ITEST Careers Webinar Series: Environmental Science Careers

The ITEST National STEM Learning Exchange, in partnership with ITEST PIs and STEM professionals who work with ITEST projects, will be hosting a quarterly public webinar series. These are designed to provide guidance counselors and educators with resources and strategies to increase student awareness of STEM career opportunities. The series will feature STEM professionals who will speak about their fields of expertise and how they contribute positively to society. Tips for transferring these learnings to increase students' engagement in and motivation for STEM will be included.

EVENT #1: Hosted by Liesl Hotaling, Co-Principal Investigator of the ITEST SENSE IT project, with guest scientists

Access this webinar:
Webinar link: http://www.learningtimes.net/itestregister.html
Toll free: 1-888-450-5996
Local: 1-719-955-1371
Participant Access Code: 424447#

Primary Area of Focus: Environmental Science
Content Area: STEM Career Opportunities/Interests
Project Name: Student Enabled Network of Sensors for the Environment Using Innovative Technology (SENSE IT) http://senseit.org

Agenda

Time	Topic	Speaker
2:00 – 2:10	**Welcome and Introductions**	Moderator – Liesl Hotaling
2:10 – 2:15	**Sensor Revolution** – How we arrived	Liesl Hotaling – SENSE IT
2:15 – 2:25	**Sensors in Environmental Observatories** – How they are used	Tom Harmon – UC Merced
2:25 – 2:35	**Professional Societies** – How we support scientists and engineers and encourage students to pursue careers	Mike Hall - MTS
2:35 – 2:45	**Ocean Sciences Student** – Why I chose to study	Kimberly Keats
2:45 – 2:55	**Q&A**	Moderator – Liesl Hotaling
2:55 – 3:00	**Webinar Summary and Resources**	Moderator – Liesl Hotaling
3:00	**Adjourn**	

This webinar will be archived on the ITEST (http://itestlrc.edc.org/) and SENSE IT (http://senseit.org/) project web sites.

Resources

Presenter Bios	**Career Resources**	**Need for STEM Professionals**
Outlook for STEM Professionals	**Preparation of Professionals**	**College Funding**
Professional Societies	**Sensor Networks Information**	**Environmental Workforce**
Large scale observatories	**Careers**	

Presenter Biographic Information

Tom Harmon – Tom is a professor of engineering with the University of California – Merced. He is the co-Principal Investigator for UC Merced on the NSF science and technology Center for Embedded Networked Sensing , where he is directing the contaminant assessment and management applications research thrust areas. He has worked on several international collaboration pertaining to sensing water quality and soil conditions, including organizing and co-chairing the Pan-American Sensors for Environmental Observations (PASEO) Workshop (NSF OISE Award), held in June 2007 in Bahia Blanca, AR, and the follow-up PASEO Pan-American Advanced Studies Institute (PASI) held in March 2009. He also participated as an instructor for PASI events in Concepcion, Chile and La Selva, Costa Rica.

Mike Hall –Mike is the Manager of Member Groups and Student Outreach activities with the Marine Technology Society. He oversees the MTS scholarship program, which provides over $80,000 annually in scholarships to undergraduate and graduate students pursuing degrees in marine science and technology. Mike also manages all MTS member groups, which include its local professional sections, technical interest groups, and student sections.

Kimberly Keats - Kimberley is a PhD Candidate in Biology at the Ocean Sciences Centre, Memorial University of Newfoundland, Canada. Her primary research interests include bacterial community structure and biogeography, the role of bacteria in ocean biogeochemical processes, and the development of techniques to better quantitatively assess bacterial diversity. Her dissertation research focuses on the nutrient regulation of bacterial growth and community structure in the Lancaster Sound-Baffin Bay region of the Eastern Canadian Arctic. She currently serves on the Executive Committee of the Graduate Students' Union of Memorial University, the Board of Directors of the American Society and Limnology and Oceanography, the Organizing Committee for the 2011 Conference of the Canadian Society of Microbiologists, the Scientific Planning Committee for the 2012 Ocean Sciences Meeting, and as co-chair of the 2012 International Polar Year Early Career Researcher Symposium.

