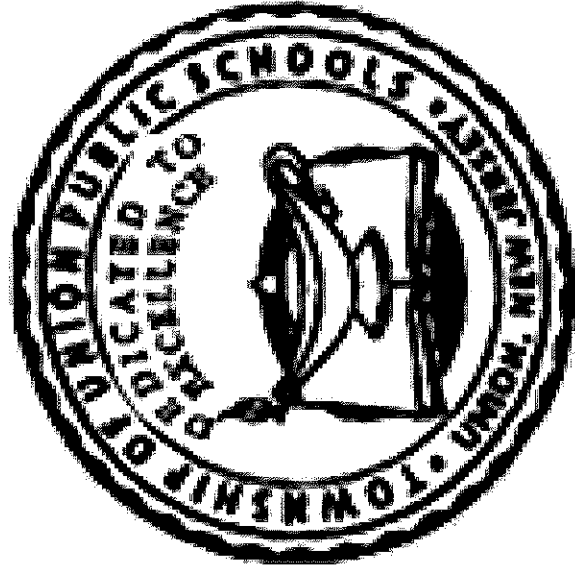


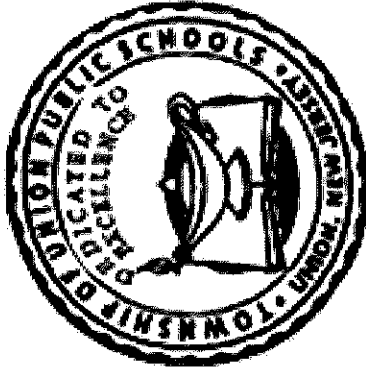
**TOWNSHIP OF UNION PUBLIC SCHOOLS**



**Technology Education  
TE 100**

**Curriculum Guide**

Curriculum Guide Approved June 2015



## **Board Members**

**David Arminio, President**

**Vito Nufrio, Vice President**

**Guy Francis**

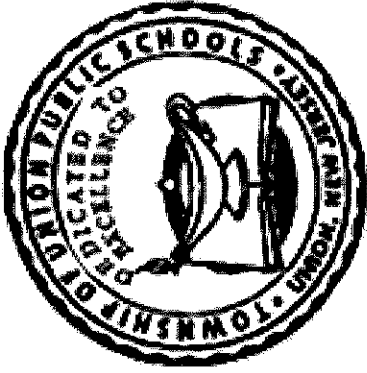
**Richard Galante**

**Lois Jackson**

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**Angel Salcedo**

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**TOWNSHIP OF UNION PUBLIC SCHOOLS**

Administration

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**Assistant Superintendent .....Dr. Noreen Lishak**

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**Director of Athletics, Health, Physical Education and Nurses.....Ms. Linda Ionta**

## DEPARTMENT SUPERVISORS

All Academic Areas K-2 .....	Ms. Maureen Corbett
Language Arts/Social Studies 3-5 .....	Mr. Robert Ghiretti
Mathematics/Science 3-5 .....	Ms. Theresa Matthews
Guidance K-12/SAC .....	Ms. Nicole Ahern
Language Arts.....	Ms. Mary Malyska
Math 8-12.....	Mr. Jason Mauriello
Science 6-12.....	Ms. Maureen Guilfoyle
Social Studies/Business.....	Ms. Libby Galante
World Language/ESL/Career Education/G&T/Computer Technology.....	Ms. Yvonne Lorenzo
Art/Music .....	Mr. Ronald Rago

**Technology Education  
TE 100**

**Curriculum Committee Members**

**Daniel Eberenz  
Edwin Oyola**

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## **Mission Statement**

The Township of Union Board of Education believes that every child is entitled to an education designed to meet his or her individual needs in an environment that is conducive to learning. State standards, federal and state mandates, and local goals and objectives, along with community input, must be reviewed and evaluated on a regular basis to ensure that an atmosphere of learning is both encouraged and implemented. Furthermore, any disruption to or interference with a healthy and safe educational environment must be addressed, corrected, or when necessary, removed in order for the district to maintain the appropriate educational setting.

