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| ENGINEERING & TECHNOLOGY EDUCATION CAREER PATHWAYS2015-2016  |
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| PROJECT LEAD THE WAY (PLTW) ENGINEERING CIP 14.0101.01  |
| PATHWAY DESCRIPTION: A program that generally prepares individuals to apply mathematical and scientific principles to solve a wide variety of practical problems in industry, social organization, public works, and commerce. Includes instruction in undifferentiated and individualized programs in engineering.  |
| BEST PRACTICE CORE  | EXAMPLE ILP-RELATED CAREER TITLES  |
| Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification) Complete (2) TWO CREDITS: * •219901 Introduction to Engineering Design (PLTW)
* •219902 Principles of Engineering (PLTW) Choose (2) TWO CREDITS from the following:
* •219903 Digital Electronics (PLTW)
* •219904 Computer Integrated Manufacturing (PLTW)
* •219905 Civil Engineering & Architecture (PLTW)
* •219906 Engineering Design & Development (PLTW)
* •219907 Aerospace Engineering (PLTW)
* •219908 Biotechnical Engineering (PLTW)
* •219917 Special Topics in Engineering (PLTW)
* •110730 Computer Science & Software Engineering (PLTW)
* •210330 Engineering & Technology Co-Op OR

210331 Engineering & Technology Internship Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to PLTW Program Requirements for further information.  | Engineering Technology Instructor Production Woodworker Manufacturing Manager Manufacturing Worker Electronics Assembler Industrial Engineer Industrial Technician Quality Controller Architect Aerospace Engineer Interior Designer Nuclear Engineer Electrical Engineer Electronics Engineer Civil Engineer Computer Hardware Engineer  |

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| CTE-PLTW HYBRID CAREER PATHWAYS 2015-2016  |
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| ELECTRICAL ENGINEERING CIP 14.4101.00  |
| PATHWAY DESCRIPTION: This pathway provides the opportunity to blend Career & Technical Education (CTE) courses with Project Lead the Way (PLTW) courses to help students apply technical skills along with science, technology, engineering, and math (STEM) skills to solve real-world problems. Electrical Engineers apply electrical theory and related knowledge to diagnose and modify developmental or operational electrical machinery and electrical control equipment and circuitry in industrial or commercial plants and laboratories. Electrical Engineers experiment with motor-control devices, switch panels, transformers, generator windings, solenoids, and other electrical equipment and components according to engineering data and knowledge of electrical principles.  |
| BEST PRACTICE CORE  | EXAMPLE ILP-RELATED CAREER TITLES  |
| Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification) Complete (5) FIVE CREDITS from the following : * •219901 Introduction to Engineering Design (PLTW)
* •470322 Industrial Maintenance Electrical Principles
* •470348 Industrial Maintenance Electrical Motor Controls
* •470330 Industrial Maintenance of PLC
* •219903 Digital Electronics (PLTW)

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to PLTW Program Requirements for further information.  | Electrical Technician Electrical Supervisor Electrical Engineer  |

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| CTE-PLTW HYBRID CAREER PATHWAYS 2015-2016  |
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| AUTOMOTIVE ENGINEERING CIP 15.0803.00  |
| PATHWAY DESCRIPTION: This pathway provides the opportunity to blend Career & Technical Education (CTE) courses with Project Lead the Way (PLTW) courses to help students apply technical skills along with science, technology, engineering, and math (STEM) skills to solve real-world problems. A program that prepares individuals to apply basic engineering principles and technical skills in support of engineers and other professionals engaged in developing, manufacturing and testing self-propelled ground vehicles and their systems. Includes instruction in vehicular systems technology, design and development testing, prototype and operational testing, inspection and maintenance procedures, instrument calibration, test equipment operation and maintenance, and report preparation.  |
| BEST PRACTICE CORE  | EXAMPLE ILP-RELATED CAREER TITLES  |
| Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification) Complete (6) SIX CREDITS from the following : * •219901 Introduction to Engineering Design (PLTW)
* •470507 Automotive Maintenance and Light Repair Section A and Lab
* •470509 Automotive Maintenance and Light Repair Section B and Lab
* •470511 Automotive Maintenance and Light Repair Section C and Lab
* •470513 Automotive Maintenance and Light Repair Section D and Lab
* •219903 Digital Electronics (PLTW)

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to PLTW Program Requirements for further information.  | Automotive Engineer Service Manager  |