Liesl Hotaling - Liesl Hotaling is a Senior Research Engineering at the University of South Florida, College of Marine Science. She holds a B.A. in Marine Science, a M.A.T. in Science Teaching, and a M.S. in Maritime Systems (ocean engineering). She is a partner in Centers for Ocean Science Education Excellence - Networked Ocean World (COSEE-NOW) and the COSEE National Coordinating Office and specializes in real time data and hands-on STEM educational projects supporting environmental observing networks. She is the SENSE IT Co-PI and Project Manager.

Career Web sites/Information

OceanCareers.com
http://oceancareers.com/2.0/index.php

Higher Education Guide to Marine Science and Technology Programs
https://www.mtsociety.org/publications/higherguide.aspx

NOAA Ocean Explorer
http://oceanexplorer.noaa.gov/edu/oceanage/welcome.html

ASLO – Working in the Aquatic Sciences
http://www.aslo.org/career/aquaticcareer.html

Science in Public Policy
http://www.aslo.org/policy/policycareer.html

Need for STEM professionals

Background Information

The importance of science and engineering to the U.S. has been documented in a series of reports for over half a century. Nevertheless, critical issues for the nation's science and engineering infrastructure remain unsettled. Among them, America faces a demographic challenge with regards to its science and engineering workforce: minorities are seriously underrepresented in science and engineering, yet they are also the most rapidly growing segment of the population.

The United States stands again at the **crossroads**: a national effort to sustain and strengthen science and engineering must also include a strategy for ensuring that we draw on the minds and talents of all Americans.

The science and engineering workforce is large and fast-growing: more than 5 million strong and projected by the U.S. Bureau of Labor Statistics to grow faster than any other sector in coming years. This growth rate provides an opportunity to draw on new sources of talent, including underrepresented minorities, to make our science and engineering workforce as robust and dynamic as possible.
(*Rising Above the Gathering Storm, National Academies of Sciences, 2005*)

Outlook for STEM Professional Employment Opportunities

CNN Money (October 2010) **Best Jobs in America**
http://money.cnn.com/magazines/moneymag/bestjobs/2010/
America's best jobs offer great pay, work that's satisfying, and big growth opportunities. Here are the 100 with the best prospects in the years ahead:
1) Software Architect
2) Physician Assistant
3) Management Consultant
4) Physical Therapist
5) Environmental Engineer
6) Civil Engineer
7) Database Administrator
8) Sales Director
9) Certified Public Accountant
10) Biomedical Engineer

CNN Money (May 2006) **The 10 fastest-growing jobs**
http://money.cnn.com/magazines/business2/nextjobboom/
We identify ten occupations that are projected to see double digit growth between now and 2014:
1. Network systems and data communications analyst
2. Physician assistant
3. Computer software engineer, applications
4. Computer software engineer, systems software
5. Network and computer systems administrator
6. Database administrator
7. Physical therapist
8. Medical scientist
9. Occupational therapist
10. College instructor

Preparation of STEM Professionals

Education is an Asset

Improving the education of our citizens—especially in science and engineering—has further benefits to society:

1) a citizenry better educated in science and engineering strengthens democracy and informed participation in a world in which STEM is more important than ever to policy;
2) minority communities with greater access to experts who understand science and engineering problems (e.g. water quality and toxic waste dumps) and policy choices for them will be stronger;
3) STEM-educated workers will be better able to perform in environments characterized by risk and complexity.

(*Expanding Underrepresented Minority Participation: America's Science and Technology Talent at the Crossroads*, *National Academies* , 2011)

Information is Critical

The Spellings Commission focused in this regard on college awareness activities during high school, noting that "many students and parents don't understand the steps needed to prepare for college" and "there need to be programs that provide resources for early and ongoing college awareness activities that show the benefits of college, career exploration, academic support, college planning, financial aid application assistance)." Similarly, a recent report of the College Board argued that, especially to encourage more first-generation students to apply to college, the postsecondary admissions process needs to be simplified and clarified.

(*A Test of Leadership: Charting the Future of U.S. Higher Education (Spellings Commission), U.S. Department of Education, 2006)*

Barriers in Pursuing a STEM career

Proper preparation

Algebra is a "gatekeeper" subject; students who don't do well in Algebra or who don't take it have precluded their career options in a variety of jobs related to science, technology, engineering, and mathematics.

