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  - PTM300 Syllabus & Curriculum and Academic/CFM/CDOS Crosswalks
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## Teacher Certification

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- Technical Assessment Summary
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## Post Secondary Articulation

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## Employability Profile
Self-study is the first step in the career and technical education approval process. The self-study review is required for all existing programs and new programs seeking approval. Its purpose is to bring together partners to review the CTE program, propose relevant modifications, and evaluate the degree to which the program meets the policy requirements approved by the Board of Regents on February 6, 2001.

Self-study review will include:

- Curriculum review
- Benchmarks for student performance and student assessment
- Teacher certification and highly-qualified status of instructional staff
- Work-based learning opportunities
- Teacher and student schedules
- Resources, including staff, facilities, and equipment
- Accessibility for all students
- Work skills employability profile
- Professional development plans
- Projected number of students to be served

Mechanical Engineers

Quick Facts: Mechanical Engineers

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>2015 Median Pay</td>
<td>$83,590 per year</td>
</tr>
<tr>
<td></td>
<td>$40.19 per hour</td>
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<tr>
<td>Typical Entry-Level Education</td>
<td>Bachelor's degree</td>
</tr>
<tr>
<td>Work Experience in a Related Occupation</td>
<td>None</td>
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<tr>
<td>On-the-job Training</td>
<td>None</td>
</tr>
<tr>
<td>Number of Jobs, 2014</td>
<td>277,500</td>
</tr>
<tr>
<td>Job Outlook, 2014-24</td>
<td>5% (As fast as average)</td>
</tr>
<tr>
<td>Employment Change, 2014-24</td>
<td>14,600</td>
</tr>
</tbody>
</table>

What Mechanical Engineers Do
Mechanical engineering is one of the broadest engineering disciplines. Mechanical engineers design, develop, build, and test mechanical and thermal sensors and devices, including tools, engines, and machines.

Work Environment
Mechanical engineers generally work in offices. They may occasionally visit worksites where a problem or piece of equipment needs their personal attention. Mechanical engineers work mostly in engineering services, research and development, and manufacturing.

How to Become a Mechanical Engineer
Mechanical engineers typically need a bachelor's degree in mechanical engineering or mechanical engineering technology. All states and the District of Columbia require mechanical engineers who sell services to the public to be licensed.

Pay
The median annual wage for mechanical engineers was $83,590 in May 2015.

Related Occupations

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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<td>Percent</td>
</tr>
<tr>
<td>Mechanical engineering technicians</td>
<td>17-3027</td>
<td>48,400</td>
<td>49,300</td>
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<tr>
<td>Drafters</td>
<td>17-3010</td>
<td>204,400</td>
<td>198,300</td>
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<td></td>
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<td></td>
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<td>-6,200</td>
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<tr>
<td>Architectural and engineering managers</td>
<td>11-2041</td>
<td>182,100</td>
<td>185,800</td>
<td>2</td>
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<td></td>
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<td></td>
<td></td>
<td>3,700</td>
</tr>
<tr>
<td>Materials engineers</td>
<td>17-2131</td>
<td>25,300</td>
<td>25,600</td>
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<td>300</td>
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</tbody>
</table>

# New York Employment Demand Profile: PTECH Mechanical

**Source:** Labor Insight Jobs (Burning Glass Technologies). Summary Demand and Requirements Table by Occupation, New York state data, Mar. 01, 2016 - Feb. 28, 2017, Monday, March 6, 2017

| SOC Code (ONET-6) | Occupation Title                                   | Number of Job Postings | Number Employed | % Change in Employment, 2014-2015 | Projected Statewide Change in Employment, 2016-2026 | Mean Advertised Salary | Mean Salary | % Requiring high school* | % Requiring Post-Secondary or Associate’s Degree* | % Requiring Bachelor’s Degree* | % Requiring Graduate or Professional Degree* | % with Unspecified Education | % with a H.S. diploma or less | % with Some College or an Assoc. | % with a Bachelor’s or higher |
|-------------------|---------------------------------------------------|------------------------|-----------------|----------------------------------|--------------------------------------------------|------------------------|-------------|----------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|-------------------------------|--------------------------------|---------------------------------|-------------------------------|
| 17-2141           | Mechanical Engineers                              | 4,004                  | 10,860          | 5%                               | 10.9%                                            | $86,486                | $85,840     | 0%                          | 0%                                           | 94%                                           | 26%                                           | 28%                                           | 5%                             | 20%                                           | 74%                                           |                               |
| 11-9041           | Architectural and Engineering Managers            | 3,627                  | 7,150           | 7%                               | 10.3%                                            | $110,154               | $151,740   | 0%                          | 0%                                           | 94%                                           | 31%                                           | 34%                                           | 4%                             | 12%                                           | 84%                                           |                               |
| 17-2131           | Materials Engineers                               | 295                    | 1,610           | 3%                               | 17.6%                                            | $98,841                | $87,930     | 0%                          | 0%                                           | 84%                                           | 55%                                           | 18%                                           | 6%                             | 21%                                           | 74%                                           |                               |
| 17-3027           | Mechanical Engineering Technicians                | 267                    | 1,870           | 8%                               | 11.9%                                            | $45,189                | $57,010     | 45%                         | 49%                                           | 36%                                           | 16%                                           | 33%                                           | 26%                             | 56%                                           | 17%                                           |                               |
| 17-3012           | Electrical and Electronics Drafters               | 220                    | 1,710           | -12%                             | 17.4%                                            | $88,148                | $70,630     | 11%                         | 45%                                           | 65%                                           | 16%                                           | 36%                                           | 12%                             | 61%                                           | 27%                                           |                               |

*excluding NA*
**A. Curriculum Review**

*The curriculum review is a step in the self-study process. It is an opportunity for members of the self-study team to evaluate the proposed curriculum for completeness in terms of the knowledge, skills, and competencies required in the program field. The team reviews the curriculum to ensure that course content in the career and technical education program meets State Education Department regulations, contributes to achievement of state and industry standards, and prepares students for successful completion of a technical assessment. Approved curriculum content is nonduplicative, challenging, organized along a continuum of difficulty, and free of bias.*

*CTE program approval does not constitute Department approval or endorsement of proprietary curriculum or related curriculum products. Program approval indicates only that a school district or BOCES has provided the Department with assurances that the curriculum review has been completed.*

**Process**

- The school district or BOCES identifies the faculty members and other individuals who will be involved in conducting the curriculum review
- The school district or BOCES determines the procedures used in completing the curriculum review
- Reviewers confirm that CTE program content aligns with state CDOS standards, relevant state academic standards, and related business and industry standards
- Reviewers confirm that CTE program content includes integrated or specialized units of credit
- Reviewers confirm that the CTE program meets unit of credit and other distributive requirements

**Documentation**

Documentation of the curriculum review is maintained by the school district or BOCES and is updated whenever modifications are made to the approved CTE program. Recommendations from curricular review should be included in the self-study report and reviewed by the external committee.

**Resources**

New York State graduation requirements

http://www.emsc.nysed.gov/part100/pages/1005.html

Behind the scenes, behind the machines, behind the technology you use every day – there’s a mechanical technician inventing, reinventing and perfecting the machines that enable our modern lives.

As a student in the Mechanical Technology program at The Institute of Technology at Central, you’ll learn about the latest technological advancements in computer drafting, computer-aided design and manufacturing.

In addition, you’ll gain hands-on experience using computer software to analyze and design mechanical systems and automated manufacturing systems.

With this experience, you’ll have the basis to create, build and shape the way we live for generations to come.

CAREER OPPORTUNITIES:
Mechanical Engineer, Drafter, Mechanical Technician, Machinist/Tool and Die Maker
Course of Study P-TECH Mechanical Technology

DISTRICT REQUIREMENTS

- Students must pass PTECH Mechanical 100, 200, 300 and 400 to challenge the course approved technical assessment.

- All students in 9th grade will receive Career and Financial Management.

- Student will have earned the 12th grade integrated ELA credit upon successful completion of the PTECH Mechanical 100, 200, 300 and 400 sequences.

- Student will receive the CTE Endorsement upon successful completion of the CTE PTECH Mechanical 400, passage of the prescribed technical assessment and completion of a commencement level project.

- Student will have earned the 12th grade specialized math upon successful completion of the PTECH Mechanical 400.

- Student will have earned the 11th grade integrated science upon successful completion of the PTECH Mechanical 300.
Program Overview
Students will develop critical and analytical thinking, troubleshooting and problem solving skills through hands-on activities in this project-based curriculum. Electrical and mechanical concepts and processes are taught and topics include ethics in engineering, technical drawing and cad design, measuring tools, simple machines, failure analysis, and data collection and analysis. Career pathways are explored and skills are enhanced through work-based experiences. The PTECH program offers the opportunity to earn college credits toward Electrical Engineering or Mechanical Technology degrees. Upon completion of PTP 100-300, students will earn 11th grade science credit, and following the successful completion of PTP 100-400, students will be awarded specialized math and 12th grade ELA credits.

Course Description
This course will provide an overview of various aspects of the engineering profession. Students will gain skills in career exploration, learn more about pathways to selected engineering careers and begin to develop foundation skills in professional and ethical responsibilities. Students will learn about practical engineering tools, engineering design and the basics of CAD and CAM, air conditioning and refrigeration. Through various speakers and field trip experiences, they will learn about education and licensing requirements, roles and responsibilities, regulatory agencies and work settings. Students will also begin to learn and apply standard engineering nomenclature within the context of the subjects, and based on instruction and research, they will begin to understand the need for industry regulations and protocols. In addition, they will practice team building, critical thinking skills, oral and written communications.

Course Objectives
- Students will identify and understand the major disciplines in the engineering field and associated pathways to becoming educated and licensed.
- Students will apply math and science concepts to the engineering profession.
- Students will learn basic design processes for application to assigned projects.
- Students will identify ethical and professional roles and responsibilities in the engineering profession.
- Students will learn and apply basic skills in technical drawing and design, CAD and use of practical engineering tools.
- Students will understand the concepts of materials and fabrication in the manufacturing process.
- Students will understand motion and simple machines.
- Students will learn basic concepts of mechanical and electrical engineering.
- Students will apply teamwork, communication skills research practices to assigned projects.
Integrated Academics
N/A

Equipment and Supplies
School will provide:
• Computer hardware and software
• Engineering and drawing tools and measurement instruments.
• Plotter/printer
Student will provide:
• 3-Ring Binder
• Dividers
• Writing utensils – pens and pencils
• Notebook and filler paper

Textbook
TBD

Grading

<table>
<thead>
<tr>
<th>First and Second Quarter</th>
<th>Third and Fourth Quarter</th>
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</thead>
<tbody>
<tr>
<td>25% Homework, quizzes, etc.</td>
<td>20% Homework, quizzes, tests</td>
</tr>
<tr>
<td>25% Tests, reports, projects.</td>
<td>20% Technical writing, projects</td>
</tr>
<tr>
<td>25% Technical drawings</td>
<td>20% Data analysis application</td>
</tr>
<tr>
<td>25% Professionalism</td>
<td>20% Research papers</td>
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<tr>
<td>25% Professionalism</td>
<td>20% Professionalism</td>
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</table>

Additional Course Policies
TBD

Course Calendar

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Units of Study</th>
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</table>
| 1       | • Introduction to Engineering and Engineering Career Pathways  
|        | • Roles & Responsibilities of Engineers  
|        | • Ethics in Engineering |
| 2       | • The Engineering Design Process, Designs and Modeling  
|        | • Measurement Tools and Techniques  
|        | • Manufacturing Engineering  
|        | • Math and Science Connections |
| 3       | • Materials and Fabrications  
|        | • Mechanical Engineering  
|        | • Electrical Engineering  
|        | • Electronics |
| 4       | • Air Conditioning and Refrigeration Characteristics  
|        | • The Engineering Team  
<p>|        | • Final Project Presentation |</p>
<table>
<thead>
<tr>
<th>Time Frame</th>
<th>Unit of study</th>
<th>Key Questions</th>
<th>Key Learning Targets (Students will know and be able to)</th>
<th>Assessment Evidence of Learning</th>
<th>Related Standards</th>
<th>CCLS Literacy, Math, Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1-2</td>
<td>Introductions and Classroom Procedures</td>
<td>• Who are you? • What do you think this course is about? • What procedures and safety practices will be important in this class? • What does respect and leadership mean?</td>
<td>• Understand and engage in icebreaker and “getting to know you” exercises • Explain the rationale for and follow classroom rules and procedures • State and apply safety rules and procedures for the class and school • Discuss classroom respect and leadership</td>
<td>• Students will learn about other students and staff • Safety quiz • Compliance with procedures • Posters with Presentations</td>
<td>Career Ready Practice CRP1,4</td>
<td>Literacy RST.9-10.1,3 WHST.9-10.4</td>
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<td></td>
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<td></td>
<td>Cluster Standards ST3</td>
<td>ELA R.9-10.2,7 W.9-10 2,4,6 SL.9-10.1,4 L.9-10.1</td>
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<tr>
<td></td>
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<td></td>
<td>Pathway Standards</td>
<td>Math Science</td>
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<td>Math Science</td>
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<td>MathPathway Standards</td>
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<tr>
<td>Week 3-4</td>
<td>Introduction to Technology and Engineering</td>
<td>• What is the definition of engineering? • What are the connections among science, technology, engineering, and mathematics? • Can you name early examples of engineering and models of great engineering achievements of the past century? • How would you compare major engineering activities?</td>
<td>• Define engineering • Describe how engineering has affected the world in the past and the present • Identify several early examples of engineering • Evaluate great engineering achievements of the past century • Compare and contrast the major engineering activities</td>
<td>• Quiz on engineering terms • Research and write papers on engineering achievements of the past • Research assignment on benefits of the engineering profession • Student developed questions for guest speaker – 21st Century Rubric</td>
<td>Career Ready Practice CRP2,4,7,11</td>
<td>Literacy RST.9-10.1,2 WHST.9-10.4,7</td>
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<td>Cluster Standards ST4</td>
<td>ELA W.9-10 .1,2,4,6, 7 R.9-10.1,2,4,8 L.9-10.1,2,3,4</td>
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<td></td>
<td>Pathway Standards ST-ET2</td>
<td>MathPathway Standards</td>
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<td></td>
<td>Science HS-ETS1-2</td>
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<td></td>
<td>Science HS-ETS1-3</td>
</tr>
<tr>
<td>Time Frame</td>
<td>Key Questions</td>
<td>Key Learning Targets</td>
<td>Assessment Evidence of Learning</td>
<td>Related Standards</td>
<td>CCLS Literacy, Math, Science</td>
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<tr>
<td>Week 5-7</td>
<td>• What is meant by the engineering design process?</td>
<td>• Outline and describe the engineering design process</td>
<td>• Design project presentations. (Rubric)</td>
<td>Career Ready Practice</td>
<td>Literacy RST.9-10.1,2,7</td>
<td></td>
</tr>
<tr>
<td>The</td>
<td>• What are the common design process steps?</td>
<td>• List steps in common design process</td>
<td>• Quiz, Tests</td>
<td>Cluster Standards</td>
<td>WHST.9-10.4,7</td>
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<tr>
<td>Engineering</td>
<td>• What are the constraints to engineering design?</td>
<td>• Identify engineering problems and opportunities</td>
<td>• PBL project</td>
<td>Pathway Standards</td>
<td>ELA R 9-10.1,2,4,7</td>
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</tr>
<tr>
<td>Design Process</td>
<td>• How can old products or buildings be updated to</td>
<td>• Describe the rationale for detailed documentation</td>
<td></td>
<td>ST-ET2,5</td>
<td>W 9-10.1,3,6</td>
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</tr>
<tr>
<td></td>
<td>include new engineering ideas and achievements?</td>
<td>• Discuss design constraints</td>
<td></td>
<td></td>
<td>SL 9-10.1,4</td>
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</tr>
<tr>
<td></td>
<td>• What is brainstorming?</td>
<td>• Identify types of research involved in developing a project</td>
<td></td>
<td></td>
<td>L 9-10.1,3,4</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Explain prototyping and rapid prototyping</td>
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<tr>
<td>Week 8-10</td>
<td>• Why is sketching an important part of engineering,</td>
<td>• Identify the sketching skills and techniques used by engineers</td>
<td>• Students will apply techniques</td>
<td>Career Ready Practice</td>
<td>Literacy RST.9-10.1,2,7</td>
<td></td>
</tr>
<tr>
<td>Design and</td>
<td>and what are the different types of lines used in</td>
<td>• Recognize the different types of lines in engineering drawings</td>
<td>learned to a design project</td>
<td>Cluster Standards</td>
<td>WHST.9-10.4,7</td>
<td></td>
</tr>
<tr>
<td>Modeling</td>
<td>engineering drawings?</td>
<td>• Examine the methods of generating three-dimensional models</td>
<td>involving sketches, drawings, and</td>
<td>Pathway Standards</td>
<td>ELA R 9-10.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• How are the most common views, perspectives and</td>
<td>• Generate and describe three dimensional views</td>
<td>prototyping</td>
<td>ST-ET1,3,4</td>
<td>W 9-10.1,2,4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>drawing types of engineered objects used today?</td>
<td>• Compare and explain the types of theoretical models and their uses</td>
<td>• Quizzes</td>
<td>ST-M4</td>
<td>SL 9-10.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• What are the types and uses of theoretical</td>
<td>• Students will apply techniques learned to a design project involving sketches,</td>
<td>• Project completion and assessment</td>
<td></td>
<td>L 9-10.1,4,6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>models?</td>
<td>drawings, and prototyping</td>
<td>(Rubric)</td>
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<tr>
<td></td>
<td>• What are the methods of generating three-</td>
<td>• Examine the methods of generating three-dimensional models</td>
<td></td>
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</tr>
<tr>
<td>Time Frame Unit of study</td>
<td>Key Questions</td>
<td>Key Learning Targets (Students will know and be able to)</td>
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</table>
| **Week 11-12** Measurement Tools and Techniques | • What are standard measuring tools?  
• How are measuring devices used?  
• What is tolerance and how is it checked?  
• What is scaling? | • Identify standard measuring tools  
• Demonstrate correct use of tools to measure components  
• Define geometric tolerance  
• Analyze dimensions from a drawing and check components  
• Determine where to locate drawing scale from a print | • Application of measurement terminology quiz  
• Assessment on drawing dimensions  
• Performance assessment on use of measuring tools | Career Ready Practice  
CRP2,4,8  
Cluster Standards  
ST4,6 | Science  
HS-ETS1-2  
HS-ETS1-3  
HS-ETS1-4  
Literacy  
RST.9-10.1,2  
ELA  
R 9-10.1,2,4,7  
W 9-10.2,8  
SL 9-10.1  
L 9-10.6  
Math  
G-MG.1,3  
N-Q.3  
S-IC.4  
Science |
| **Week 13-16** Manufacturing Engineering | • What is rapid prototyping?  
• What are the four basic types of manufacturing?  
• What is quality control?  
• What is computer-aided manufacturing?  
• Why is packaging important to a | • Discuss the benefits of rapid prototyping  
• Identify four types of manufacturing systems and explain the benefits of each  
• Explain how quality control in manufacturing has evolved  
• Compare and contrast the roles of computer-aided manufacturing and computer-integrated manufacturing | • Terminology quiz  
• Students will complete a packaging challenge  
• Exercise to analyze quality issues in a product | Career Ready Practice  
CRP2,4,8,11,12  
Cluster Standards  
MN6  
ST1,6  
Pathway Standards  
MN-MIR1  
MN-PPD1,3,4,5  
MN-QA6,7 | Literacy  
RST.9-10.1,2,4  
ELA  
R 9-10.1,3,4,7  
W 9-10.1,8  
SL 9-10.1,2  
L 9-10.1,6  
Math  
S-IC.1,4,6 |
<table>
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<tr>
<th>Time Frame</th>
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<th>Key Learning Targets (Students will know and be able to)</th>
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<th>CCLS Literacy, Math, Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 17-19</td>
<td>manufacturer?</td>
<td>• Analyze the role of packaging in the manufacturing process</td>
<td>• Written summary to check for understanding</td>
<td>Career Ready Practice CRP1,2,4,8</td>
<td>Science HS-ETS1-4</td>
</tr>
<tr>
<td>Math and Science Connections</td>
<td></td>
<td></td>
<td>• Application of learning to a discovery project (Rubric)</td>
<td></td>
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<tr>
<td></td>
<td>• Why are math and science important in engineering tasks?</td>
<td>• Explain why math and science are important to the daily tasks of engineers in all disciplines</td>
<td></td>
<td>Cluster Standards ST-4</td>
<td>Literacy RST.9-10.1</td>
</tr>
<tr>
<td></td>
<td>• How do engineers use mathematics to measure energy savings and construction costs?</td>
<td>• Describe the concept of a normal distribution and two ways in which this concept can be applied in engineering</td>
<td></td>
<td>Pathway Standards ST-SM1,4</td>
<td>ELA R 9-10.2,4</td>
</tr>
<tr>
<td></td>
<td>• Do you think that nature and living creatures, even tiny ones like bugs and spiders, can have an impact on engineering design?</td>
<td>• Discuss how probability and statistics affect the choices applied to engineering designs</td>
<td></td>
<td></td>
<td>W 9-10.1,8</td>
</tr>
<tr>
<td></td>
<td>• What types of energy should engineers be able to evaluate?</td>
<td>• List applications of geometry and trigonometry in engineering</td>
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<td>SL 9-10.1,2,3,4,5</td>
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<td>• Identify three main physics topics of interest to engineers</td>
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<td>L 9-10.1,2,4,6</td>
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<td>• Describe how engineers work within four fields of science</td>
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<td>Math A-CED.4</td>
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<td>Science HS-ESS2-1</td>
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<td>HS-PS3-1</td>
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<td>Week 20-22</td>
<td>• What are the characteristics and classifications of natural and synthetic materials?</td>
<td>• Identify the characteristics used to classify and group both natural and synthetic materials</td>
<td>• Students will assess material types through various testing procedures</td>
<td>Career Ready Practice CRP1,2,4,8,12</td>
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<td>Materials and Fabrications</td>
<td>• How do engineers choose materials for a</td>
<td>• Evaluate how engineers choose materials for a</td>
<td>• Terminology Exam</td>
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<td>Cluster Standards MN6</td>
<td>Literacy RST.9-10.1,3,4</td>
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<td>ST1,2,3</td>
<td>WHST.9-10.2,4</td>
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<td>Time Frame Unit of study</td>
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<td>Key Learning Targets (Students will know and be able to)</td>
<td>Assessment Evidence of Learning</td>
<td>Related Standards</td>
<td>CCLS Literacy, Math, Science</td>
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<td><strong>Week 23-25</strong></td>
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| Mechanical Engineering  | • What are Newton's laws of motion?  
  • What are the laws of thermodynamics?  
  • What is the difference between hydraulics and pneumatics?  
  • What is a simple machine?  
  • What are the six simple machines?  
  • What are the different types of motion?  
|                                 | • Summarize Newton's three laws of motion  
  • Evaluate the laws of thermodynamics  
  • Compare and contrast hydraulics and pneumatics  
  • Discuss simple machines  
  • Identify five different types of motion.  
  • Analyze the purpose of basic mechanisms | • Task analysis of the engineering steps needed for the development of a selected product (Rubric)  
  • Research a product that uses simple machines, including a description of each machine in reports  
  • Mechanical terminology quiz | Pathway Standards  
  MN-MIR1  
  ST-ET1,2 | Career Ready Practice  
  CRP2,4,8,11 | ELA  
  R 9-10.4,7  
  W 9-10.1,5,7  
  SL 9-10.1,4  
  L 9-10.1,2,6 |
|                          |               |                                                        |                                 |                  |                               |
| **Week 26-27**          |               |                                                        |                                 |                  |                               |
| Electrical Engineering   | • What is required for licensure of electrical engineers?  
  • How is electricity  
|                                 | • Discuss specialty and licensure options of electrical engineers.  
  • Identify at least four | • Students will construct a simple generator  
  • Electrical | Career Ready Practice  
  CRP1,2,4,6,8,11,12 | Literacy  
  RST.9-10.1,2,4,  
  7 |
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<th>Assessment Evidence of Learning</th>
<th>Related Standards</th>
<th>CCLLS Literacy, Math, Science</th>
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| Week 28-30 Electronics   | • What is Electronics Engineering and what are the licensure requirements for electronics engineers?  
• What is Ohms Law?  
• What type of equipment and components are used in electronics?  
• What is a capacitor? | • Discuss electronics engineering, educational and licensure requirements  
• Explain Ohm’s Law  
• Analyze the effect of digital electronics and integrated circuits  
• Describe the relationship between electrical potential (voltage), rate of flow (current), and resistance in an electric circuit, according to Ohm’s law | • Task analysis of the engineering steps needed for the development of a selected product. (Rubric)  
• Terminology quiz  
• Assessment on reading schematic drawings | Career Ready Practice  
Cluster Standards ST6 | ELA |
|                          |                                                                              | measurements (and their units of measure) that are critical to electrical and electronics engineers  
• Describe several ways energy is used to create electricity  
• Compare direct current and alternating current | terminology quiz  
• Performance test on calculating and measuring volts, ohms, amps | Cluster Standards ST2,5  
Pathway Standards ST-ET5  
ST-SM1,2,3,4 | Math A-CED.2,4  
Science HS-PS3-6  
HS-PS3-1  
HS-PS3-2 |
| Week 31-33 Air Conditioning and Refrigeration | • What is air-conditioning and refrigeration?  
• What is latent heat?  
• What is sensible heat?  
• What are conduction, convection and radiation?  
• What is pressure? | • Compare and contrast air-conditioning and refrigeration  
• Explain latent heat  
• Explain sensible heat  
• Analyze the difference between conduction, convection and radiation  
• Explain pressure and the effects of pressure | • Terminology quiz  
• Lab Practical | Career Ready Practice  
Cluster Standards ST2,6  
Pathway Standards ST-ET2,3 | Literacy RST.9-10.1,3  
Math A-CED.2,4  
Science HS-PS3-6 |
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<th>Related Standards</th>
<th>CCLLS Literacy, Math, Science</th>
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<td>Week 34-35</td>
<td>• What other professions are involved with engineers?</td>
<td>• Identify the professionals and team members who work with engineers</td>
<td>• Research and present on professional qualities used in the field of engineering</td>
<td>Career Ready Practice CRP1,2,4,7,11</td>
<td>Literacy RST.9-10.1,2,4,7, WHST.9-10.2,4,7</td>
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<td>• What are the ways in which engineers communicate?</td>
<td>• Discuss communication skills engineers must develop to work successfully with others</td>
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<td>Cluster Standards ST5</td>
<td>ELA R 9-10.1,5,6,7 W 9-10.2,4,5,6,7,8 SL 9-10.1,2,4,5 L 9-10.1,2,3,6</td>
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<td>• Why is communication an integral part of engineering?</td>
<td>• Examine the additional safety, information technology, cultural, and business skills that are important to the engineer's working life</td>
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<td>Pathway Standards ST5</td>
<td>Math Science HS-ETS1-2 HS-ETS1-3</td>
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<td>• Identify the professionals and team members who work with engineers</td>
<td>• Analyze the need to diversify the engineering workforce</td>
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<td>Week 36-39</td>
<td>• How can I apply what I know in a final project?</td>
<td>• Apply all aspects of the design process to a final project</td>
<td>• Final Project with peer and instructor rubrics</td>
<td>Career Ready Practice CRP1,2,4,8</td>
<td>Literacy RST.9-10.1,2,4,7, WHST.9-10.2,4,7</td>
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<td>• Evaluate peers’ projects and provide growth-producing feedback</td>
<td>• Final Project with peer and instructor rubrics</td>
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<td>Cluster Standards ST2,3,6</td>
<td>ELA R 9-10.1,2,3,7 W 9-10.1-8 SL 9-10.1,2,4,5 L 9-10.1,2,6</td>
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<td>• Apply engineering knowledge and principles to</td>
<td>• Final Exam</td>
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<td>Pathway Standards ST-ET1,2,4,5</td>
<td>Math G-SRT.5,6,8 5G-MG.1,3 G-GMD.4 N-Q.1 S-IC.1,4,6</td>
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<td>• How can I apply what I know in a final project?</td>
<td>• Final Exam</td>
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<td>Science HS-ETS1-2</td>
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<td>Week 40</td>
<td>• How can I apply what I know in a final project?</td>
<td>• Final Exam</td>
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<td>Career Ready Practice</td>
<td>Literacy RST.9-10.1,2,4</td>
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<td>• Apply engineering knowledge and principles to</td>
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<td>Time Frame Unit of study</td>
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<td>Course Wrap-up and Evaluation</td>
<td>• What have I learned?</td>
<td>a topic as a final project</td>
<td>CRP2,4,6,7,8,11</td>
<td>ELA</td>
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<td>• Review for final exam.</td>
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<td>Math</td>
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Syracuse City School District  
Career and Technical Education  
Course Syllabus  
PTP200: Pre-Engineering: Mechanical/Electrical 200

