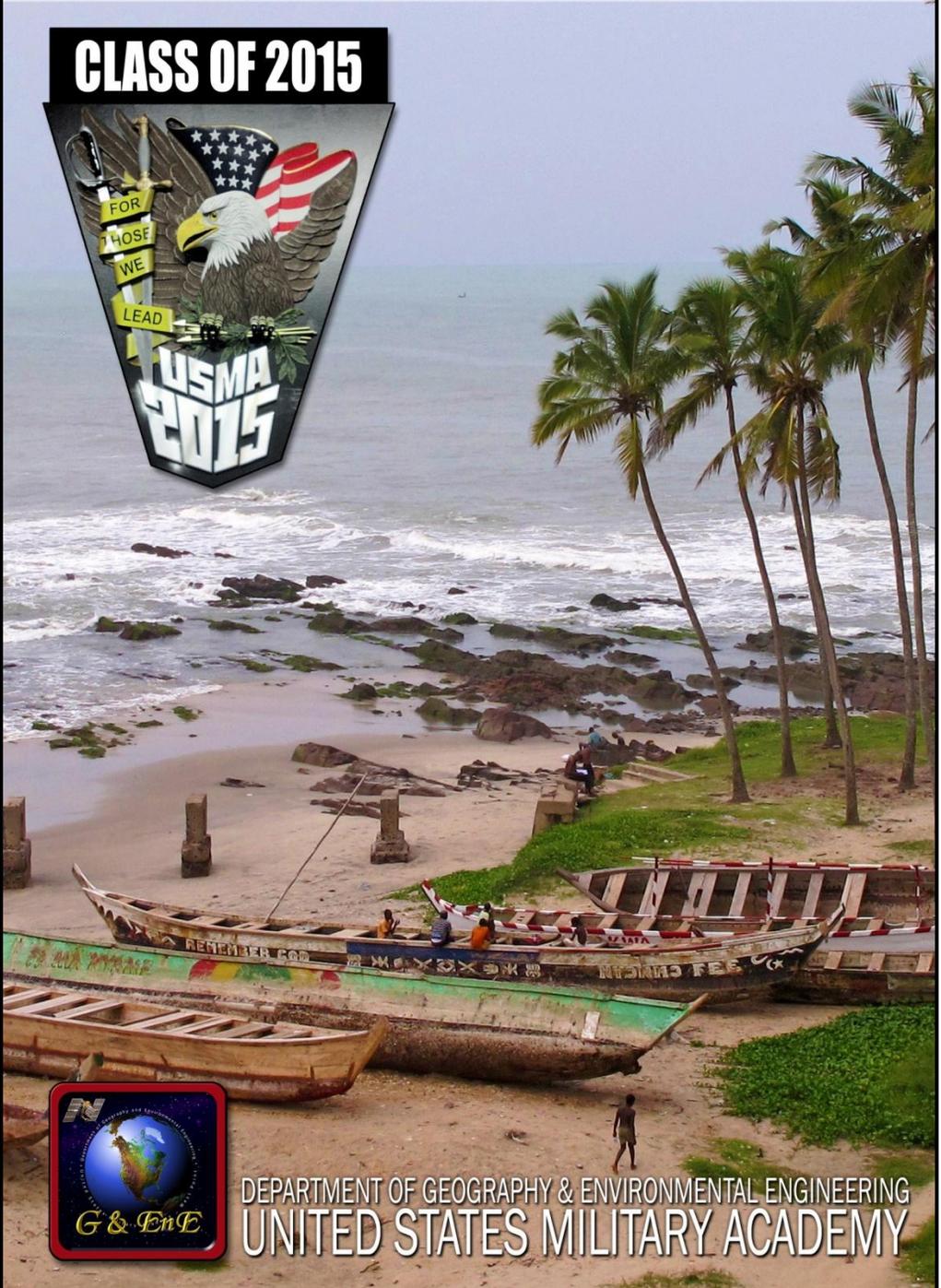


DEPARTMENT CATALOG & GUIDE TO ACADEMIC PROGRAMS

CLASS OF 2015



DEPARTMENT OF GEOGRAPHY & ENVIRONMENTAL ENGINEERING
UNITED STATES MILITARY ACADEMY

**DEPARTMENT OF GEOGRAPHY &
ENVIRONMENTAL ENGINEERING**
UNITED STATES MILITARY ACADEMY



**COLONEL THAYER,
FATHER
OF THE
MILITARY ACADEMY**



DEPARTMENT CATALOG AND GUIDE TO ACADEMIC PROGRAMS

FOR THE CLASS OF 2015

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Hometown Distribution, USMA Class of 2015..... Inside Back Cover

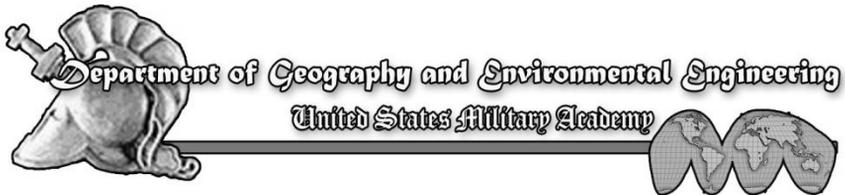
Department Web Site External to USMA:

<http://www.dean.usma.edu/departments/geo/>

Department Web Site Internal to USMA:

<http://usma-portal/collab/gene>

Department Academic Counselor: **MAJ Dustin Menhart**



MESSAGE TO CADETS

The mission of the Department of Geography and Environmental Engineering is to enhance the intellectual, character, and military development of all cadets within the context of a core course in physical geography, a three-course engineering sequence, five distinct majors, and an assortment of elective courses. We offer studies in geography, environmental engineering, environmental science, and geospatial information science—disciplines that have unquestionable relevance for our Army and Nation.

The Department's overarching theme is to better understand the world in which we live. We offer a diverse group of majors and honors programs, which prepare cadets for service in the Army and encourage a lifetime of intellectual growth. These include:

1. **Human Geography:** the spatial study of people, their activities, and the places they inhabit.
2. **Environmental Geography:** the study of the interactions between people and the natural environment.
3. **Environmental Science:** a broad, integrative science-based study of how humans affect the planet with the goal of creating a sustainable future for all.
4. **Environmental Engineering:** the application of science and engineering principles to minimize the adverse effects of human activities on the environment and to protect human health by providing clean air and clean water.
5. **Geospatial Information Science:** the integration and analysis of satellite, GPS, and map intelligence information.

Our majors and honors programs will prepare cadets for lifelong professions that are personally rewarding and important to our nation. Despite the continual changes in our Army and throughout the world, there are several constants that continue to serve as guideposts for our profession:

- ★ Understanding weather and terrain will always be among the keys to victory in battle and success during other military operations.
- ★ Understanding other people is necessary to preserve peace.
- ★ Understanding our Earth is critical for our future health and well-being.

These imperatives describe what we in the Department of Geography and Environmental Engineering offer to you, first in our core course in physical geography and continuing with our exciting majors, honors programs, and environmental engineering sequence. In some respects, our mission is the same as every academic department at West Point: to prepare cadets for a career in the Army and a lifetime of service to the nation. Each academic course has the objective of developing you as a self-learner, problem solver, and critical thinker; all of which are attributes critical for success as a leader in the Army. In choosing a major, you select a subject to investigate in depth. Both the knowledge gained and the learning skills developed in this process prepare you to contribute to the Army and the nation. Your task in selecting a major is to find the subject that excites you and inspires a vision for your future. We have much to offer - let us tell you more!

Geography programs flourish in more than 275 universities across the country. Geography is an exciting discipline with great variety and tremendous relevance for future Army officers. Our program at West Point teaches cadets about the Earth as the home of humanity. We offer studies focused on the diverse peoples of the Earth. Our **Human Geography** major examines the spatial differentiation and organization of people, their activities, and lifestyles. Majoring in **Environmental Geography** enables the student to comprehend the processes - natural and human - that form and change the Earth and to understand how people interact with the natural environment. In our capstone course ev203, the Army is used as a laboratory to demonstrate how understanding geography informs military operations across the spectrum from peacetime to war. Geography majors have opportunities for advanced studies that literally take cadets around the world.

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The world's population of over 7 billion people places a serious burden on the sustainability of the Earth. The effects are now visible everywhere and include negative impacts on the air we breathe, water we drink, and soils that we depend on for growing food. Environmental Scientists and Engineers are at the tip of the spear in trying to solve environmental dilemmas. It is critical that we find ways to coexist with our natural environment. **Environmental Science** majors develop an understanding of the physical, chemical and biological processes that govern the Earth's activities. Cadets can choose to study in depth any of the ecological processes or methods that we use to analyze and protect the environment. Majoring in **Environmental Engineering** enables cadets to develop the skills needed to control human pollution of the air, land, and water. Environmental Engineering is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. The major prepares you to clean and sustain the environment, protecting all of us from the adverse impacts of human activity. Our graduates well exceed the national average pass rates on the Fundamentals of Engineering Exam, the first important step in becoming a licensed professional engineer.

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In our **Geospatial Information Science** program, you learn to analyze, describe, and visualize the features of the Earth in remarkable detail. The newest and best computer hardware and software are used to instruct you in remote sensing, surveying, computer cartography, and geographic information systems, just to highlight a few areas. Army applications of this technology for analyzing the battlefield are obvious, but there is much more ongoing in this field. If you have interest in this area, visit the instructors and let them tell you about this area of study and show you our state-of-the-art Geospatial Science Laboratory.

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Regardless of your major, the **Environmental Engineering Sequence** will enhance your West Point experience. This sequence accomplishes two goals in preparing you as an educated leader. First, it develops your ability to solve complex problems by introducing you to a decision-making process that is applied to current environmental issues. Second, the sequence provides an understanding of the key environmental issues threatening the well-being of the world today, such as safe and sufficient water for a growing world population, clean air and global atmospheric protection, and the management of hazardous and toxic wastes. You will examine the science underlying these issues as well as the laws and regulations established to protect people and the environment. The sequence culminates

by providing cadets with the opportunity to solve a complex environmental problem with competing technical, socio-cultural, political, and economic requirements.

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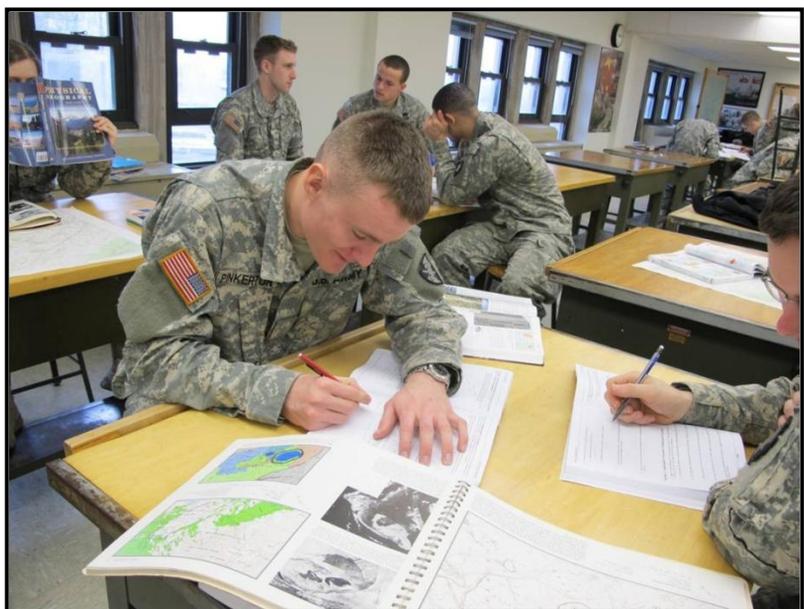
Your options are exciting and the possibilities are numerous. Please look through this booklet, consider what interests you, and then visit with our faculty. They are anxious to assist you in understanding the rewarding opportunities that are available within our department. ★

WILEY C. THOMPSON
Colonel, US Army
Professor and Head
Department of Geography
and Environmental Engineering





Environmental majors travelled to Uganda to build a biogas digester for a local school. The IAD-A was led by LTC Jeff Starke(2012)



Cadets in EV203 (Physical Geography) work on an image interpretation lab exercise.

GEOGRAPHY AND ENVIRONMENTAL ENGINEERING AFTER GRADUATION

Each of our majors is focused on preparing you for success as a leader. Successful leaders are incisive thinkers who critically evaluate and solve problems. Regardless of your major, you will develop analytical problem solving skills in our classes that will serve you well in the future. Many of the problems you will face in the Army will be examined in our classes because the Army is our laboratory and we study real world examples. You will also become a capable user of some of the most up-to-date technology in your field. The department has the best undergraduate laboratory facilities in the country, and our Geospatial Sciences Laboratory is world-class. Thus, you will learn to understand the world around you, and be prepared to solve its most complex environmental problems. Our AIAD programs will provide you with an opportunity to see how the Army uses your discipline through assignments to Army and DoD activities throughout the world.

Majoring in this department does not limit your branch opportunities – on the contrary, it expands your value in whatever branch you choose. Each branch needs leaders who understand the world, its people, and how they interact – our programs will give you those skills. All Army units must train and operate in varied operational environments and within the guidelines of established environmental regulations in a way that sustains limited training lands. Finally, the special skills learned as part of the geospatial sciences program are critical to all types of military planning and provide the critical spatial data that every Army deployment requires. ★

• **What Geographers and Environmental Engineers do for the Army**

As a geographer or environmental engineer, you will be an asset to any branch or functional area. Your keen understanding of culture, technology, and engineering will provide you valuable insights for any mission. As our Army continues to place increased emphasis on cultural awareness and environmental issues, you will be well positioned to succeed regardless of your branch. Here are just a few examples:

WARFIGHTING: Geographers and environmental engineers are found in all combat and support branches. Terrain, weather, climate, and cultural landscapes are typically the decisive geographic elements common to every tactical environment and across the spectrum of Army missions. An understanding of physical geography enables the officer to judge the influence of climate, soils, vegetation, and terrain on military operations. A clear awareness of the fundamentals of cultural geography is a critical element in operational planning, given the high probabilities of low and mid-intensity conflict. Officers trained in the geospatial information sciences permit the Army to retain an advantage in maintaining information dominance on the battlefield. Environmental engineers and scientists are well suited to understanding and addressing environmental issues associated with warfare ranging between the use of environmental warfare by our adversaries to the protection of our troops from disease and other wartime environmental hazards.

OPERATIONS OTHER THAN WAR: As the Army's mission profile increasingly expands to include stability and support operations, the need for well-trained geographers and environmental engineers will become critical. Today's peacekeeping and humanitarian

support missions occur around the world. Likewise, humanitarian assistance has been provided in places such as Kashmir, Sumatra, Pakistan, the Democratic Republic of the Congo, Rwanda and Sudan. These examples reflect the diverse array of culture systems and physical environments with which our soldiers must contend. Officers trained in human geography understand cultural, political, and economic situations and are a valuable asset to every peacekeeping mission. Environmental geographers can assess the natural landscape, environmental resources, and human-environment interaction, thus providing useful information during peacekeeping or disaster relief operations. The environmental engineer is well suited to meet the demands of these situations by providing safe drinking water, improving sanitary conditions, and mitigating adverse impacts of military operations. Finally, all Army units rely on geospatial information to ensure accurate, successful planning and mission execution. The ability to process multiple layers of data linked to an actual location on the ground allows the mission planner to make the most informed decision, from road construction to well digging, and route planning to crime-stopping.

SUPPORTING MILITARY TRAINING: During peacetime operations, leaders are increasingly challenged to develop imaginative ways in which to provide tough, realistic training while sustaining and improving the condition of our training areas. In preparing for the unit's wartime mission, a geographer's understanding of contingency locations around the world is useful in developing realistic training conditions. Environmental scientists and engineers implement policies that support a broad range of environmental protection regulations from resource management to hazardous waste disposal. Using modern geospatial information sciences and techniques, the spatial distribution of key training area resources as well as potential hazards are accurately recorded and analyzed.



Courses in the GIS program provide cadets the opportunity to gain real world experience with spatial information technologies.

GEOGRAPHY AND ENVIRONMENTAL ENGINEERING AT WEST POINT

• Overview

The department offers some of the best undergraduate facilities in the country for the study of geography, geospatial information science, and environmental science/engineering. Each cadet's elective sequence, regardless of the program, is tailored according to personal interests and abilities. Throughout the program of study, special attention is focused on the analysis and evaluation of significant human-environment problems. This theme permeates all aspects of the academic program.

• Opportunities for Cadets Selecting Department Majors

DEPARTMENT ACTIVITIES AND FACILITIES. Our majors are integrated into a variety of activities. Cadets are invited to attend lectures, seminars, and professional discussions on a wide array of subjects. Department facilities include a specialized library, map library, a geographic sciences laboratory, a geology laboratory, and environmental laboratories. Academic and social events are held frequently so that students and faculty can continue the interactive process of learning in a variety of forums.

INDIVIDUAL ADVANCED DEVELOPMENT. The department sponsors an outstanding summer intern program for approximately 60 upper-class cadets as a part of Cadet Summer Training. Cadets have the opportunity to work with agencies such as the Army Environmental Center, Army Environmental Policy Institute, Army Geospatial Center, National Geospatial Intelligence Agency, Army Research Institute, Environmental Protection Agency, and Defense Intelligence Agency. Cadet travel can cover the entire world, including Central Asia, Southeast Asia, the Middle East, or any of an ever-changing array of locations. These programs offer unique opportunities for cadets to broaden their education while observing the critical contributions of their discipline at high levels of government.

INDIVIDUAL RESEARCH. Each semester a number of cadets are selected to participate in individually designed research and study programs on topics of special interest. Cadets and a faculty sponsor design projects jointly. These research endeavors offer a unique opportunity to excel in an area of academic interest. Examples of recent projects include a yardage book and course guide for the West Point Golf Course using GIS, herbicide effectiveness on invasive lake species in Wilkins Pond, determining lead mobility from small arms ranges, mixing and stratification impact on water quality issues in Devils Lake, North Dakota, and an evaluation of beach erosion hot-spots along the mid-Atlantic coast.

HONORS PROGRAMS. Five of the department's six majors offer an honors program for qualified cadets. The Geography honors program begins during term seven as participants attend a research seminar. During this seminar, cadets explore salient research issues in their particular field, learn methodologies, and develop technical writing skills. As part of this seminar, each cadet will define a research topic, explore the literature, and develop a research proposal. During their final term, cadets will use the research proposal as a point of departure and conduct an independent study project. At the end of the year, cadets will present their findings to the faculty and submit a written honors thesis. The GIS and Environmental Science majors select one additional course from their respective electives

list and will complete an independent research project (EV489A) during term 7 or 8 and present their findings to their classmates and faculty. Environmental Engineering majors will complete an independent research project as one of their electives. Refer to the detailed program descriptions in this book and see your academic counselor for the specific details for each honors program as well as entry standards.

ACADEMIC AWARDS. The department recognizes its best cadets through a number of prestigious awards. The Congressional Medal of Honor Society Award is presented annually to a member of the graduating class for excellence in geography. The Order of the Founders and Patriots of America Award is presented annually to a member of the graduating class for excellence in environmental science or engineering. The National Organization of the Ladies Auxiliary Veterans of Foreign Wars of the United States Award is presented annually to a member of the graduating class for excellence in the Environmental Engineering sequence. The Environmental Systems Research Institute Award is presented annually to a member of the graduating class for excellence in geospatial information science. The BAE Systems Award for excellence in photogrammetry is presented annually to a member of the graduating class for excellence in aerial photography and photogrammetry. These honors are presented at the annual graduation awards convocation to the cadet in each respective major with the highest grade point average in the elective program.



Environmental majors on a course field trip to Wheelebrator to examine a local waste-to-energy plant. The cadets are standing on the tipping floor where Westchester's garbage is dumped prior to being burned to create electricity.

Academic Awards - Previous Awardees

• Congressional Medal of Honor Society Award for Excellence in Geography

12- Matthew McGoffin

11 – Alexander Keimach

10 - Nicholas Lewis-Walls

09 - Trey Wheeler

08 - Lauren Teal

07 - Jennifer Lichty

06 - Sarah McNair

05 - Kristin Davis

04 - Charles Lewis

03 - Thomas Lainis

02 - Eric Wilkinson

01 - Matthew Sullivan

00 - Joshua Schneider

99 - Matthew Debiec

98 - Michael Lipsner

97 - Aaron Ecklund

• Order of Founders and Patriots of America Award for Excellence in Environmental Science and Environmental Engineering

12- Bradley Potts

11 – Taylor Hirschev

10 - Nathaniel Sheehan

09 - Tyler Bott

08 - Russell Raines

07 - Brandon Woerth

06 - Justin Sprague

05 - Sean Healy

04 - Joe Marullo

03 - Sarah Williams

02 - Stephen Lewandowski

01 - Paul McBride

00 - Jeffery Jager

99 - Travis Rayfield

98 - Bradley Stoltz

97 - Ralph Radka

• National Organization of the Ladies Auxiliary VFW of the United States Award for Excellence in the Environmental Engineering Sequence

12- Alex Pagoulatos

11 – Kelly Macdonald

10 - Margaret Fountain

09 - Trey Wheeler

08 - Zachary Miller

07 - Jeremy Stratman

06 - Matthew Schardt

05 - Jordan Yokley

04 - Todd Martin

03 - Daniel Tran

02 - Jose Garcia-Aranda

01 - Jeffrey Han

00 - Nicholas Schommer

99 - Stephen Mintz

98 - William Blake

97 - Jacob Kramer

• Environmental Systems Research Institute Award for Excellence in Geospatial Information Science

12- Hannah Burgess

11 – Augustin Paulo

10 – Nicholas Lewis-Walls

09 – Nicholas Dieter

08 – Jonathan Dyer

07 – Jeremy Stratman

06 – Doug Calloway

05 – William Zielinski

04 – Grace Chung

03 - Jeffrey Oster

02 – Miguel Gastellum

01 - Ryan Piotrowski

00 - Joshua Schneider

• BAE Award for Excellence in Photogrammetry

12- Nick Bayer

11 – Rhys Hearn &
Byron Plapp

10 – Augustin Paulo

09 – Megan McIntosh

08 – Nicholas Dieter

07 – Andrew Morgan

GEOGRAPHY & ENVIRONMENTAL ENGINEERING PROGRAMS: CLASS OF 2015

SCOPE: Our Geography, Environmental, and Geospatial Information Science programs are designed to prepare cadets for careers involving the observation, evaluation and design of human and physical systems in today's interdependent world. State of the art departmental laboratory facilities support our programs.