There are a variety of studies that have linked success in algebra to future educational and career opportunities. For example, completing a mathematics course beyond Algebra II in high school more than doubles the odds that a student who enters college will complete a bachelor's degree. Another study found more than three-quarters of students who took Algebra I and Geometry went on to college within two years of high school graduation, while only one-third of students who did not take Algebra I and Geometry courses did so.

(*Chris Dede, Ed., Harvard Graduate School of Education, 2010*)

Funding General Resources

Student loans, financial aid, and scholarships

Free Application for Federal Student Aid (FAFSA)
http://www.fafsa.ed.gov/

Find Aid
http://www2.ed.gov/finaid/landing.jhtml?src=ln
If you're exploring options for paying for college, you'll learn about the various kinds of financial aid (loans, grants, and work-study), how to apply, common myths, and more.

College Board – Pay for college
http://www.collegeboard.com/student/pay/
Understand all of your options when it comes to paying for college. This web site contains the latest information about college costs, scholarships, financial aid applications, education loans and college financing.

Look for schools with scholarships in your field of interest:
Science, Technology, Engineering, and Mathematics (S-STEM)
This National Science Foundation program makes grants to institutions of higher education to support scholarships for academically talented, financially needy students, enabling them to enter the workforce following completion of an associate; baccalaureate; or graduate-level degree in science and engineering disciplines. Grantee institutions are responsible for selecting scholarship recipients, reporting demographic information about student scholars, and managing the S-STEM project at the institution. *The program does not make scholarship awards directly to students; students should contact the institution's Office of Financial Aid for this and other scholarship opportunities.*

Science, Technology, Engineering, and Mathematics Talent Expansion Program (STEP)
The Science, Technology, Engineering, and Mathematics Talent Expansion Program (STEP) seeks to increase the number of students (U.S. citizens or permanent residents) receiving associate or baccalaureate degrees in established or emerging fields within science, technology, engineering, and mathematics (STEM).

This National Science Foundation program provides educational opportunities for Undergraduate students . This program supports institutions which may provide support to individuals at those institutions. To inquire about opportunities in this program, contact one of the awarded institutions, available by clicking on the Awards link.
(http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5488

Federal Cyber Service: Scholarship for Service (SFS)
The Federal Cyber Service: Scholarship for Service (SFS) program seeks to increase the number of qualified students entering the fields of information assurance and computer security and to increase the capacity of the United States higher education enterprise to continue to produce professionals in these fields to meet the needs of our increasingly technological society.

This program provides educational opportunities for Undergraduate Students, Graduate Students. This program supports institutions which may provide support to individuals at those institutions. To inquire about opportunities in this program, contact one of the awarded institutions, available by clicking on the Awards link.
(http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5228)

Louis Stokes Alliances for Minority Participation (LSAMP)
This program is aimed at increasing the quality and quantity of students successfully completing science, technology, engineering and mathematics (STEM) baccalaureate degree programs, and increasing the number of students interested in, academically qualified for and matriculated into

programs of graduate study. LSAMP supports sustained and comprehensive approaches that facilitate achievement of the long-term goal of increasing the number of students who earn doctorates in STEM fields, particularly those from populations underrepresented in STEM fields.

Pathways to Science
PathwaysToScience.org is a portal website supporting pathways to the STEM fields: science, technology, engineering, and mathematics. Particular emphasis is placed on connecting traditionally underrepresented groups with STEM programs and resources, including funding and mentoring opportunities.
http://www.pathwaystoscience.org/lsamp.asp?sort=region&subsort=Southeast

Academic Competitiveness Grant (ACG) Program
http://www.studentaid.ed.gov/PORTALSWebApp/students/english/AcademicGrants.jsp
An Academic Competitiveness Grant provides $750 for the first year of study and $1,300 for the second year. Note: The amount of the ACG, when combined with a Pell Grant, may not exceed the student's cost of attendance. In addition, if the number of eligible students is large enough that payment of the full grant amounts would exceed the program appropriation in any fiscal year, then the amount of the grant to each eligible student may be ratably reduced.

National Science and Mathematics Access to Retain Talent Grant (National SMART Grant) Program
http://www.studentaid.ed.gov/PORTALSWebApp/students/english/SmartGrants.jsp
The National Science and Mathematics Access to Retain Talent Grant, also known as the National Smart Grant is available during the third and fourth years of undergraduate study (or fifth year of a five-year program) to at least half-time students who are eligible for the Federal Pell Grant and who are majoring in physical, life, or computer sciences, mathematics, technology, engineering or a critical foreign language; or non-major single liberal arts programs. The student must also maintain a cumulative grade point average (GPA) of at least 3.0 in course work required for the major. The National SMART Grant award is in addition to the student's Pell Grant award.

