Program request type: □ Undergraduate  □ Graduate  □ First Professional (ex., DVM, JD, MD, etc.)
Requested by the Department or Unit of: Oceanography

Program Type, Level, Designation, Title, Description, Hours
Program Type: □ Certificate Program  □ Degree Program
Program Level: □ UG Certificate  □ Grad Certificate  □ Bachelor  □ Master  □ Doctoral  □ Professional
Degree Designation (i.e., BS, BA, MA, MS, MAg, MED, PhD, EdD, etc.) MOST
Title of proposed program: Master of Ocean Science and Technology
Proposed CIP Code (if known): 

Brief program description (provide a catalog description for undergraduate and graduate certificates):
This is a non-thesis Master of Ocean Sciences and Technology. Students will be trained in the science of oceanography, ocean observing and ocean observing technologies, and data handling and analysis. Post-graduate opportunities exist in the rapidly growing field of ocean observation in both the public (e.g., government agencies) and private (e.g. offshore energy industry) sectors.

Minimum program semester credit hours (SCH)  Certificates - 12 hours*  Bachelors - 120 hours  Masters - 30 hours
Proposed program hours: 36
*12 hours minimum to appear on transcript

Certificate Programs  □ Embedded  □ Standalone

Students take coursework that will result in a degree and certificate being earned at the same time.

Non-degree seeking students take coursework to earn a certificate only (no degrees are awarded).

Off-Campus or Distance Delivery
% of Program a student can take off-campus or through Distance Education  Program Start Date  SACSCOC Approval**  When Provost needs to inform SACSCOC
□ 25%  Notification Only
□ 50%  Approval Required  6 months before first day of program
□ 80%  Approval Required  6 months before first day of program
□ 100%  Approval Required  6 months before first day of program

**Notification letter arranged through the Vice Provost for Academic Affairs and sent by TAMU President.

Program Delivery Mode
□ On-campus  O&M Building
□ Broadcast / TTVN
□ Specific off-campus location***
□ Distance Education / Internet  □ In-State  □ Out-of-State  Start Date
□ Out-of-Country  Will this program be offered with another institution?  □ Yes  □ No
If yes, contact the Vice Provost for Academic Affairs for additional reporting requirements.

***Is this an approved SACSCOC location?  □ Yes  □ No  If no, a program prospectus must be sent to SACSCOC.
Approved locations as of March 2012: TAMU-Galveston, TAMU-Qatar, University Center-The Woodlands, CityCentre-Houston, Dubai and Saudi Arabia.

Program Funding
Has program funding been finalized at the department or college level?  □ Yes  □ No
If no, explain or attach budget: 

Will new costs for the first five years of the program be under $2 million?  □ Yes  □ No
If new costs exceed $2 million, coordinating board approval is required.
New Program Request Form for
Certificate Programs, Bachelor’s and Master’s Degrees
Page 2

Submitted by (Contact Person):
Dr. Deborah Thomas
dthomas@ocean.tamu.edu
Name
Email
Associate Professor and Interim Department Head
979-845-7211
Title
Phone

Certification Statement
By signing below, the Dean of the College certifies the proposed program complies with coordinating board standards. If the program is delivered through Distance Education, the Dean of the College certifies that they are following the Principles of Good Practice for Academic Degree and Certificate Programs and Credit Courses Offered Electronically.

Use additional signature lines if program is between three or more departments or colleges.

Signature, Department Head or Interdisciplinary Program Chair
Deborah Thomas
Typed or Printed Name

Chair, College Review Committee
Date

Dean of College
Date

Chair, University Curriculum Committee or Graduate Council
Date

Signature, Department Head or Interdisciplinary Program Chair (if joint program)
Typed or Printed Name

Chair, College Review Committee
Date

Dean of College
Date

Chair, University Curriculum Committee or Graduate Council
Date

Additional Approvals Required: Faculty Senate and President.

Revised 01.14.2014
08 October 2014

MEMORANDUM

To: Dr. Eric Riggs, Assistant Dean, Graduate Affairs and Diversity, College of Geosciences

From: Dr. Debbie Thomas, Interim Department Head, Oceanography

RE: New non-Thesis Master of Ocean Science and Technology

I have attached a proposal for a new non-Thesis Master of Ocean Science and Technology to be offered by the Department of Oceanography.

Please let me know if any additional information is needed.
Request Form for Bachelor's and Master's Degrees

Following Board action on July 30, 2009, new bachelor's and master's programs that meet the following criteria are automatically approved (Chapter 5, Subchapter C, Section 5.44):

- The program has institutional and governing board approval;
- the program complies with the *Standards for Bachelor's and Master's Programs*;
- adequate funds are available to cover the costs of the new program;
- new costs during the first five years of the program will not exceed $2 million;
- the program is a non-engineering program (i.e., not classified under CIP code 14); and
- the program will be offered by a university or health-related institution.

A new bachelor's or master's degree program that meets these criteria may be requested using the *Certification Form for New Bachelor's and Master's Programs* and is automatically approved if no objections are received during the 30-day public comment period. The institution's program inventory will be updated accordingly and a letter of approval will be sent to the institution/System. All other requests for new bachelor's or master's programs must be submitted using the *Form for Requesting a New Bachelor's or Master's Degree Programs*.

I. Need

**NEEDS ASSESSMENT**
Useful resources for developing a degree program proposal can be found at:
http://www.thecb.state.tx.us/index.cfm?objectid=C5278BD7-DBFD-5C19-BFA9642A86E404A48&flushcache=1&showdraft=1
Use the THECB website to check program inventory for existing programs within the state
http://www.thecb.state.tx.us/InteractiveTools/ProgramInventory/

A. **Job Market Need** – Provide short- and long-term evidence of the need for graduates in the job market.

There is a growing need for trained ocean sciences and technology professionals, both in the public (e.g. integrated global ocean observing systems) and private sectors (e.g. energy and transportation industries). These needs are both on the short and long term. A series of trends are leading to an expansion of opportunities in this sector, including the exploration and exploitation of energy resources in deeper waters offshore (e.g. Gulf of Mexico and the Arctic Ocean), the continued growth of human populations along the coast, and growing efforts to predict and mitigate coastal hazards (e.g. hurricanes, tsunami, oil spills, and harmful algal blooms). Perhaps the greatest opportunity will come from the growth of ocean observing systems, integrated systems designed to collect, store and deliver ocean data. In the United States, the Integrated Coastal and Ocean Observation System Act of 2009 (33 U.S.C §3601-3610) legislates for the establishment of such a system, at an estimated 15-year cost of $54.2 billion dollars from a variety of public and private sector sources (Interagency Ocean Observation committee: Independent Cost Estimate, 2012). The construction, maintenance and operation of these systems will provide countless opportunities for professionals for decades to come. Based on the societal benefits proposed by NOAA (National Oceanic and Atmospheric Administration), there will be careers for our graduates in the field of severe weather prediction, forecasting hazards, improving search and rescue success, optimizing marine

AAR/Webmasters Updated 11/30/2010
operations, homeland security applications, monitoring water quality, predicting threats to human health, oil spill response, and climate change research. Examples of recent career openings in the Ocean sciences and Technology field are listed in Appendix 1.

At the state level, Texas is ranked third in numbers of jobs in the Marine Science and Technology industry (Barrow et al. 2005). However, the provision of education and training in Ocean Sciences and Technology does not match other coastal states such as New Jersey and California. By offering a Master of Ocean Science and Technology (MOST), we will cater to an expanding job market nationally and a need within Texas to ensure that the State remains competitive in industries associated with emerging fields within the Ocean Sciences.

At present, oceanography education and training in the United States is focused on producing Ph.D. scientists suited to research and academic settings. The development and growth of ocean observing has created the need for highly trained non-thesis Masters level scientists, a need that is currently overlooked by educational institutions in Texas and the United States in general. In fact, the only comparable degree in the United States is the Masters in Operational Oceanography offered by Rutgers in New Jersey. The creation of the Master of Ocean Science and Technology at Texas A&M University will provide access to a professional masters in this field for students in the southern United States and industries operating in the resource-rich Gulf of Mexico.

References Cited

B. Student Demand – Provide short- and long-term evidence of demand for the program.

The most recent data (from 2012) shows that there are currently 340,000 geoscientists employed in the United States and it is expected that 48% of these workers will be of retirement age over the next decade (Wilson, 2014). Consequently, there will be a severe shortage of geoscientists over the next few decades and therefore career opportunities for students graduating with a Master of Ocean Science and Technology. A Masters degree is the terminal degree for many careers in the Geosciences, such as many careers within the energy industry and the National Weather Service. Our colleagues in the Department of Atmospheric Sciences at Texas A&M University are enthusiastic about MOST as they see it fulfilling a need for their students that is not currently met within the College of Geosciences. Current salaries in the Geosciences are attractive and continue to increase, with starting salaries for Masters graduates in the range of $30,000 to $120,000 per year (Wilson, 2014). These data suggest an unfulfilled demand for this type of degree at Texas A&M University.

Our projected enrollment is based on enrollment for our existing graduate programs in Oceanography, the rapid growth of the undergraduate Minor in Oceanography, and the rapid growth of the Bachelor of Science in Environmental Geosciences. Note that the Department of Oceanography at Texas A&M University does not offer a bachelors in Oceanography and therefore the students entering the Masters will all come from other programs. There is an increasing demand for graduate education (Research M.S. and

AAR/Webmasters Updated 11/30/2010
New Program Request Form for
Bachelor's and Master's Degrees
Page 3
Ph.D.) in the ocean sciences, as exemplified by an incoming class of 25 students for fall 2014, which is the Department's largest in over a decade. In addition, our graduation rate (Research M.S. and Ph.D.) has been in an upward trajectory over recent years, from 8 students (2008-2009), to 17 students (2009-2010 and 2010-2011) to 23 students (2012-2013). Similarly, enrollment in the minor has increased from 4 students in 2008-2009 to 20 students today (20013-2014). Collectively, these statistics indicate that our programs are growing and that there is a growing student demand for an ocean sciences education to match the need for ocean scientists in the workforce. Many of the students taking a minor in Oceanography are ideal candidates for the Master of Ocean Science and Technology program.

In addition to the standalone Master of Ocean Science and Technology, we have designed a fast track dual degree program (also known as a 3+2 degree program) to enable students in identified degree programs within the College of Geosciences to graduate with a Bachelors of Science and a Master of Ocean Sciences and Technology in 5 years. Accelerated programs have been approved for a B.S. in Environmental Geosciences, a B.S. in Meteorology, and both B.A. and B.S. in Geology. The option of combining the Master of Ocean Sciences and Technology with an undergraduate degree will be an attractive option for students seeking cost-effective education option that allows them to join the workforce relatively quickly.

References cited

C. Enrollment Projections – Use this table to show the estimated cumulative headcount and full-time student equivalent (FTSE) enrollment for the first five years of the program. (Include majors only and consider attrition and graduation.)

<table>
<thead>
<tr>
<th>Year</th>
<th>Change of Major/Transfers</th>
<th>New Students</th>
<th>Attrition</th>
<th>Graduation</th>
<th>Cumulative Headcount</th>
<th>Cumulative FTES (New only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>5</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>12</td>
<td>1</td>
<td>7</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>15</td>
<td>1</td>
<td>11</td>
<td>37</td>
<td>39</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>15</td>
<td>1</td>
<td>14</td>
<td>51</td>
<td>54</td>
</tr>
</tbody>
</table>

*These numbers will dictate the projected formula income in the funding source portion in Section III, Anticipated New Formula Funding.
FTES = full-time equivalent student.
Per CB guidelines, 1 FTES = 15 sch for UG, 12 sch for M, and 9 sch for D
II. Quality

A. Degree Requirements – Use this table to show the degree requirements of the program. (Modify the table as needed; if necessary, replicate the table for more than one option.)