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| CTE-PLTW HYBRID CAREER PATHWAYS 2015-2016  |
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| FABRICATION ENGINEERING CIP 14.1901.00  |
| PATHWAY DESCRIPTION: This pathway provides the opportunity to blend PLTW courses and CTE courses to promote training with applied technical skills and the science, technology, engineering and math required to solve real-world problems. The Fabrication Engineer design parts to engineering specifications that are required for the development of metal parts and interior metal structures. Fabrication Engineers work with Sheet Metal Technicians in the development of complex geometrical parts. The Fabrication Engineer provides direct support to the manufacturing industry in the areas of design, fabrication, modification and development of metal assemblies, components and sub-assemblies.  |
| BEST PRACTICE CORE  | EXAMPLE ILP-RELATED CAREER TITLES  |
| Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification) Complete (5) FIVE CREDITS from the following : * •219901 Introduction to Engineering Design (PLTW)
* •480816 Metal Trade Information & Metals
* •480813 Parallel Line Layout
* •480817 Sheet Metal 1-A
* •219902 Principles of Engineering (PLTW)

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to PLTW Program Requirements for further information.  | Manufacturing Engineer Sheet Metal Engineer  |

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| CTE-PLTW HYBRID CAREER PATHWAYS 2015-2016  |
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| COMPUTERIZED MANUFACTURING AND MACHINING (CMM) ENGINEERING CIP 48.0510.00  |
| PATHWAY DESCRIPTION: This pathway provides the opportunity to blend Career & Technical Education (CTE) courses with Project Lead the Way (PLTW) courses to help students apply technical skills along with science, technology, engineering, and math (STEM) skills to solve real-world problems. CMM Engineers design, develop and run programs which direct machines to cut and shape metal or plastic for such things as airplanes, automobiles and other industrial machines. CMM Engineers use blueprints and 3- dimensional computer designs to create the programs which result in precisely cut products.  |
| BEST PRACTICE CORE  | EXAMPLE ILP-RELATED CAREER TITLES  |
| Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification) Complete (5) FIVE CREDITS from the following : * •219901 Introduction to Engineering Design (PLTW)
* •470913 Fundamentals of Machine Tools-A
* •470914 Fundamentals of Machine Tools-B
* •470915 Manual Programming
* •219904 Computer Integrated Manufacturing (PLTW)

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to PLTW Program Requirements for further information.  | Machine Operator Machinist Technician Machinist Maintenance Machinist CNC Machine Operator CNC Programmer Quality Control Manager Mechanical Engineer Engineer Technician Industrial Engineer  |

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| CTE-PLTW HYBRID CAREER PATHWAYS 2015-2016  |
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| DESIGN ENGINEERING CIP 15.1304.00  |
| PATHWAY DESCRIPTION: This pathway provides the opportunity to blend Career & Technical Education (CTE) courses with Project Lead the Way (PLTW) courses to help students apply technical skills along with science, technology, engineering, and math (STEM) skills to solve real-world problems. Design Engineers have a working knowledge of mechanical parts as well as computer-aided design (CAD) software, such as AutoCAD. Mechanical designers begin a project by meeting with project managers, engineers, and clients to understand the needs and requirements for a new product or mechanical system. For example, designers working on a project to create an automobile engine may consult engineers regarding which structural materials to use or clients regarding engine efficiency requirements. Once materials and specifications have been determined, designers begin using CAD software to plan and develop models.  |
| BEST PRACTICE CORE  | EXAMPLE ILP-RELATED CAREER TITLES  |
| Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification) Complete (5) FIVE CREDITS from the following : * •219901 Introduction to Engineering Design (PLTW)
* •480110 Introduction to Computer Aided Drafting
* •480136 Parametric Modeling
* •480113 Engineering Graphics
* •219906 Engineering Design & Development (PLTW) OR 219902 Principles of Engineering (PLTW)

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to PLTW Program Requirements for further information.  | Engineer Technician Electrical Engineer Industrial Engineer Mechanical Engineer Civil Engineer  |

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| CTE-PLTW HYBRID CAREER PATHWAYS 2015-2016  |
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| WELDING ENGINEERING CIP 15.0614.00  |
| PATHWAY DESCRIPTION: This pathway provides the opportunity to blend Career & Technical Education (CTE) courses with Project Lead the Way (PLTW) courses to help students apply technical skills along with science, technology, engineering, and math (STEM) skills to solve real-world problems. Welding Engineers design and develop metal components for products for the pipeline, automotive, boiler making, ship building, aircraft and mobile home industry. Welding Engineers must have knowledge of cutting processes and gas metal arc welding procedures for efficient development of these industrial processes.  |
| BEST PRACTICE CORE  | EXAMPLE ILP-RELATED CAREER TITLES  |
| Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification) Complete (5) FIVE CREDITS from the following : * •219901 Introduction to Engineering Design (PLTW)
* •480505 Blueprint Reading for Welding
* •480501 Cutting Processes
* •480522 Gas Metal Arc Welding
* •219902 Principles of Engineering (PLTW)

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to PLTW Program Requirements for further information.  | Pipe Welder Certified Welding Inspector (CWI) Certified Welding Educator (CWE) Welding Engineer Structural Engineer Mechanical Engineer  |

