial Designer

3D Modeling (Math)
Balancing Form and Function (English)
A Day in the Life of an Industrial Designer (Social Studies) ●
The Material Difference (Science)
Industrial Designers Develop Amazing Things (Video) ●



Mechanical Engineer

A Day in the Life of a Mechanical Engineer (English)
How Machines Advance Civilization (Social Studies)
Mechanical Advantage and Efficiency (Math) ●
Simple and Compound Machines (Science)
Mechanical Engineers Design Tools (Video) ●

● ● Express missions only include these lessons.



Cameras

Cameras vs Privacy (Social Studies)
Get Focused – Lenses (Math) ●
I See You Facial Recognition (English)
Over the Rainbow - Electromagnetic Spectrum (Science)



Computers

A Supercomputer in Your Pocket (Math)
Communicating with Computers (English) ●
Making Memory (Science)
The Computer Age (Social Studies)



Electrical Circuits

Printed Circuit Boards (English)
Staying Alive (Math)
Vacuum Tubes to Circuit Boards (Social Studies)
Zap Crackle Pop - Resistors and Capacitors (Science) ●



Microphones

Can You Hear Me (English)
Making Waves – Sound Waves (Science) ●
Sound Bites – Microphone Technology (Social Studies)
Turn it Up - Decibel Levels (Math)



Sensors and Logic

Digital Decision Making (Math)
How Decisions Are Made (Social Studies)
How We Machines Perceive World (English)
Seeing with Sound – Sonar (Science) ●

Transportation Congestion

Evaluate new transportation methods for a city with traffic congestion problems.

Career Emphasis:

Transportation



Automotive Engineer and Technician

A Day in the Life of an Automotive Engineer (English) ●
Consumption Junction (Math)
Fuel Cells (Science)
Intelligent Roadways (Social Studies)
Automotive Technicians Keep Things Moving (Video) ●



Logistics Engineer

Find It and Fix It (Math)
Five Minutes Late (Science) ●
Labyrinth of Logistics (Social Studies)
Text Heard Round the World (English)
Logistics Engineers Get Things Done (Video) ●



Mechanic

Diesel Gas or Electric (Science)
Dr. Diagnosis (English)
Engine Mechanics – What's Your Specialty? (Social Studies) ●
Hold Your Horses (Math)
Mechanics Keep Our World Moving (Video) ●



Transportation Engineer

Building Blocks (English)
Mix it Up (Science)
The Master Plan (Social Studies)
To Grid or Not to Grid (Math) ●
Transportation Engineers Move the World (Video) ●



Transportation Planner

An Ounce of Prevention (English)
Drive or Dollars (Social Studies)
Eye in the Sky (Science)
Hurry Up and Go (Math) ●
Transportation Planners Keep the World Moving (Video) ●

● ● Express missions only include these lessons.



Aircraft

As the Crow Flies (Math) ●
Silent Flight (English)
The Hindenburg (Social Studies)
The Plane Truth (Science)



Automobiles

Better Mileage & Better Safety (Science) ●
Cars and Society (Social Studies)
Home James – Self Driving Cars (English)
Pay the Toll (Math)



Hybrid Cars

Braking the Car (Science)
Government Policies and Hybrid Cars (Social Studies)
Hybrid Cars - Are They Worth It (Math)
Range Anxiety (English) ●



Public Transportation

Busing It (Social Studies)
Chemistry of Smog (Science) ●
Pedal Power (English)
What Floats Your Boat (Math)



Trains

Railroad Tracks - One Size Fits All (English)
Riding the Rails (Social Studies)
The Force is With You (Science)
Worth the Ride (Math) ●