DOBBS FERRY MIDDLE SCHOOL
Dobbs Ferry, New York 10522

COURSE OUTLINE

SUBJECT: STEM 8 **GRADE**: **8**

COURSE DESCRIPTION:

The STEM 8 curriculum is based on activities using LEGO MINDSTORMS EV3 system. Students will design and build programmable robots using high quality motors, sensors, gears, wheels, axles, and other technical components. Students will go from coding programs via simple drag and drop interface to developing complex algorithms. They will create programs that intersect with the real world by using input and output devices.

Anticipated student outcomes:

Grade 8 – STEM 8 (*meets every other day for a year)*

By the end of the two semesters, students using hands-on robotics, will:

- Produce simple sequences and commands that link cause and effect using input/output devices
- Design robotic characters' looks,
- Use intuitive prediction tools to gain first-hand experience in forming hypotheses
- Integrate math and science using physical constraints, units of measurement, coordinate system, minimum, maximum, mean and linear relationship.

Key Concepts Taught by this Course -

- Learn and use engineering design process skills
- Understand and use mathematical skills and concepts, such as
    - proportions and ratios,
    - graphing,
    - linear regressions and predictions, and
    - multi-digit computation
- Apply knowledge of science concepts, such as speed and power, motion and stability, and forces and interactions
- Understand cross-cutting concepts, such as systems, patterns, structure and function, and logical thinking
- Understand the role of troubleshooting, invention and innovation, and experimentation in problem solving
- Plan and manage activities to develop a solution or complete a project

- Demonstrate creative thinking and construct knowledge using technology

- Use digital media and environments to communicate and work collaboratively

Materials required or used:

8th Grade STEM

- Chromebook
- Graph paper spiral notebook
- Pencils and a manual sharpener
- Calculator
- Colored Pencils

Criteria for grading:

Grades will be based on the following:

- Activities and Projects
- Class Participation
- Assessments
- Homework
- Online Performance

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