



Examination of Environmental Engineering Topics Taught in United States Federal Service Academies and Senior Military Colleges

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Abstract

There are eleven Federal Service Academies and Senior Military Colleges in the U.S. These military schools emphasize academic rigor, military education, physical fitness, and character development. For those enrolled in the officer training program, each of these institutions grants a bachelor's degree and a commission as a military officer upon successful completion of academic, military, and physical programs. Two military schools, the U.S. Military Academy at West Point and Norwich University, were among the first engineering schools in the U.S., offering engineering degrees since the early 1800s. Almost all other Federal Service Academies and Senior Military Colleges currently offer engineering degrees; however, the engineering disciplines available for study at each vary. This study examines the current state of environmental engineering topics, including programs and course offerings, at all eleven Federal Service Academies and Senior Military Colleges. Specifically, this study identifies where environmental engineering (or similarly named disciplines) are placed within academic departments, available focused degree options, available environmental engineering courses at each institution, student enrollment data, and military occupational specialties that environmental engineers can enter upon commissioning into military service. Results suggest that despite the emergence of environmental engineering as a distinct academic discipline, at present, only one military school offers an ABET-accredited undergraduate degree. However, all but three (the Naval Academy, the University of North Georgia, and the Merchant Marine Academy) provide environmental engineering education in some form. The other eight military schools examined nest environmental engineering within civil engineering, but do not currently offer a separate accredited environmental engineering degree. To illustrate differences in environmental topic offerings, a deep-dive comparison between the U.S. Military Academy, a military school with an ABET-accredited environmental engineering program, and The Citadel, which offers environmental courses within an ABET-accredited civil engineering degree, is provided. Enrollment data and the number of degrees conferred suggest large differences between institutions, with the number of graduating students ranging from a low of 9 to a high of 254. Analysis of environmental engineering-related military occupational specialties indicates that almost every branch of the military has relevant environmental engineering positions and commissioned officers have opportunities to practice upon graduation.

Keywords

Environmental Engineering, Military College, Service Academy, Undergraduate Degree

1. Introduction

1.1. Early Engineering Education at Military Schools

Jewell et al. (2001), who provide a summary of early engineering education in the U.S. prior to 1850, state that engineering education was first observed at four colleges in the Northeast in the early 1800s: the U.S. Military Academy (West Point, NY), Rensselaer Polytechnic Institute (Troy, NY), Norwich University (Northfield, VT), and Union College (Schenectady, NY) [1]. The U.S. Military Academy, henceforth called West Point, and Norwich University were each established as military and engineering schools. At West Point, artillery officers and engineers were trained as early as 1796 to support the Continental Army. However, the U.S. Military Academy was officially established by Act of Congress under President Thomas Jefferson in 1802, making it the first military academy in the U.S [2]. A mission of West Point was to produce technically trained officers capable of designing and developing infrastructure during both wartime and peace. The War of 1812 catalyzed the need for competent engineering-minded military officers and West Point was authorized to hire its first professor of engineering in 1813, Captain Alden Partridge [1]. After then, civil engineering topics, to include instruction on the design and construction of roads, bridges, canals, and fortifications, were included in the West Point curriculum. These topics, coupled with cutting edge courses in subjects like mathematics and physics, helped make West Point one of the foremost scientific institutions in America for the first half of the 19th century. By 1860, of the eight civilian technical colleges in the U.S., seven used the West Point curriculum and had West Point graduates on their staffs [1].

Norwich University was founded in 1819 by Captain Alden Partridge after he was court martialled and relieved of his responsibilities at West Point [1]. Norwich was initially named the American Literary, Scientific and Military Academy and its initial course of instruction included civil engineering topics of road, canal, lock, and bridge construction, as well as other related areas like architecture and surveying. Norwich University established a formal Department of Civil Engineering in 1834 [3]. In total, Norwich graduated 16 civil engineers between 1834 and 1850 (of note, they graduated 3 other civil engineers between 1819 and 1834) [1].

