RTTT Career and Technical Education STEM Program Descriptions

Program Title	**Pathways to Engineering (PLTW) 9400300 – Computer Integrated Manufacturing (CIM)**
CTE Courses and Descriptions	In this program, students are required to complete the three core courses plus their pathways course. The core courses prepare students for the rigor of the pathways courses. **8600550 Introduction to Engineering Design** **8600520 Principles of Engineering** **8600530 Digital Electronics** **8600560 Computer Integrated Manufacturing** - applies principles of robotics and automation and builds on computer solid modeling skills developed in Introduction to Engineering Design. Students use Computer Numerical Controlled (CNC) equipment to produce actual models of their three-dimensional designs. Design analysis and elemental concepts of robotics used in automated manufacturing are included.
Integrated Core Course(s)	Algebra
Teacher Certification(s)	Technology Education (TECH ED) Teacher must complete Project Lead The Way training for each course.
Industry Certification(s)	Autodesk Certified Associate – Inventor (ADESK024) MSSC Certified Production Technician (MSSCN001)
Number of Articulated Credits	None - although there are a number of universities and technical colleges nationwide that grant credit for completion of the PLTW curriculum. The University of South Carolina offers 3 semester hours of college credit per course for Introduction to Engineering Design, Principles of Engineering, and Digital Electronics.
Implementation Costs	**Startup Costs (approximate): $165,000** This is a turnkey 20-seat estimate and includes computers, software, peripheral equipment, furniture, course-specific equipment, textbooks, and training for one teacher. This estimate does not include any instructional technology items such as smart boards, computer projection devices, etc. **Recurring Costs (approximate): $13,500** includes software lease renewals and replacement consumables.
Recommended Feeder Programs/Course	It is recommended that districts also implement Gateway to Technology (GTT), an activities oriented PLTW middle school program to engage students and ensure their readiness for the Pathways to Engineering program. Taught in conjunction with a rigorous academic curriculum, this program consists of the following independent nine-week units: *Design and Modeling, Magic of Electrons, Science of Technology, Automation and Robotics, Flight and Space, and Energy and the Environment.* **Startup Costs (approximate): $105,000** This is a turnkey 26-seat estimate and includes computers, software, peripheral equipment, furniture, course-specific equipment, textbooks, and training for one teacher. This estimate does not include any instructional technology items such as smart boards, computer projection devices, etc. **Recurring Costs (approximate): $2,400** includes software lease renewals and replacement consumables. Districts are encouraged to incorporate the PLTW Aerospace Engineering curriculum for grades 3-5 students. Additional engineering activities will be made available students in grades K-2 to complete the Florida K-16 STEM pipeline. **Startup Costs (approximate): $50,000** This estimate does not include any instructional technology items such as smart boards, computer projection devices, etc. **Recurring Costs (approximate): $2,000** This includes replacement consumables.