The Graduate School of Engineering and Applied Sciences (GSEAS) at the Naval Postgraduate School in Monterey, California provides graduate education leading to the master of science, engineer, doctor of philosophy, and doctor of engineering degrees.

GSEAS is composed of seven technical academic departments (applied mathematics, electrical and computer engineering, mechanical and aerospace engineering, meteorology, physics, oceanography, systems engineering) and two interdisciplinary academic groups (space systems and undersea warfare). Degree programs are tailored to the specific needs of the Navy and defense community at large, at the same time providing the technical foundation for student theses and interdisciplinary projects of faculty and students.

Research centers and unique laboratory facilities (e.g., the spacecraft research and design lab, rockets and combustion lab, signal enhancement lab, ocean acoustics observatory, interactive digital environment analysis lab, secure space-systems research lab, secure computer-network research lab, and directed energy lab) add rigor to the resident academic and sponsored programs.

GSEAS’ defense-related research aggressively develops and incorporates advances in learning and technology, ensuring that our faculty, instruction, and students remain at the crest of their disciplines. Instruction is “real world.” Our students handle the latest defense technologies and nascent systems on a routine basis, including electric-powered ships; nanotechnologies; directed-energy weapons; electric rail guns; the electrical and computer-engineering systems underlying concepts such as net-centric warfare; unmanned underwater, aerial, and land systems; space systems; battlespace environments and their impact on combat; and many others.

Conceptual mastery is paramount in our teaching philosophy. GSEAS students not only learn why things work, but why they don’t, as well as how scientific and engineering principles can be applied to the integration of the U.S. military with various defense systems (such as sonar, radar technologies, and others) to enable future war-fighting concepts and capabilities.

GSEAS is truly a joint school, with healthy enrollments of all military services. No other graduate school can compete with the combination of rigorous education and joint military orientation found at the Naval Postgraduate School.
Applied Mathematics (MA)

The Department of Applied Mathematics provides exceptional education supporting relevant and strategic research for our sponsors. Our curriculum emphasizes modern mathematical techniques and the cultivation of analysis, reasoning, and creativity. The department serves its clients, students, and profession not only through research and education, but by leadership in professional organizations and scholarly contributions to the body of mathematical knowledge. The department employs sixteen regular faculty and offers both the M.S. and PhD.

Electrical and Computer Engineering (ECE)

The Department of Electrical and Computer Engineering is the major contributor to education in the electronic systems-engineering curriculum and provides courses for other curricula, including space systems, information warfare, electronic warfare, information systems, systems engineering, and underwater warfare. The department offers programs leading to the doctor of philosophy, electrical engineer (EE), master of science (MSEE, MSCE, MSES[EE], and MSES[CE]), and master of engineering (MEng[EE] and MEng[CE]), typically awarding over forty masters degrees annually to resident students. The core curriculum spans the breadth of electrical and computer engineering. Students may elect to concentrate in specialty tracks that support Joint Vision 2020, Sea Power 21, and national security strategy, including sensor systems, cyber and network engineering, communications, signal processing, nano-electronics, computers, and shipboard electrical power and control. The robust externally funded research program is fully integrated with resident graduate education and supports work in all core areas. The Center for Cyber Warfare and Center for Joint Services Electronic Warfare, with their laboratories, highlight the department’s unique research capabilities.

Mechanical and Aerospace Engineering (MAE)

The Mechanical and Aerospace Engineering Department conducts wide-ranging fundamental and applied research. Master’s and doctoral students are integrally involved in projects, working alongside faculty, postdoctoral fellows, and staff to resolve complex problems in national security. Focus includes thermal-fluid sciences and propulsion, structural mechanics, autonomous-vehicle control and navigation, materials science, total-ship systems engineering, and satellite and spacecraft design and engineering. Research supports development and operation of submarines, surface combatants, aircraft, autonomous vehicles, missiles, and satellite systems. A breadth of expert personnel and unique labs contribute to theoretical, computational, M&S, and experimental research, classified and unclassified.
Meteorology (MR)

