NAVAL SCIENCE AND TECHNOLOGY

ENGR 3109: Navy STEM Professional Development Seminar

Wednesday, April 11, 2018
5:00 pm to 6:00 pm
UConn, Storrs Campus – Laurel Hall 205

"US Navy Nuclear Submarine Life Support Systems"

DESCRIPTION: Nuclear submarines are capable of extended submerged operation, limited only by their 90-day food supply and crew endurance. Systems to maintain a breathable atmosphere in their enclosed environment are among the many critical enablers of this capability. Temperature and humidity control are provided by the ship's air conditioning system. However, replenishing oxygen and removing atmospheric contaminants, specifically carbon dioxide, as well as trace contaminants such as carbon monoxide require specialized technologies. These systems must be designed for reliable, continuous operation and must be easy to operate and maintainable by the crew. Their development and qualification for submarine service includes an extensive series of rigorous tests. This seminar reviews overall nuclear submarine atmosphere control and discusses the design of modern oxygen generation, gas management, and carbon dioxide removal systems. Specific discussions of their designs for operability and maintainability and a review of the qualification process are included.

ARTHUR K. COLLING, CHIEF ENGINEER MARITIME SYSTEMS, UNITED TECHNOLOGIES AEROSPACE SYSTEMS
UNITED TECHNOLOGIES AEROSPACE SYSTEMS (UTAS)

Mr. Arthur Colling is the Chief Engineer for United Technologies Aerospace Systems (UTAS) Maritime Systems located in Windsor Locks, Connecticut. In his long career at UTAS he has been the engineering lead for the development of numerous space and submarine life support and thermal management systems. These included the prototype water recycling and oxygen generating systems for the International Space Station. Systems for nuclear submarines include oxygen generation, gas management, atmospheric carbon dioxide removal, and chlorine generator biofouling systems. These systems are currently operational on Los Angeles, Seawolf, and Virginia attack submarines classes and are selected for use on Ohio Class and for the future Columbia Class ballistic missile submarines. Mr. Colling graduated from the United States Naval Academy with majors in aerospace engineering and mathematics. After Naval Nuclear Power School, he served in submarines as a nuclear qualified officer and as an instructor at Naval Submarine School. Mr. Colling subsequently earned a masters degree in Mechanical Engineering from Rensselaer Polytechnic Institute. He holds four US patents. Outside of his professional activities, he has been a mentor to high school students for the past twenty-three years for the FIRST (For Inspiration and Recognition for Science and Technology) robotics program.

Upcoming Distinguished Seminars

Valery Godinez-Azcuaga
Vice President, Engineering & Product Development
MISTRAS GROUP, INC.
April 18th @ 5pm
Laurel Hall 205

WEBSITE:
Coming Soon!

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