## **Philosophy Statement**

The Township of Union Public School District, as a societal agency, reflects democratic ideals and concepts through its educational practices. It is the belief of the Board of Education that a primary function of the Township of Union Public School System is to formulate a learning climate conducive to the needs of all students in general, providing therein for individual differences. The school operates as a partner with the home and community.

## **Statement of District Goals**

- **Develop reading, writing, speaking, listening, and mathematical skills.**
- **Develop a pride in work and a feeling of self-worth, self-reliance, and self-discipline.**
- **Acquire and use the skills and habits involved in critical and constructive thinking.**
- **Develop a code of behavior based on moral and ethical principles.**
- **Work with others cooperatively.**
- **Acquire a knowledge and appreciation of the historical record of human achievement and failures and current societal issues.**
- **Acquire a knowledge and understanding of the physical and biological sciences.**
- **Participate effectively and efficiently in economic life and the development of skills to enter a specific field of work.**
- **Appreciate and understand literature, art, music, and other cultural activities.**
- **Develop an understanding of the historical and cultural heritage.**
- **Develop a concern for the proper use and/or preservation of natural resources.**
- **Develop basic skills in sports and other forms of recreation**



## **Course Description**

**TECHNOLOGY EDUCATION      TE 100**

**Enrollment:    Grades 9-12**

### **Purpose and Overview**

Technology Education will utilize a problem solving approach to design. Students will be exposed to hands on Technology Learning Activities (TLA) to investigate areas listed below. In exploring technology students develop an understanding of the progression and scope of technology through exploratory experiences. In group and individual activities, students experience ways in which technological knowledge and processes contribute to effective designs, abilities, and skills contribute to effective design and solutions to technological problems. Students participate in design activities to understand how criteria, constraints, and processes affect designs. Brainstorming, visualizing, modeling, constructing, testing, and refining designs provide firsthand opportunities for students to understand the uses and impacts of innovations. Students develop skills in communicating design information and reporting results.

Areas of concentration include:    The Design Process, Communications, Materials and Characteristics, Technology Systems, Structures, Construction Systems, Simple Machines, Transportation, Energy, Electricity and Magnetism, Vocational Areas and the impacts of Technology on society.

## Recommended Textbooks

**TECHNOLOGY** Shaping Our World -

John Gradwell, Malcolm Welch Eugene Martin, The  
Goodheart-Wilcox Co. Inc.  
Tinley Park Illinois. 1996 Edition

**TECHNOLOGY** Today and Tomorrow

Sharon Brusic, James Fale and Vincent Kuetemeyer  
Glencoe, McGraw-Hill Publishing Company  
New York 1999 Edition

**TECHNOLOGY** Today and Tomorrow

Sharon Brusic, James Fale and Vincent Kuetemeyer **STUDENT WORKBOOK**  
Glencoe, McGraw-Hill Publishing Company  
New York 1999 Edition

## **Course Proficiencies**

Students will be able to...

### **TECH ED**

**At the completion of TECH ED the student should have a basic knowledge of and demonstrated:**

1. An understanding of technology and its effect on society.
2. Understand the definition of technology
3. An understanding of the problem solving method (design loop)
4. Understand a technological system
5. Understand the seven resources of technology
6. An understanding of measurements and appropriate math skills
7. A basic knowledge of computers software and its applications
8. An understanding of basic design procedures to produce quality drawings
9. The ability to construct prototype models of project ideas
10. Understand the concept of craftsmanship to produce quality prototype models
11. The proper care for the computers, peripherals and equipment
12. Appropriate classroom rules and regulations