OPTIONS: Students desiring to complete a baseline program have six alternatives for a major. Those who desire academic enrichment in the discipline and meet academic requirements may apply to participate in an honors program in five of our six majors. The program areas are:

- ★ Human Geography
- ★ Environmental Geography
- ★ Environmental Science
- ★ Environmental Engineering
- ★ Environmental Engineering Studies
- ★ Geospatial Information Science

CORE REQUIREMENTS: You must complete or have received USMA credit for the 26 core courses as shown in the General Section of the USMA Academic Program (Redbook) for your class. You must also fulfill the Information Technology core course requirement.

ENGINEERING SEQUENCE: The **3-Course Environmental Engineering Sequence** is available to all cadets. It provides an engineering sequence that focuses on important environmental issues and provides cadets with the opportunity to develop viable, sustainable solutions. It offers an opportunity to learn and apply the engineering design process in the natural world, within which social, political, cultural, and economic considerations are critical factors in decision-making. The environmental engineering sequence has three important objectives:

- ★ Fundamental knowledge of the most salient environmental issues and the ability to analyze their underlying causes and impacts on the natural environment.
- ★ The ability to formulate and communicate practical engineering solutions to important environmental problems.
- ★ The capability to develop and apply viable engineering solutions that conform to important economic, social, cultural, and political criteria.

The first course in the sequence, **EV300 Environmental Science** provides cadets with a broad understanding of environmental issues and how influences, especially human, cause changes in the balance of Earth's natural and biological cycles. The second course, **EV350 Environmental Engineering Technologies** builds on the EV300 experience through the application of science-based engineered solutions to common environmental issues. Finally, in **EV450 Environmental Decision Making** cadets learn to balance engineered solutions with economic, social, political, and ecological considerations, which focus on solutions for the developed world. Unlike EV350, many of the solutions developed during this course focus on the developing world in austere environments. These field expedient solutions are directly applicable to our Army ★

PROGRAM DESCRIPTIONS

• GEOGRAPHY

Geographers examine the spatial arrangements, processes, distributions, and organization of natural and human landscapes. Geography is a broad, integrating discipline with methodologies and analytical foundations that span engineering, science, and the humanities. Majoring in geography requires persistent curiosity and inquiry into human-land-environment interfaces: how natural systems function; how physical landscapes evolve; how human populations adapt; and how humans shape the environment. The majors allow cadets to explore geography either from a natural or social science perspective. The Environmental Geography program emphasizes the study of the natural landscape, anthropogenic influences on the environment, and natural hazards. The Human Geography program enables cadets to explore cultural diversity, population trends, economic, and political systems from a global and regional perspective. Both programs integrate the use of geographic skills such as computer cartography, remote sensing, and geographic information systems. Geography is the ideal discipline for an Army officer in a changing world. ★



POC: LTC Andrew Lohman, WH5304, x2930, andrew.lohman@usma.edu

• ENVIRONMENTAL SCIENCE

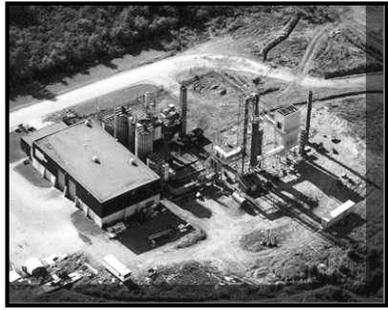
Environmental science is a broad, integrative, science-based discipline which focuses on the interrelationships between people and the environment. Environmental scientists conduct investigations to analyze these interrelationships and to identify, abate, or eliminate human-caused pressures on the environment. The ultimate goal of these investigations is to create a sustainable balance between humans and the natural world that minimizes environmental degradation. This major develops expertise into the processes that sustain our environment by expanding upon the West Point core science education by adding studies in the natural sciences such as biology, ecology, geology, and meteorology, and in the integrative studies of environmental decision making and environmental security. This broad academic background is excellent preparation for challenges faced by a military leader who must balance resource and human requirements. The program seeks to (1) enhance your curiosity about natural processes and your ability to study such processes as a scientist and (2) deepen your knowledge of human influences on the environment and foster evaluation of our individual and collective responsibilities as environmental stewards. ★



POC: Dr. Marie Johnson, WH5416, x4855, marie.johnson@usma.edu

• ENVIRONMENTAL ENGINEERING

Environmental engineers face a range of issues from disasters like air pollution from the 9/11 terrorist attack on the World Trade Towers or drinking water contamination following the catastrophic 2010 earthquake in Haiti. Environmental engineers use chemical, biological, and physical processes to engineer systems that address these issues. This discipline is evolving to face new challenges resulting from rapid growth in human population and technology.



Environmental engineers work in multidisciplinary teams to develop methods to combat global climate change; find alternative sources of energy; and recover materials from discarded products. It is not surprising that a report in *Fortune Magazine* identified environmental engineering as the fastest growing profession for the period 2002 to 2012. Our program provides you with an active learning experience designed to develop your knowledge of math, science, and engineering science and your ability to use this knowledge to be an active problem solver for complex environmental issues. This skill has been invaluable to our graduates in the Army as they worked environmental projects in Iraq and Afghanistan and improved the welfare of their soldiers. The objectives of the Environmental Engineering Program identify what our graduates can accomplish after graduation. Graduates of the Environmental Engineering Program can:

- Analyze and solve complex problems. Graduates can apply their knowledge of mathematics, science, engineering, and the humanities to analyze and solve practical problems to include those in Environmental Engineering. They can evaluate, mitigate, and communicate risk. They can use appropriate technologies to formulate effective, context-based courses of action; adapt methods and strategies to overcome incomplete or imperfect information; and recommend or choose a best course of action. Graduates can creatively adapt problem solving strategies and solutions to a rapidly changing and/or potentially life threatening situations. Problem solving is not bounded by disciplinary expertise. Graduates may encounter problems within the environmental engineering discipline, or within the broader context of officership in the profession of arms.
- Lead, manage, and execute. Graduates can lead people, manage resources and programs, prioritize activities, and execute projects within constraints to successfully complete the mission within the environmental field and the Army. Graduates must be able to execute an array of missions efficiently while minimizing environmental impacts. Potential missions include actions in combat, homeland security, disaster relief, humanitarian aid, and other operations under austere conditions.
- Communicate effectively. Graduates have the ability to listen to, understand, and assess varying viewpoints and can, based on this assessment, communicate pertinent information to stakeholders and the general public in such a manner as to bridge their differences and strengthen relationships among them.
- Recognize their roles as a professional. Graduates have internalized their professional responsibilities to society, the profession of arms, and the practice of engineering. They demonstrate internalization through participation in professional societies, continuing education, progression in assignments, community outreach, and other activities. ★

POC: Dr. Marie Johnson, WH5416, x4855, marie.johnson@usma.edu

• **GEOSPATIAL INFORMATION SCIENCE**



Fundamental to understanding our environment and the geography of the Earth is our ability to locate, measure, and quantify geographic phenomena. The discipline of geospatial information science (GIS) is concerned with the measurement of the Earth and of all that is on it—natural and manmade. The GIS major is accredited by the United States Geospatial Intelligence Foundation (USGIF). Cadets majoring in GIS develop expertise in subjects ranging from traditional methods of land surveying to satellite imaging and positioning systems. The GIS curriculum builds on a firm math, science, and geography foundation with specialized courses in surveying, cartography, photogrammetry, remote sensing, geographic information systems and military geospatial operations. Both the civil and military sectors of our society are placing an ever-increasing reliance on the ability to build and query geospatial information to support a myriad of social/economic and engineering issues. The cadet at USMA has a rare opportunity to pursue an integrated field of study that is commonly spread over several separate disciplines at other institutions. This major has applicability for the future military officer regardless of branch. Cadets majoring in GIS receive a 3Y (Space Activities) Skill Identifier on their official military record. Qualified cadets will also receive a Geospatial Intelligence Certificate from the USGIF upon graduation. The curriculum prepares cadets for advanced civil schooling in any of the specialized fields of GIS. ★

POC: Dr. John Brockhaus, WH5302, x2063, john.brockhaus@usma.edu

**GEOGRAPHY AND ENVIRONMENTAL ENGINEERING
FACULTY COUNSELORS FOR AY 12-13**

<u>PROGRAM</u>	<u>PROGRAM COUNSELOR</u>	<u>OFFICE</u>	<u>PHONE</u>
Geography	LTC Andrew Lohman	WH5304	2930
Environmental Engineering/Science	Dr. Marie Johnson	WH5416	4855
Geospatial Information Science	Dr. John Brockhaus	WH5302	2063
Counseling and Scheduling	MAJ Dustin Menhart	WH5319	3042

DEPARTMENT COURSE DIRECTORS

<u>COURSE</u>	<u>TITLE</u>	<u>COURSE DIRECTOR</u>	<u>OFFICE</u>	<u>PHONE</u>
EV203	Physical Geography	MAJ Malone	WH5316	3253
EV300	Environmental Science	MAJ Lewandowski	WH5415	3124
EV301	Environmental Science for Engineers and Scientists	LTC Henderson	WH5411	4869
EV303	Foundations in Geography	Dr. Malinowski	WH5323	4673
EV350	Environmental Engineering Technologies	MAJ Dietz	WH5315	0207
EV365	Geography of Global Cultures	LTC Lohman	WH5304	2930
EV371	Geography of Russia	Dr. Wolfel	WH4326	8798
EV372	Geography of Asia	Dr. Malinowski	WH5323	4673
EV373	Geography of Latin America	MAJ Morrow	WH5313	5421
EV375	Geography of Africa	MAJ Hanlon	WH5322	4622
EV376	Geography of the Middle East	LTC Lohman	WH5304	2930
EV377	Remote Sensing	Dr. Brockhaus	WH5302	2063
EV378	Cartography	COL Fleming	WH5414	3124
EV379	Photogrammetry	MAJ Anderson	WH5311	3540
EV380	Principles of Surveying	MAJ Anderson	WH5311	3540
EV384	Geography of North America	COL Thompson	WH6001	4035
EV385	Introduction to Environmental Engineering	Dr. Butkus	WH5317	2820
EV386	Geography of Europe	Dr. Siska	WH4330	4949
EV387	Meteorology	Maj. MacPherson	WH5415	3986
EV388A	Physical Geology	Dr. Johnson	WH5416	4855
EV388B	Geomorphology	MAJ Menhart	WH5319	3042
EV389B	Climatology	Dr. Kalkstein	WH5410	3403
EV390B	Urban Geography	Dr. Wolfel	WH4326	8798
EV391A	Principles of Land Use Planning and Management	Dr. Krawkowka	WH5409	3735
EV391B	Environmental Geology	LTC Smith	WH5424	3136

EV394	Hydrogeology	Dr. Butkus	WH5317	2820
EV396	Environmental Biological Systems	MAJ Lewandowski	WH5415	3124
EV397	Air Pollution Engineering	MAJ Pfluger	WH6003	3509
EV398	Geographic Information Systems	LTC Bailey	WH5413	3938
EV400	EV Engineering Seminar	MAJ Dietz	WH5315	0207
EV401	Physical and Chemical Treatment	LTC Starke	WH5320	4265
EV402	Biochemical Treatment	LTC Starke	WH5320	4625
EV450	Environmental Decision Making	LTC Starke	WH5320	4625
EV471	Ecology	LTC Smith	WH5324	3136
EV477	Advanced Remote Sensing	Dr. Brockhaus	WH5302	2063
EV478	Military Geospatial Operations	COL Fleming	WH6006	2326
EV480	Honors Seminar in Geography	Dr. Malinowski	WH5323	4673
EV481	Water Resources Planning and Design	MAJ Dietz	WH5315	0207
EV482	Military Geography	LTC Lohman	WH5304	2930
EV485	Special Topics in Geography and the Environment	Dr. Muhajir	WH6001	
EV486	Environmental Geography	COL Thompson	WH6001	4035
EV487	Environmental Security	Dr. Johnson	WH5416	4855
EV488	Solid and Hazardous Waste Treatment and Remediation	LTC Starke	WH5320	4625
EV489A	Advanced Individual Study I	Dr. Johnson	WH5416	4855
EV489B	Advanced Individual Study II	Dr. Malinowski	WH5323	4673
EV490	Advanced Environmental Engineering Design	Dr. Butkus	WH5317	2820
EV498	Advanced GIS	LTC Bailey	WH5413	3938
XS391	Prin. & Appl. of EV CHEM.	Dr. Butkus	WH5317	2820



Members of the 2011 Intercollegiate Champions Orienteering Team, sponsored by the G&EnE Department, received the Dean's award for highest GPA of all competitive clubs at West Point!



EV471 (Ecology) cadets cataloguing the biodiversity in an on-post stream.

HUMAN GEOGRAPHY

HUMAN GEOGRAPHY MAJOR (GEO)

HUMAN GEOGRAPHY MAJOR WITH HONORS (GEOH)

CORE CURRICULUM AND ENGINEERING SEQUENCE:

- Complete the 26-course core curriculum
- Complete any 3-course core engineering sequence
- Complete **one** of the following courses:

Course #	Course Title
IT305	Theory and Practice of Military IT Systems
IT355	Advanced Theory and Practice of Military IT Systems

FOUNDATION COURSES

- Complete the three courses listed below:

Course #	Course Title
EV303	Foundations in Geography
EV365	Geography of Global Cultures
EV398	Geographic Information Systems

REGIONAL GEOGRAPHY

- Complete **one** of the seven Regional Geography courses listed below:

Course #	Course Title
EV371	Geography of Russia
EV372	Geography of Asia
EV373	Geography of Latin America
EV375	Geography of Africa
EV376	Geography of the Middle East
EV384	Geography of North America
EV386	Geography of Europe

PHYSICAL GEOGRAPHY

- Complete **one** of the four courses listed below:

Course #	Course Title
EV388A	Physical Geology
EV388B	Geomorphology
EV389B	Climatology
EV391B	Environmental Geology

GEOGRAPHY TOOL

- Complete the course listed below:

Course #	Course Title
LX ____	Third Semester of Language

GEOGRAPHY ELECTIVE

- Complete **two** of the FIVE courses listed below:

Course #	Course Title
EV390B	Urban Geography
EV391A	Principles of Land Use Planning and Management
EV3XX	Any Regional Geography Course (see list on previous page)
EV483	Colloquium in Geography
EV485	Special Topics in Geography and the Environment

GENERAL ELECTIVE

- Complete **one** of the courses listed below:

Course #	Course Title
EV371	Geography of Russia
EV372	Geography of Asia
EV373	Geography of Latin America
EV375	Geography of Africa
EV376	Geography of the Middle East
EV377	Remote Sensing
EV378	Cartography
EV384	Geography of North America
EV386	Geography of Europe
EV387	Meteorology
EV388B	Geomorphology
EV389B	Climatology
EV390B	Urban Geography
EV391A	Principles of Land Use Planning and Management
EV391B	Environmental Geology
EV397	Air Pollution Engineering
EV478	Geospatial Military Operations
EV483	Colloquium in Geography
EV485	Special Topics in Geography and the Environment
EV486	Environmental Geography
EV487	Environmental Security
EV489A	Advanced Individual Study in Geography
EP333	Cultural Studies
EP392	Ethnic Literature
HI337	China – Kingdom to Communist Rule
HI339	The Modern Middle East
HI340	Colonial America
HI341	The Age of Exploration
HI342	The British Isles Since 1688
HI343	Modern Germany
HI345	Modern Africa
HI346	Modern South Asia

Course #	Course Title
HI347	Asian Warfare and Politics
HI349	The Middle East to 1798
HI360	History of the Classical World
HI361	History of Medieval Europe
HI362	History of Early Modern Europe
HI363	Europe in Transition and Revolution
HI364	Modern Western Europe
HI365	The Ancient World
HI367	History of Imperial/Soviet Russia
HI368	Mod. Central and E. Europe 1896-1989
HI369	American Frontiers
HI372	History of US Foreign Relations, 20 th Century
HI390	Early National America
HI391	History of World Religions
HI394	Revolutionary America
HI395	History of Civil War America
HI396	Making of Modern America
HI398	Society & Culture in American History
LW481	International Law
LX400	Fourth Semester, Foreign Language
MA376	Applied Statistics
MS360	Low Intensity Conflict
MS455	Comparative Military Systems
PL361	Research Methods
PL377	Social Inequality: Race, Gender, and Ethnicity
SS360	Political Analysis
SS366	Comparative Politics
SS368	Econometrics
SS372	Politics and Gov. of China
SS374	Politics & Gov. of Korea & Japan
SS375	Politics and Governments of Russia & Neighbors
SS377	Politics & Gov. of Europe
SS381	Political and Cultural Anthropology
SS383	Politics and Governments of the Middle East
SS384	Politics and Governments of Latin America
SS385	Comparative Economic Systems
SS485	Politics and Development in Sub-Saharan Africa

INTEGRATIVE EXPERIENCE

- Complete the following course:

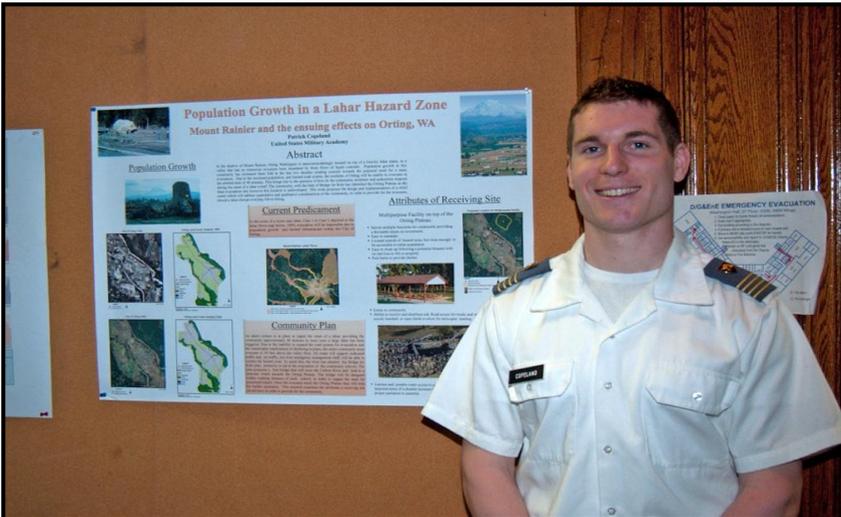
Course #	Course Title
EV482	Military Geography

HONORS PROGRAM IN HUMAN GEOGRAPHY

• Cadets pursuing the honors program in Human Geography must meet the entry-level requirement of having a 3.0 grade point average in the core curriculum, an APSC of at least 3.5 in the major, and approval by the Geography Program Director. Cadets approved for participation in the honors program must complete the following courses:

Course #	Course Title
EV480	Honors Seminar in Geography
EV489B	Advanced Individual Study II

Note: These courses are not restricted to honors cadets.



CDT Patrick Copeland (Geo, 2011) presents his honors thesis during Projects Day .



Cadets on a G&EnE sponsored AIAD to Israel.