For Master's degree programs:

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Non-thesis SCH</th>
<th>Thesis SCH</th>
<th>Clock Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. *Foundation Courses: prerequisite/leveling (explain any special circumstances)</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Required Courses (of all students)</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCNG 603 Communicating Ocean Sciences</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCNG 604 Ocean Observing Systems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCNG 608 Physical Oceanography</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCNG 657 Data Methods and Graphical Representation in Oceanography</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCNG 6XX Advanced data Analysis and Communication (list course names w/prefix &amp; course numbers)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Prescribed Elective Courses</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCNG 620 Biological Oceanography</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCNG 630 Geological Oceanography</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCNG 640 Chemical Oceanography</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(list course name w/ prefix &amp; course numbers)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Elective Courses (list elective areas only)</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Choose 5 courses from 26 listed 3 credit hour specialized courses in the areas of Physical Oceanography, Chemical Oceanography, Geological Oceanography, and Biological Oceanography</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e1. Thesis/Dissertation</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e2. Other (specify) (e.g. internships/clinical practicum, etc.)</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL SCH REQUIREMENTS** 36  N/A

B. Curriculum – Use these tables to identify the required courses and prescribed electives of the program. Note with an asterisk (*) courses that would be added if the program is approved. (Add and delete rows as needed. If applicable, replicate the tables for different tracks/options.)
### Required Courses

<table>
<thead>
<tr>
<th>Prefix and Number</th>
<th>Required Courses</th>
<th>SCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCNG 608</td>
<td>Physical Oceanography</td>
<td>3</td>
</tr>
<tr>
<td>OCNG 604</td>
<td>Ocean Observing Systems</td>
<td>3</td>
</tr>
<tr>
<td>OCNG 657</td>
<td>Data Methods and Graphical Representation in Oceanography</td>
<td>3</td>
</tr>
<tr>
<td>OCNG 603</td>
<td>Communicating Ocean Sciences</td>
<td>3</td>
</tr>
<tr>
<td>OCNG 6XX</td>
<td>Advanced Data Analysis and Communication</td>
<td>3</td>
</tr>
</tbody>
</table>

### Prescribed Elective Courses

<table>
<thead>
<tr>
<th>Prefix and Number</th>
<th>Prescribed Elective Courses</th>
<th>SCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCNG 640</td>
<td>Chemical Oceanography</td>
<td>3</td>
</tr>
<tr>
<td>OCNG 620</td>
<td>Biological Oceanography</td>
<td>3</td>
</tr>
<tr>
<td>OCNG 630</td>
<td>Geological Oceanography</td>
<td>3</td>
</tr>
</tbody>
</table>

### Faculty

#### a. Use these tables to provide information about Core and Support faculty. Add an asterisk (*) before the name of the individual who will have direct administrative responsibilities for the program. (Add and delete rows as needed.)

<table>
<thead>
<tr>
<th>Name of Core Faculty and Faculty Rank</th>
<th>Highest Degree and Awarding Institution</th>
<th>Courses Assigned in Program</th>
<th>% Time Assigned To Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>e.g.: Robertson, David Asst. Professor</td>
<td>PhD. in Molecular Genetics, Univ. of Texas at Dallas</td>
<td>MG200, MG285, MG824 (Lab Only)</td>
<td>50%</td>
</tr>
<tr>
<td>Dr. Achim Stössel, Associate Professor</td>
<td>Ph.D., Physical Oceanography, University of Hamburg</td>
<td>OCNG 608 Physical Oceanography</td>
<td>30%</td>
</tr>
<tr>
<td>Dr. Steven DiMarco Professor</td>
<td>Ph.D. Physics, University of Dallas</td>
<td>OCNG 657 Data Methods and Graphical Representation in Oceanography</td>
<td>40%</td>
</tr>
<tr>
<td>Dr. Katherine Shamberger Assistant Professor</td>
<td>Ph.D. Chemical Oceanography, University of Washington</td>
<td>OCNG 603 Communicating Ocean Sciences</td>
<td>30%</td>
</tr>
</tbody>
</table>
### Name of Support Faculty and Faculty Rank

<table>
<thead>
<tr>
<th>Name of Support Faculty and Faculty Rank</th>
<th>Highest Degree and Awarding Institution</th>
<th>Courses Assigned in Program</th>
<th>% Time Assigned To Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

b. What impact will the new program have on current programs in regards to faculty resources?

1. How will the teaching load of current faculty be impacted?
2. How will the teaching load of faculty assigned a portion of their time to the new program be covered?

The proposed Master of Ocean Science and Technology will increase the numbers of students taught within the Department of Oceanography. With the exception of the new capstone OCNG 6XX Advanced Data Analysis and Communication and OCNG 603 Communicating Ocean Sciences, there will not be any new courses added to our course listing. Therefore, students in the proposed new program will take existing courses that are currently being taught in the Department. Most of these classes currently have spare
capacity and therefore any increase in students will be absorbed by our current allocation of teaching faculty.

OCNG 603 Communicating Ocean Sciences will be taught by Dr. Katie Shamberger, who recently joined our faculty (Spring 2014) and therefore increased our graduate teaching capacity. Dr. Jessica Fitzsimmons will contribute to graduate reaching when she joins the faculty in Fall 2015. In addition, Dr. Christine Stover Wiederwohl joined the faculty as an Instructional Assistant Professor (Fall 2013). While she will not be directly involved in teaching courses for the proposed program, her teaching of undergraduate courses and supervision of our teaching labs frees up faculty to devote more effort to the proposed degree.

C. Students – Describe general recruitment efforts and admission requirements. In accordance with the institution’s Uniform Recruitment and Retention Strategy, describe plans to recruit, retain, and graduate students from underrepresented groups for the program.

The admission requirements for MOST will be:

- Online application through the ApplyTexas website (https://www.applytexas.org/adappc/gen/c_start.WBX)
- Bachelor of Science or Bachelor of Engineering degree by the time students enter the program, with a minimum GPA of 3.00.
- The Bachelor degree should have included math through integral calculus, 1 year of college Chemistry, 1 year of calculus-based college Physics with grades of C or above. A survey course in Biology and/or geology will be recommended, but not required.
- Official transcripts from all college level institutions attended, whether or not a degree was awarded.
- Resume or curriculum vitae.
- Two letters of recommendation.

In addition, international students must also submit proof of proficiency of the English language in the form of scores from either the International English Language Testing System (ELTS) or Test of English as a Foreign Language (TOEFL).

Recruitment efforts:
Recruitment and retention will be conducted at both the College and Department level. Our objective will be to recruit students that reflect the population of Texas, including groups underrepresented in the current population of graduate students in the Department of Oceanography. Dr. Christine Wiederwohl is Chair of the Department of Oceanography ‘Recruiting and Admissions’ committee, which consists of faculty and Melissa Mathews, the Department’s Academic Advisor.

The Department is actively involved in the recruitment and retention of underrepresented groups in the Geosciences, through participation in national meetings such as the annual meeting of Society for Advancement of Hispanics/Chicanos and Native Americans in Science (SACNAS), and through university level activities such as the
New Program Request Form for Bachelor's and Master's Degrees
Page 8

Texas A&M System Louis Stokes Alliance for Minority Participation (TAMUS LASAMP), Alliances for Graduate Education and the Professoriate (AGEP), and Bridge to the Doctorate.

At the college level, the college graduate recruiting and retention efforts are led by Dr. Eric Riggs (Associate Dean for Diversity and Graduate Student Development) and Judy Nunez (Director of Recruitment). Recruitment efforts are closely coordinated with the College of Geosciences Communication team (led by Karen Riedel) who maintain the College and Department's website and produce printed and electronic media to promote the College of Geosciences in its mission.

E. Library – Provide the library director's assessment of library resources necessary for the program. Describe plans to build the library holdings to support the program.

The Department of Oceanography is located 2 minutes walk from the Evans Library, the main library of the 5 on the College Station campus. In addition, the digital library offers access to ebooks and journals via the university Howdy portal both on and off campus. We will work with Mr. Rusty Kimball, the Oceanography librarian, to ensure that needs continue to be met in Ocean Sciences and Technology. The current Oceanography collection is 11,432 books and 659 serials (i.e. journals and book series) and continues to grow.

F. Facilities and Equipment – Describe the availability and adequacy of facilities and equipment to support the program. Describe plans for facility and equipment improvements/additions.

Texas A&M University is the flagship university of the Texas A&M System, with a student population of over 50,000. The Department of Oceanography benefits from the resources of a major public university holding Land Grant, Sea Grant, and Space Grant status. The Department's faculty are primarily in the O&M Building on the campus of Texas A&M University (College Station) and in the Ocean and Coastal Studies Building at Texas A&M Galveston. These buildings contain adequate classrooms and laboratories to support the MOST program, including projected increases in student numbers. The classrooms are fitted out with regularly updated information technology, including the hardware and software to enable classes to be taught between the College Station and Galveston campuses. In addition, the Department of Oceanography has close ties, (including joint appointments) with other units within the College of Geosciences directly relevant to the MOST degree, such as the International Ocean Discovery Program (IODP) and the Geochemical and Environmental Research Group (GERG). GERG is the College's unit that builds and operates ocean observing systems, including the Texas Automated Buoy System and our Slocum Glider fleet. We are currently integrating the activities of GERG into teaching and learning with the Department of Oceanography, through investment in facilities and ocean observing tools at GERG ($1,445,000) and a reorganization of the Department of Oceanography. For example, Dr. Steven DiMarco is both the Team Leader of Ocean Observing at GERG and a full Professor in the Department of Oceanography who will teach required courses in the MOST degree.
The Department has allocated space in the O&M Building and $150,000 into the construction of a new 'Ocean Observing Educational Facility'. The state-of-the-art facility will enable students to work with operating ocean observing instruments collecting data in the Gulf of Mexico, providing students with 'hands on' high impact learning experience. This facility will be used to pilot our growing fleet of Slocum Gliders, which are remotely operated vehicles making measurements in the ocean for research and teaching applications.

G. Accreditation – If the discipline has a national accrediting body, describe plans to obtain accreditation or provide a rationale for not pursuing accreditation.

Oceanography does not have an accreditation organization or agency and therefore we will not be seeking accreditation specific to the Masters of Ocean Science and Technology degree. Texas A&M University is fully accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACS-COC).

H. Evaluation – Describe the evaluation process that will be used to assess the quality and effectiveness of the new degree program.

There are rigorous procedures for program review at Texas A&M University and these will be applied to the MOST program to ensure that it is being taught to meet its objectives and that the students achieve the defined learning outcomes of the degree and the individual courses on their degree plans. Annual program assessment will form the backbone of our assessment efforts, in line with the existing Masters of Science in Oceanography and Doctor of Philosophy in Oceanography degrees offered by the Department of Oceanography. Program assessment is managed by the Office of Institutional Assessment (OIA) directed by Dr. Ryan McLawhon. Programs undergo continuous assessment and the assessment process is documented using WEAVEonline, a web based tool for documenting and storing assessment information. Results of the annual assessment will be analyzed to produce an annual action plan, which will be used to improve the effectiveness of the MOST degree.

