

Chesapeake Student Recruitment, Early Advisement, Mentoring (StREAM) Program Chesapeake Research Consortium, Inc. (CRC)

About

The [Chesapeake Research Consortium](#) is a regional consortium of seven institutions leading biological and marine related research across the Chesapeake Bay Watershed. The vision of the CRC is to fully enable its member institutions and the broader scientific community in the region to contribute effectively toward better understanding and management of Chesapeake Bay and its watershed.

(NOTE: Any faculty member, manager, or research investigator interested in participating in this program or in furthering the development of this draft concept document) is encouraged to contact the authors – see footer below.)

Chesapeake Student Recruitment Early Advisement and Mentoring (C StREAM) Program.

In March, 2018, the Chesapeake Research Consortium launched a new program to encourage students from groups traditionally underrepresented in the natural sciences, engineering and mathematics to pursue environmentally oriented research and/or management careers in the academic, public and private sectors. The CRC and its partners are working to develop the **C StREAM Program** as a unique long-term program of mentorship that will provide new fully paid **Summer Student Internship Opportunities** for undergraduate- and Masters-level students of diverse or underrepresented backgrounds. The objective is to provide typically under-represented students with entry points and follow-up mentoring and training to prepare them for competitive applications toward PhD support in environmentally related programs at CRC and other academic research institutions or to move directly into professional career paths related to environmental policy, natural resource management and/or environmental non-profit leadership.

Chesapeake StREAM Program will be designed to offer closely mentored research, policy or non-profit experiences in areas of science and engineering relevant to the understanding and management of rivers, lakes, estuaries and coastal waters as well as their watersheds, and including (for example) areas of ecology, environmental chemistry, environmental microbiology, environmental engineering, marine biology, natural resource management, environmental policy, and non-profit project implementation. Potential future employers of the supported students will include any major research institution, government agency or non-governmental organization (for-profit and non-profit NGOs) that is involved in environmental protection, restoration, or management. It is a hope, however, that students who have been mentored and trained through the StREAM Program will be especially interested and capable at contributing toward the goals of the Chesapeake Bay Program Partnership and that they might find future educational opportunities and careers within the academic institutions, agencies, and NGOs that collaborate within the Partnership. In this regard, it is noteworthy that the EPA's Chesapeake Bay Program Office (EPA CBPO), the NOAA Chesapeake Bay Office (NCBO) and all seven institutional members of the CRC are all integrally involved with the proposed project, along with numerous other CBP partners, Historically Black Colleges and Universities (HCBU's), and other academic institutions whose faculty work closely to mentor undergraduate students in areas of environmental research and management.

StREAM Mission Statement

The mission of the Chesapeake Student Recruitment Early Advisement and Mentoring Program is to develop under-represented students into outstanding leaders and role models in a wide range of disciplines relevant to environmental protection, restoration, policy, and management, with focus on watersheds, estuaries, and costal systems. Relevant disciplines can include not only traditional areas of science and engineering relevant to natural processes of estuarine and watershed systems, but also to computational and mathematical sciences appropriate to data use and problem solving and social sciences relevant to the socio-economic aspects of real-world problem solving.

Specific Aims

1. Engage faculty and administrators at universities and colleges throughout the region in helping our consortium institutions to identify and recruit the most promising candidates with aptitude and interests in advance study and research relevant to Chesapeake Bay ecosystem issues.
2. Develop a summer-based program where a cohort of student researchers work with graduate students, faculty mentors and full-time staff of the environmental agencies/organizations under the Chesapeake Bay Program Partnership to gain experience, mentorship and support students to pursue a career in ecosystem science or management.
3. Provide continuing opportunities to the cohort of student researchers for ongoing exposure to research and follow on programs of mentorship, networking and support toward their continuing education and professional careers.
4. To collaborate closely and effectively with existing programs of support for mentoring students toward STEM (Science, Technology, Engineering, and Math) education in order to create synergies that supplement opportunities and leverage resources toward the achievement of both the more general mission of STEM education and the specific StREAM program mission.

Vision Statement

By 2022, the Chesapeake Research Consortium will establish the Chesapeake Student Recruitment, Early Advisement and Mentoring (StREAM) Program to build a regional internship program dedicated to increasing academic/professional diversity in environmental science academia, natural resource management and environmental policy.

Methods and Approach

1. Student Engagement and Recruitment

To engage with universities and colleges across the region and nation to recruit students with an interest in Chesapeake Bay issues. To engage and recruit students, the program management must:

1.1 Identify institutional coordinators at feeder institutions who will serve as liaisons between the potential student recruits and the host research institutions. (The institutional coordinator will hold a role at the feeder institutions including but not limited to a tenured professor, academic Dean or Administrative leader at the university.)

