Join Our World-Class Faculty!

All Systems GO!

"The United States Military is an Equal Opportunity, Affirmative Action Employer. Minorities and female officers, as well as graduates of institutions other than USMA, are needed and sought to ensure a balanced faculty composition."

Agenda

PURPOSE: Provide prospective faculty with an overview of the Department of Systems Engineering, the application process, and career timeline implications.

- United States Military Academy & DSE Mission
- Department of Systems Engineering (DSE) Overview, Structure, and Course Offerings
- Academic Programs Overview
- Research Overview
- DSE Instructor Opportunities
- Application Requirements and Process
- Planning Timelines – Junior Military Faculty
- Questions & Points of Contact

Current As Of: 08 August 2023

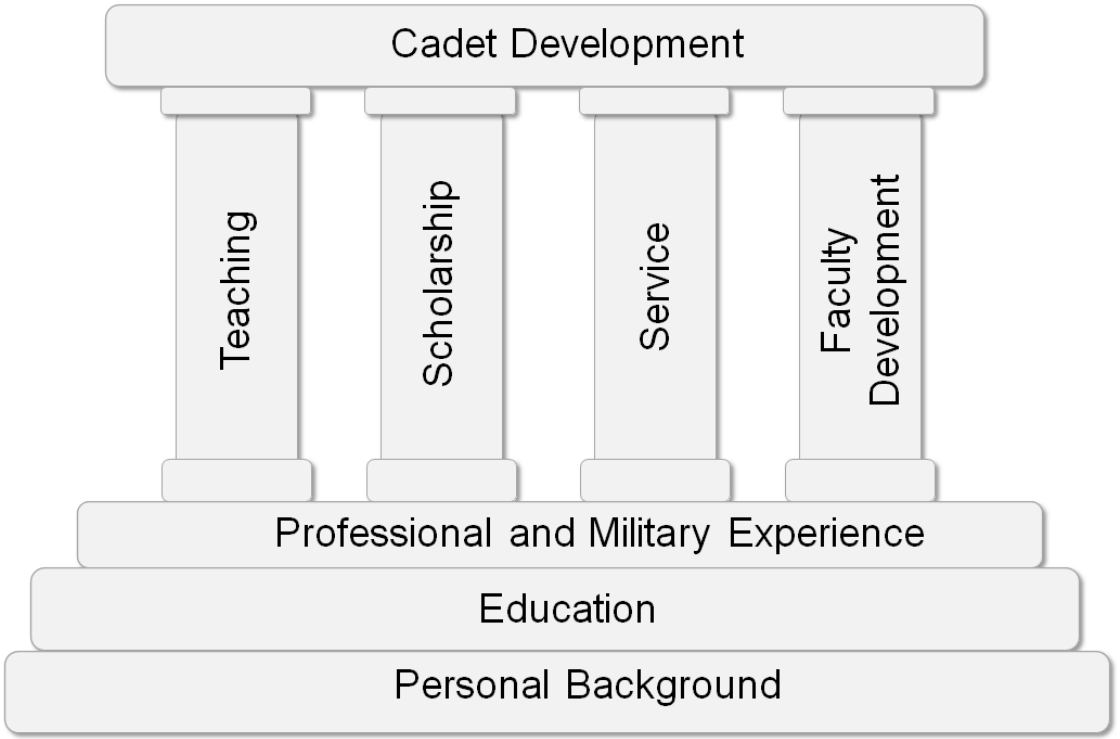
DSE's Faculty Philosophy

USMA Mission

To **educate, train, and inspire the Corps of Cadets** so that each graduate is a commissioned leader of character committed to the values of Duty, Honor, Country and prepared for a career of professional excellence and service to the Nation as an officer in the United States Army.

DSE Mission

The Department of Systems Engineering educates, develops, and inspires **leaders of character** who identify, formulate, and solve complex, engineering, and socio-technical problems for our Army and Nation. We use an interdisciplinary, integrative approach that applies systems thinking, engineering design, data analysis, mathematical modeling, simulation, decision science, and project management.



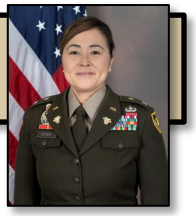
Cadet Development is the fundamental objective of every DSE faculty member, regardless of position or academic rank.

Depending on the faculty member's (1) position, (2) skillset, and (3) goals, emphasis on each domain can and should adjust.

