Course resumes showcase the technical skills students obtain in each PLTW course. Each resume outlines the computational skills, analytical skills, and knowledge acquired in the course. Course resumes also detail student experience with tools, software, lab work, and engineering design. The detailed skills listed within course resumes illustrate the immediate, applicable contributions that students can make within a workplace.

Computational and Analytical Skills

- Apply financial principles to manufacturing scenarios
- Calculate power requirements
- Calculate milling speed and feed rates
- Develop and apply formulas to solve to manufacturing dilemmas
- Analyze a product and propose manufacturing processes used to produce
- Analyze a product life cycle

Manufacturing Engineering and Design Experience

- Collaborate effectively with peers to solve problems using a design process
- Apply an engineering design process to solve a problem
- Design, build, and test a manufacturing system model
- Design and test a program to control a system
- Select material for an application
- Design a part using CAD modeling software
- Select tooling and create tool paths using CAM software
- Optimize tooling, tool paths and feed rates to safely and efficiently mill a part
- Operate a mill to produce a part
- Evaluate prototyping techniques and choose the appropriate method for a product
- Create programs for devices to communicate with a simulated manufacturing system
- Investigate manufacturing engineering career

Tools and Software

- CAD modeling software
- CAM software for 3D milling
- CNC milling machine
- Shop tools and hand tools
- Manufacturing and robot design system
- Programming language
- Robot arm hardware
- Robot arm programming software

Professional Skills

- Team collaboration
- Project management
- Problem-solving
- Communication skills
- Presentation skills
- Technical writing

Course Knowledge

- Manufacturing
  - Historical evolution of manufacturing systems
  - Modern manufacturing systems
  - Manufacturing processes
  - Manufacturing system design
  - Designing for manufacturability
  - Prototyping techniques
  - Cost of manufacturing and efficiency
  - Manufacturing system power
  - Integration of manufacturing elements
  - Manufacturing automation
  - Robots in manufacturing
- Manufacturing Software and Tools
  - Software programing and troubleshooting
  - Milling machine tooling
  - Milling machine speed and feed rates
  - Milling machine operation
  - Communication between devices
  - CAD software
  - CAM software
- Engineering
  - Engineering code of ethics
  - Engineering design process
  - Project management tools
  - Product life cycle
  - Manufacturing engineering careers
  - Material selection
  - Power systems