



An Introduction to STEM Careers

MISSOURI UNIVERSITY OF SCIENCE AND TECHNOLOGY

.....
Founded 1870 | Rolla, Missouri | mst.edu

What is STEM?

Science

Technology

Engineering

Mathematics

Aerospace Engineering

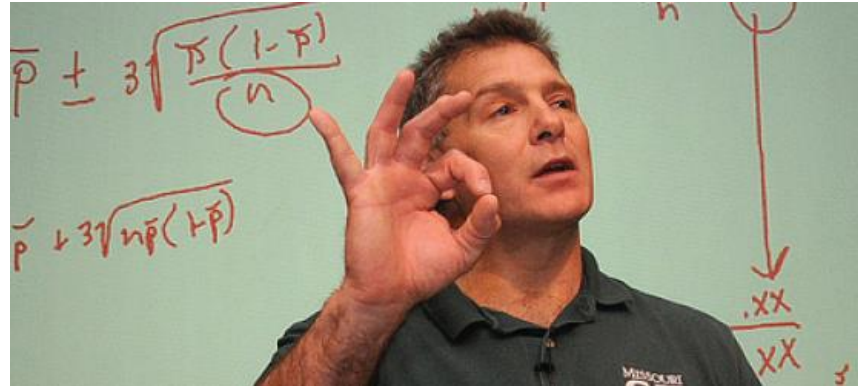


- Become an Astronaut
- Design the next generation of aircraft
- Monitor global habitat via remote sensing from space
- Develop clean energy transportation systems
- Send rockets to space
- Design and build supersonic jet fighters
- Develop support systems for long-term space travel
- Produce affordable launch systems for space stations

Average Starting Salary:
\$60,967



Applied Mathematics



- Actuarial Science
- Financial planner/broker/agent
- Risk Management Consultant
- Insurance and Liability
- Algebra/Discrete Mathematics
- Applied Analysis
- Computational Mathematics
- Claims adjusting/underwriting
- Elementary or Secondary Education
- Corporate Law

Almost EVERY company that :

- (1) has a research division,
- (2) deals with complex financial transactions
- (3) relies heavily on complex computing
- (4) keeps detailed statistics

has a need for mathematicians in some capacity.

Average Starting Salary:
\$53,350

Architectural Engineering



- Structures
- Foundations
- Building Systems
- HVAC
- Construction Management
- Construction Materials
- “Green” Buildings

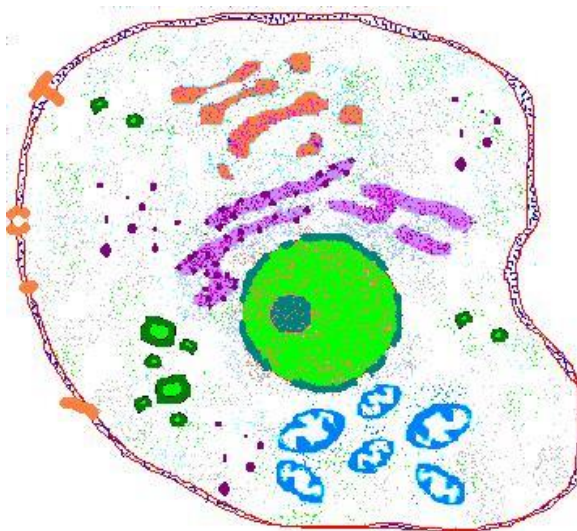
Average Starting Salary:
\$56,393



Biological Sciences

Focus on living organisms and the things that impact their environment and existence

- Natural Resources
- Conservation
- Pharmaceutical
- Research
- Doctor/Physician
- Biotechnology
- Bioinformatics
- Agriculture
- Education
- Scientist
- Environmental
- Biologist