Program Overview
Students will develop critical and analytical thinking, troubleshooting and problem solving skills through hands-on activities in this project-based curriculum. Electrical and mechanical concepts and processes are taught and topics include ethics in engineering, technical drawing and cad design, measuring tools, simple machines, failure analysis, and data collection and analysis. Career pathways are explored and skills are enhanced through work-based experiences. The PTECH program offers the opportunity to earn college credits toward Electrical Engineering or Mechanical Technology degrees. Upon completion of PTP 100-300, students will earn 11th grade science credit, and following the successful completion of PTP 100-400, students will be awarded specialized math and 12th grade ELA credits.

Course Description
This course will continue the engineering concepts, practices and projects in the level 100 course and cover various aspects of the engineering profession. Students gain additional knowledge in career exploration, including pathways to selected engineering careers. They will work to further develop skills in professional and ethical responsibilities and behaviors. The course introduces students to technical drawing, the use of practical engineering tools, engineering design, CAD, data collection and analysis methods. Fundamentals of electricity, electrical circuits and input/output devices, as well as drive systems and hydraulics are also covered. Students continue to learn about education and licensing requirements, roles and responsibilities, regulatory agencies and work settings through various speakers and field trip experiences. Students learn and apply standard engineering nomenclature within the context of the subjects and utilize instruction and research for understanding the need for industry regulations and protocols. Research, teamwork, critical thinking and oral/written communication skills will also be expanded.

Course Objectives

• Students will understand and identify the major disciplines in the engineering field and associated pathways to becoming educated and licensed.
• Students will identify ethical and professional roles and responsibilities of the engineering profession.
• Students will apply teamwork, communication skills research practices to assigned projects.
• Students will learn and apply electrical, hydraulic and drive system concepts.
• Students will learn and apply basic skills in technical drawing and design, CAD and use of practical engineering tools.
• Students will learn and apply
• Students will learn and apply data collection and elementary statistics to a variety of designs in both student produced and industry produced projects.

Integrated Academics
N/A

Equipment and Supplies

School will provide:
• Computer hardware and software
• Engineering and drawing tools and measurement instruments.
• Plotter/printer

Student will provide:
• 3-Ring Binder
• Dividers
• Writing utensils – pens and pencils
• Notebook and filler paper

Textbook
TBD

Grading

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<tr>
<th>First and Second Quarter</th>
<th>Third and Fourth Quarter</th>
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<tbody>
<tr>
<td>25% Homework and Quizzes</td>
<td>20% Homework, Quizzes, Tests</td>
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<tr>
<td>25% Tests, Reports/Research Papers</td>
<td>20% Technical Writing</td>
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<tr>
<td>25% Technical Drawings and Projects</td>
<td>20% Projects</td>
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<td>25% Professionalism</td>
<td>20% Data Analysis Application</td>
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<td>20% Professionalism</td>
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Course Calendar

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Units of Study</th>
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| 1       | • Introduction to Engineering and Engineering Career Pathways  
|         | • Roles & Responsibilities of Engineers  
|         | • Ethics in Engineering |
| 2       | • Electricity and Electrical Circuits  
|         | • Drive Systems  
|         | • Hydraulics |
| 3       | • Technical Drawing and CAD Design  
|         | • Use of Practical Measuring Tools  
|         | • Simple Machines |
| 4       | • Failure Analysis  
|         | • Data Collection and Analysis  
<p>|         | • Final Project Presentations |</p>
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<tr>
<th>Time Frame</th>
<th>Unit of Study</th>
<th>Key Questions</th>
<th>Key Learning Targets</th>
<th>Assessment Evidence of Learning</th>
<th>Related Standards</th>
<th>CCLS Literacy, Math, ELA</th>
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<tbody>
<tr>
<td>Week 1-2</td>
<td>Introductions and Classroom Procedures</td>
<td>• Who are you? • What do you think this course is about? • What procedures and safety practices will be important in this class? • What does respect and leadership mean?</td>
<td>• Understand and engage in icebreaker and “getting to know you” exercises • Explain the rationale for classroom rules and procedures • State and apply safety rules and procedures for the class and school • Discuss classroom respect and leadership</td>
<td>• Students will learn about other students and staff • Safety quiz • Compliance with safety rules and procedures</td>
<td>Career Ready Practices CRP2,4,7,10</td>
<td>Literacy RST.9-10.1,2,4 WHST.9-10.2,7,8,9</td>
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<td>Cluster Standards ST4,5</td>
<td>ELA R.9-10.3,5 W.9-10.1 S.9-10.1,3,6 L.9-10.3,4,6</td>
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<td>Pathway Standards ST-ET2</td>
<td>Math Science</td>
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<td>Week 3</td>
<td>Roles and Responsibilities of an Engineer</td>
<td>• What are the roles and responsibilities of engineers? • What are the personal attributes of successful engineers? • What are the legal/ethical responsibilities for engineers? • What does teamwork look like in engineering with U.S. companies? • How do U.S. companies manage engineering teams with locations overseas?</td>
<td>• Describe the tasks engineers perform • Define the duties and obligations of engineers • Understand the personal attributes to consider when pursuing an engineering career • Explain the concept of teamwork in businesses employing engineers • Determine a plan for the management of U.S. based companies with sites abroad</td>
<td>• Guest speaker. Rubric • Quiz on roles and responsibilities of engineers • Group projects illustrating the personal attributes necessary for success in engineering with rationale about why the attributes are important • Teamwork problem solving activity: Strategic plan for collaborating with overseas teams Rubric</td>
<td>Career Ready Practices CRP1,2,4,8,10,12</td>
<td>Literacy RST.9-10.1,2,4 WHST.9-10.2,7,8,9</td>
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<td>Pathway Standards ST-ET1,2</td>
<td>Math Science</td>
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<td>Week 4</td>
<td>Engineering Careers</td>
<td>• What types of engineering titles exist within the profession? • What is the demand for</td>
<td>• Describe duties of engineers • Understand the responsibilities and duties</td>
<td>• Research project and presentations on selected engineering careers</td>
<td>Career Ready Practices CRP1,2,4,7,10,11</td>
<td>Literacy RST.9-10.1,2,4,9 WHST.9-10.2,7,8,9</td>
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<td>Cluster Standards ST4,5</td>
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<td>Week 5-6</td>
<td>Use of Practical Measuring Tools</td>
<td>• What is the relationship between English and metric linear measurement? • What tools are used for measurements in engineering?</td>
<td>• Convert English to metric linear measurement • Apply metric measurement to design models • Identify measurement tools used in mechanical and electrical engineering</td>
<td>• Hands-on test of use of measuring instruments</td>
<td>Career Ready Practices CRP1,2,4,7,11</td>
<td>Literacy RST.9-10.1,2,3 WHST.9-10.2,4</td>
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<td>Weeks 7-8:</td>
<td>Mechanical / Electrical Engineering</td>
<td>• What is a mechanical/electrical engineer? • How do engineers impact our daily lives?</td>
<td>• Define mechanical or electrical engineering • Describe the roles and responsibilities of</td>
<td>• Application of engineering terminology (Quiz) • Task analysis of the</td>
<td>Career Ready Practices CRP4</td>
<td>Literacy RST.9-10.1,2,4 WHST.9-10.2,7,8,9</td>
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<td><strong>Weeks 9-10</strong>&lt;br&gt;Fundamentals of electricity</td>
<td>• What is Ohm’s Law?&lt;br&gt;• What is magnetism?&lt;br&gt;• What is a resistor and how are resistors measured?&lt;br&gt;• What are volts, amps and resistance?&lt;br&gt;• What are circuits?&lt;br&gt;• What is electricity?&lt;br&gt;• Can you name the differences between alternating and direct current?&lt;br&gt;• What is engineering notation?</td>
<td>• Understand Ohm’s Law&lt;br&gt;• Identify volts, amps and resistance in electrical theory&lt;br&gt;• Understand magnetism as it applies to electrical theory&lt;br&gt;• Use a resistor color code chart&lt;br&gt;• Define electricity&lt;br&gt;• Explain ways in which electricity is generated, transmitted, and used&lt;br&gt;• Describe the how AC and DC are different?</td>
<td>• Vocabulary of electrical terms assignment&lt;br&gt;• Worksheets&lt;br&gt;• Summative assessments&lt;br&gt;• Performance evaluations&lt;br&gt;• Skill sheet assessment&lt;br&gt;• Quiz relating to electrical symbols</td>
<td>Career Ready Practices&lt;br&gt;CRP1,2,4,7,11</td>
<td>Literacy&lt;br&gt;RST.9-10.1,2,4&lt;br&gt;WHST.9-10.2,7,8,9</td>
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<td><strong>Weeks 11-12</strong>&lt;br&gt;Electrical Circuit Components</td>
<td>• What are the basic components of an Electrical circuit?&lt;br&gt;• What are the types of power supplies?&lt;br&gt;• What is an electrical schematic?</td>
<td>• Describe the function of the four basic components of an electrical circuit&lt;br&gt;• Describe the operation of two types of power supplies&lt;br&gt;• Draw a schematic sing the symbols for circuit components</td>
<td>• Electrical terminology quiz&lt;br&gt;• Performance quiz on calculating and measuring volts, ohms, amps&lt;br&gt;• Troubleshoot a simple circuit</td>
<td>Career Ready Practices&lt;br&gt;CRP1,2,4</td>
<td>Literacy&lt;br&gt;RST.9-10.1,2,3,7&lt;br&gt;WHST.9-10.2,4</td>
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<td>Assessment Evidence of Learning</td>
<td>Related Standards</td>
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| **Week 13-14**          | • What are manual input devices?  
• What is the meaning of NO and NC?  
• Identify three manual input devices?  
• Why do engineers use electrical schematic drawings for manual input devices?  
• Correctly identify each manual input device  
• Explain the difference between NO and NC  
• Draw an electrical schematic and legend  
• Construct a circuit using input and output device by reading a schematic  
• Performance task to construct a simple circuit  
• Troubleshoot a simple circuit | • Performance task to construct a simple circuit  
• Troubleshoot a simple circuit | **Career Ready Practices**  
CRP2,4,8,11  
**Cluster Standards**  
MN6  
**Pathway Standards**  
| **Career Ready Practices**  
CRP2,4,8,11  
**Cluster Standards**  
MN6  
**Pathway Standards**  
| **Literacy**  
RST.9-10.1,2,3,7  
WHST.9-10.2,4  
**ELA**  
R.9-10.3,4  
W.9-10.4,8  
SL.9-10.3  
L.9-10.1-3  
**Math**  
A-CED.4  
**Science**  
HS-PS 3-6  
HS-ETS 1-2  
HS-ETS 1-3 |
| **Week 15**             | • What is the function of a mechanical drive?  
• Can you name the methods of rotary mechanical power?  
• Why are safety rules for power transmission equipment important?  
• When do we use Lockout/tagout?  
• What methods are applied to check RPM?  
• Explain the function of a mechanical drive  
• Identify the mechanical advantage of each drive system  
• Give an example of for each type of drive system  
• Explain and demonstrate a lockout/tagout procedures  
• Name and assemble three types of foundations  
• Use set-up devices  
• Performance evaluations  
• Application of safety rules practical situations  
• Quiz/test  
• Individual projects: Constructing a functioning simple machine | • Performance evaluations  
• Application of safety rules practical situations  
• Quiz/test  
• Individual projects: Constructing a functioning simple machine | **Career Ready Practices**  
CRP2,4,8,11  
**Cluster Standards**  
ST3  
**Pathway Standards**  
MN6-HSE1  | **Literacy**  
RST.9-10.1,2,3,7  
WHST.9-10.2,4  
**ELA**  
R.9-10.1,3,5  
W.9-10.1,2,4-8  
SL.9-10.2-4  
L.9-10.1-4,6 |
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| **Week 16** | **Key Fasteners** | • Identify and apply different fasteners in an installation  
• Calculate and verify RPMs | | | **Math**  
A-CED.4  
F-IF.6 |
| **Week 16** | | • Identify and apply different types of fasteners  
• Identify and give an example of key  
• Measure and cut a key from stock  
• Assemble a motor coupling | | | **Science**  
HS-PS 3-3  
HS-ETS 1-2  
HS-ETS 1-3 |
| | | • Vocabulary of fasteners terms assignment  
• Lab practicals  
• Worksheets  
• Unit Exam | | | **Career Ready Practices**  
CRP2,4,8,11 |
| | | | | | **Literacy**  
RST.9-10.1,2,3,7  
WHST.9-10.2,4 |
| | | | | | **Cluster Standards**  
ST3  
MN6 |
| | | | | | **ELA**  
R.9-10.3,4-6  
W.9-10.1,2,8  
SL.9-10.3,6  
L.9-10.3,4,6 |
| | | | | | **Pathway Standards**  
MN-HSE1 |
| | | | | | **Math**  
S-IC.4  
A-CED.4 |
| | | | | | **Science**  
HS-PS 3-3 |
| **Week 17-18** | **Power Transmission** | • Explain the function of a shaft and identify shaft sizes from samples  
• Categorize bearings from a sample  
• Install a motor shaft and bearing assembly  
• Recognize where and | | | **Career Ready Practices**  
CRP2,4,8,11 |
| | | • Vocabulary assignment  
• Worksheets  
• Unit exam  
• Performance evaluation | | | **Literacy**  
RST.9-10.1,2,3,7  
WHST.9-10.2,4 |
| | | | | | **Cluster Standards**  
ST3  
MN6 |
| | | | | | **ELA**  
R.9-10.1-4  
W.9-10.1,2,4,5  
SL.9-10.1,3  
L.9-10.1-4 |
<p>| | | | | | <strong>Pathway Standards</strong> |</p>
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<tr>
<td><strong>Week 19-20</strong>&lt;br&gt;Spur Gears / Multiple Shaft Drives</td>
<td>functions of couplings? when to use a coupling • Problem solve shaft alignment and misalignment • Demonstrate the use of measuring devices in shaft alignment</td>
<td>• Describe the three functions of a gear drive system • Calculate pitch, speed, torque, and ratios • Calculate gear pitch, circle and diameters • Define the twelve dimensions of a gear • Describe the features of a gear drive system • Diagnose and correct backlash • Calculate speed and torques in a multiple shaft system • Describe a compound gear system</td>
<td>• Vocabulary assignment • Research project on the application of a gear drive system. (Rubric) • Worksheets • Unit exam • Performance evaluation</td>
<td><strong>Career Ready Practices</strong>&lt;br&gt;CPR2,4,8,11</td>
<td><strong>Math</strong>&lt;br&gt;A-CED.4&lt;br&gt;F-IF.4&lt;br&gt;A-REI.6&lt;br&gt;<strong>Science</strong>&lt;br&gt;HS-ETS 1-2&lt;br&gt;HS-ETS 1-3</td>
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<tr>
<td><strong>Week 21-22</strong>&lt;br&gt;V-Belt and Chain Drives</td>
<td>• What are the basic types and components of a Belt and Chain Drive? • How is a Belt size determined? • How might you describe Pitch? • What is tension and deflection?</td>
<td>• Identify belt and chain types • Identify the basic components of a belt or chain drive system • Measure and size V-belt</td>
<td>• Vocabulary of Belt and Chain Drives&lt;br&gt;Worksheets&lt;br&gt;Quizzes&lt;br&gt;Unit Exam&lt;br&gt;Performance evaluation</td>
<td><strong>Career Ready Practices</strong>&lt;br&gt;CPR 2,4,8,11</td>
<td><strong>Literacy</strong>&lt;br&gt;RST.9-10.1,2,3,7&lt;br&gt;WHST.9-10.2,4&lt;br&gt;<strong>ELA</strong>&lt;br&gt;R.9-10.1-7&lt;br&gt;W.9-10.1,2,4-8&lt;br&gt;SL.9-10.1-5&lt;br&gt;L.9-10.1-4,6</td>
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| **Weeks 23-25**  
Introduction to Technical Drawings | • What is the terminology of technical drawings?  
• What are isometric, oblique and orthographic drawings and designs?  
• What are basic line conventions?  
• What is the purpose of multi-view drawings?  
• How are geometric shapes used in technical drawings? | • List and explain the views of each drawing  
• Define isometric, oblique and orthographic as they apply to technical drawing  
• Explain basic line conventions  
• Understand uses for multi-view drawings  
• Apply basic drawing techniques to project design | • Class discussions using terminology in the context of the subject  
• Application of simple drawing techniques to basic projects | Career Ready Practices  
CRP2,4,8,11 | Math  
A-REI.1  
A-CED.2,4  
F-IF.6  
F-TF.1  
N-Q.1  
Science |
| **Cluster Standards**  
ST 1 | | | | | Literacy  
RST.9-10.1,2,3,7  
WHST.9-10.2,4 |
| **Pathway Standards**  
ST-ET 2,4 | | | | | ELA  
R.9-10.1,3,4  
W.9-10.1,4,8  
SL.9-10.1,2,3  
L.9-10.1,4 |
| **Weeks 26-27**  
Intro to CAD | • What is CAD and what makes it different?  
• What are some different types of CAD applications?  
• What is important to consider in using CAD? | • Describe essential drawing tools in CAD  
• Apply CAD drawing applications to basic designs  
• Differentiate between CAD and other drawing tools | • Quiz on terminology  
• Written critique on pros and cons of CAD  
• Application of CAD software in project design-Rubric | Career Ready Practices  
CRP2,4,8,11 | Literacy  
RST.9-10.1,2,3,7  
WHST.9-10.2,4 |
| **Cluster Standards**  
ST6 | | | | | ELA  
R.9-10.1,3,4,5  
W.9-10.1,2,4,7  
SL.9-10.1,2,3  
L.9-10.1,3,4,6 |
| **Pathway Standards**  
ST-ET1 | | | | | Math  
N-Q.1  
Science  
HS-PS3-1 |
| **Weeks 28-29** | • What is Fluid Power? | • Describe Hydraulics | • Lesson review sheets | Career Ready Practices | Literacy  
RST.9-10.1,2 |
<table>
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</table>
|            | Hydraulics    | • Why are hydraulics used?  
• What are Pascal’s laws?  
• What is viscosity?  | • Explain the principles of hydraulics  
• List and explain the components used in a hydraulic system  
• Utilize the principles of Pascal’s Laws  
• Explain viscosity | • Component identification worksheet | CRP1,2,4,8,9  | WHST.9-10.2,4 |
|            | Pathway Standards | | | | Cluster Standards | ST3 |
|            | Cluster Standards | | | | Pathway Standards | ELA  
R.9-10.1,3  
W.9-10.1,8  
SL.9-10.3,6  
L.9-10.1,4 |
|            | Math | | | | | SIC.1  
SID.1.2,4.6  
S-CP.1  
F-LE.1 |
|            | Science | | | | | HS-ETS1-2  
HS-ETS1-3 |
| Weeks 30-32 | Introduction to Problem Solving | Failure Analysis  
• What is the importance of problem solving and how do engineers apply problem solving skills?  
• Why is failure analysis important to engineers and what are its impacts in engineering?  
• What is Rapid Root Cause Analysis (RRCA)?  
• How is data analysis applied to failure analysis?  | • Understand the application of problem solving to the design process  
• Analyze and troubleshoot designs  
• Analyze structural integrity  
• Understand about why structures fail | • Technical drawings for bridge project (Rubric)  
• Summary report on bridge project | Career Ready Practices  
CRP1,2,4,8  
| Literacy  
RST.9-10.1,2,3,7  
WHST.9-10.2,4 |
|            | Cluster Standards | | | | Pathway Standards | ST-ET5 |
|            | Math | | | | | SIC.1  
SID.1.2,4.6  
S-CP.1  
F-LE.1 |
|            | Science | | | | | HS-ETS1-2  
HS-ETS1-3 |
| Weeks 33-34 | Simple Machines | • What are the six classic machines?  
• How are the six machines similar and different?  
• How can I apply what I  | • Identify the six classic machines and explain their use  
• Distinguish similarities and differences of the six | • Group projects: Construct a functioning simple machine-Rubric  
• Written final project | Career Ready Practices  
CRP1,2,3,4,8,9  
| Literacy  
RST.9-10.1,2,3,7  
WHST.9-10.2,4 |
|            | Cluster Standards | | | | | R.9-10.1,3,4-6  
W.9-10.1,4,5 |
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</table>
| Week 35    | Computer Programs | know in a final project? | simple machines  
• Apply collaborative and critical thinking skills to project planning and development  
• Develop a final project proposal | proposal | Pathway Standards  
ST-ET2,5 | Math  
G-SRT.6,8  
A-CED.4  
Science  
HS-PS3-3  
HS-PS2-1  
HS-ETS1-2  
HS-ETS1-3 |
|            |                |               |                                                     |                                 |                  |                           |
| Week 36    | Collecting and Analyzing Data, Statistics | What are the common programs used in engineering?  
• How have they improved today’s production processes? | Compare and contrast traditional technical drawing and CAD  
• Explain how computer engineering software aids in the production process | Application of engineering software in product design exercises-Rubric | Career Ready Practices  
CRP2,4 | Literacy  
RST.9-10.1,2,3,7  
WHST.9-10.2,4 |
|            |                |               |                                                     |                                 |                  |                           |
|            |                |               |                                                     |                                 |                  |                           |
|            |                |               |                                                     |                                 |                  |                           |