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| CTE-PLTW HYBRID CAREER PATHWAYS 2015-2016  |
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| CONSTRUCTION ARCHITECTURAL ENGINEERING CIP 15.0101.02  |
| PATHWAY DESCRIPTION: This pathway provides the opportunity to blend Career & Technical Education (CTE) courses with Project Lead the Way (PLTW) courses to help students apply technical skills along with science, technology, engineering, and math (STEM) skills to solve real-world problems. A program that prepares individuals to apply basic engineering principles and technical skills in support of architects, engineers and planners engaged in designing and developing buildings, urban complexes, and related systems. Includes instruction in design testing procedures, building site analysis, model building and computer graphics, structural systems testing, analysis of prototype mechanical and interior systems, report preparation, basic construction and structural design, architectural rendering, architectural-aided drafting (CAD), layout and designs, architectural blueprint interpretation, building materials, and basic structural wiring diagramming.  |
| BEST PRACTICE CORE  | EXAMPLE ILP-RELATED CAREER TITLES  |
| Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification) Complete (5) FIVE CREDITS from the following : * •219901 Introduction to Engineering Design (PLTW)
* •460201 Introduction to Construction Technology
* •460212 Floor and Wall Framing
* •460213 Ceiling and Roof Framing
* •219905 Civil Engineering & Architecture (PLTW)

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to PLTW Program Requirements for further information.  | Flooring Engineer Construction Engineer Structural Engineer  |

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| CTE-PLTW HYBRID CAREER PATHWAYS 2015-2016  |
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| STRUCTURAL ENGINEERING CIP 14.0803.00  |
| PATHWAY DESCRIPTION: This pathway provides the opportunity to blend Career & Technical Education (CTE) courses with Project Lead the Way (PLTW) courses to help students apply technical skills along with science, technology, engineering, and math (STEM) skills to solve real-world problems. A program that prepares individuals to apply basic engineering principles and technical skills in support of architects, engineers and planners engaged in designing and developing buildings, urban complexes, and related systems. Includes instruction in design testing procedures, building site analysis, model building and computer graphics, structural systems testing, analysis of prototype mechanical and interior systems, report preparation, basic construction and structural design, architectural rendering, architectural-aided drafting (CAD), layout and designs, architectural blueprint interpretation, building materials, and basic structural wiring diagramming.  |
| BEST PRACTICE CORE  | EXAMPLE ILP-RELATED CAREER TITLES  |
| Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification) Complete (5) FIVE CREDITS from the following : * •219901 Introduction to Engineering Design (PLTW)
* •460201 Introduction to Construction Technology
* •460218 Construction Forms
* •460214 Site Layout and Foundations
* •219905 Civil Engineering & Architecture (PLTW)

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to PLTW Program Requirements for further information. .  | Engineering Technology Instructor Architect Interior Designer Home Improvement Contractor CarpenterConstruction Laborer Construction Manager Construction Supervisor Project Manager  |

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| CTE-PLTW HYBRID CAREER PATHWAYS 2015-2016  |
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| ELECTRICAL CONSTRUCTION ENGINEERING CIP 15.0303.00  |
| PATHWAY DESCRIPTION: This pathway provides the opportunity to blend Career & Technical Education (CTE) courses with Project Lead the Way (PLTW) courses to help students apply technical skills along with science, technology, engineering, and math (STEM) skills to solve real-world problems. A program that prepares individuals to apply technical knowledge and skills to install, operate, maintain, and repair electric apparatus and systems such as residential, commercial, and industrial electric-power wiring; and DC and AC motors, controls, and electrical distribution panels. Includes instruction in the principles of electronics and electrical systems, wiring, power transmission, safety, industrial and household appliances, job estimation, electrical testing and inspection, and applicable codes and standards.  |
| BEST PRACTICE CORE  | EXAMPLE ILP-RELATED CAREER TITLES  |
| Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification) Complete (5) FIVE CREDITS from the following : * •219901 Introduction to Engineering Design (PLTW)
* •460316 Circuits I
* •460319 Circuits II
* •219903 Digital Electronics (PLTW)

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to PLTW Program Requirements for further information.  |  |

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| CTE-PLTW HYBRID CAREER PATHWAYS 2015-2016  |
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| WOOD MANUFACTURING ENGINEERING CIP 03.0509.00  |
| PATHWAY DESCRIPTION: This pathway provides the opportunity to blend Career & Technical Education (CTE) courses with Project Lead the Way (PLTW) courses to help students apply technical skills along with science, technology, engineering, and math (STEM) skills to solve real-world problems. Wood Manufacturing Engineers design and create interior cabinets and wood products for homes and businesses. Wood Manufacturing Engineers consult with clients and Cabinetmakers for cutting, shaping wood, preparing surfaces and forming a completed product.  |
| BEST PRACTICE CORE  | EXAMPLE ILP-RELATED CAREER TITLES  |
| Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification) Complete (5) FIVE CREDITS from the following : * •219901 Introduction to Engineering Design (PLTW)
* •480740 Wood Product Manufacturing
* •480731 Cabinet Making Technology
* •480716 Lumber Grading and Drying
* •219904 Computer Integrated Manufacturing (PLTW)