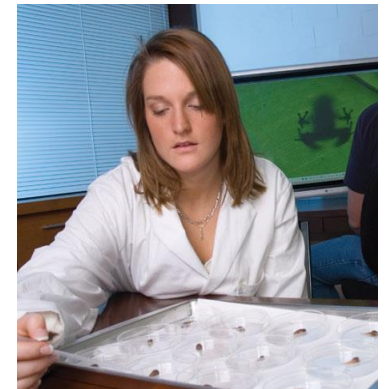


Average Starting Salary:
\$55,657

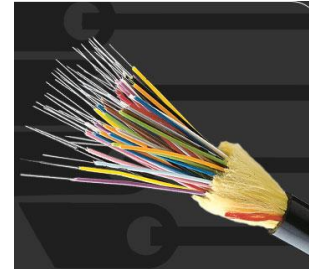
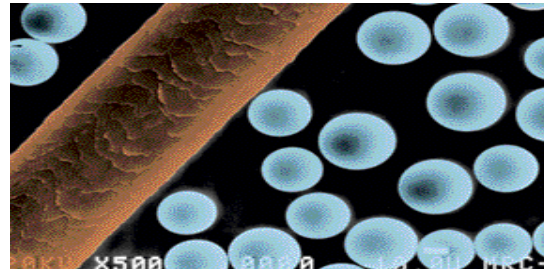


Biomedical Engineering

- An inter-disciplinary field that applies engineering principles and methods to medicine and biology, with the goal of improving the quality and effectiveness of patient care.
- Biomedical engineers are employed in industry, hospitals, research facilities, academia, and government agencies.



Ceramic Engineering



- Traditional Ceramics (whiteware, clay, glass)
- Modern (advanced) Ceramics
- Solid Oxide Fuel Cells
- Electronics
- Biomedical
- Fiber optics
- Sensors
- Superconductivity
- Heat Shields
- Nuclear Waste Storage



Honeywell



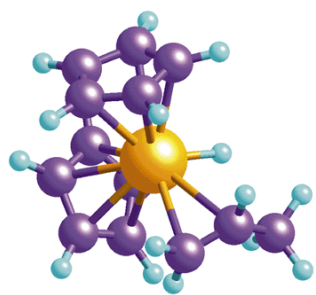
GP
Georgia-Pacific



Average Starting Salary:
\$61,200

Chemical & Biochemical Engineering

Convert discoveries into useful products and materials



- New Materials
- Cheaper and Better Products
- Greener Products
- Medical Breakthroughs
- Pharmaceutical industry
- Food Processing
- Biotechnology

Average Starting Salary:
\$69,495



Chemistry

Chemists work with grams of materials.

Focus on the molecular level

Chemical engineers work with tons of materials.

Focus on applying chemistry solutions to problems

- Scientist
- Doctor/Physician
- Research Chemist
- Dentist
- Analytical Chemist
- Technical Sales and Marketing
- Environmental Chemist
- Teacher
- Food and Drug Inspector
- Biomedical Scientist
- Coatings and Polymer Scientist



Average Starting Salary:

\$69,496

		Group																		
		I	II											III	IV	V	VI	VII	VIII	
1		1 H																		2 He
2		3 Li	4 Be											5 B	6 C	7 N	8 O	9 F	10 Ne	
3		11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar	
4		19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr	
5		37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe	
6		55 Cs	56 Ba	*	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn	
7		87 Fr	88 Ra	**	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Rg	112 Uub	113 Uut	114 Uuq	115 Uup	116 Uuq	117 Uus	118 Uuo	
8		119 Uun																		
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Civil Engineering



- Transportation
- Structures
- Drainage
- Soils
- Construction
- Hydrology/Hydraulics
- Public Utilities

Barry-Wehmler

JE JACOBS



Average Starting Salary:
\$55,243

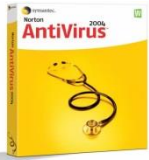
Computer Engineering

- VLSI Design
- Embedded Computer Systems
- Microprocessor Systems
- Computer Networking
- Digital Systems Design
- Computational Intelligence/
Neural Networks
- Artificial Intelligence
- Computer Systems