Pathway Standards  
ST-ET2,5  
ST-SM4  
ST-ET2,5  
ST-ET2,5
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| **Week 37** | **Ethics**    |  • What are ethics?  
  • What are the ethical obligations of engineers?  
  • What are the results of non-ethical practices? |  • Understand how engineering decision are based on ethical decisions  
  • Understand the relationship between ethical decisions and product safety |  • Research paper on ethical impact of product failures |  | **Science** |
| **Weeks 38-39** | **Final Project Presentations** |  • How can I apply what I know in a final project?  
  • Apply engineering principles and knowledge to a topic as a final project  
  • Evaluate peers projects and provide growth-producing feedback |  • Final Project with peer and instructor rubrics |  |  | **Literacy**  
  **RST.9-10.1,2,3**  
  **WHST.9-10.2.8.9**  
  **ELA**  
  **R.9-10.1,3,4**  
  **W.9-10.1,4**  
  **S.9-10.1,2**  
  **L.9-10.1,3,6**  
  **Math**  
  **Science**  
  **HS-ETS1-1** |
| **Week 40** | **Course Wrap-up and Evaluation** |  • How can I apply what I know in a final project?  
  • What have I learned?  
  • Apply engineering principles and knowledge to a final project topic  
  • Review for final exam |  • Final Exam |  |  | **Literacy**  
  **RST.9-10.1,2,3**  
  **WHST.9-10.2,7,8,9**  
  **ELA**  
  **R.9-10.1,3,4,6,7**  
  **W.9-10.1,4-7,9**  
  **SL.9-10.1,2,3,4,5**  
  **L.9-10.1,3,4,6**  
  **Math**  
  **Science**  
  **HS-ETS1-2**  
  **HS-ETS1-3** |
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<td>Pathway Standards ST-ET5</td>
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<td>ELA R.9-10.3,4</td>
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<td>W.9-10.6,9</td>
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<td>SL.9-10.1,6</td>
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Return to TOC
Program Overview
Students will develop critical and analytical thinking, troubleshooting and problem solving skills through hands-on activities in this project-based curriculum. Mechanical concepts and processes are taught and topics include ethics in engineering, technical drawing and cad design, measuring tools, simple machines, failure analysis, and data collection and analysis. Career pathways are explored and skills are enhanced through work-based experiences. The PTECH program offers the opportunity to earn college credits toward a Mechanical Technology degree. Upon completion of PTT100-300, students will earn 11th grade science credit, and following the successful completion of PTT 100-400, students will be awarded specialized math and 12th grade ELA credits.

Course Description
Mechanical Technology is an introduction to basic concepts underlying the computer and its applications in technology and science fields. The focus is on studying the computer for acquiring and presenting information, using spreadsheets to solve problems, collecting and storing data and word processing documents. Topics include: Hardware and software computer concepts, introduction to internet to acquire and share information, introduction to spreadsheet applications for solving problems and charting, and using text editors in word processing documents. Introduction to technical presentations, use of application programs for organizing data, and drawing charts and schematics are also covered. Student will develop professional skills along with the application of engineering theory into practice.

Pre-Requisites
PTT100, PTT200 and Regents Math

Course Objectives
Students will:
1. Demonstrate the ability to use Microsoft (MS) Office applications through hands-on activities including the use of the Windows operating system.
2. Build quality reports with MS Word.
3. Analyze technical data with MS Excel.
4. Integrate information from both MS Word and Excel.
5. Prepare PowerPoint presentations.
7. Produce and deliver MS PowerPoint presentations.

Integrated Academics
11th grade integrated Science Credit
Equipment and Supplies
• **School will provide:** Laptop Computers, and software programs.
• **Student will provide:** Notebook and writing utensils.

Textbook
No Textbook is required

Grading
<table>
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<tr>
<th>First and Second Quarter</th>
<th>Third and Fourth Quarter</th>
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<tbody>
<tr>
<td>25% Assigned Coursework</td>
<td>20% Assigned Coursework</td>
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<tr>
<td>25% Lab Projects</td>
<td>20% Lab Projects</td>
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<tr>
<td>25% Quizzes and Assessments</td>
<td>20% Participation</td>
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<tr>
<td>25% Professionalism &amp; Participation</td>
<td>20% Quizzes and Assessments</td>
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<td></td>
<td>20% Professionalism</td>
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</table>

Additional Course Policies
**Missed Classes:** You are responsible for the activities of each class period. If you know of a conflict ahead of time, you are welcome to submit projects early. If you do not take a test on the scheduled day, contact me for a makeup.

**Assignments:** All assignments are due at the end of class on the date due. Late assignments receive partial credit.

**Academic Dishonesty:** Plagiarism and cheating are serious offenses and may be penalized by failure on exam, paper or project.

Course Calendar

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Units of Study</th>
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</thead>
</table>
| 1       | • Introduction to Engineering and Engineering Career Pathways  
         | • Personal & Professional Characteristics in Mechanical Technology  
         | • Intro to Basic Computer Applications  
         | • Inputting and Modifying Data, Basic Formatting & Formulas  
         | • Using Averages, Percent Weighting, and IF statements  
         | • Technical Reports & PowerPoint Presentations  
         | • Percent Error, Elementary Statistics & Plotting Data Results  
         | • Industry Cert Assessment (NOCTI)  
         | • Understanding Formulas and Plots in Excel |
| 2       | • Conversion and Calculation  
         | • Engineering Lists & Historical Logs  
         | • Intermediate Formulas and Mechanical Analysis |
| 3       | • Product Proposals and Marketing  
         | • Electrical Plotting and Analysis  
         | • Advanced Statistics and Data Analysis in Excel |
| 4       | • Engineering Functions in Excel  
         | • Curve Fitting and Plotting in Excel  
         | • Tables and Selecting Data for Engineering Calculation  
<pre><code>     | • Final Comprehensive Project with Industry Professionals |
</code></pre>
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<td>Week 1</td>
<td>• Who are you? • What are the course expectations? • What are the classroom procedures and safety practices? • What are the objectives of this course? • Can you identify the benefit of this course in a future professional environment?</td>
<td>• Communicate &amp; engage in &quot;getting to know you&quot; exercises • Understand, explain and follow classroom procedures • Identify and explain safety rules and procedures for the class, lab area and school • Identify hazards of a manufacturing shop floor • Interpret the course syllabus, and identify the course objectives • Discuss the application of this course to a professional environment</td>
<td>• Participation in &quot;getting to know you&quot; activity • Safety quiz • Poster and Presentation • Student compliance with classroom procedures and safety practices</td>
<td>Career Ready Practices CRP1,2,4,5,6,8,9,11</td>
<td>Literacy RST.11-12.4,9 WHST.11-12.4,6 ELA R.I.3,4,7 L.1,2,4 SL.1,2,4,5 Math</td>
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<td>Cluster Standards ST2,3,4,6</td>
<td>Science</td>
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<td>Pathway Standards ST-SM1,2,4</td>
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<td>Week 2</td>
<td>• What is time management? • Can you name the professional characteristics necessary for success in the engineering field? • How do your habits influence the way you present yourself to others? • What habits and attitudes?</td>
<td>• Discussion of personal and professional attributes • Reflect and self-assess personal habits and attitudes • Develop employability goals appropriate for the profession • Student will learn to open the excel program, save, and modify documents.</td>
<td>Class room worksheets. • Student discussion • Development of a employability profile</td>
<td>Career Ready Practices CRP1,2,4,5,6,8,9,11</td>
<td>Literacy RST.11-12.4,9 WHST.11-12.4,6 ELA R.I.1,4,7 W.2,5,6 SL.1,4,5 L.1,2,6</td>
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<tr>
<td>Week 3</td>
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<td>practices do you need to work on during this course?</td>
<td>Pathway Standards ST-SM1,2,4</td>
<td>Science</td>
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<tr>
<td>Unit 3</td>
<td>• What is the function of Microsoft Excel and Word?</td>
<td>• Describe the primary purpose of Microsoft Excel and Word applications</td>
<td>Career Ready Practices CRP1,2,4,5,6,8,9,11</td>
<td>Literacy RST.11-12.4,9 WHST.11-12.4,6</td>
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<td></td>
<td>• How is data analysis useful to the engineering industry?</td>
<td>• Explore menus, tools and functional capabilities of Excel and Word</td>
<td>Cluster Standards ST 1,2,3,4,6</td>
<td>ELA L 1,2,3,4,6 SL 1,2,4,5 RI 3,4,7 W 2,4,5,6</td>
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<td></td>
<td>• Can you describe connections between process improvement and data statistics?</td>
<td>• Open, create, and save documents</td>
<td>Pathway Standards ST-SM1,2,4</td>
<td>Math S-ID.7</td>
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<td></td>
<td>• How has excel revolutionized the analysis of engineered data previously completed without computers?</td>
<td>• Perform basic formatting Excel and Word</td>
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<td>Science HS-ETS1-4</td>
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<td>Week 4</td>
<td>• Are you able to describe gross income?</td>
<td>• Discuss how data analysis affects the choices applied to engineered designs or processes</td>
<td>Career Ready Practices CRP 1,2,4,5,6,8,9,11</td>
<td>Literacy RST.11-12.4,9 WHST.11-12.4,6</td>
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<tr>
<td>Unit 4</td>
<td>• How is net pay defined and calculated?</td>
<td>• Generate a pay stub table, identify gross vs net pay, utilize basic math calculations, and utilize percentages in excel</td>
<td>Cluster Standards ST1,2,3,4,5,6</td>
<td>Math N-Q.1</td>
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<tr>
<td></td>
<td>• How are percentages converted to decimals?</td>
<td>• Create linear equation plots</td>
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<td></td>
<td>• How can unit conversion be important to engineers utilizing complex equations in calculations?</td>
<td>• Explore Excel as it applies to data and chart plotting</td>
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<td></td>
<td>• Plot results as a graphical</td>
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<td>Week 5</td>
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<td>Pathway Standards ST-SM 1,2,4</td>
<td>Science HS-ETS1-4</td>
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<tr>
<td>Week 5</td>
<td></td>
<td>• In what ways does a graphical plot assist data or engineering analysts perform tasks more effectively?</td>
<td>representation</td>
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<td>Unit 5</td>
<td></td>
<td>• How are averages calculated?</td>
<td></td>
<td>Career Ready Practices CRP1,2,4,5,6,8,9,11</td>
<td>Literacy RST.11-12.4,9 WHST.11-12.4,6</td>
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<td></td>
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<td>• How can percentages be used to weight grades?</td>
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<td>ELA Ri.11-12.4,5,7 W.11-12.1,8 SL.11-12.1,3,5 L.11-12.1,2,6</td>
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<td></td>
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<td>• What is the purpose or benefit of organized data tables, summary tables, and auto updating formulas?</td>
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<td>Math S-ID.2</td>
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<td></td>
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<td>• In what ways might an Excel template be useful for engineers who frequently perform similar data analyses?</td>
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<td></td>
<td></td>
<td>• Create gradebook with formulas for average and weighted final average</td>
<td>• Project/Lab: Students apply functions and tools (Rubric)</td>
<td>Pathway Standards ST-SM1,2,4</td>
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<td></td>
<td></td>
<td>• Utilize IF statements to return a text string from a conditional formula</td>
<td>• Cloud computing submittal of assignment</td>
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<td></td>
<td></td>
<td>• Input information into organized excel spreadsheet</td>
<td>• Written summaries of improved efficiency in the use of electronic data analysis</td>
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<td>• Identify and use shortcut keys, Excel tools, ribbon functions</td>
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<td>• Discuss advantages of using templates for analyzing data in daily engineering operations</td>
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<td>Week 6</td>
<td></td>
<td>• What can we learn from an inspiring engineer of the past?</td>
<td>• PowerPoint presentations</td>
<td>Career Ready Practices CRP1,2,4,5,6,7,8,9,11,12</td>
<td>Literacy RST.11-12.4,9 WHST.11-12.4,6</td>
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<td>Unit 6</td>
<td></td>
<td>• What are important attributes of a good public speaker?</td>
<td>• Student self-assessment with a presentation rubric</td>
<td></td>
<td>ELA Ri.11-12.1,2,3,5,7 W.11-12.1-8 SL.11-12.1,2,4,5 L.11-12.1,2,3,6</td>
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<td></td>
<td></td>
<td>• Is it possible to save time through advanced skill in Microsoft Office programs?</td>
<td>• Technical reports</td>
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<td></td>
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<td>• Demonstrate use of title page templates</td>
<td>• Completed list of sources cited in a bibliography MLA or APA style</td>
<td>Pathway Standards ST-SM1,2,4</td>
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<td></td>
<td></td>
<td>• Create an &quot;auto updating&quot; table of contents, citations, and bibliography in Microsoft Word</td>
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<td>• Create and present a short 3-4 min PowerPoint on selected subject</td>
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<td>• PowerPoint presentations</td>
<td>• Student self-assessment with a presentation rubric</td>
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**Pathway Standards**
- ST-SM1,2,4