In addition, The Texas Administrative Code Texas Degree requires that all standalone Masters programs are reviewed on a 7 year cycle. The Academic Program Review (APR) is coordinated by the Office of the Provost and Executive Vice president for Academic Affairs and is based around a self-study and a site visit by an expert external review panel. APR review will be conducted in line with the Southern Association of Colleges and Schools Commission on Colleges Principles of Accreditation guide. APR will be used to systematically review MOST and the findings will be used to improve the MOST degree and ensure that strategies for improvement align with the strategic plans of the university, College of Geosciences, and Department of Oceanography.

III. Costs and Funding

AARWebmasters Updated 11/30/2010
New Program Request Form for
Bachelor's and Master's Degrees
Page 10

New Five-Year Costs and Funding Sources - Use this table to show new five-year costs and sources of funding for the program. (Please refer to reference and resources at end of document in developing information)

There are no new costs associated with this degree program. MOST will rely on faculty who are already members of the Department of Oceanography and MOST students will take courses that are already offered by the Department of Oceanography, with the exception of one course that will be created specifically for the program (OCNG 6XX Advanced data Analysis and Communication). The projected increase in student numbers will be absorbed by our current teaching capacity and facilities. Existing funds from the department, college and university will be sufficient to meet the costs of adding this degree program.

<table>
<thead>
<tr>
<th>Five-Year Costs</th>
<th>Five-Year Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel¹</td>
<td>Reallocated Funds</td>
</tr>
<tr>
<td>Faculty</td>
<td>$0</td>
</tr>
<tr>
<td>Administration</td>
<td>$0</td>
</tr>
<tr>
<td>Graduate Assistants</td>
<td>$0</td>
</tr>
<tr>
<td>Clerical/Staff</td>
<td>$0</td>
</tr>
<tr>
<td>Other Personnel</td>
<td>$0</td>
</tr>
<tr>
<td>Facilities, Equipment &amp; IT Resources</td>
<td>$0</td>
</tr>
<tr>
<td>Supplies and Materials</td>
<td>$7,500</td>
</tr>
<tr>
<td>Library</td>
<td>$0</td>
</tr>
<tr>
<td>Other²</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Total Costs</strong></td>
<td><strong>$7,500</strong></td>
</tr>
</tbody>
</table>

1. Report costs for reassigned faculty, new faculty hires, graduate assistants, and technical support personnel. Prorate individual salaries as a percentage of the time assigned to the program. If existing faculty will contribute to program, include costs necessary to maintain existing programs (e.g., cost of adjunct to cover courses previously taught by faculty who would teach in new program).

2. Specify other costs here (e.g., accreditation, travel).

3. Indicate formula funding for students new to the institution because of the program; formula funding should be included only for years three through five of the program and should reflect enrollment projections for years three through five.

4. Report other sources of funding here. In-hand grants, "likely" future grants, and fees can be included.
Reference and Resources for completion of proposal.

For certification on signature page.

_TAC Section 5.50 (b)._ 

(b) To be approved by the Commissioner, a proposal for a new degree program must include certification in writing from the Board of Regents of a proposing institution, in a form prescribed by the Commissioner, that the following criteria have been met:

1. The proposed degree program is within the Table of Programs previously approved by the Board for the requesting institution.

2. The curriculum, faculty, resources, support services, and other components of a proposed degree program are comparable to those of high quality programs in the same or similar disciplines offered by other institutions.

3. Clinical or in-service placements, if applicable, have been identified in sufficient number and breadth to support the proposed program.

4. The program is designed to be consistent with the standards of the Commission on Colleges of the Southern Association of Colleges and Schools, and with the standards of other applicable accrediting agencies; and is in compliance with appropriate licensing authority requirements.

5. The institution has provided credible evidence of long-term student interest and job-market needs for graduates; or, if proposed by a university, the program is appropriate for the development of a well-rounded array of basic baccalaureate degree programs at the institution where the principal faculty and other resources are already in place to support other approved programs and/or the general core curriculum requirements for all undergraduate students.

6. The program would not be unnecessarily duplicative of existing programs at other institutions.

7. Implementation and operation of the program would not be dependent on future Special Item funding.

8. New costs to the institution over the first five years after implementation of the program would not exceed $2,000,000.
Section II. C of the CB proposal asks campuses to provide information about Core and Support Faculty but does not ask for any other personnel information or any additional personnel who may be involved in the delivery of the new program. AND Section III of the proposal requests identification of personnel costs for first five-year period.

The following ‘FTE personnel’ table provides program proposal preparers an avenue to identify personnel requirements by category types, along with the types of funding sources [new costs vs. reallocated/reassigned funds from existing sources] for these personnel. The total costs from this table will provide ‘Personnel’ information costs to be included within Section III — the ‘Five-Year Costs and Funding Sources’ table on p. 4 of the program proposal form.

### FTE Personnel Involved in Delivery of New Program

<table>
<thead>
<tr>
<th>Personnel</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Administration</td>
<td>New</td>
<td>Reassignment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CORE Faculty</td>
<td>New</td>
<td>Reassignment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUPPORT Faculty</td>
<td>New</td>
<td>Reassignment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate Student Assts</td>
<td>New</td>
<td>Reassignment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clerical/Other Support</td>
<td>New</td>
<td>Reassignment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>New</td>
<td>Reassignment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| 5-Year TOTAL/TOTAL | New  | Reassignment |

**NOTE:** Reassignment = reallocation(s)
NEW COSTS TO THE INSTITUTION OF THE PROGRAM/ADMINISTRATIVE CHANGE *(TAMUS modified)*

*Complete this chart to indicate the dollar costs to the institution that are anticipated from the change requested.*

<table>
<thead>
<tr>
<th>Cost Category</th>
<th>Cost Sub-Category</th>
<th>1st Year</th>
<th>2nd Year</th>
<th>3rd Year</th>
<th>4th Year</th>
<th>5th Year</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty Salaries</td>
<td>(New)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Reassignments)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program Administration</td>
<td>(New)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Reassignments)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate Assistants</td>
<td>(New)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Reassignments)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clerical/Staff</td>
<td>(New)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Reassignments)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplies &amp; Materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Library</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment &amp; IT Resources**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (Identify)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTALS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ANTICIPATED SOURCES OF FUNDING  

*For more information, please refer to the accompanying Anticipated Sources of Funding: Explanatory Notes and Examples*
# NON-FORMULA SOURCES OF FUNDING

Note: Use this form to specify as completely as possible each of the non-formula funding sources for the dollar amounts listed on the reverse side of this form.

<table>
<thead>
<tr>
<th>Funding Category</th>
<th>Non-Formula Funding Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>II. Other State Funding*</td>
<td>#1</td>
</tr>
<tr>
<td></td>
<td>#2</td>
</tr>
<tr>
<td>III. Reallocation of Existing Resources*</td>
<td>#1</td>
</tr>
<tr>
<td></td>
<td>#2</td>
</tr>
<tr>
<td>IV. Federal Funding*</td>
<td>#1</td>
</tr>
<tr>
<td></td>
<td>#2</td>
</tr>
<tr>
<td>V. Other Funding*</td>
<td>#1</td>
</tr>
<tr>
<td></td>
<td>#2</td>
</tr>
</tbody>
</table>
I. Formula Income
   A. The first two years of any new program should not draw upon formula income to pay for the program.
   B. For each of Years 3 through 5, enter the smaller of:
      1. the new formula income you estimate the program would generate, based on projected enrollments and formula funding rates; or
      2. half of the estimated program cost for that year.
   C. Because enrollments are uncertain and programs need institutional support during their start-up phase, it is the Coordinating Board's policy to require institutions to demonstrate that they can provide:
      1. sufficient funds to support all the costs of the proposed program for the first two years (when no new formula funding will be generated); and
      2. half of the costs of the new program during years three through five.
   D. When estimating new formula income, institutions should take into account the fact that students switching programs do not generate additional formula funding to the institution. For example, if a new master's program has ten students, but five of them switched into the program from existing master's programs at the institution, only five of the students will generate new formula income to help defray the costs of the program.

II. Other State Funding
    This category could include special item funding appropriated by the legislature, or other sources of funding from the state that do not include formula-generated funds (e.g., HEAF, PUF, etc.).

III. Reallocation of Existing Resources:
    If faculty in existing, previously budgeted positions is to be partially or wholly reallocated to the new program, you should explain in the text of your proposal how the institution will fulfill the current teaching obligations of those faculty and include any faculty replacement costs as program costs in the budget.

IV. Federal Funding
    Only federal monies from grants or other sources currently in hand may be included. Do not include federal funding sought but not secured. If anticipated federal funding is obtained, at that time it can be substituted for funds designated in other funding categories. Make note within the text of the proposal of any anticipated federal funding.

V. Other Funding
    This category could include Auxiliary Enterprises, special endowment income, or other extramural funding.
Submitted by: Dr. Mark A. Hussey, Interim President/CEO  
Texas A&M University

Subject: Approval of a New Master of Ocean Science and Technology Degree Program  
and Authorization to Request Approval from the Texas Higher Education  
Coordinating Board

Proposed Board Action:

Approve the establishment of a new degree program at Texas A&M University leading to a Master  
of Ocean Sciences and Technology, authorize the submission of this degree program to the Texas  
Higher Education Coordinating Board (THECB) for approval and certify that all applicable THECB  
criteria have been met.

Background Information:
The proposed Master of Ocean Science and Technology will be a unique program for the State of  
Texas. It will provide students with education and training from scientists who are active  
researchers and educators working at the cutting edge of ocean sciences throughout the global  
ocean, from the Gulf of Mexico to the waters around Antarctica. The College of Geosciences is  
in an ideal position to offer this new degree due to our leadership in ocean observation for more  
than 50 years, and our close ties with the International Ocean Discovery Program (IODP) and  
offshore energy industry. A unique feature of this program is that the curriculum has been  
designed to interface with the existing Bachelor degrees taught in the College of Geosciences.  
This integration will enable the most capable undergraduate students to obtain both Bachelor’s  
and M.S. degrees in 5 years in an accelerated degree program. The educational objectives of this  
program will be 1) To provide students with a basic understanding of the major concepts in  
oceanography that can be applied in their Ocean Sciences careers, 2) To provide students with  
the skills and tools to evaluate and analyze data, particularly large datasets of the type generated  
by ocean observing systems, 3) to facilitate critical thinking and problem solving. The proposed  
implementation date is Fall 2015.

The development and growth of ocean science and technology has created the need for highly  
trained non-thesis M.S. level scientists, a need that is currently overlooked by educational  
institutions in Texas. The degree will satisfy the growing demand for trained Ocean Sciences and  
technology professionals, both in the public (e.g. integrated global ocean observing systems) and  
private sectors (e.g. energy and transportation industries). A series of trends are leading to an  
expansion of opportunities in this sector, including the exploration and exploitation of energy  
resources in deeper waters offshore (e.g. Gulf of Mexico), the continued growth of human  
populations along the coast, and growing efforts to predict and mitigate coastal hazards (e.g.  
hurricanes, tsunami, oil spills, and harmful algal blooms).

A&M System Funding or Other Financial Implications:
There are no new costs associated with the new Master of Ocean Science and Technology. The new  
degree will rely on faculty who are already members of the Department of Oceanography, and  
eexisting funds within the Department will be sufficient to meet the costs of adding this degree  
program. The program will be self sustaining.
Agenda Item No.