# Curriculum Units

Unit 1: Intro to Technology

Unit 2: Technology and You

Unit 3: Solving Problems

Unit 4: Communication

Unit 5: Energy

Unit 6: Rockets

Unit 7: Packaging Design

Unit 8: Zoon Air Cars

Unit 9: Trebuchets

Unit 10: Electronic Lab

Unit 11: Delta Dart Planes

Unit 12: Careers in Technology

## Pacing Guide- Course

<u>Content</u>	Number of Days
<u>Unit 1:</u> Introduction to TECH ED	5 days
<u>Unit 2:</u> Technology and You	10 days
<u>Unit 3:</u> Solving problems in Technology	15 days
<u>Unit 4:</u> Communication	10 days
<u>Unit 5:</u> Energy	15 days
<u>Unit 6:</u> Rockets	20 days
<u>Unit 7:</u> Packaging Design	15 days
<u>Unit 8:</u> Zoon Air Cars	20 days
<u>Unit 9:</u> Trebuchets	20 days
<u>Unit 10:</u> Electronic Lab	20 days
<u>Unit 11:</u> Delta Dart Planes	10 days
<u>Unit 12:</u> Careers in Technology	5 days
	<u>33 weeks +/-</u> 3 weeks +/- testing, assessments, writing

**Unit 1:**

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>What is "technology"?</p> <p>Why study technology?</p> <p>How does technology affect you?</p> <p>What is a definition of technology?</p> <p>What design methods industry use?</p>	<p><b>SWAT:</b></p> <p>Understand why we study Technology</p> <p>Define Technology</p> <p>Understand why Technology is used</p> <p>Identify various technological careers</p> <p>Understand how to operate in a safe classroom environment</p> <p>Understand how to maintain a clean and orderly classroom setting</p> <p><b>9.3.12.AC.2</b>  <b>9.3.12.AC.7</b>  <b>9.3.12.AC-DES.2</b>  <b>9.3.12.AC-DES.6</b></p>	<p>Research samples of Technology used today and explain how they affect you on a daily basis.</p> <p>Make a collection of pictures that show products that satisfy needs.</p> <p>Collect five employment opportunities in a technological career and discuss the qualifications for each.</p>	<ul style="list-style-type: none"> <li>• Teacher observations</li> <li>• Presentations</li> <li>• Projects</li> <li>• Rubrics</li> <li>• Checklists</li> <li>• Tests / quizzes</li> <li>• Self-evaluation</li> </ul>

**Unit 2:**

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>Explain the difference between science and technology?</p> <p>Describe how technology affected your routine this morning?</p> <p>List five needs that people have and explain how technology helps to satisfy those needs?</p> <p>Give two examples of technologies that have simple developed from more simple technologies?</p>	<p><b>SWAT:</b></p> <p>Understand the relationship between science and technology.</p> <p>Understand categories of Technology</p> <p>Connect relationships with Technology and other disciplines</p> <p>Predict the future of Technology</p> <p>Understand and define technology systems</p> <p>Input, Process, Output, Feedback</p> <p><b>9.3.12.AC.1</b>  <b>9.3.12.AC.3</b>  <b>9.3.12.AC.6</b>  <b>9.3.12.AC-CST.5</b>  <b>9.3.12.AC-CST.9</b></p>	<p>Develop a timeline of technological events and describe how they have impacted society.</p> <p>Use the computer and authorized web-sites for research</p> <p>Design a mobile to showcase technology</p>	<ul style="list-style-type: none"> <li>• Teacher observations</li> <li>• Presentations</li> <li>• Projects</li> <li>• Rubrics</li> <li>• Checklists</li> <li>• Tests / quizzes</li> <li>• Self-evaluation</li> </ul>

**Unit 3:**

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>How are problems solved?</p> <p>What tool is used to solve problems?</p> <p>How many steps can a loop contain?</p> <p>What is your design doesn't fulfill your needs?</p>	<p><b>SWAT:</b></p> <p>Create a Design Loop with specific steps to solve a problem</p> <p>Identify the problem</p> <p>Research how others have solved a similar problem</p> <p>Generate solutions</p> <p>Choose the best one</p> <p>Prototype</p> <p>Test</p> <p>Revise if necessary</p> <p>Utilize brainstorming Techniques</p> <p><b>9.3.12.AC.1</b>  <b>9.3.12.AC.6</b>  <b>9.3.12.AC-CST.2</b>  <b>9.3.12.AC-DES.2</b>  <b>9.3.12.AC-DES.6</b></p>	<p>Research samples of solved problems using what you have learned.</p> <p>Research Rube Goldberg. Understand that he uses several unnecessary steps to reach an end result. The more steps the more comical the contraption</p> <p>Students will design a Rube Goldberg contraption to do a simple task in 12 steps</p>	<ul style="list-style-type: none"> <li>• Teacher observations</li> <li>• Presentations</li> <li>• Projects</li> <li>• Rubrics</li> <li>• Checklists</li> <li>• Tests / quizzes</li> <li>• Self-evaluation</li> </ul>