**Cluster Standards**
- ST-SM1,2,3,4,5,6
- ST1,2,3,4,5,6
- S-ID.2
- SL.11-12.1,3,4,5
- W.11-12.1-8
- L.11-12.1,2,3,6
- RST.11-12.4,9
- WHST.11-12.4,6
- ELA Ri.11-12.4,5,7 W.11-12.1,8 SL.11-12.1,3,5 L.11-12.1,2,6
- Math S-ID.2
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<tr>
<td>Week 7</td>
<td></td>
<td>• Are you able to define histogram?</td>
<td>• Generate simple experimental data</td>
<td>Career Ready Practices</td>
<td>Science</td>
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<td>Unit 7</td>
<td></td>
<td>• What is percent error used for?</td>
<td>• Examine error or differences between theoretical and experimental data</td>
<td></td>
<td>CRP1,2,4,5,6,8,9,11,12</td>
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<tr>
<td>Percent Error, Elementary Statistics &amp; Plotting Data Results</td>
<td></td>
<td>• What is the difference between SORT and FILTER in Excel?</td>
<td>• Utilize Excel to SORT results, generate a scatter plot and a frequency histogram plot</td>
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<td>Literacy RST.11-12.4,9,9,11,12</td>
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<tr>
<td></td>
<td></td>
<td>• Why is data analysis important in industry?</td>
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<td>WHST.11-12.4,6</td>
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<td>ELA Rl.11-12.1,3,7</td>
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<td>L.11-12.1,2,3,6</td>
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<td>Math N-Q.3</td>
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<td>Science HS-PS3-1</td>
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<td>Week 8</td>
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<td>• NOCTI Manufacturing Technology Assessment</td>
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<td>Career Ready Practices</td>
<td>Literacy RST.11-12.4,9,9,11,12</td>
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<tr>
<td>Industry Certification Assessment</td>
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<td>• NOCTI Manufacturing Technology Assessment</td>
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<td>Weeks 9-10</td>
<td></td>
<td>• What is Amortization plotting used for?</td>
<td></td>
<td>Career Ready Practices</td>
<td>Literacy RST.11-12.4,9,9,11,12</td>
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<tr>
<td>Unit 8</td>
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<td>• Understand the variables of an amortization plot and</td>
<td></td>
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<td>WHST.11-12.4,6</td>
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<td>• Project/Lab application of assigned formulas</td>
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<td>ELA Rl.11-12.1-4</td>
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| Understanding Formulas and Plots in Excel | • How could understanding a loan payment schedule be important to manufacturing facilities?  
• When expensive equipment is procured by a company, could they use amortization plotting to finance their purchase? | generate loan payment schedules  
• Assess and analyze data  
• Use and apply math formulas to analyze data tables in excel | and plotting activities (Rubric)  
• Terminology Quiz | | ELA  
R.I.11-12.1,3,4,7  
W.11-12.1, 8  
SL.11-12.1,2,3  
L.11-12.1,3,6  
Cluster Standards  
ST 1,2,3,4,5,6 | Math  
A-SSE.3  
F-IF.6,8  
F-BF.1,2  
Pathway Standards  
ST-SM 1,2,4 | Science  
HS-PS2-1  
HS-PS3-5 |
| Week 11-12  
Unit 9  
Conversions and Calculation | • How could excel be beneficial as a quick unit conversion calculator?  
• What are common equations that utilize unit conversion?  
• Do people do unit conversion in daily life with time, distance, or money? | • Perform fundamental unit conversion and utilize excel for basic multivariable calculations  
• Identify where unit conversion is required or necessary  
• Formulate a plan to convert units using Excel application | • Project/Lab in conversions and calculations (Rubric)  
• Word problem and unit conversion assignments | Career Ready Practices  
CRP1,2,4,5,6,8,9,11 | Literacy  
RST.11-12.4,9  
WHST.11-12.4,6  
ELA  
R.I.11-12.3,7  
W.11-12.4,5  
SL.11-12.1,4  
L.11-12.1,6  
Cluster Standards  
ST1,2,3,4,5,6 | Math  
A-CED.4  
N-Q1  
Pathway Standards  
ST-SM1,2,4 | Science  
HS-PS2-1  
HS-PS3-5  
HS-PS3-6 |
| Week 13-14  
Unit 10  
Engineering Lists & Historical Logs | • What is the definition of a List?  
• What is the purpose of an engineering log template?  
• Why would a | • Apply key terms and engineering vernacular  
• Create important engineering lists and historical data logs commonly created in | • Creation of excel database  
• Project/Lab application of Excel functions and tools (Rubric)  
• Terminology Quiz | Career Ready Practices  
CRP1,2,4,5,6,8,9,11 | Literacy  
RST.11-12.4,9  
WHST.11-12.4,6  
ELA  
R.I.11-12.1,3,4,7  
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Cluster Standards  
ST2,4,5,6 |
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| Week 15-18              | • What is a spring constant?  
• Are material selections important to engineers when designing a car suspension?  
• Can you define oscillation?  
• What is resonance and how could it be catastrophic to engineering design?  
• What is a dampening system?  
• How can civil engineers use calculations in project design to prevent damage from earthquakes? | • Mathematically model spring constant data  
• Analyze critical information for solution of the model  
• Understand the differential equation variables provided  
• Discuss how civil engineers use calculations in project design | Students will apply intermediate formulas in Excel  
• Project/Lab with write up and excel plots  
• Analysis of mechanical data using Excel  
• Terminology quiz | Career Ready Practices  
CRP1,2,4,5,6,8,9,11 | Literacy  
RST.11-12.4,9  
WHST.11-12.4,6  
ELA  
RI.11-12.3,4,7  
W.11-12.1,2,4,9  
S.11-12.1,2,3,4  
L.11-12.1,2,6 |
| Unit 11 Intermediate Formulas and Mechanical Analysis in Excel | | | | Pathway Standards  
ST-SM1,2,4 |
| | | Pathway Standards  
L.11-12.1,3,6 | | Math |
| | | Pathway Standards  
Science  
HS-ETS 1-4 |
| | | | Pathway Standards  
ST-SM1,2,4 |
| Week 19-20              | • What is the fundamental | • Develop rectified wave plot from engineered data | • Terminology Quiz  
• Rectified Wave plot | Career Ready Practices  
CRP1,2,4,5,6,8,9,11 | Literacy  
RST.11-12.4,9  
WHST.11-12.4,6 |
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| **Intermediate Formulas and Electrical Analysis in Excel** | *difference between AC and DC current*  
• Why do electrical engineers rectify voltage?  
• What is the “period” of a wave equation?  
• What is amplitude and how is phase shift defined?  
| source  
• Create a lexicon of electrical engineering terminology  
• Demonstrate competence in data analysis using higher level formulas | activity  
• Project/Lab with write up and excel plots. |  |  |  |
| **Week 21-23**  
**Unit 13**  
**Product Proposals and Marketing** | *What is included in an engineer’s “Career Profile,” in addition to a resume?*  
• Why does a company that manufactures engineered products provide customers with a technical product proposal?  
• How can you distinguish the difference between technical and commercial proposals?  
| *Support attractiveness to employer recruiting with an all-inclusive career profile*  
• Develop a technical product proposal  
• Compare the difference between technical and commercial information | *Student presentations of product proposals*  
• Student self-evaluation (rubric)  
• Development of Career Profiles |  | **Career Ready Practices**  
CRP1,2,4,5,6,8,9,11 |  |
| **Week 24-26**  
**Unit 14** | *In the International System of Units, what*  
| *Create a saw tooth wave plot in Excel* | *Student Projects/Lab exercises (Rubric)* |  | **Career Ready Practices**  
CRP1,2,4,5,6,8,9,11 |  |
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| **Continuing Electrical Plotting and Analysis** | is a unit of electric charge called?  
Who is Charles-Augustine de Coulomb what was his contribution to the electrical engineering field?  
What is Fourier Analysis? | • Develop a square wave function with plot in Excel  
• Compare and contrast wave differences  
• Create a short technical report describing work completed  
• Discuss the contributions of Charles Augustin de Coulomb | • Fourier Analysis Activity |  | ELA  
RI.11-12.1,3,6,7  
W.11-12.1,2,3,6,7  
SL.11-12.1-5  
L.11-12.1-4,6 |
| **Cluster Standards** |  |  |  | Math F-TF.5 |  |
| **Pathway Standards** |  |  |  | Science HS-PS3-5 |  |
| **Week 27-30 Unit 15 Advanced Statistics and Data Analysis in Excel** | • What is Regression Analysis used for?  
What is P Value telling us?  
What is the difference between overhead (fixed) costs and variable costs?  
What is a significant indicator? | • Model, develop, interpret, and evaluate regression analysis of actual industry data  
• Calculate and predict future electrical consumption in a manufacturing facility | • Project/Lab for students to apply understanding of advanced concepts/functions in excel (Rubric)  
• Electrical consumption analysis of a real manufacturing facility with empirical data | Career Ready Practices CRP1,2,4,5,6,8,9,11  
Cluster Standards ST1,2,3,4,5,6  
Pathway Standards ST-SM1 | Literacy RST11-12.4,9, WHST.11-12.4,6  
ELA RI.11-12.1,3,4,7  
W.11-12.1,6,8  
SL.11-12.1,2,3,5  
L.11-12.1,4,6 |
| **Week 31-32 Unit 16 Engineering Functions in Excel** | • What is a Bessel Function?  
What is the VLOOKUP function used for?  
How is normalization used in data analysis? | • Build tables in Excel utilizing the BESSEL function  
• Perform a vertical lookup of data by searching for a value in the first column of a table and returning the value  
• Develop plots after | • Project/Lab with write up and excel plots. (Rubric) | Career Ready Practice CRP  
1,2,4,5,6,8,9,11  
Cluster Standards ST1,2,3,4,5,6  
Pathway Standards ST-SM1,2,4 | Literacy RST11-12.4,9, WHST.11-12.4,6  
ELA RI.11-12.1,3,4  
W.11-12.1,8  
SL.11-12.1,3,5  
L.11-12.1,6 |
<table>
<thead>
<tr>
<th>Time Frame/Unit of Study</th>
<th>Key Questions</th>
<th>Key Learning Targets (Students will know and be able to)</th>
<th>Assessment Evidence of Learning</th>
<th>Related Standards</th>
<th>CCLS Literacy, Math, Science</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Week 33</strong></td>
<td><strong>Unit 17</strong></td>
<td>normalizing data sets</td>
<td></td>
<td></td>
<td>Math S-ID.4 S-CP.1 Science</td>
</tr>
</tbody>
</table>
| Curve Fitting and Plotting in Excel | • What is Array Curve Fitting used for?  
• What does a 2nd order polynomial equation look like?  
• What are the slope and y-intercept variables in a linear equation?  
• Identify the difference between linear and non-linear equations  
• Create a best fit equation for differing order equations  
• Utilize the LINEST function in excel |                                                                                                                                                                                                               | • Project/Lab with write up and excel plots. (Rubric)  
• Applied Engineering Math Assignments                                                                                                          | Career Ready Practice  
CRP1,2,4,5,6,8,9,11  
Cluster Standards  
ST1,2,3,4,5,6  
Pathway Standards  
ST-SM1,2,4 | Literacy RST.11-12.4,9  
WHST.11-12.4,6  
ELA RI.11-12.4  
W.11-12.1,4  
SL.11-12.1,3  
L.11-12.1,6  
Math A-CED.2  
F-LE.1,2,5  
Science HS-PS3-5                                                                                                                                                                                                 |                                                                                                                                                                   |                                                                                                                                                                   |                                                                                                                                                                   |
| **Week 34**              | **Unit 18**                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                               |                                                                                                                                                                   |                                                                                                                                                                   | Math N-Q.1                                                                                                                                                       |
| Tables and Selecting Data for Engineering Calculation | • Where do reference tables come from?  
• Why would engineers use reference tables?  
• What information is found on Steam Tables?  
• Read and pull critical information from reference tables  
• Solve for missing reference information using interpolation  
• Understand and describe the importance of engineering reference tables  
• Quiz on excel functions  
• Project/Lab skill application (Rubric)  
• Extracting important data from text strings of raw unfiltered data |                                                                                                                                                                                                               |                                                                                                                                                                   | Career Ready Practices  
CRP1,2,4,5,6,8,9,11  
Cluster Standards  
ST1,2,3,4,5,6  
Pathway Standards  
ST-SM1,2,4 | Literacy RST.11-12.4,9  
WHST.11-12.4,6  
ELA RI.11-12.1,3,4,5,6  
W.11-12.1,4,6  
SL.11-12.1,2  
L.11-12.1,4,6  
Cluster Standards  
ST1,2,3,4,5,6  
Pathway Standards  
ST-SM1,2,4 | Literacy RST.11-12.4,9  
WHST.11-12.4,6  
ELA RI.11-12.1,3,4,5,6  
W.11-12.1,4,6  
SL.11-12.1,2  
L.11-12.1,4,6  
Cluster Standards  
ST1,2,3,4,5,6  
Pathway Standards  
ST-SM1,2,4 | Science HS-PS1-9                                                                                                                                                                                                                                                             |                                                                                                                                                                   |                                                                                                                                                                   |                                                                                                                                                                   |
<table>
<thead>
<tr>
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<th>Assessment Evidence of Learning</th>
<th>Related Standards</th>
<th>CCLS Literacy, Math, Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 35-40</td>
<td></td>
<td>• What have we learned about the important Excel tools in this course?</td>
<td>• Mentor-based project utilizing industry partners for supply of authentic data and analysis requirements</td>
<td>Career Ready Practices CRP1,2,4,5,6,8,9,11</td>
<td>Literacy RST.11-12.4 9 WHST.11-12.4,6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Why are technical reports so important in the engineering industry?</td>
<td>• Technical research &amp; report documentation</td>
<td></td>
<td>ELA RL.11-12.1,3,6,7 W.11-12.1,3,4,5,6,7,8 SL.11-12.1,2,4,5,6 L.11-12.1,2,3,6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• How have we improved our professionalism and public speaking through the course?</td>
<td>• Excel data analysis and plotting</td>
<td></td>
<td>Math A-CED.4 N-Q.1,3 S-ID.1,2,4,6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Generate experimental data and examine percent error between theoretical vs experimental data</td>
<td>• Completion of a list of professional references, including mentor interview</td>
<td></td>
<td>Cluster Standards ST1,2,3,4,5,6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Utilize engineering reference tables, interpolation, and theoretical derivation of engineering equations</td>
<td>• Final PowerPoint presentation to professional panel</td>
<td></td>
<td>Pathway Standards ST-SM1,2,4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Calculate results using engineering formulas and variables in Excel</td>
<td></td>
<td></td>
<td>Science HS-ETS1-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Produce a presentation and technical report</td>
<td></td>
<td></td>
<td>HS-ETS1-2</td>
</tr>
<tr>
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<td>HS-ETS1-3</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td>HS-ETS1-4</td>
</tr>
</tbody>
</table>
Program Overview
Students will develop critical and analytical thinking, troubleshooting and problem solving skills through hands-on activities in this project-based curriculum. Electrical and mechanical concepts and processes are taught and topics include ethics in engineering, technical drawing and cad design, measuring tools, simple machines, failure analysis, and data collection and analysis. Career pathways are explored and skills are enhanced through work-based experiences. The PTECH program offers the opportunity to earn college credits toward Electrical Engineering or Mechanical Technology degrees. Upon completion of PTP 100-300, students will earn 11th grade science credit, and following the successful completion of PTP 100-400, students will be awarded specialized math and 12th grade ELA credits.

Course Description
The Professional Technology and Cooperative Work Experience Program component expands and enhances skills taught throughout the P-TECH program. Students will be assigned mentors and work with specific manufacturing industry professionals who will facilitate growth opportunities according to the needs of mentoring enterprise. Topics include employability, professionalism, teamwork, time management, design theory problem and solving/analysis. Students will develop 21st Century skills with the application of engineering theory in authentic industry environments within the Syracuse Manufacturing field. Students will perform these internship experiences 5 periods per week.

Pre-Requisites
PTP 100, PTP 200, PTP 300

Course Objectives
1. Students will demonstrate professionalism in an industry environment with professionals.
2. Students will analyze technical data and apply engineering theory.
3. Students will prepare PowerPoint presentations.
4. Students will present results in front of a group.
5. Students will produce and deliver a high quality assignments meeting and exceeding expectations of industry mentors.

Integrated Academics
12th Grade integrated ELA Credit
Equipment and Supplies
- **School will provide:** Laptop Computers, and software programs.
- **Student will provide:** Notebook and writing utensils.

Textbook
No Textbook is required

Grading

<table>
<thead>
<tr>
<th>First and Second Quarter</th>
<th>Third and Fourth Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>25% Assigned Coursework</td>
<td>20% Assigned Coursework.</td>
</tr>
<tr>
<td>25% Mentor Projects</td>
<td>20% Mentor Projects</td>
</tr>
<tr>
<td>25% Quizzes and Assessments</td>
<td>20% Employability Skills</td>
</tr>
<tr>
<td>25% Professionalism &amp; Participation</td>
<td>20% Quizzes and Assessments</td>
</tr>
<tr>
<td></td>
<td>20% Professionalism</td>
</tr>
</tbody>
</table>

Additional Course Policies

**Missed Classes:** Students are responsible for the activities of each class period. If you know of a conflict ahead of time, you are welcome to submit projects early. If you do not take a test on the scheduled day, contact me for a makeup.

**Assignments:** All assignments are due at the end of class on the date due. Late assignments receive partial credit.

**Academic Dishonesty:** Plagiarism and cheating are serious offenses and may be penalized by failure on exam, paper or project.

Course Calendar

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Units of Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>• Professionalism &amp; Employability</td>
</tr>
<tr>
<td></td>
<td>• Mentor Lab Project 1</td>
</tr>
<tr>
<td></td>
<td>• Safety in the Manufacturing Facility</td>
</tr>
<tr>
<td>2</td>
<td>• NOCTI Certification Assessment</td>
</tr>
<tr>
<td></td>
<td>• Time Management</td>
</tr>
<tr>
<td></td>
<td>• Team Presentations</td>
</tr>
<tr>
<td>3</td>
<td>• Cooperative Work Experience with Industry Mentors</td>
</tr>
<tr>
<td></td>
<td>• Mentor Lab Project 2</td>
</tr>
<tr>
<td></td>
<td>• Project Solving &amp; Analysis</td>
</tr>
<tr>
<td>4</td>
<td>• Cooperative Work Experience with Industry Mentors</td>
</tr>
<tr>
<td></td>
<td>• Comprehensive Team Project &amp; Presentation</td>
</tr>
<tr>
<td></td>
<td>• Mentor Lab Project 3</td>
</tr>
<tr>
<td></td>
<td>• Design and Decision Theory</td>
</tr>
</tbody>
</table>
# Syracuse City School District
## Career and Technical Education Program
### Scope and Sequence
#### PTM 400: P-TECH Pre-Engineering: Mechanical 400

<table>
<thead>
<tr>
<th>Time Frame</th>
<th>Key Questions</th>
<th>Key Learning Targets</th>
<th>Assessment Evidence of Learning</th>
<th>Related Standards</th>
<th>CCLS Literacy, Math, ELA</th>
</tr>
</thead>
</table>
| Quarter 1 & 2 | - Core courses follow each scope and sequence  
- College technical course follow college sequence time line  
- Why are job shadows important to my success?  
- What are the opportunities available for employment?  
- Student portfolio wrap-up | - Core High School and College classes follow course syllabus  
- Compose and present a rational for or against the use of job shadows in the program  
- Students finalize portfolios and prepare for future college or career | - Job shadow evaluations will be based on career coaches, business partners and company representative feedback and student reflections  
- Students present portfolios to career coaches, perspective employers and instructors | Career Ready Practices  
CRP2,4,7,10 | Literacy  
RST.9-10.1,2,4  
WHST.9-10.2,7,8,9 |
| College Technical course sequence | Job Shadow | | | Cluster Standards  
ST4,5 | ELA  
R.9-10.3,5  
W.9-10.1  
S.9-10.1,3,6  
L.9-10.3,4,6 |
| Senior independent project | | | | Pathway Standards  
ST-ET2 | Math |
| | | | | | Science |
| Quarter 3 & 4 | - Core courses follow each scope and sequence  
- College technical course follow college sequence time line  
- Where do I go from here?  
- Student focus on technical writing  
- Student will develop an individual culminating project relating to their field of study. | - Core High School and College classes follow course syllabus  
- Student develop technical and report writing skills based on their job shadow experiences  
- Develop a comprehensive individual research project. Present project proposal to instructor for approval | - Job shadow evaluations will be based on career coaches, business partners and company representative feedback and student reflection  
- Evaluation of student projects based on rubric | Career Ready Practices  
CRP2,4,7,10 | Literacy  
RST.9-10.1,2,4  
WHST.9-10.2,7,8,9 |
| Core courses consisting of (College English, Math, College Science, Economics) | Job Shadow | | | Cluster Standards  
ST4,5 | ELA  
R.9-10.3,5  
W.9-10.1  
S.9-10.1,3,6  
L.9-10.3,4,6 |
| College Technical course sequence | College or Career preparation | | | Pathway Standards  
ST-ET2 | Math  
Science |
| | | | | | |

Return to TOC
B. Teacher Certification

The self-study team reviews the teacher certification and training of the school or BOCES’ instructional, paraprofessional, and support staff who deliver services within the CTE program seeking approval. New York State teacher certification review should include both CTE teachers and teachers of academic content within the proposed program.