Average Starting Salary:
\$68,882

Computer Science



- Operating Systems
- Computational Science
- Programming Languages
- Architecture
- Intelligent Systems
- Automata Theory
- Information Systems
- Software Engineering
- Internet Computing

```

/*display the fra
 * Simple HelloButton() method.
 * @version 1.0
 * @author john doe<doe.j@example.c
 */
HelloButton()
{
JButton hello = new JButton("Hello, wor
hello.addActionListener( new HelloBtnList

// use the JFrame type until support for t
// new component is finished
JFrame frame = new JFrame("Hello Button"
Container pane = frame.getContentPane();
pane.add( hello );
frame.pack();
frame.show();
}
    
```



Average Starting Salary:
\$69,873

Electrical Engineering



- Power/Machinery/Drives
- Power Generation, Transmission & Distribution
- Electronics
- Electromagnetics and Solid State Devices
- EMC, Electro-optics
- Solid State Materials
- Communications & Digital Signal Processing
- Wireless, Satellite Communications
- Circuits and Network Synthesis



Average Starting Salary:
\$65,950

Environmental Engineering



- Water and Wastewater Resources
- Geo-Environmental
- Air Pollution
- Soil Pollution
- Environmental Chemistry
- Environmental Microbiology
- Mine Reclamation

RIO
TINTO

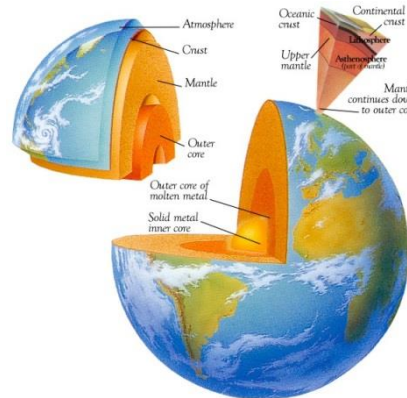


Average Starting Salary:
\$55,484

Geology & Geophysics

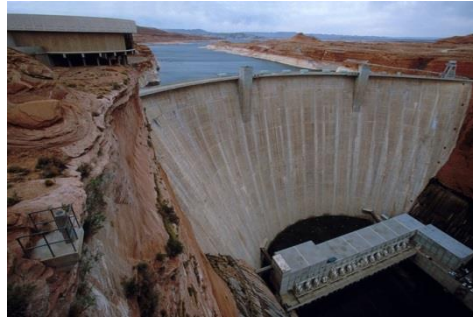


- Plate tectonics
- Earthquakes
- Volcanoes
- Seismology
- Beach erosion
- Soil erosion/stability
- Soils & Minerals
- Ecology
- Paleontology
- Petroleum Exploration



**US Army Corps
of Engineers.**

Geological Engineering



- Design and construct groundwater wells/systems
- Investigate and clean up contaminated soil and groundwater
- Design building foundations according to subsurface conditions
- Fix geologic hazards such as landslides



US Army Corps
of Engineers®



Average Starting Salary:
\$57,821

Humanitarian Engineering and Science



- Improve the well-being of underserved or developing communities
- Network with community and corporate partners already engaged in humanitarian efforts



Information Science



Job opportunities include:

- system and network administration and maintenance
- web development, design, and administration
- e-commerce
- usability and human-computer interaction specialist
- user support services
- information and database architecture



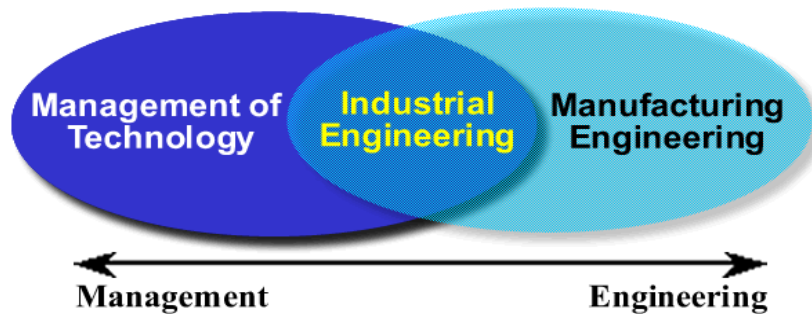
Average Starting Salary:
\$55,918

K-12 Education



- Teach tomorrow's leaders
- **Elementary Education**
S&T grants a bachelor of arts degree in multidisciplinary studies with a concentration in math or science and are certified to teach grades 1-6
- **Secondary Education**
S&T grants bachelor of science degree programs in STEM fields with emphasis in education and are certified to teach grades 9-12