**Unit 4:**

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPI/s)	Activities	Assessments
<p>Why are drawings used?</p> <p>Are drawings easy to understand?</p> <p>What are technical drawings?</p> <p>Are 3D drawings easier to understand?</p> <p>What has industry done to make reading plans easier?</p>	<p><b>SWAT:</b></p> <p>Understand communication systems</p> <p>Communication innovations Trends</p> <p>Need for new technology Components of a Communication System</p> <p>Input, Process and Output Computers</p> <p>Graphic communication Telecommunications.</p> <p><b>9.3.12.AC-DES.1</b> <b>9.3.12.AC-DES.3</b> <b>9.3.12.AC-DES.6</b></p>	<p>Introduce students to design methods.</p> <p>Research a variety of drafting programs and compare and contrast.</p> <p>Provide a variety of drawings and projects utilizing drafting equipment that utilize various commands in the program</p>	<ul style="list-style-type: none"> <li>• Teacher observations</li> <li>• Presentations</li> <li>• Projects</li> <li>• Rubrics</li> <li>• Checklists</li> <li>• Tests / quizzes</li> <li>• Self-evaluation</li> </ul>

**Unit 5:**

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>What are six forms of energy?</p> <p>Name three forms of power?</p> <p>Why must energy be controlled?</p> <p>Name two major impacts of energy and power technology?</p> <p>How do you measure the amount of work done?</p>	<p><b>SWAT:</b></p> <p>Understand society's dependence on energy.</p> <p>Understand the difference between potential and kinetic energy.</p> <p>Identify the various forms of energy and their applications.</p> <p>Understand how energy can be changed from one form to another.</p> <p>Distinguish between renewable and nonrenewable sources of energy.</p> <p>List advantages and disadvantages of each type of energy</p> <p><b>9.3.12.AC.6</b>  <b>9.3.12.AC-CST.2</b>  <b>9.3.12.AC-CST.3</b>  <b>9.3.12.AC-DES.6</b></p>	<p>Design problems that will measure at least three examples of energy or power from the following: work, power, force, torque, pressure, heat and electricity.</p> <p>Assign students a variety of TLA problems to show usage of energy.</p>	<ul style="list-style-type: none"> <li>• Teacher observations</li> <li>• Presentations</li> <li>• Projects</li> <li>• Rubrics</li> <li>• Checklists</li> <li>• Tests / quizzes</li> <li>• Self-evaluation</li> </ul>

**Unit 6:**

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>Who invented the first rocket ever to launch to outer space?</p> <p>Why is safety important when launching a rocket?</p> <p>Why is instruction important prior to assembling this?</p> <p>What type of tools do you need to make it fly?</p> <p>What materials are most prototypes made of?</p> <p>Why does craftsmanship have to be important when creating?</p>	<p><b>SWAT:</b></p> <p>Understand motion and forces.</p> <p>Identify Newton's 3 Laws of physics and how they apply to the rockets performance.</p> <p>Design and make simple objects using wood, metal and plastic materials.</p> <p>Identify the correct parts of a rocket and their significance.</p> <p>Select the correct method for joining materials</p> <p>Select and apply an appropriate finish to a material</p> <p>Understand the concept of "Craftsmanship" in processing materials.</p> <p><b>9.3.12.AC-DES.1</b>  <b>9.3.12.AC-DES.2</b>  <b>9.3.12.AC-DES.6</b></p>	<p>Discuss the history of rockets and how they are used in real life.</p> <p>Watch a demonstration video.</p> <p>List all the components and materials needed to build a rocket.</p> <p>Construct a rocket.</p> <p>Test and calculate the rockets speed.</p>	<ul style="list-style-type: none"> <li>• Teacher observations</li> <li>• Presentations</li> <li>• Projects</li> <li>• Rubrics</li> <li>• Checklists</li> <li>• Tests / quizzes</li> <li>• Self-evaluation</li> </ul>