1.2. Evolution of Environmental Engineering Education in the U.S.

Today, environmental engineers serve the health and well-being of society by providing technical or engineered solutions to problems involving environmental and/or natural systems [4]. However, the origins of environmental engineering in the U.S. lay in the practices of hydraulic engineering in the early 1800s and sanitary engineering in the 1830s [5]. In the mid-1800s, as public water conveyance systems became more common, water quality concerns grew and sanitary chemistry emerged as a new area of environmental engineering [6]. Anderson (2002) provides a succinct history of environmental engineering in the U.S., to include description of the development of environmental practices and education [6]. The first sanitary chemistry lab for water quality examination in the U.S. was created at the Massachusetts Institute of Technology (MIT) in 1874. Subsequent work at the Lawrence Experiment Station in Massachusetts helped establish biological wastewater treatment; however, formal engineering design evolved more slowly as engineers continued to explore best practices. In 1889, MIT established the first undergraduate degree-granting program in sanitary engineering, which incorporated courses in sanitary chemistry and sanitary biology. MIT concurrently changed the

name of its civil engineering department to the Department of Civil and Sanitary Engineering. However, the number of formally educated sanitary engineers remained small. By 1899, only two schools offered degrees in sanitary engineering (MIT and the University of Illinois) and there were only 19 students enrolled in sanitary engineering programs (of 9,679 students engineering students nationwide) [5, 6].

Advances in practice in the World War I era helped set professional standards for the discipline. For example, beginning in 1913, a group of engineers and scientists, to include Streeter, Phelps, and others, worked to understand how the presence of bacteria impacted streams and, in doing so, created the Oxygen Sag Curve model. Metcalf and Eddy's first publication of *American Sewerage Practice* was in 1915 and, in 1923 Abel Wolman developed controlled chlorination of water. In 1913, MIT combined with Harvard University to establish the MIT-Harvard School of Public Health [6]. By 1949, approximately one-half of American doctorates in sanitary engineering up to that time had been earned at Harvard. The post-World War II expansion of industry concurrently increased the quantity of chemical and industrial wastes deposited in water bodies, in the air, and on land, thereby increasing the scope of the environmental engineering discipline [6]. The emergence of environmental engineering as an independent discipline distinct from civil engineering in the U.S. came from the environmental revolution and the creation of several environmental regulatory initiatives between 1970 and 1980 (e.g., the Clean Air Act and the Clean Water Act) [7]. The range of activities that require environmental engineering expertise continues to evolve with time and the needs of society, and very likely will continue to for the foreseeable future [8].

Today ABET accreditation is widely held as foundational for engineer's professional licensure in the United States. As of the time of publication, ABET has 91 current programs in the US with accredited Environmental Engineering Bachelor's degrees [9]. This compares to a total of 294 programs with accredited Civil Engineering Bachelor's degrees. These relative program frequencies may be seen as another reflection of the more recent emergence of environmental engineering as an independent discipline.

1.3. U.S. Federal Service Academies and Senior Military Colleges

Today in the U.S. there are eleven Federal Service Academies or Senior Military Colleges. In addition to the aforementioned West Point, Federal Service Academies include the U.S. Air Force Academy, the U.S. Coast Guard Academy, the U.S. Merchant Marine Academy, and the U.S. Naval Academy. In addition to Norwich University, other Senior Military Colleges in the U.S. include The Military College of South Carolina (or simply, The Citadel), Texas A&M University, the University of North Georgia, Virginia Military Institute (VMI), and the Virginia Polytechnic Institute and State University (i.e., Virginia Tech). These military schools emphasize academic rigor, military education, physical fitness, and character development. Each of these institutions grants a Bachelor of Science (BS) degree and the opportunity to commission as a military officer upon successful completion of academic, military, and physical programs. Almost all Federal Service Academies and Senior Military Colleges currently offer engineering degrees; however, the engineering disciplines available for study at each vary.

