



## “Solar Decathlon”<sup>1</sup>

**Grade Level: 9-12**

<b>OVERVIEW</b>	The purpose of this lesson is work as a school against various other high schools participating in our own “solar decathlon.” We will be creating designs for more energy efficient homes and then selecting one design to construct our very own green home on the computer program. This is a competition between schools.
<b>OBJECTIVES</b>	<p>At the end of this project, students will:</p> <ul style="list-style-type: none"> <li>❖ Have an understanding of green energy and the environment</li> <li>❖ Gained a valuable work ethic</li> <li>❖ Gained the confidence to work with others to come together for a final product</li> <li>❖ Learned to use Jotform for logging work hours</li> </ul>
<b>STANDARDS<sup>2</sup></b>	<p><b>1. Engineering &amp; Technology Education HS.2:</b> Describe technology as a system with inputs, processes, outputs, impacts, and feedback.</p> <p><b>2. Engineering &amp; Technology Education HS.4:</b> Describe technology as it is applied in the context of communication, construction, design, manufacturing, transportation, and related technologies.</p> <p><b>3. Principles of Earth and Space Science ES.1:</b> Students investigate, through laboratory and fieldwork, the universe, the Earth, and the processes that shape the Earth. They understand that the Earth operates as a collection of interconnected systems that may be changing or may be in equilibrium. Students connect the concepts of energy, matter, conservation, and gravitation to the Earth, solar system, and universe. Students utilize knowledge of the materials and processes of the Earth, planets, and stars in the context of the scales of time and size.</p> <p><b>4. Engineering &amp; Technology Education HS.6:</b> Work cooperatively and productively in groups to design and use technology to solve technological problems.</p>

<sup>1</sup> Taken from the US Department of Energy’s Solar Decathlon: <http://www.solardecathlon.org/>

<sup>2</sup> Indiana Academic Standards found at <http://dc.doe.in.gov/Standards/AcademicStandards/StandardSearch.aspx>

<b>MATERIALS</b>	<ul style="list-style-type: none"> <li>❖ <i>Pen and paper for brainstorming</i></li> <li>❖ <i>Computer with internet</i></li> <li>❖ <i>Library for research</i></li> <li>❖ <i>Drafting supplies (ruler, graph paper, pencils, etc.)</i></li> </ul>
<b>PROCEDURE</b>	<ul style="list-style-type: none"> <li>• <i>On the first explain what the Solar Decathlon is and what the project outline is; rules &amp; regulations sheet</i></li> <li>• <i>For the remainder of the class period, take students to the library to begin looking at books on energy conservation, energy efficient homes, architecture, etc.</i></li> <li>• <i>During the next class period, students will receive the entire period to work as a team and brainstorm roles for each student and what the class would like the house to include/incorporate</i></li> <li>• <i>For the next class period, the class will be in the computer lab learning how to use Jotform, specifically the Time Sheet form. Students will begin to log in their hours spent on the project.</i></li> <li>• <i>For the next three weeks, students will continue to draft and design various house ideas and begin to use the computer program to format the home</i></li> <li>• <i>Students will finalize their project and submit their home plan to the “solar decathlon”</i></li> <li>• <i>After the project is finalized, students will use the Survey form on Jotform to send their thoughts and comments about this project’s success to the instructor, as well as note any particular people that students’ felt were lacking on participation</i></li> </ul>
<b>EVALUATION</b>	<p><i>The teacher will be taking notes and grading each individual on participation throughout the project. The instructor will take into consideration the student critiques about fellow classmates and the general view of the whole project.</i></p>