

# Mid-Atlantic Robotics IN Education Program offerings

All in-person excursions are suitable for 10 to 20 students and include bus transportation, experimental materials, and ASU BIOS educator.

## Ocean Sounds | The Science of Sound

2.5-hour excursion

Students will explore how sound travels through different mediums and factors that affect pitch. They will conduct their own laboratory experiments on vibration, explore how marine life use sound to communicate and learn how scientists use sound to study the ocean.

Proficiency Scales    P5 Physics / Light and Sound (5Ps.01, 5Ps.02, 5Ps.03)  
M3 Physics / Light and Sound (9Ps.01, 9Ps.02)

## Force | The Science of Ocean Pressure M2

2.5-hour workshop

Students will learn about the impact of pressure on marine animals and divers. Students will explore how pressure varies with the ocean's depth and conduct their own pressure experiments in the laboratory.

Proficiency Scales    M2 Physics / Forces and Energy (8Pf.05, 8Pf.06)

## Circuits | Diagrams and Conductors P4, P6, M1 & M3

2.5-hour workshop

Students will investigate how some materials are better conductors than others and why plastics are used to cover wires and switches. Students will make predictions, take measurements and record the results of their circuit experiments. Students will additionally have a chance to use their knowledge of circuits to pilot student-built remotely operated vehicles in BIOS's Innovation Test pool.

Proficiency Scales    P4 Physics / Electricity and Magnetism (4Pe.01, 4Pe.02, 4Pe.03, 4Pe.04)  
P6 Physics / Electricity and Magnetism (6Pe.01, 6Pe.02)  
M1 Physics / Electricity and Magnetism (7Pe.01, 7Pe.02, 7Pe.03, 7Pe.04, 7Pe.05)  
M3 Physics / Electricity and Magnetism (9Pe.01, 9Pe.02, 9Pe.03, 9Pe.04)

## Engineering | Robotics P4, P6, M1 & M3

2.5 hour workshops

Students will explore aspects of computer, mechanical and electrical engineering with three hands-on workshops. Students will build a prototype robotic arm to better understand mechanical engineering. Using a prototyping circuit board, students will be exposed to how to solder and complete an electrical circuit and finally students will compete in a remotely operated vehicle piloting challenge at BIOS's Innovation Test pool.

Proficiency Scales    (\*same as above) Physics / Electricity and Magnetism