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## Rutgers Earth & Environmental Science and Engineering Summer Scholars Institute

Rutgers Earth & Environmental Science and Engineering Summer Scholars Institute is a successful summer program for Newark's middle and high school students. Established with funding from the National Science Foundation, its mission is to expose urban minority youth to potential careers in applied Earth and environmental sciences and engineering, and encourage career interest using innovative teaching and mentoring techniques. The program introduces study and careers to the students who have an interest in the environmental health and hazard protection of the Newark area. By demonstrating the importance of the professions and impacts in applied and real-life settings through interdisciplinary hands-on programming integrating the arts, students gain an interest in such careers. With a focus on college-readiness, students will be primed to pursue a number of STEM/STEAM careers. By broadly engaging Coalition partners, a far-reaching program can transform the lives of the participants through a place-based issue of concern.

**The 4-week Summer Institute** will be held at Rutgers University-Newark, and serve 90, 14-16-year-old Newark high school students, most of whom would be first-generation college students. Developed and overseen by a Rutgers Professor, the program will be run by a coordinator overseeing 4 NPS teachers, assisted by 5 Rutgers University students and 5 Essex County College (ECC) students. The City of Newark provides stipends and lunch for the students through the Summer Youth and Employment Program. The Institute begins with an orientation to place the experience into context and ensure family and community support. Benchmark surveys are administered before activities are begun.

The program consists of 4 modules—Week 1, Mining and Mineral resources, Week 2: Energy Resources, Week 3: Environment and Sustainability, and Week 4: Surface Processes and Engineering. Each module begins with an introductory lecture by the Professor, is illustrated by engaging in hands-on activities using proprietary experimental models of applied earth and environmental science/engineering, includes 2 field trips per week to local examples of the topic (Sandy Hook for coastal processes, mining/smelter complex, volcanic eruption simulation using molten glass at Glassroots), and is accompanied by presentations by professionals in the field highlighting careers in Earth and Environmental Science, Engineering and Sustainability including Prudential (property investment), PSE&G (energy), ExxonMobil (oil and gas), NBC Sports (Health and Safety), and local environmental monitoring, remediation and engineering companies. The research project is done in a local park and demonstrates the scientific method with a hypothesis, field sampling, analytical testing, data compilation, analysis and presentation. It uses geospatial methods (GPS and GIS) for location and chemical-analytical testing of water and soil samples collected in the field. The project is computer assembled to create professional quality research posters for schools.

To involve the Newark STEAM Coalition, 1 day per week in each of the 4 weeks is reserved for programming by coalition members who have overlap and interest in any of the module topics or related topics. Please submit a short description of an activity your group wishes to present as well as a budget. All activities should take place at Rutgers University-Newark if at all possible and should last 1 day or less. Please send proposals to Dr. Alexander Gates at [agates@rutgers.edu](mailto:agates@rutgers.edu) by April 15, 2018.