

PROGRAM COMPETENCIES

INTRODUCTION TO ENGINEERING (Project Lead The Way)

Design Process
Technical Sketching and Drawing
Measurement and Statistics
Modeling Skills
Geometry of Design
Reverse Engineering
Documentation
Advanced Computer Modeling
Design Team
Design Challenges

COMPUTER INTEGRATED MANUFACTURING (Project Lead The Way)

Principles of Manufacturing

- History of Manufacturing
- Control Systems
- The Cost of Manufacturing

Manufacturing Processes

- Designing for Manufacturability
- How We Make Things
- Product Development

Elements of Automation

- Introduction to Robotic Automation
- Elements of Power
- Robotic Programming and Usage

Integration of Manufacturing Elements

- CIM Systems
- Integration of Manufacturing Elements

PROGRAM COMPETENCIES

CIVIL ENGINEERING & ARCHITECTURE (Project Lead The Way)

Overview of Civil Engineering and Architecture

- History of Civil Engineering and Architecture
- Careers in Civil Engineering and Architecture

Residential Design

- Building Design & Construction
- Cost & Efficiency Analysis
- Residential Design

Commercial Applications

- Commercial Building Systems
- Structures
- Services & Utilities
- Site Consideration

Commercial Building Systems

- Commercial Building Design & Presentation

PRINCIPLES OF ENGINEERING (Project Lead The Way)

Energy and Power

- Mechanisms
- Energy Sources
- Energy Applications

Materials and Structures

- Statics
- Material Properties
- Material Testing

Control Systems

- Machine Control
- Fluid Power

Statistics and Kinematics

- Statistics
- Kinematics

ENGINEERING DESIGN AND DEVELOPMENT (Project Lead The Way)

Project Management

- Overview and Expectations
- The Design Process

Define a Problem

- Identify a Valid Problem
- Justify the Problem

Design a Solution

- Select a Solution Path
- Develop a Design Proposal

Design and Prototype a Solution

- Plan for the Prototype
- Build the Prototype

Test, Evaluate, and Refine the Solution

- Plan the Test
- Test the Prototype

Communicate the Process and Results

- Documentation and Presentation