**Unit 7:**

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPI/s)	Activities	Assessments
<p>What are the main patterns used?</p> <p>What is the principle behind each folding line?</p> <p>What is the preferred method of making a crease?</p> <p>What system is used to make these products?</p> <p>Can you name four different systems types?</p> <p>Why is it important not to make the production of the packaging cheap?</p>	<p><b>SWAT:</b></p> <p>Understand the history of packaging.</p> <p>Explain the Robert Gair invention.</p> <p>Understand tessellated.</p> <p>Understand parallel line development.</p> <p>Understand how to interrupt pattern designs.</p> <p>Design and construct a simple shape.</p> <p><b>9.3.12.AC-DES.2</b>  <b>9.3.12.AC-DES.5</b>  <b>9.3.12.AC-DES.6</b>  <b>9.3.12.AC-DES.8</b></p>	<p>Discuss the history of packaging and how Robert Gair invention affected it.</p> <p>Complete vocabulary and worksheets.</p> <p>Create and construct packages based on certain patterns.</p> <p>Re-design an existing product you use a lot to make it what you want it to be.</p>	<ul style="list-style-type: none"> <li>• Teacher observations</li> <li>• Presentations</li> <li>• Projects</li> <li>• Rubrics</li> <li>• Checklists</li> <li>• Tests / quizzes</li> <li>• Self-evaluation</li> </ul>

**Unit 8:**

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>What is the difference between Co2 and compressed air?</p> <p>What is considered a bullet?</p> <p>How do Co2 tanks activate.</p> <p>Where can you buy racing cartridges and how much do they go for?</p>	<p><b>SWAT:</b></p> <p>Understand torque, momentum, speed, estimating and calculating distance.</p> <p>Recognize many different types of designs.</p> <p>Understand types of materials to use when building the model.</p> <p>Identify the loads that act upon your design.</p> <p>Demonstrate how cars can be designed to withstand loads.</p> <p><b>9.3.12.AC.1</b>  <b>9.3.12.AC.3</b>  <b>9.3.12.AC.6</b>  <b>9.3.12.AC-DES.1</b>  <b>9.3.12.AC-DES.6</b></p>	<p>Design and construct a zoon air car from supplies provided.</p> <p>Complete worksheets associated with the zoon car.</p> <p>Design a barrel that is going to hold the CO2 cartridge.</p> <p>Construct a pin that will activate the cartridge.</p> <p>Discuss the importance of craftsmanship.</p>	<ul style="list-style-type: none"> <li>• Teacher observations</li> <li>• Presentations</li> <li>• Projects</li> <li>• Rubrics</li> <li>• Checklists</li> <li>• Tests / quizzes</li> <li>• Self-evaluation</li> </ul>

**Unit 9:**

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>How did trebuchets come about?</p> <p>What were they originally used for?</p> <p>When were they first invented?</p> <p>How are they used now?</p>	<p><b>SWAT:</b></p> <p>Understand and calculate distance, range, trajectory, and velocity.</p> <p>Understand the advantages and disadvantages of various components.</p> <p>Explain the principals of various types of wood used.</p> <p>Understand how this tool was used by men.</p> <p>Understand the impact of how this machine was the best weapon during that era.</p> <p><b>9.3.12.AC.1</b>  <b>9.3.12.AC.3</b>  <b>9.3.12.AC.6</b>  <b>9.3.12.AC-DES.1</b>  <b>9.3.12.AC-DES.6</b></p>	<p>Research samples of how trebuchets where build.</p> <p>Calculate the speed and trajectory of the launch.</p> <p>Design and construct trebuchets from the supplies given.</p> <p>Think about what parts can be replaced for new material not used back then.</p>	<ul style="list-style-type: none"> <li>• Teacher observations</li> <li>• Presentations</li> <li>• Projects</li> <li>• Rubrics</li> <li>• Checklists</li> <li>• Tests / quizzes</li> <li>• Self-evaluation</li> </ul>