TEXAS A&M UNIVERSITY
Office of the President
Date of Submission

Members, Board of Regents
The Texas A&M University System

Subject: Approval of a New a Master of Ocean Sciences and Technology Degree Program, and Authorization to Request Approval from the Texas Higher Education Coordinating Board

I recommend adoption of the following minute order:

"The Board of Regents of The Texas A&M University System approves the establishment of a new degree program at Texas A&M University leading to a Master of Ocean Science and Technology degree.

The Board also authorizes submission of Texas A&M University's new degree program request to the Texas Higher Education Coordinating Board for approval and hereby certifies that all applicable criteria of the Coordinating Board have been met."

Respectfully submitted,

Dr. Mark A. Hussey, Interim President

Approval Recommended: Approved for Legal Sufficiency:

______________________________  ______________________________
John Sharp  Ray Donilla
Chancellor  General Counsel

______________________________
James R. Hallmark
Vice Chancellor for Academic Affairs
New Bachelor’s and Master’s Degree
Cover Page/Signature Page

Directions: An institution shall use this form to propose a new bachelor’s or master’s degree program. In completing the form, the institution should refer to the document Standards for Bachelor’s and Master’s Programs, which prescribes specific requirements for new degree programs. Note: This form requires signatures of (1) the Chief Executive Officer, certifying adequacy of funding for the new program; (2) a member of the Board of Regents (or designee), certifying Board approval, and (3) if applicable, a member of the Board of Regents or (designee), certifying that criteria have been met for staff-level approval. NOTE: Preliminary authority is required for all engineering programs. An institution that does not have preliminary authority for a proposed engineering program shall submit a separate request for preliminary authority prior to submitting the degree program request form. That request shall address criteria set in Coordinating Board rules Section 5.24 (a).

Information: Contact the Division of Academic Affairs and Research at 512/427-6200 for more information.

---

Administrative Information

1. Institution:
   Texas A&M University

2. Program Name — Show how the program would appear on the Coordinating Board’s program inventory (e.g., Bachelor of Business Administration degree with a major in Accounting):
   Master of Ocean Science and Technology

3. Proposed CIP Code:
   40.0607.0002

4. Number of Required Semester Credit Hours (SCHs) (If the number of SCHs exceeds 120 for a Bachelor’s program, the institution must request a waiver documenting the compelling academic reason for requiring more SCHs):
   36 credit hours

5. Brief Program Description — Describe the program and the educational objectives:
The Department of Oceanography intends to offer a non-thesis Master of Ocean Sciences and Technology. Students will be trained in the science of oceanography, ocean observing and ocean observing technologies, and data handling and analysis. Post-graduate opportunities exist in the rapidly growing field of ocean observation in both the public (e.g., government agencies) and private (e.g. offshore energy industry) sectors. While the Master of Ocean Sciences and Technology is a standalone degree program, we anticipate that many students will combine the M.S. degree with several Bachelor of Science degrees currently offered by the College of Geosciences. The proposed Master Ocean Sciences and Technology curriculum has been designed to provide motivated and outstanding students with the opportunity to ‘fast track’ their M.S. by completing a Bachelor of Science degree and the non-thesis Master of Ocean Sciences and Technology within five years.

6. Administrative Unit — Identify where the program would fit within the organizational structure of the university (e.g., The Department of Electrical Engineering within the College of Engineering):
   Department of Oceanography within the College of Geosciences
7. **Proposed Implementation Date** – Report the date that students would enter the program (MM/DD/YY): **Fall 2015: August 2015**

8. **Contact Person** – Provide contact information for the person who can answer specific questions about the program:

   **Name:** Dr. Deborah Thomas  
   **Title:** Interim Department Head  
   **E-mail:** dthomas@ocean.tamu.edu  
   **Phone:** 979-845-7211
Signature Page

1. **Adequacy of Funding** – The chief executive officer shall sign the following statement:

   I certify that the institution has adequate funds to cover the costs of the new program. Furthermore, the new program will not reduce the effectiveness or quality of existing programs at the institution.

   ____________________________________________  Date
   Chief Executive Officer

2. **Board of Regents or Designee Approval** – A member of the Board of Regents or designee shall sign the following statement:

   On behalf of the Board of Regents, I approve the program.

   ____________________________________________  Date of Approval
   Board of Regents (Designee)

3. **Board of Regents Certification of Criteria for Commissioner of Assistant Commissioner Approval** – For a program to be approved by the Commissioner or the Assistant Commissioner for Academic Affairs and Research, the Board of Regents or designee must certify that the new program meets the eight criteria under TAC Section 5.50 (b): The criteria stipulate that the program shall:

   (1) be within the institution’s current Table of Programs;
   (2) have a curriculum, faculty, resources, support services, and other components of a degree program that are comparable to those of high quality programs in the same or similar disciplines at other institutions;
   (3) have sufficient clinical or in-service sites, if applicable, to support the program;
   (4) be consistent with the standards of the Commission of Colleges of the Southern Association of Colleges and Schools and, if applicable, with the standards or discipline-specific accrediting agencies and licensing agencies;
   (5) attract students on a long-term basis and produce graduates who would have opportunities for employment; or the program is appropriate for the development of a well-rounded array of basic baccalaureate degree programs at the institution;
   (6) not unnecessarily duplicate existing programs at other institutions;
   (7) not be dependent on future Special Item funding
   (8) have new five-year costs that would not exceed $2 million.

   On behalf of the Board of Regents, I certify that the new program meets the criteria specified under TAC Section 5.50 (b).

   ____________________________________________  Date
   Board of Regents (Designee)
Certification Form for New Bachelor's and Master's Programs
Texas Higher Education Coordinating Board

**Directions:** An institution shall use this form to request a new bachelor's or master's degree program that meets all criteria for automatic approval in Coordinating Board Rules, Chapter 5, Subchapter C, Section 5.44: (a) The program has institutional and governing board approval; (b) the program complies with the *Standards for Bachelor's and Master's Programs*; (c) adequate funds are available to cover the costs of the new program; (d) new costs during the first five years of the program will not exceed $2 million; (e) the program is a non-engineering program (i.e., not classified under CIP code 14); and (f) the program will be offered by a university or health-related institution.

If a new bachelor's or master's program does not meet the criteria above, an institution must submit a request using the *Form for Requesting a New Bachelor's and Master's Degree Program*.

**Information:** Contact the Division of Academic Affairs and Research at 512/427-6200 for more information.

---

**Administrative Information**

1. **Institution:** Texas A&M University

2. **Program Name:** Show how the program would appear on the Coordinating Board's program inventory (e.g., *Bachelor of Business Administration degree with a major in Accounting; Bachelor of Arts in Interdisciplinary Studies with 4-8 ESL Generalist Certification*).

**Masters of Ocean Sciences and Technology**

3. **Proposed CIP Code:** 40.0607.0002

4. **Number of Required Semester Credit Hours (SCHs)** *(If the number of SCHs exceeds 120 for a bachelor's program, the institution must request a waiver documenting the compelling academic reason for requiring more SCHs.)*: 

36 credit hours

5. **Administrative Unit:** Identify where the program would fit within the organizational structure of the university (e.g., *The Department of Electrical Engineering within the College of Engineering*).

**Department of Oceanography within the College of Geosciences**

6. **Delivery Mode:** Identify how and where the program would be delivered, e.g. on-campus face-to-face, online, off-campus, interactive videoconferencing, hybrid, etc.

**On-campus face-to-face and interactive videoconferencing**

7. **Implementation Date:** Report the first semester and year that students would enter the program.

**Fall 2015**

8. **Contact Person:** Provide contact information for the person who can answer specific questions about the program.

Name: **Dr. Deborah Thomas**
Title: **Interim Department Head**
E-mail: **dthomas@ocean.tamu.edu**
Phone: **979-845-7211**
Signature Page

I hereby certify that all of the following criteria have been met in accordance with the procedures outlined in Coordinating Board Rules, Chapter 5, Subchapter C, Section 5.44:

(a) The program has institutional approval.

(b) The program complies with the Standards for Bachelor’s and Master’s Programs.

(c) Adequate funds are available to cover the costs of the new program.

(d) New costs during the first five years of the program will not exceed $2 million.

(e) The program is a non-engineering program (i.e., not classified under CIP code 14).

(f) The program will be offered by a university or health-related institution.

I understand that the Coordinating Board will update the program inventory for the institution if no objections to the proposed program are received during the 30-day public comment period.

_________________________________________  ____________________________
Chief Executive Officer                             Date

_________________________________________  ____________________________
I hereby certify that the Board of Regents has approved this program.

Date of Board of Regents approval: ____________________________

_________________________________________  ____________________________
Board of Regents (or Designee)                             Date
Texas A&M University

Master of
Ocean Sciences and Technology
(CIP 40.0607.0002)

Program Review Outline

BACKGROUND & PROGRAM DESCRIPTION

Administrative Unit: College of Geosciences (Department of Oceanography)

The proposed Master of Ocean Sciences and Technology will be a unique program for the State of Texas. It will provide students with education and training from scientists who are active researchers and educators working at the cutting edge of ocean sciences throughout the global ocean, from the Gulf of Mexico to the waters around Antarctica. The College of Geosciences is in an ideal position to offer this new degree due to our leadership in ocean observation for more than 50 years, our close ties with the International Ocean Discovery Program (IODP) and the offshore energy industry. A unique feature of this program is that the curriculum has been designed to interface with existing Bachelor of Science degrees taught in the College of Geosciences. This integration will enable the most capable undergraduate students to obtain both Bachelor’s and MS degree in 5 years in an accelerated degree program.

The educational objectives of this program will be: 1) To provide students with a basic understanding of the major concepts in oceanography that can be applied in their Ocean Sciences careers, 2) To provide students with the skills and tools to evaluate and analyze data, particularly large datasets of the type generated by ocean observing systems, 3) to facilitate critical thinking and problem solving.

Students will be required to take 3 credit hour graduate courses in Ocean Observing, Physical Oceanography, Communicating Ocean Science, and Data Methods and Graphical Representation in Oceanography. Students will take 2 prescribed elective 3 credit hour courses from a list of 3 graduate courses. Students will have the opportunity to follow their interests by selecting 5 graduate classes from a list of 26 elective 3 credit hour courses. Finally, all students will take part in a directed 3 credit hour capstone learning experience.

The proposed implementation date is Fall 2015.

The College of Geosciences, Texas A&M University, certifies that the proposed new degree program meets the criteria under the Texas Administrative Code, Section 5.450 in regards to need, quality, financial and faculty resources, standards and costs. New costs during the first five years will not exceed $2 million.

I. NEED
A. Employment Opportunities

There is a growing need for trained Ocean Sciences and technology professionals, both in the public (e.g. integrated global ocean observing systems) and private sectors (e.g. energy and transportation industries). A series of trends are leading to an expansion of opportunities in this sector, including the exploration and exploitation of energy resources in deeper waters offshore (e.g. Gulf of Mexico), the continued growth of human populations along the coast, and growing efforts to predict and mitigate coastal hazards (e.g. hurricanes, tsunami, oil spills, and harmful algal blooms). Perhaps the greatest opportunity will come from the growth of ocean observing systems, integrated systems designed to collect, store and deliver ocean data. The construction and maintenance of these systems will provide countless opportunities for professionals for decades to come. Texas is ranked third in numbers of jobs in the Marine Science and Technology industry. However, the provision of education and training in Ocean Sciences and Technology does not match other coastal states such as New Jersey and California. The development and growth of ocean observing has created the need for highly trained non-thesis M.S. level scientists, a need that is currently overlooked by educational institutions in Texas.