1.2 Visit potential feeder institutions to present to students within the Natural Science and engineering Departments.

2. Student Activities and Responsibilities

The Chesapeake StREAM Program will be a summer program that provides students with the opportunity to work on an existing research or management topic or create their own project with supervision from a research mentor. As part of this program the students will, among other things:

- 2.1 Spend 8-10 weeks at a Chesapeake StREAM Program institution conducting research based on Chesapeake Bay related issues. This will include receiving a stipend, travel and housing expenses from the research institution.
 - 2.2 Work under the guidance of a faculty, research, state/federal employee or non-profit employee mentor.
 - 2.3 Gain theoretical knowledge and/or practical training in academic research, scientific experimentation, administrative government, or non-profit program/project implementation. While others are actively helping citizens learn to reduce their "footprints" on the environment, our program will be assisting students to put their "handprint" on solutions to existing and vexing problems.
 - 2.4 Undergo preparation to apply for graduate-level research programs with the cohort (GRE preparation classes, resume building, career mapping and public speaking courses.)
 - 2.5 Concluding the program, present oral or poster presentations at the Chesapeake Symposium and any existing symposiums at the host institution.
3. Continuity and Retention
- To retain student participants and prepare them to serve as future leaders and role models, there must be continuous and engaged involvement of research and internship mentors at both the home and host institutions. It is the program administrators' responsibility to find and engage these mentors, who must remain engaged throughout the students' tenure in the program, which will ideally continue at least until the students' graduations from their home institution. Once the mentors are identified, it will be their responsibility to:
- 3.1 Provide guidance and mentorship during the period between their selection and their first internship experience.
 - 3.2 Train, guide, support and oversee the success of the students during their summer periods at the host institutions
 - 3.3 Continue to provide mentorship during any academic years following the first summer experience. Toward this end, mentors will also work both within their own networks and the StREAM program partnership to provide continued research opportunities and support, including subsequent summer support if appropriate.
 - 3.4 Work closely within StREAM program partnership to identify the most appropriate graduate school programs or career opportunities, and mentor the student through the application process.
 - 3.5 Advise and mentor students toward success in achieving their chosen career path, including provision of up-to-date informational resources and access to other mentoring and peer networks, including those to be provided by StREAM program managers.

- 3.6 Ask students who complete the Chesapeake StREAM Program to return to their home institutions to recruit emerging leaders to participate in the following summer program and facilitate this activity in collaboration with StREAM program managers.

Potential Fields of Summer Research or Career Experience

(This is a partial list which we expect our partners to help us grow and develop over time! The only criterion for this program is that the student's motivation and experience make connections between science and management issues that relate to environmental ecosystems such as the Chesapeake's.)

Agricultural Engineering and Science
Air pollution chemistry
Air pollution modeling
Biological Oceanography
Chemical Oceanography
Climate Modeling
Coastal Engineering
Computer Modeling of Environmental Processes
Contaminant Hydrogeology
Data Analysis in Environmental Science
Ecology of estuarine and/or watershed systems
Energy Impacts and Environmental Sustainability
Environmental Biology / Microbiology
Environmental Chemistry
Environmental Economics
Environmental Engineering
Environmental Health Sciences
Environmental Law
Environmental Statics
Environmental Systems Modeling
Environmental Policy
Environmental Justice
Estuarine Biogeochemistry
Estuarine Ecology
Fish Ecology
Fisheries Management
Food Sustainability and Nutrition
Geology
Geomorphology
GIS/Modeling
Groundwater Hydrology
Groundwater Management
Habitat Management
Human Geography
Hydrology
Infrastructure Finance and Planning
Landscape hydrology
Land Use and Planning
Limnology

Marine Biology
Marine Chemistry
Marine Ecology
Natural Resource Management
Non-Profit Project Implementation/Program Management
Ocean Engineering
Physical Oceanography
Policy and Public Decision-Making
Political Science
Risk Assessment and Reduction
Science Communications
Sediment Transport
Sociology
Stormwater Management
Stream Restoration
Surface Water Hydrology
Sustainability Science (e.g. Life Cycle Assessments)
Wastewater Management
Water Resource Engineering and Planning
Watershed Sciences
Urban Planning

Broader impacts

- Goal 1: Develop a Prepared Talent Pool for the 21st Century Workforce
- Goal 2: Develop, Foster, and Maintain a Sustainable Network among Dedicated Mentors
- Goal 3: Expand the Cadre of New Doctoral Scholars within Environmental Science
- Goal 4: Sustain Institutional Commitment to Diversity
- Goal 5: Advance Science and Management of the Chesapeake Bay