ENVIRONMENTAL GEOGRAPHY

ENVIRONMENTAL GEOGRAPHY MAJOR (EGE) ENVIRONMENTAL GEOGRAPHY MAJOR WITH HONORS (EGEH)

CORE CURRICULUM AND ENGINEERING SEQUENCE:

- Complete the 26-course core curriculum
- Complete the Environmental Engineering Sequence
- Complete **one** of the following courses:

Course #	Course Title
IT305	Theory and Practice of Military IT Systems
IT355	Advanced Theory and Practice of Military IT Systems

FOUNDATION COURSES

- Complete the three courses listed below:

Course #	Course Title
EV303	Foundations in Geography
EV398	Geographic Information Systems
EV486	Environmental Geography

PHYSICAL GEOGRAPHY STEM

- Complete **one** of the courses listed below:

Course #	Course Title
EV388B	Geomorphology
EV389B	Climatology

PHYSICAL GEOGRAPHY ELECTIVE

- Complete **one** of the five courses listed below:

Course #	Course Title
EV387	Meteorology
EV388A	Physical Geology
EV388B	Geomorphology
EV389B	Climatology
EV391B	Environmental Geology

GEOGRAPHY TOOLS AND LANDSCAPE ANALYSIS

- Complete **one** of the three courses listed below:

Course #	Course Title
EV377	Remote Sensing
EV390B	Urban Geography
EV391A	Principles of Land Use Planning and Management

CULTURE STEM

- Complete the following course:

Course #	Course Title
EV365	Geography of Global Cultures

REGIONAL GEOGRAPHY ELECTIVE

- Complete **one** of the seven Regional Geography courses listed below:

Course #	Course Title
EV371	Geography of Russia
EV372	Geography of Asia
EV373	Geography of Latin America
EV375	Geography of Africa
EV376	Geography of the Middle East
EV384	Geography of North America
EV386	Geography of Europe

GENERAL ELECTIVE:

- Complete **one** of the courses listed below:

Course #	Course Title
EV371	Geography of Russia
EV372	Geography of Asia
EV373	Geography of Latin America
EV375	Geography of Africa
EV376	Geography of the Middle East
EV377	Remote Sensing
EV378	Cartography
EV379	Photogrammetry
EV380	Principles of Surveying
EV384	Geography of North America
EV386	Geography of Europe
EV387	Meteorology
EV388A	Geology
EV388B	Geomorphology
EV389B	Climatology
EV390B	Urban Geography
EV391A	Principles of Land Use Planning and Management
EV391B	Environmental Geology
EV394	Hydrogeology
EV397	Air Pollution Engineering
EV483	Colloquium in Geography
EV485	Special Topics in Geography and the Environment
EV487	Environmental Security
EV489A	Advanced Individual Study in Geography
LX300	Third Semester Foreign Language
MA376	Applied Statistics

Course #	Course Title
SS368	Econometrics I
SS385	Comparative Economic Systems
SS485	Politics & Development of Sub-Saharan Africa

INTEGRATIVE EXPERIENCE

- Complete the following course

Course #	Course Title
EV482	Military Geography

HONORS PROGRAM IN ENVIRONMENTAL GEOGRAPHY

• Cadets pursuing the honors program in Environmental Geography must meet the entry-level requirement of having a 3.0 grade point average in the core curriculum, an APSC of at least 3.5 in the major, and approval by the Geography Program Director. Cadets approved for participation in the honors program must complete the following courses:

Course #	Course Title
EV480	Honors Seminar in Geography
EV489B	Advanced Individual Study II

Note: These courses may be taken as additional electives by any cadet; it is not restricted to those in the honors program.



Left: Cadets experience the Physical Landscapes of Israel!

Right: The human perspective of Jerusalem!



ENVIRONMENTAL SCIENCE

ENVIRONMENTAL SCIENCE MAJOR (ESC)

ENVIRONMENTAL SCIENCE MAJOR WITH HONORS (ESCH)

CORE CURRICULUM AND ENGINEERING SEQUENCE:

- Complete the 26-course core curriculum
- Complete the Environmental Engineering Sequence
- Complete **one** of the following courses:

Course #	Course Title
IT305	Theory and Practice of Military IT Systems
IT355	Advanced Theory and Practice of Military IT Systems

FOUNDATION COURSES

- Complete the five courses listed below:

Course #	Course Title
CH375	Introduction to Biology
EV365	Geography of Global Cultures
EV388A	Physical Geology
EV471	Ecology
EV487	Environmental Security

ATMOSPHERE COURSE

- Complete **one** of the following courses:

Course #	Course Title
EV387	Meteorology
EV389B	Climatology

TOOLS ELECTIVE

- Complete **one** of the three courses listed below:

Course #	Course Title
CH387	Human Physiology
EV377	Remote Sensing
EV398	Geographic Information Systems

DEPTH ELECTIVES

- Complete **two** of the seven courses listed below:

Course #	Course Title
CH383	Organic Chemistry I
CH384	Organic Chemistry II
EV391A	Land Use Planning and Management
EV391B	Environmental Geology
EV396	Environmental Biological Systems
EV398	Geographic Information Systems
XS391	Principles and Applications of Environmental Chemistry

FIELD ELECTIVE

- Complete **one** of the thirty-nine courses listed below:

Course #	Course Title
EV377	Remote Sensing
EV378	Cartography

Course #	Course Title
EV380	Principles of Surveying
EV384	Geography of North America
EV386	Geography of Europe
EV387	Meteorology
EV388B	Geomorphology
EV390B	Urban Geography
EV391A	Principles of Land Use Planning and Management
EV391B	Environmental Geology
EV394	Hydrogeology/Hydraulic Systems
EV396	Environmental Biological Systems
EV397	Air Pollution Engineering
EV398	Geographic Information Systems
EV401	Physical and Chemical Treatment
EV482	Military Geography
EV488	Solid and Hazardous Waste Treatment and Remediation
EV489A	Advanced Individual Study I
XS391	Principles and Applications of Environmental Chemistry
MC300	Fundamentals of Engineering Mechanics and Design
CE380	Hydrology/Hydraulic Design
CH357	Microbiology
CH383	Organic Chemistry I
CH384	Organic Chemistry II
CH385	Introduction to Cell Biology
CH387	Human Physiology
CH460	Human Anatomy
CH481	Physical Chemistry I
EP386	Philosophy of Science
LW481	International Law
MA363	Vector Calculus and ODE
MA366	Applied Engineering Math
MA391	Mathematical Modeling
MA396	Numerical Methods for the Solution of DE
MA476	Mathematical Statistics
MS350	Military Communications
EM381	Engineering Economy
SS479	Environmental Economics
SS480	Advanced American Politics, Policy, and Strategy

Cadets pursuing the honors program will complete two additional courses: 1) EV489A (Advanced Individual Study), and 2) an additional course from the *field electives* list. Cadets also must graduate with an APSC of at least 3.0 in the USMA core curriculum and an APSC of at least 3.5 in the major.

ENVIRONMENTAL ENGINEERING

ENVIRONMENTAL ENGINEERING MAJOR (EVE)

- Complete the 26-course core curriculum
- Complete the following fifteen courses:

Course #	Course Title
EE301	Fundamentals of Electrical Engineering
EV301	Environmental Science for Engineers and Scientists
EV388A	Physical Geology
EV394	Hydrogeology/Hydraulic Systems
EV396	Environmental Biological Systems
EV397	Air Pollution Engineering
EV400	Environmental Engineering Seminar
EV401	Physical and Chemical Treatment
EV402	Biochemical Treatment
EV481	Water Resources Planning and Design
EV488	Solid and Hazardous Waste Treatment and Remediation
EV490	Advanced Environmental Engineering Design
MA366	Applied Engineering Math
MC311	Thermal Fluid Systems I
XS391	Principles and Applications of Environmental Chemistry

- Choose three electives from the **ENVIRONMENTAL ENGINEERING FIELD ELECTIVES list**. The sum of the Engineering Topics for the three chosen field electives must total **8** or greater.

ENVIRONMENTAL ENGINEERING FIELD ELECTIVES:

Course #	Course Title
EV377	Remote Sensing
EV380	Surveying
EV398	Geographic Information Systems
EV485	Special Topics in Geography and the Environment
EV489A	Advanced Individual Study I
EV489B	Advanced Individual Study II
CE380	Hydrology/ Hydraulic Design
CH362	Mass and Energy Balances
EE377	Electrical Power Engineering
EM381	Engineering Economy
EM411	Project Management
CE 350	Infrastructure Engineering
CE371	Soil Mechanics/Foundation Engineering
CE450	Construction Management
MC300	Fundamentals of Engineering Mechanics and Design

Course #	Course Title
MC312	Thermal-Fluid Systems II
MC364	Mechanics of Materials
MC380	Engineering Materials
ME350	Mechanical Engineering/How Army Systems Work
ME472	Energy Conversion Systems
ME370	Computer Aided Design
SE375	Statistics for Engineers
SE385	Decision Analysis

- Cadets pursuing the honors program must complete Advanced Individual Studies I (EV489A) as one of their field electives, and attain an APSC of at least 3.0 in the USMA core curriculum and an APSC of at least 3.5 in the major.

Below: EV471 Ecology students on a course field trip to study the health of area wetlands.



Above: Physical Geology students on an EV388a field trip to the Bear Mountain Museum.

ENVIRONMENTAL ENGINEERING STUDIES

ENVIRONMENTAL ENGINEERING STUDIES MAJOR (EES)

- Complete the 26-course core curriculum
- Complete the following eleven courses:

Course #	Course Title
EE301	Fundamentals of Electrical Engineering
EV301	Environmental Science for Engineers and Scientists
EV388A	Physical Geology
EV396	Environmental Biological Systems
EV397	Air Pollution Engineering
EV401	Physical and Chemical Treatment
EV402	Biological Treatment
EV481	Water Resources Planning and Design
EV490	Advanced Environmental Engineering Design
MC311	Thermal Fluid Systems I
XS391	Principles and Applications of Environmental Chemistry

- Complete **two** of the four Environmental Engineering directed electives:

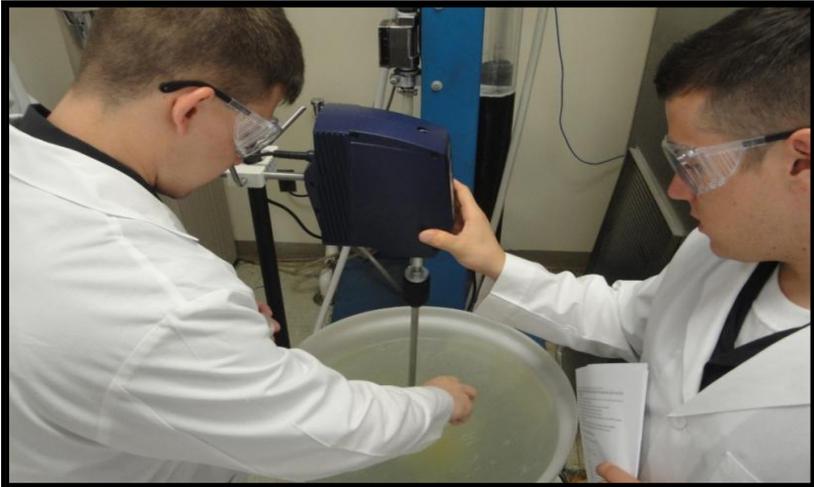
Course #	Course Title
MA366	Applied Engineering Math
MC300	Fundamentals of Engineering Mechanics and Design
EV394	Hydrogeology/Hydraulic Systems
EV488	Solid and Hazardous Waste Treatment and Remediation

- Complete **one** of the nineteen courses from the Environmental Engineering field electives list:

Course #	Course Title
CE380	Hydrology/Hydraulic Design
CH362	Mass and Energy Balances
MC380	Engineering Materials
EM381	Engineering Economy
EM411	Project Management
EV377	Remote Sensing
EV380	Surveying
EV388B	Geomorphology
EV391B	Environmental Geology
EV394	Hydrogeology/Hydraulic Systems
EV398	Geographic Information Systems
EV485	Special Topics in Geography and the Environment (with approval)
EV488	Solid and Hazardous Waste Treatment and Remediation
EV489A	Advanced Individual Study I
EV489B	Advanced Individual Study II
MC300	Fundamentals of Engineering Mechanics and Design
MC312	Thermal-Fluid Systems II

Course #	Course Title
SE375	Statistics for Engineers
SE385	Decision Analysis

No honors program is offered in the Environmental Engineering Studies major.



EV401 environmental engineering majors learn about physical and chemical treatment processes to make water safe for drinking.

EV396 Environmental Biology students brew beer during a class lab. Making beer involves a thorough understanding of microbiology and evidently a great deal of concentration.



GEOSPATIAL INFORMATION SCIENCE

GEOSPATIAL INFORMATION SCIENCE MAJOR (GIS) GEOSPATIAL INFORMATION SCIENCE MAJOR WITH HONORS (GISH)

CORE CURRICULUM AND ENGINEERING SEQUENCE:

- Complete the 26-course core curriculum
- Complete any 3-course engineering sequence
- Complete **one** of the following courses:

Course #	Course Title
IT305	Theory and Practice of Military IT Systems
IT355	Advanced Theory and Practice of Military IT Systems

- Complete all of the following Fundamentals of GIS courses:

Course #	Course Title
EV377	Remote Sensing
EV378	Computer Cartography
EV398	Geographic Information Systems

- Complete **one** of the following Spatial Data Acquisition courses:

Course #	Course Title
EV379	Photogrammetry
EV380	Principles of Surveying

- Complete the following advanced spatial data analysis courses:

Course #	Course Title
EV477	Advanced Remote Sensing
EV498	Advanced Geographic Information Systems

- Complete the following integrative experience:

Course #	Course Title
EV482	Military Geography

- Complete the following cultural immersion course:

Course #	Course Title
EV365	Geography of Global Cultures

- Select **two** of the eighteen courses from the Geospatial Information Science elective list:

Course #	Course Title
EV300	Environmental Science
EV371	Geography of Russia
EV372	Geography of Asia
EV373	Geography of Latin America
EV375	Geography of Africa
EV376	Geography of the Middle East
EV379	Photogrammetry
EV380	Principles of Surveying
EV384	Geography of North America
EV386	Geography of Europe

Course #	Course Title
EV388A	Physical Geology
EV388B	Geomorphology
EV389B	Climatology
EV390B	Urban Geography
EV391A	Principles of Land Use Planning and Management
EV391B	Environmental Geology
EV397	Air Pollution Engineering
EV478	Military Geospatial Operations
EV481	Water Resources Planning and Design

- Cadets pursuing an honors program in Geospatial Information Science must complete one of the two options below, and attain a final APSC of at least 3.0 in the core curriculum as well as a final APSC of at least 3.5 in the major.

OPTION A:

Course #	Course Title
EV489A	Advanced Individual Study I
EV__	One course From the Geospatial Information Science elective list

OPTION B:

Course #	Course Title
EV489A	Advanced Individual Study I
EV489B	Advanced Individual Study II



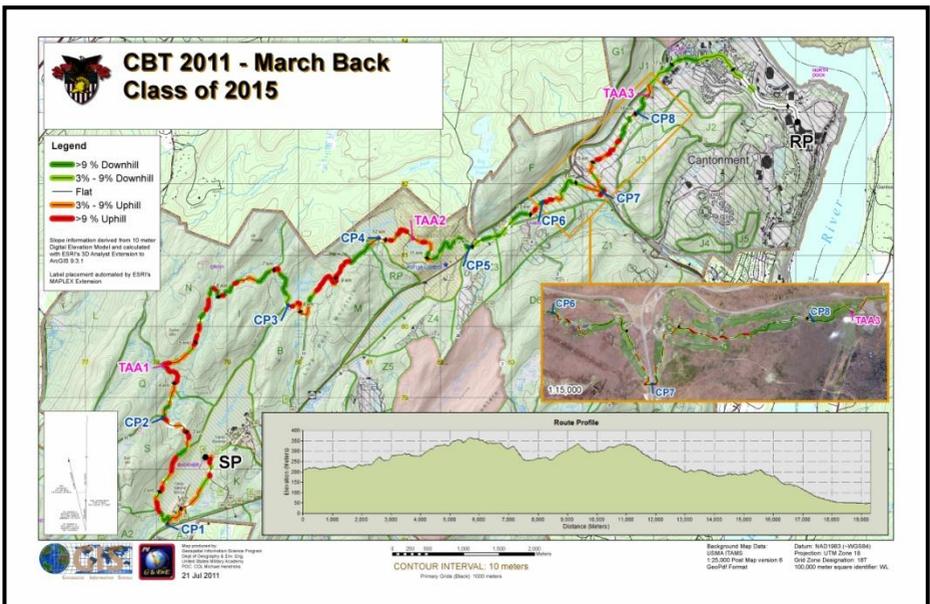
GIS cadets setting up equipment for a lab exercise in EV380 (Principles of Surveying).

COURSE OFFERINGS

Course #	Course Title	131	132	141	142	151	152
EV203	Physical Geography (133; 143)	X	X	X	X	X	X
EV300	Environmental Science	X		X		X	
EV301	EV Sci for Engineers	X		X		X	
EV303	Foundations in Geography	X		X		X	
EV350	EV Engineering Technologies		X		X		X
EV365	Geography of Global Cultures	X	X	X	X	X	X
EV371	Geography of Russia	X		X		X	
EV372	Geography of Asia		X		X		X
EV373	Geography of Latin America	X		X		X	
EV375	Geography of Africa	X		X		X	
EV376	Geography of the Middle East		X		X		X
EV377	Remote Sensing	X	X	X	X	X	X
EV378	Cartography	X		X		X	
EV379	Photogrammetry		X		X		X
EV380	Principles of Surveying	X		X		X	
EV384	Geography of North America	X		X		X	
EV385	Introduction to EV Engineering		X		X		X
EV386	Geography of Europe		X		X		X
EV387	Meteorology		X		X		X
EV388A	Physical Geology	X	X	X	X	X	X
EV388B	Geomorphology		X		X		X
EV389B	Climatology	X		X		X	
EV390B	Urban Geography		X		X		X
EV391A	Land Use Plan & Management	X		X		X	
EV391B	Environmental Geology		X		X		X
EV394	Hydrogeology/Hydraulic Systems	X		X		X	
EV396	Environmental Biological Sys.		X		X		X
EV397	Air Pollution Engineering		X		X		X
EV398	Geographic Information Systems	X	X	X	X	X	X
EV400	EV Engineering Seminar		X		X		X
EV401	Physical & Chemical Treatment		X		X		X
EV402	Biochemical Treatment	X		X		X	
EV450	Environmental Decision Making	X		X		X	
EV471	Ecology	X		X		X	
EV477	Advanced Remote Sensing		X		X		
EV478	Geospatial Military Operations		X		X		
EV480	Honors Seminar in Geography	X		X		X	
EV481	Water Resources	X		X		X	
EV482	Military Geography		X		X		X
EV483	Colloquium in Geography						

Course #	Course Title	131	132	141	142	151	152
EV485	Special Topics: Geography and the Environment						
EV486	Environmental Geography	X		X		X	
EV487	Environmental Security		X		X		X
EV488	Solid and Hazardous Waste		X		X		X
EV489A	Advanced Individual Study I	X	X	X	X	X	X
EV489B	Advanced Individual Study II		X		X		X
EV490	Advanced EV Eng Design		X		X		X
EV498	Advanced GIS	X		X		X	
XS391	Principles and Applications of Environmental Chemistry	X		X		X	

Right: GIS majors employ GPS gathered data to track their routes during execution of land navigation training. They are using this data during the AAR process to fine-tune their navigation skills.



COURSE DESCRIPTIONS

EV203	PHYSICAL GEOGRAPHY
	3.0 Credit Hours (BS=2.5, ET=0.0)

SCOPE: This core course provides cadets with a fundamental understanding of scientific principles and processes of earth science, meteorology, climatology, geomorphology and environmental systems, as well as an introduction to cultural geography. Further, the course furnishes cadets with the technical skills - digital terrain analysis, image interpretation and spectral analysis, remote sensing, global positioning system, geographic information systems cartography - to delineate the geographic distribution of landforms, weather, climate, and culture systems; and evaluate their potential impact on military operations. Lessons are reinforced by extensive use of in- and out-of-class practical exercises, terrain walks and computer exercises to demonstrate the interrelationship between physical and human landscapes, and their impact on the environment. Historical vignettes are employed to demonstrate how the factors of weather, climate, terrain, soils, vegetation and culture are important, cogent and frequently decisive in military operations

LESSONS: 36 @ 55 min (2.5 Att/wk)

LABS: 4 @ 55 min

SPECIAL REQUIREMENTS: None.

EV300	ENVIRONMENTAL SCIENCE
EV CES Course	3.0 Credit Hours (BS=0.0, ET=0.0) Prerequisite: EV203; Disqualifier: EV301, EV390A

SCOPE: As the introductory course to the Environmental Engineering Sequence, EV300 provides the cadet with a broad understanding of current global and local environmental issues. It specifically focuses on natural ecosystems processes, the effects of pollution on human health and how the level of risk associated with this pollution is assessed, the environmental effects of energy use, and air pollution concerns such as global climate change, acid rain, and smog. Discussions of anthropogenic influences are conducted with consideration of social, economic, technological and political impacts. Cadets learn to evaluate literature on environmental issues through readings and interactive debates. A course project applying the scientific method to evaluate a current environmental problem provides an opportunity to tie multiple course topics with an in-depth study of an issue of interest.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: Design and conduct an environmental study.

EV301	ENVIRONMENTAL SCIENCE FOR ENGINEERS AND SCIENTISTS
	3.0 Credit Hours (BS=1.0, ET=2.0) Prerequisite: EV203; Disqualifier: EV300, EV390A

SCOPE: This course is similar to EV300 except that the context of discussion in EV301 is appropriate for cadets who have elected to major in science or engineering. EV301 provides the cadet with a broad understanding of current global and local environmental issues. It specifically focuses on natural ecosystems processes, the effects of pollution on human health and how the level of risk associated with this pollution is assessed, the environmental effects of energy use, and air pollution concerns such as global climate change, acid rain, and smog. Discussions of anthropogenic influences are conducted with consideration of social, economic, technological and political impacts. Cadets learn to evaluate literature on environmental issues through readings and interactive debates. A course project applying the scientific method to evaluate a current environmental problem provides an opportunity to tie multiple course topics with an in-depth study of an issue of interest.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: Design and conduct an environmental study, attend one field trip, in-class labs.

EV303	FOUNDATIONS IN GEOGRAPHY
	3.0 Credit Hours; Prerequisite: None

SCOPE: This course presents the basic concepts, theories and methods of inquiry in the discipline of geography as a foundation for advanced study in human/regional geography, environmental geography, or geospatial information science. The course includes models and concepts from the many sub-disciplinary (systematic) areas of geography to include cultural, historical, economic, urban, political and military geography. The application of concepts to real-world issues is emphasized. Research skills and techniques used by professional geographers are presented. Cadets use these approaches to spatially analyze and map the distribution of human and environmental phenomena. Several short papers will be assigned.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: Requires Department Head approval for all cadets not selecting a FOS/MAJ in the Department of Geography & Environmental Engineering.

