Course Description
The second in a sequence of courses addressing the history & operational structure of industry, lean manufacturing principles, product development, precision measurement, and quality management. Emphasis is placed on the interaction of process selection, strength optimization, cost, and overall quality.
STRAND 1
Students will follow safety practices.

Standard 1
Identify potential safety hazards and follow general laboratory safety practices.
- Assess workplace conditions regarding safety and health.
- Identify potential safety issues and align with relevant safety standards to ensure a safe workplace/jobsite.
- Locate and understand the use of shop safety equipment.
- Select appropriate personal protective equipment.

Standard 2
Use safe work practices.
- Use personal protective equipment according to manufacturer rules and regulations.
- Follow correct procedures when using any hand or power tools.

Standard 3
Complete a basic safety test without errors (100%) before using any tools or shop equipment.

STRAND 2
Students will gain an understanding of how a typical corporation is structured and how the responsibilities for various aspects of production are often organized.

Standard 1
Understand the company vision and how the employee fits into that vision and mission.

Standard 2
Understand how a typical corporation is organized and what each department contributes.
- Production
- Engineering
- Accounting
- Shipping & Receiving
- Quality Control
- Human Resources

Standard 3
Understand how Production Systems are organized.
- Forecasting
- Production Planning
- Plant Layout
- Inventory Control
- Work Measurement
Standard 4
Understand the value of the end product and how each employee’s actions positively or negatively affect that value.

STRAND 3
Students will correctly interpret advanced tolerancing, including Geometric Dimensioning and Tolerancing (GD&T).

Standard 1
Calculate the potential result of a “tolerance stack”.

Standard 2
Determine whether or not a selection of parts are “within spec”.

Standard 3
Understand the use of and responsibilities associated with the use of a quality stamp.

STRAND 4
Students will increase their ability to both comprehend and create technical documents.

Standard 1
Communicate professionally using email.

Standard 2
Use software applications commonly found in the workplace.
  • MS Excel
  • MS Word

STRAND 5
Students will be introduced to the basic elements of Statistical Process Control.

Standard 1
Understand essential concepts and terminology used in statistics.
  • Scatter plot
  • Bell curve
  • Average
  • Mean
  • Median
  • Mode
  • Variation
  • Standard deviation
Standard 2
Create and correctly interpret an X-Y work chart to bring a process in control and make it more capable.

STRAND 6
Students will complete the requirements to earn certification from an industry recognized institution in Six Sigma and/or Lean Manufacturing.

Standard 1
Industry recognized Lean Bronze certifications include:
- ASQ
- AME
- Shingo Institute
- SME

Standard 2
Industry recognized Lean Six Sigma Yellow Belt certifications include:
- ASQ
- IASSC
- MSI
- SixSigma

Skill Certificate Test Points by Strand
Complete Lean Manufacturing Bronze or Six Sigma Yellow Belt Certification.

Performance Skills

1. Create and utilize an engineering notebook per established conventions.  
   https://schools.utah.gov/cte/tech/publicationsresources

2. Demonstrate practice of the Technology & Engineering Professional Workplace Skills. 
   https://schools.utah.gov/cte/tech/publicationsresources

3. Participate in a significant activity that provides each student with an opportunity to 
   render service to others, employ leadership skills, or demonstrate skills they have 
   learned through this course, preferably through participation in a Career & Technical 
   Student Organization (CTSO) such as the Technology Student Association (TSA).