

Engineering Technology  
Level II Outline

**Unit I: Review of Shop Rules / Shop Safety**

- Student agenda book
- General overview of course and requirements
- General shop safety rules and procedures
- Location and use of shop safety equipment
- Physics: Describing Motion

**Unit II: Review of Precision Measurement**

- Introduction to significant figures
- Accuracy
- Precision
- Use of Vernier caliper
- Use of Vernier micrometer
- Use of Vernier height gage
- Physics: Vectors

**Unit III: Computer Aided Manufacturing (CAM) FeatureCam:**

- Standard Toolbar
- Main Mode Toolbar
- Manufacturing Toolbar
- Assistance Bar
- Status Bar
- Snap Mode Toolbar

**Unit IV: Making Your First 2½-D Part**

- The First Time
- Create a Part File
- Simulate the Part
- Part Documentation
- Order of Manufacturing Operations
- Controlling the Automation
- NC Code
- Features From Curves
- Setting Up the Interface
- Setting the Snaps
- Building Circles

- Drawing Lines
- Chaining a Curve
- The Next Step
- Feature from a Curve
- Simulate the Part

#### **Unit V: CAM: Introduction to Turning**

- The First Time
- Create a Part File
- Making Features
- Ordering of Operations
- Part Documentation
- NC Code
- The Next Step
- Introduction to 3D
- 3D Machining
- Part Surfaces
- Changing Manufacturing Operations
- Check Surfaces
- 3D Modeling and Multiple Surface Manufacturing
- Create Boss Feature and Side Surface
- Create Top Lofted Surface
- Create Fillet
- Final Manufacturing
- 3D Data Import
- Orient Part and View Data
- Create Three Flange Hole Features
- Create Two Side Features
- Create a Facing Feature
- Create Top Surface Milling Feature
- Create Pocket Features

#### **Unit VI: Inventing and Prototyping**

- Students will design their own parts
- Students will manufacture their own designs on the CNC equipment

Engineering Technology  
Level II Outline  
New Jersey Student Learning Standards (NJSL)

**NJSL CTE.9.3**

<b>CONTENT AREA:</b>	<b>9.3 CAREER AND TECHNICAL EDUCATION</b>
<b>SCIENCE, TECHNOLOGY, ENGINEERING &amp; MATHEMATICS CAREER CLUSTER®</b>	
<b>Number</b>	<b>Standard Statement</b>
By the end of Grade 12, Career and Technical Education Program completers will be able to:	
<b>CAREER CLUSTER®:</b>	<b>SCIENCE, TECHNOLOGY, ENGINEERING &amp; MATHEMATICS (ST)</b>
9.3.ST.1	Apply engineering skills in a project that requires project management, process control and quality assurance.
9.3.ST.2	Use technology to acquire, manipulate, analyze and report data.
9.3.ST.3	Describe and follow safety, health and environmental standards related to science, technology, engineering and mathematics (STEM) workplaces.
9.3.ST.4	Understand the nature and scope of the Science, Technology, Engineering & Mathematics Career Cluster and the role of STEM in society and the economy.
9.3.ST.5	Demonstrate an understanding of the breadth of career opportunities and means to those opportunities in each of the Science, Technology, Engineering & Mathematics Career Pathways.
9.3.ST.6	Demonstrate technical skills needed in a chosen STEM field.
<b>PATHWAY:</b>	<b>ENGINEERING &amp; TECHNOLOGY CAREER PATHWAY (ST-ET)</b>
9.3.ST-ET.1	Use STEM concepts and processes to solve problems involving design and/or production.
9.3.ST-ET.2	Display and communicate STEM information.
9.3.ST-ET.3	Apply processes and concepts for the use of technological tools in STEM.
9.3.ST-ET.4	Apply the elements of the design process.
9.3.ST-ET.5	Apply the knowledge learned in STEM to solve problems.
9.3.ST-ET.6	Apply the knowledge learned in the study of STEM to provide solutions to human and societal problems in an ethical and legal manner.
<b>PATHWAY:</b>	<b>SCIENCE &amp; MATHEMATICS CAREER PATHWAY (ST-SM)</b>
9.3.ST-SM.1	Apply science and mathematics to provide results, answers and algorithms for engineering and technological activities.
9.3.ST-SM.2	Apply science and mathematics concepts to the development of plans, processes and projects that address real world problems.
9.3.ST-SM.3	Analyze the impact that science and mathematics has on society.
9.3.ST-SM.4	Apply critical thinking skills to review information, explain statistical analysis, and to translate, interpret and summarize research and statistical data.