B. Projected Enrollment

Our projected enrollment is based on enrollment for our existing graduate programs in Oceanography, the rapid growth of the undergraduate Minor in Oceanography, and the rapid growth of the Bachelor of Science in Environmental Geosciences. For example, our graduation rate of graduate students (Research M.S. and Ph.D.) has been in an upward trajectory over recent years, from 8 students (2008-2009), to 17 students (2009-2010 and 2010-2011) to 23 students (2012-2013). Similarly, enrollment in the minor has increased from 4 students in 2008-2009 to 20 students today (20013-2014). Many of the students taking a minor in Oceanography are ideal candidates for the Master of Ocean Science and Technology program and we have designed a an accelerated degree program (3 +2) to enable such students to graduate with a Bachelors of Science in Environmental Geoscience and a Master of Ocean Science and Technology in 5 years. Similar 3+2 programs are planned with the B.S. in Meteorology and the B.A. and B.S. in Geology. Based on these developments, we project a graduation rate of 9 to 10 students per year with Masters of Ocean Sciences and Technology after 5 years (see table below):

<table>
<thead>
<tr>
<th>Year</th>
<th>Change of Major/Transfers</th>
<th>New Students</th>
<th>Attrition</th>
<th>Graduation</th>
<th>Cumulative Headcount</th>
<th>Cumulative* FTES (New only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>5</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>12</td>
<td>1</td>
<td>7</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>15</td>
<td>1</td>
<td>11</td>
<td>37</td>
<td>39</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>15</td>
<td>1</td>
<td>14</td>
<td>51</td>
<td>54</td>
</tr>
</tbody>
</table>

C. Existing State Programs

There are currently no taught or research-based Masters programs that offer training in Ocean Sciences and Technology with the State of Texas. The proposed program would be unique to Texas A&M University and therefore provide a needed opportunity for education and training
within Texas in this emerging field. The Ocean Sciences and Technology degree will be a taught program designed specifically to give students the range of skills needed for careers in ocean observation, data analysis, and related fields. The only comparable program in the United States is the Masters in Operational Oceanography offered by Rutgers, the state university of New Jersey.

Existing Master of Science degrees in the ocean sciences within Texas are limited to programs in Oceanography, Marine Biology, Marine Sciences, Master of Marine Resources Management (MARM), and Master of Maritime Administration and Logistics (MMAL). Master of Science in Marine Biology is currently offered by Texas A&M Galveston (TAMUG), Texas A&M Corpus Christi, and Texas A&M University. This degree is focused on the ecology and physiology of marine organisms and therefore does not conflict with the proposed degree. Similarly, the focus of the Master of Science in Marine Science offered by the University of Texas is marine biology and chemistry. Students in our own Master of Science in Oceanography degree program pursue relatively specialized studies focused on marine geology, physics, chemistry, or biology. Moreover, these are all research-oriented programs. MARM and MMAL are two new taught Masters programs offered by TAMUG. We developed our proposed degree in consultation with colleagues at TAMUG and therefore these programs should be regarded as complementary rather than competitive. Moreover, the growing choice of specialist graduate degree programs and the rising rates of graduation indicate that Texas A&M is poised to become a national leader in Ocean Sciences education; the proposed Ocean Sciences and Technology degree would add to this momentum by offering educational opportunities in a new and emerging field.

II. QUALITY & RESOURCES

A. Faculty
The Department currently has 29 teaching faculty, with 18 based in College Station and 11 at Texas A&M Galveston, with an additional faculty member joining the College Station faculty in Fall 2015. All faculty have a Ph.D in Oceanography or related science discipline.

B. Program Administration
The program will be administered by the Department of Oceanography and the College of Geosciences. Day-to-day management of the program will be led by the Head of Department of the Department of Oceanography.

C. Other Personnel
The program will be supported by the 4 administrative staff and the Graduate Advisor within the Department of Oceanography. Specialist staff are available to support IT, communications and engagement, assessment, and recruitment in the Dean’s office of the College of Geosciences.

D. Supplies, Materials
Adequate supplies for teaching are available within the Department and College of Geosciences. There are clear procedures and resources available for requesting additional materials and supplies to support teaching if needs arise.

E. Library
The Department of Oceanography is located 2 minutes walk from the Evans Library, the main library of the 5 on the College Station campus. In addition, the digital library offers access to
ebooks and journals via the university Howdy portal both on and off campus. We will work with Mr. Rusty Kimball, the Oceanography librarian, to ensure that needs continue to be met in Ocean Sciences and Technology. The current Oceanography collection is 11,432 books and 659 serials (i.e. journals and book series) and continues to grow.

F. Equipment, Facilities
The Department is well equipped to provide this program. Facilities include the O&M Building in College Station, the Geochemical and Environmental Research Group (GERG) facility in College Station, and the new Ocean and Coastal Studies Building (completed in 2010) and associated facilities (marina and sea life center) in Galveston. Substantial resources are being invested into the development of new facilities at GERG, including the recent purchase of a pair of Slocum gliders, which are remotely operated vehicles (ROV) used to make measurements from the ocean while being controlled from the shore. Students in the proposed program will gain experience with state-of-the-art technologies and tools used in the Ocean Sciences by researchers who use the tools on a daily basis.

G. Accreditation
The program does not seek national accreditation. Texas A&M University is fully accredited by the Southern Association of Colleges and Schools Commission on Colleges.

III. NEW 5 YEAR COSTS & FUNDING SOURCES
Costs for the proposed degree are minimal as instruction can be met with existing resources. It is projected that the program will not require any new faculty or other resources for the first five years.

<table>
<thead>
<tr>
<th>NEW FIVE-YEAR COSTS</th>
<th>SOURCES OF FUNDING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty</td>
<td>Formula Income $0</td>
</tr>
<tr>
<td>Program Administration</td>
<td>Statutory Tuition $0</td>
</tr>
<tr>
<td>Graduate Assistants</td>
<td>Reallocation $0</td>
</tr>
<tr>
<td>Supplies &amp; Materials</td>
<td>Designated Tuition $0</td>
</tr>
<tr>
<td>Library &amp; IT Resources</td>
<td>Other Funding: $0</td>
</tr>
<tr>
<td>Equipment, Facilities</td>
<td>List other funding</td>
</tr>
<tr>
<td>Other</td>
<td>Estimated 5-year Revenues $0</td>
</tr>
<tr>
<td>Estimated 5-Year Costs</td>
<td></td>
</tr>
</tbody>
</table>

Keep this Program Review Outline to a maximum of 4 pages, using the pagination format included.
To: Dr. Debbie Thomas, Associate Professor  
Interim Department Head, Department of Oceanography

From: Patrick Louchouarn, Vice President for Academic Affairs and Chief Academic Officer (TAMUG), Associate Provost (TAMU)

Subject: Master of Ocean Science and Technology (MOST)

Date: 21 October 2014

Dear Dr. Thomas,

I thank you for sending the Department of Oceanography’s proposal for a new 36 credit hour non-thesis Master of Ocean Science and Technology (MOST) degree program. Your proposal offers a new and exciting option for students who seek to gain advanced professional training in ocean sciences. Your review of the curriculum will open new courses opportunities to students on both the College Station and Galveston campuses.

This proposed program complements, but does not compete with, existing marine sciences degree programs at Texas A&M University Galveston. Texas A&M University at Galveston thus supports this proposal and has no objection for OCNG to offer it.

Sincerely,

Patrick Louchouarn,  
Vice President for Academic Affairs and Chief Academic Officer (TAMUG)  
Associate Provost (TAMU)  
Professor
MEMORANDUM

TO: Dr. Robin Autenrieth, A.P. and Florence Wiley Professor III  
Department Head, Zachry Department of Civil Engineering

FROM: Dr. Debbie Thomas, Associate Professor  
Interim Department Head, Department of Oceanography

SUBJECT: Master of Ocean Science and Technology (MOST)

I am writing to inform you of the Department of Oceanography's proposal for a new 36 credit hour non-thesis Master of Ocean Science and Technology (MOST) degree program. The program was approved this week by the College of Geosciences curriculum committee.

Attached is a table that illustrates the differences between our current thesis based Master of Science degree and the proposed Master of Ocean Science and Technology degree. Students will be trained in the science of oceanography, ocean observing, and data handling and analysis. The proposed degree program is built from courses that are currently offered by the Department of Oceanography, with the exception of a new 3 hour OCNG 603 'Communicating Ocean Sciences' course (which will be required for all our graduate students from Fall 2015) and a 3 hour OCNG 6XX 'Advanced Data Analysis and Communication' course, which will be the capstone course for the MOST degree. While MOST is a stand-alone degree program, we anticipate that some students will combine the M.S. degree with Bachelor of Science degrees (e.g. Environmental Geosciences, Meteorology, and Geology) currently offered by the College of Geosciences in an accelerated five-year degree program. Post-graduate opportunities exist in the rapidly growing field of ocean observation in both the public (e.g. government agencies) and private (e.g. offshore energy industry) sectors.

I hope you will agree that the proposed program complements, but does not compete with, existing ocean-orientated degree programs at Texas A&M University. We believe that MOST fills a niche for students seeking a non-thesis M.S. degree, which is the terminal degree for many careers in the Geosciences. We hope that you and your colleagues are supportive of the proposed program. If you have any questions, comments, or concerns, I will be happy to address them. To indicate your support for the proposed program, please return this memo with your signature at your earliest convenience.

[Signature]

Robin Autenrieth

[Date]
Appendix 1

Examples of recent advertised positions suitable for graduates with a Master of Ocean Science and Technology
ASSOCIATE ENVIRONMENTAL SCIENTIST

Back to all Jobs
20-May-14 08:22 AM
URL: http://www.indecon.com
Company / Organization: Industrial Economics, Inc.
Type: Full-time
City: Cambridge, MA

Description:
Associate Environmental Scientist We are seeking an environmental scientist with an graduate level degree in environmental sciences or a related field (e.g., ecology, biology, chemistry, toxicology, marine science). The successful candidate will support our dynamic natural resources practices through analysis of environmental data to assess the impacts of chemical and/or physical degradation to a wide range of ecological components. The successful candidate will be responsible for conducting applied analysis and planning/coordination in the context of environmental policy, environmental litigation, and natural resource damage assessments. Responsibilities may include: • Designing and implementing major quantitative analyses. • Interpreting and communicating results (verbally and in writing). • Identifying and working with outside experts. • Recommending modifications to achieve project objectives. • Critically reviewing reports and analyses produced by other parties. • Providing logistical and administrative support internally and to the client, including organizing meetings and conference calls, producing call notes, and helping to maintain project communication. We expect a candidate to have excellent analytical, organizational, and writing skills, and be able to multi-task and work in a fast-paced consulting environment. A high degree of initiative and creativity is also required. Because IIEc is committed to growth from within, we seek candidates with a long-term interest in a consulting career. Skills Requirements: • Ability to understand and interpret environmental data • Strong analytical and math skills • Experience with database and spreadsheet management • Ability to clearly communicate complex technical information (oral and written) Position Type: Full Time Required Qualifications: MA, MS, MBA, MPP, Ph.D.or equivalent in relevant field (see above). Relevant work or internship experience.

Requirements:
Required Qualifications: MA, MS, MBA, MPP, Ph.D.or equivalent in relevant field (see above). Relevant work or internship experience.

