DOBBS FERRY MIDDLE SCHOOL
Dobbs Ferry, New York 10522

COURSE OUTLINE

SUBJECT: STEM 6   **GRADE**: 6

COURSE DESCRIPTION:

The STEM 6 curriculum is an introduction to Computer Science. Emphasis is placed on the idea that computer science is fun, collaborative, and creative. The course is designed to motivate students to continue learning and improve real world relationships, connections, and life. The class environment is based on communal learning with importance placed on risk-taking. This course will teach students about computer science, computational thinking, and programming and will help students persevere in solving problems. It will also make the connection between mathematics and computer science.

Anticipated student outcomes:

Grade 6 – STEM 6 (*meets every other day for a semester*)

By the end of the two quarters, students will have been offered opportunities to engage in:
- Exploration of mathematics and computer science
- Personally meaningful and relevant activities
- Interactions with others as audience, coaches, and co-creators.
- Review their creative practices.

Key Concepts Taught by this Course:
- What is computer science?
- What is a computer scientist?
- What is Digital Citizenship?
- Applications of computer science
- Basic understanding of binary numbers and binary coding
- How to debug
- How the computer works
- Programming concepts
    - Algorithm
    - Sequencing
    - Loops
    - Conditionals
    - Functions
    - Functions with parameters

- Computational Thinking
    - o Decomposition: Breaking down data, processes, or problems into smaller, manageable parts
    - o Pattern Recognition: Observing patterns, trends, and regularities in data
    - o Abstraction: Identifying the general principles that generate these patterns
    - o Algorithm Design: Developing the step by step instructions for solving this and similar problems

Materials required or used:

6th Grade STEM
- o 1 inch binder (to be left in the classroom)
- o Loose leaf lined paper
- o 3 - binder dividers
- o Pencils and a manual sharpener
- o Calculator
- o Colored Pencils

Criteria for grading:
Grades will be based on the following:
- In-class activities
- Class participation
- Assessments
- Homework
- Online performance

Outline developed by: Math Department   *Date: Spring 2017*