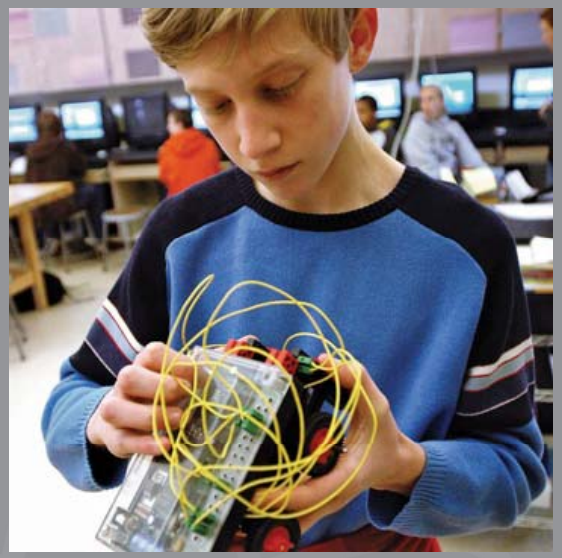
Project Lead The Way engages student learning through three programs in schools across the nation.



PROJECT LEAD THE WAY
PLTW

Increased Engagement in School

University of Wisconsin-Madison Center on Education and Work (2007)

More Interested in Math and Science

Evaluation of PLTW in Rockwell-Sponsored Schools (2011)

Increased College Enrollment, Persistence, and Performance

True Outcomes (2009), MSOE, RIT

Closed the Achievement Gap

University of Wisconsin-Milwaukee Report (2009)

Significant Gains in Math and Science

State of Iowa Report (2011)

Significantly Better in Math

Evaluation of PLTW in Rockwell-Sponsored Schools (2011)

Enroll in more Math and Science Courses

State of Iowa Report (2011)

Take more Math Courses

Evaluation of PLTW in Rockwell-Sponsored Schools (2011)

Curriculum Characteristics:

- Full-year courses for high school
- Written to National Standards
- Teacher Notes Provided
- Day-by-Day Lesson Planning
- Student Handouts
- Scoring Rubrics
- Additional Resources Available

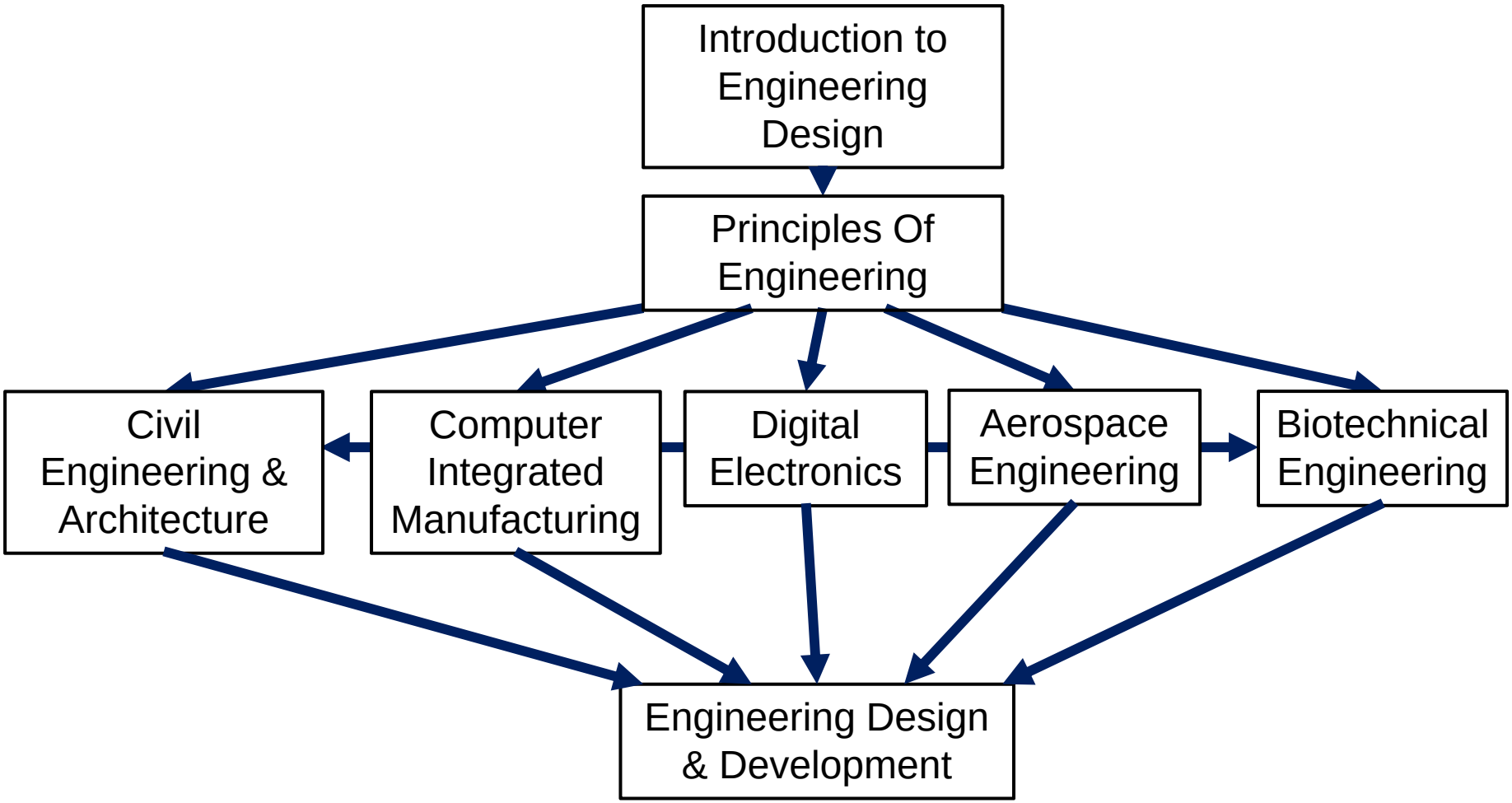
Why PLTW for Rye?