EV350	ENVIRONMENTAL ENGINEERING TECHNOLOGIES
EV CES Course	3.0 Credit Hours (BS= 0.0, ET=0.0), Prerequisites: CH102 or CH152, MA205 or MA255, and EV300 or EV301; Disqualifiers: EV385

SCOPE: This course builds on environmental issues introduced in EV300 and further explores environmental engineering from a unit process and materials balance approach. Analyzing water (transport, quality, drinking water treatment, and wastewater treatment); air (transport, quality, and pollutant minimization); and pollutant management (solid and hazardous wastes), the cadet is exposed to the breadth of the environmental discipline. A laboratory experience is integral to the course. In the laboratory, physical, chemical, and biological quality are discussed and measured. An introductory environmental engineering design project on river water quality is developed within the semester.

LESSONS: 36 @ 55 min (2.5 Att/wk)

LABS: 6 @ 120 min

SPECIAL REQUIREMENTS: One design project.

EV365	GEOGRAPHY OF GLOBAL CULTURES
	3.0 Credit Hours; Prerequisite: EV203

SCOPE: This course provides the geographic foundation for study in interdisciplinary and management academic areas. Contemporary regions of the world political map serve as the framework within which geographic concepts and analytical techniques are applied. Each cadet will develop an awareness of the diversity and distribution of people on the Earth, human organization and exploitation of territory, and interactions among culture groups. Particular emphasis is placed on social institutions, their impact on economic development, and the subsequent identification and analysis of developed, emerging, and underdeveloped states.

LESSONS: 38 @ 55 min (2.5 Att/wk)

LABS: 2 @ 55 min

SPECIAL REQUIREMENTS: None

EV371	GEOGRAPHY OF RUSSIA
	3.0 Credit Hours; Prerequisite: EV365

SCOPE: This course examines the political, economic, and cultural geography of Russia and its adjacent neighbors; the Baltic States, East Central European region, Transcaucasus, and Central Asia. Topics covered include: the Commonwealth of Independent States; ecocide in the former Soviet Union; disposition of the former Soviet military; and ethnic rivalries. The objective of the course is to provide the student with an understanding of the recent past of the traditional Soviet system in order to understand, as well as geographically evaluate, Russia's and the other former republics' situation today.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: One field trip; one research paper.

EV372	GEOGRAPHY OF ASIA
	3.0 Credit Hours; Prerequisite: EV365

SCOPE: The course studies the physical and cultural environment of Asia with emphasis on those geographic elements related to the region's progress, developing states, and emerging world and regional powers. Topics covered include a consideration of the physical and resource base, environmental and cultural factors, spatial organization of agricultural and industrial economies, population patterns and problems, and examination of the realm's several major subregions.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: One field trip; one written report and one oral presentation.

EV373	GEOGRAPHY OF LATIN AMERICA
	3.0 Credit Hours; Prerequisite: EV365

SCOPE: This course studies the physical and cultural landscape of Latin America, giving special treatment to the diversity and cultural identity of the region. Topics covered include a historical geography of the region, including Pre-Columbian civilizations, Iberian, African, and European influences; the geography of transportation networks, agriculture, urbanization, and population. National boundaries, major landforms and climatic conditions are discussed to describe their effect on civilization. This course also investigates the historical relationship between the United States and Latin America, and covers recent U.S. military interventions in the region.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: One oral report, one research paper.

EV375	GEOGRAPHY OF AFRICA
	3.0 Credit Hours; Prerequisite: EV365, Disqualifiers: EV374

SCOPE: This course examines the cultural and natural diversity of African landscapes, with an emphasis on development, population issues, disease, and the origin, dispersal, spatial organization, and interaction of important cultural groups. Africa's physical landscapes will also be introduced as the palette upon which Africa's complex human mosaic has developed. Students will explore, from a geographic perspective, why Africa has seemingly been plagued with problems of economic development, health, and political instability.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: One written research report with brief oral presentation; One field trip is possible.

EV376	GEOGRAPHY OF THE MIDDLE EAST
	3.0 Credit Hours; Prerequisite: EV365, Disqualifiers: EV374

SCOPE: This course examines the cultural and natural diversity of Southwest Asian landscapes. The cultures and ethnicities are studied in a geographic context, with an emphasis on the origin, dispersal, spatial organization, and interaction of important cultural groups. Among issues examined are the distribution and strategic significance of critical mineral and energy resources, population and resource disparities, cultural conflict, and economic development. Students will learn how geographic issues impact the prospects for peace and stability in the region.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: One written research report with brief oral presentation. One field trip is possible.

EV377	REMOTE SENSING
	3.0 Credit Hours (BS=1.0, ET=2.0); Prerequisite: EV203, IT105 or IT155

SCOPE: Remote Sensing is learning about something without touching it--the most obvious example being the use of satellites to study the Earth. EV377, a techniques course applicable to both the humanities and engineering, studies how and what types of information can be carried by the electromagnetic spectrum. Students enjoy a wide range of practical exercises which introduce them to several remote sensing systems to include conventional and color infrared photography, multispectral scanners, satellite imagery, thermal infrared, and radar. The capstone exercise offers each student the opportunity to perform real-time automated image classification using satellite data on his/her own microcomputer. The course focus is on applying remotely sensed data to solve current problems.

LESSONS: 32 @ 55 min (2.5 Att/wk)

LABS: 8 @ 55 min

SPECIAL REQUIREMENTS: None.

EV378	CARTOGRAPHY
	3.0 Credit Hours (BS=0.0, ET=0.0); Prerequisite: EV203, IT105 or IT155

SCOPE: Cartography teaches the principles of cartographic communication and enables the student to apply map design principles along with computer mapping techniques to solve contemporary problems in geography, economics, international relations, and applied sciences. Cadets will study the basic cartographic design process and use mapping and analysis software in the Geographic Sciences Laboratory to produce topographic and thematic maps. A final course design project presents the opportunity for the cadets to demonstrate their ability to synthesize sound mapping principles.

LESSONS: 23 @ 55 min (2.5 Att/wk)

LABS: 17 @ 120 min

SPECIAL REQUIREMENTS: Course project included in lab periods.

EV379	PHOTOGRAMMETRY
	3.0 Credit Hours (BS=3.0, ET=0.0); Prerequisite: EV203, IT105 or IT155

SCOPE: Photogrammetry, the art and science of making accurate measurements on photographs, is an important and fundamental discipline concerned with civilian and military mapping. Students, applying simple geometric principles to the photograph, determine object identity, size, spatial relationship, and position. An abundance of practical exercises, involving the use of sophisticated equipment, provide the opportunity to apply the fundamentals while arriving at solutions to real-world problems. An interesting field trip to a local mapping organization vividly displays how all these techniques may be blended to produce maps in the commercial business world.

LESSONS: 33 @ 55 min (2.5 Att/wk)

LABS: 7 @ 55 min

SPECIAL REQUIREMENTS: None.

EV380	PRINCIPLES OF SURVEYING
	3.5 Credit Hours (BS=0.5, ET=3.0); Prerequisite: None

SCOPE: A framework for understanding and applying practical surveying methods is developed. Consideration of error theory and the concepts of precision of and accuracy yields understanding of the probabilistic nature of measurements. The principles of differential leveling, taping, electronic distance measurement and angular measurement are studied and applied using state-of-the-art surveying equipment and software tools. Plane surveys are principally explored, although the fundamentals of geodetic surveys are also presented. Traverse, triangulation, trilateration, level networks and the proper adjustment of related measurements are examined. Control survey, land survey, topographic survey, horizontal and vertical curve design, computer-aided mapping and GIS applications are included. Extensive use of laboratory periods permits application of surveying fundamentals, methods and planning skills to actual field situations. The principles of the global positioning system are explored and applications in the Army and surveying are applied in the final lab exercise.

LESSONS: 21 @ 55 min (2.5 Att/wk)

LABS: 19 @ 120 min

SPECIAL REQUIREMENTS: None.

EV384	GEOGRAPHY OF NORTH AMERICA
	3.0 Credit Hours; Prerequisite: EV365

SCOPE: This course provides a regional geography of North America, with balanced coverage of the human and physical geography of the United States and Canada. Lectures are appropriately supplemented with movies, slides, and maps to facilitate understanding of important themes that are prevalent in various subregions. Emphasis is placed on cultural patterns and contemporary environmental issues.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: One oral presentation.

EV385	INTRODUCTION TO ENVIRONMENTAL ENGINEERING
	3.5 Credit Hours (BS=0.0, ET=3.5); Prerequisite: CH102/CH152, MA205/MA255; Corequisites: PH202/PH252, PH204/ PH254 Disqualifier: EV350, EV385B

SCOPE: This course introduces cadets to the study of environmental engineering from a unit process and a materials balance approach. The focus is design-oriented problem solving to protect human health and the health of ecosystems using fundamental physical, chemical, and biological processes. Through the study of contaminant removal from water and air to integrated management techniques for solid/hazardous wastes, the cadet is exposed to the breadth of the discipline. In the laboratory, the science behind physical, chemical, and biological processes are applied to the engineering discipline. A military oriented design problem allows application of engineered solutions to topical water and air quality issues.

LESSONS: 40 @ 55 min (2.5 Att/wk);

LABS: 6 @ 120 min

SPECIAL REQUIREMENTS: Two field trips; course design project.

EV386	GEOGRAPHY OF EUROPE
	3.0 Credit Hours; Prerequisite: EV365

SCOPE: The course examines European cultural landscapes, focusing on the environmental and cultural diversity exhibited among the states of modern Europe. Nationalism and the territorial imperative, long recognized as major forces in Europe, are studied from a geographic perspective to include patterns and processes of both regional continuity and change. Emphasis is given to the rapidly developing urbanization and mutual interdependence among countries of Western Europe. West and East European agricultural/industrial resource bases and developmental strategies are compared and contrasted. Specific topics are tailored to current issues and include regional conflict, economic development and trade, and problems of energy and the environment. This course concludes with a study of contemporary European extraregional spatial relationships with other major world culture regions.

LESSONS: 40 @ 55 min (2.5 Att/wk);

LABS: None

SPECIAL REQUIREMENTS: One field trip; one research paper.

EV387	METEOROLOGY
	3.0 Credit Hours; Prerequisite: EV203

SCOPE: This course introduces meteorological processes, systems, and patterns with emphasis on spatial distributions. The course begins with a comprehensive look at the structure of the atmosphere to include the energy budget, heat transfer mechanisms, as well as an examination of daily and seasonal patterns of temperature. A thorough look at atmospheric moisture and stability precedes a study of cloud and precipitation processes followed by a study of the atmosphere in motion, namely air pressure, governing forces, winds, small and local-scale wind systems and the general circulation of the planet. Specific phenomena are then examined, including mid-latitude cyclones, thunderstorms/lightning, tornadoes, severe thunderstorms, hurricanes, air pollution, and a brief look at climate and climate change. The end of the course focuses on the art and science of weather forecasting and its applicability to military operations. In-class labs.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: Term project.

EV388A	PHYSICAL GEOLOGY
	3.5 Credit Hours (BS=2.0, ET=1.5); Prerequisite: EV203

SCOPE: This course primarily emphasizes learning to identify minerals and rocks and then applying this knowledge to analyze the significant geologic processes that act on and within the earth. These processes include plate tectonics, rock mechanics, geologic mapping, ground and surface water, and elements of mining and petroleum engineering. Field trips are conducted to illustrate how local geology has influenced development and construction in the Hudson Valley. The course is capstoned by an open-ended engineering problem which requires the creative application of geology to design a practical solution to a stated need. Cadets use a geologic exploration simulation to convert given resources optimally including safety and cost factors.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: 12 @ 55 min

SPECIAL REQUIREMENTS: Two field trips; one design project; compensatory time provided.

EV388B	GEOMORPHOLOGY
	3.0 Credit Hours (BS=3.0, ET=0.0); Prerequisite: EV203

SCOPE: This course studies the processes that create landforms on the surface of the earth and their regional and global distributions. The course focuses on processes and their inter-relationships with geologic structure, soils and climate. Processes emphasized include glaciers, streams, downslope motion caused by gravity, groundwater, coastlines, and eolian landscapes. Each student prepares a final report synthesizing these processes and how they relate to real-world applications.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: Two field trips; one written report and one oral report; compensatory time provided.

EV389B	CLIMATOLOGY
	3.0 Credit Hours; Prerequisite: EV203

SCOPE: The course investigates the earth's atmospheric phenomena, giving special attention to the dynamic physical processes which produce weather and result in distinctive climates. The course focus is on how climate influences daily life and activities. Time is devoted to case studies of urban microclimates and attendant problems of atmospheric pollution and scientific efforts to alter the weather. Exercises allow the student to apply climate data and information to problem solving in the fields of engineering, agriculture, land use, and the military.

LESSONS: 34 @ 55 min (2.5 Att/wk)

LABS: 6 @ 55 min

SPECIAL REQUIREMENTS: None

EV390B	URBAN GEOGRAPHY
	3.0 Credit Hours; Prerequisite: None

SCOPE: This course examines the location, function, structure, growth and interactions of urban areas. Spatial techniques are used to explore the internal attributes of cities, as well as their connectivity to other places. While the primary focus is on urbanization in the United States, primate cities abroad are often used for comparative purposes. Emphasis is placed on contemporary urban problems, particularly environmental issues and social disparities.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: One oral report.

EV391A	LAND USE PLANNING AND MANAGEMENT
	3.0 Credit Hours (BS=0.0, ET=0.5); Prerequisite: EV203

SCOPE: An introduction to land use planning and management with focus on the land-law interfaces between the physical, cultural, and legal realms. The course surveys the policies and legislative basis for land use controls at the local, federal and regional levels to include national parks and forests, agricultural lands, rangelands, and military training areas. National resource management issues and strategies are explored. The importance of geographic concepts is emphasized in the conduct of applied case studies addressing land use conflicts and environmental strategies.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: One field trip; one oral presentation; compensatory time provided.

EV391B	ENVIRONMENTAL GEOLOGY
	3.0 Credit Hours (BS=3.0, ET=0.0); Prerequisite: EV203

SCOPE: This course focuses on natural phenomena that pose hazards to people. The cause, nature, and occurrence frequency of natural hazards such as flooding, earthquakes, hurricanes, and volcanic activity will be examined. Emphasis will also be placed on how people perceive and respond to these hazards. Land use policies and practices in these hazard areas will also receive attention. Students participate in map based laboratory exercises and have the opportunity to write a short paper advising a government official how to mitigate local geohazards.

LESSONS: 37 @ 55 min (2.5 Att/wk)

LABS: 3 @ 55 min

SPECIAL REQUIREMENTS: One research paper; compensatory time provided.

EV394	HYDROGEOLOGY/HYDRAULIC SYSTEMS
	3.5 Credit Hours (BS=0.0, ET=3.5); Prerequisite: EV203,MA206

SCOPE: This course covers the principles governing the movement of subterranean water (groundwater), the interaction of this water with the porous medium, and the transport of chemical constituents (contaminants) in the subsurface. Lesson blocks explore traditional background elements of hydraulic engineering to include flow systems for the conveyance of groundwater and drainage systems for groundwater. Computer models are used to evaluate groundwater problems and conduct sensitivity analyses.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: 12 @ 55 min

SPECIAL REQUIREMENTS: One course project.

EV396	ENVIRONMENTAL BIOLOGICAL SYSTEMS
	3.5 Credit Hours (BS=1.0, ET=2.5); Prerequisites: CH102/CH152, EV203, and EV300/EV301 or EV385

SCOPE: This course will examine biology from a practical environmental engineering and environmental science perspective. The foci of the course are applied public health, microbiology and microbial energetics. Specific topics include the biological health issues associated with drinking water, microbial aspects of industrial and domestic waste treatment and protection or restoration of natural water bodies from environmental contaminants. Students are also introduced to medical geography and the spatial biological health issues associated with a deployment. Laboratory exercises are used to introduce the student to water quality analyses and practices commonly used in the fields of environmental engineering and the environmental sciences.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: 12 @ 55 min

SPECIAL REQUIREMENTS: None.

EV397	AIR POLLUTION ENGINEERING
	3.0 Credit Hours (BS=0.0, ET=3.0); Prerequisite: EV203

SCOPE: This course employs a design approach to air pollution control. It begins by defining air pollution problems, to include pollutant types, sources, legislation, and effects on both local and global scales. The course then examines the design of various means of controlling particulate and gaseous air pollution from both mobile and stationary sources. Finally, students study the link between meteorology and air pollution, as well as pollutant dispersion modeling in the atmosphere. The culminating course project involves a numerical approach to dispersion modeling that incorporates modeling and solution optimization.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: none

SPECIAL REQUIREMENTS: Field trip(s).

EV398	GEOGRAPHIC INFORMATION SYSTEMS
	3.0 Credit Hours (BS=0.0, ET=3.0); Prerequisites: EV203

SCOPE: Geographic Information Systems are hardware/software systems that permit the input, storage, retrieval, manipulation, analysis, and display of geocoded data. Used by environmentalists, engineers, land-use planners, architects, managers of large land holdings, and the military, these highly intricate "decision support" systems assist managers in answering important "what if" questions. Using digitizers and microcomputers students will build a geocoded database and solve "real-world" problems.

LESSONS: 33 @ 55 min (2.5 Att/wk)

LABS: 7 @ 55 min

SPECIAL REQUIREMENTS: Short oral reports, one database design; compensatory time provided.

EV400	ENVIRONMENTAL ENGINEERING SEMINAR
	1.0 Credit Hours; (BS=0.0, ET=1.0); Co-requisite: EV490

SCOPE: This seminar will meet once each week and will include all first class cadets majoring in environmental engineering. The seminar topics will address a variety of fundamental engineering science, design, and professional practice topics including engineering ethics, economics, and licensing. Periodically, guest lecturers from the military, industrial, and academic communities will provide their perspective on these topics.

LESSONS: 13 @ 55min (1.0 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: None.

EV401	PHYSICAL AND CHEMICAL TREATMENT
	3.5 Credit Hours; (BS=0.0, ET=3.5); Prerequisite: XS391; Corequisite: MC311

SCOPE: This course takes a process approach to environmental engineering using engineering science and design of drinking water treatment systems as the primary foci. Building upon concepts gained in environmental chemistry, cadets study physical and chemical processes used in environmental engineering. Discussion includes the theories behind these processes and the design procedures involved in their application. Cadets develop comprehensive concept design of drinking water treatment processes. While the focus of the course is drinking water treatment, the processes developed are also applicable to wastewater treatment, groundwater remediation, air pollution control, and the treatment of solid and hazardous wastes.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: 12 @ 55 minutes

SPECIAL REQUIREMENTS: One term project, one field trip.

EV402	BIOCHEMICAL TREATMENT
	3.5 Credit Hours (BS=0.0, ET=3.5); Prerequisites: EV396 and MC311

SCOPE: This course provides cadets with the opportunity to apply the principles of microbiology to the protection and improvement of the environment. This course builds on the concepts learned in EV396, Environmental Biological Systems, and directly applies those concepts to the treatment of wastewater, removal of nutrients from wastewater, anaerobic digestion, bioremediation, industrial waste treatment, and emerging applications of biological treatment and modeling. A comprehensive, multi-step design project serves as the design experience for this course.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: 7 @ 120 minutes

SPECIAL REQUIREMENTS: Engineering design project with a written report.

EV450	ENVIRONMENTAL DECISION MAKING	
EV CES Course	3.0 Credit Hours; (BS=0.0, ET=0.0); Disqualifier: EV481	Prerequisite: EV350

SCOPE: This course is the third in a three-course sequence and is concerned with the balance of engineered solutions with economic, socio-cultural, political, and ecological considerations evaluated during a decision-making process. Using management of water resources as a teaching model, the realities of decision-making and policy development for all areas of engineering, and particularly environmental engineering, are examined. The course begins with instruction on the tools available to water resource managers, to include both structural (engineered) and non-structural approaches to solve water resource problems. Elements of engineering design and the design process are introduced as well as methods of conducting tradeoff analyses. The course makes use of case studies of current water resource projects and includes a term project. Visiting speakers are employed to present views of government and concerned public interest groups.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: Must be a first class cadet. Each cadet will complete a paper and oral presentation on a contemporary water resources project.

EV471	ECOLOGY	
	3.0 Credit Hours; (BS=3.0, ET=0.0); Prerequisites: CH385 or CH375, EV300 or EV301, EV350 or EV385	

SCOPE: This course examines ecosystems through the study of ecological principles related to an organism's relationship to its environment, community, and ecosystem. Species, population, community, and ecosystem level interactions and dynamics are emphasized. The fundamental influences of energy flow and material cycling are examined, as well as the unique role of wetlands within ecosystems. The course includes several field trips, which lead to a culminating term project designed to integrate previously acquired environmental science technical skills and ecological principles.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: In-class labs and out-of-class field trips; term paper examining aspects of one of the world's ecosystems.

EV477	ADVANCED REMOTE SENSING	
	3.0 Credit Hours; (BS=0.0, ET=3.0); Prerequisites: EV203 and EV377	

SCOPE: This course examines advanced remote sensing theory and digital image processing techniques suitable for the processing of remotely sensed data. Emphasis is on the processing and analysis of state-of-the-art high spatial and spectral resolution data gathered by airborne and satellite sensors. Topics covered include geometric and radiometric image rectification; registration and resampling techniques, image enhancements, data merging, image segmentation, and automated feature extraction. A wide range of practical exercises and in-class laboratory assignments provides hands-on experience with a variety of remotely sensed imagery ranging from multi-spectral to hyper-spectral data. The course culminates with a capstone term project that allows students to apply digital image processing skills to a scientific problem.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: In-class labs; term project. Compensatory time provided.