A National SMART Grant will provide up to $4,000 for each of the third and fourth years of undergraduate study. The amount of the SMART Grant, when combined with a Pell Grant, may not exceed the student's cost of attendance. In addition, if the number of eligible students is large enough that payment of the full grant amounts would exceed the program appropriation in any fiscal year, then the amount of the grant to each eligible student may be ratably reduced.

Research Experience for Undergraduates (REU)
The Research Experiences for Undergraduates (REU) program supports active research participation by undergraduate students in any of the areas of research funded by the National Science Foundation. REU projects involve students in meaningful ways in ongoing research programs or in research projects specifically designed for the REU program. *REU Sites* are based on independent proposals to the National Science Foundation to initiate and conduct projects that engage a number of students in research. REU Sites may be based in a single discipline or academic department, or on interdisciplinary or multi-department research opportunities with a coherent intellectual theme. Proposals with an international dimension are welcome. A partnership with the Department of Defense supports REU Sites in DoD-relevant research areas.

Undergraduate student participants must be citizens or permanent residents of the United States or its possessions.

Students may not apply to NSF to participate in REU activities. Students apply directly to REU Sites and should consult the directory of active REU Sites:
(http://www.nsf.gov/crssprgm/reu/reu_search.cfm)

National Institutes of Health, Bridges to the Baccalaureate
http://www.nigms.nih.gov/Research/Mechanisms/BridgesBaccalaureate.htm
The Bridges to the Baccalaureate Program provides support to institutions to help students make transitions at a critical stage in their development as scientists. The program is aimed at helping students make the transition from 2-year junior or community colleges to full 4-year baccalaureate programs. The program targets students from groups underrepresented in the biomedical and behavioral research enterprise of the nation and/or populations disproportionately affected by health disparities (targeted groups).

The Bridges to the Baccalaureate Program promotes institutional partnerships between community colleges or other 2-year post-secondary educational institutions granting the associate degree and colleges or universities that offer the baccalaureate degree. The partnership/consortium must involve at least two colleges or universities but no more than four institutions, including the applicant institution, unless strongly justified. The bachelor's degree-granting institution(s) in the consortium must have a strong science curricula and a track record of enrolling, retaining and graduating students who pursue advanced degrees in biomedical and behavioral research fields. Community colleges and other 2-year post-secondary educational institutions in the consortium must offer associate degree programs with an emphasis on the biomedical and behavioral sciences and must have a high enrollment, as determined by the applicant institution, of students from targeted groups.

Bridges to the Baccalaureate Degree Participating Institutions:
http://www.nigms.nih.gov/Minority/Bridges/PartInstBacc.htm

National Institutes of Health, MARC Undergraduate Student training in Academic Research (U*STAR): MARC U-STAR
http://www.nigms.nih.gov/Training/MARC/USTARAwards.htm
MARC U-STAR awards provide support for undergraduate students who are underrepresented in the biomedical and behavioral sciences to improve their preparation for high-caliber graduate training at the Ph.D. level. The program also supports efforts to strengthen the science course curricula, pedagogical skills of faculty and biomedical research training at institutions with significant enrollments of students from underrepresented groups.

Local Community Scholarships
Several local businesses and organizations offer scholarships for students pursuing STEM careers. Ask your Guidance Counselor or search local organizations for opportunities.

Community college and Technical Schools are wonderful options for students. High school students can often college courses while still in high school and accrue college credit.

- Reasonably priced
- Focus on teaching/hands-on learning
- Often smaller classes

The Advanced Technology Education (ATE) Program from NSF funds technology education programs at various Community Colleges throughout the US, please refer to the ATE Network's web site for detailed information about the programs: http://atecentral.net/

Military
Entering the military can offer students a variety of STEM career options:

- Enlisting – Post basic training assignments
- College preparatory – West Point, Annapolis, Air Force Academy, etc.
- Graduate School - Naval Post Graduate School, etc
- Service members Opportunity College (http://www.soc.aascu.org/)
- K-12 outreach: Office of Naval Research (ONR) (http://www.stem2stern.org/index)

Professional societies
Identify and contact the professional societies representing the field of interest – many have scholarship opportunities, internship opportunities, mentoring programs, and overall guidance as to how best to enter the particular field of interest.

