## Content:

### Essential Questions:
- How can the engineering design process benefit us by solving problems?
- How can students design or adapt a tool to solve an existing problem within the school or local community?
- How does one prepare for and deliver an effective informative speech?

### Skills and Topics:

<table>
<thead>
<tr>
<th>Days</th>
<th>Day 1-4</th>
<th>Day 5-23</th>
<th>Day 24-28</th>
</tr>
</thead>
<tbody>
<tr>
<td>NJSL Standards:</td>
<td>8.2.8.C.1, 8.2.8.C.4, 8.2.8.C.6-8, 8.2.8.E.1-4</td>
<td>8.1.8.A.1, 8.1.8.D.1-5, 8.1.8.E.1, 8.1.8.F.1, 8.2.8.A.1-5, 8.2.8.C.1-8, 8.2.8.D.1-6</td>
<td>8.1.8.A.2, 8.1.8.A.4, 8.1.8.B.1</td>
</tr>
</tbody>
</table>

### Design Thinking Philosophy
- Explain how different teams/groups can contribute to overall design of a product.
- Identify steps in design process that would be used to solve a designated problem.
- Collaborate with peers to determine problem, identify steps to troubleshoot problem and malfunctions, use the design process to develop solutions, and document steps in development using digital tools.

### Design Thinking & Digital Tools in Research
- Identifying and understanding a real world problem using digital tools.
- Effectively use a variety of search tools in a professional database to find information to solve a real world problem.
- Conduct research within the school &/or local community to find issues that need to be addressed.
- Generation of possible solutions for the

### Public Speaking and Presentation Skills
- Create a presentation using one or more digital applications.
- Demonstrate audience awareness using appropriate volume and clarity in formal speaking presentations.
- Listen critically and respond in small and large group settings.
<table>
<thead>
<tr>
<th>Writing</th>
<th>Formative Assessment</th>
<th>Summative Assessment</th>
<th>Interdisciplinary Connections</th>
</tr>
</thead>
</table>
| • Documentation of design process  
• Daily notebook entry | Technology notebook entries, teacher observations, daily work completion | Project Completion, Documentation Completion | Career Ready Practices:  
CRP1  
CRP2 |
| problem.                 | Technology notebook entries, teacher observations, daily work completion | Project Completion, Documentation Completion | Career Ready Practices:  
CRP1  
CRP2 |
| • Choose a solution that is best fit, identify materials needed, and how to create the solution. | Technology notebook entries, teacher observations, daily work completion | Project Completion, Documentation Completion | Career Ready Practices:  
CRP1  
CRP2 |
| • Test solution, identify new problems, and redesign as needed. | Technology notebook entries, teacher observations, daily work completion | Project Completion, Documentation Completion | Career Ready Practices:  
CRP1  
CRP2 |
| • Demonstrate appropriate citations and understanding of intellectual property. | Technology notebook entries, teacher observations, daily work completion | Project Completion, Documentation Completion | Career Ready Practices:  
CRP1  
CRP2 |
| • Explore a local issue using digital tools to make an informed decision. | Technology notebook entries, teacher observations, daily work completion | Project Completion, Presentation | Career Ready Practices:  
CRP1  
CRP2 |
## Somerville Public Schools

<table>
<thead>
<tr>
<th>21st Century Themes:</th>
<th>21st Century Skills:</th>
<th>Resources/Technology Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.2.8.B.1, 3Global Awareness, 9.2.12.C.7 Civic Literacy</td>
<td>CRP6,CRP8:Creativity and innovation, Critical thinking and problem solving, CRP4: Communication and collaboration, Information literacy</td>
<td>Internet, chromebooks, computer lab, SMART boards, Google Docs, video streaming, podcasts, code.org, scratch, -Extraordinary Design Studio</td>
</tr>
<tr>
<td>9.2.8.B.1 Global Awareness, 9.2.12.C.7 Civic Literacy, 9.2.12.C.6 Economic and Entrepreneurial Literacy</td>
<td>CRP6,CRP8: Creativity and innovation, Critical thinking and problem solving, Media literacy, Information and communication technologies literacy CRP4: Communication and collaboration, Information literacy</td>
<td>Internet, chromebooks, computer lab, SMART boards, Google Docs, video streaming, podcasts, code.org, scratch, tinkercad, 3D printer</td>
</tr>
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<td>9.2.8.B.1 Global Awareness, 9.2.12.C.7 Civic Literacy, 9.2.12.C.6 Economic and Entrepreneurial Literacy</td>
<td>CRP6,CRP8: Creativity and innovation, Critical thinking and problem solving, Media literacy, Information and communication technologies literacy CRP4: Communication and collaboration, Information literacy</td>
<td>- Ted Talks</td>
</tr>
</tbody>
</table>

### Career Ready Practices:
- CRP1, CRP2, CRP4, CRP6, CRP12
- ISTE standards for students: 1 a,c,d; 3 a,c,d; 4 a,b,c,d; 5a,b,c,d; 6a,b,c,d; 7b,c,d
- New Jersey Next Generation Science Standards: MS-ETS1-(1-4)

### Modifications/Accommodations:
- Student choice, peer to peer
- Student choice in project
- Student choice in project
| Somerville Public Schools | guidance, audio recordings, time management strategies | undertaking, peer to peer guidance, project time completion, audio recordings, time management strategies | undertaking, peer to peer guidance, audio recordings, time management strategies |