UNITED STATES MILITARY ACADEMY
WEST POINT

Department Structure

Department Head	**COL Julia Coxen**
Deputy Department Head	**COL Matthew Dabkowski**



Academic Programs

Systems Engineering Program	Engineering Management Program	Systems & Decision Sciences Program
Director: COL James Enos **Deputy**: Dr. Vikram Mittal	**Director:** COL Jim Schreiner **Deputy:** Dr. Kenny McDonald	**Director:** LTC Steve Gillespie **Deputy:** Dr. Jon Mellon

Research Centers

Operations Research Center	Systems Design & Analysis Center
Director: LTC(P) David Beskow **Associate Director:** Mrs. Hyeyon Bastian	**Director:** COL Brandon Thompson **Associate Director:** Dr. Isabella Sanders

Staff

Executive Officer	S1 - Personnel	S3 - Operations	S4 - Supply	Department Academic Counselors	Administrative Office	Information Technology

DSE Academic Programs

Academic Programs

Systems Engineering Program

- **SE302:** Fundamentals of Systems Engineering
- **SE370**: Computer Aided Systems Engineering
- **SE375**: Statistics for Engineers
- **SE387**: Deterministic Models
- **SE388**: Stochastic Models
- **SE400**: Professional Engineering Seminar
- **SE485**: Combat Modeling
- **SE490**: Advanced Topics in SE/EM

Engineering Management Program

- **EM381**: Engineering Economy
- **EM384**: Analytical Methods for Engineering Management
- **EM411**: Project Management
- **EM420**: Production Operations Management
- **EM481**: Systems Simulation
- **EM482**: Supply Chain Engineering and Information Management

Systems & Decision Sciences Program

- **SE301**: Fundamentals of Engineering Design & Systems Management
- **SE385**: Decision Analysis
- **SE450**: Applied Systems Design and Decision Making
- **SM484**: System Dynamics Simulation

Research Centers

Operations Research Center

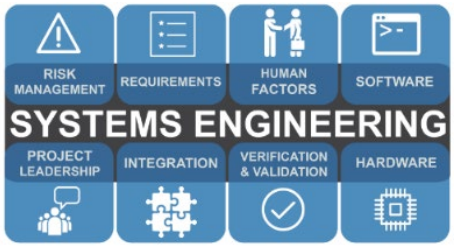
- Led by Academy Professor and Civilian Deputy
- Full-time analysts are typically selected from 2nd- or 3rd-year junior or senior rotating faculty members (branch immaterial)

Systems Design & Analysis Center

- **SE402/403**: Systems Design & Management I / II
- **EM402/403**: Engineering Management Design I / II
- **SE489**: Advanced Individual Study in Systems Engineering/Eng. Management
- **SE491**: Research Project in Systems Engineering/Eng. Management

UNITED STATES MILITARY ACADEMY
WEST POINT®

Program Overview – Systems Engineering



"**Systems Engineering** is an **interdisciplinary approach** and means to enable the realization of successful systems. It focuses on **defining the customer's [technical and business] needs** and . . . it **integrates [other engineering] disciplines** into a **team effort** forming a **structured development process** that proceeds from **concept to production to operation**." (www.incose.org)

The Systems Engineering Program:

Applies engineering principles to understand **real-world problems**.

Prepares cadets for the everyday challenges faced by **Army officers**.

Provides the foundation for a wide spectrum of **graduate degrees**.

The Systems Engineering Program is accredited by the Engineering Accreditation Commission of ABET.
http://www.abet.org

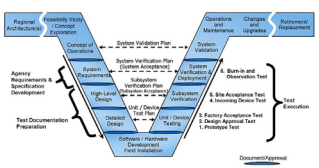
Systems Engineering Major Summary

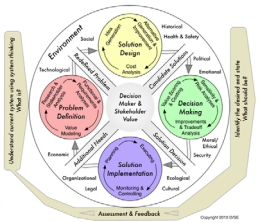
Students learn a wide variety of methods and tools used to model and analyze systems. These include:

- **Simulation Modeling**: represents a system in a computer environment to gain insight.
- **Optimization Modeling**: searches for the best possible solution given a set of specified constraints.
- **Stochastic Modeling**: handles the uncertainty of information in order to inform the system outcome risks.
- **Project Management**: applies a structured process to plan, organize, lead, control resources, and execute tasks to achieve specified goals.
- **Decision Modeling**: builds a composite perspective of several stakeholders with multiple, competing objectives for complex, high-stakes decisions with uncertain information.
- **System Design**: develops solutions to complex problems from concept development and detailed design to system validation and implementation.

