

Delivering Acquisition Training to the Space Professional Community

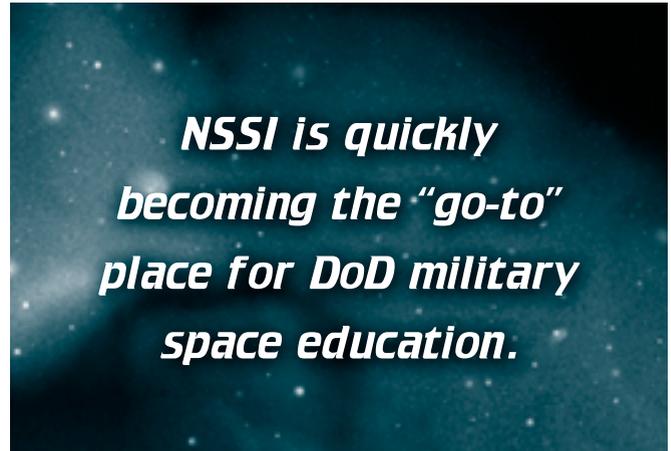
Robert L. Tremaine

There's a quiet revolution going on at Air Force Space Command, and its outcome will be felt in the years to come. At the center of the revolution is the National Security Space Institute—known by some as the “space schoolhouse.” NSSI is quickly becoming the “go-to” place for DoD military space education and will eventually arm the nation's more than 10,000-strong space-professional community with an even wider assortment of space warfighting knowledge and specialized skills. As these credentialed space professionals graduate, they will eventually fill key leadership positions, and as they do, the DoD will increasingly exploit space systems. The NSSI is already making considerable headway. With the recent integration of the operations and acquisition functions under one command, Air Force Space Command expects to grow operational space leaders who can fully exploit the space systems they helped design. Air Force Brig. Gen. Erika Steuterman, the NSSI chancellor, emphasizes that “acquisition education at the NSSI is integral to many course offerings since space professionals will benefit from a firm foundation in acquisition essentials.”

Need for More Space Education

The NSSI grew from two pioneer organizations: the Space Tactics School (STS) and the Space Operation School (SOPSC). The STS, which existed from 1994-1996 (and was later absorbed by the U.S. Air Force Weapons School in 1996), grew from Operation Desert Storm lessons learned. The two organizations found that campaign planning had not fully leveraged the nation's space capabilities. The STS attempted to fill the void initially. SOPSC, which ran from 2001-2004, extended beyond the sights of the STS and filled the breach by teaching broader space concepts and systems. The schools conducted a thorough examination of how to educationally equip and train its warfighters, and instituted programs that addressed recognized shortfalls.

The Space Commission report of January 2001 amplified the need for more space education and training, noting the shortfall in growing space professionals at senior leadership echelons. The Commission's report served as a catalyst to help transform the SOPSC into the NSSI, which officially activated on Oct. 1, 2004. By then, the space



education curriculum had grown to 16 objective courses (in various stages of construction) and covered a wide range of topics in response to the needs of the space professional community.

With an engaging curriculum in place only a year after its official inception, the NSSI is also looking well beyond the horizon. Thanks to a diversified yet unified family of multi-Service (active duty, guard, and reserve), government, federally funded research and development corporations, and support contractor personnel currently assigned, the staff and faculty are focusing on the aggregate needs. The NSSI is also targeting a very broad audience. After first meeting with a number of representative agencies, organizations, and educational institutions involved with space operations and training, they crafted a flexible organizational construct and phased curriculum to help validate the NSSI's strategic goals. Their findings drove them to form three schools: Space Tactics, Space Professional, and Space Operations.

Under these three schools, the NSSI developed a roadmap to include a wide array of course offerings tailored to each school's focus area. Some courses are very mature, others are in various construction phases, and still others have yet to be developed. Some courses have a certain technical specificity and are either system- or functionally centered. For example, the NAVOPS Advanced Course concentrates on the Global Positioning Satellite system and contains a number of subordinate instructional blocks:

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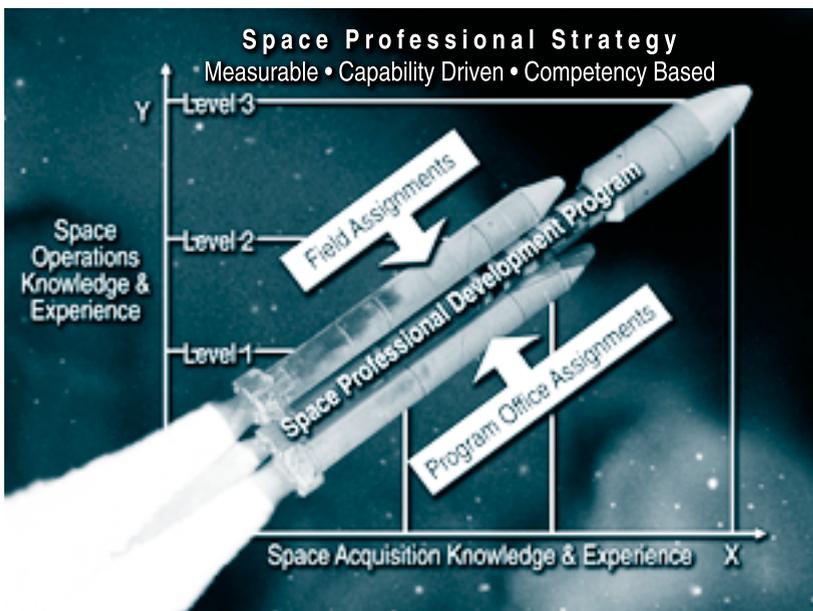
GPS basics; modeling and simulation; control and space segments; tactics, techniques, and procedures; and foreign and future systems. Similarly, the Missile Warning Advanced Course provides an in-depth examination of missile warning and defense with a focus on space-based warning assets. Topics include sensor physics; enemy threat systems; warning architectures; air-, land-, sea-, and space-based sensors; missile warning and missile defense operations centers; warning processes; and tactics. Other courses like Space 200 and Space 300 are very broad in nature, resembling capstone courses. Each embodies many functional areas and relies on broad space system knowledge.

Credentialed Space Professionals and Certification

NSSI course lengths vary from as little as one day to as much as 13 weeks. Recent concentration has been on the flagship courses, Space 200 and Space 300—both four weeks in residence. Space 200, offered 13 or 14 times a year, “provides the educational breadth required by our space professionals and reach many in the community,” according to the dean of academics, Air Force Lt. Col. Kyler Barnes. Space 200 and 300 also satisfy part of the Army, Navy, and Marine Corps space professional educational requirements.

Fundamentally, these courses and others under the Space Professional School support a defined certification process outlined in the 2003 U.S. Air Force Space Professional Strategy. In a framework similar to that of the acquisition community, the Air Force space community adopted three certification levels. The Space Professional Certification Strategy is compatible with the Defense Acquisition Workforce Improvement Act. Space Professional Certification

Striking the Balance Between Space Operations and Acquisition Knowledge and Experience



requirements complement but do not replace requirements of the Defense Acquisition Workforce Improvement Act of 1990, and space professionals in acquisition-coded positions must continue to meet DAWIA-defined certifications.

Even though Air Force space personnel (currently numbered at 7,434) fill most NSSI classrooms, the NSSI has reached out to all DoD. As a result, the Army, Navy, Marines, National Reconnaissance Office, and even NASA send their space cadre to the NSSI. While the number of slots available outside the Air Force may seem low, they are generally equivalent to the ratio of space professionals found in their respective domains.

Acquisition Education Considerations

The NSSI considers acquisition education an essential ingredient for space professional development (since space professionals could easily find themselves in acquisition-related positions) and has made it integral to many courses. Three key questions remain, however, as the NSSI continues to look even more closely at its curriculum: Which NSSI courses should include acquisition education? How much acquisition education is enough? What courses might help the space professional achieve credit toward acquisition certification?

To help answer these and related questions, the Defense Acquisition University recently offered its assistance, signing a Memorandum of Agreement on June 10, 2005. A key DAU responsibility is to “research, develop and review NSSI acquisition education” as well as consider the right amount of growth in acquisition presence. The balance is notionally represented in the graphic.

Which NSSI Courses Should Include Acquisition Education?

