

## WHAT DO STUDENTS LEARN IN TECHNOLOGY EDUCATION?

In a word, it is about INNOVATION! It is about how people think! It is how to apply technology in the solutions of problems facing society. The aim is to solve problems and create opportunities within a realistic context. That context can start with the student's everyday environment and progressively move into more global issues.

Examples of technology problems and learning situations could be the cleaning of a stream that has become polluted, the creation and fabrication of an invention to solve a household problem, or designing and building of a habitat for a unique situation. The thinking process is closely related to that of an engineer, hi-tech worker, designer, or architect.

Students apply their ingenuity with tools, materials, processes, and resources to create solutions and opportunities for themselves and others. The nature of learning goes from the very early years of just "knowing" to more developed applications that might relate to the medical, agricultural, energy and power, information and communication, transportation, manufacturing, and construction technologies. It is a new and dynamic subject in our schools that is as fast moving and as up-to-date as the thinking of technology in our society! It is the future workforce thinking!

Adapted from An Educational Imperative, ITEA 2005.



It is the policy of the Indiana Department of Education not to discriminate on the basis of race, color, religion, sex, national origin, age, or disability, in its programs, activities, or employment policies as required by the Indiana Civil Rights Law (I.C. 22-9-1), Title VI and VII (Civil Rights Act of 1964), the Equal Pay Act of 1973, Title IX (Educational Amendments), Section 504 (Rehabilitation Act of 1973), and the Americans with Disabilities Act (42 USCS §12101, et. seq.).

Inquiries regarding compliance by the Indiana Department of Education with Title IX and other civil rights laws may be directed to the Human Resources Director, Indiana Department of Education, Room 229, State House, Indianapolis, IN 46204-2798, or by telephone to 317-232-6610, or the Director of the Office for Civil Rights, U.S. Department of Education, 111 North Canal Street, Suite 1053, Chicago, IL 60606-7204



For more information contact:

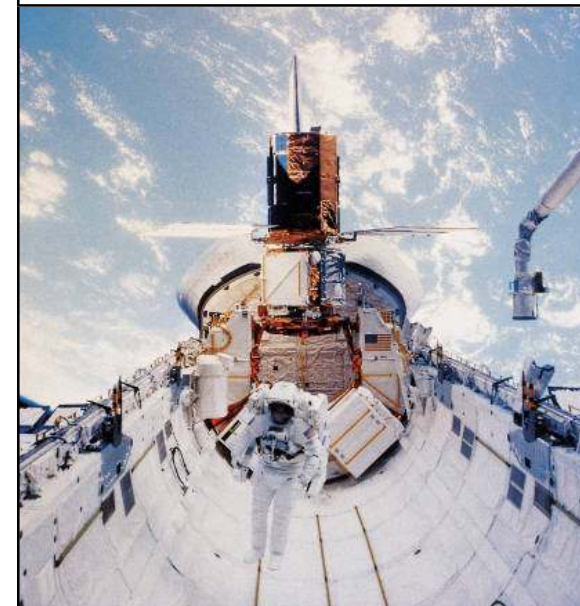
Mike Fitzgerald  
Technology Education Specialist  
Office of Career & Technical Education  
Room 229, State House  
Indianapolis, IN 46204

Phone: 317-232-6990  
Fax: 317-232-9121  
E-mail: [mfitzger@doe.state.in.us](mailto:mfitzger@doe.state.in.us)

<http://www.doe.state.in.us/octe/technologed/welcome.html>

# Indiana Department of Education

INDIANA TECHNOLOGY EDUCATION



**AEROSPACE  
TECHNOLOGY  
PROJECT LEAD THE WAY**

# TECHNOLOGY EDUCATION

**ARE STUDENTS READY** for the technological and engineered world? This question is more important today than ever before. As most kids play with technology, a central question that occurs is do they know what they can **DO** with it? Technology Education is the answer. Students who study technology apply problem-based learning that integrates (STEM) Science, Technology, Engineering, and Mathematics.

Students learn important skills and concepts needed for the workforce and society. This standards based curriculum can become a springboard for career exploration as well as a basis for determining personal goals for higher education.

