



## Curriculum Night: 7th Grade Design Devin Saywers

Willows Preparatory School 2017-18

### *I.B. Learning Aims & Goals*

- Integrate the physical and computing world using sensors and programming.
- Use programming tools and data to simulate, test, and evaluate real-world scenarios.
- Design and test prototype solutions to real-world scenarios.
- Use effective research techniques to develop ideas and solutions.

### *I.B. Learning Objectives*

IB learning objectives are determined across four objective criterion:

- Objective A: Knowing and Understanding
- Objective B: Developing Ideas
- Objective C: Creating the Solution
- Objective D: Evaluating

### *I.B. Grading Criteria*

Students will receive a local grade which is percentage based and letter referenced.

Additionally all IB objective criterion will be formally assessed twice throughout the year. These will be informally assessed on a continual basis. The success in the objective criterion is measured on a 0-8 scale. Limited competency is graded 1-2, adequate 3-4, substantial 5-6 and excellent 7-8. Further detail, specific to Mathematics, regarding the grade descriptors is available in OneNote

A cumulative score is calculated for the year using the criterion scores and this is referenced on a scale of 1-7.



The following is an outline of the content for the 7<sup>th</sup> Grade Design Course. Projects and homework will be assigned to help students meet the IB learning aims and goals.

**Trimester 1**

C++ programming basics, basic electronics, microcontroller programming and integration with sensors, data storage and manipulation

**Trimester 2**

Renewable energy models and simulations, basic scientific and mathematical programming with Python, design simple mechanical systems

**Trimester 3**

Actuating motors, environmental monitoring, intermediate C++ programming, building and designing to a specification