The major culminates with an integrative **Capstone** experience working for a real-world client developing a system solution to a complex problem.

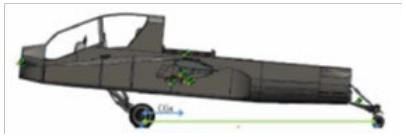
Systems Engineering majors acquire the skills to make tough decisions…





…and learn the process to build complex systems.

West Point's Department of Systems Engineering educates cadets and develops faculty to lead teams that design and implement high value solutions to challenging problems in a dynamic, uncertain, and technologically complex world.



Department of Systems Engineering
Mahan Hall, 4th Floor
Building 752, Thayer Road
West Point, New York 10996

https://westpoint.edu/academics/academic-departments/systems-engineering

Program Overview – Engineering Management

The Top-Rated Engineering Management Program (ASEM) 16 times over the last two decades, and Best Student Chapter in 2023

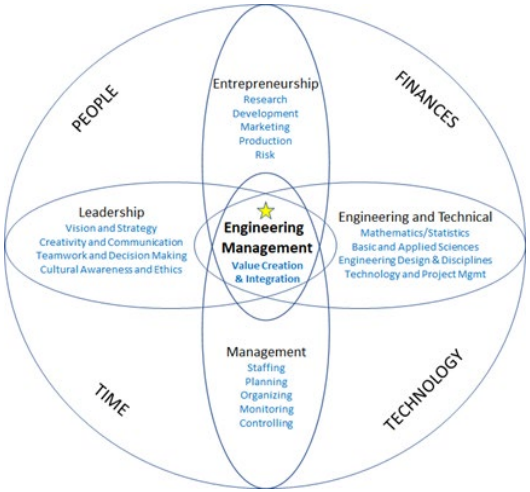
Accredited Engineering degree by the Engineering Accreditation Commission of ABET, http://www.abet.org

ENGINEERING MANAGEMENT

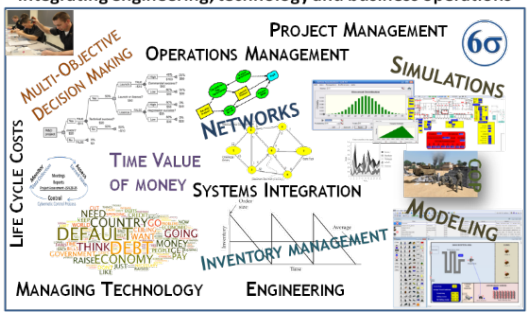
Engineering Managers effectively and efficiently align and integrate finances, technology, time, and people through the domain applications of **engineering**, **entrepreneurship**, **management**, and **leadership** in order to *create and improve enterprise value*.

Focal areas for the EM program:

- Agile Project Management and Operations Management
- Supply Chain Design and Cost Engineering – Engineering Economy
- Systems Design and Engineering
- Decision Analysis and Analytic Methods for Engineering Managers
- Systems Simulation Modeling
- Organizational Behavior, Business Process Improvement, Quality Management
- Engineering Ethics and Technical Organization Leadership
- Work toward your Lean Six Sigma Green Belt and Project Management Professional Certifications and Army Skill Identifiers

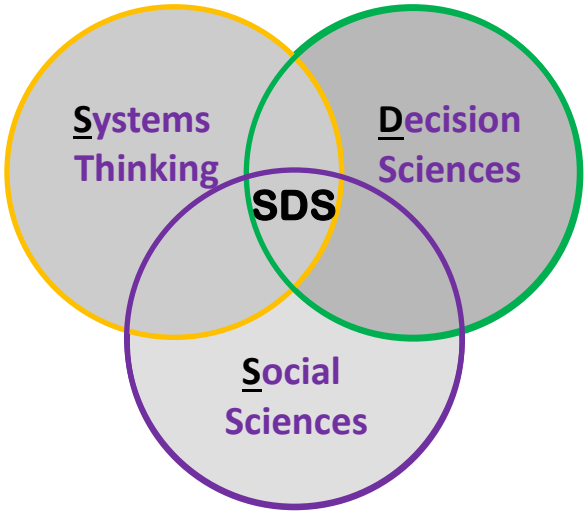


Integrating engineering, technology and business operations



UNITED STATES MILITARY ACADEMY
WEST POINT®

Program Overview – Systems & Decision Sciences



SDS graduates build interdisciplinary skills rooted in **engineering, management**, and **social sciences.**

