



2021 Virtual HBCU-UP/CREST PI-PD Meeting



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Mathematical Engagement for the Marine, Biological, and Environmental Realms of Science (MEMBERS)

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Project Overview

The project is focused on developing the foundation of discipline-specific quantitative skills to facilitate students in the Marine, Biological, and Environmental Sciences.

Supporting and training well-rounded members of the scientific community, MEMBERS provides a foundation for

- promotion of appropriate new courses
- modernization of new and current courses in extant curricula
- focused professional development workshops
- provision of novel research for students
- applied internships across disciplines
- STEM workforce development



All efforts are directed to improve within-major retention and promote the matriculation of students to relevant graduate programs, by providing educational opportunities for HBCU students

Best Practices/Successes

Cumulative number of students impacted: **320** (2019-present)

- Employed manual for introductory biology based on quantitative reasoning
- Implementation of CURE labs in four courses
- Built interdisciplinary cooperation by fostering technology between intra/extramural programs (Bowie State University)
- Formalized workshops/activities on: scientific and financial literacy, ethics, science communication, visualizing data, GIS, and science identity
- Assessed student attitudes regarding quantitative reasoning and formalized plan of action to address problem areas

Implications (Broader Impacts)

- Development of new interdisciplinary courses and workshops, and invigoration of extant courses to emphasize inquiry-based experiential training and quantitative reasoning
- Mastery of critical thinking and communication skills on the interdependent sociopolitical issues related to biosciences



Identified Gap(s) for Future Collaboration or Enhancement

Long-term

- Graduate training and workforce development by customizing contemporary quantitative skill sets
- Focused engagement for students not enrolled in targeted TIP-courses

Short-term

- Need for advancing cyber pedagogical approaches
- Reinforced virtual platforms
- Development of virtual research experiences