

# Barclay Hopkins STEM Partnership

Barclay Elementary/Middle School works in partnership with Johns Hopkins University's Whiting School of Engineering to offer both in-school and out-of-school STEM programming, with a key focus on engineering and computer science. This ten-year partnership aims to engage Barclay youth, teachers, and staff, with JHU faculty and students, to help promote STEM education and strengthen Barclay Elementary/Middle School as a university-assisted, PK-8 STEAM community school.

## ENGINEERING CURRICULUM

The PK-8 project-based curriculum engages students in critical thinking, problem solving, and prototype development. Throughout the program, students work in collaborative teams to solve real-world problems by using the engineering design process. By the time a student graduates from Barclay Elementary/Middle School they will have had 10 years of engineering experience prior to beginning high school.

PK-K	Engineering is Elementary (EIE), Early Childhood Edition (piloting in Spring 2017)
1 <sup>st</sup> -2 <sup>nd</sup>	City Schools Curriculum modeled after SABES 3-5 (SABES-like)
3 <sup>rd</sup> -5 <sup>th</sup>	STEM Achievement in Baltimore Elementary Schools (SABES)
6 <sup>th</sup> -8 <sup>th</sup>	Project Lead the Way (PLTW), Gateway to Technology (GTT)

## MIDDLE SCHOOL INQUIRY BASED FIELD STUDIES

As part of their classroom experience, students in grades 6-8 will engage in content aligned, inquiry based, field studies where they explore a science concept through real-world data collection and analysis. Each of the field study experiences align to grade level standards identified by Next Generation Science Standards (NGSS).

6<sup>th</sup> Grade – Climate Science Investigation, SciTech Labs

- *How will warming oceans impact CO2 absorption?*

7<sup>th</sup> Grade – Stream Study, Patapsco State Park

- *How do scientists determine the health of a stream?*

8<sup>th</sup> Grade – Physics Exploration, Roundtop Mountain Resort

- *How do the principles of motion and energy influence a snow-tubing experience?*



## JHU CAMPUS VISITS

Students in grades 3-8 are invited to the JHU campus to experience both academic and student life. Faculty, staff, and graduate students from the Whiting School of Engineering and beyond, open their labs to Barclay classes for investigations, demonstrations, and engineering challenges. Themes for the 2016-2017 JHU Campus Visits include:

- 3rd Grade – Technology, Now and Then & Applied Math Experience
- 4th Grade – Ecology – Animals, Habitats, and Ecosystems
- 5th Grade – Electrical & Computer Engineering and Physics & Astronomy
- 6th Grade – Environmental and Civil Engineering
- 7th Grade – Mechanical Engineering and Robotics
- 8th Grade – Biomedical Engineering Capstone Design Challenge

## AFTER-SCHOOL PROGRAMS

Johns Hopkins University, in partnership with Child First Authority (CFA), offers after-school program opportunities for students in grades 3-8. These programs are offered during the Monday-Thursday CFA program schedule. Enrollment in the CFA program is required for participation.

SABES STEM Program – 3<sup>rd</sup> – 5<sup>th</sup> grades

CS4All! Coding and Gaming Club – 4<sup>th</sup> – 5<sup>th</sup> grades

Maryland Science Olympiad – 6<sup>th</sup> – 8<sup>th</sup> grades

3D Printing Club – 6<sup>th</sup> – 8<sup>th</sup> grades

VEX Robotics – 6<sup>th</sup> – 8<sup>th</sup> grades

Global Environmental Change and Sustainability (GECS) – 6<sup>th</sup> – 8<sup>th</sup> grades



## STEM EXPLORATION SERIES

The STEM Exploration Series is an opportunity for 6<sup>th</sup> grade students to explore a variety of STEM fields by working directly with JHU staff, faculty, and community partners. Activities occur at Barclay School's Engineering Lab, at labs on Johns Hopkins Homewood Campus, and at community organizations throughout Baltimore City. Space is limited to 10 participants per program. Advanced registration is required.

2016-2017 STEM Exploration Series:

Explore Space! – Aerospace Engineering (after-school in January, 2017)

Explore Brains! – Biomedical Engineering (Saturdays, February 2017)

Explore Earth! – Environmental Engineering (Spring Break, April 10-14, 2017)

Explore Robots! – Mechanical Engineering (after-school in April, 2017)



## BARCLAY SUMMER STEM ACADEMY

Barclay Elementary/Middle School, in partnership with Johns Hopkins University, Whiting School of Engineering, offers a STEM-focused, school year extension program for rising 5<sup>th</sup> – 8<sup>th</sup> grade students. For Summer 2017, the Barclay Summer STEM Academy will be offered M-F, July 10<sup>th</sup>-28<sup>th</sup>, from 8:30am-3:00pm. Throughout the weeks, students will participate in science investigations, engineering design challenges, computer programming and coding activities, media arts, career exploration, all while applying math and reading skills. The program will end with a Student and Community Showcase where students present their accomplishments!

## CONTACT US

For more information on the Barclay Hopkins STEM Partnership, contact Becky Palmisano at 410-516-6239 or through email at [rpalmis2@jhu.edu](mailto:rpalmis2@jhu.edu). Visit our website at [barclay.jhu.edu](http://barclay.jhu.edu).