STEAM Syllabus

2019



Instructor: Chris Knappenberger

Availability: Daily between 7:30-8:00 AM and 2:00-2:20 (610-377-6535 ext 3001 or email cknappenberger@lehighton.org).

Website:<http://websites.pdesas.org/Index/ViewWebPage?websitePageId=91139>

**Course: Design and Modeling (6th Grade)**

**Overview for Design and Modeling**

In the Design and Modeling (DM) unit, students discover the design process and develop an understanding of the influence of creativity and innovation in their lives. They are then challenged and empowered to use and apply what they’ve learned throughout the unit to design a therapeutic toy for a child who has cerebral palsy.

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| **Introduction to Design** | Days |
| Activity 1.1 Foot Orthosis Instant Design Challenge | 4 |
| Activity 1.2 A Picture is Worth a Thousand Words | 3 |
| Activity 1.3 How Big Was That Fish? | 4 |
| Activity 1.4 Investigate the Inside | 5 |
| Lesson 1 Assessment | 1 |
| **Total** | **17**  |
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| --- | --- |
| Activity, Project or Problem |  Days |
| Activity 2.1 Building Blocks |  5 |
| Activity 2.2 Taking Modeling to Another Dimension |  4 |
| Project 2.3 Puzzle Cube Statistical Analysis |  6 |
| Lesson 2 Assessment |  1 |
| **Total** |  **16**  |

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| **Design Challenge** |  Days |
| 3.1 Therapeutic Toy Design Challenge |  11 |
| Unit Summative Assessment |  1 |
| **Total** |  **12**  |

**Course: Green Architecture**

**Overview for Green Architecture (7th and 8th Grade)**

Today’s students have grown up in an age of “green” choices. In Green Architecture (GA) students learn how to apply this concept to the fields of architecture and construction by exploring dimensioning, measuring, and architectural sustainability as they design affordable housing units using Autodesk’s® 3D architectural design software.

What is Architecture?

Lesson 1: **Architectural Basics** **Days**

1.1 Measurement 2

1.2 Calculating Perimeter and Area 1

1.3 Activity 1.3 Architectural Dimensioning (using Revit) 1

1.4 Measuring Your Classroom 1

1.5 Using Autodesk Revit 2

1.6 & 1.7 Estimating Flooring Materials 2

1.8& 1.9 Fundamentals of Construction 2

1.10 Reading a Floor Plan 2

1.11& 1.12My Bedroom Using Revit 3

 **Total 16**

Lesson 2: **Introduction to Sustainable Architecture**

2.1 Rebuilding Greensburg 1.5

2.2 Green Vocabulary 1.5

2.3 Why Recycle? 3

2.4 Saving the Earth Comic Strip 3

2.5 Indoor Air Quality 1

2.6 Building Green 1

2.7 House Styles 1

2.6 Building Green 2

 **Total 14**

Lesson 3: **Architectural Challenge**

3.1 Wood Frame Construction 2

3.2 Building a Shed 3

3.3.Why Insulate? 3

3.4 Shipping Container Home 7

 **Total 15**

**Grading**

**60%** Assessments/Test/Projects (properly completed and following of criteria).

**30%** Graded Classwork/Quizzes/Group Evaluation (staying on task)/Notebooks

**10%** Homework (includes group and class participation).

**Classroom Rules**

1. Treat each other with respect.
2. Be honest with each other when sharing ideas, giving feedback, and reflecting on team dynamics.
3. Make sure everyone on the team is heard and appreciated.
4. Keep the classroom environment as clean and organized as possible.
5. Be safe.

(Other rules will be added by the students while they are in their groups.)

**Consequences**

 1. Verbal warning

 2. Conference - student/teacher

 3. Phone call to parents

 4. Referred to guidance counselor

 5. Teacher/Parent Conference in school with guidance counselor, principal, etc.