Point of Contact: Recruiting Committee
UPPRT SCIENTIST II - ATMOSPHERIC
MESOSCALE DATA ASSIMILATION

Back to all Jobs
08-Aug-14 12:42 PM

Company / Organization: NOAA Environmental Modeling Center (EMC)
City: College Park
State or Country if outside US: MD

Description: I.M. Systems Group, Inc. (IMSG), www.imsg.com, a Federal Government Contractor, is seeking to fill a position for a Support Scientist to work at NOAA's Environmental Modelling Center (EMC) of the National Centers for Environmental Prediction (NCEP) located in College Park, MD. The successful candidate will work with the Mesoscale Modeling Branch and be tasked with testing new ideas in variational observation quality control applied to the NCEP data assimilation system, the GSI. The immediate goal of the research is to improve the quality control applied to surface observations from a diverse range of platforms used in NCEP's Real-Time Mesoscale Analysis. To Apply: Please submit your resume, the contact information for three (3) references, your salary requirements and a cover letter explaining how your qualifications meet the requirements of the position to jobs@imsg.com with the following subject line: NOAA1421 Support Scientist II - MMB Data Assimilation IMSG offers an outstanding overall compensation package including health/dental insurance, short term/long term disability insurance, paid-time-off, and a 401(k) plan. IMSG is an Equal Opportunity Employer and Veteran friendly.

Requirements: Required Skills: ? A MSc. or Ph.D. in Atmospheric Science, Oceanography, or a related physical or applied mathematical science. ? Strong background in mathematics and statistics. ? Experience in using observations of the atmosphere or ocean for diagnostic and/or modeling purposes. ? Experience in variational or Kalman-filter data assimilation, or alternatively a university level course taken in data assimilation. ? Experience with code development in FORTRAN and scripting in Linux/Unix shell environments. ? Experience with running complex jobs, processing, and performing comprehensive analyses of large amounts of observed and modeled output data. ? Good written and oral communication skills. Desired ? Working knowledge of the GSI. ? Experience with displaying tools commonly used in atmospheric studies, such as Grads and Python. ? Experience in using high performance supercomputers in a FORTRAN/UNIX environment, including the use of MPI programming.

Point of Contact: jobs@imsg.com
Attachment: download
SUPPORT SCIENTIST - ATMOSPHERIC MESOSCALE DATA ASSIMILATION

Back to all Jobs
08-Aug-14 12:47 PM

Company / Organization: NOAA Environmental Modeling Center (EMC)
City: College Park
State or Country if outside US: MD

Description: I.M. Systems Group, Inc. (IMSG), www.imsg.com, a Federal Government Contractor, is seeking to fill a position for a Support Scientist to work at NOAA's Environmental Modelling Center (EMC) of the National Centers for Environmental Prediction (NCEP) located in College Park, MD. The successful candidate will support the further development of the so-called Grid-Point Statistical Interpolation (GSI) system, focusing on its use by the Real-Time Mesoscale Analysis (RTMA) system. The GSI is EMC's analysis system for the atmosphere, which is used for 2DVar, 3DVar, 4DVar, and hybrid ensemble/variational applications. The RTMA system runs the GSI in 2DVar-mode to provide real-time analyses for sensible weather elements of the NWS' digital forecast suite. Most are surface parameters (e.g. 2m-temperature, 2m-dewpoint, 10m-wind). The candidate will work to improve analyses of existing RTMA parameters and, especially, to add new control variables to the GSI to analyze new RTMA parameters as they are requested by the National Weather Service forecasters and other RTMA users. Examples of such parameters include cloud amount (aka sky cover), ceiling, max/min Temperature at 2m, snow amount, the Haines Index, PBL height (aka mixing depth), transport wind, surface ozone, and 80-m winds. To Apply: Please submit your resume, the contact information for three (3) references, your salary requirements and a cover letter explaining how your qualifications meet the requirements of the position to jobs@imsg.com with the following subject line: NOAA1422 Support Scientist - RTMA GSI IMSG offers an outstanding overall compensation package including health/dental insurance, short term/long term disability insurance, paid-time-off, and a 401(k) plan. IMSG is an Equal Opportunity Employer and Veteran friendly.

Requirements: Required Skills: ? At least a M.S in Meteorology, Atmospheric Sciences, or related field. ? Experience in atmospheric or oceanic data assimilation, or alternatively a graduate-level course in data assimilation or principles of objective analysis. ? Experience in using large atmospheric or oceanic datasets for analysis, assimilation or diagnostic purposes. ? Solid background in calculus, algebra, and statistics. ? Experience with code development in FORTRAN and scripting in Linux/Unix shell environments. ? Good written and oral communication skills. Desired ? Experience with the use of the GSI. ? Experience with the use of high performance supercomputers in a FORTRAN/UNIX environment, including the use of MPI programming. ? Experience with display tools commonly used in atmospheric modeling, such as
Grads, GEMPAK and/or Python.

**Point of Contact:** jobs@imsg.com

**Attachment:** download
With roots dating back to 1903, the Bermuda Institute of Ocean Sciences (BIOS) is a world class marine science research and education organization, Bermuda's source for environmental education and a global training center for young scientists. **BIOS is committed to ocean science for human good.**

BIOS is a U.S. incorporated 501(c)(3) not-for-profit research and education institute employing a multi-national staff approximating 100 people. BIOS operates RV Atlantic Explorer which functions as a sea-going laboratory supporting faculty and scientists from BIOS and other institutions and agencies. Information on BIOS can be found at www.bios.edu.

**Marine Science Technician**

BIOS currently has two opportunities for seagoing Marine Science Technicians. Candidates that fall short of the minimum qualifications may be considered for a Junior Marine Science Technician position.

**Duties and Responsibilities**

- Operate, maintain, troubleshoot, calibrate and repair various oceano- graphic systems, sensors and sampling gear.
- Deploy/operate/maintain specialized systems which will include SeaBird CTD, RDI ADCP, Knudsen echo sounders and R.M. Young meteorological suite.
- Collaborate with scientists and ship’s crew to ensure a safe and successful mission.
- Instruct and assist scientific users of the ship in safe operating procedures of shipboard equipment; and proper oceanographic techniques, both on deck and in the labs.
- Act as system administrator for the ship’s computers, including networked Linux and Windows Server systems, firewalls and satellite-based internet services.

**Qualifications**

- Bachelor’s degree in a field related to oceanography or engineering. Other degrees and disciplines will be considered with prior experience in a sea-going technical position directly related to oceanographic field studies.
- 2 years of experience working with UNOLS vessels is desirable.
- Knowledge of basic electrical theory and marine electronic systems.
- Experience with oceanographic systems including but not limited to CTD, ADCP, XBT, meteorological and data acquisition systems.
- Proven ability to work safely at sea in adverse weather and conditions.
- Experience with rigging and over-the-side equipment deployments
- Strong computer skills, including knowledge of basic scientific data processing techniques.
- Must be proficient with Windows-based networking environments, routers and firewalls.

**Special Requirements:** Must be able to perform normal duties onboard an ocean-going ship; ascending and descending ladders; handling mooring lines; opening and closing watertight doors; working odd and extended hours including holidays and weekends. Must be able to travel and work in the USA.

*Interested candidates should email or fax their applications including a Cover Letter, Resume/CV, three References and Salary requirements to:*

Human Resources Officer,
The Bermuda Institute of Ocean Sciences (BIOS)
17 Biological Station, St. George's GE01, Bermuda
Email: HR@bios.edu or Fax: (441) 297-2222

*Position will remain open until filled*

BIOS is an equal opportunity employer in a drug-free workplace and learning environment.
Vacancy: PACIFIC ISLANDS GLOBAL OCEAN OBSERVING SYSTEM COORDINATOR (PIGOOSC)

Applications are invited for the above position with SPREP at Apia.

This is an exciting and challenging opportunity to work with SPREP, one of the world’s leading regional environmental organisations. The Secretariat is seeking a suitably qualified and motivated person for the role of Pacific Islands Global Ocean Observing System Coordinator. This person will focus mainly on expanding the PI-GOOS programme by identifying and securing additional funds, leading strategic programme development, and coordinating and managing the full range of activities expected of the PIGOOS programme.

Applicants should have a minimum qualification of a Bachelor degree in the field of Science, including marine and oceanography or related field with at least 5 years relevant experience specifically in dealing with marine environmental issues, at least 2 of those years working in a developing country and preferably within the public sector.

The appointment carries a competitive remuneration and benefits package. Remuneration for this post falls within Band 10 of SPREP’s salary scale and will be in the range of SDR25,597 to SDR38,395. Currently, the equivalent in Samoan Tala is SAT$101,212 (USD$41,996) to SAT$151,818 (USD$62,995) per annum. Other staff entitlements include a Cost-of-Living Differential Allowance (COLDA), housing & education allowances, medical benefits, life & personal accident insurance, etc.

Full details of the PIGOOS’s responsibilities, requirements, remuneration package and lodging an application can be obtained from the Employment section of our website: www.sprep.org or by contacting the Personnel Officer on telephone: +685 21929 Ext. 230, Fax: +685 20231, or direct Email: luanac@sprep.org

Applications should include:
1. A detailed curriculum vitae containing full personal details;
2. A statement to address how each Essential Selection Criteria is met;
3. Names and contact details of at least three professional referees who are prepared to provide testimonials – prefer the most recent employers and/or supervisors; and,
4. Indication of possible starting date if successful.

All applications to be clearly labeled “Application for Pacific Islands Global Ocean Observing System Coordinator”. We encourage all interested applicants to send their applications through email to sprep@sprep.org. Alternatively, please send to: The Director, SPREP, P O Box 240, Apia, SAMOA.

Closing date: Friday, 11 March 2011.

Late applications and those that do not submit all the requirements stated above will not be considered.

SPREP is an Equal Opportunity Employer
Bermuda Institute of Ocean Sciences

•

•

•

•

•

Search

Explore

• Research
  • Projects
  • Facilities
  • Partnerships

• Education
• Ship Ops
• News

• Currents
• Support Us
• About BIOS
  • Mission
  • History
  • Leadership
  • Team Members
  • Careers
  • Visiting Information
  • Forms

• Events
• Contact

About BIOS / Careers

Careers

Physical Oceanography Research Technician

The Bermuda Institute of Ocean Sciences (BIOS) is seeking a motivated physical oceanography research technician to work on the U.S. National Science Foundation funded time-series programs; Bermuda Atlantic Time-series Study (BATS) and Hydrostation ‘S’. These BIOS hosted projects are focused on understanding the processes that influence the variability of the physics and biogeochemistry of the Sargasso Sea and ultimately how these processes interact to regulate the carbon cycle. Both programs have a strong field component requiring a dedicated team of scientists to perform the at-sea data and sample collection, and subsequent shore-side data processing and sample analyses. For this current position we are looking for an individual with at least a B.Sc., in oceanography/marine science with a physics/maths emphasis or a closely
related subject.

The position will initially be for 1-year with continuation depending on job performance and starting salary will be in the range of $34,000 to $45,000 commensurate with experience and qualifications. Review of applications will start immediately with effective starting dates October 1st 2014.

For further information or to make a formal application (cover letter, CV and the names and contact information of three references) please contact Dr. Rod Johnson (rod.johnson@bios.edu).