Process

- Reviewers confirm that all CTE teachers hold appropriate New York State teacher certification for the program in which they will teach.

- Reviewers confirm that all teachers of academic content hold appropriate New York State teacher certification for the program in which they will teach.

- Reviewers confirm the appropriate NCLB highly-qualified status for the CTE teachers in programs offering academic credit.

- Reviewers confirm that staff delivering instruction in programs where certification, licensure, or registration by an external entity have acquired the necessary credentials.

- Reviewers confirm that professional development opportunities exist within the school district or BOCES for instructional, paraprofessional, and support staff to acquire and improve skills and knowledge related to instructional enhancement of the CTE program.

Documentation

Recommendations from the review of teacher certification should be included in the self-study report and reviewed by the external committee. A list of all teachers for the program and the New York State teacher certification(s) held by each must be attached to the Application for Career and Technical Education Program Approval.

Resources

New York State Office of Teaching Initiatives
http://www.highered.nysed.gov/tcert/certificate/certprocess.htm

Account Information

Person Information

Name
BENJAMIN A BLANKENSHP

Teacher Id

Address

SSN

Date of Birth

Gender
Male

Certificates

<table>
<thead>
<tr>
<th>Credential</th>
<th>Status</th>
<th>Application Type</th>
<th>Issued</th>
<th>Effective Date</th>
<th>Original Exp. Date</th>
<th>Time Extended Exp. Date</th>
<th>Control Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electro-Mechanical Equipment Occupations (Repair &amp; Installation) 7-12, Transitional A Certificate</td>
<td>Issued</td>
<td>CERTIFICATE</td>
<td>12/02/2017</td>
<td>01/31/2021</td>
<td>01/31/2021</td>
<td>1189652171</td>
<td></td>
</tr>
</tbody>
</table>

Applications are valid for three years or two evaluations, whichever comes first.

Applications

<table>
<thead>
<tr>
<th>Credential</th>
<th>Cert Path</th>
<th>Application Type</th>
<th>Status</th>
<th>Application Date</th>
<th>Evaluation History</th>
<th>Application Paid?</th>
</tr>
</thead>
</table>
No Data Found

https://eservices.nysed.gov/teach/teachext/Inquiry.do

12/4/2017
C. Technical Assessments Based on Industry Standards

The self-study team reviews the selection of a technical assessment for the program seeking approval. The selected technical assessment must be nationally-recognized and based on industry standards. It must be available to students enrolled in the approved program and must consist of three parts: written, student demonstration, and student project. Successful completion of the technical assessment is not a requirement for high school graduation, but is required for a student to earn a technical endorsement on the high school diploma.

The New York State Education Department does not approve, endorse, or certify any technical assessment.

Process

- The school district or BOCES selects an appropriate industry standard technical assessment to measure student proficiency in the technical field for the program. The school district or BOCES may select a New York State licensing examination as the technical assessment.

- The school district or BOCES determines the scheduling and administration of technical assessments. It is not required that the technical assessment be administered at the conclusion of the program. Parts may be administered throughout a student’s learning experience.

- The school district or BOCES determines the number of times a student may take a particular technical assessment.

- The school district or BOCES must comply with existing laws and regulations related to administration of technical assessments to students with disabling conditions and provide appropriate testing modifications. Restrictions on student eligibility for testing are the responsibility of the test producer.

- In the absence of an appropriate nationally-recognized industry standard based assessment, a consortium of local, regional, state, business and industry representatives may be formed to produce such an instrument.

  - Technical assessments must meet generally recognized psychometric criteria. Therefore, the consortium approach may be expensive because of the many steps required to insure assessment validity, reliability, and security.

  - An existing CTE advisory committee or craft committee is not a technical assessment consortium. The school district or BOCES must ensure that the assessment consortium adequately represents current business and industry standards for the specific career area for the program.

- Where an appropriate technical assessment exists, but consists of only one or two parts, a consortium must be formed to develop the missing part(s).

- The school district or BOCES must develop a system to collect student-level and program-level data on performance on the technical assessment.

Documentation

Recommendations on the technical assessment selection should be included in the self-study report and reviewed by the external committee.

Resources

New York State graduation requirements: [http://www.emsc.nysed.gov/part100/pages/1005.html](http://www.emsc.nysed.gov/part100/pages/1005.html)


Test Type: The Manufacturing Technology industry-based credential is included in NOCTI's Job Ready assessment battery. Job Ready assessments measure technical skills at the occupational level and include items which gauge factual and theoretical knowledge. Job Ready assessments typically offer both a written and performance component and can be used at the secondary and post-secondary levels. Job Ready assessments can be delivered in an online or paper/pencil format.

Revision Team: The assessment content is based on input from secondary, post-secondary, and business/industry representatives from the states of Kentucky, New York, and Oklahoma.

The Association for Career and Technical Education (ACTE), the leading professional organization for career and technical educators, commends all students who participate in career and technical education programs and choose to validate their educational attainment through rigorous technical assessments. In taking this assessment you demonstrate to your school, your parents and guardians, your future employers and yourself that you understand the concepts and knowledge needed to succeed in the workplace. Good Luck!
Written Assessment

NOCTI written assessments consist of questions to measure an individual’s factual theoretical knowledge.

**Administration Time:** 3 hours  
**Number of Questions:** 195  
**Number of Sessions:** This assessment may be administered in one, two, or three sessions.

### Areas Covered

- **Manufacturing Math, Science, and Measurement:** 9%
- **Workplace Safety, Health, and Job Skills:** 12%
- **Quality Assurance:** 9%
- **Blueprint Reading:** 9%
- **Manufacturing Fundamentals, Processes, and Materials:** 12%
- **Material Handling:** 5%
- **Industrial Robotics Systems:** 4%
- **Computer Use:** 7%
- **Process Control:** 9%
- **Purchasing and Resource Identification Activities:** 4%
- **Electronics and Hydraulics:** 12%
- **Design Processes:** 8%
Specific Standards and Competencies Included in this Assessment

Manufacturing Math, Science, and Measurement
• Apply math functions to solve problems
• Create and interpret graphs and charts commonly used in manufacturing
• Match measurement activities to manufacturing processes
• Demonstrate proper general and precision measurement techniques
• Using mechanical formulas, solve problems involving geometric shapes and metric conversions
• Understand molecular action as a result of temperature extremes, chemical reaction, and moisture content

Workplace Safety, Health, and Job Skills
• Complete forms and paperwork as required
• Identify issues involving basic industrial safety
• Maintain and use protective guards on equipment and machinery
• Use electrical devices correctly and safely
• Identify fire exits, fire-fighting equipment, and procedures
• Determine weight/operating limits of equipment
• Perform periodic checks during operation to assure proper function
• Identify, safely handle, and properly dispose of chemical, biological, and physical hazards
• Describe ergonomics and its importance to the manufacturing process

(Continued on the following page)
Specific Standards and Competencies (continued)

**Quality Assurance**
- Identify components of an effective manufacturing system
- Explain the effect of quality assurance on profit
- Demonstrate the ability to apply continuous quality improvement to the manufacturing process
- Define and apply SPC (Statistical Process Control)
- Identify and address customer problems
- Perform inspections

**Blueprint Reading**
- Interpret commonly used abbreviations, terminology, and symbols
- Determine tolerances and dimensions associated with a drawing
- Interpret blueprints to determine appropriate tool usage
- Identify types of lines within a drawing
- Extract information from title blocks and legends
- Identify various views

**Manufacturing Fundamentals, Processes, and Materials**
- Demonstrate basic mechanical skills
- Perform troubleshooting and maintenance procedures
- Describe the importance of correct fixturing and workholding devices
- Describe the function of specific machine tools
- Locate and retrieve production materials specific to process flow and delivery schedule
- Demonstrate proper use and processes of manufacturing shop tooling
- Enter and edit a program in a Computer Numerical Control (CNC) machine
- Set up and operate a Computer Numerical Control (CNC) machine

(Continued on the following page)
Specific Standards and Competencies (continued)

**Material Handling**
- Requisition, ship, handle, and store materials
- Apply knowledge of assembly lines
- Apply knowledge of materials and material handling procedures

**Industrial Robotics Systems**
- Interpret appropriate industrial robotic functions and applications
- Interpret basic robotic programming, including CADD
- Identify various industrial robotic design features

**Computer Use**
- Apply computer applications in manufacturing processes
- Identify possible effects of introducing automations into manufacturing processes
- Describe various methods of tracking inventory quantities
- Perform measurements using digital or electronic gauges interfaced with a CPU
Specific Standards and Competencies (continued)

Process Control
- Identify a variety of process control applications
- Collect and analyze information to determine and improve work processes
- Explain the advantages and disadvantages of just-in-time inventory
- Interpret project plans
- Apply knowledge of time and motion studies
- Appropriately report job status

Purchasing and Resource Identification Activities
- Exhibit knowledge of “make or buy” decisions
- Demonstrate knowledge of vendor relationships

Electronics and Hydraulics
- Use various devices to gather electrical measurements (e.g., analog voltmeter, DMM)
- Apply knowledge of basic electronics and basic components
- Exhibit appropriate electrical wiring techniques
- Apply knowledge of hydraulics
- Interpret basic ladder diagrams
- Connect and program digital input and output devices to a robot controller Programmable Logic Controller (PLC)

Design Processes
- Construct drawings using various commands in a Computer Aided Design (CAD) program
- Create a sketch of a multiview drawing given an isometric drawing
- Use Computer Aided Manufacturing (CAM) software to generate and post a Computer Numerical Control (CNC) program
- Design process procedure
- Exhibit knowledge of research and development (R and D)
Sample Questions (continued)

With an increase from 90 degrees Fahrenheit to 100 degrees Fahrenheit, the density of water
   A. increases substantially
   B. increases slightly
   C. decreases slightly
   D. decreases substantially

The views on a working drawing are set up according to which of the following parameters?
   A. perspective
   B. orthographic
   C. first angle
   D. isometric

The common unit of measurement of inductance is the
   A. henry
   B. farad
   C. mho
   D. ohm

CAD/CAM software allows the user to
   A. generate artistic sketches
   B. schedule conveyors
   C. replace the architect
   D. select tool diameters

Time and motion studies
   A. determine the facility capacity
   B. focus on product line
   C. focus on entire work group output
   D. determine the workload at a specific location

(Continued on the following page)
Sample Questions (continued)

When working with capacitors, check to see that they are
A. wiped clean
B. discharged
C. disconnected
D. charged

The primary purpose of a counterbore is to
A. enlarge a hole already drilled
B. cut a recess for a socket-head screw
C. spot face a rough casting
D. countersink a flat head screw

To avoid confusion when wiring a DC circuit, always use ______ as the color of the primary hot lead, as required by code.
A. green
B. white
C. red
D. black

The original sample of a product or process used in research and development is called the
A. originator
B. prototype
C. instigator
D. pattern

The worker's partner in the JIT manufacturing model is the
A. customer
B. vendor
C. supervisor
D. manager
Performance Assessment

NOCTI performance assessments allow individuals to demonstrate their acquired skills by completing actual jobs using the tools, materials, machines, and equipment related to the technical area.

**Administration Time:** 3 hours
**Number of Jobs:** 3

**Areas Covered:**

- **47% Milling Operations**
  Participants will demonstrate ability to safety operate mill, indicate the vise and measurements correctly, overall finish and quality of work, clean up, and care of tools/equipment.

- **31% Assemble a Multiple Shaft Gear Drive System**
  Participants will safely mount the electric gear motor, install gears and prony brake, and record current for final operational product.

- **22% Determining Gage Block Combinations**
  Participants will wire gage blocks together, verify and record combined height using a height gage.
Sample Job

Determining Gage Block Combinations

**Maximum Time:** 40 minutes

**Participant Activity:** The participant is to wring gage blocks together, verify and record combined height of the blocks using a height gage.
**SCSD CTE Student Portfolio**

**Definition:** Student portfolios are a collection of personal documents, which showcase an individual's learning experiences, goals and achievements. Student portfolios are created and controlled by the student, facilitated by the instructor, and evaluated by outside entities.

**Purpose:** Students should be able to leave a program with as many tools in their toolbox as possible. Student portfolios are a way to assist students in marketing themselves in future interviews, by using the portfolio to illustrate his or her skills and/or talents.

### SCSD CTE Student Portfolio Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Table of Contents:</strong></td>
<td>This should list each section and piece of the portfolio in the order it appears.</td>
</tr>
<tr>
<td><strong>Cover letter</strong></td>
<td>A cover letter introducing the student to a potential employer about a specific job in his or her chosen pathway. Should focus on why the student is the best candidate for the job. It should compliment the resume, not repeat it.</td>
</tr>
<tr>
<td><strong>Resume</strong></td>
<td>Should be professionally formatted. Usually a one-page document listing the student’s name, personal information (address, phone, and email), an objective, work history or extracurricular/community involvement, education, certifications/credentials, personal skills/interests, and references.</td>
</tr>
<tr>
<td><strong>Letters of Recommendation</strong></td>
<td>Students must include at least two (2) reference letters, provided by people outside the school who are familiar with his or her work or character. The reference letters can be employment-related, personal, or they can attest to the character of the student.</td>
</tr>
<tr>
<td><strong>Certifications/Credentials</strong></td>
<td>Students should include copies of any credentials and/or certifications they have earned as a result of their program.</td>
</tr>
<tr>
<td><strong>Transcript</strong></td>
<td>Student provides a copy of his or her full academic transcript.</td>
</tr>
<tr>
<td><strong>Employability Profile</strong></td>
<td>Per NYSED: The work skills employability profile is intended to document student attainment of technical knowledge and work-related skills. Documents to validate skills reported on the profile could include, but are not limited to, an employer/teacher review of student work based on learning standards and expectations in the workplace, performance evaluations and observations. Students must have at least one employability profile completed within one year prior to school exit. If a student is involved in a number of work-based learning experiences and/or is employed part time, he/she may also have additional employability profiles as completed by others knowledgeable about his or her skills (e.g.,</td>
</tr>
<tr>
<td>Section</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>College Research</td>
<td>A written research assignment focusing on three colleges offering programs in the student’s chosen career pathway.</td>
</tr>
<tr>
<td>Career Plan</td>
<td>Per NYSED: “Career Plans are an important mechanism to add relevance and meaning to learning experiences across subject areas. The career development model used to create the Career Plan aligns with the CDOS standards.” A Career Plan document can be found here: <a href="http://www.p12.nysed.gov/cte/careerplan/docs/SecondaryCommLClvl.pdf">http://www.p12.nysed.gov/cte/careerplan/docs/SecondaryCommLClvl.pdf</a></td>
</tr>
<tr>
<td>Student Awards</td>
<td>This section is completely open ended. Students should use this section to illustrate any awards, projects, exemplars, service learning, or scholarships, they participated or earned during their high school years. They can show evidence through pictures, project documentation, news articles, program agendas, meeting minutes, videos, etc.</td>
</tr>
<tr>
<td>Work Samples</td>
<td>Examples highlighting <em>only the student’s best work</em>, demonstrating the skills and competencies he or she has mastered. These should be presented professionally and be clearly captioned. <em>Should not be thought as a scrapbook.</em> Potential employers are only interested in the very best examples.</td>
</tr>
</tbody>
</table>
D. Postsecondary Articulation

The self-study team reviews the postsecondary articulation agreement for the program seeking approval. Postsecondary articulation agreements help students prepare for the transition from high school to advanced study in a particular career area. Articulation agreements provide direct benefits to students such as dual credits, college credits, advanced standing, or reduced tuition at a postsecondary institution. Articulation agreements may include several school districts and/or BOCES and multiple postsecondary institutions. The school district or BOCES may enter into multiple articulation agreements for a program seeking approval.

Process

- Reviewers confirm that the postsecondary articulation agreement is designed to prepare students for the transition from high school study to postsecondary study in the career area of the program seeking approval.

- Reviewers confirm that a postsecondary articulation agreement has been obtained that offers direct benefits to students in the program seeking approval.

- Reviewers confirm that the postsecondary articulation agreement includes the
  - prerequisite skills, knowledge, or coursework required of students to participate in the agreement
  - roles and responsibilities of each institution
  - duration of the agreement
  - endorsement by officials of each institution

- Signed articulation agreements must be on file within the school district or BOCES.

Documentation

Documentation of the postsecondary articulation agreement is maintained by the school district or BOCES and updated whenever modifications are made. Recommendations on the technical assessment selection should be included in the self-study report and reviewed by the external committee. A copy of the signed postsecondary articulation agreement must be attached to the Application for Career and Technical Education Program Approval.

July 12, 2017

Mr. Jamie Alicea, Superintendent
Syracuse City School District
725 Harrison St.
Syracuse, NY 13204

Re: Memorandum of Understanding
SCSD/ITC
College Credit Now

Dear Mr. Alicea:

Attached for your files, please find one (1) fully executed copy of the above referenced Memorandum of Understanding.

If you have any questions, please contact Ms. Amy Kremenek at 315-498-6062 or me directly at 498-2371.

Sincerely,

Michael P. McMullen
Assistant Vice President
Office of Management Services

MPM/mj

Attachment (1)

Cc: Amy Kremenek, VP Enrollment Development
MEMORANDUM OF UNDERSTANDING
Between
Onondaga Community College
And
SCSD/ITC High School

It is the goal of Onondaga Community College, in accordance with its Strategic Plan, to partner with Central New York school districts to offer a variety of Onondaga Community College credit courses for the benefit of qualifying high school students in our community.

This Agreement is the mechanism through which programs at the secondary and post-secondary levels will interface. The school district and college will provide equal access for all students, including "at-risk" students and students with disabilities. Students will not be discriminated against based on gender or any other legally protected classification or characteristic.

The following courses are approved for the 2017-18 academic year at SCSD/ITC High School:

- MET 150  Introduction to Engineering
- CIS 100  Information and Computer Literacy
- CMT 101  Introduction to Computers and Applications

Onondaga Community College will partner with the SCSD/ITC High School (the “School District”) to provide services which fulfill the purpose of the Onondaga Community College Credit Now (“CCN”) concurrent enrollment program. The parties to this Memorandum of Understanding have reached the following understanding:

**Statement of Work:**

**SCSD/ITC High School will:**

- Communicate and send all School District requests and associated correspondence to the College Credit Now program office at Onondaga Community College.
- Designate a School District contact for the purpose of the administration of the CCN program.
- Provide classroom facilities and laboratory space.
- Select the prospective instructors who will teach the classes at the high school. The credentials for the instructors will be reviewed by Onondaga, as well as high school administration. Onondaga will make the final determination if the instructor’s credentials meet the academic requirements.
- Notify the College Credit Now program office in a timely fashion of instructor replacements in order for the approval process to be completed for each new instructor prior to the commencement of the School District’s academic year.
- Complete and submit all student course registrations by the designated deadlines.
- Provide a learning environment where all course requirements/pre requisites are met, including Placement Testing, Onondaga Community College approved textbooks and class size limitations where appropriate.
- Provide district and student data necessary for SUNY General Education Assessment and program accreditation by the National Alliance for Concurrent Enrollment Partnerships (NACEP).
Onondaga Community College will:

- Provide a point of contact for all communication for the CCN program.
- Implement and communicate the procedure and timeline for the course enrollment process.
- Maintain student records as related to college credit earned.
- Assign a content area mentor who will provide course information including required texts, exams, a grading rubric, classroom materials as well as training for the successful delivery of the college course. The mentor will assist the School District instructors in the development of an appropriate course syllabus.
- Supply an official grade roster to School District instructors to confirm registrations. The roster will be submitted to Onondaga Community College at the end of the course with student grades.
- Select and provide an Onondaga Community College designee to administer training/mentoring for School District instructors. The designee will make site visits to each high school class in accordance with the accreditation standards set forth by the National Alliance for Concurrent Enrollment Partnerships (NACEP). Onondaga Community College will work collaboratively with the School District and the instructor to schedule such training and mentoring.
- Provide a list of approved courses and instructors each year for the participating school district. The School District will determine, in its discretion, which of the approved courses, if any, to offer throughout an academic year.

