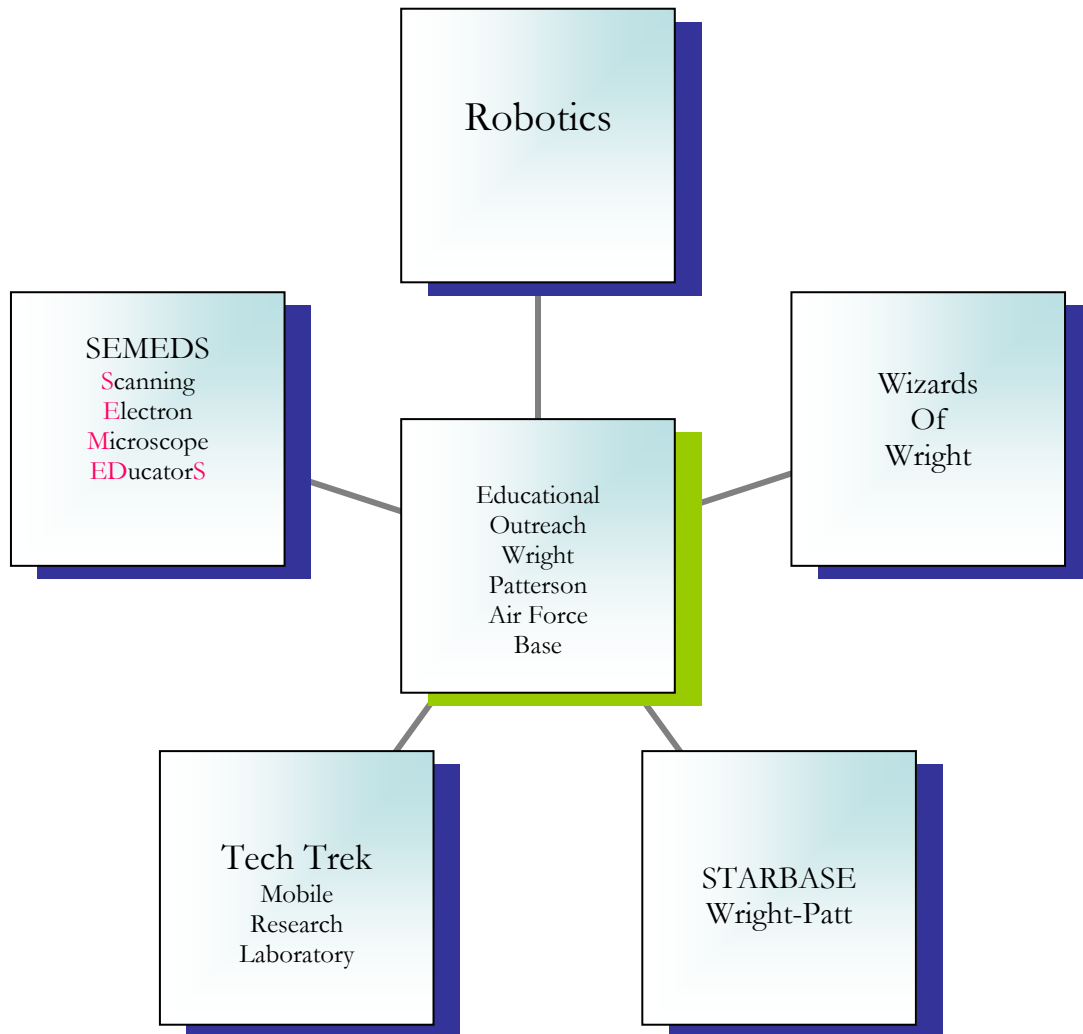


Wright-Patterson Air Force Base
Educational Outreach Office
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K-12 Educational Programs

Robotics in the Classroom For Grades 4-8

Robotics help students learn:

- applied math and physics
- problem-solving and design processes
- programming
- the scientific method, and
- teamwork

The Wright Patterson Air Force Base Educational Outreach Office is pleased to help bring the excitement of robotics to the classroom. Age appropriate curriculum units introduce students to robotics and build on that knowledge by allowing students to progress from theory to real robot design and programming.