The purpose of this study is to examine the current state of environmental engineering topics taught at all eleven Federal Service Academies and Senior Military Colleges. Specific areas of

examination include programs, course offerings, placement within academic departments, available degree options, and student enrollment data. An in-depth comparison of West Point and The Citadel highlights the differences between an independent ABET-accredited environmental engineering program and an ABET-accredited civil engineering program that offers environmental engineering courses. This study also identifies higher-level environmental commands within each branch of services and military occupational specialties that cadets majoring in environmental engineering can enter upon commissioning into military service. The intended audience for this study includes anyone interested in the history of engineering programs at military schools and those interested in how military schools educate students to serve as environmental leaders in the military today.

2. Data Collection Methods

Data for this study were gathered from publicly available documents and on-line repositories. Specifically, on-line degree catalogues and course descriptions were queried to identify courses related to environmental engineering. Enrollment data were collected from the National Center for Educational Statistics at the Institute of Education Sciences (U.S. Department of Education) for reference year 2019-2020 [10].

3. Results & Discussion

3.1. Placement and Characteristics of Environmental Engineering Topics

As history and ABET records would indicate, much of the environmental engineering education present at military schools in the United States is housed within Civil Engineering Departments. Out of the eleven schools in this study, only four do not include environmental engineering within civil engineering (Table 1).

Three schools - U.S. Naval Academy, University of North Georgia, and U.S. Merchant Marine Academy - do not offer environmental engineering nor civil engineering. However, topics related to hydrology are taught within Marine Engineering programs at the naval schools while North Georgia has a degree in Environmental Spatial Analysis which relates to the application of GIS technology in environmental modeling, a newer sub-field of environmental engineering.

In 1995, the Environmental Engineering BS program at West Point was accredited. The program is housed within the Department of Geography and Environmental Engineering, separate from civil engineering. It is also of note that Texas A&M has started a separate environmental engineering degree that will result in an Environmental Engineering BS. This program can receive ABET accreditation in the 2022-2023 academic year.

Even within Civil Engineering degree programs, several schools in the study allow students more focused environmental engineering course loads. For example, both VMI and Virginia Tech allow students to take additional environmental engineering elective courses in their senior year. Additionally, Texas A&M civil engineering majors currently select a course “track” within their major. These options include (1) Water Resources and (2) Environmental Engineering among other civil engineering topics.

