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2008

# Mechanical and Aerospace Engineering

Millsaps, Knox T.

Naval Postgraduate School (U.S.)

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<http://hdl.handle.net/10945/29639>

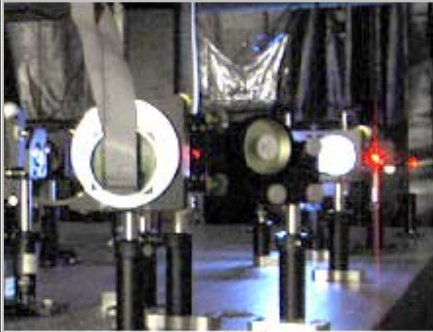


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## RESEARCH THAT SUPPORTS THE 21ST CENTURY NAVY

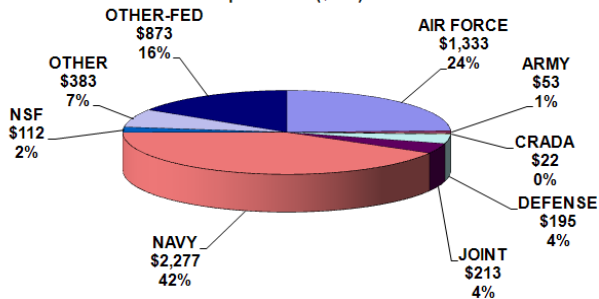


Space Systems Design Lab

The cutting edge research conducted in the Mechanical and Astronautical Engineering department MAE covers a wide spectrum of technologies and military applications, from space and satellite design to

unmanned vehicles and survivability of surface ships and aircraft. In FY2007, the Department executed more than \$5M in reimbursable research projects, from a wide variety of sponsors

NPS Mechanical Engineering Department: FY07 Sponsored Research Expenditures (\$000)



## RESEARCH GROUPS AND CENTERS

MAE has several research groups and centers. For more information about the exciting research being conducted in these centers, please see the links below

Center for Autonomous Underwater Vehicles  
[www.nps.edu/AUV](http://www.nps.edu/AUV)

Spacecraft Research and Design Center  
[www.nps.edu/SRDC](http://www.nps.edu/SRDC)

Ship Shock Simulations  
[www.nps.edu/SVCL](http://www.nps.edu/SVCL)

Material Science  
[www.nps.edu/materials](http://www.nps.edu/materials)

Center of Survivability and Lethality  
[www.nps.edu/csl](http://www.nps.edu/csl)

Propulsion Laboratories  
[www.nps.edu/propulsion](http://www.nps.edu/propulsion)

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## DISTANCE LEARNING DEGREE PROGRAMS

**Bettis Reactor Engineering School (BRES) Graduates**  
MAE offers a distance learning masters program to graduates of BRES working at Naval Reactors Headquarters in Washington, D.C. There have been more than 100 graduates of this program. For more information see [www.nps.edu/mae/bres](http://www.nps.edu/mae/bres).

**Naval Nuclear Power School (NNPS) Graduates**  
The Naval Postgraduate School awards 28.5 graduate-level, quarter-credits for all graduates of NNPS. Please contact NPS if you wish to obtain a transcript for these credits. MAE offers a distance learning program for graduates of Naval Nuclear Power School while deployed. For more information see [www.nps.edu/mae/dl/nuc](http://www.nps.edu/mae/dl/nuc).

## MECHANICAL AND AEROSPACE ENGINEERING



NAVAL  
POSTGRADUATE  
SCHOOL

MONTEREY, CALIFORNIA



The Mechanical and Aerospace Engineering (MAE) Department, the founding department of the Naval Postgraduate School in 1909, offers a wide range of graduate degree programs including M.S. and Ph.D., in either Mechanical or Astronautical Engineering. The faculty, research staff, and students in MAE conduct fundamental and applied research that supports a wide range of technologies, and operational needs that are critical to National Security. NPS Students come from the U.S. Navy, USAF, USA, USMC, and USCG, and more than 50 countries, and degree programs are open to DoD civilians and DoD contractors. We invite you to learn more about our department's degree programs and our research and see what we have to offer.

Visit our web-site for more information

[www.nps.edu/mae](http://www.nps.edu/mae)

## ADVANCE YOUR CAREER



Admiral James D. Watkins, USN  
Chief of Naval Operations, 1982-1986  
Secretary of Energy, 1989-1993  
Distinguished Graduate (Class of 1958)

“In 1954 I decided to stay in the Navy because I was accepted at the Naval Postgraduate School and at major turning points throughout my career; in one case probably saving the ship during an operational emergency at sea. I heavily relied on

my NPS science and engineering education. NPS transfers learning, science, and technology to officers so that they can apply this knowledge in their jobs, improving our ability to overcome threats to our security. The unique, creative environment produces research and education of direct and immediate relevance to the needs of today’s warfighter.”