EV478	MILITARY GEOSPATIAL OPERATIONS	
	3.0 Credit Hours; (BS=0.0, ET=0.0);	Prerequisites: EV203

SCOPE: This course is designed to teach the most current state of geospatial operations in the military. It is built to provide the student an improved understanding of the cornerstone to the digital force - the "common operational picture" or COP. This course is divided into five major blocks of instruction: (1) a linked discussion of geospatial operations' development, organizations and data systems; (2) the geographic information system (GIS) as a military tool - system input, management, data analysis and production outputs; (3) Army geospatial operations in the garrison environment; (4) Army geospatial operations in combat environments; and (5) geospatial operations for joint/coalition forces. The course includes several relevant practical exercises and laboratories, a field trip, guest lectures and one panel discussion. Due to the currency of the material discussed a secret security clearance is required for all participants.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None.

SPECIAL REQUIREMENTS: None

EV480	HONORS SEMINAR IN GEOGRAPHY
	3.0 Credit Hours; Must be selected for participation in the Honors Program Prerequisite: EV203

SCOPE: This course will examine major research initiatives in the discipline and delineate their data requirements. The primary objective of this course is to identify and outline the senior thesis, which is the culminating event for the honors program. Hence, cadets participating in this course will explore research methods and data sources used by geographers, conduct a critical analysis of seminal literature in the field, define a research problem, identify and evaluate data sources, and assemble a research proposal. The final product of this course will be a written research proposal that will define the senior thesis (written during EV489B). The cadet will make a formal presentation of this proposal to senior geography faculty. The course is conducted in a seminar and one-and-one format. Lessons and labs are established by consultation between the cadet and faculty advisor.

LESSONS and LABS: Established by consultation between cadet and faculty advisor.

SPECIAL REQUIREMENTS: Senior thesis or as determined by the faculty advisor.

EV481	WATER RESOURCES PLANNING AND DESIGN
	3.0 Credit Hours; (BS=0.0, ET=3.0); Prerequisites: Standing as a First Class Cadet; Disqualifier: EV450

SCOPE: The course is concerned with effective use of water as a manageable natural resource. It begins with instruction on the tools required by water resource managers to make sound decisions in their field. The course assesses current needs for water and the structural (engineered) and non-structural approaches available to meet these needs. Elements of engineering design and the design process are introduced. The bulk of the course is concerned with assessment of the impacts of various water resources development activities on the economic, socio-cultural and ecological sectors of the environment. Methods for conducting tradeoff analyses among the engineered and environmental aspects of projects are developed and applied in a term project. The course makes use of case studies of current water resource projects. Visiting speakers represent the views of the Federal government and concerned public interest groups.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: Written and oral research reports on a contemporary water resources project.

EV482	MILITARY GEOGRAPHY
	3.0 Credit Hours; Prerequisite: EV203

SCOPE: History is replete with examples of the impact of terrain, weather and climate on military operations at all scales. National strategies are influenced heavily by geographic realities of relative location, spatial interaction, population dynamics and resource distribution. This course emphasizes the development of a geographic method for systematic analysis of the battlefield that is appropriate for platoon leader and corps commander alike. Students evaluate the elements of national power and examine their geostrategic influences, past and present. The role of the environment in shaping today's Army and its missions is discussed. Jungle, cold region, alpine, riverine, desert, temperate and urban operational environments are examined for their effect on military planning and execution. Finally, cadets review case studies of the impact of these diverse environments on military operations at the tactical level.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: One oral presentation and one written research project

EV483	COLLOQUIUM IN GEOGRAPHY
	3.0 Credit Hours; Prerequisite: EV203 and EV365

SCOPE: The colloquium is a directed readings course using small group discussions of important literature, methodological traditions, and contemporary research trends in the field of geography. Dependent on instructor preference and individual student interest, in-depth readings will be pursued in one or more of the following areas of geographic study: cultural, political, regional or military geography. Compensatory time is given to permit extra readings.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: A research proposal and its oral presentation.

EV485	SPECIAL TOPICS IN GEOGRAPHY AND THE ENVIRONMENT
	3.0 Credit Hours; Prerequisite: EV203, Permission Required.

SCOPE: This course explores an advanced topic in Human and Regional Geography, Environmental Geography, Environmental Science, Environmental Engineering, or Geospatial Information Science. Specific subject matter will vary with the expertise of the visiting professor or senior faculty member conducting the course.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: As specified by instructor.

EV486	ENVIRONMENTAL GEOGRAPHY
	3.0 Credit Hours; Prerequisite: EV203 and EV365

SCOPE: Whereas physical geographers focus on the Earth's surface and atmosphere, and human geographers concentrate on the spatial aspect of human activities, environmental geographers are interested in both how people adapt to specific environments and how they alter those environments through human activities. To understand these interactions and their implications, environmental geographers must fully appreciate natural processes and landform development within and on the surface of the Earth, as well as the implications of human intervention in the natural system.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: None.

EV487	ENVIRONMENTAL SECURITY
	3.0 Credit Hours; Prerequisite: Standing as a First Class Cadet

SCOPE: This interdisciplinary seminar uses Environmental Security in a case study approach to study environmental issues potentially affecting U.S. national security. Cadets will explore environmental security topics such as water, natural resource shortages, energy use and dependency, global climate change using an interdisciplinary approach from social, political, economic, and scientific-technological perspectives. The course culminates on a student team analysis of a developing country in terms of environmental security issues and the related U.S. national security interests. The final project includes a formal brief and written paper.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: Standing as a first class cadet required for enrollment.

EV488	SOLID AND HAZARDOUS WASTE TREATMENT & REMEDIATION
	3.0 Credit Hours (BS=0.0, ET=3.0); Prerequisites: EV394 and EV402

SCOPE: This course examines the treatment, storage, and disposal of solid and hazardous wastes. Both regulatory requirements and evolving technology associated with solving modern solid waste disposal problems are discussed. Processes for the investigation and remediation of contaminated waste sites are presented, along with design methodologies for solid and hazardous waste disposal systems. The course culminates in the application of hazardous waste engineering to the cleanup of a contaminated hazardous disposal site.

LESSONS: 40 @ 55 min (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: One design project.

EV489A	ADVANCED INDIVIDUAL STUDY I
	3.0 Credit Hours; Prerequisite: Permission Required

SCOPE: The course is an individually supervised research and study program designed to provide cadets with the opportunity to pursue advanced topics within their discipline. The cadet prepares a research and study proposal setting forth the objectives, scope, and anticipated accomplishments of his/her efforts for the semester. If required for a specific degree, the proposal will include a justification for engineering science or design credit. Once approved, the proposal serves as a basis for the cadet's research and study program. Progress in research reports and observations by the faculty advisor form the basis for grades. The program for each cadet will culminate in one of two outcomes: 1) a discipline-appropriate written product (e.g., senior thesis or design project) with oral defense; or 2) enrollment in EV489B for the completion of the research and study program during the second academic term.

LESSONS and LABS: Established by consultation between cadet and faculty advisor.

SPECIAL REQUIREMENTS: Senior thesis or as determined by faculty advisor. Project dependent BS, ES, and ED credit.

EV489B	ADVANCED INDIVIDUAL STUDY II
	3.0 Credit Hours; Prerequisite: EV480 and EV489A

SCOPE: The course is an individually supervised research and study program designed to provide cadets with the opportunity to pursue advanced topics within their discipline. The cadet uses a research and study proposal setting forth the objectives, scope, and anticipated accomplishments of his/her efforts for the semester. If required for a specific degree, the proposal will include a justification for engineering science or design credit. The proposal serves as a basis for the cadet's research and study program. Progress in research reports and observations by the faculty advisor form the basis for grades. The program for each cadet will culminate in a discipline-appropriate written product (e.g., senior thesis or design project) with oral defense.

LESSONS and LABS: Established by consultation between cadet and faculty advisor.

SPECIAL REQUIREMENTS: Written report with oral defense. Project dependent BS, ES, and ED credit.

EV490	ADVANCED ENVIRONMENTAL ENGINEERING DESIGN
	3.5 Credit Hours (BS=0.0, ET=3.5); Prerequisites: EV301 and EV385B; Standing as a First Class Cadet in Environmental Engineering or Permission of the Department Head

SCOPE: This is the final design course for the major in environmental engineering. Cadets experience the complete design experience including defining the project scope, identifying design constraints, comparing alternatives, development of plans and specifications, engineering economics, and project management. The course centers on a senior design project that requires the integration of concepts developed in previous courses. Working in teams, cadets examine projects through the feasibility and concept design phases to evolve and develop concepts that are not only technically feasible, but economically, socially, and politically acceptable. The evaluation of alternatives employs trade-off analysis and the use of multi-attribute decision models. The final product includes a formal oral briefing and written design specifications. In addition to project management, course lectures cover topical coverage of fundamental engineering topics relevant to the problems under study.

LESSONS: 40 @ 55 min a (2.5 Att/wk)

LABS: 12 @ 55 minutes

SPECIAL REQUIREMENTS: One design problem. Standing as a first class cadet is required for enrollment.

EV498	ADVANCED GEOGRAPHIC INFORMATION SCIENCES
	3.0 Credit Hours (BS=0.0, ET=3.0); Prerequisite: EV398

SCOPE: This course examines the analytical methods used in Geographic Information systems (GIS) and provides cadets with a clear understanding of the theoretical/conceptual aspects of algorithms found in GIS software. Lectures focus on the underlying mathematical basis for widely used spatial analytical techniques. Among the topics covered are neighborhood operations, map transformation, spatial interpolation, terrain analysis, network analysis, spatial overlay, fuzzy sets, neural networks, and expert systems. In-class practical exercises and laboratory assignments complement the lectures by providing hands-on experience with a variety of advanced analytical techniques. The course culminates with a capstone term project that allows cadets to identify a scientific problem, formulate a hypothesis, use GIS to solve the problem, and then present the results of their analysis.

LESSONS: 30 @ 55 min (2.5 Att/wk)

LABS: 10 @ 55 Min

SPECIAL REQUIREMENTS: Term Project. Compensatory time provided.

XS391	PRINCIPLES AND APPLICATIONS OF ENVIRONMENTAL CHEMISTRY
	3.0 Credit Hours (BS=0.5, ET=2.5); Prerequisites: CH102/CH152 and MA104

SCOPE: This course examines chemical interactions of pollutants in air, soil, and water systems. The focus of the course is problem solving with the following topic coverage: approximately 80% applied aquatic chemistry, 15% environmental organic chemistry, and 5% applied analytical chemistry. Specific topics include the chemistry applied in drinking water production and the chemical aspects of industrial and hazardous waste treatment. The fate of heavy metals and organic contaminants in soil and aqueous systems is also discussed.

LESSONS: 40 @ 55 min a (2.5 Att/wk)

LABS: None

SPECIAL REQUIREMENTS: One in-class lab.



MAJ Tom Hanlon teaches Yearlings about mass wasting during a (Physical Geography) EV203 terrain walk.



GIS cadets enrolled in EV379 (Aerial Photogrammetry) receive hands-on training during a field trip to Keystone Aerial Survey in Philadelphia.



The Environmental program showing off the 'Green Team'!



Dr. Brockhaus presents the Environmental Systems Research Institute Award to GIS major CDT Gus Paulo (2011) for excellence in Geospatial Information Sciences.



EV350 cadets on a course field trip to the West Point water treatment facility. Don't press that button!



Cadet on an AIAD at the United States Institute of Peace with the Secretary of Defense, Honorable Leon Panetta.

DEPARTMENT FACULTY

PERMANENT MILITARY FACULTY

COL WILEY C. THOMPSON

Professor and Head, Department of
Geography and Environmental Engineering

Ph.D., Oregon State University, 2008

M.S., Oregon State University, 1999

B.S., USMA, 1989

Deputy Department Head, D/G&EnE, USMA,
2009-2011

Academy Professor, Geography and Environmental
Engineering, USMA, 2008-2009

Task Force XO, 12th Aviation Brigade Task Force,
Bagram, Afghanistan, 2006

Task Force Operations Officer, 3-158th Aviation Task
Force, Kandahar, Afghanistan, 2005

Battalion Operations Officer, 3-158th Aviation Battalion, Giebelstadt, Germany, 2004

Battalion XO, 3-158th Aviation Battalion, Balad, Iraq, 2003

Instructor/Assistant Professor, D/G&EnE, USMA, 1999-2002

Company XO, 571 MEDEVAC (AA), Fort Carson, CO, 1997

Troop Commander, 4th Squadron, 3rd Armored Cavalry Regiment, Fort Bliss, Texas and Fort
Carson, Colorado, 1995-1996

Squadron S-4 4th Squadron, 3rd Armored Cavalry Regiment, Fort Bliss, Texas, 1995

Flight Operations Officer, 4th Squadron, 3rd Armored Cavalry Regiment, Fort Bliss, Texas, 1994

Platoon Leader, 4th Squadron, 3rd Armored Cavalry Regiment, Fort Bliss, Texas, 1992-1994

Platoon Leader, 2/2 Aviation, 2nd Infantry Division, Camp Stanley, ROK, 1990-1991



COL Thompson is an Army Aviator with tactical assignments at the company, battalion and brigade levels. His most recent field experience includes operational aviation assignments in support of both Operation Iraqi Freedom and Operation Enduring Freedom. Academically, COL Thompson specializes in environmental geography with research interests in large-scale disaster response, development, and conflict. COL Thompson teaches Geography of North America (EV384) and Military Geography (EV482). He has taught Physical Geography (EV203), Geography of Global Cultures (EV365), and Land Use Planning and Management (EV391A). ★

COL STEVEN D. FLEMING

Academy Professor, Geospatial Information Science

Ph.D., University of Georgia, 2004

M.A., Naval War College, 1999

M.A., University of Georgia, 1995

B.S., USMA, 1985

Academy Professor, Department of Geography and
Environmental Engineering, USMA,
2009-Present

Advisor, National Military Academy – Afghanistan,
CSTC-A, Kabul, Afghanistan, 2008

Academy Professor, Department of Geography and
Environmental Engineering, USMA,
2005-2008

Advisor, National Military Academy - Afghanistan,
CFC-A, Kabul, Afghanistan, 2005

Academy Professor, Department of Geography and Environmental Engineering, USMA,
2004-2005

Assistant Division Air Defense Officer, 4th Infantry Division, Fort Hood, Texas 2000-2001

Battalion S-3, 1-44 ADA, 4th Infantry Division, Fort Hood, Texas 1999-2000

Aide de Camp to the Superintendent, USMA, 1997-1998

Instructor/Assistant Professor, Department of Geography and Environmental Engineering, USMA,
1995-1998

Battery Commander, A/1-62 ADA, 25th Infantry Division, Schofield Barracks, Hawaii,
1992-1993

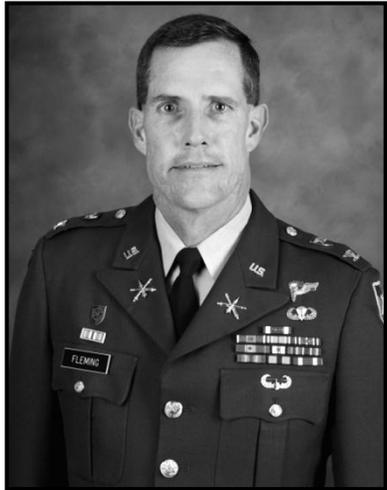
Assistant Battalion S-3/Brigade Liaison Officer, 1-62 ADA, 25th Infantry Division, Schofield
Barracks, Hawaii, 1990-1992

Battalion S-1, 5-62 ADA, 11th ADA Brigade, Fort Bliss, Texas, 1988-1990

Assistant Battalion S-3, 5-62 ADA, 11th ADA Brigade, Fort Bliss, Texas, 1988

Platoon Leader, 5-62 ADA, 11th ADA Brigade, Fort Bliss, Texas, 1986-1988

Platoon Leader, 4-1 ADA, 11th ADA Brigade, Fort Bliss, Texas, 1985-1986



COL Fleming is an Air Defense officer with command and staff experience in short-range air defense operations at the battalion, brigade and division levels. Academically, COL Fleming specializes in geospatial information sciences with particular interest in large-scale mapping of coastal regions, terrestrial image collection and applications of geospatial technologies for homeland security and military operations. He has taught EV203 (Physical Geography), EV377 (Remote Sensing), EV379 (Photogrammetry), EV380 (Surveying), EV485 (Advanced Topics in Geography and the Environment) and EV489 (Advanced Independent Study in GIS). COL Fleming currently teaches EV377 (Remote Sensing), EV378 (Cartography), EV398 (Geographic Information Systems), and EV478 (Military Geospatial Operations). ★

COL MICHAEL D. HENDRICKS

Academy Professor, Geospatial Information Science

Ph. D., University of Maine – Orono, 2004

M.S., University of South Carolina, 1994

B.S., University of Delaware, 1986

Battalion XO, 29th Engineer Battalion

(Topographic), Fort Shafter, HI 2000-2001

Geospatial Operations Officer & Detachment

Commander, 5th Planning and Control, U.S.

Army Pacific (USARPAC), Fort Shafter, HI

1999-2000

Instructor and Assistant Professor, Department of

Geography and Environmental Engineering

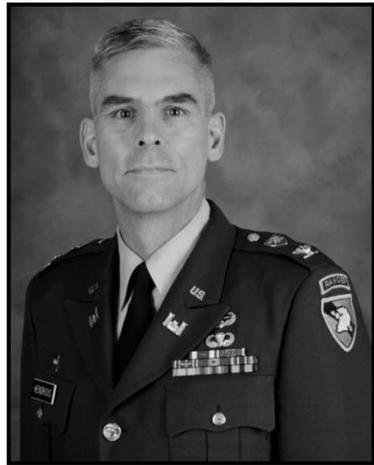
USMA, 1995-1998

Company Commander, A Co, 13th Engineer Battalion (Light), Fort Ord, CA, 1992-1993

Asst Operations Officer, 13th Engineer Battalion (Light), Fort Ord, CA, 1991-1992

Company XO, HQ Co, 317th Engineer Battalion (Mech), Germany, 1989-1990

Platoon Leader, A Co, 317th Engineer Battalion (Mech), Germany 1987-1989



COL Hendricks is an Engineer officer specializing in geospatial information operations. His recent military experience was with the 29th Engineer Battalion (Topographic) supporting PACOM, USARPAC, and numerous other organizations in the pacific region with mapping and geospatial intelligence. His research interests include; GIS education, supporting navigation and mobility analysis in dynamic and uncertain settings, and mobile mapping. In addition, he is involved in producing large-scale topographic maps for the sport of orienteering and is the officer representative to the USMA orienteering team. COL Hendricks is the course director for EV398 (Geographic Information Systems) and EV498 (Advanced Geographic Information Systems). COL Hendricks is on sabbatical during academic year 2012. ★

LTC ANDREW D. LOHMAN

Academy Professor and Program Director of Geography

Ph.D., University of Illinois, Urbana-Champaign, 2009

M.S., University of South Carolina, 1999

B.S., USMA, 1989

Senior Operational Detachment Bravo (ODB) Observer-Controller, Special Operations Training Detachment, Joint Readiness Training Center (JRTC), Fort Polk, LA

Company Commander, Group Support Company, 5th Special Forces Group (Airborne), Fort Campbell, KY

Company Commander, B Company, 2nd Battalion, 5th Special Forces Group (Airborne), Fort Campbell, KY

Assistant Professor, Department of Geography and Environmental Engineering, USMA

Instructor, Department of Geography and Environmental Engineering, USMA

Operational Detachment Alpha (ODA) Commander, A Company, 1st Battalion, 5th Special Forces Group (Airborne), Fort Campbell, KY

Executive Officer, Combat Support Company, 3rd Battalion, 47th Infantry, Fort Lewis, WA

Rifle Platoon Leader, B Company, 3rd Battalion, 47th Infantry, Fort Lewis, WA

Anti-Tank Platoon Leader, A Company, 2nd Battalion, 2nd Infantry Brigade, Fort Lewis, WA



LTC Lohman is a Special Forces officer with operational experience as an ODA and SF company commander in the Middle East, Africa, and the Caribbean. He is a political geographer with research interests in the geography of war and conflict, with a specific focus on insurgency and civil war. His dissertation analyzed the spatial patterns of intra-state conflict through an urban network approach. He teaches EV365 (Geography of Global Cultures), EV376 (Geography of the Middle East) and EV482 (Military Geography). ★

LTC MARK A. SMITH

Academy Professor, Environmental Science

Ph.D., University of Wisconsin, Madison, 2002

M.S., University of Wisconsin, Madison, 1989

B.S., Oregon State University, 1985

Theater Missile Defense Officer and Balkans
Reserve Force Desk Officer, Joint Force
Command, Naples, Italy, 2002-2005

S-3, 5-7 ADA, Hanau Germany, 2001-2002
Operations and Training Officer, Extended Air
Defense Task Force, Giessen, Germany,
1999-2001

Team Leader, 432nd Civil Affairs Battalion,
Green Bay, WI, 1998-1999

Detachment Commander, 2/335th Bn, 4th Bde, Madison, WI, 1997-1998

OIC, Observer Controller Lanes Team, 2/335th Bn, 4th Bde, Madison, WI, 1996-1997

Platoon Leader, Observer Controller Lanes Team, 2/335th Bn, 4th Bde, Madison, WI, 1994-1996
Force Air Defense Officer, Allied Command Europe Mobile Force Land and S-5, Wackernheim,
GE, 1991-1994

Platoon Leader, 5/3 ADA, Wackernheim, GE, 1990-1991

Platoon Leader, 3/5 ADA, Buedingen, GE, 1990



LTC Smith is an Air Defense officer with experience in a wide variety of assignments, to include joint and combined tours with NATO and European Union forces. LTC Smith has also served two combat tours in Iraq (platoon leader during DESERT STORM, and NATO LNO to Multi-National Corps Iraq in support of the NATO training Mission in Iraq). LTC Smith holds a joint Ph.D. in wildlife ecology and zoology from the University of Wisconsin-Madison. His dissertation research and interests are about integrating military training and wildlife on military lands. He teaches EV471 (Ecology), EV301 (Environmental Science for Engineers and Scientists), EV391B (Environmental Geology), and the three courses of the Environmental Engineering Sequence: EV 300 (Environmental Science), EV350 (Environmental Technologies), and EV450 (Environmental Decision Making). ★

LTC JEFFREY A. STARKE, P.E.