Marine Technology Society - MTS
(https://www.mtsociety.org/education/)

American Society of Limnology and Oceanography – ASLO
(http://www.aslo.org/employment/studentops.html)

Society for the Advancement of Hispanics/Chicanos and Native Americans in Science – SACNAS
(http://sacnas.org/students)

Institute of Electrical and Electronics Engineers - IEEE
(http://www.ieee.org/education_careers/index.html)

The Oceanography Society - TOS
(http://www.tos.org/)

Sensor Networks Background Information
Sensors for Environmental Observatories (National Science Foundation Report)
http://www.wtec.org/seo/final/Sensors_for_Environmental_Observatories.pdf

Sensor Revolution (National Science Foundation Special Report)
http://www.nsf.gov/news/special_reports/sensor/index.jsp

Environmental Observatories and the Need for Workforce
In the 1980s, the personal computer revolution placed computing at the average citizen's fingertips. In the 1990s, the internet revolution provided connections with an information web that spans the planet. This decade ushered in the next revolution—the sensor revolution. This latest use of technology is connecting the internet to the physical world, creating the world's first electronic nervous system (NSF, 2005).

The science and engineering communities, with the support of the National Science Foundation and other agencies, have successfully conceived, designed, and begun implementing several new environmental observing systems that will provide data products and enable longer-term sensing of the environment. The installation and use of environmental observatories is transforming the way scientific research is

conducted, a paradigm shift from discrete sampling to continuous, in-situ sampling. Environmental observatories will enable an accelerated accumulation of baseline data, create a more robust database for improved investigations and models, and enable continuous sampling during episodic events.

However, there are significant limitations to current sensor technology and the environmental observation networks that collect data, clearly demonstrating the need for:

- The development of new types of sensors and sensors with new capabilities;
- The ability to link sensors to a broader network;
- Coordination across various environmental observatories;
- Capabilities for long-term autonomous deployment and maintenance; and
- A ***new mechanism to educate*** researchers, technicians, and the general public on new sensor and sensor network technologies (Sensors for Environmental Observatories, NSF 2006).

The education of the 21st century environmental technology workforce demands an understanding of environmental sciences and other disciplines, an ability to resolve complex environmental issues, and the ability to communicate complex ideas to a broad audience. Fostering these critical abilities will require a new set of learning opportunities. Developing and maintaining such a workforce will rely on innovative educational programs that prepare future sensor technology workforce professionals at a variety of levels and in a variety of environmental field. Proper leverage of information technology (IT)-enabled systems, tools, and services will be critical for addressing these training needs, having a profound impact on the practice of science and assessment, engineering research, industry, and global citizenry. However, the multidisciplinary, technology-based approach needed to ensure workforce preparedness is not always reflected in our educational programs.

SENSE IT provides students with the opportunity to learn the engineering design process through the construction, programming, deployment and testing of a student-implemented water monitoring network. The sensor development phase and analysis of sensor data requires students to apply several STEM principles showing students how their skills can be used to solve real-life problems within the context of an environmental monitoring project. The project emphasizes the pedagogical approach of project-based learning and collaborative teamwork, and gives students practical experience in systems thinking.

Some Large scale environmental observatories under development

Ocean Observatories Initiative (OOI)
(http://www.oceanobservatories.org/)

Integrated Ocean Observing Systems (IOOS)
(http://www.ioos.gov/)

National Ecological Observatory Network (NEON)
(http://www.neoninc.org/)

Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI)
(http://www.cuahsi.org/)

Arctic Observing Network (AON)
(http://www.aoncadis.org/)

Earthscope
(http://www.earthscope.org/)

Long Term Ecological Research Network (LTER)
(http://www.lternet.edu/)

Careers Involved with the Operation of an Environmental Observatory (Annotated list)

- Computer Scientists
- Software engineers (sample job description)
- Data managers
- Data Visualization programmers (sample job description)
- Environmental Science
    - oceanographer (sample job description)
    - meteorologist
    - climatologist
    - microbiologist
    - hydrologist
    - chemist
    - biologist
    - physicist
- Field Deployment Managers (sample job description)
- Aquatic Instrument Engineer/scientists (sample job description)
- Environmental Engineers (sample job description)
- Technicians
- Satellite Technicians (sample job description)
- Radar Technicians
- Web Designers
- Graphic Designer (sample job description)