Student Eligibility

- High school students will meet all college placement requirements and course pre-requisites as stated in the official college course description.
- Students who register for college credit will be registered as a non-matriculated, part-time student of Onondaga.
- Students will be required to receive a minimum of 15 contact hours per one credit hour of instruction.
- A Certificate of Residency will be required by Onondaga Community College at the time of registration from any student who has been a New York State resident for one year prior to registration, but has not been a resident of Onondaga County for the previous six months. The student will be responsible for submitting a Certificate of Residency when appropriate. The School District will not be responsible for any fees or charges imposed upon a student who fails to submit a required Certificate of Residency.

Marketing and Publicity:

- The parties will, when possible, provide information to their constituencies.

Dates: Classes will be held September through June of each calendar year (i.e., during the School District’s “academic year”) as agreed upon by both parties.

Classes, Tuition, and Payments:

- The parties agree that classes may be comprised of students who register for credit and those who have elected not to register for Onondaga Community College credit.
- The parties agree that the minimum number of students will be 6. Should the number of students in an individual class fall below 6, the class will be evaluated for cancellation.
The per credit hour tuition rate recorded for each student will be $63.00 which represents one third of the College’s per credit hour rate for the classes being offered during the 2017-2018 academic year. It is mutually agreed that the cost of the leased space along with janitorial expense, utility expense and the School District’s cost of student support and instructional services will not be less than the cost of the tuition per student for each class.

**Nature of Relationship**

Faculty members provided by Onondaga Community College to assist the School District with the CCN program shall be and remain employees of Onondaga. As such, Onondaga Community College employees shall not be considered employees of the School District and shall not be eligible for any compensation or benefits from the School District. Neither party shall have, or hold itself as having, the power or authority to bind or create liability for the other by its negligent or intentional act or omission.

**Compliance with Law**

The parties will comply with all applicable requirements regarding the confidentiality of student records, including the Family Educational Rights and Privacy Act, HIPAA and regulations of the New York State Education Department. The School District will ensure that any and all Onondaga Community College employee(s) who are reasonably expected to have direct, face-to-face, in-person contact with the School District’s students for more than five days during any school year are fingerprinted and criminally cleared by the State Education Department prior to having contact with the School District’s students, as set forth in applicable law, including but not limited to the regulations of the Commissioner of Education. Onondaga Community College agrees to cooperate fully with the fingerprinting and criminal clearance process.

**Term of the Agreement:** The agreement is in effect from September 1, 2017 through June 30, 2018. Extension or continuation of the agreement will be determined by mutual consent of the parties.

**Termination:** The School District and Onondaga Community College reserve the right to terminate this Agreement with written notice submitted within thirty days of the date of the termination. In this event, the date of termination will be the day after the end of the semester during which the 30-day period expires.

The School District covenants and agrees to indemnify, defend and hold harmless Onondaga Community College and the County of Onondaga; its officers, agents, and employees from and against any and all loss or expense that may arise by reason of liability for damage, injury or death, or for invasion of personal or property rights, of every name and nature, and whether casual or continuing trespass or nuisance, and any other claim for damages arising at law and equity alleged to have been caused or sustained in whole or in part by or because of any omission of duty, negligence or wrongful act on the part of its agents in connection with this Agreement.

Onondaga Community College will indemnify, defend and hold harmless the School District, its officers, agents, and employees from and against any and all loss or expense that may arise by reason of liability for damage, injury or death, or for invasion of personal or property rights, of every name and nature, and whether casual or continuing trespass or nuisance, and any other claim for damages arising at law and
equity alleged to have been caused or sustained in whole or in part by or because of any omission of duty, negligence or wrongful act on the part of its agents in connection with this Agreement.

Each party shall be responsible for obtaining insurance coverage (or an equivalent program of self-insurance with appropriate reserves) that is reasonably adequate to cover potential claims arising out of the activities contemplated by this Agreement.

If any provision of this Agreement is invalid, illegal or incapable of being enforced, by reason of any rule of law, administrative order, judicial decision or public policy, all other conditions and provisions of this Agreement shall remain in full force and effect. No covenant or provision shall be deemed dependent upon any other covenant or provision unless so expressed herein. No modification made after execution of this Agreement shall be enforceable unless it is in writing and signed by both parties to this Agreement.

The parties to the Memorandum of Understanding agree to cooperate in a manner indicating their mutual legitimate educational interests for purposes of sharing information legally under the provisions of the Family Rights and Educational Privacy Act (FERPA).

Authorized Signature and Title

[Signature]

SCSD/ITC High School

Title: Superintendent

Date: 6/30/17

Authorized Signature and Title

[Signature]

Mark R. Manning
Onondaga Community College

Title: CFO

Date:
E. Work-based Learning

Work-based learning (WBL) is the “umbrella” term used to identify activities which collaboratively engage employers and schools in providing structured learning experiences for students. These experiences focus on assisting students to develop broad, transferable skills for postsecondary education and the workplace. A quality WBL experience can make school-based learning more relevant by providing students with the opportunity to apply knowledge and skills learned in the classroom to real world situations.

Time requirements that students in an approved program may devote to work-based learning experiences are set by administrators of the approved program. This time should be an outcome of the self-study report and external review phases of the approval process. Work-based learning experiences must be sufficient in length and rigor to contribute to student achievement of the State learning standards as well as specific technical competencies.

Process

- The school district/BOCES and the employer cooperatively plan all work experiences.
- The school district/BOCES set up a formal procedure for the supervision/coordination of all work-based learning experiences and must ensure that work-based learning coordinators are appropriately certified.
- The school district/BOCES provide work-based learning experiences for students with disabilities
- The school district/BOCES and employer must ensure compliance with federal and state labor laws, and the State Department of Labor regulations and guidelines.
- The school district/BOCES must explore and develop work-based learning experiences in settings that are relevant to the program.
- The school district/BOCES must comply with Commissioner’s Regulations and Department policy where credit towards graduation is being awarded.

Documentation

Recommendations for work-based learning should be included in the self-study report and reviewed by the external committee.

Resources


PREPARING TODAY’S STUDENTS FOR TOMORROW’S CAREERS.
Syracuse City School District
Career and Technical Education Internship

Introduction to Career & Technical Education Work Based Learning
Introduction to Syracuse City School District CTE Internship

Career & Technical Education Program/Teacher Guidelines
1. Legal requirements of Internship Program
2. Career & Technical Education Program/Teacher Checklist

Employer Internship Partner Guidelines
1. Employer Safety Requirements
2. Expectations and responsibilities of the employer partner
3. Worksite/Employer Internship Partner Checklist

Student Intern Guidelines
1. Student Intern expectations and responsibilities
2. Student Internship Checklist

FORMS
- NYSED Application for Employment Certificate (NYSED form attached)
- SCSD Certificate of insurance to cover student liability (sample attached)
- SCSD Memorandum of Agreement (Form #1)
- SCSD Internship Program Application (Form #2)
- SCSD Internship Ready to Work Assessment (Form #3)
- SCSD Internship Training Plan (Form #4)
- SCSD Notification of unpaid internship (Form #5)
- SCSD Internship Safety Certification (Form #6)
- SCSD Worksite Orientation (Form #7)
- SCSD Weekly Time Log/Record of Attendance (Form #8)
- SCSD Student Evaluation (Form #9)
- SCSD Mentor Program Evaluation (Form #10)

Forms are available on SCSD CTE website www.syracusecityschools.com/cte
Introduction

Syracuse City School District Career and Technical Education

Work Based Learning

Learning in the workplace is not a new concept. Informal, on-the-job training is an integral part of all workforce development. Work based learning (WBL) provides structured learning experiences for students through exposure to a range of occupations. The Harvard University report, Pathways to Prosperity (February, 2011) suggested that “Work-linked learning should play an especially important role in the new American system of pathways to prosperity. There is mounting evidence that this would be an effective strategy for encouraging young adults to complete both high school and post-secondary degrees. Co-operative education is a tested model that provides students with extensive work experience that is monitored by the school.”

Learning in the workplace is connected to and supports learning in the classroom. Work based learning also helps students achieve established academic standards. Properly developed and supported, work based learning provides a practical context for school subject matter and enhances the traditional classroom learning. Work based learning activities promote the development of broad, transferable skills and are a key element of a rigorous and relevant education for students. It enables students to acquire the attitudes, skills and knowledge needed to succeed in today's workplace.

Employer partners can develop and support work based learning experiences that promote the attainment of workplace knowledge and skills. In doing so, they can support academic achievement and personal growth by designing, structuring, supporting and connecting work based learning experiences. Work based learning also supports professional, technical, and work-readiness skills development. Quality work based learning should:

- Be designed to enhance the learning of skills and workplace knowledge in all aspects of the industry
- Be structured to be safe, legal and measurable
- Be developmentally appropriate
- Have identified learning objectives and assess student performance
- Develop career ready practices and provide opportunities for reflection
- Be supported and documented by appropriate planning and training; and
- Comply with State and Federal labor laws

Syracuse City School District Career and Technical Education Internship

A Career and Technical Education Internship provides an important link between the classroom and the workplace for students age 16 and older. It is a structured, time-limited, career preparation activity in which students are assigned to a workplace for a defined period of time to participate in and observe firsthand within a given industry. The internship enhances and adds relevance to classroom learning. The internship may provide the opportunity to work in teams, rotate through a number of departments and job functions, or work on a project of interest to the student. It is essentially a partnership that links school, community, and business/industry to provide a real-world environment in which students are given the opportunity to apply, and thereby enhance, the knowledge and skills obtained in the classroom. The internship is related to the student's CTE program of study, with the primary goals of promoting:

- The exploration of and experience in a field of interest
- Exposure to a wide range of careers and jobs within an industry
- Opportunities to develop, practice and demonstrate new skills
- The acquisition of occupational knowledge and awareness of the skills and education needed to be successful in the industry
Legal Requirements of SCSD CTE Internship Program

All Career and Technical Education Internship Programs have the common objective of providing opportunities for students to develop and demonstrate job skills at a supervised worksite. They are supported by training plans developed cooperatively by the employer, instructor, and student. There should be ongoing communication between the job mentors and the CTE teacher or work based learning coordinator concerning students’ performance and needs.

Each internship program needs to have the following:

- New York State Education Department (NYSED) approval of the CTE program
- The employer understands that the student placement is governed by NYSED, New York State Workers’ Compensation Board (NYSWCB), New York State Department of Labor (NYSDOL), and United States Department of Labor (USDOL) labor laws and regulations
- Employer is provided a Certificate of Insurance from school where school liability insurance protects the employer from any damage student may do in the workplace
- Students are given written notification that this program is unpaid and they are not due any wages per NYSDOL regulations
- Per NYS, students are required to receive coverage under the employer’s Workers’ Compensation Insurance if student is interning for a for-profit company. If student is interning at a non-profit entity, the student is required to be covered by the employer’s visitors or volunteer insurance.
- Worksites must be in compliance with Occupational Safety and Health Administration (OSHA) regulations. Health and safety instruction/training appropriate for the job is provided by the SCSD and employer specific training is provided by the employer on the worksite.
- Memorandum of Agreement is in effect between the cooperating business and the education agency and outlines the responsibilities of the student, employer, parent/guardian, and school/coordinator, all of whom must sign to confirm their support of the agreement.
- Students complete an Internship Application indicating their understanding of, and agreement to, all rules and regulations of the program.
- Students receive instruction embedded within their CTE curriculum relating to the technical and career ready practices.
- An Internship Training Plan (ITP) is developed and used for each participating student. The plan identifies the general and specific job tasks the student will perform on the job, the desired learning outcomes of the experience, and the time frame the student will spend at each task. The training plan should be designed to ensure that the student will have a progressive learning experience.
- All participating students are meeting, or have met, academic requirements of their CTE programs and academic subjects. No students on academic probation will participate in the internship.
- Employment Certificate (Working Papers) for students provide verification that a student under age 18 is eligible for employment. The student, employer, and school must complete the form. Employment certificates are obtained at the high school – typically the main office, health office, or guidance office.
- Time Log/Record of Attendance provides an official record of the weekly and cumulative hours the student has worked during the experience. It must be maintained for each student.
- An intern evaluation will be done by the CTE teacher before the internship, at the midpoint of the internship and at the end of the internship. This same form will be completed by the on-site supervisor in the midpoint and at the end of the internship.
SCSD CTE Internship Program Checklist
(To be completed by CTE teacher or WBL coordinator)

☐ NYSED has approved the CTE program
☐ The employer understands that the student placement is governed by NYSED, NYSWCB, NYSDOL, and USDOL labor laws and regulations
☐ NYSED Application for Employment certificate (working papers, usually available in school counseling office) has been verified (NYSED form attached)
☐ Employer is provided with a Certificate of Insurance from school to cover liability (sample attached)
☐ A written Memorandum of Agreement is in effect between the cooperating business and the education agency (Form #1)
☐ Students complete an Internship Application indicating their understanding of, and adherence to all rules and regulations set forth by the program. (Form #2)
☐ Students receive instruction embedded within their CTE curriculum relating to the technical and Career Ready Practices. The CTE teacher and the student have completed the SCSD CTE Internship Ready to Work Assessment (Form #3)
☐ An Internship Training Plan (ITP) is developed and used for each participating student (Form #4)
☐ Students are given written notification that this program will be unpaid and they are not due any wages per NYS DOL regulations (Form #5)
☐ All SCSD internship candidates have received appropriate safety certification for the industry provided by the school before internship and employer specific training and orientation is provided by the employer on the worksite (Form #6 & Form #7)
☐ All participating students are meeting, or have met, academic requirements of their CTE programs and academic subjects
☐ Review Time Log/Record of Attendance which serves as an official record of the hours the student has worked during the experience (Form #8)

CTE Teacher/WBL Coordinator ________________________ Date ________________________

REQUED FORMS
- NYSED Application for Employment Certificate
- Certificate of Insurance
- SCSD Memorandum of Agreement (Form #1)
- SCSD Internship Program Application (Form #2)
- SCSD Internship Ready to Work Assessment (Form #3)
- SCSD Internship Training Plan (Form #4)
- SCSD Notification of unpaid internship (Form #5)
- SCSD Internship Safety Certification (Form #6)
- SCSD Worksite Orientation (Form #7)
- SCSD Weekly Time Log/Record of Attendance (Form #8)

Forms are available online at the SCSD CTE website : www.syracusecityschools.com/cte
Employer Internship Partner Guidelines

SCSD CTE Internship Employer Requirements

Safety
At all times, both school personnel and the employment site personnel must take appropriate steps to ensure that safe practices are stressed and followed. However, it is impossible to guarantee that no injuries resulting in medical expenses and liability will occur. The following prudent steps are encouraged:

1. In-school course content must include training related to safety at the worksite. Appropriate safety certification should be offered if possible. SCSD internship candidates will have received appropriate safety training before beginning their internship.

2. Any sites used for SCSD CTE internships will be reviewed by school personnel prior to placing a student at the worksite.

3. Employers must provide safety training information to interns as they would a new employee. Safety training must be provided if the employer engaged in a particularly hazardous occupation for minors as defined by the USDOL.

4. Provisions for student safety must be included as part of the training agreement signed by the employer, student, parent, and school representative.

Types of Liability Insurance and Risk Management

Workers' Compensation and Employer Liability Insurance

All employers will have a policy that provides coverage for the Workers’ Compensation statutory benefits as well as liability coverage for certain employment-related situations. Verification of employer’s Workers Compensation insurance will be included in the Memorandum of Agreement. The SCSD will also have insurance that covers the student participating in a school-related internship experience.
SCSD CTE Internship Expectations & Responsibilities of Employer

Before
- Determine projects or activities that would be appropriate for your student intern
- Communicate with staff that an intern will be at the workplace and identify mentors
- Designate one employee, the on-site supervisor, to work with coordinator/teacher to develop and define successful student objectives and experiences and record on the student Internship Training Plan

During
- Provide student with a Work Site Orientation to organization and any required training
- Train student intern for your work site, including all work site safety training
- Maintain a quality, safe and legal learning experience; provide effective supervision
- Use the Internship Training Plan as a guide for the internship; hold intern to employee standards/expectations; oversee, direct, and provide adequate tasking to maximize learning
- Meet with coordinator/teacher and student to decide on an ongoing communications strategy
- Evaluate intern work and provide constructive criticism
- Assist student in working toward learning outcomes
- Coordinate student schedule, approve weekly timesheets
- Communicate successes and opportunities at the workplace that the teacher can use to enhance the value of classroom connections
- Complete a student evaluation midway through internship and discuss with student

After
- Complete a final evaluation of the student
- Hold debriefing session and review performance with the student and teacher
- Complete a Program Evaluation
SCSD CTE Internship Employer Internship Partner Checklist
(To be completed by On-Site Supervisor/Mentor)

☐ Meet with coordinator/teacher and student to agree on ongoing communication strategy (e-mail, text, telephone, etc.)

☐ A written Memorandum of Agreement is in effect between the cooperating business and the education agency (Form #1)

☐ Work with coordinator/teacher to develop and define successful student objectives and experiences and record on the student Internship Training Plan (Form #4)

☐ Coordinate student schedule, approve weekly time log/record of attendance (Form #8)

☐ Communicate with staff that an intern will be at the workplace and identify on-site supervisor and/or mentor

On-Site Supervisor ________________________________

Mentor Name ________________________________

☐ Provide student with Work Site Orientation to organization and any required training (Form #7)

☐ Create and maintain a quality, safe and legal learning experience

☐ Hold intern to employee standards/expectation; provide student support and candid feedback

☐ Communicate successes and opportunities at the workplace that the teacher can use to enhance the value of classroom connections

☐ Complete an interim SCSD CTE Internship Ready to Work Assessment of student performance and discuss with student (Form #3)

☐ Provide effective supervision

☐ Complete a final assessment of the student (Ready to Work Assessment, Form #3 and Student Training Plan, Form #4)

☐ Complete a program evaluation (Form #10)

Employer/ Mentor ____________________________ Date ____________________________

REQUIRED FORMS

SCSD Memorandum of Agreement (Form #1)
SCSD Internship Ready to Work Assessment (Form #3)
SCSD Internship Training Plan (Form #4)
SCSD Worksite Orientation (Form #7)
SCSD Weekly Time Log/Record of Attendance (Form #8)
SCSD Mentor Program Evaluation (Form #10)

Forms are available online at the SCSD CTE website: www.syracusecityschools.com/cte
Student Intern Guidelines

Expectations and Responsibilities of Students

Before
- Obtain working papers (if under 18)
- Return Internship Application and all permission slips with appropriate signatures
- Meet with your teacher/Coordinator and worksite supervisor to finalize an Internship Training Plan

During
- Attend Orientation at the worksite
- Observe all workplace rules and regulations particularly those applicable to safety and security concerns
- Perform all duties, jobs and assigned tasks; treat internship like a real job
- Maintain regular work schedule and notify supervisor in advance of any vacation/appointments
- Track your hours as instructed on Weekly Timesheet
- Develop skill specific learning outcomes with your worksite supervisor
- Participate in ongoing reflection journal activities and skill building classroom assignments
- Communicate with your teacher/Coordinator and worksite supervisor if issues arise
- Keep copies of all necessary paperwork (work journal, training plan, Weekly Time Log/Record of Attendance, and evaluations)

After
- Participate in self-evaluation and reflection activities
- Update your resume based upon new skills and experiences gained
- Send thank you note to employer
SCSD CTE Internship Student Checklist
(To be completed by student)

☐ Obtain NYSED Application for Employment Certificate (usually available in school counseling office, application attached)

☐ A written Memorandum of Agreement is in effect between the cooperating business, the education agency, and signed by student and parents (Form #1)

☐ Return Internship Application (Form #2) and all permission slips with appropriate signatures

☐ Develop skill specific learning outcomes with your worksite supervisor

☐ Meet with your teacher/coordinator and worksite supervisor to finalize an Internship Training Plan for the internship (Form #4)

☐ Attend orientation at the worksite (Form #7)

☐ Observe all workplace rules and regulations particularly those applicable to safety and security concerns

☐ Perform all duties, jobs and assigned tasks; treat internship like a real job

☐ Maintain regular work schedule and notify supervisor in advance of any vacation/appointments

☐ Track your hours as instructed on time log/record of attendance (Form #8)

☐ Participate in ongoing reflection activities and skill building classroom assignments

☐ Communicate with your teacher/coordinator and worksite supervisor, if issues arise and keep copies of all necessary paperwork (work journal, training plan, Weekly Time Log/Record of Attendance, and evaluations)

☐ Participate in self-evaluation and reflection activities (Forms #3 & #9)

☐ Update your resume based on new skills and experiences gained

☐ Send thank you note to employer

---

REQUIRED FORMS

SCSD Memorandum of Agreement (Form #1)
SCSD Internship Program Application (Form #2)
SCSD Internship Ready to Work Assessment (Form #3)
SCSD Internship Training Plan (Form #4)
SCSD Worksite Orientation (Form #7)
SCSD Weekly Time Log/Record of Attendance (Form #8)
SCSD Student Evaluation (Form #9)

Forms are available online at the SCSD CTE website: www.syracusecityschools.com/cte

---

Student

Date
SCSD CTE Internship Forms

NYSED Application for Employment Certificate

SCSD Certificate of Insurance to Cover Student Liability (Sample)

Form #1 SCSD Memorandum of Agreement

Form #2 SCSD Internship Program Application

Form #3 SCSD Internship Ready to Work Assessment

Form #4 SCSD Internship Training Plan

Form #5 SCSD Notification of unpaid internship

Form #6 SCSD Internship Safety Certification

Form #7 SCSD Worksite Orientation

Form #8 SCSD Weekly Time Log/Record of Attendance

Form #9 SCSD Student Evaluation

Form #10 SCSD Mentor Program Evaluation

*Forms are available on SCSD CTE website at www.syracusecityschools.com/cte*
THE UNIVERSITY OF THE STATE OF NEW YORK  
THE STATE EDUCATION DEPARTMENT  
ALBANY, NY 12234

APPLICATION FOR EMPLOYMENT CERTIFICATE

See reverse side of this form for information concerning employment of minors.