Ultimately, it comes down to the NSSI’s strategic educational objectives, which consider student experience and educational levels. Currently, Air Force entry-level credentialed space professional personnel (officer, enlisted, and government civilians) get their initial exposure to acquisition education through Space 100 offered at Vandenberg AFB, Calif. Unless they are members of the professional acquisition corps, have been to a project office, or have enrolled in acquisition-related distance/continuous learning courses, they do not receive formal acquisition education and training again until they take Space 200—generally at the eight- to 12-year point in their careers. In most cases, the same is true of the other Services. When the NSSI faculty developed courses, they recognized that some students may have little to no acquisition experience.

Consequently, they incorporated a number of critical lessons into key courses to expose space professionals to acquisition fundamentals. Many of the courses currently offered include tailored space acquisition tutorials that help give students a top-level acquisition context.

In other courses, instructors provide much more acquisition detail, since many lesson objectives and subsequent exercises depend on it. Space 200 is one of those courses. By the end of this course, students must apply knowledge and comprehension of space concept development, space systems, space operations, and space systems acquisition. Space 200 also integrates acquisition imperatives and emphasizes the importance of the operator/user involvement in the acquisition process in order to ensure a system is designed, developed, and deployed to meet the indispensable need. Student understanding is measured by assigning a satellite project. The students actually write a detailed mission requirement, design the orbit, consider orbital maneuvers and supporting communication network, size the payload, assess impacts of the space environment, evaluate potential launch vehicles, and integrate the design solution with other key DoD space assets. The NAVOPS Advanced Course also addresses a wide range of acquisition functions and processes and helps grow GPS experts who will effectively exploit the weapon systems' capabilities.

How Much Acquisition Education Is Enough?

Feedback from course graduates has been favorable, though some students from the first offering of Space 300 indicated the need for a precursor course similar to Acquisition 101. As the NSSI suspected, the acquisition comfort level was lower for some space professionals; however, time becomes a limiting factor. Adding content to course offerings could have a ripple effect on other lessons. If the number of course days is sacred, other lessons might need to be subtracted before any new content can be added. Hence, the real answer is "it depends." It depends on whether the course is missing key acquisition elements that may be required to fully satisfy course objectives. It depends on the expectations we have regarding the institution's strategic acquisition goals and expectations of NSSI graduates. It depends on the placement of Level II and III credentialed space professionals. And it depends on the aggregate acquisition resources available at the institution or at their disposal.

Like other Service schoolhouses, the NSSI shaped courses with student educational levels, job knowledge, operational assignments, and practical experiences in mind. They also found the need to establish a common educational denominator via prerequisite education. Consequently, the NSSI sends prospective students CDs containing lessons on GPS, orbital mechanics, satellite communications fundamentals, and space environment.

Student knowledge levels on fundamentals are now relatively even when students arrive for class.

What Courses Might Help Space Professionals Achieve Credit Toward Acquisition Certification?

Since the majority of acquisition education at the NSSI centers on a general understanding of acquisition, some additional rigor may be required. Very few space professionals are DAWIA-certified, even at the entry level, unless they find themselves in space or missile acquisition project offices. To reverse the trend, DoD could award acquisition certification equivalencies in some functional categories after completion of certain sanctioned NSSI courses. The NSSI and DAU are investigating what particular courses, in combination with other DAU courses (resident or distance learning), might be candidates for DAWIA certification in some functional areas. Space 200 and Space 300 are likely contenders for meeting part of Program Management Levels I and II, since they contain many similar lessons. Similar justifications may apply to other functional areas like systems engineering.

Importance of Distance Learning

NSSI, like many educational organizations, is exploring the benefits of virtual education to supplement classroom attendance. Distance learning provides real educational flexibility for both the instructors and students and, given the time demands on the workforce, might be the most reasonable method available to augment additional NSSI acquisition education. With broad experience and expertise in distance learning, DAU is in a good position to support NSSI's efforts. DAU is already helping develop a space continuous learning module that focuses on National Security Space Policy NSS 03-01 (a hybrid directive formed after blending NRO's Directive 7 and DoD's Directive 5000.1 designed to better accommodate space system acquisitions). This module will serve as an invaluable litmus test for other acquisition distance learning opportunities that show promise for space professionals.

The outlook for space professional education at the NSSI is excellent. The NSSI and DAU partnership will help diversify and enhance the nation's credentialed space professional community educational program. As Air Force Gen. Lance Lord, commander of Air Force Space Command, has said, "The first step to securing our future is to efficiently acquire the space systems and capabilities required by the joint warfighter. ... The joint warfighter's need for space demands nothing less."

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