Software Applications Engineer

Essential Duties and Responsibilities:

• Work directly with the Cyber infrastructure team to formulate a design capable of meeting the data production requirements for all instrumentation platform data
• Work with the Data Products and Science teams in developing data transformation algorithms and Algorithm Theoretical Basis Documents.
• Implement mathematical models and algorithms into production level code, making recommendations for the most efficient approach to producing complex ecological models
• Create new or modify existing scientific code, and build a library of reusable code modules and executables that can be combined, scheduled, and executed by an automated workflow manager on a High Performance Computing Cluster
• Create executables that will support the highly varied instrumentation platforms, scientific data production workflows, and the delivery of data products to Science and Education Portals
• Create designs to support the development of high-quality, robust, production level code and technology while minimizing development and production support costs
• Select and test commercially available off-the-shelf (COTS) and open source solutions, and develop prototype solutions to validate designs being proposed

Education:

• MS in Applied Mathematics, Physics, Engineering, or Computer Science

Required Experience:

• 8-10 years experience with scientific software development teams
• Strong knowledge of numerical processing and applied mathematics
• Expert level knowledge and experience with various application technologies and languages to include at least C, C++, R, and FORTRAN
• Experience in large scale, high performance scientific computing utilizing workflow and process management infrastructure software, common services, high volume data bases and data storage systems, compute farms and distributed computing

Preferred Experience:

• Experience working in a start up environment
• Some experience with sensor hardware/software interfaces
• Experience with scientific modeling and visualization techniques and standards
• Significant experience in successful scientific application development with particular emphasis in designing and developing scientific data collection, data production, data analysis, modeling, and data publishing solutions

Skills and Abilities:

• Experienced highly-motivated individual with the ability to take charge
• Ability to communicate and present clearly and effectively to a diverse range of audiences, including Senior Management, general employee population, scientists and academia
• Ability to solve complex problems by applying experience, judgment, and creativity to both short- and long-term challenge
• Ability to stay on tight schedules while meeting budgetary requirements in a high-pressure environment
• Ability to work independently with little direction and/or supervision and in a team environment

Visualization Programmer

Required Education, Training and Experience:

- BA/BS degree (advanced degree highly preferred) in engineering, mathematics, science, computer science, or related field. Alternative degree fields will be considered if accompanied by equivalent experience (depending on nature and depth of experience as it relates to current NCSA projects and technologies).
- Experience using various/multiple computational platforms, including UNIX, AIX, and/or LINUX.
- Considerable knowledge in most of the following areas: large-scale scientific visualization, parallel rendering, parallel algorithms, parallel IO, distributed computing.
- Some experience using and modifying VisIt and/or Paraview parallel visualization platforms. Typical modifications would be addition of new parallel data readers and/or new parallel visualization algorithms to these packages.
- At least 3 years parallel programming experience on high performance computers including development, optimization, porting, and/or scaling of large scale parallel visualization and data analysis application codes written in python, C, and/or C++, and utilizing communication protocols such as MPI and OpenMP.
- Due to limiting export controls over this project, residency and/or citizenship restrictions may apply.

Preferred Experience:

- Using high-performance computers to solve large-scale science and engineering problems.
- Experience with large-scale parallel visualization application development.
- Experience in OpenGL, PovRay, and VTK visualization libraries/APIs.
- Developing codes using high-level IO libraries (HDF5, pNetCDF, etc.).
- Developing and presenting technical training material and web-based technical documentation.
- Familiarity with a variety of scientific visualization techniques including, CFD methods, GIS analysis, molecular modeling and chemistry related visualization, and geophysical simulations.
- Familiarity with information visualization techniques and methods.