**Unit 10:**

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>What are the different frequencies found in electricity?</p> <p>Name three forms of frequency?</p> <p>Why must frequency be controlled?</p> <p>Can you see electricity?</p> <p>How do you measure the amount voltage?</p>	<p><b><u>SWAT:</u></b></p> <p>Understand and assembly the different components of an electronic lab.</p> <p>Understand electrical frequency.</p> <p>Understand society's dependence on energy.</p> <p>Understand the difference between potential and kinetic energy.</p> <p>Identify the various forms of energy and their applications.</p> <p>Understand how electricity can be changed from one form to another.</p> <p><b>9.3.12.AC.1</b>  <b>9.3.12.AC.3</b>  <b>9.3.12.AC.6</b>  <b>9.3.12.AC-DES.1</b>  <b>9.3.12.AC-DES.6</b></p>	<p>Design different circuit routes.</p> <p>Discuss the objective of the electronic lab.</p> <p>Complete worksheets of electrical frequency.</p> <p>Carefully craft and assemble the different wires to create different circuit routes.</p> <p>Discuss proper care and technique of wiring.</p>	<ul style="list-style-type: none"> <li>• Teacher observations</li> <li>• Presentations</li> <li>• Projects</li> <li>• Rubrics</li> <li>• Checklists</li> <li>• Tests / quizzes</li> <li>• Self-evaluation</li> </ul>

## Unit 11:

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>Who were the first to fly a glider plane?</p> <p>Where and when did this take place?</p> <p>Why must the craft be equally balance?</p> <p>Name two major impacts that aircrafts have change war?</p>	<p><b><u>SWAT:</u></b></p> <p>Identify the key terms and people that correspond to flight.</p> <p>Understand the different components of the dart.</p> <p>Understand the proper care and wiring technique for the propellers.</p> <p>Understand motion and forces and how weight affects the flight.</p> <p><b>9.3.12.AC.1</b> <b>9.3.12.AC.3</b> <b>9.3.12.AC-DES.6</b></p>	<p>Construct the delta dart by following the instruction manual.</p> <p>Test and time the delta darts time and height.</p> <p>Discuss the objective of the delta dart.</p> <p>Calculate the lift and drag of the airplane.</p>	<ul style="list-style-type: none"> <li>• Teacher observations</li> <li>• Presentations</li> <li>• Projects</li> <li>• Rubrics</li> <li>• Checklists</li> <li>• Tests / quizzes</li> <li>• Self-evaluation</li> </ul>



**Unit 12:**

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>What type of careers are available in the design industry?</p> <p>Where would you look for careers in this area?</p> <p>What qualifications are required?</p> <p>What is the pay scale?</p>	<p><b>SWAT:</b></p> <p>Make informed career decisions based on trends in the economy.</p> <p>Understand the variety of opportunities available.</p> <p>List careers that make the least and most salary wages.</p> <p><b>9.3.12.AC.1</b>  <b>9.3.12.AC.3</b>  <b>9.3.12.AC.6</b>  <b>9.3.12.AC-DES.6</b></p>	<p>Research careers in the aerospace, building, structural, manufacturing, map making and the electrical and electronics industries.</p> <p>Create a resume and cover letter for a position in technology that you are interested in.</p>	<ul style="list-style-type: none"> <li>• Teacher observations</li> <li>• Presentations</li> <li>• Projects</li> <li>• Rubrics</li> <li>• Checklists</li> <li>• Tests / quizzes</li> <li>• Self-evaluation</li> </ul>