WPAFB is a proud tournament partner with FIRST LEGO League to help bring local and state FLL competitions to Ohio. The challenge is announced in September, and student teams have eight weeks to design, build, and program a robot to achieve as many objectives on the playing field as possible in a two and a half minute “round”. In addition, teams must make a Research Project Presentation about the science behind the challenge theme, and a Technical Presentation about their strategy for designing, building and programming their robot. Judges evaluate these presentations and the Teamwork effort demonstrated by each team.

Competition teams attend regional competitions around the state, and teams that qualify move on to the State Championship. The winner of the State Championship represents Ohio at the FLL International Competition!

For more information about educator workshops or forming a team for competition:

Kathy Levine (937)255-5259 (937)904-8622

Kathleen.Levine@wpafb.af.mil

Alice.kochel@wpafb.af.mil

<http://edoutreach.wpafb.af.mil/robotics.htm>

W.O.W! Wizards of Wright

The scientists & engineers of Wright-Patterson AFB have developed some portable science kits to bring “Science” to your classroom!

Let us share our love of science with you!

We are pleased to offer demonstrations in the following areas:

- **Aerospace**- A science experience that’s a blast.
- **Bridges**- Build a bridge with your class!
- **Bubbleology**- Surface tension, good clean fun.
- **Chemistry**-Science in & around the home.

- **Cryogenics**- Storage, effects & applications of very low temperatures.
- **Egg Drop**- The science behind packaging and delivery.
- **Electricity/Magnetism**- Get charged about electricity!
- **Environmental**- Learn science through our environment
- **Laser & Optics**- The behavior of laser light passing through water & lenses
- **Magnets & Motors**- Stuck on motion.
- **Math Madness**- Be amazed what numbers can do!
- **Parachutes**- Drop in and experience a physics experiment.
- **Robotics**- Get geared up for the challenge!
- **Rocketry**- Coming soon!!
- **Vacuum Science**- Atmospheric pressure, gas laws, gravity, energy, sound & the environment.
- **Waves**- Water, sound, light, radio & microwaves.
- **Weather**- Rain, Snow, you name it! Learn from the experts!

Presentations are designed for all grade levels, class size of 25-30. Special requests may be considered.

For information Contact Fran Johnson of the Wright-Patterson AFB Educational Outreach Office at (937)255-0068 or email Alva.Johnson@wpafb.af.mil

STARBASE Grade 5

STARBASE Wright-Patt is part of the nation-wide Department of Defense (DoD) STARBASE program that provides local community youth the opportunity to participate in a variety of learning experiences designed to increase interest in and knowledge of math, science and technology.

There are currently 50 such programs across the United States and Puerto Rico. STARBASE Wright-Patt is targeted toward at-risk 5th grade students in the Greater Dayton Area and is the only STARBASE program in the State of Ohio.

STARBASE uses hands-on approach and participatory learning experiences to provide strong motivation to learn about science, math and technologies. Volunteers from across Wright- Patterson AFB participate as classroom speakers and provide positive role models for students. Activities also help students develop positive self-esteem, provide goal setting/achievement skills and tools to lead a drug free lifestyle. Teamwork is emphasized throughout the curriculum, teaching students to work effectively with others.

For more information on STARBASE and other FREE educational programs call (937)904-8622 or visit the WPAFB Educational Outreach website at: <http://edoutreach.wpafb.af.mil>

Department of Defense STARBASE Website: www.starbasedod.org

TECH TREK Mobile Research Laboratory

What is TECH Trek?