Academy Professor, Environmental Engineering

Ph.D., University of Wisconsin - Madison, 2011

M.S., University of Wisconsin - Madison, 2001

B.S., Villanova University, 1991

Academy Professor, Department of Geography and
Environmental Engineering, USMA, 2011-present
Battalion Executive Officer, 206th Military Intelligence
Battalion, Fort Gordon, Georgia

Battalion S-3, 206th Military Intelligence Battalion, Fort
Gordon, Georgia

Chief, Cryptologic Services Group, JTF-76, Bagram,
Afghanistan

Chief, Current Operations, NSA/CSS-Georgia, Fort
Gordon, Georgia

Assistant Professor, Department of Geography and Environmental Engineering, USMA

Instructor, Department of Geography and Environmental Engineering, USMA

Commander, HHB, Task Force 3-43, Camp Doha, Kuwait

Commander, HHB, 3-43 Air Defense Artillery Battalion, 11th ADA Brigade, Fort Bliss, Texas

Battalion S-2, 3-43 Air Defense Artillery Battalion, 11th ADA Brigade, Fort Bliss, Texas

Battalion S-1, 2-505 Parachute Infantry Regiment, 82nd Airborne Division, Fort Bragg,
North Carolina

Company Executive Officer, 2-505 Parachute Infantry Regiment, 82nd Airborne Division,
Fort Bragg, North Carolina

Platoon Leader, Delta Company, 2-505 Parachute Infantry Regiment, 82nd Airborne Division,
Fort Bragg, North Carolina

Platoon Leader, Bravo Company, 2-505 Parachute Infantry Regiment, 82nd Airborne Division,
Fort Bragg, North Carolina



LTC Starke is a Military Intelligence officer with command and staff experiences at the battalion, brigade, and joint task force levels. His most recent experiences include operational intelligence assignments in support of Operation Enduring Freedom. Academically, LTC Starke specializes in environmental engineering with research and teaching interests in drinking water, public health, and microbial-mediated renewable energy resources. LTC Starke teaches EV400 (Environmental Engineering Seminar), EV401 (Physical and Chemical Processes), EV EV450 (Environmental Decision Making), and XS391 (Environmental Chemistry). ★

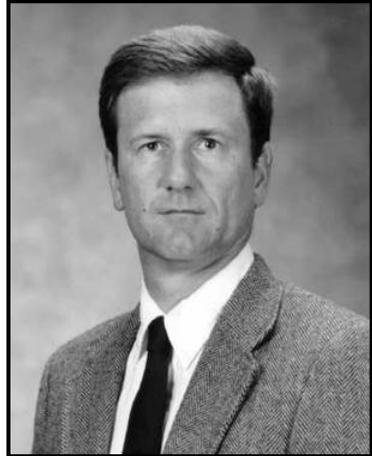
CIVILIAN FACULTY

Dr. JOHN A. BROCKHAUS

Professor of Geospatial Information Science and
Program Director, Geospatial Information
Science

Ph.D., University of Idaho, 1987
M.S., California Polytechnic State University, 1980
B.S., California Polytechnic State University, 1978

Research Associate, NCS University, 1984-94
Instructor, University of Idaho, 1982-84
Systems Analyst, Humboldt State University,
1981-82
Instructor, California Polytechnic State University,
1978-80



Dr. Brockhaus is an environmental scientist with teaching and research interests in aerial photo interpretation, remote sensing, and geographic information systems. He has expertise in the application of remote sensing and geographic information systems in the study of landscape characterization, spatial modeling of ecological processes, site degradation monitoring, and land cover change analysis. He has published numerous articles in professional journals and has presented over 50 papers at national and international conferences. His research interests include site degradation monitoring with remotely sensed data, detection and mapping of invasive plant species using hyperspectral imagery, and the use of ground penetrating radar in archeological studies. He teaches EV377 (Remote Sensing), EV378 (Cartography), EV379 (Photogrammetry), EV398 (Geographic Information Systems) and EV477 (Advanced Remote Sensing). ★

Dr. MARIE C. JOHNSON

Professor of Geology and Program Director,
Environmental Science

Ph.D., Brown University, 1990

M.Sc., Brown University, 1987

A.B., Harvard College, 1985, *magna cum laude*

Associate Professor, Department of Geography and
Environmental Engineering, USMA, 1999-2005

Assistant Professor, Department of Geography and
Environmental Engineering, USMA, 1995-1999

Associate Research Scientist, Lamont- Doherty Earth
Observatory of Columbia University, 1992-1995

Lamont- Doherty Post-Doctorate Fellow, Earth
Observatory of Columbia University,
1990-1992

Research Assistant, Brown University, 1986-1990



Dr. Johnson is a Geologist who applies the skills and techniques of physical chemistry to understanding geological processes. Her specific research interests include understanding fluid behavior at high pressures and temperatures inside the Earth, deducing physical conditions inside a volcano just prior to eruption, and environmental security. She is the author of many articles in professional journals, and often presents papers at national conferences. Dr. Johnson serves as the Environmental Program Director. ★

Dr. JON C. MALINOWSKI

Professor of Geography

Ph.D., University of North Carolina at Chapel Hill,
1995

M.S., University of North Carolina at Chapel Hill,
1993

B.S., Georgetown University, 1991, *magna cum laude*,
Phi Beta Kappa

Teaching Fellow, UNC-Chapel Hill, 1993-95



Dr. Malinowski is a Geographer with teaching and research interests in environmental perception, spatial ability, children's geographies, summer camps, and the geography of Asia. He is the published author of several books, academic journal articles, and book chapters. He ALSO TEACHES ev365 (Geography of Global Cultures). Dr. Malinowski is the course director for EV303 (Foundations in Geography) in the fall term and EV372 (Geography of Asia) in the spring term. ★

JOHN MELKON

**Chair for the Center of Study for Civil and Military
Operations (CSCMO)**

Texas A&M University; College Station, Texas

George Bush School of Government.

- Master of Policy International Affairs, National Security, Magna Cum Laude.

Lowry Mays School of Business.

- Master of Business Administration, International Business

Princeton University; Princeton, New Jersey

BA, History.



Dr. Malinowski is a Geographer with teaching and research interests in environmental perception, spatial ability, children's geographies, summer camps, and the geography of Asia. He is the published author of several books, academic journal articles, and book chapters. He ALSO TEACHES ev365 (Geography of Global Cultures). Dr. Malinowski is the course director for EV303 (Foundations in Geography) in the fall term and EV372 (Geography of Asia) in the spring term. ★

Dr. MICHAEL A. BUTKUS

Professor of Environmental Engineering

Ph.D., The University of Connecticut, 1997

M.S., The University of Connecticut, 1995

B.S., The US Merchant Marine Academy, 1989

P.E., State of Connecticut, 1997



Dr. Michael A. Butkus has expertise in water, wastewater, and hazardous waste treatment system design. He currently teaches EV394 (Hydrogeology and Hydraulic Systems), EV490 (Advanced Environmental Engineering Design) and EV489 (Advance Individual Study). He has conducted environmental research for both the military and civilian sectors. Prior to graduate school, he practiced nuclear engineering with Knolls Atomic Power Laboratory. Dr. Butkus is a registered professional engineer in the State of Connecticut. His research interests are primarily in the area of physicochemical treatment processes with recent applications in drinking water disinfection, lead remediation, and ballast water treatment. He holds a patent on a method for disinfecting water with UV radiation and silver. Dr. Butkus also enjoys family, hiking, firefighting, and playing jazz piano. ★

Dr. PETER P. SISKA

Professor, Geography

Ph.D., Texas A&M University, 1995

Ph.D., Comenius University, Bratislava, Slovakia,
1984

M.S., Comenius University, Bratislava, Slovakia 1978

B.S., Comenius University, Bratislava, Slovakia 1974

Associate Professor, Austin Peay State University
Clarksville, TN, 2004-2007

Assistant Professor, Stephen F. Austin University,
Nacogdoches, TX, 1999 - 2004

Research Scientist, Texas A&M University,
1997-1999

Assistant Professor, Constantine Philosopher
University, Nitra, Slovakia, 1995 – 1997

Assistant Professor, Comenius University, Bratislava,
Slovakia, 1979 – 1984



Dr. Peter Siska has a diverse background in natural resource management, spatial analysis, geostatistics and geographic information systems. He participated in regional planning projects in Slovakia and in research projects in Texas, including: volumetric analysis of the total tree stem volume of the east Texas forest ecosystem, natural resource and inventory border zone project between Texas and Mexico, and developing a karst hazard prediction model on Pennyroyal Plane as well as the western Kentucky Highlands. Dr. Siska was also director of the School of Agriculture and Geosciences and published several papers in international scientific journals. He presented scientific papers in the United States and Europe and is active on the board of directors for the Applied Geography Conference. He is a member of Slovak Academy of Sciences and currently serves on the editorial board for *Geografický Časopis* (Journal of Geography), published by the Slovak Academy of Sciences and *Papers of Applied Geography Conference*. He teaches EV 365 (Geography of Global Cultures), EV203 (Physical Geography), and previously taught Regional Geography of Europe, the Americas and Australia, Regional Geography of Africa, Asia and Oceania, Introduction to GIS, Political Geography and graduate courses in geospatial analysis. ★

Dr. RICHARD L. WOLFEL

Associate Professor, Geography
Chair, Intercultural Competence, Center for
Languages, Cultures, and Regional Studies

Ph.D, Indiana University, Bloomington, 2001
M.A., University of Cincinnati, 1997
BSED, West Chester University of Pennsylvania, 1995

Assistant Professor, Southern Illinois University
Edwardsville, 2003-2007
Assistant Professor, Salem State College, 2001-2003
Associate Instructor, Indiana University, 1997-2001



Dr. Wolfel is a cultural and political geographer with regional interests in Central Asia and Germany. His specific research interests focus on nationalism and the urban built environment, post-Soviet political development and the influence of nationalism on tourism. Dr. Wolfel has traveled to Korea in support of the Second Infantry Division's REAL warrior program. He also serves as a consultant/advisor with the CJ-5 (Future Plans) and CJ-9(Civilian-Military Operations) of CJTF-1, First Cavalry Division, Regional Command East, Bagram, Afghanistan in support of Operation UNIFIED ENDEAVOR. In 2010, Dr. Wolfel traveled to Kisangani, Democratic Republic of Congo to conduct human terrain mapping for AFRICOM and Special Operations Command, Africa, in support of Operation OLYMPIC CHASE. He is the author of several books, journal articles, reviews and book chapters. Dr. Wolfel is course director for EV 371: Geography of Russia, EV 390B: Urban Geography and directs the Cross Cultural Competence Initiative for USMA as part of the Center for Languages, Cultures and Regional Studies (CLCRS). ★

Dr. ADAM J. KALKSTEIN

Assistant Professor, Geography

Ph.D., Arizona State University, 2008

M.A., Arizona State University, 2004

B.A., University of Virginia, 2002, with distinction



Dr. Kalkstein is a geographer-climatologist whose research and teaching interests focus primarily on climate change and human-environment interactions. He has taught a variety of courses including: Meteorology, Climatology, Earth Science, Environmental Issues, and Environmental Policy. Dr. Kalkstein has authored or co-authored numerous articles in peer-reviewed journals covering topics as diverse as the impact of jet contrails on climate, the geography of human mortality in the United States, and the effects of heat on human health. Most recently, his research has focused on examining the role of weather on suicide and determining how climate influences influenza and winter mortality. Dr. Kalkstein teaches EV203 (Physical Geography) and EV389B (Climatology). ★

Dr. AMY R. KRAKOWKA

Associate Professor, Geography

Ph.D., Boston University, 2005

M.A., Boston University, 2002

B.S., Boston University, 2000, *magna cum Laude*

Research fellow, Boston University, 2002-2005

Teaching fellow, Boston University, 2001

Dr. Krakowka is a geographer who applies her skills to understanding the interactions between environmental resources and economic systems. Specifically, she uses statistical models, GIS, remote sensing data, and economic data to research the interactions between marketed and non-marketed environmental resources and the economy. She is the author of several articles in professional journals, is the editor of the book *Understanding Africa: A Geographic Approach*, and often presents papers at national conferences. Dr. Krakowka teaches EV203 (Physical Geography), EV386 (Geography of Europe) and EV486 (Environmental Geography). She has also taught EV365 (Geography of Global Cultures). Dr. Krakowka is on sabbatical during academic year 2012. ★



MAKAME MUHAJIR

Minerva Research Fellow

Department of Geography and Environmental Engineering, USMA.

Ph.D., The University of Kansas, Lawrence, 2011

M.A., Curtin University, Perth, Australia, 1994

Undergraduate Diploma, Ardihi University, 1985

Minerva Fellow for African Studies, Department of Geography and Environmental Engineering, USMA, 2012-present

Lecturer/Graduate Teaching Assistant, University of Kansas, Lawrence, Kansas, 2008-2012

Research Assistant, Department of Geography, University of Kansas, 2008-2011

Director, Urban Conservation Program, Zanzibar, 2001-2005

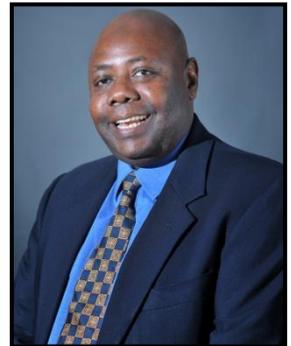
Director, Department of Surveys and Urban Development, Zanzibar, 1994-2001

Visiting Lecturer, Faculty of Spatial Planning, University of Dortmund, Germany, 2005

Intern, Department of Planning and Urban Development, Perth, Australia, 1992-1993

Member of Urban Development Authority, Zanzibar, 1987-1990

Urban Planner, Department of Surveys and Urban Planning, Zanzibar, 1985-1990



DR. MUHAJIR IS AN URBAN GEOGRAPHER WITH COMMANDING PROFESSIONAL EXPERIENCES IN AFRICAN STUDIES AND SUSTAINABILITY PLANNING AT REGIONAL, ENVIRONMENTAL, AND LAND USE MANAGEMENT AREAS. HIS MOST RECENT MANAGEMENT EXPERIENCE INCLUDES STUDENT COORDINATION IN SUPPORT OF THE AFRICAN STUDIES CENTER AS ITS FORMER EXECUTIVE COUNCIL MEMBER AT THE UNIVERSITY OF KANSAS. ALONGSIDE HIS DIRECTORATE ROLE IN ZANZIBAR'S URBAN PLANNING DEPARTMENT IN THE 1990S, DR MUHAJIR WAS A MEMBER OF THE PREPARATORY COMMITTEE OF THE UN-HABITAT PREPARATORY TEAM I&II THAT PREPARED A COUNTRY REPORT FOR THE UNITED NATIONS CONFERENCE ON HUMAN SETTLEMENTS HELD IN ISTANBUL, TURKEY IN 1996. ACADEMICALLY, DR. MUHAJIR SPECIALIZES IN DEVELOPMENT GEOGRAPHIES FOR AFRICA WITH SPECIFIC CONCERNS ON HOW PLANNING WORKS IN THE AGE OF REFORMS. DR. MUHAJIR HAS ALSO STUDIED AT THE UNIVERSITY OF DORTMUND, GERMANY, THE UNIVERSITY OF THE WEST INDIES, KINGSTON, JAMAICA, AND GALILEE COLLEGE IN ISRAEL ON SPATIAL PLANNING AND ENVIRONMENTAL MANAGEMENT. DR. MUHAJIR CONDUCTS RESEARCH ON DIALOGIC AND ETHNO-CULTURAL PLANNING APPROACHES FOR AFRICA, ENVIRONMENTAL, AND POPULATION GEOGRAPHIES, AND TEACHES TOPICS IN AFRICAN GEOGRAPHY AND AFRICAN STUDIES SEMINARS IN FALL 2012 AND SPRING 2013.

ROTATING MILITARY FACULTY

LTC BRIAN P. BAILEY

Assistant Professor, Geospatial Information Science

M.S., University of Maine, Orono, 2003

B.S., The College of William and Mary, VA, 1994

Project Engineer, Space and Terrestrial Communications
Directorate, CERDEC, RDECOM, Fort Monmouth, NJ
Deputy Director/Chief, Network Operations, SWA Theater
Network Operations and Security Center, Camp Arifjan,
KU

Instructor/Assistant Professor, Department of Geography and
Environmental Engineering, USMA, 2003-2006

Battalion S-3, 602nd Aviation Support Battalion (ASB), 2nd
Infantry Division, Camp Stanley, Korea 2000-2001

Company Commander, HSC/602nd ASB, 2ID, Camp Stanley, Korea 1999-2000

Asst. Brigade S-4, 1st Armored Brigade, Camp Casey, Korea, 1998-1999

Battalion S-1, 615th ASB, 1st Cavalry Division, Fort Hood, TX 1997-1998

Company XO, A/27th Main Support Battalion, 1st Cavalry Division, Fort Hood, TX, 1997

Platoon Leader, B/1-9CAV, 3rd Brigade, 1st Cavalry Division, Fort Hood, TX 1996-1997

Platoon Leader, D/2-9 Infantry (MANCHU), 1st Brigade, 2nd Infantry Division, Camp Casey,
Korea, 1995-1996



LTC Bailey enlisted in the United States Navy serving as a Boatswain's Mate and a Fire Control Technician from 1987-1989. After Commissioning, LTC Bailey served as a Mechanized Platoon Leader and as Logistical Company Commander. As a Career Field Designated (CFD) FA24 – Telecommunication Systems Engineer, LTC Bailey supervised the operation and maintenance of tactical and strategic communication networks supporting OIF/OEF. His research interests include the transformative effects of Information Systems and Technologies on Organizational Leadership and Behavior. LTC Bailey's work focuses on integration and interoperability of C4ISR technologies that support communication systems through use of geospatial technologies. He has taught EV203 (Physical Geography), EV378 (Cartography), EV398 (GIS), EV498 (Advanced GIS), EV380 (Surveying), and EV377 (Remote Sensing). ★

LTC CURTIS B. EDSON

Assistant Professor, Geospatial Information Science

Ph.D., Oregon State University, 2011

M.S., University of Wisconsin, 2002

B.A., California Polytechnic State University, 1992

S3, 29th Engineer Battalion, 8th Theater Sustainment
Command, Schofield Barracks, HI, 2006-07
Geospatial Operations Officer & Detachment Commander,
5th Planning and Control, US Army Pacific,
Fort Shafter, HI, 2005-06

Instructor, Geospatial Information Science, D:\G&EnE,
West Point, NY, 2002-04

Commander, B Co, 40th Engineer Battalion (Combat), 1st
Armored Division, Baumholder, GE, 1998-00

Assistant S3, 40th Engineer Battalion (Combat), 1st Armored Division, Baumholder, GE, 1997-98

S4, Support Squadron, 11th Armored Cavalry Regiment, Fort Irwin, CA 1995-96

XO, 58th Engineer Company (OPFOR), 11th Armored Cavalry Regiment, Fort Irwin, CA 1994-95

Platoon Leader, A&O/87th En Co 177th AR Bde (OPFOR), FT Irwin, CA, 1994

Platoon Leader, A and B Companies, 44th En Bn, 2nd Infantry Division, South Korea, 1993



LTC Edson is an Engineer Officer specializing in Geospatial Information Operations. His recent military experience was in the 29th Engineer Battalion (Topographic) supporting PACOM, USARPAC, and numerous other organizations in the pacific region with mapping and geospatial intelligence. He has also served in combat engineer units and as the S-4 Support Squadron, 11th ACR. He has prior service experience serving as a supply specialist in 75th Ranger Regiment, and in the reserves with 12th Special Forces Group (Airborne). His other experiences include company command in Bosnia, several BLUFOR and OPFOR rotations at CMTC, OPFOR at NTC, and service in Korea. His research interests include LiDAR remote sensing and GPS in forest measurements, forest surveying and remote sensing change detection. He teaches EV398 (Geographic Information Systems), EV380 (Principles of Surveying), and EV379 (Photogrammetry). ★

LTC JOSEPH P. HENDERSON

Associate Professor, Environmental Engineering

Ph.D., University of Tennessee, 2006

M.S., University of Tennessee, 1997

B.S., USMA, 1987

Commander, Transition Team, 1st HBCT, 1st Armored
Division, Kirkuk, Iraq, 2009-2010

Assistant Professor, D/G&EnE, USMA, 2006-2009

Aviation Plans and Operations Officer, Eighth U.S. Army,
Seoul, Korea, 2002

S-3, 3rd MI Bn, 501st MI Bde, Pyongtaek, Korea, 2001

Bde Aviation Officer, 501st MI Bde, Seoul, Korea, 2000

Instructor/Assistant Professor, D/G&EnE, USMA, 1997-
2000

Commander, Aviation Detachment, 751st MI Bn, Pyongtaek, Korea, 1994

Bde S-2, Operational Support Airlift Command (OSAC), Ft. Belvoir, VA 1992

Operations Officer and XO, Fixed Wing PAT, OSAC, Ft. Belvoir, VA 1990

Air Assault Commandant, Davison Aviation Command, Ft. Belvoir, VA 1990

Aeroscout Platoon Leader, C/4-501st Attack Bn, Chunchon, Korea, 1988-1989



LTC Henderson is an Aviation officer with command and staff experience in both fixed and rotary wing units including aeroscout, utility helicopter, fixed-wing airlift, and fixed-wing reconnaissance. His most recent operational experience was as a combat advisor with a Kurdish Regional Guard Brigade in Iraq. His research interests include geomorphology, climatology, and military geography. His graduate-level research included creating landslide hazard maps using GIS and the study of climate and fire ecology using tree-ring data. LTC Henderson was the course director for EV203 (Physical Geography), E388B (Geomorphology), and EV482 (Military Geography), and he also taught EV350 (Environmental Engineering Technologies). He is currently the course director for EV301 (Environmental Science for Engineers and Scientists). ★

MAJ MERLIN F. ANDERSON

Instructor, Geospatial Information Science

M.S., George Mason University, 2011

M.S., University of Missouri - Rolla, 2007

B.S., United States Military Academy, 2001

Company Commander, A Co, 35th Engineer Battalion, 1st

Engineer Brigade, Fort Leonard Wood, MO, 2007- 09

Company Commander, C Co, 577th Engineer Battalion, 1st

Engineer Brigade, Fort Leonard Wood, MO, 2007

Military Transition Team, HSC Advisor, 3rd Bn, 1st Bde,

6th Iraqi Infantry Division, Baghdad, IZ, 2006 - 07

BDE Movement Officer, 20th Engineer Brigade, Baghdad, IZ, 2004 - 05

XO, HHC, 20th Engineer Brigade, Fort Bragg, NC, 2004

XO, HHC, 30th Engineer Battalion, Fort Bragg, NC, 2003

PL, Terrain Platoon, 175th Engineer Company and XVIIIth Airborne Corps, Fort Bragg, NC,

2002-2003

MAJ Anderson is an Engineer officer who started his career as a junior-enlisted Topographic Engineer Soldier in 1994. His educational background in Geospatial Science enabled him to serve as a junior officer supporting units from the platoon- through Army Corps-level. His graduate research focused on the use of collision prediction models and empirical ranking methods to identify signalized intersections that would benefit from safety improvements. His academic interests include GIS in environmental applications and GIS in traffic safety applications. MAJ Anderson teaches EV203 (Physical Geography), EV377 (Remote Sensing), EV378 Cartography), EV380 (Surveying), and EV398 (Geographic Information Systems). ★



MAJ MATTHEW P. BAIDEME, P.E.