- Increasing Student interest in STEM
- Growing college and career opportunities
- Teaches & Reinforces Critical Thinking Skills as well as Problem Solving Techniques
- Encourages Team Efforts

PROPOSED IMPLEMENTATION AT RYE HIGH SCHOOL

- Introduction to Engineering Design (IED)
  - Proposed start September 2014
  - 1st course introduced [prerequisite is completion of Integrated Algebra]
- Principles of Engineering (POE)
  - Offered the following year
- 3rd and final course will be determined by student interest, options would include the specialization course or the capstone course
- Students will be able to opt into the Introduction to Engineering course at any point in their high school career

Full year courses for grades 9-12



PART I: FOUNDATION COURSES

- Introduction to Engineering Design (IED)
- Principles Of Engineering (POE)

COURSE #1:
INTRODUCTION TO ENGINEERING DESIGN (IED)

- Main focus is on the design process & implementation of applications
- Through hands-on projects, students apply engineering standards & document their work
- Documentation will adhere to the Common Core Learning Standards

COURSE #1:
INTRODUCTION TO ENGINEERING DESIGN (IED)

- 3D modeling software will be utilized to help students design solutions to proposed problems

- Communicate solutions to peers and members of the professional community

COURSE #2:
PRINCIPLES OF ENGINEERING (POE)

- Exposes students to major concepts encountered in a post-secondary engineering course of study
- Topics include mechanisms, energy, statics, materials, & kinematics
- Develops problem-solving skills while applying knowledge of research and design to create solutions for various challenges

COURSE #3: SPECIALIZATION COURSES

Options available based on student interest:

- Aerospace Engineering (AE)
- Biotechnical Engineering (BE)
- Civil Engineering & Architecture (CEA)
- Computer Integrated Manufacturing (CIM)
- Digital Electronics (DE)

AEROSPACE ENGINEERING (AE)

- Explores the evolution of flight, navigation & control, flight fundamentals, aerospace materials, propulsion, space travel, orbital mechanics, and alternative applications of aerospace engineering concepts
- Students will analyze, design, and build aerospace systems
- Course culminates in the students giving a final presentation about the future of the industry & their professional goals

BIOTECHNICAL ENGINEERING (BE)

- Students will explore the diverse fields of biotechnology
- Hands-on projects will engage students in engineering design problems related to biomechanics, cardiovascular engineering, genetic engineering, tissue engineering, biomedical devices, forensics and bioethics
- Students will apply biological and engineering concepts to design materials and processes that directly measure, repair, improve and extend living systems

CIVIL ENGINEERING & ARCHITECTURE (CEA)

- Students will learn about various aspects of civil engineering and architecture
- Students will apply their knowledge to the design and development of residential and commercial properties and structures
- Students will use 3D design software to design and document solutions for major course projects
- Students will communicate and present solutions to their peers and members of a professional community of engineers and architects

COMPUTER INTEGRATED MANUFACTURING ENGINEERING (CIM)

- Students will discover the answer to many questions like:

  How are things made? What processes go into creating products? Is the process for making a water bottle the same as it is for a musical instrument? How do assembly lines work? How has automation changed the face of manufacturing?

- Students will learn about the history of manufacturing, robotics and automation, manufacturing processes, computer modeling, manufacturing equipment, and flexible manufacturing systems.

DIGITAL ENGINEERING (DE)

- This course 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

PENDING OPTION SPECIALIZATION COURSE

- Computer Programming & Software Engineering course is tentatively scheduled for 2015

This new specialization course will be offered by PLTW and can be considered by Rye students as another alternative to the 3rd and final course of this program

FUTURE POSSIBILITIES CAPSTONE COURSE

- Engineering Design and Development (EDD)
  - 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 will define the problem, then design, build and test their solutions while working closely with industry professionals
  - Finally, teams present and defend their solutions in front of a panel of outside experts