Engineering Technology
Level I Outline

Unit I: Introduction / 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: Introduction to 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: Introduction to the Siemens NX Software Package
- The assembly environment
- The part environment
- The draft environment
- The sheet metal environment
- Interface basics
- Element and Object Selection
- Physics: Force and Motion, Energy

Unit IV: Modeling Parts
- Feature modeling
- Profile-based features
- Drawing profiles
- Drawing sketches of parts
- Thin-walled features
- Treatment features
- Pattern features
- Cutting, copying and pasting features
- Feature libraries
- Inserting part copies
- Families of parts

- Plastic part features
- Feature pathfinder
- Renaming and suppressing features
- Reference Elements
- Feature modeling and Boolean operations
- Modeling a sheet metal part
- Working with sheet metal parts in NX
- Constructing flanges
- Constructing contour flanges
- Flattening Sheet Metal Parts
- Custom bend formulas
- Sheet metal deformation features
- Physics: Momentum, Circular Motion and Gravitation

Unit V: 2-D Drawing
- Drawing in Siemens NX
- Intellisketch
- Intent Zones
- Sketch point
- Free sketch and free form
- Dimensioning Elements
- Design
- Windows and views
- Rotating a view
- Using colors in Siemens NX
- Applying formats with styles
- Formatting views
- Rendering parts and assemblies
- Assembly presentations
- Physics: Rotational Motion, Equilibrium
- Creating documents and using templates
- Document properties
- Finding, opening, and saving documents
- Importing and inserting documents
- Printing documents
- Document revision control
- Siemens NX find files
- Physical properties of parts and assemblies
- Distance and area measurement
- Part and assembly document updates

- Variables
- Symbols
- Customization
- Macros
- Physics: Mechanical Properties of Matter, Fluids

Unit VI: Managing Siemens NX Documents

- Creating documents and using templates
- Document properties
- Finding, opening, and saving documents
- Importing and inserting documents
- Printing documents
- Document revision control
- Siemens NX find files
- Physical properties of parts and assemblies
- Distance and area measurement
- Part and assembly document updates
- Variables
- Symbols
- Customization
- Macros

Unit VII: Reverse Engineering Projects

- Individuals and/or groups to work on reverse engineering projects to produce complete engineering design packages.

NJSLS CTE.9.3

CONTENT AREA:	9.3 CAREER AND TECHNICAL EDUCATION
SCIENCE, TECHNOLOGY, ENGINEERING & MATHEMATICS CAREER CLUSTER®	
Number	**Standard Statement**
By the end of Grade 12, Career and Technical Education Program completers will be able to:	
CAREER CLUSTER®:	SCIENCE, TECHNOLOGY, ENGINEERING & MATHEMATICS (ST)
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.
PATHWAY:	ENGINEERING & TECHNOLOGY CAREER PATHWAY (ST-ET)
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.
PATHWAY:	SCIENCE & MATHEMATICS CAREER PATHWAY (ST-SM)
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.