Management / Industrial / Manufacturing / Systems Engineering



- Project engineering
- Industrial engineering
- Production planning and control
- Manufacturing engineering
- Packaging engineering
- Safety engineering
- Quality engineering
- Plant engineering
- Operations management
- Sales engineering
- Engineering administration



JOHN DEERE



CISCO



TOYOTA



CATERPILLAR

IBM



GARMIN

GOODYEAR

Average Starting Salary:
\$62,768

Mechanical Engineering



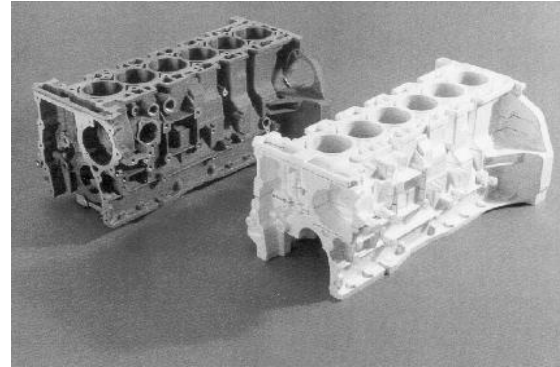
Any product that you can see, hear, smell or taste has been designed or manufactured by a mechanical engineer

- Manufacturing
- Robotics
- Automation
- Hydrogen Transportation
- Nanotechnology
- Composites
- Fluid & Solid Mechanics
- Transportation
- Hydraulics
- Materials Stresses/Fatigues
- Smart Sensors
- Dynamics & Controls
- Solar Energy
- CAD

Average Starting Salary:
\$63,380



Metallurgical Engineering



- Process Engineering
- Design
- Manufacturing of Metal Parts
- Machining
- Research & development
- Failure Analysis
- Metal Smelting

Average Starting Salary:
\$65,778



CATERPILLAR®



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TOYOTA

UgS United States Steel



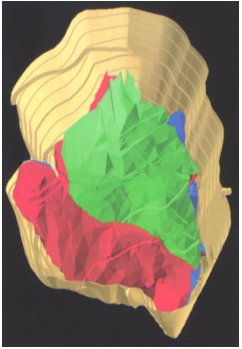
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SeverStal

Honeywell

BOEING®

Mining/Explosives Engineering

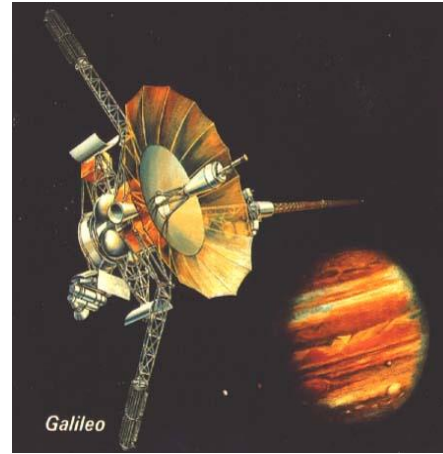


- Exploration
- Evaluation
- Extraction
- Processing
- Reclamation
- Utilization
- Explosives specialist



Average Starting Salary: \$61,474

Nuclear Engineering



- Uranium Exploration, Mining, and Milling
- Enrichment & Fuel Fabrication
- Nuclear Power Production
- Waste Disposal & Environmental Remediation
- National Security
- Space Nuclear Power
- Nuclear Reactors
- Nuclear Medicine