All signatures must be handwritten in ink, and applicant must appear in person before the certifying official.

PART I – Parental Consent – (To be completed by applicant and parent or guardian)

Parent or guardian must appear at the school or issuing center to sign the application for the first certificate for full-time employment, unless the minor is a graduate of a four-year high school and presents evidence thereof. For all other certificates, the parent or guardian must sign the application, but need not appear in person to do so.

Date...

I, .......................................................................................................................... Age
[applicant]

Home Address .......................................................................................... apply for a certificate as checked below
[Full Home Address including Zip Code]

☐ Nonfactory Employment Certificate – Valid for lawful employment of a minor 14 or 15 years of age enrolled in day school when attendance is not required.

☐ Student General Employment Certificate – Valid for lawful employment of a minor 16 or 17 years of age enrolled in day school when attendance is not required.

☐ Full-Time Employment Certificate – Valid for lawful employment of a minor 16 or 17 years of age who is not attending day school.

I hereby consent to the required examination and employment certification as indicated above.

[Signature of Parent or Guardian]

PART II – Evidence of Age – (To be completed by issuing official only)

............................................................................................ – Check evidence of age accepted – Document # (if any)
[Date of Birth]

Birth Certificate State Issued Photo ID Driver’s License Schooling Record Other...[Specify]

PART III – Certificate of Physical Fitness

Applicant shall present documentation of physical exam from a school or private physician, physician’s assistant or nurse practitioner licensed to practice within New York State. Said examination must have been given within 12 months prior to issuance of the employment certificate. Date of physical exam on file with school ................. If physical exam is over 12 months, provide student with certificate of physical fitness to be completed by school medical director or private health care provider.

If the physical exam or Certificate of Physical Fitness is limited with regards to allowed work/activity, the issuing official shall issue a Limited Employment Certificate (valid for a period not to exceed 6 months unless the limitation noted by the physician is permanent, then the certificate will remain valid until the minor changes jobs. Enter the limitation on the employment certificate. THE PHYSICIAN’S CERTIFICATION SHOULD BE RETURNED TO THE APPLICANT.

PART IV – Pledge of Employment – (To be completed by prospective employer)

Part IV must be completed only for: (a) a minor with a medical limitation; and (b) for a minor 16 years of age or legally able to withdraw from school, according to Section 3205 of the Education Law, and must show proof of having a job.

The undersigned will employ ........................................................., residing at ...........................................

[Applicant]

as .......................................................................................... at ..........................................................

[Description of Applicant’s Work] [Job Location]

for .......... days per week .......... hours per day, beginning .......... a.m. .......... p.m.

........................................................................................................................................................................

[Name of Firm] Factory ending .......... a.m. .......... p.m.

........................................................................................................................................................................

[Address of Firm] [Telephone Number] Nonfactory Starting date ...

........................................................................................................................................................................

[Signature of Employer]

PART V – Schooling Record – (To be completed by school official)

Part V must be completed only for a minor 16 years of age who is leaving school and resides in a district (New York City and Buffalo) which require a minor 16 years of age to attend school, according to Section 3205 of the Education Law.

I certify that the records of .......................................................... ..........................................................
[Name of School] [Address]

Show that .......................................................... whose date of birth is ..........................................................
[Name of Applicant] ...
[Signature of Principal or Designee]

PART VI – Employment Certification – (To be completed by issuing official only)

Certificate Number ...................................................................... Date Issued ..........................................................

[School or Issuing Center] [Address] [Signature of Issuing Officer]
GENERAL INFORMATION

An employment Certificate (Student Nonfactory, Student General, or Full Time) may be used for an unlimited number of successive job placements in lawful employment permitted by the particular type of certificate.

A Nonfactory Employment Certificate is valid for 2 years from the date of issuance or until the student turns 16 years old, with the exception of a Limited Employment Certificate. A Limited Employment Certificate is valid for a maximum of 6 months unless the limitation noted by the physician is permanent, then the certificate will remain valid until the minor changes job. It may be accepted only by the employer indicated on the certificate.

A new Certificate of Physical Fitness is required when applying for a different type of employment certificate, if more than 12 months have elapsed since the previous physical for employment.

An employer shall retain the certificate on file for the duration of the minor’s employment. Upon termination of employment, or expiration of the employment certificate’s period of validity, the certificate shall be returned to the minor. A certificate may be revoked by school district authorities for cause.

A minor employed as a Newspaper Carrier, Street Trades Worker, Farmworker, or Child Model, must obtain the Special Occupational Permit required.

A minor 14 years of age and over may be employed as a caddy, babysitter, or in casual employment consisting of yard work and household chores when not required to attend school. Employment certification for such employment is not mandatory.

An employer of a minor in an occupation which does not require employment certification should request a Certificate of Age.

PROHIBITED EMPLOYMENT

Minors 14 and 15 years may not be employed in, or in connection with a factory (except in delivery and clerical employment in an enclosed office thereof), or in certain hazardous occupations such as: construction work, helper on a motor vehicle, operation of washing, grinding, cutting, slicing, pressing or mixing machinery in any establishment, painting or exterior cleaning in connection with the maintenance of a building or structure, and others listed in Section 133 of the New York State Labor Law.

Minors 16 and 17 years of age may not be employed in certain hazardous occupations such as: construction worker, helper on a motor vehicle, the operation of various kinds of power-driven machinery, and others listed in Section 133 of the New York State Labor Law.

HOURS OF EMPLOYMENT

Minors may not be employed during the hours they are required to attend school.

Minors 14 and 15 years of age may not be employed in any occupation (except farmwork and delivering, or selling and delivering newspapers):

When school is in session:
- more than 3 hours on any school day, more than 8 hours on a non-school day, more than 6 days in any week, for a maximum of 18 hours per week, or a maximum of 23 hours per week if enrolled in a supervised work study program approved by the Commissioner.
- after 7 p.m. or before 7 a.m.

When school is not in session:
- more than 8 hours on any day, 6 days in any week, for a maximum of 40 hours per week.
- after 9 p.m. or before 7 a.m.

This certificate is not valid for work associated with newspaper carrier, agriculture or modeling.

Minors 16 and 17 years of age may not be employed:

When school is in session:
- more than 4 hours on days preceding school days; more than 8 hours on days not preceding school days (Friday, Saturday, Sunday and holidays); 6 days in any week, for a maximum of 28 hours per week.
- between 10 p.m. and 12 midnight on days followed by a school day without written consent of parent or guardian and a certificate of satisfactory academic standing from the minor’s school (to be validated at the end of each marking period).
- between 10 p.m. and 12 midnight on days not followed by a school day without written consent of parent or guardian.

When school is not in session:
- more than 8 hours on any day, 6 days in any week, for a maximum of 48 hours per week.

EDUCATION LAW, SECTION 3233

“Any person who knowingly makes a false statement in or in relation to any application made for an employment certificate or permit as to any matter by this chapter to appear in any affidavit, record, transcript, certificate or permit therein provided for, is guilty of a misdemeanor.”
CERTIFICATE OF LIABILITY INSURANCE

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

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<th>PRODUCER</th>
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DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

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<tr>
<th>CERTIFICATE HOLDER</th>
<th>CANCELLATION</th>
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<td>SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.</td>
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AUTHORIZED REPRESENTATIVE

© 1988-2010 ACORD CORPORATION. All rights reserved.
Memorandum of Agreement
(Form #1)

Type of Work Based Learning Experience: Non-Paid Internship

This Work Based Learning Experience Agreement is entered into by and between the Syracuse City School District (SCSD) ________________, (Student), his/her Parents/Guardian, ________________, (Parent/Guardian), and his/her Work Experience Employer, ________________, (Employer), on the date indicated below, whereby the Student will participate in a CTE Internship (Program at the Employer’s place of business located at ______________________, on __________________, during the hours of ________________________.

THE STUDENT UNDERSTANDS THAT HIS/HER CONDUCT IS A REFLECTION UPON THE SCHOOL NAME AND AGREES THAT HE/SHE WILL:

1. Provide his/her own transportation to and from the Employer’s place of business (the SCHOOL, the Student’s home school, the SCHOOL and the Employer are in no way responsible for providing the Student with transportation to and/or from the Employer’s place of business at any time or for any incidents or accidents which may occur while the Student is on route to or from the Employer’s place of business)

2. Demonstrate a conscientious attitude and be honest, punctual, cooperative, courteous and willing to learn while at the Employer’s place of business.

3. Keep regular attendance as agreed upon with the Employer, excluding Employer-observed holidays, days on which the Employer’s place of business is closed or other legal absences and understands that his/her attendance will be taken from his/her weekly attendance reports.

4. Keep regular attendance at his/her home school.

5. Give the Employer as much advance notice as possible if unable to report for work or to do so in a timely manner and contact the CTE teacher at (315) ________________.

6. Report to SCHOOL if the Internship location is closed for any reason during at time in which the student is scheduled to be at the Internship location and SCHOOL is in session.

7. Complete weekly time log/record of attendance (Form # 8) reports as required by SCHOOL.

8. Engage in only those work based learning experiences approved by the supervisor at the work-site.

THE EMPLOYER AGREES THAT IT WILL:

1. Not permit the Student to replace any paid employee (in the case of an Internship).

2. Advise the Student of all company rules, regulations and policies which relate to the Student.

3. Explain to the Student the responsibilities and duties of his/her internship and shall correlate on-the-job training with safety instructions given by the SCHOOL.

4. The work of the Student in occupations declared particularly hazardous by the U.S. Department of Labor shall be (i) incidental to the Student’s training; (ii) intermittent and for short periods of time; and (iii) under the direct and close supervision of a qualified and experienced person.

5. Provide direct supervision by an authorized employee to the Student as needed.

6. Complete an accident report form and return to SCHOOL in the event of an accident.

7. Review the Student’s performance with him/her on a weekly basis and sign a weekly time sheet, complete an evaluation of the Student on forms provided by the SCHOOL.

8. Inform the SCHOOL Instructor/Coordinator when the Student is absent or not performing adequately by calling (315) ________________.
9. Observe any and all laws that may relate to the Student’s work experience.

**THE SCHOOL AGREES THAT IT WILL:**

1. Carry the insurance listed for students during class activities including internships, job experiences and work placement.

2. Accident Insurance: SCHOOL carries tertiary accident insurance to cover medical expenses as a result of an accident. The parent’s health insurance is primary and the home school district would be secondary. General Liability Insurance: SCHOOL carries general liability insurance to cover up to one million dollars for a single event. As added protection, a ten million dollar umbrella policy is also in effect.

3. Assist the Student in securing internship placement regardless of his/her sex, race, color, national origin or disability (all inquiries and/or complaints regarding discrimination should be directed to the compliance officer, Patty Clark, SCSD Central Office, 725 Harrison Street, Syracuse, New York 13210. Telephone: (315) 435-4131.

4. Provide the STUDENT with safety instructions correlated by the EMPLOYER with on-the-job training.

5. Review with the Student and the Employer their respective responsibilities and obligations while participating in the Program.

The parties/signatories hereby agree that good communication and understanding between them is vital if the objectives of this Program are to be met and that joint conferences between the Student, Employer, Parent/Guardian, Instructor, and others may be scheduled from time to time in order to discuss:

1. the student’s progress
2. any misunderstandings
3. the reason for termination of the Agreement

This Agreement is not in effect until signed by all parties. This Agreement may be terminated at any time by any party upon written notice to the other parties.

We the undersigned, have reviewed and agreed to the terms and conditions set forth herein.

Date__/__/________ Student
Date__/__/________ Parent/ Guardian
Date__/__/________ Daytime Phone
Date__/__/________ Evening Phone

Date__/__/________ Employer/ Supervisor

Date__/__/________ CTE Teacher

Date__/__/________ Home School Principal

The Syracuse City School District hereby advises students, parents, employees and the general public that it is committed to providing equal access to all categories of employment, programs and educational opportunities, including career and technical education opportunities, regardless of actual or perceived race, color, national origin, Native American ancestry/ethnicity, creed or religion, marital status, sex, sexual orientation, age, gender identity or expression, disability or any other legally protected category under federal, state or local law. Inquiries regarding the District’s non-discrimination policies should be directed to:

Executive Director of Student Support Services, Civil Rights Compliance Officer, Syracuse City School District, 725 Harrison Street • Syracuse, NY 13210 (315) 435-4131, Email: CivilRightsCompliance@scsd.us
# CTE Internship Program Application Form

(Form #2)

## Personal Information

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<th>Last Name</th>
<th>First Name</th>
<th>Age</th>
<th>Date of Birth</th>
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<tr>
<th>Street</th>
<th>Home Telephone Number</th>
<th>Cell Phone Number</th>
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<tr>
<th>City, State, Zip</th>
<th>Emergency Contact Name</th>
<th>Telephone Number</th>
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<tr>
<th>Email Address</th>
<th>Relationship to Emergency Contact</th>
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<tr>
<th>Primary Parent/ Guardian Name</th>
<th>Parent/ Guardian's Telephone Number</th>
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<th>Primary Parent/ Guardian Email</th>
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<th>Secondary Parent/ Guardian Name</th>
<th>Secondary Parent/ Guardian's Telephone Number</th>
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<th>Secondary Parent/ Guardian Email</th>
<th>Home</th>
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<tr>
<th>Working Papers Certificate Number</th>
<th>SCSD Student schedule should be attached to this form</th>
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<tr>
<th>School Counselor</th>
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## School Year Training/ Work Schedule Availability

Please list the hours you can work during a typical weekly schedule

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<tr>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
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</thead>
</table>

Please check applicable box:  

- [ ] Fixed Schedule  
- [ ] Schedule will vary

## Sports, Clubs, and Other Activities


## Transportation

Please check the appropriate response

- Do you have a license?  
  - [ ] Yes  
  - [ ] No  
  If YES, which license do you have?  
    - [ ] Full License  
    - [ ] Junior License  

- Do you drive to school?  
  - [ ] Yes  
  - [ ] No

If you do not have a license, how do you plan on getting to and from your internship?  

- [ ] Public Transportation  
- [ ] Other
INSURANCE COVERAGE IN CASE OF INJURIES TO STUDENT AT INTERNSHIP:

EMPLOYER’S WORKER’S COMPENSATION MUST COVER THE STUDENT IN CASE OF INJURIES AT TRAINING SITE.

PROGRAM AWARENESS STATEMENT TO BE CHECKED BY STUDENTS:

☐ In order to receive credit for my work-based learning experience, I must be training at a legal site approved by the school’s CTE Teacher or work-based learning coordinator.

☐ I must notify my CTE teacher or work-based learning coordinator immediately if there is a change of work schedule or duties at the training site.

☐ Failure to report any disciplinary action, termination, or proper documentation of hours may result in the student not earning school credit.

☐ Students must present all daily attendance records to CTE teacher or work-based learning coordinator weekly and complete all assignments related to the program.

☐ I must immediately notify my work-based learning coordinator if I have or develop any medical condition(s) which affects my ability to participate in training, such as allergies, lifting heavy items, movement, standing, sitting, migraine headaches, etc. If there are any current conditions, please state them below. The presence of such a condition will not necessarily preclude me from participating in the internship and accommodations may be provided.

PARENTAL/GUARDIAN PERMISSION AND PICTURE/NEWS STORY RELEASE:

I give my child, ___________________________________________ permission to participate in the work-based learning internship at the Syracuse City School District. By signing the parental permission form, it is understood that:

• All the information is accurate.
• In order to receive credit, students must work a minimum of 150 hours during the school year.
• All students must report to CTE teacher or work-based learning coordinator in the case of any change in employment.
• Failure to report any disciplinary action, termination, or proper documentation may result in the student not earning school credit.
• Students must present all daily attendance records to CTE teacher or work-based learning coordinator weekly and complete all assignments related to the program.
• A student with a junior license must only drive to school if they go directly to work following the school day and they must carry with them the proper paperwork as directed by the work-based learning coordinator.

In addition to agreeing with the above statements, please check off one:

☐ I give permission for my child’s photograph or name to be used to promote the Work Experience Program.

☐ I do not want my child’s photograph or name to be used to promote the Work Experience Program.

Parent/ Guardian’s Name ___________________________ Parent/ Guardian’s Signature ___________________________ Date ____________

Relationship to Student ___________________________

Student’s Name ___________________________ Student’s Signature ___________________________ Date ____________

The Syracuse City School District hereby advises students, parents, employees and the general public that it is committed to providing equal access to all categories of employment, programs and educational opportunities, including career and technical education opportunities, regardless of actual or perceived race, color, national origin, Native American ancestry/ethnicity, creed or religion, marital status, sex, sexual orientation, age, gender identity or expression, disability or any other legally protected category under federal, state or local law. Inquiries regarding the District’s non-discrimination policies should be directed to: Executive Director of Student Support Services, Civil Rights Compliance Officer, Syracuse City School District, 725 Harrison Street • Syracuse, NY 13210/ (315) 435-4131, Email: CivilRightsCompliance@scsd.us

Syracuse City School District CTE Internship Form
## CTE Internship Ready to Work Assessment
(Form #3)

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<th>Name</th>
<th>Program</th>
<th>Date</th>
</tr>
</thead>
</table>

### Scale

1 = Seldom. 2 = Occasionally. 3 = Usually. 4 = Always.

### ZEST

<table>
<thead>
<tr>
<th></th>
<th>Student</th>
<th>Teacher</th>
<th>Onsite Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Actively participates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Shows enthusiasm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Invigorates others</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### GRIT

<table>
<thead>
<tr>
<th></th>
<th>Student</th>
<th>Teacher</th>
<th>Onsite Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Finishes whatever he or she begins</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Tries very hard even after experiencing failure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Works independently with focus</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SELF CONTROL SCHOOL WORK

<table>
<thead>
<tr>
<th></th>
<th>Student</th>
<th>Teacher</th>
<th>Onsite Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Comes to class prepared</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Pays attention and resists distractions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Remembers and follows directions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Gets to work right away rather than procrastinating</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SELF-CONTROL INTERPERSONAL

<table>
<thead>
<tr>
<th></th>
<th>Student</th>
<th>Teacher</th>
<th>Onsite Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Remains calm even when criticized or otherwise provoked</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Allows others to speak without interruption</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Is polite to adults and peers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Keeps his/her temper in check</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### OPTIMISM

<table>
<thead>
<tr>
<th></th>
<th>Student</th>
<th>Teacher</th>
<th>Onsite Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Gets over frustrations and setbacks quickly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Believes that effort will improve his or her future</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### GRATITUDE

<table>
<thead>
<tr>
<th></th>
<th>Student</th>
<th>Teacher</th>
<th>Onsite Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Recognizes and shows appreciation for others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Recognizes and shows appreciation for his/her opportunities</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SOCIAL INTELLIGENCE

<table>
<thead>
<tr>
<th></th>
<th>Student</th>
<th>Teacher</th>
<th>Onsite Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Is able to find solutions during conflicts with others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Demonstrates respect for feelings of others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Knows when and how to include others</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### CURIOSITY

<table>
<thead>
<tr>
<th></th>
<th>Student</th>
<th>Teacher</th>
<th>Onsite Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>Is eager to explore new things</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Asks and answers questions to deepen understanding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Actively listens to others.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### ACADEMIC PERFORMANCE

<table>
<thead>
<tr>
<th></th>
<th>Student</th>
<th>Teacher</th>
<th>Onsite Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>Completes all assignments with quality and timeliness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Uses tools appropriately and safely</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### COMMITMENT

<table>
<thead>
<tr>
<th></th>
<th>Student</th>
<th>Teacher</th>
<th>Onsite Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>Attends class with one or less absences per quarter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Demonstrates loyalty and appreciation to the program and instructors</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### CTE Internship Training Plan

**Form #4**

<table>
<thead>
<tr>
<th>Student’s Name</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student’s Address</td>
<td>Telephone</td>
</tr>
<tr>
<td>CTE Program Career Cluster</td>
<td>Working Papers Certificate #</td>
</tr>
<tr>
<td>School Coordinator</td>
<td></td>
</tr>
<tr>
<td>Phone Number</td>
<td></td>
</tr>
<tr>
<td>Fax Number</td>
<td></td>
</tr>
<tr>
<td>Email</td>
<td></td>
</tr>
<tr>
<td>Employer</td>
<td></td>
</tr>
<tr>
<td>Phone Number</td>
<td></td>
</tr>
<tr>
<td>Fax Number</td>
<td></td>
</tr>
<tr>
<td>Email</td>
<td></td>
</tr>
<tr>
<td>Immediate Job Supervisor</td>
<td></td>
</tr>
<tr>
<td>Phone Number</td>
<td></td>
</tr>
<tr>
<td>Email</td>
<td></td>
</tr>
<tr>
<td>Corporate Address</td>
<td></td>
</tr>
</tbody>
</table>

#### Training Schedule

<table>
<thead>
<tr>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
</table>

#### Insurance Coverage

- [ ] Student is a non-paid intern – Worker’s Compensation
- [ ] Student is a non-paid observer – Worker’s Compensation

#### Transportation Provided by

- [ ] Student/parent will provide own transportation
- [ ] School district will provide transportation during school hours

#### Goals for this Work-Based Learning Student:

1. To explore, learn and develop the skills necessary for this career.
2. To develop the Career Ready Practices necessary for success in the global, competitive world.
3. To be trained in the safe operations of this job title.
4. To be able to demonstrate positive behavior and appropriate dress.
### JOB TASKS AND LEARNING OUTCOMES
(Determined by the Employer and Coordinator)

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### ACHIEVEMENT LEVEL AND COMMENTS
1. Mastered skill
2. Needs more training at the work site.
3. Needs more training at school.
4. Has not reached this training area.