New Jersey Core Curriculum Content Standards  
Academic Area

**9.3- Career & Technical Education (CTE)**  
**Content Area: 21<sup>st</sup> Century Life and Careers**

<b>CONTENT AREA:</b>	STANDARD 9.3 CAREER AND TECHNICAL EDUCATION
<b>ARCHITECTURE &amp; CONSTRUCTION CAREER CLUSTER</b>	
<b>Number</b>	Standard Statement
	By the end of Grade 12, Career and Technical Education Program completers will be able to:
<b>Career Cluster:</b>	<b>Architecture &amp; Construction (AC)</b>
9.3.12.AC.1	Use vocabulary, symbols and formulas common to architecture and construction.
9.3.12.AC.2	Use Architecture and construction skills to create and manage a project.
9.3.12.AC.3	Comply with regulations and applicable codes to establish and manage a legal and safe workplace.
9.3.12.AC.4	Evaluate the nature and scope of the Architecture & Construction Career Cluster and the role of architecture and construction in society and the economy.
9.3.12.AC.5	Describe the roles, responsibilities, and relationships found in the architecture and construction trades and professions, including labor/management relationships.
9.3.12.AC.6	Read, Interpret and use technical drawings, documents and specifications to plan a project.
9.3.12.AC.7	Describe career opportunities and means to achieve those opportunities in each of the Architecture & Construction Career Pathways.

<b>PATHWAY:</b>	<b>Construction (AC-CST)</b>
9.3.12.AC-CST.1	Describe contractual relationships between all parties involved in the building process.
9.3.12.AC-CST.2	Describe approval procedures required for successful completion of a construction project.
9.3.12.AC-CST.3	Implement testing and inspection procedures to ensure successful completion of a construction project.
9.3.12.AC-CST.4	Apply scheduling practices to ensure the successful completion of a construction project.
9.3.12.AC-CST.5	Apply practices and procedures required to maintain jobsite safety.
9.3.12.AC-CST.6	Manage relationships with internal and external parties to successfully complete construction projects.
9.3.12.AC-CST.7	Compare and contrast the building systems and components required for a construction project.
9.3.12.AC-CST.8	Demonstrate the construction crafts required for each phase of a construction project.
9.3.12.AC-CST.9	Safely use and maintain appropriate tools, machinery, equipment and resources to accomplish construction project goals.
<b>PATHWAY:</b>	<b>Design/Pre-Construction (AC-DES)</b>
9.3.12.AC-DES.1	Justify design solutions through the use of research documentation and analysis of data.
9.3.12.AC-DES.2	Use effective communication skills and strategies (listening, speaking, reading, writing and graphic communications) to work with clients and colleagues.
9.3.12.AC-DES.3	Describe the requirements of the integral systems that impact the design of buildings
9.3.12.AC-DES.4	Apply building codes, laws and rules in the project design.

9.3.12.AC-DES.5	Identify the diversity of needs, values and social patterns in project design, including accessibility standards.
9.3.12.AC-DES.6	Apply the techniques and skills of modern drafting, design, engineering and construction to projects.
9.3.12.AC-DES.7	Employ appropriate representational media to communicate concepts and project design.
9.3.12.AC-DES.8	Apply standards, applications and restrictions pertaining to the selection and use of construction materials, components and assemblies in the project design
<b>PATHWAY:</b>	<b>Maintenance/Operations (AC-MO)</b>
9.3.12.AC-MO.1	Recognize and employ universal construction signs and symbols to function safely in the workplace.
9.3.12.AC-MO.2	Use troubleshooting procedures when solving a maintenance problem in buildings.
9.3.12.AC-MO.3	Apply construction skills when repairing, restoring or renovating existing buildings.
9.3.12.AC-MO.4	Determine work required to repair or renovate an existing building.
9.3.12.AC-MO.5	Plan and practice preventative maintenance activities to service existing buildings.
9.3.12.AC-MO.6	Maintain and inspect building systems to achieve safe and efficient operation of buildings.

