## FUSE Challenge NGSS Alignment

<table>
<thead>
<tr>
<th>Challenge Name</th>
<th>Description</th>
<th>CCC</th>
<th>DCI</th>
<th>SEPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>3D You</td>
<td>Use 3D scanner and 3D design software to create models of your head.</td>
<td>Scale, proportion, and quantity</td>
<td>PS4</td>
<td>• Developing and using models</td>
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<td>• Analyzing and interpreting data</td>
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<tr>
<td>Coaster Boss</td>
<td>Design a roller coaster that can meet various design goals given material and space constraints.</td>
<td>Energy and matter</td>
<td>PS2</td>
<td>• Defining problems</td>
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<td>• Designing solutions</td>
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<tr>
<td>Dream Home</td>
<td>Design a home using 3D design software that meets various design goals given space constraints.</td>
<td>Scale, proportion, and quantity</td>
<td>ETS 1</td>
<td>• Using mathematics and computational thinking</td>
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<td></td>
<td>• Designing solutions</td>
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<tr>
<td>Dream Home 2</td>
<td>Design a home for a client using 3D design software that balances the competing needs of your clients and space.</td>
<td>Scale, proportion, and quantity</td>
<td>ETS 1</td>
<td>• Defining problems</td>
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<td>Electric Apparel</td>
<td>Use e-textile components to design wearable circuits and modify a garment to be interactive and light up.</td>
<td>Energy and matter</td>
<td>PS4</td>
<td>• Developing and using models</td>
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<td>• Planning and carrying out investigations</td>
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<tr>
<td>Activity</td>
<td>Description</td>
<td>Category</td>
<td>ETS</td>
<td>Related Skills</td>
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| **Eye Candy** | Design a pair of eyeglasses frames that can be printed out on a 3D printer. | Structure and function | ETS 1 | ● Developing and using models  
● Designing solutions  
● Using mathematics and computational thinking |
| **Game Designer** | Use a powerful game design software to fix a broken game and create your own levels that meet various design goals. | Cause and effect | ETS 2 | ● Defining problems  
● Using mathematics and computational thinking |
| **Get in the Game** | Use a Makey Makey to design and build embodied controllers for online games. | Cause and effect | ETS 1 | ● Defining problems  
● Developing and using models  
● Designing solutions |
| **How to Train Your Robot** | Use block based coding to program a robot to complete various goals. | Cause and effect | ETS 2 | ● Defining problems  
● Analyzing and interpreting data  
● Using mathematics and computational thinking |
| **Jewelry Designer** | Use 3d design software to design your own jewelry and print them out on a 3D printer. | Scale, proportion, and quantity | ETS 1 | ● Developing and using models  
● Designing solutions  
● Using mathematics and computational thinking |
| **Just Bead It** | Create gel beads using the same technique scientists use to grow human cells. | Structure and function | LS1 | ● Planning and carrying out investigations  
● Designing solutions |
| **Keychain Customizer** | Use 3D design software to create custom keychain designs that can be printed out on a 3D printer | Scale, proportion, and quantity | ETS 1 | ● Developing and using models  
● Designing solutions  
● Using mathematics and computational thinking |
<p>| <strong>Laser Defender</strong> | Use mirrors and a laser pointer to | Structure and | PS4 | ● Developing and using models |</p>
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<thead>
<tr>
<th>Project</th>
<th>Description</th>
<th>Domain</th>
<th>Grade Level</th>
<th>Additional Skills</th>
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</thead>
<tbody>
<tr>
<td>LED Color Lights</td>
<td>Build a circuit capable of lighting up three LED’s.</td>
<td>Energy and matter</td>
<td>PS3</td>
<td>Developing and using models, Designing solutions</td>
</tr>
<tr>
<td>MiniMe Animation</td>
<td>Use 3D animation software to bring a CGI figure to life and meet various design goals.</td>
<td>Cause and effect</td>
<td>ETS2</td>
<td>Developing and using models, Using mathematics and computational thinking</td>
</tr>
<tr>
<td>Music Amplifier</td>
<td>Using electrical components to build a circuit capable of playing music from your phone.</td>
<td>Energy and matter</td>
<td>PS4</td>
<td>Developing and using models, Designing solutions</td>
</tr>
<tr>
<td>Party Lights</td>
<td>Use a programmable micro-controller to build and control a light display.</td>
<td>Energy and matter</td>
<td>PS3</td>
<td>Developing and using models, Designing solutions</td>
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<tr>
<td>Print my Ride</td>
<td>Use 3D design software to build a model of your favorite car that can be 3D printed.</td>
<td>Scale, proportion, and quantity</td>
<td>ETS1</td>
<td>Developing and using models, Designing solutions, Using mathematics and computational thinking</td>
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<tr>
<td>Ringtones</td>
<td>Use a music mixing software to create your own custom tracks.</td>
<td>Cause and effect</td>
<td>ETS2</td>
<td>Developing and using models, Using mathematics and computational thinking</td>
</tr>
<tr>
<td>Spaghetti Structures</td>
<td>Use spaghetti and marshmallows to build a tower that can pass various tests.</td>
<td>Structure and function</td>
<td>PS2</td>
<td>Planning and carrying out investigations, Designing solutions</td>
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<tr>
<td>Selfie Sticker</td>
<td>Use 2D design software and a vinyl cutter to create</td>
<td>Structure and function</td>
<td>ETS2</td>
<td>Developing and using models, Designing solutions</td>
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<td><strong>Solar Roller</strong></td>
<td><strong>Wind Commander</strong></td>
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<tr>
<td>Design and engineer a solar powered car to meet various design goals.</td>
<td>Design and engineer a wind turbine to achieve various design goals.</td>
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- Planning and carrying out investigations
- Analyzing and interpreting data
- Designing solutions