Duties & Responsibilities

Demonstrated programming experience within the context of oceanographic data analysis and the ability to work synergistically in a multi-disciplined team of oceanographers are essential requirements for this position. Extensive experience of Matlab (multiple platforms especially UNIX), good familiarity with oceanographic instrumentation and a proven sea going capability are a distinct advantage. The expected duties of the successful person are:

- Maintain routine data processing and compliant archiving of all data streams.
- Regular participation on the time-series cruises (~5 to 7 days/month).
- Develop software to enhance data processing, QC and data dissemination.
- Assume responsibility for laboratory salinity measurements.
- Liaise with the marine technical department on instrument calibrations.
- Produce quarterly reports on data status in consultation with the P.I.’s
- Interact with resident and other scientists on data synthesis and data products.
- Keep current with developments in oceanographic data processing standards.
- Assist where required to maintain overall project objectives

The Bermuda Institute of Ocean Sciences is an U.S. incorporated 501(c)(3) not-for-profit research and education institution, Bermuda’s source for environmental education and a global training center for young scientists. BIOS employs a multi-national staff of approximately 80 people and is based in Bermuda since 1903. Activities include oceanographic and marine biological research conducted by resident and visiting scientists, and university level courses on topics ranging from marine pollution to biogeochemical cycles in the Sargasso Sea. Additional information on BIOS can be found at http://www.bios.edu/. BIOS is an Equal Opportunity employer.

Email your CV, cover letter, and references to:
Dr. Rod Johnson rod.johnson@bios.edu

Qualifications

- At least a B.Sc., in oceanography/marine science with a physics/maths emphasis or a closely related subject
- Programming experience within the context of oceanographic data analysis
- The ability to work synergistically in a multi-disciplined team of oceanographers
- Extensive experience of Matlab (multiple platforms especially UNIX)
- Good familiarity with oceanographic instrumentation
- Proven sea going capability is a distinct advantage

Marine Science Technician
BIOS currently has two opportunities for seagoing Marine Science Technicians. Candidates that fall short of the minimum requirements described below may be considered for a Junior Marine Science Technician position.

Interested candidates should email or fax their applications including a cover letter, resume/CV and three references to:

**Human Resources Officer**  
**The Bermuda Institute of Ocean Sciences (BIOS)**  
**17 Biological Station**  
**St. George's GE01 Bermuda**  
*email: HR@bios.edu; Fax: 441-297-2222*

**Position will remain open until filled.**

BIOS is an equal opportunity employer in a drug free workplace and learning environment.

**Duties & Responsibilities**

- Operate, maintain, troubleshoot, calibrate and repair various oceanographic systems, sensors and sampling gear
- Deploy/operate/maintain specialized systems which will include SeaBird CTD, RDI ADCP, Knudsen echo sounders and R.M. Young meteorological suite
- Collaborate with scientists and ship's crew to ensure a safe and successful mission
- Instruct and assist scientific users of the ship in safe operating procedures of shipboard equipment; and proper oceanographic techniques, both on deck and in the labs
- Act as system administrator for the ship's computers, including networked Linux and Windows Server systems, firewalls and satellite-based internet services

**SPECIAL REQUIREMENTS:** Must be able to perform normal duties onboard an ocean-going ship; ascending and descending ladders; handling mooring lines; opening and closing watertight doors; working odd and extended hours including holidays and weekends. Must be able to travel and work in the USA.

**Qualifications**

- Bachelor's degree in a field related to oceanography or engineering. Other degrees and disciplines will be considered with prior experience in a sea-going technical position directly related to oceanographic field studies
- 2 years of experience working with UNOLS vessels is desirable
- Knowledge of basic electrical theory and marine electronic systems
- Experience with oceanographic systems including, but not limited to, CTD, ADCP, XBT, meteorological and data acquisition systems
- Proven ability to work safely at sea in adverse weather and conditions
- Experience with rigging and over-the-side equipment deployments
- Strong computer skills, including knowledge of basic scientific data processing techniques
- Must be proficient with Windows-based networking environments, routers and firewalls
National Oceanic And Atmospheric Administration

Job Title: Oceanographer, GS-1360-13 (DE/CR)
Department: Department Of Commerce
Agency: National Oceanic and Atmospheric Administration
Job Announcement Number: NOS-ORR-2014-0016

**SALARY RANGE:** $88,179.00 to $114,633.00 / Per Year

**OPEN PERIOD:**
Tuesday, July 1, 2014 to Tuesday, July 8, 2014

**SERIES & GRADE:** GS-1360-13

**POSITION INFORMATION:** Competitive: Career/Career Conditional - Permanent: Full Time

**PROMOTION POTENTIAL:** 13

**DUTY LOCATIONS:**
1 vacancy in the following location:
Seattle, WA View Map

**WHO MAY APPLY:**
All qualified United States Citizens or Nationals

**SECURITY CLEARANCE:** Secret

**SUPERVISORY STATUS:** No

**POSITION SUMMARY:**
About the Agency

This position is located in the Office of Response and Restoration’s Emergency Response Division, in Seattle, WA. The primary mission of the division is to supply scientific support during marine pollution events. The incumbent will be expected to provide fate and transport forecast in support of a response. To successfully do this, the incumbent will need an authoritative understanding of coastal physical oceanography (currents and what makes them move) and be familiar with a variety of operational models.

This position is also announced under vacancy number NOS-ORR-2014-0015, which is open to status candidates. You must apply to both announcements if you want to be considered for both.

- A one year probationary/trial period may be required.
- This position is in the bargaining unit.

**NOTE:** This vacancy may be used to fill other Oceanographer, GS-1360-13 positions throughout NOAA. The position must be alike (e.g., within the same geographic locations, same grade/band; requires the same qualifications as indicated in this vacancy announcement).

**UNIQUE POSITION REQUIREMENTS:**

- While most work is performed in an office environment or laboratory setting, many oceanographers routinely spend time at sea subject to extreme, unexpected weather situations and/or visit hazardous material spills in coastal and estuarine waters requiring the use of protective clothing and equipment.
- When conducting research in the field, work from aircraft, ships and shore stations may be required.
- When in the field, the use of personal protective equipment will be required.
- The incumbent will be required to successfully complete various safety trainings which will require time in a swimming pool with trained instructors.
- The incumbent will be required to drive either government vehicles or rental cars, potentially at night and under adverse weather conditions.
- May be on 24/7 call and must be able to work off hours and over 8 hour days and over 40 hour weeks in support of a spill response.
- This position requires the ability to spend long days walking rugged beaches as part of survey team.
During a major response, may be required to work long hours (10-15 hours per day) up to 14 days at a time.

**TRAVEL REQUIRED**
- Occasional Travel
  - Must be able to travel up to 2 weeks at a time with 24 hour notice.

**RELOCATION AUTHORIZED**
- No

**KEY REQUIREMENTS**
- Must be a U.S. Citizen or National to apply.
- Required to pass a background investigation and fingerprint check
- Must be suitable for Federal employment.
- Must be registered for Selective Service, if applicable (www.sss.gov).
- Qualification requirements must be met by closing date of announcement.
- Must be able to maintain an valid U.S. driver's license.

**DUTIES:**
The individual selected for this position will:

- Provide physical oceanography expertise, explaining and modeling coastal currents and the mechanisms that drive the currents, with the specific focus of modeling the fate and transport of pollutants in the coastal marine environment.
- Provide authoritative science advice in support of pollution response operations. Independently produce and deliver timely pollution fate and transport forecasts to emergency response communities across the United States after notification of an incident.
- Lead the development and maintenance of several of our in-house response applications, including writing and debugging code written in the Python, Java Script and C++ programming languages.
- Instruct classes on oil spill fate and transport processes, as well as on modeling oil spills, to the professional response community several times a year.
- Attend and present at scientific conferences, workshops and community meetings while representing the office as a technical authority.

**QUALIFICATIONS REQUIRED:**
Qualification requirements in vacancy announcements are based on the U.S. Office of Personnel Management (OPM) Qualification Standards Handbook, which contains federal qualification standards. This handbook is available on OPM's website at: Qualifications.

This position has a positive education requirement, transcripts must be submitted.

**CANDIDATES MUST MEET THE FOLLOWING BASIC EDUCATION REQUIREMENTS: 1360, OCEANOGRAPHY SERIES:**

**Degree:** major 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.

**OR Combination of education and experience:** course work as shown above, plus appropriate experience or additional education.

**NOTE:** Applicants who qualify on the basis of major study in biology or geology must have had at least 6 semester hours in the major directly concerned with marine science or 6 semester hours in oceanography; applicants who qualify on the basis of other physical sciences or engineering must have had differential and integral calculus and at least 6 semester hours in physics.

**IN ADDITION TO THE BASIC EDUCATION REQUIREMENTS** applicants must possess one year of specialized experience equivalent in difficulty and responsibility to the next lower grade level in the Federal Service. Specialized experience is experience that has equipped the applicant with the particular competencies/knowledge, skills and abilities to successfully perform the duties of the position. This experience need not have been in the federal government.

**To Qualify at the GS-13 level:**
One full year (52 wks) of specialized experience equivalent to the GS-12 of the Federal service. Specialized experience is defined as:

- Using hydrodynamic models to predict the movement of pollutants in the marine coastal
environment;

- Developing and troubleshooting software applications written in programming languages (i.e. C/C++, Python, JavaScript, HTML/CSS, etc.);
- Conducting technical training to promote employee skills and abilities;
- Providing oceanographic analysis to drive operational decisions during an emergency response, or other time-critical work environment;
- Reviewing scientific reports and publications to advise on research projects and operations; and
- Presenting physical oceanographic work at scientific conferences and workshops.

**College Transcript:** Submit a copy of your college transcript that lists college courses detailing each course by the number and department (i.e., bio 101, math 210, etc.), course title, number of credit hours and grade earned. You must submit evidence that any education completed in a foreign institution is equivalent to U.S. education standards with your resume. You may submit an unofficial copy of the transcript at the initial phase of the application process. If course content cannot be easily identified from the title of the course as listed on your transcript, you must submit an official course description from the college/university that reflects the content at the time the course was taken.

**Note:** Your college transcript is used to verify successful completion of degree, or college course work. An official college transcript will be required before you can report to duty.

**HOW YOU WILL BE EVALUATED:**
We will review your resume, optional cover letter and supporting documentation to determine if you meet the minimum qualifications for the position. If you meet the minimum qualifications stated in the vacancy announcement, we will compare your resume, optional cover letter and supporting documentation to your responses on the scored occupational questionnaire (True/False, Yes/No, Multiple Choice questions) and place you in one of three pre-defined categories. These categories are “gold,” "silver,” and “bronze.” However, your resume or optional cover letter must support your responses to the self-assessment questions, or your score may be lowered. Candidates placed in the "gold" category will be identified for referral to the hiring manager and may be invited for an interview.

How you will be evaluated for preference eligibility: Within each category, those entitled to veterans' preference will be listed at the top of the pre-defined category for which they are placed. Preference eligibles with a service-connected disability of 10% or more will be listed at the top of the highest quality category (gold) depending on the position and grade level of the job. For more information on category rating, please go to: **Category Rating**

The scored occupational questionnaire will evaluate you on the following competencies; please do not provide a separate written response:

- Knowledge of how costal physical oceanographic principles affect the fate of spilled oil and other pollutants.
- Skill to model ocean currents and pollutant movement in the marine environment by utilizing computer models and model algorithms.
- Ability to concisely communicate, in a timely manner, a summary of fate and transport of pollutants for the response community.
- Skill to maintain and improve computer programs written in Python, C++, Javascript, and HTML/CSS which are used for forecasting fate and transport of oceanic pollutants.
- Skill and knowledge to acquire and programmatically manipulate and reformat ocean current and wind model data from an OPeNDAP data delivery framework, and by using the THREDDS data access protocol.
- Ability to develop lesson plans and conduct training for technical and scientific groups learning about the science of oil spills.
- Skill and knowledge to convert scientific findings into working computer code by reading scientific journals and meeting with scientific oil spill and ocean modeling community at conferences and workshops.
- Ability to estimate level of effort necessary to program complex mathematical models and manage project timelines and deliverable priorities.

