# Project Lead the Way Competency Profile

**The Student Can:**

- Sketch objects including dimensioning.
- Create multiview drawings using CAD solid modeling software.
- Scale and properly dimension simple drawings.
- Create isometric drawings.
- Create basic electrical and fluid power schematics.
- Create simple CNC language from CAM software.
- Calculate basic gear train speed and torque data.
- Interpret basic BOM information.
- Determine the mechanical efficiency of simple and complex mechanical devices.
- Create process flow charts for manufacturing a given product.
- Use precision measuring tools; micrometers, calipers, dial indicators as well as scales, tape measures.
- Convert between metric and US customary measurement systems.
- Calculate mean and average of sample data, construct a histogram.
- Create and edit simple programs for bench top robots using a teach pendant as well as pc software.
- Use hard wire and PLC devices to set up basic control logic circuits for control of electrical devices.
- Used simulation software to create and test basic electronic circuits.
- Use a digital multimeter to measure voltage, current and resistance values.
- Connect and operate directional control devices to control linear and rotary actuators.
- Create and analyze free body diagrams for pinned connections.
- Calculate mass properties of various objects using manual and software packages given physical dimensions and material make-up of the object.

**The Student Has:**

- Used a 12 step Design Process to manage lab projects.
- Operated bench model CNC equipment.
- Demonstrated proper use of basic shop hand tools including; files, hammers, layout tools, wrenches..
- Demonstrated manufacturing area safety practices and procedures.
- Demonstrated an understanding of basic SPC principles.
- Demonstrated proper set up and operation of hydraulic and pneumatic power systems.
- Demonstrated proper set up and operation of basic AC and DC circuits.
- Used a solid modeling software to create a part and subsequently produced a part on a rapid prototype machine.
- Worked on project teams to solve problems and report solution.
- Soldered electronic components on circuit boards.
- Designed circuits to display date and using solderless breadboards to test their circuits.
- Set up communications between a CNC machine and a robot to load and unload the CNC machine
- Completed and received certification in an OSHA general safety course.
- Observed a stress analyzer pull tensile specimens and record data for the same.
- Used online and published works to research patented items when developing design ideas.
- Developed a prototype alternative energy system given the constraints as well as available materials available for project completion.
- Used a decision matrix approach to determine the best possible solution for problem resolution.
- Created a career passport of personal qualifications and achievements.

Instructor_____ Date_____