Since 1946, the Department of Meteorology’s premier program has featured multimillion-dollar facilities and expert instruction, offering master’s and doctoral degrees to U.S. and allied officers and government civilians. The curricula provide grounding in meteorology and expertise for working with data and models in weather-dependent operations. Concentrations include synoptic, mesoscale, and coastal meteorology; numerical weather prediction; environmental analysis and visualization; air–sea interactions; satellite- and ground-based remote sensing; tropical meteorology; tropical cyclones; boundary-layer meteorology; climate dynamics; and atmospheric factors in electromagnetic/electro-optical propagation. Military operations and research are emphasized and enhanced by collaboration with Fleet Numerical Meteorological and Oceanographic Center and the Naval Research Laboratory.

Oceanography (OC)

The Oceanography Department offers internationally recognized research and education that extend the frontiers of physical oceanography while anticipating the needs of the Navy, to the benefit of both science and the military. Curricula sponsored by the oceanographer of the Navy include oceanography, air-ocean science, and operational oceanography, as well as core courses for undersea warfare and the space-systems curricula. The department offers the M.S. and Ph.D in physical oceanography and a joint M.S. in meteorology and physical oceanography.

Research is predominantly Navy and NSF-funded, with strong naval relevance providing urgency to theses. Expertise fielded includes global and littoral/regional numerical prediction (including polar), nearshore oceanography and impact on mine countermeasures and amphibious warfare, littoral/coastal oceanography, especially the impact of littoral processes, eddies, and boundary currents on surveillance systems, and acoustical oceanography with an antisubmarine focus.

Physics (PH)

The Department of Physics conducts basic and applied research in acoustics, optics, opto-electronics, directed-energy weapons (rail guns and free-electron lasers), sonar and radar, shaped-charge explosives, advanced semiconductor sensors, and remote sensing. The department offers the master’s and PhD degrees in physics, applied physics, and engineering acoustics. Our graduates fill a spectrum of assignments in the development of future combat systems, working creatively and practically in conceiving, developing, and acquiring advanced combat systems.
Systems Engineering (SE)

Systems engineering (SE) is the study of holistic system synthesis and analysis and execution of interdisciplinary methods to satisfy customer and stakeholder needs in a quality, trustworthy, cost-efficient and timely manner during a system’s lifecycle. NPS’s SE department prepares graduates for national-security challenges by equipping them to conceive, design, implement, operate, analyze, maintain, and improve systems-of-systems that are reliable, capable, effective, and affordable. The department has 30 faculty with primary appointments, 19 with joint appointments, 7 research staff, and 2 administrative staff, offering master’s degrees in SE and SE management, and a PhD in SE. Current enrollment is 68 resident and 396 nonresident distance-learning students. The department has several defense contractor students in the master’s program. Responding to the SECNAV, we are expanding to meet the educational and systems research needs of our naval and DoD stakeholders. SE works closely with NPS’s Wayne E. Meyer Institute of Systems Engineering, especially in multidisciplinary research.

Space Systems Academic Group (SP)

The Space Systems Academic Group (SSAG) is an interdisciplinary association of faculty and staff with responsibility for the academic content of the Space Systems Operations and Space Systems Engineering curricula. It is also the focal point for all space-related research performed at NPS.

A major goal of the Space Systems Academic Group is to couple NPS space-research efforts with the graduate education of military officers. This is done through a number of sponsored research projects, as well as through the Small Satellite Design Program, created to marry the space-systems educational mission with the defense-related research in small satellite technology.

The various research areas in progress include CubeSat nano-satellite development, the NPSAT1 small satellite project, and the NPS CubeSat Launcher project. Facilities are also being developed, maintained, and augmented to support space-systems research areas, including space environmental testing, attitude dynamics and control testing, and facilities to support space-flight experiment development and integration.

Undersea Warfare Academic Group (USWAG)

The Undersea Warfare Academic Group consists of a curricular officer and fourteen faculty who teach in the USW curriculum, conduct related research, and advise USW master’s students. The program integrates acoustics, electrical engineering, mathematics, meteorology, oceanography, physics, operations analysis, human factors, computer science, and robotics, with a naval focus on anti-submarine warfare and mine warfare.