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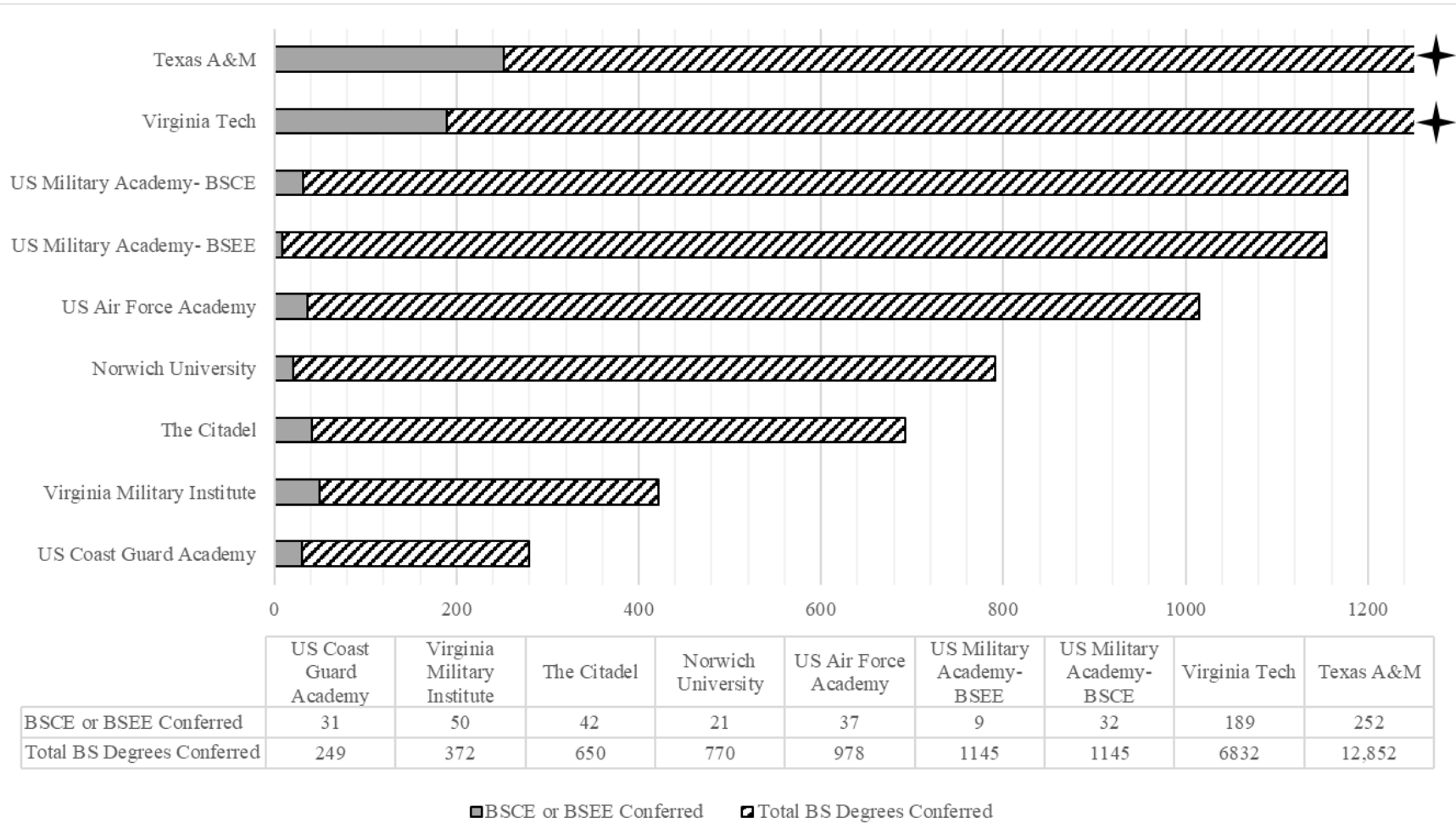
Table 1. Summary of academic departments at Federal Service Academies (FSA) and Senior Military Colleges (SMC) offering environmental engineering related topics at the undergraduate level. Many institutions offer Civil Engineering degrees which includes environmental engineering content.

* Denotes SMC where Engineering faculty do not wear military uniforms and/or hold military rank.

** BS degree offered notes the degree path that includes the most environmental engineering content. Further discussion of degree “tracks” and elective courses is elsewhere in this paper.

Institution	Location	Institution Type	Institution Established	Department	BS Degree Offered**	Original ABET Accreditation
US Military Academy	West Point, NY	FSA	1802	1) Geography & Environmental Engineering 2) Civil Engineering	1) Environmental Engineering 2) Civil Engineering	1995 (Environmental) 1985 (Civil)
Norwich University	Northfield, VT	SMC	1819	Civil & Environmental Engineering	Civil Engineering	1936
Virginia Military Institute	Lexington, VA	SMC	1839	Civil & Environmental Engineering	Civil Engineering	1936
The Citadel	Charleston, SC	SMC	1842	Civil, Environmental, & Construction Engineering	Civil Engineering	1936
US Naval Academy	Annapolis, MD	FSA	1845		1) General Engineering Naval 2) Architecture & Marine Engineering	2011 (General Engineering) 1972 (Naval Architecture)
Virginia Tech	Blacksburg, VA	SMC*	1872	Civil & Environmental Engineering	Civil Engineering	1936
University of North Georgia	Dahlonega, GA	SMC*	1873	Environmental Spatial Analysis	Environmental Spatial Analysis	N/A
US Coast Guard Academy	New London, CT	FSA	1876	Civil Engineering	Civil Engineering	1978
Texas A&M	College Station, TX	SMC*	1876	Civil & Environmental Engineering	1) Civil Engineering 2) Environmental Engineering	1936 (Civil) 2023 (Environmental)
US Merchant Marine Academy	Kings Point, NY	FSA	1943		Marine Engineering	1982 (Marine Engineering)
US Air Force Academy	Colorado Springs, CO	FSA	1954	Civil & Environmental Engineering	Civil Engineering	1967