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to PLTW Program Requirements for further information.  | Wood Product Supervisor Wood Technologist Wood Product Engineer  |

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| CTE-PLTW HYBRID CAREER PATHWAYS 2015-2016  |
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| FLUID POWER ENGINEERING CIP 15.1103.00  |
| PATHWAY DESCRIPTION: This pathway provides the opportunity to blend Career & Technical Education (CTE) courses with Project Lead the Way (PLTW) courses to help students apply technical skills along with science, technology, engineering, and math (STEM) skills to solve real-world problems. Fluid Power Engineers design, fabricate, and test industrial hydraulic equipment. Fluid Power Engineers apply knowledge of hydraulic, pneumatic, and electrical principles to test equipment, and analyzes and records data, such as fluid pressure, flow measure, and power loss due to friction and parts wear. Fluid Power Engineers understand hydraulic symbols, reads system schematics, understands electrical principles, and is skilled in test procedures and instrumentation.  |
| BEST PRACTICE CORE  | EXAMPLE ILP-RELATED CAREER TITLES  |
| Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification) Complete (5) FIVE CREDITS from the following : * •219901 Introduction to Engineering Design (PLTW)
* •470321 Fluid Power
* •470316 Advanced Hydraulic Systems
* •470326 Pneumatic Systems
* •219902 Principles of Engineering (PLTW)

Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to PLTW Program Requirements for further information.  | Industrial Hydraulic Technician Mechanical Engineer Industrial Engineer Pneumatic Specialist Fluid Power Supervisor Hydraulic Engineer  |

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| INFORMATION TECHNOLOGY CAREER PATHWAYS 2015-2016  |
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| COMPUTER SCIENCE CIP 11.0701.01  |
| PATHWAY DESCRIPTION: The Computer Science Pathway courses focus on computer theory, computing problems and solutions, and design of computer systems and user-interfaces. The coursework will include instruction in the principles of computational science, computer development and programming and applications to a variety of end use situations.  |
| BEST PRACTICE CORE  | EXAMPLE ILP-RELATED CAREER TITLES  |
| Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification) Complete (1) ONE CREDIT from the following: * •110110 Computer Literacy OR 060112 Digital Literacy
* •110710 Introduction to Computer Science(NEW Course 2015-2016)(May be taken in place of Computer Literacy if proficiency has been demonstrated)

Complete (1) ONE CREDIT from the following: * •110251 Computational Thinking
* •110205 JAVA
* •110711 Computer Science Principles (NEW Course 2015-2016)
* •110730 Computer Science and Software Engineering (PLTW)

(NEW Course 2015-2016) Choose (2) TWO CREDITS from the following: * •110701 AP Computer Science A
* •110202 C++1
* •110207 Visual Basic
* •110809 JavaScript
* •110206 JAVA II
* •110208 Visual Basic II
* •110918 Information Technology Co-op OR

110919 Information Technology Internship Note: (PLTW) courses require an agreement between Project Lead The Way and the Local School District please see the link to PLTW Program Requirements for further information.  | Software Developer Database Administrator Computer Hardware Engineer Computer Systems Analyst Computer Network Architect Web Developer Information Security Analyst Computer Programmer Computer Systems Manager Information Systems Manager Project Manager  |

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| HEALTH SCIENCES CAREER PATHWAYS 2015-2016  |
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| PLTW BIOMEDICAL SCIENCES CIP 26.0102.00  |
| PATHWAY DESCRIPTION: A general, program that focuses on the integrative scientific study of biological issues related to health and medicine, or a program in one or more of the biomedical sciences that is undifferentiated as to title. Includes instruction in any of the basic medical sciences at the research level; biological science research in biomedical faculties; and general studies encompassing a variety of the biomedical disciplines.  |
| BEST PRACTICE CORE  | EXAMPLE ILP-RELATED CAREER TITLES  |
| Foundational Skills Necessary for Career-Ready Measure: (KOSSA/Industry Certification) Complete (4) FOUR CREDITS: * • 170701 Principles of Biomedical Science
* • 170702 Human Body Systems
* • 170703 Medical Interventions
* • 170704 Biomedical Innovations

Note: (PLTW) courses require an agreement between Project Lead the Way and the Local School District.  | Biologist Biomedical Engineer Biotechnologist CoronerDoctorForensic Scientist NursePharmacistSurgeon  |