**New Jersey Scoring Rubric**  
**New Jersey Registered Holistic Scoring Rubric - GEPA/HSPA**

In Scoring, consider the grid of written language	Inadequate Command	Limited Command	Partial Command	Adequate Command	Strong Command	Superior Command
Score	1	2	3	4	5	6
<b>Content &amp; Organization</b>	<ul style="list-style-type: none"> <li>May lack opening and/or closing</li> <li>Minimal response to topic; uncertain focus</li> <li>No planning evident; disorganized</li> <li>Details random, inappropriate, or barely apparent</li> <li>No apparent control</li> <li>Severe/numerous errors</li> <li>Assortment of incomplete and/or incorrect sentences</li> <li>Errors so severe they detract from meaning</li> </ul>	<ul style="list-style-type: none"> <li>May lack opening and/or closing</li> <li>Attempts to focus</li> <li>May drift or shift focus</li> <li>Attempts organization</li> <li>Few, if any, transitions between ideas</li> <li>Details lack elaboration, i.e., highlight paper</li> <li>Numerous errors</li> <li>Excessive monotony/ same structure</li> <li>Numerous errors</li> <li>Numerous serious errors</li> </ul>	<ul style="list-style-type: none"> <li>May lack opening and/or closing</li> <li>Usually has single focus</li> <li>Some lapses or flaws in organization</li> <li>May lack some transitions between ideas</li> <li>Repetitious details</li> <li>Several unelaborated details</li> <li>Errors/ patterns of errors may be evident</li> <li>Little variety in syntax</li> <li>Some errors</li> <li>Patterns of errors evident</li> </ul>	<ul style="list-style-type: none"> <li>Generally has opening and/or closing</li> <li>Single focus</li> <li>Ideas loosely connected</li> <li>Transition evident</li> <li>Uneven development of details</li> <li>Some errors that do not interfere with meaning</li> <li>Some errors that do not interfere with meaning</li> <li>No consistent pattern of errors</li> <li>Some errors that do not interfere with meaning</li> </ul>	<ul style="list-style-type: none"> <li>Opening and closing</li> <li>Single focus</li> <li>Sense of unity and coherence</li> <li>Key ideas developed</li> <li>Logical progression of ideas</li> <li>Moderately fluent</li> <li>Attempts compositional risks</li> <li>Details appropriate and varied</li> <li>Few errors</li> <li>Few errors</li> <li>Few errors</li> </ul>	<ul style="list-style-type: none"> <li>Opening and closing</li> <li>Single, distinct focus</li> <li>Unified and coherent</li> <li>Well-developed</li> <li>Logical progression of ideas</li> <li>Fluent, cohesive</li> <li>Compositional risks successful</li> <li>Details effective, vivid, explicit, and/or pertinent</li> <li>Very few, if any, errors</li> <li>Very few, if any, errors</li> <li>Very few, if any, errors</li> </ul>
<b>Usage</b>						
<b>Sentence Construction</b>						
<b>Mechanics</b>						

### **Holistic Scoring Guide for Mathematics Open-Ended (OE) Items (Generic Rubric)**

#### **3 - Point Response**

The response shows complete understanding of the problem's essential mathematical concepts. The student executes procedures completely and gives relevant responses to all parts of the task. The response contains few minor errors, if any. The response contains a clear, effective explanation detailing how the problem was solved so that the reader does not need to infer how and why decisions were made.

#### **2 - Point Response**

The response shows nearly complete understanding of the problem's essential mathematical concepts. The student executes nearly all procedures and gives relevant responses to most parts of the task. The response may have minor errors. The explanation detailing how the problem was solved may not be clear, causing the reader to make some inferences.

#### **1 - Point Response**

The response shows limited understanding of the problem's essential mathematical concepts. The response and procedures may be incomplete and/or may contain major errors. An incomplete explanation of how the problem was solved may contribute to questions as to how and why decisions were made.

#### **0 - Point Response**

The response shows insufficient understanding of the problem's essential mathematical concepts. The procedures, if any, contain major errors. There may be no explanation of the solution or the reader may not be able to understand the explanation. The reader may not be able to understand how and why decisions were made.