**Average Starting
Salary:
\$61,403**

Petroleum Engineering



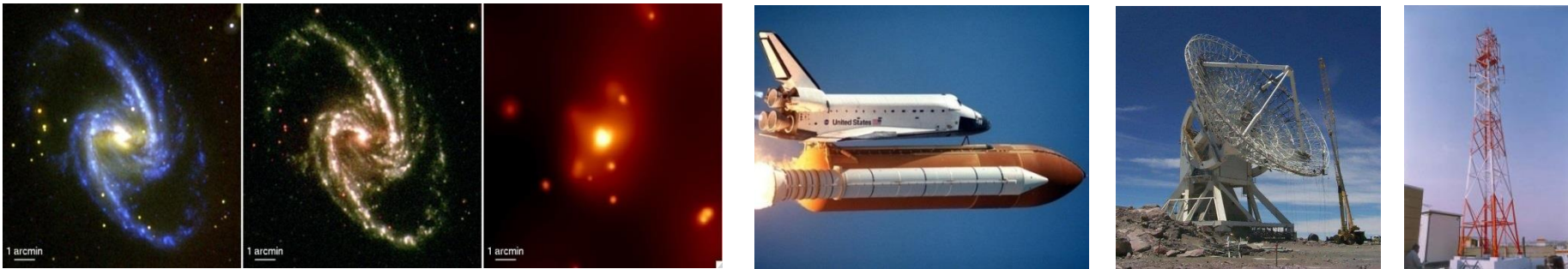
- Petroleum provides energy:
 - power generation for lighting and heating our homes
 - fuel our transportation system
- Sparks the creation of thousands of products
 - Medicines, plastics, textiles, cosmetics

- Drilling
- Production
- Reservoir Engineering



Average Starting Salary:
\$85,369

Physics



- Finance
- Telecommunications
- Electronics
- Medicine
- Astronomy
- Meteorology
- Education
- Materials Science
- Oceanography
- Climatology
- Cartography
- Broadcasting
- Acoustics
- Naval Construction
- Military
- Space Exploration



Pre-Med / Pre-Vet

Most popular options for student considering medical professions:

- Biological Sciences
- Chemistry
- Biochemistry
- Chemical Engineering
- Biochemical Engineering
- Biological Engineering

Do you have to go to medical school to pursue a medical profession? **NO**

- Genetics / Reproduction Research
- Pharmacists
- Dentists
- Optometrist
- Medical Scientists
- Law
- Agriculture
- Veterinary School



Psychological Science



Psychology is the scientific study of behavior and cognitive processes.

Psychology graduates are:

- Industrial Psychologists
- Sales and Advertising Representatives
- Social Workers
- Family Counselors
- Personnel Managers
- School Teachers and Counselors
- Stockbrokers
- Human Factors Engineers

College of Engineering and Computing

Undergraduate Degree Programs

- Aerospace Engineering
- Architectural Engineering
- Ceramic Engineering
- Chemical Engineering
- Civil Engineering
- Computer Engineering
- Computer Science
- Electrical Engineering
- Engineering Management
- Environmental Engineering
- Geological Engineering
- Geology and Geophysics
- Mechanical Engineering
- Metallurgical Engineering
- Mining Engineering
- Nuclear Engineering
- Petroleum Engineering

Distinctive Freshman Engineering Program

College of Arts, Sciences, and Business

Undergraduate Degree Programs

Majors

- Applied Mathematics
- Biological Sciences
- Business & Management Systems
- Chemistry
- Economics
- English
- History
- Multidisciplinary Studies
- Philosophy
- Physics
- Psychology
- Technical Communication
- Information Science & Technology