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3.2. Comparison of Student Enrollment Data

Military academies and senior military colleges historically intended to prepare graduates for officer positions in the military. The senior military colleges have since opened enrollment, to varying degrees, to civilian students and the program offerings diversified accordingly. For example, as shown in Figure 1, The Citadel had 42 students graduate with BSCE degrees out of a total of 650 bachelor's degrees awarded in academic year 2019-2020. Per internal department records, approximately 30 of 42 and 590 of 650 were in the cadet program with the remaining balance as non-cadet students. Texas A&M and Virginia Tech have the largest overall enrollments (nearly 13,000 and 7000 students respectively received bachelor's degrees in the sampled year) with approximately 500 in their cadet programs. These schools have the largest number of students in Civil Engineering BS and/or Environmental Engineering BS programs, however, the percent of students in the degrees is comparable to most other schools (2% to 3%). It is unknown what percentage of those graduates were also in the cadet program. The highest relative number of BSCE and BSEE graduates from total enrollment are at VMI, US Coast Guard Academy, and The Citadel (13.4%, 12.4%, and 6.5% respectively). The only specifically environmental engineering program is offered by West Point. This is just under 1% of the total West Point bachelor's degree graduates.

3.3. Comparison of Environmental Engineering Topics Taught at The Citadel and West Point

As mentioned, at the time of this study, West Point is the only Federal Service Academy to offer a BS in environmental engineering. The program is ABET-accredited and housed in a department that does not include civil engineering. The Citadel teaches environmental engineering content as a part of the Civil, Environmental and Construction Engineering Department. Students graduate with an ABET-accredited Bachelor of Science degree in civil engineering.

West Point's environmental engineering program has been accredited by ABET since 1995, soon after the major was established [7]. Of note, very early West Point graduates did not receive degrees in engineering, but instead just received commissions in the Regular Army. West Point began granting undergraduate degrees in 1933, but it wasn't until 1985 that West Point cadets were allowed to declare individual academic majors – beforehand all graduates were awarded a general B.S. degree [2]. Accordingly, West Point did not accredit engineering programs through ABET until 1989 [1]. For the Class of 2022, each environmental engineering major must complete a 22-course core curriculum, which includes humanities and social science classes (e.g., military history, international relations, psychology) and STEM courses (e.g., general chemistry, math modeling). West Point environmental engineering majors are also required to take 17 major specific courses and 3 electives to earn an environmental engineering degree (Table 2). Environmental engineering labs are embedded directly into five separate courses; therefore, cadets do not take a separate lab course. In addition to academic courses, cadets take numerous military and physical courses, as well as complete rigorous military summer training requirements.

The Citadel's civil engineering program has been ABET-accredited since 1936. Prior to 1916, Citadel graduates only had three options for majors, offering specialization beyond the general education curriculum: civil engineering, the sciences, or literature. The earliest graduates, after


the formation of the school in 1842, were selected from across the state of South Carolina and were subject to a blend of the military training rigor of West Point and the broader scientific education possible at contemporary universities. Among this early course load are many topics that pertain to environmental engineering as defined today, including Architecture, Civil and Military Engineering, Topographical Drawing, Chemistry, Physics, Geology, Mineralogy, and Botany. Under the current model, students in the Class of 2022, must complete a 32-course sequence of civil engineering courses in addition to 20 general education courses including foundational math, science, and history courses. There are no electives in the civil engineering courses. Students enrolled in the cadet program, also must take an additional 14-course sequence in leadership, physical fitness, and military principles as a part of The Citadel's military environment. For cadets who are not contracted with a military branch, some of the military courses are waived.