To preview questions please [click here](https://jobs.rngapps.monster.com/doc/vacancy/preview/benefits.html?orgId=16&jnum=100099)
OTHER INFORMATION:
ICTAP candidates will be eligible if it is determined that they have exceeded the minimum qualifications for the position by attaining at least a rating of 85 out of 100. Information about ICTAP eligibility is on the Office of Personnel Management's Career Transition Resources website at: [ICTAP eligibility](https://www.opm.gov/career过渡). 

Applicants MUST submit the following documents:
1. Copy of your RIF separation notice; notice of proposed removal for failure to relocate; notice of disability annuity termination; certification from your former agency that it cannot place you after your recovery from a compensable injury; or certification from the National Guard Bureau or Military Department that you are eligible for disability retirement;
2. A copy of your SF-50 "Notification of Personnel Action" documenting your RIF separation, noting your positions, grade level, and duty location, and/or Agency certification of inability to place you through RPL, etc;
3. A copy of your latest performance appraisal including your rating; and
4. Any documentation from your agency that shows your current promotion potential.

NOAA participates in e-Verify. E-Verify is an Internet based system operated by the Department of Homeland Security (DHS) in partnership with the Social Security Administration (SSA) that enables participating employers to electronically verify the employment eligibility of their newly hired employees.

HOW TO APPLY:
Your complete application, including required documents, must be received by 11:59 p.m. Eastern Time (ET) on the closing date of this announcement.

To apply on-line, you must complete and submit an application by accessing the USAJOBS website at [USAJOBS](https://www.usajobs.gov/). To begin, click the Apply Online button near the bottom of this screen and follow the prompts to register into your USAJOBS account, answer the questions, and submit all required documents.

To return to your saved application, log in to your USAJOBS account at USAJOBS and click on "Application Status." Click on the position title, and then select Apply Online to continue.

If you have problems completing your on-line application, including problems submitting your supporting documents, please contact the Help Desk by e-mail at msghelp@monster.com or phone at 866.656.6831. The help desk is available Monday-Friday, 7:00 am, to 7:00 p.m. ET.

For instructions on submitting your application in another format please contact the HR Personnel listed in this announcement.

REQUIRED DOCUMENTS:
- **Resume showing relevant experience; cover letter optional.** Your resume must indicate your citizenship and if you are registered for Selective Service if you are a male born after 12/31/59. Your resume must include information about your paid and nonpaid work experience related to this position including: job title, duration of employment (mm/dd/yy – mm/dd/yy), hours per week, duties and accomplishments, salary, and your education. For work in the Federal service, please include the grade level for the position/s. Your resume may be used to validate your responses to the scored occupational questionnaire.

- **If you are a veteran with preference eligibility and you are claiming 5-points veterans' preference,** you must submit a copy of your Member 4 DD-214 stating disposition of discharge or character of service or other valid proof of eligibility (i.e., statement of service that shows service dates AND character of service). **If you are claiming 10-point veterans' preference,** you must also submit an SF-15, "Application for 10-Point Veterans' Preference" plus the proof required by that form. For more information on veterans' preference see [Vet Guide](https://www.va.gov/vetguide/)

- **Active Duty Service Members--** You must submit a statement of discharge/certification of release or an official written document from the armed forces that certifies you are expected to be discharged or released from active duty service in the armed forces under honorable conditions no later than 120 days from the date the announcement closes. Enlisted Record Briefs and military identification do NOT qualify as official documentation. If the appropriate information is not submitted to confirm the discharge status, dates of service, etc., you will not be considered for this job opportunity under Veteran Preference procedures. To gain access to your DD-214 online please visit [Military Records](https://www.dod.mil/). 

- **Interagency Career Transition Assistance Plan (ICTAP) and Interagency Career Transition Assistance Plan (ICTAP) documentation** if applicable (see other information).

- **Education.** If this position requires proof of higher education, you must submit an unofficial transcript or a list of courses that includes the following information: name of accredited institution, grades earned, completion dates, and quarter and semester hours earned. Education completed in foreign colleges or universities must be evaluated in terms of equivalency to that acquired in U.S. colleges and universities. Applicants educated in whole or in part in foreign countries must submit sufficient evidence, including transcripts, to an accredited private organization for an equivalency evaluation of course work and degree. A listing of these accredited organizations can be found on the Department of Education's website. You must provide a copy of the letter containing the results of the equivalency evaluation with a course by course listing along with your application. Failure to provide such documentation by the closing date of the announcement will result in lost
consideration.

Note: You are not required to submit official documents at this time; copies are sufficient.

AGENCY CONTACT INFO:
Heather Mair
Ph: 816-426-2074
Fax: 00-000-0000
Email: heather.a.mair@noaa.gov

Agency Information:
NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION
WFMO/Kansas City Staffing Division
601 East 12th Street
Room 1713
Kansas Cr, MO
64106
US
Fax: 000-000-0000

WHAT TO EXPECT NEXT:
You will be notified of your application status through USAJOBS at four points during the hiring process,
as applicable. You can check the status of your application by accessing the USAJOBS website at:
USAJOBS and clicking on "Application Status". The four points of notification are:
1. Application Received or Application Incomplete;
2. Minimum Qualification Requirement Met or Minimum Qualification Requirement Not Met;
3. Eligible (Application Referred to the Selecting Official) or Ineligible (Application Not Referred to the
Selecting Official) and
4. Selected or Not Selected.

By submitting your application, you are certifying the accuracy of the information contained in your
application. If you make a false statement in any part of your application, you may not be hired; you
may be terminated after you begin work; or, you may be fined or jailed. After making a tentative job
offer, we will conduct a suitability/security background investigation. You will be required to submit
official documentation prior to appointment. The agency will then verify the information provided on your
application (i.e., degree, veterans' preference, disability, etc.).

Back to top
Electrical Engineer
SeaBotix, Inc.


Essential Job Functions • Power electronics design for Switch Mode Power Supply and DC Motor Controls • Analog and Digital PID Control Loop design • Analog and Digital circuit simulation using PSPICE, Matlab, or Altium • Specification of high frequency power magnetics • Microprocessor and high speed digital circuit design • Electronic reliability calculations using MTBF hdbk 271f • Analysis and specification of component thermal management systems • Wiring diagrams, schematics, test reports, and Bill-of-Materials • Costing and cost reduction analysis • Actively manage project activities and coordinate work efforts of engineering technicians • Define interface and black-box specifications for use by software and embedded firmware engineers • Performance of other tasks as assigned with minimal supervision.

Please include your salary history and salary expectations for the position when submitting your resume for this job opening.

Skills/Experience Requires Knowledge of:

• Prior experience working with power electronics • An in-depth understanding of high frequency printed circuit board (PCB) layout design • A working knowledge of 2004/108/EC CE Technical File requirements for CE Marking • Hands-on experience developing strategies to meet EMC requirements for 47 CFR Part 15 • Familiarity with the details of Harmonized Standards for Product safety • Knowledge of video standards including NTSC, SDTV, and HDTV • Knowledge of broadband communication systems including GB Ethernet and VDSL using fiber optic and copper transmission media • Familiarity with sensor circuits, signal conditioning, and sensor fusion algorithms used for

SeaBotix, Inc.
Website

SeaBotix is the world leading manufacturer of MiniROV systems with a pedigree of underwater expertise. A dedication to providing a capable underwater solution unlike anything else. SeaBotix Inc. was founded on years of research, development and industry related trades. Drawing from previous experience in the underwater industry SeaBotix has the edge.
navigation (GPS, Sonar, Laser, Compass, Gyros, MEMS, etc) • Proficiency using Altium EDA tools, and PSPICE or Matlab/Simulink • Use of electronic instrumentation such as: Oscilloscopes, Spectrum Analyzers, Network Analyzers, Signal Generators, etc. • Expertise in RoHS (Restriction of Hazardous substances) compliant design • Excellent verbal and written communication

NOTES:

Additional Salary Information: Discretionary Bonus
Schmidt Ocean Institute is currently seeking highly experienced candidates for the shipboard position of Marine Technician. The opening is a unique opportunity to join this young organization to fulfill a full-time seagoing position in support of a 275’/82.9m oceanographic research vessel. The Marine Technician will work on the R/V FALKOR vessel approximately 6 months per year.

The Marine Technician may be required to work remotely when not sailing aboard the ship or attending training or conferences. The ship’s Marine Technicians provide shipboard technical and science logistical support for all science cruise-related activities, including but not limited to, pre-cruise planning and setup, on-shore and off-shore scientific technical support of all shared-use instrumentation and equipment, and cruise mobilization and demobilization. The Marine Technicians will source, acquire, install, configure, operate, maintain and troubleshoot all scientific equipment aboard the vessel.

All of the Schmidt Ocean Institute Marine Technicians rotate an additional duty as the “Cruise Coordinator.” This duty includes serving as the science parties’ and contractors’ shipboard point-of-contact during the pre-cruise planning periods, as well as during the cruises.

Regular duties of the Marine Technician will be similar to the duties described in the document “Knowledge and Skill Guidelines for Marine Technicians Who Work Aboard Research Vessels”: Click Here

The Marine Technicians may attend training courses and conferences.

- Advanced degree in marine science, physical or engineering science or a combination of technical schooling and job experience • 5+ years of marine technician experience • All citizenships welcomed to apply. Non-US applicants must have a B-1 Visa to work in the US. • Must be fluent in speaking, reading and
writing the English language.

Qualifications Desired: • Posses a valid drivers license • STCW-95 certificates covering Basic Safety Training which includes First Aid and CPR

Experience Desired: • Extensive experience at-sea aboard ocean or global class research vessels supporting shipboard science • Familiar in use of science winches • Familiar with deck operations and over-the-side deployments • Demonstrated knowledge of marine circuitry • Advanced computer literacy required, computer programming and windows based networking skills • Experienced in use of hand-held power tools • Installation, testing, operation, interpretation and maintenance of the following echo sounding systems: • EA600 • EK60 • EM710 • EM302 • Knudsen Chirp 3260 • RDI ADCP 75kHz and 300kHz • Sonardyne USBL • KSYNC • SH90

• Installation, testing, operation, interpretation and maintenance of the following multidisciplinary science systems: • Meteorological monitoring systems • Science navigation systems (Hypack and/or Winfrog) • Winch and wire monitoring systems • Thermosalinographs (SBE 45) • CTDs, Rosettes and Niskin bottles • Shipboard Data Logging system experience, SCS preferred • Science navigation equipment (Seapath/PosMV/GPS/ GNSS) • XBT • Sound Velocity Profilers

• Skills with various data acquisition and processing software: • SBE Data Processing • CARIS • MBSYSTEM • Fledermaus • GIS • Microsoft Office (or similar) • Windows/Linux/Mac • Adobe Acrobat

NOTES:

Additional Salary Information: Salary based on experience

Schmidt Ocean Institute
Website:

Established in March 2009, the Schmidt Ocean Institute seeks to advance ocean exploration, discovery, and knowledge, and catalyze sharing of information about the oceans. The Institute is devoted to the inspirational vision of our Founders that the advancement of technology and open sharing of information will remain crucial to expanding the understanding of the world’s oceans. Since the Earth’s o...