Teacher Certifications

- Elementary Education
- Secondary Education

Pre-Professional

- Pre-Law
- Pre-Med
- Pre-Nursing
- Pre-Veterinary

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Human
Powered Vehicle



Robotics



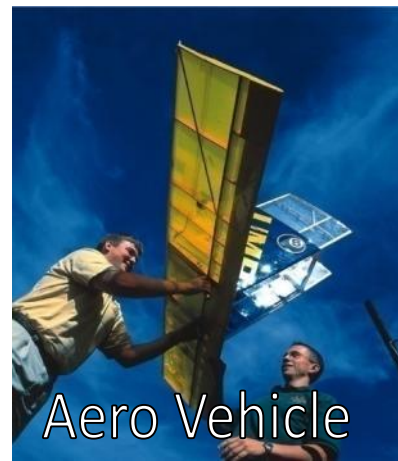
Solar House



Formula SAE



Solar Car

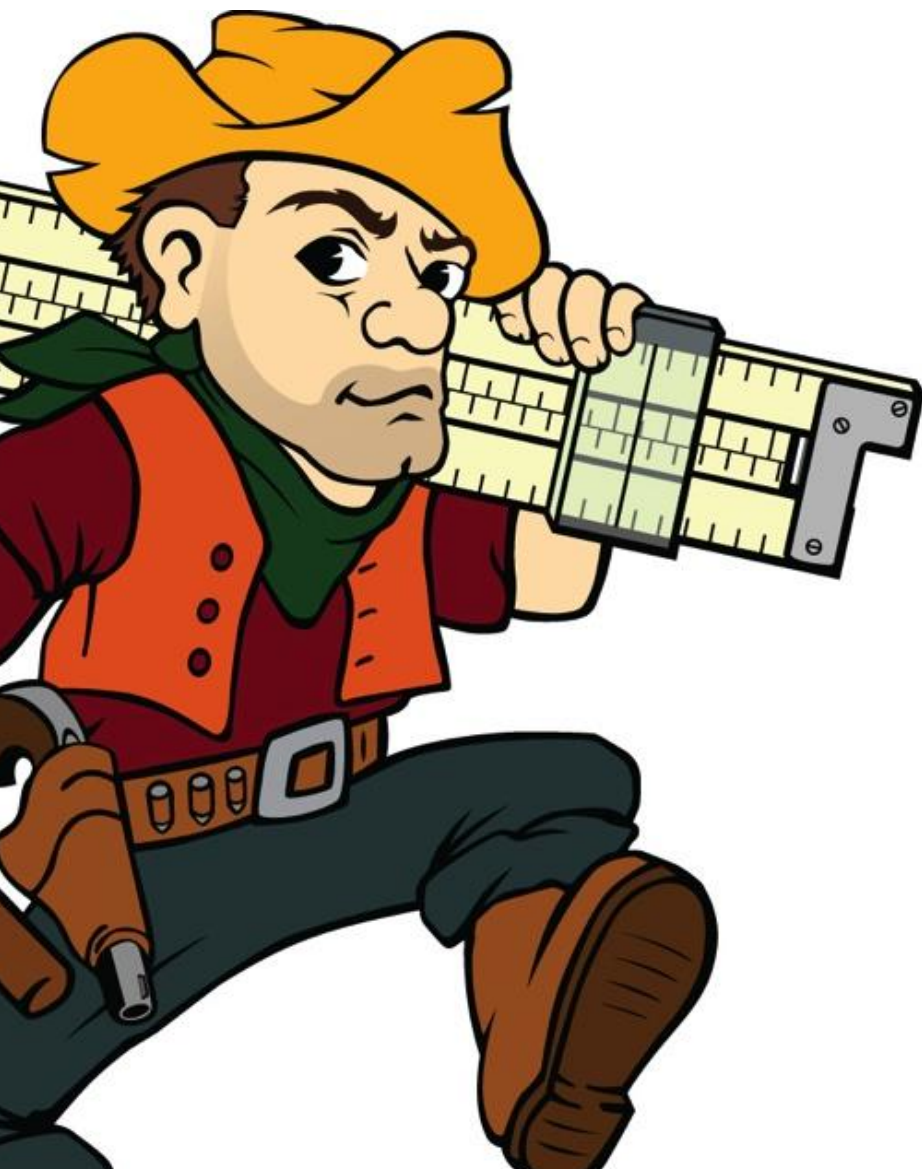


Aero Vehicle



Baja SAE

We're Here To Help



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- Every second and fourth Saturday

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- 30 STEM exploration programs for students of all ages
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