**STEM at RM!**

Here’s a peek of what STEM-centric activities are going on inside some of our classrooms…

**CHEMISTRY**

MYP Chemistry

* Students read and discuss Einstein’s atomic bomb letters
* Students interpret solubility curves for various compounds
* Students research chemical disasters and create a project
* Students investigate properties with molecular geometry models
* Students self-discover the 5 types of chemical reactions by developing criteria for similarities
* Students determine the identity of the 4 ions in an experiment by mixing the solutions and using solubility rules
* Students design a lab to separate parts of a heterogeneous mixture

AP Chemistry:

* Students extract natural pH indicators from fruits and vegetables to determine if unknown substances are acidic/basic/neutral
* DEA forensic chemists visit the classroom and have students do activities
* Students prepare and present demonstrations for JW and other middle school students
* Students volunteer at Rockville Science Day with Chromatography Club

IB Chemistry:

* Students design a lab to investigate the factors that affect the heat change in redox (reduction – oxidation) reactions
* Students evaluate the risk/benefit of drug treatments

**BIOLOGY**

MYP Biology:

* Students connect to real world scientists through DNA laboratory and use a scientific database
* Students work learn about career connections with applied genetics

AP Biology

* Students perform inquiry-based molecular biology labs
* Students do problem-solving activities utilizing molecular data bases

IB Biology

* Students perform inquiry based labs
* Students read articles on current genetics research

Magnet Biology:

* Students design a lab to test a behavioral pattern of pillbugs
* Students do weekly presentations of recent articles/current events

Wildlife Biology:

* Students take field trips to the National Aquarium and the Zoo to study food webs, trophic levels and diversity
* Speakers visit the classroom, including National Park Service and Wildlife Management

**PHYSICS**

Honor Physics:

* Students do mathematical modeling of physical situations
* Students build freestanding towers from spaghetti
* Students do cosmic ray investigations and calculate what affects the amount of cosmic rays striking the Earth
* Students learn the historical background of physics concepts

IB Physics:

* Students take field trip to Carderock Naval Labs to see engineering in the workplace
* Students participate in the Final Frontiers design competition
* Students build water rockets
* Students build rolling devices which are intended to go as slow as possible
* Students perform design lab to investigate the factors affecting water flow from a container
* Students perform design lab to investigate the factors affecting the cooling rate of a liquid

Magnet Physics/Chemistry:

* Students investigate particle physics using online simulations

**OTHER SCIENCES**

Environmental Science:

* Students investigate water use in the world
* Students do current event presentations
* Students participate in a macroinvertebrate stream study
* Students create wind turbine models and determine electrical current generated

Matter and Energy:

* Students perform open ended labs
* Students do online simulations
* Students build models

Integrated and Applied Physical Science (IAPS):

* Students study local drinking water sources to understand “safe” drinking water
* Students work with water cycle simulations

Anatomy and Physiology:

* Students perform open heart surgery simulation
* Students do genetic investigations
* Students learn about micropropagation

Nutrition Science:

* Students modify recipes in terms of substitute materials to create healthier recipes
* Students build calorimeters and use them to measure the heat energy in various snack foods
* Students measure amounts of fats, proteins, and carbohydrates in various foods

**TECHNOLOGY EDUCATION**

Foundations of Technology:

* Students investigate green technology/sustainable living
* Students do real world redesigns/improvements
* Students investigate manufacturing/building,/structural design
* Students cellphone app redesign for successful teacher student use
* Students test car safety features

Intro to Engineering Design:

* Students learn about reverse engineering

Principles of Engineering:

* Students Design and build a compound machine that will complete some task
* Students design and build a model of a recycling center to separate different recycling materials
* Students design and build a bridge that will withstand a given weight