Project Lead the Way

Igniting imagination and innovation through learning
Program Description

The Project Lead the Way program at Charles Herbert Flowers High School (CHFHS) is redefining CTE program in Prince George’s County. Cultivated in a nurturing learning environment, the program is transforming impressionable students into young professionals capable of using their skills, talents, and resources to solve the world’s problems. The PLTW program partners with colleges and corporations to plan unique activities where students apply academic and technical concepts learned in PLTW courses related to real life situations. Students are involved in mentoring sessions with practicing engineers, STEM competitions, summer camps, work-based learning experiences, college scholarship opportunities, and other extended learning activities focused on providing experiences beyond the PLTW curriculum. These efforts are designed to promote STEM-related interest and encourage students to consider engineering as viable career.
The Mission

- To ensure that America succeeds in the increasingly high-tech and high-skill global economy by partnering with middle schools and high schools

- To prepare students to become the most innovative and productive in the world
HISTORY

- PLTW was launched in 1997 in 12 high schools in upstate New York as a program designed to address the shortage of engineering students at the college level.
- PLTW was implemented at CHFHS in 2003
- CHFHS Program is certified
Attributes of the PLTW Curriculum

- Prepares students for successful transition to college into all 2/4 year programs
- Develops the science, engineering/engineering technology/STEM pipeline
- Sustained and updated through a private non-for-profit foundation
Course Sequence

**Grade 9**
- English 9 Honors
- US History Honors
- Math (Algebra or higher)
- Biology
- Introduction to Engineering Design
- Physical Education/Health
- Foreign Language

**Grade 10**
- English 10 Honors
- LSN Government
- Math
- Chemistry
- Foreign Language
- Principles of Engineering
- Elective
# Course Sequence (continued)

**Grade 11**
- English 11 Honors/AP Language
- World History Honor/AP World History
- Math
- Physics
- Digital Electronics
- Civil Engineering and Architecture
- Elective

**Grade 12**
- English 12/AP Literature
- Social Studies
- Math
- AP Physics
- **Engineering Design and Development**
- Elective(s)
Courses

• **Introduction to Engineering Design (IED)**
  - Designed for 9th or 10th grade students, the major focus of IED is the design process and its application. Through hands-on projects, students apply engineering standards and document their work. Students use industry standard 3D modeling software to help them design solutions to solve proposed problems, document their work using an engineer’s notebook, and communicate solutions to peers and members of the professional community.

• **Principles of Engineering (POE)**
  - Designed for 10th or 11th grade students, this survey course exposes students to major concepts they’ll encounter in a post-secondary engineering course of study. Topics include mechanisms, energy, statics, materials, and kinematics. They develop problem-solving skills and apply their knowledge of research and design to create solutions to various challenges, document their work and communicate solutions.
Courses (continued)

- **Civil Engineering and Architecture (CEA)**
  - Students learn about various aspects of civil engineering and architecture and apply their knowledge to the design and development of residential and commercial properties and structures. In addition, students use 3D design software to design and document solutions for major course projects. Students communicate and present solutions to their peers and members of a professional community of engineers and architects. This course is designed for 11th or 12th grade students.

- **Digital Electronics (DE)**
  - Digital electronics is the foundation of all modern electronic devices such as mobile phones, MP3 players, laptop computers, digital cameras and high-definition televisions. Students are introduced to the process of combinational and sequential logic design, engineering standards and technical documentation. This course is designed for 10th or 11th grade students.
Course (continued)

- **Engineering Design and Development (EDD)**
  - In this capstone course, students work in teams to design and develop an original solution to a valid open-ended technical problem by applying the engineering design process. Students perform research to choose, validate, and justify a technical problem. After carefully defining the problem, teams design, build, and test their solutions while working closely with industry professionals who provide mentoring opportunities. Finally, student teams present and defend their original solution to an outside panel. This course is appropriate for 12th grade students.
College Credit for PLTW Students

- Transcripted College Credit is available through the Rochester Institute of Technology to students enrolled in the following courses:
  - Introduction to Engineering Design
  - Principles of Engineering
  - Digital Electronics
  - Computer Integrated Manufacturing
  - Civil Engineering and Architecture
Program Highlights

- CHFHS PLTW program was awarded the 2010 Career and Technology Education (CTE) Outstanding Secondary CTE Program of Excellence
- Lockheed Martin formed a partnership with CHFHS PLTW program
- The University of Maryland Materials Research Science and Engineering Center (MRSEC) formed a partnership with CHFHS PLTW. MRSEC provides curriculum instruction support and sponsors PLTW Summer Camps for 9th and 10th graders
- The University of Maryland Center for Minorities in Science & Engineering provides tutoring and math enrichment camps for PLTW students.
Program Highlights

- The National Action Council for the Advancement of Minorities in Engineering (NACME) sponsors selected PLTW students to take Calculus I & II at Prince George’s Community College.
- CHFHS PLTW students participate annually in the Maryland Regional Junior Science and Humanities Symposium (JSHS) hosted by Morgan State University School of Engineering and the Innovative STEM Foundation.
- PLTW senior received over $30,000 in scholarships.
- Four 2010 PLTW graduates from CHFHS received the prestigious Lockheed Martin Scholarship. Lockheed awards 10 scholarships annually.
- 100% of PLTW seniors attended college.
Program Highlights

- CHFHS PLTW program have one of the highest percentage of females enrollment in the State of Maryland.
- CHFHS PLTW was one of only four schools invited nationally to participate in the Hubble Digital Learning Network Event hosted by the NASA Goddard Space Flight Center.
- PLTW seniors received the Lemelson-MIT (Massachusetts Institute of Technology) Grant. Students innovated a lock for the visually impaired.
- CHFHS PLTW students annually participate in the Minority Introduction to Technology & Engineering (MITE) program at the University of Missouri Science & Technology.
Projects – Marble Sorter
Projects – Cube Project
Projects – Digital Electronics
UMD MRSEC Visits the Classroom
Field Trips – Capitol College Visit
EDD Capstone Project
Lemelson-MIT InvenTeams

PROJECT LEAD THE WAY

LEMELSON-MIT
InvenTeams

Inspiring a New Generation of Inventors
Visit to University of Missouri Science and Technology MITE Program
Students & Parents 2011 College Preparation Evening Workshop