



## Engineering Essentials

PEIMS Code: N1303760

Abbreviation: ENGESS

Grade Level(s): 9-10

Award of Credit: 1.0

### Approved Innovative Course

- Districts must have local board approval to implement innovative courses.
- In accordance with Texas Administrative Code (TAC) §74.27, school districts must provide instruction in all essential knowledge and skills identified in this innovative course.
- Innovative courses may only satisfy elective credit toward graduation requirements.
- Please refer to [TAC §74.13](#) for guidance on endorsements.

### Course Description:

The purpose of the PLTW *Engineering Essentials* (EES) course is to provide a multidisciplinary approach to teaching and learning foundational concepts of engineering practice, providing students opportunities to explore the breadth of engineering career opportunities and experiences, and solve engaging and challenging real-world problems. Goals and outcomes for students include developing a strategic, systematic design and inquiry processes to guide development of an effective solution to a problem. In EES, students discover that successful STEM professionals exhibit personal and professional characteristics that lend themselves to the creative, collaborative, and solution-driven nature of their professions. Students investigate engineering career fields and determine the technical literacy and career-specific knowledge and skills to support professional practice. They incorporate computational thinking, modeling, systems thinking, professional practices and communication, project management, collaboration, professionalism and ethics as critical parts of a problem-solving process that supports the ability to interpret complex, open-ended problems across disciplines.

### Teacher qualifications:

An assignment for Engineering Essentials is allowed with one of the following certificates as well as successful completion of the Project Lead The Way's Core Training requirements for Aerospace Engineering.

PLTW Core Training:

PLTW's Core Training requires approximately 90 hours of instruction led by PLTW approved Master Teachers. Course mastery is demonstrated by the submission and approval of a course portfolio that meet's PLTW's requirements. After successful completion of Core Training, teachers receive access to the National PLTW Engineering Professional Learning Community, course-specific student and classroom instructional resources, and Ongoing Training resources

Engineering Essentials  
through the PLTW Content Management System.

- Legacy Master Science Teacher.
- Mathematics/Physical Science/Engineering: Grades 6-12.
- Mathematics/Physical Science/Engineering: Grades 8-12.
- Physical Science: Grades 6-12.
- Physical Science: Grades 8-12.
- Physics/Mathematics: Grades 7-12.
- Physics/Mathematics: Grades 8-12.
- Science: Grades 7-12.
- Science: Grades 8-12.
- Science, Technology, Engineering, and Mathematics: Grades 6-12.
- Secondary Industrial Arts (Grades 6-12).
- Secondary Industrial Technology (Grades 6-12).
- Secondary Physics (Grades 6-12).
- Secondary Science (Grades 6-12).
- Secondary Science, Composite (Grades 6-12).
- Technology Education: Grades 6-12.
- Legacy Master Mathematics Teacher.
- Mathematics: Grades 7-12.
- Mathematics: Grades 8-12.
- Secondary Mathematics: Grades 6-12
- Secondary Physical Science (Grades 6-12)
- Trade and Industrial Education: Grades 6-12. This assignment requires appropriate work approval.
- Trade and Industrial Education: Grades 8-12. This assignment requires appropriate work approval.
- Vocational Trades and Industry (Grades 6-12). This assignment requires appropriate work approval.
- Vocational Trades and Industry Pre-Employment Laboratory (Grades 6-12). This assignment requires appropriate work approval.
- Vocational Trades and Industry Co-op (Grades 6-12). This assignment requires appropriate work approval.

**Additional information:**

Districts may use these courses only with the approval of Project Lead The Way. All requirements of Project Lead The Way must be met. Please contact Project Lead The Way directly for these requirements:

Project Lead The Way  
Solution Center  
Toll Free: 877.335.PLTW (7589)  
[solutioncenter@pltw.org](mailto:solutioncenter@pltw.org)

Teachers are required to successfully complete PLTW Core Training to gain access to and teach the appropriate PLTW course curriculum. Core Training is provided in a variety of platforms – face to face, on-line and blended instruction, to meet teachers' needs.

## Engineering Essentials

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Core Training helps teachers build skills and confidence around activity-, project-, and problem-based (APB) learning; prepares educators to become facilitators and coaches; and empowers them to bring learning to life through their PLTW program.

PLTW provides a number of resources to help districts, schools, and teachers build strong PLTW programs including an Implementation Guide, best practices, regional and national events, and more. Additionally, the PLTW Solution Center provides support to help teachers 24 hours a day, seven days a week.

The cost for PLTW Engineering Essentials Core Training is currently \$2,400.00.