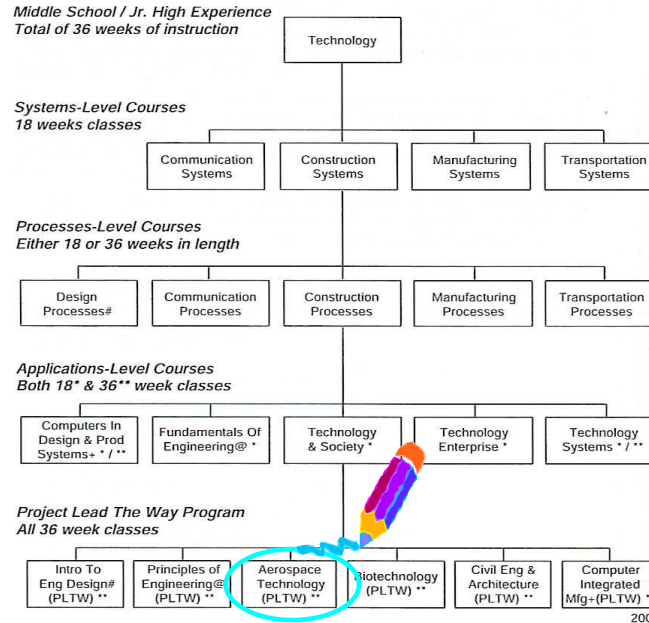
**The Curriculum-** The Indiana Technology Education curriculum is a **standards-based**, hands-on, minds-on program that applies and integrates academic concepts from Science, Technology Engineering, and Mathematics (STEM). The curriculum is designed for all students.

## Aerospace Technology #4816

Aerospace Technology should provide students with the fundamental knowledge and experience to apply mathematical, scientific, and engineering principles to the design, development, and evaluation of aircraft, space vehicles and their operating systems. Emphasis should include investigation and research on flight characteristics, analysis of aerodynamic design, and impact of this technology on the environment. Classroom instruction should provide creative thinking and problem-solving activities using software that allows students to design, test, and evaluate a variety of air and space vehicles, their systems, and launching, guidance and control procedures. Only those schools having a signed agreement with the national Project Lead The Way organization can use this course title.

- Suggested Grade Levels: 11-12
- Recommended Prerequisites: Completion of two Project Lead The Way courses
- A two credit course over two semesters.
- A Core 40 directed elective as part of a technical career area.
- This course qualifies as an Academic Honors Diploma elective.
- Schools involved in Project Lead The Way must use the content standards developed for this pre-engineering program.
- This course is a component of the Engineering, Science and Technologies career cluster. It may also be included as part of the Transportation career cluster.

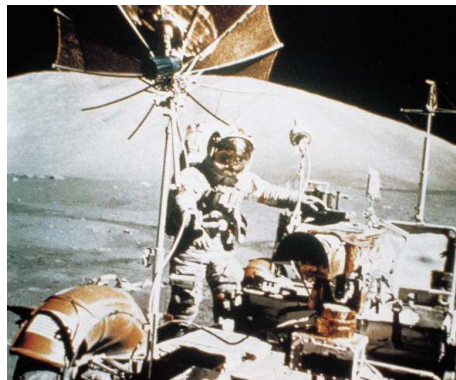
## INDIANA TECHNOLOGY EDUCATION CURRICULUM



PLTW titles of **Digital Electronics** and **Engineering Design and Development** appear under the multidisciplinary category of the Indiana Department of Education guidelines.

All Technology Education courses are **Core 40 Directed Electives** as a part of a Career & Technical Area. These courses can be used in creating **4-year course plans and Career Academic Sequences** to support students in earning 8-10 credits for the Core 40 with Technical Honors Diploma.

Students working on an **Academic Honors Diploma** may also apply Technology Education credits toward their electives.



\*Note- Project Lead The Way Aerospace Technology Curriculum Pilot in Progress

## Topics of Study

Aerospace Technology should provide students with the fundamental knowledge and experience to apply mathematical, scientific, and engineering principles to the design, development, and evaluation of aircraft, space vehicles and their operating systems. Emphasis should include investigation and research on flight characteristics, analysis of aerodynamic design, and impact of this technology on the environment. Classroom instruction should provide creative thinking and problem-solving activities using software that allows students to design, test, and evaluate a variety of air and space vehicles, their systems, and launching, guidance and control procedures. Only those schools having a signed agreement with the national Project Lead The Way organization can use this course title.

### •History of Flight

•**Aerodynamics and Aerodynamics Testing**  
Aerodynamics, Airfoil Construction, Wind Tunnel Testing

### •Flight Systems

Glider Design, Construction

### •Astronautics

Measuring Rocket Engine Thrust, Model Rocket Trajectory, Rocket Camera Orbital Mechanics

### •Space Life Sciences

Life Support and Environmental Systems, Effect of Gravity on the Human Body, Microgravity Drop Tower

### •Aerospace Materials

Composites Fabrication and Testing, Thermal Protection Systems for Space Vehicles

### •Systems Engineering

Intelligent Vehicles