Instructor

Environmental Engineering

P.E., State of Missouri, 2012

M.S., Stanford University, 2012

M.S., Missouri University of Science and Technology, 2008

B.S., United States Military Academy, 2002

Commander, 610th Engineer Support Company, 14th Engineer Battalion, 555th

Engineer Brigade, Fort Lewis, Washington / Iraq

Brigade Engineer Intelligence Officer, 555th Engineer Brigade, Fort Lewis,

Washington / Iraq

Battalion A/S3-Plans, 40th Engineer Battalion, 2nd Brigade, 1st Armored

Division, Baumholder, Germany / Iraq

Battalion Maintenance Officer, 40th Engineer Battalion, 2nd Brigade, 1st Armored Division, Baumholder, Germany

Company Executive Officer, Bravo Company, 40th Engineer Battalion, 2nd Brigade, 1st Armored Division, Baumholder, Germany / Iraq

Assault and Obstacle Platoon Leader, Bravo Company, 40th Engineer Battalion, 2nd Brigade, 1st Armored Division, Iraq

Sapper Platoon Leader, Bravo Company, 40th Engineer Battalion, 2nd Brigade, 1st Armored Division, Baumholder,

Germany / Iraq

MAJ Baideme is an engineer officer who has served in mechanized and combat support units at the brigade level and below. His command experience includes a construction engineer company in support of Operation Iraqi Freedom. He is a licensed professional environmental engineer with academic interests to include water resources damage mitigation strategies and physical and contaminant hydrogeology. MAJ Baideme teaches EV300 (Environmental Science). ★



MAJ ADAM R. BRADY

Instructor
Environmental Engineering

M.S., Colorado School of Mines, 2012
B.S., United States Military Academy, 2002

Instructor, Department of Geography and Environmental Engineering,
USMA
Commander, B Troop, 3-4 Cavalry Squadron, 25th Infantry Division,
Schofield Barracks, Hawaii/Balad, Iraq
Brigade Assistant S-3, 3rd Infantry Brigade, 25th Infantry Division,
Schofield Barracks, Hawaii/Kirkuk, Iraq
Battalion Assistant S-3, 1-66 Armor Battalion, 4th Infantry Division, Fort Hood, Texas/Taji, Iraq
Tank Company/HHC Executive Officer, 1-66 Armor Battalion, 4th Infantry Division, Fort Hood,
Texas/Taji, Iraq
Platoon Leader, Alpha Company, 1-66 Armor Battalion, 4th Infantry Division, Fort Hood, Texas/Samarra,
Iraq



MAJ Brady is an Armor officer with operational experience in heavy armor and light cavalry units. His most recent experience includes cavalry troop command in the Salah al Din Province of Iraq in support of Operation Iraqi Freedom. His research interests include decentralized water/wastewater treatment and sustainable development. MAJ Brady is an instructor for EV203 (Physical Geography), EV350 (Environmental Engineering Technologies) and EV388a (Physical Geology).★

MAJ CHRISTIAN N. DIETZ

Instructor, Environmental Engineering

M.S., University of California-Los Angeles, 2011
M.S., University of Missouri - Rolla, 2005
B.S., United States Military Academy, 2001

Company Commander, Easy Co, 2nd Bn, 9th Infantry Regt, 1st
Heavy Brigade Combat Team, 2d Infantry Division, Camp
Casey, Korea, 2008–2009
Brigade Engineer 1st Heavy Brigade Combat Team, 2nd Infantry
Division, Camp Casey Korea, 2008
Company Commander, Alpha Company, 19th Engineer Battalion
Fort Knox, KY, 2006-2007
Battalion S1, 19th Engineer Battalion Fort Knox, KY 2006.
Assistant S3, 40th Engineer Bn, Baumholder, Germany, 2005
Battalion S1, 40th Engineer Bn, Baumholder, Germany / Iraq, 2004.
Company XO, Bravo Co, 40th Engineer Bn, Baumholder, Germany (Iraq), 2003-2004.
Platoon Leader, Bravo Co, 40th Engineer Bn, Baumholder, Germany / Iraq, 2002-2003.
MAJ Dietz is an engineer officer who has served in mechanized and construction units at the
brigade level and below. His command experience includes both mechanized and construction
engineer companies. He is an environmental engineer with academic interests to include
sustainability in the built environment, and water and wastewater treatment. MAJ Dietz teaches
EV450 (Environmental Decision Making) and EV350 (Environmental Engineering Technologies).
★



MAJ THOMAS M. HANLON

Assistant Professor, Physical Geography

M.S., Oregon State University, 2010

B.A., University of Montana, 2000

Company Commander, HHC, 1st Battalion, 9th Infantry Regiment, 2nd Brigade, 2nd Infantry Division, Fort Carson, CO/ Ramadi, Iraq, 2006 – 2008

Ranger Instructor, 5th Ranger Training Battalion, Ranger Training Brigade, Dahlongega, GA, 2005–06

Training Officer, 1st Battalion, 75th Ranger Regiment, Hunter Army Airfield (HAA), GA, 2004

Ranger Platoon Leader, B Co, 1st Battalion, 75th Ranger Regiment, HAA, GA / Iraq 2003

Rifle Platoon Leader and Anti-Tank Platoon Leader, A Co and HHC, 2nd Battalion, 14th Infantry Regiment, 2nd Brigade, 10th Mountain Division, Kosovo / Fort Drum, NY, 2001-2002

Infantryman, C Co, 4th Battalion, 325th Airborne Infantry Regiment, 82nd Airborne Division, Fort Bragg, 1993-1996

MAJ Hanlon is a Foreign Area Officer assigned to the Sub-Sahara African region. He began his career as an enlisted Infantry Soldier and later commissioned as an Infantry officer. He has extensive operational experience serving in a variety of environments to include Sinai, Kosovo, Iraq and Afghanistan. His graduate research examined the effects of acid mine drainage (AMD) in critical watersheds of South Africa. His academic interests include environmental security, conflict/cooperation over water and other natural resources, and international development. MAJ Hanlon teaches EV203 (Physical Geography) and EV375 (Geography of Africa). ★



MAJ STEPHEN A. LEWANDOWSKI

Instructor, Environmental Science

M.S., Harvard University, 2011

B.S., United States Military Academy, 2002

Executive Officer, Comprehensive Soldier Fitness Directorate, HQDA DCS G-3/5/7, Pentagon, 2008-09

Executive Assistant to the Assistant Surgeon General for Force-Projection, OTSG, Pentagon, 2007-08

Chief, Environmental Health, USA MEDDAC Fort Belvoir, VA, 2006-07

Brigade Preventive Medicine Officer, C Company, 25th BSB, 1st Brigade, 25th Infantry Division (SBCT), Fort Lewis, WA and Mosul, Iraq, 2004-05

Environmental Science Officer, U.S. Army Center for Health Promotion and Preventive Medicine-Europe, Landstuhl, Germany, 2002-04



CPT Steve Lewandowski is a Medical Service Corps officer. He has deployed in support of Operation Iraqi Freedom, where he assessed environmental health hazards and implemented protective measures. He is an environmental science and engineering officer whose interests include exposure assessment and global environmental change. His graduate research examined associations between multiple sediment quality parameters and toxicity to aquatic organisms. CPT Lewandowski instructs EV300 (Environmental Science) and EV396 (Environmental Biological Systems). ★

MAJ DOUGLASS A. MACPHERSON

Instructor
Geography

M.S. Meteorology, Naval Postgraduate School, 2007

B.S. Meteorology, Lyndon State College, 2000

Instructor, Department of Geography and Environmental Engineering, USMA
Chief, Operations Support Branch, Directed Energy Directorate, Air Force Research Laboratory
Staff Weather Officer, 101st Infantry Division, Bagram AB, Afghanistan
Chief, Meteorology & Oceanography support unit, HQ US Forces Korea, Yongsan Garrison, Seoul S. Korea
Staff Weather Officer, 8th U.S. Army, Yongsan Garrison, Seoul S. Korea
Weather Flight Commander, 11th Reconnaissance Squadron, Indian Springs AAF, NV
Forecaster, 8th U.S. Army, Yongsan Garrison, Seoul S. Korea
Forecaster, 366th Fighter Wing, Mountain Home AFB, ID
Observer, Detachment 12 1st Weather Group, Fort Devens, MA
Observer, Detachment 17, 20th Weather Squadron, Yokota AB Japan



Major MacPherson is a prior enlisted Air Force Weather officer with experience supporting Air Force Army and joint operations. His most recent experiences include leading weather support to the 101st ABN DIV (RC-East) in Afghanistan and directing atmospheric research at the Air Force Research Lab in Albuquerque NM. While assigned to Predator UAV units he deployed to Bosnia and Macedonia supporting NATO operations and to Pakistan shortly after the September 11th attacks. His research interests include atmospheric impacts on laser propagation and astronomy. Maj MacPherson is an instructor for EV203 (Physical Geography) and EV387 (Meteorology) ★

MAJ CHEVELLE P. MALONE

Assistant Professor, Environmental Geography

M.S., Oregon State University, 2010

M.S., Webster University - Rolla, MO 2006

B.S., University of Oregon, 2001

Brigade Chemical Officer, 3rd Infantry Brigade Combat Team,
Brigade Special Troops Battalion, 25th Infantry Division,
Schofield Barracks, HI/Iraq 2006-08

Assistant S3/Plans, 1st Bn 21st Field Artillery Regiment, 1st

Cavalry Division, Fort Hood, TX/Iraq 2004-05

Company XO/Platoon Leader, 68th Chemical Co, 1st Bn 21st Field
Artillery Regiment, 5th Brigade (Provisional), 1st Cavalry
Division Artillery (DIVARTY), 1st

Cavalry Division, Fort Hood, TX/Iraq 2003-04

BDE Chemical Officer, 4th Combat Aviation Brigade, 1st Cavalry Division, Fort Hood, TX 2003

Squadron Chemical Officer, 1/17 Cavalry BN, 82nd Airborne Division, Fort Bragg, NC 2001-02.



MAJ Malone is a Chemical officer with a diverse military background having worked with Infantry, Armor, Aviation, Chemical, and Field Artillery. Her graduate research examined the prospects and barriers influencing a return to localized grain production in the Willamette Valley, Oregon. Her academic interests include human-environment interactions and food geography. MAJ Malone teaches EV203 (Physical Geography). ★

CPT (P) DYLAN W. MALCOMB

Instructor, Physical Geography

M.A., University of Texas at Austin, 2012
M.S., Embry Riddle Aeronautical University, 2010
B.S., United States Military Academy, 2003

Company Commander, D Co. 5-158th Aviation Regt., Katterbach,
Germany/ Balad, Iraq, 2008-2009
Maintenance Platoon Leader, D Co. 5-158th Aviation Regt.,
Katterbach, Germany/ Balad, Iraq, 2007-2008
Assistant S-3, 5-158th Aviation Regt., Katterbach, Germany
2006-2007
Operations Officer, F. Co. 159th Aviation Regt., Giebelstadt,
Germany/ Bagram, Afghanistan, 2004-2006



CPT(P) Dylan Malcomb is an Aviation officer and CH-47D Maintenance Test Pilot who started his military career as an enlisted Infantryman at Camp Casey, ROK. He has deployed to Iraq and Afghanistan in support of both Operation Iraqi Freedom and Operation Enduring Freedom with the 12th Combat Aviation Brigade in Germany. His graduate research examined household vulnerability in Malawi and improving the effectiveness of international development through subnational mapping of foreign aid projects. His academic interests include African development, governance and environmental security. CPT(P) Malcomb teaches EV203 (Physical Geography)

★

MAJ JAMES A. METZ

Instructor, Physical Geography

M.S., Geology, West Virginia University, 2012
M.S., Geography, Pennsylvania State University, 2012
B.S.A., Soil Science, West Virginia University, 2000
B.S., Geology, West Virginia University, 1998
B.S.A., Environmental Protection, West Virginia University,
1998

Executive Officer, Brigade Troops BN, 1/25th SBCT Fort Wainwright, AK
2010

Company Commander, E Co. (Rear), 1st BN 5th IN REGT, 1/25th SBCT
Fort Wainwright, AK 2009

BN Fire Support Officer, HHC 1st BN 5th IN REGT, 1/25th SBCT
Fort Wainwright, AK 2007-2008

BN Motor Officer/Assistant S-3, 6th BN 37th FA (MLRS), 2 ID
Camp Casey, Republic of Korea 2006-2007

Fire Direction Officer/Platoon Leader, B BTRY, 6th BN 32nd FA (MLRS), 212th FA BDE
Fort Sill, OK 2002-2006

Paladin Section Chief, 1st BN 201st FA (WVARNG), 17th FA BDE
Morgantown, WV 1993-2001

Persian-Farsi Linguist, B Co. 1st Radio BN, FMFPAC, USMC
Kaneohe Bay Marine Corps Air Station, HI 1988-1993

MAJ James Metz is a field artillery officer who started his military career as an electronic warfare operator in the USMC. He has deployed to the Persian Gulf in support of Operation Desert Storm, Korea, the Philippines, and most recently to Iraq as a BN fire support officer. His graduate research examined spatial relationships and the role of fire in old-growth pine forests in the southern Cascades, CA, and fluvial geomorphic mapping of a state park in Maryland. His academic interests include glacial and fluvial geomorphology, fire ecology in western forests, and geographic education. MAJ Metz teaches EV203 (Physical Geography) ★



MAJ DUSTIN A. MENHART

Instructor, Physical Geography

M.S., University of Georgia at Athens, 2011

M.A., California University of Pennsylvania, 1997

B.A., California University of Pennsylvania, 1996

General Supply Officer (GSO), 4th BCT, 82nd ABN DIV, Fort Bragg, NC/Afghanistan, 2008

Company Commander, HHC 782d BSB, 4th BCT, 82nd ABN DIV, Fort Bragg NC/Afghanistan, 2006-2008

Aerial Delivery and Heavy Drop Rigging Facility Officer, 782d MSB, 82nd ABN DIV, Fort Bragg, NC/Iraq, 2003-2005

Topographical Survey Assistant, 175th ENG PLT, 30th TOPO ENG BTN, 20th ENG BDE, Fort Bragg, NC, 2000-2002



MAJ Dustin Menhart is a Logistics officer who started his military career as a topographical surveyor. He has deployed to Iraq and Afghanistan in support of both Operation Iraqi Freedom and Operation Enduring Freedom with the 82nd Airborne Division. His graduate research examined terrestrial photography as a valid technique for stream channel survey compared to traditional field survey methods in the Blue Ridge Mountains. His academic interests include fluvial geomorphology with an emphasis in stream restoration and reclamation. MAJ Menhart teaches EV203 (Physical Geography) ★

MAJ JOHN L. MORROW

Assistant Professor, Human Geography

M.S., Geography – The Pennsylvania State University, 2010

B.A., Biology – Asbury University, 1997

Engineer Advisor to the 9th Iraqi (Mechanized) Division Engineer Regiment, Al-Rasheed Iraq, 2007-2008

Hotel Company Commander, 35th Engineer BN (OSUT), 1st Engineer Brigade, Ft. Leonard Wood, Missouri, 2005-2006

Assistant Brigade Operations Officer, 1st Engineer Brigade, Ft. Leonard Wood, Missouri, 2004-2005

Echo Company Commander, 35th Engineer BN (OSUT), 1st Engineer Brigade, Ft. Leonard Wood, Missouri, 2004

Echo Company Executive Officer, 35th Engineer BN (OSUT), 1st Engineer Brigade, Ft. Leonard Wood, Missouri, 2003-2004

Platoon Leader, Alpha Company, 44th Engineer BN (MECH), 2ID, Republic of Korea, 2002-2003



MAJ Morrow is an Engineer Officer that enlisted in the United States Army in 1997 serving as a Vietnamese linguist with Joint Task Force-Full Accounting from 1999-2001. After commissioning, MAJ Morrow served in a variety of positions from platoon through brigade in both mechanized and Initial Entry Training units. More recently, he served as the engineer advisor to the 9th Iraqi Division Engineer Regimental commander on an Iraqi Forward Operating Base in Baghdad, Iraq. He is a human geographer whose interests include the use of remote sensing and ethnographic tools to analyze and monitor land-use/land-cover change in rural populations. MAJ Morrow is an instructor for EV203 (Physical Geography) and EV373 (Geography of Latin America). ★

MAJ ANDREW R. PFLUGER

Department Executive Officer
Assistant Professor, Environmental Engineering

Engineer Degree, Stanford University, 2010
M.S., Stanford University, 2009
B.S., United States Military Academy, 2001

Troop Commander, Headquarters and Headquarters Troop, 1st Squadron, 3d Armored Cavalry Regiment, Fort Hood and Qayyarah, Iraq, 2006-2008
Chief of Plans, 2/78 Training Support Brigade, Fort Drum, 2005
S4, 1st Squadron, 3d ACR, Fort Carson, 2004
XO, C Troop, 1st Squadron, 3d ACR, Fort Carson/Al Qa'im, Iraq, 2003-2004
Scout Platoon Leader, B Troop, 1st Squadron, 3d ACR, Fort Carson/Al Qa'im, Iraq, 2002-2003



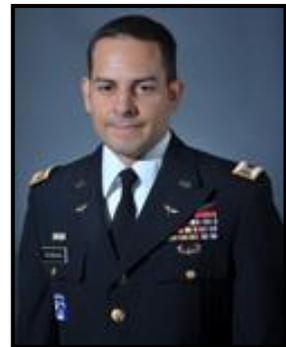
MAJ Pfluger is an armor officer who has primarily held leadership positions in Cavalry units at the Squadron level and below. He has deployed twice in support of Operation Iraqi Freedom with the 3d ACR, once as a scout platoon leader and executive officer and once as a troop commander. He is an environmental engineer whose wide range of interests include environmental biotechnology, microbial ecology, and air pollution engineering. His graduate thesis examined the selective growth of type II methanotrophic bacteria in a biological fluidized bed reactor. MAJ Pfluger instructs EV300 (Environmental Science) and EV397 (Air Pollution Engineering). ★

CPT CRISTIAN A. ROBBINS

Instructor
Environmental Engineering

M.S., Colorado State University, 2012
B.S., United States Military Academy, 2003

Commander, B Company, Headquarters and Headquarters Battalion (HHB), XVIII Airborne Corps, Fort Bragg, NC, 2009-2010
Commander, B Company, Special Troops Battalion, MNC-I, Camp Victory, Iraq, 2008-2009
Deputy Director, Multi-National Corps-Iraq (MNC-I) Personnel Recovery Coordination Center (PRCC), Camp Victory, Iraq, 2008
Battalion Assistant S-3, 2-52 GSAB, 2nd Infantry Division, Camp Humphreys, Korea, 2005-2006
Flight Platoon Leader, B Company, 2-52 GSAB, 2nd Infantry Division, Camp Humphreys, Korea, 2005-2006
Maintenance Platoon Leader, D Company, 2-52 General Support Aviation Battalion, 2nd Infantry Division, Camp Humphreys, Korea, 2005
Battalion Assistant S-1, 2-52 Aviation Regiment, 17th Aviation Brigade, Camp Humphreys, Korea, 2004-2005