Oceanographer (general description)

Essential Duties and Responsibilities:

- Assists the principal scientist in validating data for accuracy and compatibility by using proven modeling techniques
- Provides technical guidance to lower grade personnel who provide support for accomplishing the assigned projects
- Assisting in the development of program related documents, and support the lead scientist in handling the workload associated with the activities of a multidisciplinary team of scientists involved with environmental issues and analyses
- Identifying gaps or missing information in analyses/tasks and participate in corrective action to ensure timely completion of a quality products
- Analyzing, evaluating, and interpreting the information required to meet task objectives

Education:

- Minimum, 4-year course of study from an accredited college or university leading to a bachelor's degree with a major of study of at least 24 semester hours in oceanography or a related discipline such as physics, meteorology, geophysics, mathematics, chemistry, engineering, geology, or biology, plus 20 additional semester hours in any combination of oceanography, physics, geophysics, chemistry, mathematics, meteorology, computer science and engineering sciences
- Masters and/or PhD degrees may be required

Required Experience:

- Strong understanding of equipment calibration and maintenance techniques
- Mathematical modeling skills/experience
- Experience with multiple oceanographic sampling tools

Preferred Experience:

- Experience deploying instrumentation
- Experience with mechanical, electrical, IT, requirement documentation

Skills and Abilities:

- Excellent written and oral communication skills
- Excellent interpersonal skills with the ability to negotiate others

Physical Abilities:

- Outdoor work environment involves slight physical risks requiring basic safety precautions
- Able to lift at least 75 pounds
- Able to work outdoors in all types of weather, environmental conditions and remote locations

Engineering Field Deployment Manager

Essential Duties and Responsibilities:

• Remotely and onsite, manage and coordinate the Field Deployment Team
• Manage budgets, schedules, resources and personnel for all deployment related activities
• Develop and document field deployment plans for all necessary deployment activities, to ensure efficient deployment of equipment to domain locations
• Select and oversee contractors and vendors assigned to provide equipment, repair and services; assure contractors maintain project schedules, contract terms and budgeted costs to determine materials planning and ordering
• Oversee the development, control, maintenance and change process of all related documentation and databases
• Oversee quality and product assurance pre and post deployment to the domain locations
• test, troubleshoot and operate instrumentation, calibration equipment and test fixtures

Education:

• Bachelors or Masters degree

Required Experience:

• 8 years or more experience in operations with an emphasis on field deployment
• Strong understanding of equipment calibration and maintenance techniques
• Experience managing line operations, resource and personnel
• Ability to select and manage vendors and suppliers of deployment equipment, materials and repair services
• 5 or more years direct supervisory experience of 5-15 personnel

Preferred Experience:

• Experience deploying instrumentation at remote field locations
• Background in quality assurance, document control, and configuration management
• Experience with mechanical, electrical, software, IT, requirement documentation
• Experience working with electrical, mechanical, chemical, gas handling, network, RF communication and power systems

Skills and Abilities:

• Highly organized with the ability to multitask.
• Excellent written and oral communication skills.
• Excellent interpersonal skills with the ability to negotiate with and direct others.
• Able to travel 25% of the time.

Physical Abilities:

• Work environment involves slight physical risks requiring basic safety precautions
• Able to lift at least 40 pounds.
• Able to work outdoors in all types of weather, environmental conditions and remote locations.
• Able to climb tall towers and work at elevations.

Aquatic Instrument Engineer/Scientist

Essential Duties and Responsibilities:
• Design and document sensor installations for water quality in-situ sensors in small, wadeable streams, navigable rivers, and small lakes.
• Collaborate to define aquatic sensor field and lab calibration procedures.
• Co-develop and implement data QA/QC, gap-filling, and correction plans.
• Travel to sites as part of the design effort and to oversee sensor construction efforts.
• Develop sensor maintenance training program for field crews.
• Participate in the larger science community, including participating in independent research and collaborations and attending meetings/conferences.

Education:
• MSc in hydrology or related engineering field AND 5+ years of experience installing and maintaining sensors in small streams of North America.
• BSc in hydrology or related engineering field AND 10+ years of experience installing and maintaining sensors in small streams of North America.
• Specialization in a freshwater science or engineering field with emphasis in environmental monitoring of freshwater streams and lakes.

Required Experience:
• Significant experience with maintenance and calibration of sensors used in freshwater ecosystems.
• Demonstrated experience quality checking, correcting, and verifying data from in-situ sensors, including defining and correcting sensor drift.
• Significant field experience working in streams and lakes of North America.
• Demonstrated experience working with detailed, engineer-level plans and blueprints.
• Demonstrated experience working in a collaborative scientific and engineering enterprise.
• Demonstrated ability to write technical and scientific documents.
• Experience communicating in oral and written formats in a professional environment.