TECH Trek is a mobile science laboratory that offers local students, educators and businesses a hands-on interactive experience with high-tech equipment and scientific concepts. TECH Trek- a technology transfer initiative- is staffed and managed by the Wright-Patterson Air Force Base (WPAFB) Educational Outreach Office. The Mobile Laboratory includes a \$100,000 personal scanning electron microscope (PSEM), INTEL play computer interfaced light microscopes, compound light microscopes, a dissecting microscope and auxiliary equipment. All materials are on loan from the Air Force Research Laboratory (AFRL) Materials and Manufacturing Directorate at WPAFB. The program focuses on all learners, K-12 and is adaptable to a variety of learning styles and abilities. TECH Trek is an extension of the on-base Scanning Electron Microscope EducatorS (SEMEDS) Program.

Teacher Created Lesson Plans for TECH TREK

Identification Key

Laboratory Adventure (Suggested Grades: 4-9)

Microcosm of Ideas (All Grade Levels)

Stream Macro-Invertebrates (Suggested Grades: 6-12)

Personalized Investigations (Suggested Grades: 3-12)

Exploring Salts (Suggested Grades: 4-9)

Butterfly Scales (Suggested Grades: 6-12)

Ants and Other Icky Critters (Suggested Grades: 1-6)

Exploring with Tech Trek Microscopes (Suggested Grades: 4-10)

The Key Holds the Answer (Dichotomous Key Exploration - Suggested Grades: 4-8)

Show Me the Money (Suggested Grades: 4-10)

Metric Microscope Scavenger Hunt (Suggested Grades: 5-12)

Powers of Observation (Suggested Grades: 9-12) Answer Key

How to Participate?

To participate in the TECH Trek program, interested teachers must attend a professional development workshop. TECH Trek Staff members work with teachers to develop interesting and productive activities, that correlate to the State of Ohio models for math, science and language. Upon completion of the workshop, teachers may schedule TECH Trek for a week long visit under the direction of a certified educator.

For more information, contact Sharon Nelson at the Wright –Patterson Air Force Base Educational Outreach Office (937)904-8626 (8622) or email Sharon.Nelson@wpafb.af.mil

SEMEDS Scanning Electron Microscope EDucatorS

SEMEDS- (pronounced with a short “e”) is a unique program that brings local students and their teachers to Wright-Patterson Air Force Base (WPAFB) to operate state-of-the-art scanning electron microscopes in a real life laboratory setting. This motivating educational outreach program is conducted by volunteers from across WPAFB and is sponsored by the Air Force Research Laboratory Materials and Manufacturing Directorate.

SEMEDS is a two hour after school program for high school and middle school students. Each session can accommodate 12-18 students and up to four sessions are offered each month. The session begins with a brief explanation of what SEM is, how it works, and the scientific concepts behind it. Students are also briefed on typical careers and training needed in the microscopy field. They are then escorted to one of the SEM labs for a once-in-a-lifetime opportunity..to experience first hand what it’s like to use a \$500,000 microscope to explore a wide variety of unique and everyday specimens. Bringing students into a world-class facility, introducing them to the elite researchers who work there, and allowing them to use the same equipment they use, in their laboratories, is a very special experience that cannot be duplicated.

Don't miss this exciting opportunity!!

For more information, contact Kim Stultz at the Wright-Patterson AFB Educational outreach Office (937) 904-8623, (937) 904-8622 or email Kimberly.Stultz@wpafb.af.mil

Educators,

Contact the Educational Outreach Office at the Wright-Patterson AFB and use some of the many **FREE** materials and experiences that they have to offer!

Let a WIZARD into your classroom to teach the students about weather, electricity and magnetism, aerospace, and much, much, more!

Let the students out of the classroom and onto the TECH Trek bus parked in your school's parking lot. Science and exploration can be so much FUN!

Let ROBOTICS bring students together to solve problems, design, and program a real robot. It will open their eyes to new and exciting experiences! Maybe, Engineering is a new career field that they would like to explore.

For more information go to:

<http://edoutreach.wpafb.af.mil>

or call

(937)904-8622 or (937)255-0692