CPT Robbins is an Aviation officer with a rating in the CH-47D Chinook helicopter and with command and staff experiences at the battalion and corps levels. His most recent experiences include personnel recovery operations planning and command experience in Iraq and Fort Bragg with XVIII Airborne Corps. CPT Robbins specializes in environmental engineering with academic interests in wastewater treatment, waste to renewable energy planning, and water resources planning and management. CPT Robbins teaches EV300 (Environmental Science) and EV350 (Environmental Engineering Technologies). ★

CPT VLADIMIR R. SOTOSANCHEZ

Instructor

Environmental Engineering

M.S., Clemson University, 2012

M.B.A., Regis University, 2001

B.S., Rensselaer Polytechnic Institute, 1995

B.S., Rensselaer Polytechnic Institute, 1994



Commander, HHC, 11th Engineer Battalion, 36th Engineer Brigade, Fort Benning, Georgia

Assistant S-3, 11th Engineer Battalion, 36th Engineer Brigade, Fort Benning, Georgia

S-3 Plans OIC, 11th Engineer Battalion, 36th Engineer Brigade, Fort Benning, Georgia

Commander, Detachment D, 1st Battalion, Small Arms Readiness Group, Fort Gillem, Georgia

Battalion S-2, 648th Engineer Battalion, 48th Infantry Brigade Combat Team, Camp Adder, Iraq

Platoon Leader, Alpha Company, 878th Engineer Battalion, 78th Troop Command, Swainsboro, Georgia

CPT SotoSanchez is an Engineer officer with command and staff experiences at the battalion level. His most recent experiences include operational intelligence assignments in support of Operation Enduring Freedom. Academically, CPT SotoSanchez specializes in environmental engineering with research and teaching interests in drinking water, wastewater treatment and water resources. CPT SotoSanchez teaches EV EV450 (Environmental Decision Making). ★

MAJ RUSSELL B. THOMAS

Instructor

Environmental Engineering

M.S., University of Texas - Austin, 2012

B.S., United States Military Academy, 2003



Instructor, Department of Geography and Environmental Engineering, USMA

Commander, HHC, 2nd Brigade, 3rd Infantry Division, Fort Stewart, Georgia

Commander, Alpha Company, 1-64 Armor Battalion, 3rd Infantry Division, Fort Stewart, Georgia / Ninewa, Iraq

Battalion Assistant S-3, 1-64 Armor Battalion, 3rd Infantry Division, Fort Stewart, Georgia

Military Transition Team Maneuver Trainer to 3rd Battalion, 3rd Brigade, 6th Iraqi Army Division, Baghdad, Iraq

Platoon Leader, Delta Company, 3-504 Parachute Infantry Regiment, 82nd Airborne Division, Fort Bragg, North Carolina

Company Executive Officer, 3-504 Parachute Infantry Regiment, 82nd Airborne Division, Fort Bragg, North Carolina / Al Anbar, Iraq

Platoon Leader, Bravo Company, 3-504 Parachute Infantry Regiment, 82nd Airborne Division, Fort Bragg, North Carolina

Platoon Leader, Bravo Company, 3-504 Parachute Infantry Regiment, 82nd Airborne Division, Fort Bragg, North Carolina

MAJ Thomas is an Infantry officer with operational experience in the mechanized and airborne infantry. His experience includes company command in the Ninewa Province of Iraq in support of Operation Iraqi Freedom. His graduate research examined common rainwater harvesting practices in the United States. His academic interests include drinking water, renewable energy generation, and rainwater harvesting. MAJ Thomas is an instructor for EV450 (Environmental Decision Making). ★

MAJ Elizabeth A. Weaver

Instructor
Physical Geography

M.A., California State University Long Beach, 2009

B.S., University of Southern California, 2002

Battalion S-3, Baltimore Recruiting Battalion, Fort Meade, MD, 2011

Aviation Planner, J3 FUOPS, U.S. Forces Iraq, Baghdad, Iraq, 2010

Commander, 1st Staff and Faculty Company, U.S. Army Aviation

Logistics School, Fort Eustis, VA 2006-2008

Company Executive Officer, 3-82nd General Support Aviation Battalion,
Fort Bragg, NC, 2006

Platoon Leader, 1-159th Aviation Regiment, Fort Bragg, NC / Balad, Iraq 2005

Battalion S-1, 1-58th Aviation Regiment, Fort Bragg, NC 2004



MAJ Weaver is an Aviation officer qualified in the UH-60 Blackhawk. She has deployed in support of Operation Enduring Freedom and Operation New Dawn, first serving as a platoon leader and then as part of a corps level staff. Her graduate research examined perceived access barriers to Post Traumatic Stress Disorder Treatment among Veterans in rural Pennsylvania. MAJ Weaver's academic interests include medical geography with an emphasis on geographical access to health care services. MAJ Weaver teaches EV203 (Physical Geography). ★

EMERITUS FACULTY

DIRTMAN

Professor of Physical Geography and the Spirit of
the Department of G&EnE

Ph.D., United States Military Academy, 1959

M.S., United States Air Force Academy, 1959
(top graduate)

M.S., United States Naval Academy, 1845
(top graduate)

B.S., United States Military Academy, 1802 (goat)

P.E., Commonwealth of Virginia, 1802



Dirtman is a retired department faculty member currently residing on the rooftop of Washington Hall (near the Weather Station) and is known to spontaneously rally cadets enrolled in EV203, “Dirt,” to support Army athletic teams on the fields of friendly strife. As a former Army officer, he has served in every climatic regime known to man. He is an expert in geomorphology with a special interest in plate tectonics. He is currently involved in advanced studies of weather systems and enjoys the passage of wave cyclones and occluded fronts. He has personally experienced all known environmental hazards including tornadoes, hurricanes, earthquakes, tsunamis, volcanic eruptions, and williwaws. Of particular note, his volcanic encounter in 1980 in Washington State occurred shortly after he was subducted under the North American Plate. As an emeritus faculty member, he is in charge of the morale and welfare of the department faculty as well as all cadets enrolled in EV203. ★



Legendary Dirtman marches along with the West Point Band during the annual March Back for the Class of 2014.



Accompanied by MAJ John Morrow on a G&EnE sponsored AIAD trip to Isreal 2012.

GIS Assistant Professor, LTC Curtis Edson, attempts to keep his balance while collecting field data for a research project along the coast of California.





GIS majors get hands-on practical experience on the Remote Sensing Workstations located in our state of the art Geographic Sciences Laboratory.



EV350 cadets on a course field trip to the Target Hill waste water treatment plant. Here students are looking with unmitigated joy at the waste sludge which West Point must pay to have hauled away and disposed of properly.



AN AIAD to Camp Pendelton, where a soil characterization was done for the Army Test and Evaluation Command in conjunction with the Desert Research Institute (DRI).



EV majors enjoying a fine barbeque courtesy of their instructors

FIRST REGIMENT MAJORS

COMPANY A1

13	FITZGERALD, MATTHEW	EV ENG
13	HEER, DYLAN	GIS
13	NUSSBAUMER, JAMES	EV GEO
13	SOLLENBERGER,	EV SCI
14	RUTHERFORD, JAMES	GIS

COMPANY B1

13	HERRMANN, RYAN	GIS
13	JOYE, VICTORIA	GIS
13	KARPER, JOSHUA	EV ENG
13	TINDALL, PAUL	EV GEO
13	VASQUEZ, FRANCINE	HUMAN
14	BRADWAY, BONNY	EV ENG

COMPANY C1

13	HEETER, PATRICK	EV ENG
13	KIERNAN, SUSAN	EV ENG
13	OCCHIUTO, ALEXANDER	EV GEO
14	CLEMONS, EMILY	EV SCI
14	HALLAS, BRANDEN	GIS
14	MAYEAUX, MATTHEW	HUMAN
14	RODINO, CHRISTOPHER	EV ENG

COMPANY D1

13	BUNCH, JAMES	EV SCI
13	FYNAUT, LEAH	GIS
13	MORIARTY, DANIEL	HUMAN
13	PEAK, DAVID	EV SCI
14	SAMUEL, SALLEN-	GIS

COMPANY E1

13	DANIEL, TOMMY	EV ENG
13	DELLAMUTH, JEFFREY	HUMAN
13	GRAPEVINE, ALISON	GIS
13	GUZIK, CALEB	GIS
14	CONSTANTINO,	EV ENG
14	SANTON, STEVEN	HUMAN
14	ULLMAN, DANIELLE	HUMAN

COMPANY F1

13	BECKLER, CHRISTIAN	HUMAN
13	ESTVOLD, NELS	EV GEO
13	SU, MICHELLE	GIS
13	YU, PATRICK	EV ENG
14	CARRON, CHRISTIAN	EV ENG

COMPANY G1

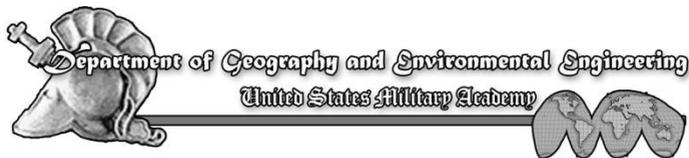
13	KELLY, CARTER	GIS
13	MONTGOMERY, RYAN	GIS
13	OLIND, JOHANNES	EV ENG
13	WASHINGTON,	GIS
14	ANDERSON, NATHALIA	EV ENG
14	DEATON, KATHERINE	EV GEO
14	TOMPKINS, RYAN	GIS

COMPANY H1

13	WHITE, PHOEBE	EV ENG
14	CAVINS, LAWRENCE	EV ENG

COMPANY I1

13	MCBRIDE, EDWARD	GIS
13	WITTMAYER, COLLIN	EV SCI
14	BELTRAMO, BENTON	GIS
14	MAULDIN, ERIN	EV SCI



SECOND REGIMENT MAJORS

COMPANY A2

13	AKES, ZACHARY	GIS
13	BOHM, WILLIAM	EV GEO
13	FRYKMAN, RYAN	EV ENG
13	HILDEBRANDT, ZACHERIAH	HUMA
14	MCGONAGILL, NAOMI	GEO
14	SHREDER, SCOTT	EV SCI

COMPANY B2

13	BERKOMPAS, BRADY	EV GEO
13	CHOPKO, TYLER	EV GEO
13	GLEESON, JUSTIN	EV SCI
13	KIBLER, DAK	GIS
13	KNOETGEN, PHILIP	EV SCI

COMPANY C2

13	MAGNUSON, CALEB	EV GEO
13	MCKEARN, ALLISON	HUMA
14	DEJEAN, CHRISTIAN	GIS
14	DEWHIRST, JACOB	GIS
14	KELLOGG, TYLER	EV SCI

COMPANY D2

13	DEVECCHIS, DEREK	GIS
13	GOBIN, ERIC	EV GEO
13	JACKSON, KENNETH	EV SCI
13	SCHUBERT, SARA	EV GEO
14	FRANTZ, HUNTER	EV GEO
14	HANCOCK, ALEX	HUMA

COMPANY E2

13	SAVAGE, JOSHUA	EV SCI
14	LIEFVELD, NIGEL	HUMAN
14	MCLUCAS, ANDREW	HUMAN
14	PLATMAN, MITCHELL	EV ENG
14	SHIELDS, RAZIEL	HUMAN

COMPANY F2

13	FORD, ALEX	GIS
13	PERKINS, CHAD	EV ENG
13	TAYLOR, NOELLA	HUMAN
14	PARKS, DARCY	HUMAN
14	SZOTT, JOHN	EV GEO

COMPANY G2

13	GILLIN, MICHAEL	GIS
13	KROLL, BRETT	EV
14	HUNT, BENJAMIN	EV SCI

COMPANY H2

13	GREEN, HARRISON	EV GEO
13	MITTUCH, CHRISTOPHER	HUMAN
13	OAKLAND, GARY	HUMAN
13	OBNEY, SCOTT	EV SCI
14	MERAZ, MAX	GIS
14	ROY, ALEXANDRE	GIS
14	WASDAHL, PIERCE	GIS

COMPANY I2

13	CASINELLI, PAUL	GIS
13	REYNOLDS, ALEXANDRIA	EV GEO
13	WENTE, CHRISTOPHER	GIS
14	CHAE, MICHAEL	EV SCI
14	HERNANDEZ, ASIA	EV SCI
14	O'GRADY, KYLE	EV GEO

THIRD REGIMENT MAJORS

COMPANY A3

13	COLVIN, ANDREW	EV ENG
13	MCPHEE, RICHARD	EV ENG
13	WILLOUGHBY, ALEXANDER	GIS
14	DEFABIO, ANDREW	EV GEO
14	DOODY, KATHERINE	EV GEO

COMPANY B3

13	ESACHINA, CHRISTINE	EV SCI
13	GREEN, AARON	GIS
13	MIELE, JOHN	HUMA
13	MOORE, MEGAN	EV SCI
13	NGUYEN, MARILINH	HUMA
13	SHELZI, JOSEPH	HUMA
13	TUCKER, WILLIAM	HUMA
14	BRODNIAK, MICHAEL	GIS
14	KISH, ALEXANDER	EV SCI

COMPANY C3

13	BULLOCK, MICHELLE	HUMA
13	SANDERLIN, THOMAS	HUMA
14	MILLER, NICOLE	HUMA
14	REEVES, CHRISTIAN	HUMA

COMPANY D3

13	CHANG, JOSEPH	EV ENG
13	DAVIS, LESLIE	HUMA
13	DIMEO, MAURI	EV SCI
13	SILVESTER, SCOTT	EV ENG
13	WILLIAMS, AUBREY	GIS
14	MCMANUS, EMILY	EV GEO

COMPANY E3

13	IMBRIALE, ALEXANDER	EV
13	MECKLEY, JOHN	HUM
13	THOMAS, JONATHAN	GIS
13	THUL, JAMES	EV
14	CHAPMAN, JAMES	EV
14	CROMARTIE, RAYMOND	GIS
14	HUGHES, ALEK	GIS
14	MARTIN, KATHRYN	HUM
14	MULKEEN, WILLIAM	HUM

COMPANY F3

13	COLE, MORGAN	HUM
13	MCCARTY, WILLIAM	EV
13	SCHLATTER, PETER	HUM
14	CASTILLO, NICHOLAS	GIS
14	HUDGINS, MCKENZIE	EV
14	SHEVITZ, JACOB	HUM

COMPANY G3

14	LINK, JAMES	HUM
14	NICHOLS, BENJAMIN	EV

COMPANY H3

14	JARKA, MARGAUX	EV
14	RIEKENBERG, ANDREW	EV

COMPANY I3

13	CUSTER, THOMAS	GIS
13	DABECK, MICHAEL	HUM
13	KIM, ELIZABETH	EV
13	LUCERO, DANIEL	HUM
13	RUPERT, BRYAN	GIS /
13	SMIGEN, CHARLES	GIS
14	ANDERSON, WILLIAM	EV

FOURTH REGIMENT MAJORS

COMPANY A4

13	DAVIS, NATHAN	GIS
13	MARTIN, AUSTIN	EV SCI
13	WILDE, KYLE	EV GEO
14	LEWIS, DEREK	GIS

COMPANY B4

13	DOTSON, ALICIA	HUMAN
13	HAGEN, TROY	HUMAN
13	IKKALA, CODY	EV GEO
13	JOHNSON, JOHN	EV SCI
13	MANIACI, MICHAEL	HUMAN
13	NAGY, ANDREW	HUMAN
13	VANDERVORT, MAX	GIS
14	KINDLEY, ETHAN	HUMAN
14	MAZA, JENNIFER	HUMAN
14	SAUL, ROSE	EV GEO
14	WAGNER, JESSICA	GIS

COMPANY C4

13	AID, JUSTIN	GIS
14	PURITZ, JOEL	EV ENG

COMPANY D4

13	ARNOLD, DUSTIN	GIS
13	CASO, CLAUDIA	EV SCI
13	WEIR, HUGH	HUMAN
14	BROWN, SWASEY	GIS
14	RYAN, CHRISTIAN	HUMAN

COMPANY E4

13	SCHAEFER, VIRGINIA	HUMAN
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COMPANY F4

13	CLEMENS, JACKSON	HU
13	FOSTER, SAMUEL	GIS
13	HOLUB, MATTHEW	HU
13	KRUEGER, BRETT	EV
13	STACKS, MICHAEL	GIS
14	WORONOWICZ, ROBERTA	HU

COMPANY G4

13	OESTREICH, JACQUES	GIS
13	POPE, KARI	EV
14	KRUSE, JAMES	EV
13	VELLIQUETTE, JOSHUA	HU

COMPANY H4

13	MARKEN, MICHAEL	GIS
13	PETERSON, CODY	GIS
14	SMITH, KELSEY	EV

COMPANY I4

13	ANKA, JUSTEN	EV
13	O'REAR, KEVAN	HU
13	WILKE, MICHAEL	HU
14	RINEY, CARLIN	GIS
14	WILLIAMS, MICHAEL	GIS

West Point Class of 2015 "Forever One Team"

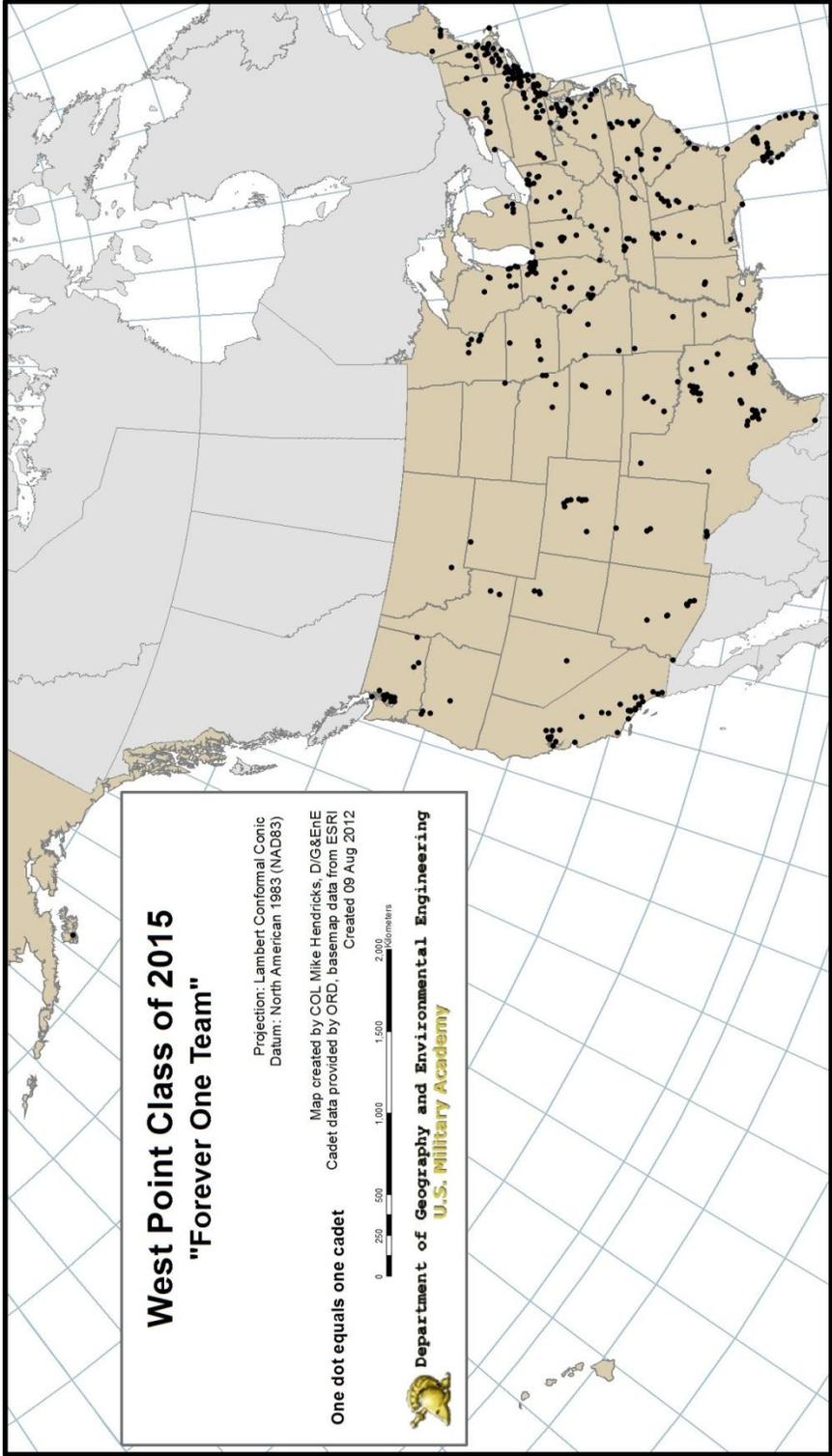
Projection: Lambert Conformal Conic
Datum: North American 1983 (NAD83)

Map created by COL Mike Hendricks, D/G&EnE
Cadet data provided by ORD, basemap data from ESRI
Created 09 Aug 2012

One dot equals one cadet



Department of Geography and Environmental Engineering
U.S. Military Academy



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HUMAN GEOGRAPHY
ENVIRONMENTAL ENGINEERING

ENVIRONMENTAL SCIENCE
ENVIRONMENTAL GEOGRAPHY

GEOSPATIAL INFORMATION SCIENCE



**DEPARTMENT OF GEOGRAPHY AND
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