Preferred Experience:
• Experience with sensor installations in large, navigable rivers and in small lakes is preferred.
• Experience with CAD or other blueprint software.
• Working knowledge of stream ecological function preferred.
• Knowledge of freshwater chemistry dynamics of streams and lakes preferred.

Skills and Abilities:
• Ability to document engineering and science specifications and plans
• Ability to read/review CAD or other blueprint documents
• Ability to write and review science documents
• Strong knowledge of sensor data assessment procedures and best practices
• Strong knowledge of statistical design and analyses
• Ability to communicate and work effectively both independently and part of science/engineering teams
• Strong communication and interpersonal skills
• Travel to domains at least 4x/year

Physical Abilities:
• The candidate may be exposed to conditions in the field, and therefore must be able to traverse uneven ground such as dirt banks, stream beds, and shallow ponds carrying equipment and materials up to 40 lbs.

Environmental Engineer

Essential Duties and Responsibilities:

- Abilities to solve environmental problems such as water and air pollution, waste disposal, and public health issues
- Knowledge of advanced principles of biology, chemistry, and environmental science to protect wildlife and natural resources as well as human life
- May be required to inspect and evaluate industrial and municipal facilities and programs to assess their compliance with environmental regulations
- Work with environmental scientists, planners, hazardous waste technicians, engineers, and other specialists to address environmental problems
- Prepare, review, and revise environmental regulations and recommendation reports and monitor the progress of certain environmental programs
- May be required to travel to project locations

Education:

- Bachelor's degree in engineering is required for any position in environmental engineering
- Master's and doctoral programs in environmental engineering, or in environmental science and technology may be required depending on the job requirements

Required Experience:

- Experience managing operations, resource and personnel
- Knowledge of and experience with environmental regulations
- Knowledge of analytical and scientific software, compliance software, and graphic imaging and CAD technology

Preferred Experience:

- Background in quality assurance, document control, and configuration management
- Experience with mechanical, electrical, software, IT, requirement documentation
  A professional engineer (PE) license (must have a degree from an accredited engineering program, four years of relevant work experience, and a passing score on a state examination)

Skills and Abilities:

- Excellent written and oral communication skills
- Excellent interpersonal skills with the ability to negotiate with and direct others
- Highly organized with the ability to multitask

Satellite Technician

Essential Duties and Responsibilities:

- Test, troubleshoot and operate instrumentation, calibration equipment and test fixtures
- Install, repair and diagnose satellite equipment
- Find locations for satellite devices to obtain optimal satellite signals for good performance

Education:

- High school diploma or GED
- Vocational training in satellite systems or electronics

Required Experience:

- Strong understanding of equipment calibration and maintenance techniques

Preferred Experience:

- Experience deploying instrumentation at remote field locations
- Experience with mechanical, electrical, IT, requirement documentation

Skills and Abilities:

- Written and oral communication skills
- Excellent interpersonal skills with the ability to negotiate others

Physical Abilities:

- Work environment involves slight physical risks requiring basic safety precautions
- Able to lift at least 75 pounds
- Able to work outdoors in all types of weather, environmental conditions and remote locations
- Able to climb and work at elevations.

Graphic Designer

Essential Duties and Responsibilities:

- Develop unique and visually appealing layout that works in the service of a specific message:
- Prepare sketches or layouts to illustrate a vision for the design
- Select the colors, sound, artwork, photography, animation, style of type and other visual elements to be included in the design
- Decide upon the arrangement of the various text and image elements on the page or screen

Education:

- Associate of Arts degree, minimum
- Bachelor of Arts degree becoming more necessary
- A certificate in any computer software such as web designing, Adobe Photoshop, 2D and 3D animation are also a plus

Required Experience:

- Dependent on level of entry, entry-level positions require education credentials listed above
- Art Director or management level positions require 5 – 10 years experience in the field

Preferred Experience:

- Flexibility to work independently and in teams
- Experience with communicating scientific information to non-expert audiences

Skills and Abilities:

- Written and oral communication skills
- Timeline/task oriented to deliver projects on time
- Excellent organizational and time management skills
- Proficient in programs such as Adobe InDesign, Photoshop and Illustrator, which are currently industry standards
- Portfolio of all the design work created
- Solve visual problems and challenges which communicate information

Physical Abilities:

- Standard office environment, no exceptional physical abilities required