Figure 2 provides a course mapping of environmental engineering topics taught The Citadel and West Point. To highlight similarities and differences in the programs, 12 key environmental engineering themes were selected using verbiage from ABET Program Criteria [11]. For The Citadel, seven of the themes are primarily taught in one course, CIVL 322 (Introduction to Environmental Engineering), though they may be secondary learning content in other courses. Other topics are covered principally in general STEM courses (i.e., chemistry and biology) or in CIVL 409 (Geotechnical Engineering). Within the civil engineering curriculum, the courses considered environmental engineering topics, and thus taught by faculty with an environmental engineering specialization, include: Fluid Mechanics, Hydrology, Water and Wastewater Treatment, and Introduction to Environmental Engineering. While the first three focus on water, the introduction course also includes discussion of solids and gases as they pertain to environmental topics. The environmental sequence also includes two laboratory classes. Under this construct, students interested in environmental engineering earn a degree in civil engineering but have a concentration of required courses in environmental themes providing a broad educational experience.

As an ABET-accredited major, the environmental engineering program at West Point has designated a course (or courses) to address each of the Program Criteria. EV301 (Environmental Science for Engineers and Scientists) is the first environmental course taken by environmental engineers and introduces several important environmental topics; therefore, EV301 is listed in Table 2 as covering numerous criteria. Similarly, EV490 (Environmental Engineering Design) and EV491 (Advanced Environmental Engineering Design) reinforce or synthesize several criteria as cadets prepare for graduation and are therefore listed as the primary course for several criteria listed in Table 2. Also of note, West Point addresses ABET Program Criteria "c", which discusses hands-on laboratory experiments and data interpretation in more than one environmental engineering focus area, by including a 0.5-credit laboratory component in five different courses: EV394 (Hydrogeology & Hydraulic Systems), EV396 (Environmental Biological Systems), EV401 (Physical and Chemical Treatment), EV402 (Biochemical Treatment), and EV488 (Solid & Hazardous Waste Treatment and Remediation). Under this construct, environmental engineering majors at West Point are provided in-depth lab experiences throughout their curriculum.

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Figure 2. Mapping of Courses from The Citadel and West Point that Introduce Environmental Engineering Topics listed in Program Criteria. Courses from The Citadel are listed in the left-hand column, ABET Program Criteria topics are listed in the center column, and West Point Courses are listed in the righthand column. Several courses at both The Citadel and at West Point cover these topics beyond the “primary” course listed; additional notes are provided below the figure.



Primary Course ¹	ABET Program Criteria	Primary Course
Chemistry 1 & 2 (w/ lab) CHEM 151, 161, 152, 162	Chemistry	General Chemistry 1 & 2 (w/ lab) CH101/151, CH102
Geotechnical Engineering CIVL 409	Earth Science	Physical Geography EV203
Biology (w/ lab) BIOL 150, 151	Biological Science	Environmental Biological Systems EV396
Fluid Mechanics & Hydrology CIVL 320, 321	Fluid Mechanics	Thermo / Fluid Systems MC311
Intro to Environmental Eng. CIVL 322	Material & Energy Balances	Ev Science for Engineers EV301
Intro to Environmental Eng. CIVL 322	Fate & Transport of Substances	Environmental Chemistry XS391
Fluid Dynamics Lab (CIVL 418) & Environmental Eng. Lab (CIVL 419)	Hands-on Lab Experiments	Multiple Courses: See Note 2
Intro to Environmental Eng. CIVL 322	Risk & Uncertainty	Solid & Hazardous Waste EV488
Intro to Environmental Eng. CIVL 322	Sustainability	Ev Science for Engineers EV301
Intro to Environmental Eng. CIVL 322	Lifecycle Principles	Environmental Eng. Design EV490
Intro to Environmental Eng. CIVL 322	Environmental Impacts	Environmental Eng. Design EV490
Intro to Environmental Eng. CIVL 322	Enviro Policy and Regulations	Multiple Courses: See Note 3

¹ The Citadel also offers an advanced Water and Wastewater Treatment course (CIVL 408) that provides in-depth study of several ABET Program Criteria.