### CAREER READY PRACTICES

<table>
<thead>
<tr>
<th></th>
<th>Always</th>
<th>Frequently</th>
<th>Occasionally</th>
<th>Rarely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Student works cooperatively as a team member?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2. Student is able to read instructions for information and application.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3. Student can calculate and measure for information and application.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4. Student can behave in a responsible manner without supervision.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>5. Student can communicate verbally and in writing to evoke clear understanding.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>6. Student demonstrates good listening and follow through skills.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>7. Student demonstrates critical thinking and problem solving skills.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>8. Student can locate and manage resources for problem solving.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>9. Student demonstrates a positive work ethic.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>10. Student demonstrates computer literacy.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
### SAFETY TRAINING

<table>
<thead>
<tr>
<th>SAFETY TRAINING</th>
<th>DATE OF SAFETY TRAINING</th>
<th>ACHIEVEMENT LEVEL AND COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Safety precautions related to stairs, floors, office equipment and furniture.</td>
<td></td>
<td>1. Mastered safety training instruction.</td>
</tr>
<tr>
<td>2. Safety precaution related to proper dress apparel, shoes, gloves, head, eye and ear protection.</td>
<td></td>
<td>2. Needs more safety training at work site.</td>
</tr>
<tr>
<td>3. Safety precaution related to use of tools, machines, and chemicals.</td>
<td></td>
<td>3. Needs more safety training at school.</td>
</tr>
<tr>
<td>4. Safety precautions related to fire, weather and other natural disasters.</td>
<td></td>
<td>4. Has not reached this training area.</td>
</tr>
<tr>
<td>5. Safety precautions related to sexual harassment and workplace violence.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SCSD CTE Internship
Notification of Unpaid Internship
(Form #5)

This form serves as notification that the Syracuse City School District CTE Internship is an unpaid internship and students are not due any wages per New York State Department of Labor.

__________________________________________
Student

_________________________ / __/ __
Date

__________________________________________
CTE Teacher/ WBL Coordinator

_________________________ / __/ __
Date

__________________________________________
Worksite Representative/ Mentor

_________________________ / __/ __
Date
SCSD Internship Safety Certification  
(Form #6)

__________________________________________  /  /  
Student                                                                                      Date

__________________________________________                                              
Mentor or Supervisor                                                                        CTE/ WBL Teacher

Student CTE Program SCSD Career and Technical Program:

<table>
<thead>
<tr>
<th>SAFETY CERTIFICATIONS</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSHA 10</td>
<td></td>
</tr>
<tr>
<td>Safe Serv</td>
<td></td>
</tr>
<tr>
<td>First Aid</td>
<td></td>
</tr>
<tr>
<td>CPR</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

Syracuse City School District
725 Harrison Street, Syracuse, NY 13210
SCSD Internship Worksite Orientation
(Form #7)

Student

Mentor or Supervisor

CTE/ WBL Teacher

Company Orientation

Directions: Be sure that your student employee obtains information about the factors listed below. Check the information on each item as it is completed. Return the completed form to the CTE Teacher or Work Based Learning Coordinator.

<table>
<thead>
<tr>
<th>Tour of Workplace</th>
<th>Department/Position Specifics</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ A tour of the workplace</td>
<td>□ Explanation of work schedule</td>
</tr>
<tr>
<td>□ An overview of the company safety plan</td>
<td>□ Review of dress and conduct code</td>
</tr>
<tr>
<td>□ Introductions to co-workers</td>
<td>□ Review of hours, breaks and lunch policies</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tour of Employee Facilities</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Rest rooms</td>
<td>□ Company orientation</td>
<td></td>
</tr>
<tr>
<td>□ Lunch room</td>
<td>□ Discuss company organizational structure</td>
<td></td>
</tr>
<tr>
<td>□ Where to store personal belongings</td>
<td>□ Review type of business, products, services</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Other</td>
<td>Other</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Safety Plan</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Safety plan</td>
<td>□ How to use the phones and office equipment</td>
<td></td>
</tr>
<tr>
<td>□ Stairwell/fire exits</td>
<td>□ Supplies, paper, pens, etc.</td>
<td></td>
</tr>
<tr>
<td>□ Fire Extinguishers</td>
<td>□ Job description, Work-Based Learning Plan and evaluation process</td>
<td></td>
</tr>
<tr>
<td>□ Special hazards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Accident prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Safety Training Log, updated as needed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>About the Company</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Discuss company organizational structure</td>
<td>□ Job performance including productivity and work habits</td>
<td></td>
</tr>
<tr>
<td>□ Review type of business, products, services</td>
<td>□ Company culture</td>
<td></td>
</tr>
<tr>
<td>□ Overview of who the customers are</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Employer/training sponsor

Student

CTE Teacher/WBL Coordinator

Date / / 

Date / /

Date / /
Syracuse City School District
725 Harrison Street, Syracuse, NY 13210

Weekly Time Log/Record of Attendance
(Form #8)

_________________________________________  _____________________________________________
Student                                                                                       Training Title

Worksite Supervisor

Time Log for the Week of:  ______________ / ______________

<table>
<thead>
<tr>
<th>Date</th>
<th>Start Time</th>
<th>End Time</th>
<th>Hours Worked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunday</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monday</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuesday</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wednesday</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thursday</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friday</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saturday</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Weekly Hours: ____________________________________________

Student please list any new tasks performed this week: ____________________________________________

By signing this timesheet, you are certifying that it is correct and truthful.

_________________________________________  / / 
Student’s Signature                                                                 Date

_________________________________________  / / 
Supervisor Name                                                                 Date

Supervisor’s Signature

Attention Worksite Supervisor:
If you have any questions or concerns, please contact:

_________________________________________  Phone
CTE Teacher                                                                

The Syracuse City School District hereby advises students, parents, employees and the general public that it is committed to providing equal access to all categories of employment, programs and educational opportunities, including career and technical education opportunities, regardless of actual or perceived race, color, national origin, Native American ancestry/ethnicity, creed or religion, marital status, sex, sexual orientation, age, gender identity or expression, disability or any other legally protected category under federal, state or local law. Inquiries regarding the District’s non-discrimination policies should be directed to: Executive Director of Student Support Services, Civil Rights Compliance Officer, Syracuse City School District, 725 Harrison Street • Syracuse, NY 13210/ (315) 435-4131; Email: CivilRightsCompliance@scsd.us
**SCSD CTE Internship Student Evaluation**
(Form #9)

<table>
<thead>
<tr>
<th>Name</th>
<th>CTE Program</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Dates of Internship</th>
<th>Year to Graduate</th>
</tr>
</thead>
</table>

Please complete this form upon completion of your internship.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Indifferent</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall, I had a great experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I was actively involved in the team meetings and felt free to express my</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>thoughts and opinions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My mentors encouraged and responded to my questions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have an increased appreciation for teamwork</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have a greater ability to ask good questions and synthesize information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I was presented with opportunities to learn by doing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I gained factual knowledge about careers throughout the internship</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would recommend this opportunity to others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My time was well spent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would consider this employer as a future employer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My co-workers are generally positive about work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The best thing about my experience was…

The worst thing about my experience was…

Any suggestions on how we could improve the intern experience?

Other comments…
### SCSD CTE Internship Mentor Program Evaluation

(Form #10)

<table>
<thead>
<tr>
<th>Internship Preparation</th>
<th>Modes of Communication with SCSD Personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Exceptional</td>
<td>□ In-Person</td>
</tr>
<tr>
<td>□ Adequate</td>
<td>□ Email</td>
</tr>
<tr>
<td>□ Inadequate</td>
<td>□ Phone</td>
</tr>
</tbody>
</table>

#### Exceptional | Adequate | Inadequate

<table>
<thead>
<tr>
<th>Amount of Communication with SCSD Personnel</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Exceptionally good</td>
<td></td>
</tr>
<tr>
<td>□ Appropriate</td>
<td></td>
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<tr>
<td>□ Too much</td>
<td></td>
</tr>
<tr>
<td>□ Too little</td>
<td></td>
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</tbody>
</table>

Suggestions for improvement: ____________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

Additional comments: _________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

Return to CTE teacher: ____________________________________________

CTE Teacher Email
BOARD OF EDUCATION
Derrick Dorsey, President
Patricia Body, Vice President
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Mark D. Muhammad
Rita Paniagua
Dan Romeo
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Suzanne Slack, Chief Financial Officer
Monique Wright-Williams, Chief of Staff

NOTICE OF NON-DISCRIMINATION
The Syracuse City School District hereby advises students, parents, employees and the general public that it is committed to providing equal access to all categories of employment, programs and educational opportunities, including career and technical education opportunities, regardless of actual or perceived race, color, national origin, Native American ancestry/ethnicity, creed or religion, marital status, sex, sexual orientation, age, gender identity or expression, disability or any other legally protected category under federal, state or local law.

Inquiries regarding the District’s non-discrimination policies should be directed to:
Assistant Superintendent for Student Support Services, Civil Rights Compliance Officer
Syracuse City School District
725 Harrison Street • Syracuse, NY 13210
(315) 435-4131
Email: CivilRightsCompliance@scsd.us
F. Employability Profile

The employability profile is a record of student achievement. That may include documentation of the student’s attainment of technical knowledge and work-related skills, endorsements, licenses, clinical experience, work experience, performance on core academic Regent’s examinations, performance on industry based assessments, attendance, student leadership honors and achievements and other honors or accolades of student success.

Process

- An employability profile model is developed for the program
- A profile of student achievement is developed for each student in the program and is maintained in accordance with records and retention policies of the school district/BOCES.
- The profile of student achievement is reviewed and updated on a continuous basis by the student and the appropriate program/guidance personnel.
- The work skills to be mastered by students with disabilities should be aligned with the student’s Individualized Education Program (IEP).

Documentation

Recommendations for the employability profile model should be included in the self-study report and reviewed by the external committee.

### EMPLOYABILITY PROFILE
#### Mechanical Technology

#### Industry Based Skill Standards

<table>
<thead>
<tr>
<th>Proficiency Definitions</th>
<th>NA = Not Applicable</th>
<th>1 = Developing</th>
<th>2 = Basic</th>
<th>3 = Proficient</th>
<th>4 = Mastery</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of Engineering</td>
<td>9th 10th 11th 12th</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Identify the different professions associated with Engineering.</td>
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<tr>
<td>Understands the origins and development of Engineering.</td>
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<tr>
<td>Design Process</td>
<td>9th 10th 11th 12th</td>
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<tr>
<td>Define and apply the design process.</td>
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<tr>
<td>Can create a sketch of a Multiview drawing given an isometric drawing</td>
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<tr>
<td>Understands the factors involved in brainstorming, prototyping and reverse engineering.</td>
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<tr>
<td>Manufacturing Math and Science Measurements</td>
<td>9th 10th 11th 12th</td>
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<tr>
<td>Demonstrates how to develop and interpret graphs and charts.</td>
<td></td>
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<tr>
<td>Able to solve problems involving geometric shapes, using formulas</td>
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<tr>
<td>Able to calculate torque, speed, voltage, and ratios using standard equations.</td>
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<tr>
<td>Safety</td>
<td>9th 10th 11th 12th</td>
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<tr>
<td>Can use electrical power tools safely</td>
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<tr>
<td>Can perform a Lockout and Tag out procedure</td>
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<tr>
<td>Complete OSHA 10 safety course</td>
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<tr>
<td>Knows basic industrial safety rules and how to report unsafe conditions.</td>
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<tr>
<td>Can identify fire exits, fire fighting equipment, and evacuation procedures.</td>
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<tr>
<td>Knows how to perform an equipment safety check.</td>
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<tr>
<td>Knows the importance of ergonomics</td>
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<tr>
<td>Knows how to find and interpret a MSDS document</td>
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<tr>
<td>Can identify and wear proper personal protective gear</td>
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<tr>
<td>Quality Assurance</td>
<td>9th 10th 11th 12th</td>
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<tr>
<td>Can Identify components of an effective quality system</td>
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<tr>
<td>Knows how to apply continuous quality improvement</td>
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<tr>
<td>Knows about customer service and the importance</td>
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<tr>
<td>Can perform quality inspections</td>
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<tr>
<td>Blueprint Production and Reading</td>
<td>9th 10th 11th 12th</td>
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<tr>
<td>Able to develop 2 dimensional drawings with AutoCAD</td>
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<tr>
<td>Can interpret commonly used symbols from a drawing</td>
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<tr>
<td>Able to determine dimensions and tolerances from a drawing</td>
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<tr>
<td>Knows how to extract information from a title block</td>
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<tr>
<td>Can identify the type of lines used on a drawing</td>
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<tr>
<td>Manufacturing Fundamentals</td>
<td>9th 10th 11th 12th</td>
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<tr>
<td>Can demonstrate basic hand tool care and use (Drills, Saws, Wrenches, etc)</td>
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<tr>
<td>Can perform basic troubleshooting maintenance procedures</td>
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<tr>
<td>Can identify specific machine tools and their function</td>
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<tr>
<td>Able to construct component from an assembly drawing</td>
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<tr>
<td>Able to operate Mills, Drill Press, Lathe, Grinder</td>
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<tr>
<td>Computer Use</td>
<td>9th 10th 11th 12th</td>
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<tr>
<td>Able to develop charts and graphs from data</td>
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<tr>
<td>Able to develop documents using Microsoft Word processing software</td>
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<tr>
<td>Able to describe different methods of tracking inventory</td>
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<tr>
<td>Mastery of Microsoft Office Suite</td>
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<tr>
<td>Process Control</td>
<td>9th 10th 11th 12th</td>
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<tr>
<td>Can explain how process control applications function</td>
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<tr>
<td>Knows the advantages and disadvantages of &quot;just-in-time&quot; inventory</td>
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<tr>
<td>Knows how time and motion studies are conducted and analyzed</td>
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<tr>
<td>Electrical</td>
<td>9th 10th 11th 12th</td>
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<tr>
<td>Can use DVM and Analog Voltmeter to gather electrical measurements</td>
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<tr>
<td>Can calculate unknown values using Ohms law</td>
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<tr>
<td>Can troubleshoot simple electric circuits</td>
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<tr>
<td>Can identify electrical components and what they are used for</td>
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<tr>
<td>Can interpret basic ladder diagrams</td>
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<tr>
<td>Hydraulics</td>
<td>9th 10th 11th 12th</td>
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<tr>
<td>Can demonstrate the basic functions of how a hydraulic system work</td>
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<tr>
<td>Can determine system pressure using gauges</td>
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<tr>
<td>Can interpret hydraulic connections from a drawing</td>
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<tr>
<td>Measuring tools</td>
<td>9th 10th 11th 12th</td>
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<tr>
<td>Demonstrate mastery of measuring instruments; scale and tape measure</td>
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<tr>
<td>Can identify precision measuring devices. (Vernier Calipers, Micrometers, etc.)</td>
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<tr>
<td>Demonstrate mastery of Vernier Calipers and Micrometers</td>
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</tbody>
</table>
# EMPLOYABILITY PROFILE

## Career Ready Practices / Career Development Standards

### STANDARDS DEFINITIONS

<table>
<thead>
<tr>
<th>NA = Not Applicable</th>
<th>1 = Developing</th>
<th>2 = Basic</th>
<th>3 = Proficient</th>
<th>4 = Mastery</th>
</tr>
</thead>
<tbody>
<tr>
<td>9th</td>
<td>10th</td>
<td>11th</td>
<td>12th</td>
<td></td>
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</tbody>
</table>

### 9th

**Acts as a responsible citizen/employee**
- Is on time and prepared, follows workplace policies, demonstrates reliability and dependability, is polite and courteous to adults and peers, demonstrates appreciation, and is reliable and consistent in their actions.

**Applies appropriate academic and technical skills**
- Demonstrates an understanding of the academic knowledge and skills associated with their trade. Technical skills are developed with academic competencies including English language arts and science that are integrated within the CTE program.

**Attends to personal health and financial well-being**
- Recognizes the benefits of physical, mental, social, and financial well-being to the importance of that success in their career. Accepts criticism and works towards self-improvement targets on a consistent basis.

**Communicates clearly, effectively, and with reason.**
- Is able to communicate both verbally and in writing to express ideas and obtain information. Uses appropriate vocabulary to share information both verbally and in writing as well. Demonstrates active listening skills and verbal communication.

**Makes appropriate decisions**
- Considers the environmental, social, and economic impacts of their decisions. Understands that their actions and decisions will impact other people directly. Works independently and responds positively to new ideas and suggestions.

**Demonstrates creativity and innovative thought**
- Demonstrates creativity and new thinking to solve workplace problems as encountered. Is creative, innovative, and is eager to explore new ways of addressing issues and challenges that are encountered.

**Employs valid and reliable research strategies**
- Seeks information to develop a deeper understanding of issues encountered. Uses technology as a tool to research, organize, and evaluate information critically. Improperly reasons through difficult situations, and makes decisions even when faced with complex or challenging problems.

**Uses critical thinking skills and demonstrates perseverance**
- Demonstrates problem-solving skills through the use of creative thinking, decision-making, and adaptability. Effectively reasons through difficult situations, and makes decisions even when faced with complex or challenging problems.

**Models integrity, ethical behavior, and leadership**
- Is accountable and transparent in all of their work and assignments. Consistently exhibits ethical behavior, and commitment to completing tasks as assigned. Develops and demonstrates leadership skills, assuming responsibility readily.

**Develops and implements a Career Plan**
- Develops a career plan based on understanding of their personal goals and the career pathways that align to them. Develops resumes, cover letters, and examples of best work to aid in the job seeking process and/or entrepreneurial goals.

**Uses technology to enhance productivity**
- Demonstrates an understanding of the use of technology related to their career pathway. Continually develops their ability to adapt to changing work environments using technology, including new tools and their associated applications.

**Works as a productive and respectful team member**
- Actively participates as a member of a team recognizing and appreciating others skills and abilities. Adds to the collective value of the team, and invigorates others to add to the collective efforts and goals.

**Demonstrates reliability and dependability**
- Regardless of tasks given, demonstrates reliable and dependable behaviors to meet the expectations as defined. Attendance and levels of participation meet expectations consistently. Take on additional responsibilities without prompting.

**Arrives on time and is prepared to work**
- Consistently demonstrates promptness, reliability, and commitment to reporting for classes, work site experiences, and other assignments as defined. Reports prepared for work or education as requirements dictate, meets attendance requirements.

**Demonstrates safe working habits**
- When engaging in worksite situations or learning labs, uses tools and equipment safely, observes general safety guidelines for material handling, and meets the expectations of maintaining a safe work environment for others.

**Demonstrates problem solving skills**
- Addresses problems encountered using effective problem-solving strategies. Works to define potential solutions to problems, identifies and implements the best solution based on the information gathered and their skill and knowledge.

## Earned Technical Endorsement on Diploma

- Yes [ ]
- No [ ]

Industry Credential(s) Awarded ____________________________________________

Student Leadership Organization _________________________________________

---

**Special Recognitions or Scholarships**

---

**ID Number:** ________________________________

**Student Name:** ____________________________________________

**School Year:** __________________________

**Teacher:** ______________________________________

**Final Grade:** ________

**Absences:** _______

**Attendance:** _______

---

**Return to TOC**