

## ***Indiana Project Lead the Way***

### **Project Lead The Way and Gateway To Technology Programs**

Project Lead The Way®, a not-for-profit organization, offers Gateway To Technology, a grade 6 – 8 math, science and technology program, and a pre-engineering, five+course program for high schools.

PLTW is the only pre-engineering/engineering technology of its kind in the nation. It is presently offered in over 500 schools in over 32 states in the country and is affiliated with such groups as NASA, the Society of Manufacturing Engineers, American Society of Electrical Engineers, American Society of Manufacturing Engineers, and others.

### **Gateway To Technology (Middle School Program)**

The Gateway To Technology math, science, and technology exploratory program consists of four, 9 week each, independent units taught in grades 6 – 8. Some schools have one unit in the 6th grade, one in the 7th and two or more in the 8th; other schools choose to offer two units (or more) in both the 7th and 8th grades. Each school decides how it wishes to offer a minimum of 4 units in these grades. In most schools, all students participate in the program. The units are as follows:

- Design and Modeling
- The Magic of Electrons
- The Science of Technology
- Automation and Robotics
- Environmental Engineering (in development)
- Energy and the Environment (in development)
- Aerospace Technology (in development)
- Pre-engineering High School Program

The pre-engineering high school program requires students to be enrolled in college preparatory mathematics sequences at the same time. The grade 9 – 12 courses, each earning one Carnegie unit, can be taught as year-long courses in a six or seven period day or as a semester class in a 4x4 block schedule. The most common implementation is for a student to take one course in both the freshman and sophomore years, double up in the junior year, and finish with the senior capstone course. Opening up the beginning classes to students in any high school grade can certainly benefit all students, even if they are only able to take one or two courses. The capstone course might be seen as a culmination of students' development in the previous courses. Working in teams with the assistance of a mentor, students design and build solutions to authentic engineering problems. At the end of the course, teams present their research papers and defend their projects to a panel of engineers, business leaders and engineering college educators for professional review and feedback. The PLTW and appropriate math courses are as follows:

- Principles of Engineering [Algebra 1]
- Introduction to Engineering Design [Geometry]
- Digital Electronics [Algebra 2]
- Specialization Course (school site selects one or more)
- Engineering Design and Development (capstone course)

### **Specialization Course Options**

Computer Integrated Manufacturing  
Civil/Architecture Engineering (in development)  
Bio-engineering (in development)  
Aerospace Technology (in development)

### **Who Should Take PLTW?**

The high school program should be offered to the top 80%\* of the class which includes students who are:

In the top 10% of their class  
Good in mathematics and science  
Interested in being engineers or technologists  
Good in art and design  
Underachievers who might get hooked by a high tech, hands-on class  
Struggling students who learn best by “doing”

[\* The 80% may vary from school to school. Students who would not be appropriately placed in the PLTW high school program are those who are taking certain math courses such as General Math and Consumer Math, exhibiting weak math skills, demonstrating little interest in science, or who are enrolling in alternative, remedial educational programs.]

### **Recruitment**

Have all technology teachers explain the program, show the PLTW video, and distribute PLTW brochures to their students.  
Invite members of the Partnership Team to share information (show video) at a Kiwanis or Rotary meeting, at their jobs, or at the Chamber of Commerce.  
Have articles appear in the local newspaper about the introduction/expansion of the GTT and PLTW pre-engineering program.  
Have PLTW teachers attend and present at parent/student orientations and other district community meetings.  
Set up a television in the cafeteria to show the PLTW videotape during pre-registration.  
Set up window displays, showing females and minorities involved in various types of Engineering.  
Provide opportunities for students to explore engineering and engineering technology as a career field by using the links on the PLTW website.  
Invite parents and students to an introductory meeting of the program, distribute brochures, show the PLTW video for Gateway To Technology and/or PLTW Pre-engineering, encourage them to visit the PLTW website for answers to their questions including transcribed college credit, links to sites about engineering as a career, and much more.  
Display PLTW posters in the counseling office (may be obtained from Contacting PLTW/Information Request on the website)

### **High School Certification and Middle School Recognition**

Under the PLTW/School Agreement signed by districts, all high schools must be certified by the second year in the program and re-certified every five years after. This process requires schools to demonstrate that they meet PLTW's quality standards in professional development of teachers and counselors; the implementation of curriculum using required equipment and software; the formation of a Partnership Team, and several others.

The Middle School Standard of Excellence program recognizes middle schools that have successfully implemented the Gateway To Technology curriculum. The process parallels the High School Certification program in quality standards.

### **Transcribed College Credit Option**

PLTW's mission is to create dynamic partnerships with our nation's schools to prepare an increasing and more diverse group of students to be successful in engineering and engineering technology programs. That means, schools should encourage the top 80% of students, especially females and minorities, to enroll in the program and to address the nation's shortage of engineers and technologists. For those students who are interested in enrolling in two and four year colleges/universities, they may earn transcribed college credit if their high schools have been certified by one of PLTW's national affiliate training centers.

Once school certification occurs, students who have an 85% average in Introduction to Engineering, Digital Electronics, or Computer Integrated Manufacturing, may take the college level test for these courses at the end of the school year. There is no charge for taking the test. If a student passes the test with a 70% or higher and pays \$200 tuition, s/he may earn transcribed college credit for each of these courses.

### **Partnership Team**

All participating schools agree to form a Partnership Team, composed of representatives from the Technology Department, colleges, business (engineering), and the community. Members of this group support the PLTW issues arising from the implementation of the program, serve as mentors to student teams, speak to students about engineering and technology, and support the program in many ways.

### **Comprehensive Website ([www.pltw.org](http://www.pltw.org))**

Project Lead The Way maintains a comprehensive website which provides the following: (1) free brochures and promotional materials (including a videotape) for counselors to use with students and parents; (2) the most frequently asked questions from parents, students, schools, counselors, and the community; (3) multiple links on engineering [What do engineers do? How to attract girls and minorities? What summer programs and competitions are available for junior and senior high school students?]; (4) power point presentations about PLTW; (5) examples of the curriculum and tests; (6) newsletters and a Showcase of Schools; (7) schools offering the program in each participating state; (8) colleges and universities involved with PLTW including Rochester Institute of Technology, Purdue, Penn State, University of Houston, and (9) a letter to the college Located on the Counselor page, the letter may be downloaded by counselors and printed on school stationery for use in students' folders being sent to colleges.