² West Point courses that have hands-on laboratory experiments are discussed in Section 3.3.

³ Environmental Policy and Regulations are covered in almost every West Point course, to include: EV301, EV394 (Hydrogeology & Hydraulic Design), EV396, EV397 (Air Pollution Engineering), EV401 (Physical & Chemical Treatment), EV402 (Biochemical Treatment), EV481 (Water Resource Planning and Design), EV488, and XS391.

3.4. Majors Commands and Military Occupational Specialties Relevant to Environmental Engineering

The U.S. Army, U.S. Air Force, and U.S. Navy have major commands directly responsible for the design and execution of civil and environmental engineering works. More specifically, the U.S. Army is home to two entities that address environmental problems or projects. First, the U.S. Army Environmental Command’s (USAEC) mission is to deliver cost-effective environmental services globally to enable Army readiness, to include leading and executing

cleanup and environmental quality programs [12]. More outward facing, the second is the U.S. Army Corps of Engineers (USACE) Environmental Program, which prides itself on being the “nation’s environmental engineer”. USACE (or “the Corps”) manages several large federal missions, to include regulating waterways, managing natural resources, constructing sustainable facilities, and restoring degraded ecosystems. The Corps also cleans up contaminated sites from previous military activities [13]. In the U.S. Air Force, the Air Force Civil Engineer Center (AFCEC) oversees environmental missions, to include environmental restoration, environmental assessments or impact studies, and wildland fire support. The AFCEC also provides environmental support in the areas of air quality, hazardous materials, natural resources, pollution prevention, and water quality, amongst others [14]. The U.S. Navy’s Naval Facilities Engineering Systems Command (NAVFAC) has an Environmental Program that provides environmental support to the Navy and Marine Corps. Focus areas for NAVFAC’s Environmental Program center on environmental management practices, which conserve, protect, and restore the environment. Some specific areas listed include Clean Air Act compliance, asbestos consultation and remediation, environmental quality assessments, hazardous waste program management, and natural resources management [15]. Specific to oceans and U.S. waterways, one of the U.S. Coast Guard’s missions is ecosystem protection. Accordingly, the Coast Guard maintains a Marine Environmental Protection program, managed by the Office of Marine Environmental Response Policy. Under this office, the U.S. Coast Guard develops and enforces regulations regarding invasive species, unauthorized ocean dumping, and prevention of oil and chemical spills [16].

Beyond major commands overseeing operations related to environmental protection, each branch of military service has occupational specialties associated with environmental science, environmental engineering, or public health. Several of these specialty areas are available to newly commissioned officers, while others can only be transferred into after several years of service. Table 2 provides a survey of environmental jobs in each military branch. As shown, each branch of service has civil engineers and some form of environmental officer, e.g., bioenvironmental or marine. Each branch of service also has a public health officer. Often these positions do not require an environmental engineering or environmental science degree but do require additional military schooling related to environmental topics (e.g., indoor air quality).

As mentioned, many cadets that major in environmental engineering or civil engineering with an environmental focus do not assess directly into one of the jobs listed in Table 2. For many, the opportunity to transition into a job coded as an environmental engineer comes later in their military career. For example, at West Point only 1 or 2 cadets per year matriculate into the Medical Service Corps with the intent of becoming an Environmental Science & Engineering Officer. The more common pathway for West Point cadets is to enter the Engineer Branch and work towards serving in a position that does environmental engineering work. It is also common for environmental engineering majors to serve in positions that leverage their leadership skills and an engineering mindset, such as the Infantry, Armor, or Aviation branches of the U.S. Army.

