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2010

Autonomous Systems Track

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Naval Postgraduate School (U.S.)

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APPLICATION PROCESS

All required forms, instructions, and examples for applying can be found at www.nps.edu/admissions.

Application packages must include a letter from employer stating their willingness to pay the tuition for the program and supply salary and benefits during your time as a student.

Applications should be sent to:

Director of Admissions
Code 01C3, He-022
Naval Postgraduate School
1 University Circle Monterey, CA 93943

If you have any questions please contact:

grad-ed@nps.edu
(831) 656-3093/DSN 756-3093



TUITION

Tuition rates vary depending on a student's employer.

- DoD civilian tuition is \$16,000 per year for a full-time, resident student.
- DoD contractor tuition is \$32,000 per year for a full-time, resident student.
- For information regarding international students admission contact International Graduate Programs office at (831) 656-2186 or intldept@nps.edu

FOR MORE INFORMATION

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www.nps.edu/mae/autonomoussystem



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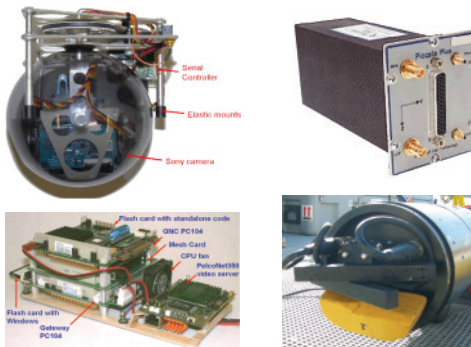


"Future Combat Systems (FCS) will have four major components Manned Ground Vehicles, Unmanned Systems, FCS Network, and Soldiers... The Unmanned Systems include Unmanned Aerial Vehicles, Unattended Systems, and Unmanned Ground Vehicles. The FCS Network provides the communication and automation that creates battle command environment. The Soldier will be empowered with the use of robotics and technological advantages."

- Excerpt from a DARPA /Army FSC Program

INTRODUCTION

The department of Mechanical and Aerospace Engineering offers an autonomous systems track within the framework of a Master's Degree in Mechanical Engineering. The program can be completed in four to six quarters, depending on academic preparedness of the student, and is developed around several core courses related to modeling and guidance navigation and control algorithms design for autonomous underwater, surface, ground, aerial systems, satellites and spacecraft. Additional course electives can be taken to enhance specialty areas, along with thesis research related to a specific type of an autonomous system or its component, or a wide range of other useful military technologies.



STUDENTS ELIGIBLE

1. U.S. Military, all services.
2. DoD Civilians from the Army, Navy, Air Force laboratories and program officers, and DoD agencies, such as MDA, DTRA, etc.
3. Industry. Employees of Department of Defense prime contractors, such as Raytheon, Lockheed-Martin, and Boeing.
4. International Military Officers and Civilians

AUTONOMOUS SYSTEMS TRACK DESCRIPTION

The autonomous systems track course sequence is taken in conjunction with courses required for the standard Master's of Science degree. The courses can be taken over the course of a year and cover the critical technology areas related to autonomous systems modeling, analysis, design, and operation.

The core courses of the track are:

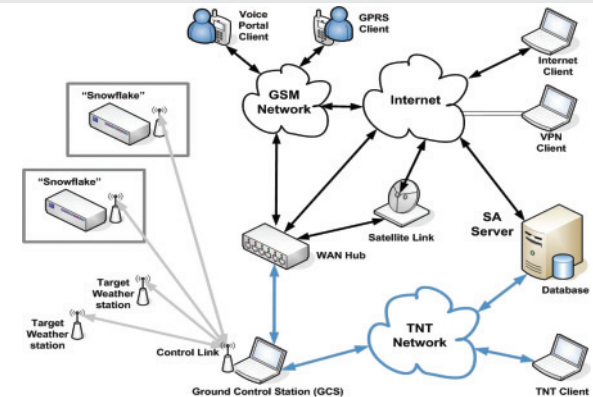
- Introduction to Unmanned Systems
- Low-Level Control of Unmanned Vehicles
- Unmanned Vehicles Navigation
- High-Level and Discrete Event Control of Autonomous Systems
- Computer Vision
- C³ Networks for Unmanned Systems
- Collaborative Control of Multiple Autonomous Systems
- Unmanned Systems Design

The final course in this sequence, Unmanned Systems Design, is a capstone course that integrates the material into a design of (a component of) an autonomous underwater, surface, ground, aerial, or space system, its algorithm or sensor to be tested within the tactical network environment during quarterly field experiments at Camp Roberts Training Site.

OTHER COURSES

Additional courses related to autonomous systems may be taken as electives. Some of the available courses are listed below:

- Signal Processing;
- MEMS-Based Sensors;
- Optimal Estimation: Sensor and Data Association;
- Electronic Warfare Systems;
- Adaptive / Robust Control;
- Network Operating Centers;
- Underwater Acoustics, Sonar Transducer Theory and Design;
- Lasers, Optoelectronics, and Electro-Optics;
- Virtual Environments Modeling and Simulations;
- Joint Campaign Analysis;
- System-of-Systems Operating Environment.



NPS FACULTY

The NPS faculty is comprised of accomplished scholars and professionals, predominantly civilian and almost all with doctorates. About 10 percent of the faculty members are senior military officers who, along with students, infuse important operational and combat experience into the education and research programs. Several Federal agencies and defense organizations, such as NASA, NRO, National Security Agency, as well as defense contractors, sponsor academic chair professorships which further strengthen the institution's relevance.

RESEARCH FACILITIES

NPS has a wide range of excellent, state-of-the-art research facilities that support underwater, surface, ground, aerial, space systems propulsion; guidance, navigation and control; combat systems design; electronic warfare; electro-optics; MEMS sensors; and many other areas. In addition to that, a well-established field experimentation program provides a unique opportunity to test a developed autonomous system or its sensor in a restricted airspace, 100 miles South from NPS or in Monterey Bay. These facilities are available for thesis research and joint and cooperative projects, between NPS and other service or agency laboratories as well as cooperative research and development agreements (CRADAs) with industry.

www.nps.edu/mae/autonomoussystems