## STUDENT RESEARCH



Students at NPS work closely with world renowned faculty to solve some of the most important technical problems that face the Defense Department. Specifically, an NPS education requires the student to conduct research and write an original thesis that presents the results. This experience provides the opportunity for students to apply what they learned in the classroom to real situations.



## DEGREE PROGRAMS

The MAE department offers Master’s, Engineer’s, and Doctoral degree programs in Mechanical and Astronautical Engineering. See [www.nps.edu/mae](http://www.nps.edu/mae) for descriptions and requirements.

### MASTER’S PROGRAMS

Master of Science in Mechanical Engineering  
Master of Science in Engineering Science (Mechanical Engineering)  
Master of Science in Engineering Science (Materials Science)  
Master of Science in Astronautical Engineering  
Master of Science in Engineering Science (Astronautical Engineering)

### ENGINEER’S PROGRAMS

Mechanical Engineer  
Astronautical Engineer

### DOCTORAL PROGRAMS

Ph.D. in Mechanical Engineering  
Ph.D. in Astronautical Engineering

## NPS SUBSPECIALTY CODES PROVIDE BETTER CAREER OPPORTUNITIES

The MAE department works closely with our curriculum sponsors: the Naval Sea Systems Command (NAVSEA) for the 570 Naval Mechanical Engineering Curriculum and the National Reconnaissance Office (NRO) for the 591 Space Systems Engineering Curriculum. These programs are custom tailored to meet not only degree requirements but also the educational skill requirements, which define specific subspecialty codes (“p-codes”). Students earning the MS in Mechanical Engineering receive a 5600 series subspecialty code while students earning the MS in Space Systems Engineering earn a 5500 series code.

These designations open the door to many exciting career opportunities, including lateral transfer to the Engineering Duty Officer community. Sample jobs associated with these subspecialties are typically available in the following commands:

**5500:** National Reconnaissance Office, PEO C4I, PEO Space Systems, SPAWAR.

**5600:** NAVSEA, NSWC, U.S. Naval Academy, PEO Ships, PEO Submarines, Regional Maintenance Centers, Naval Shipyards, Supervisors of Shipbuilding (SUPSHIP), and Fleet Staff commands.

## SPECIAL PROGRAMS

**Immediate Graduate Education Program (IGEP)**  
Fully funded immediate graduate education is available to select Ensigns graduating from the Naval Academy and ROTC programs.

**Total Ship Systems Engineering (TSSE)**  
MAE in conjunction with the Combat Systems and Electrical Engineering Departments offers the Total Ship Systems Engineering (TSSE) program. Students learn to set requirements, conduct systems level trades, and optimize performance and create preliminary designs for warships. For more information see [www.nps.edu/tsse](http://www.nps.edu/tsse).

**Missile Systems Engineering**  
MAE offers a missile systems track within the ME Degree program. Along with the standard courses, a 4-course sequence consists of Missile Aerodynamics, Missile Guidance and Control, Advanced Missile Propulsion, and a capstone course in Tactical Missile Design. For more information see: [www.nps.edu/mae/missiles](http://www.nps.edu/mae/missiles).

**Degree Programs for DoD Laboratory Personnel**  
NPS programs are open to DoD lab personnel, and MAE has a long history of Navy and USAF laboratories sending employees for resident programs. For more information see [www.nps.edu/me/dodciv](http://www.nps.edu/me/dodciv) and please ask your supervisor about coming to NPS for an advanced degree.

**Degree Programs for DoD Contractors**  
A limited number of slots are available for DoD contractors to attend NPS to obtain graduate degrees. For details see [www.nps.edu/admissions/contractors](http://www.nps.edu/admissions/contractors) and for eligibility and application information see: [www.nps.edu/admissions](http://www.nps.edu/admissions).

**Scholarship-for-Service Programs for U.S. Civilians**  
NPS offers a number of Scholarship-for-Service programs for U.S. civilians who would like to work for the federal government, including SMART ([www.asee.org/SMART](http://www.asee.org/SMART)) and NSI ([www.nps.edu/nsi](http://www.nps.edu/nsi)). For eligibility and application information see: [www.nps.edu/admissions](http://www.nps.edu/admissions).

**Ph.D. Programs**  
MAE has several opportunities for naval officers, civilians, and others to pursue a doctoral degree. Please see [www.nps.edu/mae/Academics.asp](http://www.nps.edu/mae/Academics.asp) for details.

[www.nps.edu/mae](http://www.nps.edu/mae)