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Table 2. Summary of occupational specialties related to environmental protection, to include environmental science, environmental engineering, and public health. Note, this analysis does not consider occupational health or safety-related positions, as they tend to come from other disciplines. Also, the Merchant Marines have no readily available published environmental occupational specialties. This list is not exhaustive and there may be niche specialty positions overlooked in this survey. Links to each occupational specialty are included in the reference section (subset at the end of the reference list).

Branch of Military Service	Occupational Specialty
U.S. Air Force	<ul style="list-style-type: none"> • Civil Engineer • Bioenvironmental Engineer • Public Health Officer
U.S. Army	<ul style="list-style-type: none"> • Environmental Science & Engineering Officers • Specific jobs within the U.S. Army Corps of Engineers • Environmental Compliance Officer (additional duty at unit-level) • Combat Engineer Officer
U.S. Coast Guard	<ul style="list-style-type: none"> • Environmental Health Officer • Marine and Environmental Scientists
U.S. Navy	<ul style="list-style-type: none"> • Civil Engineer • Public Health Officer • Marine Corps Environmental Compliance Officer (additional duty)

4. Conclusion

The environmental engineering discipline continues to grow and evolve, as does the way the discipline is taught at colleges and universities. The placement and characteristics of environmental topics taught at each service academy or senior military college varies substantially. At present, West Point has the only ABET-accredited environmental engineering program; however, has one of the lowest enrollments of all military colleges. Several other military schools have followed a traditional paradigm of teaching environmental engineering topics within a civil engineering curriculum. Each of these programs provides specialized training that may be leveraged by each military branch to fill environmental engineer or science positions specific to the branch, although there are relatively few direct pathways to practicing environmental engineering immediately following commission. While this may be perceived as a gap, there is also no demonstrated need to create such pathways. Given the evolution of environmental engineering as a discipline, we predict that the teaching of environmental engineering topics at military schools will continue to expand, but that the specific subdisciplines taught (e.g., engineering specific to waterways, or specific to public health) will be principally driven by the demonstrated needs specific to each military branch. Further, as existential environmental threats (e.g., climate change) increasingly impact national security, we predict that environmental engineering topics taught at each military college will morph to address these specific needs.

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- [15] Naval Facilities Engineering Systems Command (NAVFAC): https://www.navfac.navy.mil/products_and_services/ev.html
- [16] U.S. Coast Guard: <https://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Response-Policy-CG-5R/Office-of-Incident-Management-Preparedness-CG-5RI/Marine-Environmental-Response-CG-MER/>

Additional References: Occupational Specialty Weblinks

U.S. Air Force

Civil Engineer: <https://www.airforce.com/careers/detail/civil-engineer>

Bioenvironmental Engineer: <https://www.airforce.com/careers/detail/bioenvironmental-engineer>

Public Health Officer: <https://www.airforce.com/careers/detail/public-health-officer>

U.S. Army

Environmental Science & Engineering Officer: <https://www.goarmy.com/careers-and-jobs/career-match/science-medicine/research/72d-environmental-science-engineering-officer.html>

U.S. Coast Guard

Environmental Health Officer: <https://www.gocoastguard.com/active-duty-careers/officer-opportunities/programs/environmental-health>

Marine and Environmental Science Careers: <https://www.uscga.edu/mes-careers/>

U.S. Marine Corps (within the U.S. Navy)

Environmental Compliance Coordinator (additional duty): <https://www.pendleton.marines.mil/Staff-Agencies/Environmental-Security/Compliance-Requirements/Environmental-Compliance-Coordinator/>

Environmental Engineering Compliance Officer: <https://www.careersinthemilitary.com/service-career-detail/marine-corps/environmental-health-and-safety-officers/environmental-engineering-management-officer>

U.S. Navy

Environmental Health Officer: <https://www.navy.com/careers/environmental-health>

US Navy Civil Engineer: <https://www.navy.com/careers/civil-engineering>