



MATE

MARINE
ADVANCED
TECHNOLOGY
EDUCATION
CENTER

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The Marine Advanced Technology Education (MATE) Center encourages you to apply to an exciting professional development opportunity designed to engage students in engineering, technology, and computer science careers associated with the ocean environment. The annual MATE Summer Institute for Faculty Development will take place July 26 – August 1, 2010. Partially funded by the National Science Foundation, there are no fees for the workshop and room and board are covered by the grant. In addition, a limited amount of travel funds are available for institutions unable to support faculty travel.

You have been selected as a possible participant because of your technical background and the proximity of your college to ocean industries (see attached map of ocean industries). The goal of this workshop is to introduce faculty to the knowledge and skills required to build Remotely Operated Vehicles (ROVs) (“underwater robots”) and to prepare faculty and their students to participate in the MATE International ROV competition, if they so desire.

Recent workforce studies conducted by the MATE Center and funded by the Office of Naval Research, NOAA, NASA and the Mineral Management Service have identified more than twenty STEM¹-based ocean occupations that are currently limiting the growth of ocean industries because of the lack of qualified personal. At the top of the list are the following occupations: electronics technicians (including ROV technicians – a type of electronics technician); engineers (electrical, mechanical, civil/structural); and computer software engineers (e.g. software application developers).

However, these are not “just” engineers, technicians, and software developers; these are professionals that understand ocean applications within their field. For example, ROV technicians in support of ocean operations must have an understanding of the ocean environment in addition to engineering and computer science since all commercial ROVs possess computer-controlled systems and must be maintained, repaired, and modified in remote locations far from port. These skills sets are transferable to almost every sector of the economy that uses robotics and computer-controlled systems.

We don't expect that all of the students building ROVs will pursue ocean careers. Our goal is to attract students to high-demand, technical occupations and to broaden the career opportunities of students enrolled in technology, engineering, and computer science programs.

Why use robotics competitions to motivate students?

The ROV competitions are unique learning experiences that challenge students to use their physics, math, electronics, computing, and engineering knowledge and skills to solve practical problems from the STEM workplace. Through the process, students develop project management, technical writing, communication, and teamwork skills as they prepare reports, poster displays, and engineering presentations that are then delivered to technical professionals, solidifying the connection to real-world industry practices.

The competitions also provide students with the opportunity to connect and work side-by-side with ocean industry professionals, which helps them to envision themselves in these careers. The competitions foster social connections and nurture a sense of belonging, personal expression, freedom, and accomplishment. These aspects, along with the thrill and excitement of the competition event itself, help to attract and retain students in STEM programs.

The MATE Center created the ROV competition network in partnership with the Marine Technology Society's (MTS) ROV Committee in 2001. The network currently consists of one international and 19 regional competitions (15 within the U.S., two in Canada, one in Hong Kong, and one in Scotland) that are held annually.

¹ Science, Technology, Engineering, and Math

What is unique about the MATE ROV competitions?

First, there is no entry fee to the competition and second, the ocean science and technology industry helps to support the student teams through funds, access to equipment and building materials, discounts on supplies, time and technical expertise, and more.

Links for additional information:

- YouTube ROV competition video
<http://www.youtube.com/watch?v=TeFctnv5vVI>
- ROV competition website http://www.marinetech.org/rov_competition/
- Professional development course outline
http://marinetech.org/education/summer_institutes/Course%20Description%20-%20SI%202010.pdf
- Text – Introduction to Underwater Vehicle Design
<http://www.marinetech.org/education/pdf/ROVBookFlyer.Final1a.pdf>
- Application to participate in the Summer Institute on building ROVs
http://marinetech.org/education/summer_institutes/12th_Annual_Application_ds_JZ_em.pdf
- Additional information about the MATE Center
http://marinetech.org/education/summer_institutes/MATE_abstract.pdf
- Marine Technology Industry Map
http://marinetech.org/education/summer_institutes/US_Marine_Industry.pdf

For more information, please contact Erica Moulton, Faculty Development and Summer Institute Coordinator, at emoulton@marinetech.org or by phone at (727) 894-6821.

Sincerely:



Erica L. Moulton
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Deidre Sullivan
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