This major prepares SDS graduates for the following types of graduate programs:

- Business & Public Administration (MBA, MPA)
- Industrial and Systems Engineering
- Data and Decision Science

Decision Making for Leaders in a Complex and Dynamic World

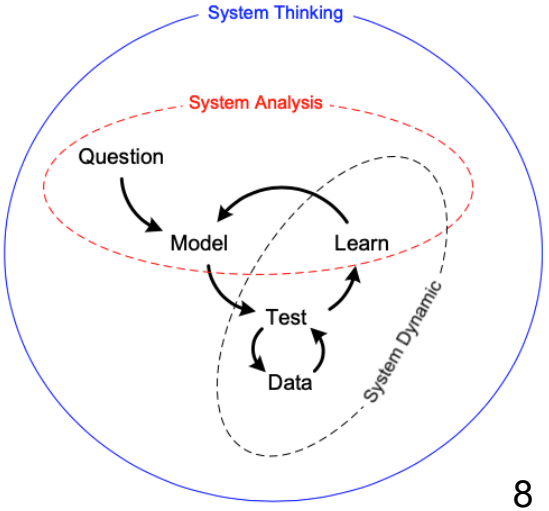
The Systems and Decision Sciences (SDS) major centers on understanding, analyzing, and improving complex systems.

The program combines elements of traditional systems engineering & management with systems thinking & modeling, decision analysis, and depth in a management, social science, or technical concentration area.

Cadets are afforded the flexibility to accommodate multiple interests including athletics, Corps leadership, study abroad, second majors. SDS graduates balance STEM and humanities / social science coursework.

SDS graduates are ready to lead multidisciplinary teams to address complex, ill-defined problems in a volatile, uncertain, complex, and ambiguous (VUCA) world.

All Systems Go!



UNITED STATES MILITARY ACADEMY
WEST POINT®

Operations Research Center (ORCEN)

LTC(P) David Beskow
ORCEN Director
Academy Professor
PhD, Societal Computing,
Carnegie Mellon
MS, Operations Research,
Naval Postgraduate School

Mrs. Hyeyon Bastian
ORCEN Deputy Director
Title X/Instructor
MPS, Data Analytics – Business Analytics,
The Pennsylvania State University
MS, Applied Mathematics
Rochester Institute of Technology

LTC Joseph Pederson
Analyst & Assistant Professor
IN/49
PhD, Decision Sciences & Engineering Systems, Rensselaer Polytechnic Institute
MS, Mathematics, Physics,
Rensselaer Polytechnic Institute

MAJ Nathan Hedgecock
Analyst & Assistant Professor
AV
MS Management Science & Eng.,
Stanford University
MBA, Stanford University GSB

Mr. Ian Kloo
Analyst & Assistant Professor
MS, Policy Analytics,
Carnegie Mellon University

CPT(P) James MacGibbon
Analyst & Assistant Professor
EN
MS, Engineering Management,
Missouri S&T
MBA, Yale School of Management

MAJ Phillip Schmedeman
Analyst & Assistant Professor
MI/49
MS, Engineering & Management,
MIT

ORCEN Mission

Since 1988 the USMA Operations Research Center has conducted reimbursable research for Army, Joint, and DoD organizations in order to leverage operations research talent at West Point to support defense analytic requirements.

ORCEN Capabilities

- Modeling and Simulation
- Decision Support
- Data Science
- Cost Modeling
- Network Analysis
- Optimization
- Production Management
- Requirements Engineering
- In-Person Data Bootcamps

SIPR Connectivity with TS/SCI Access

Payne Award for Excellence in Analysis	2009 Analysis of Individual and Unit Dwell
2005 Base Realignment & Closure	2011 US Army Officer Flow Model
2007 Predicting Small Arms Effective Life	2016 Residential Energy Analysis (2nd place)

LTC(P) David Beskow, Director, ORCEN
david.beskow@westpoint.edu

Systems Design and Analysis Center
DSE Research Program

ORCEN

SYSTEMS DESIGN AND ANALYSIS CENTER AT WEST POINT

People

JSOC Data Analysis

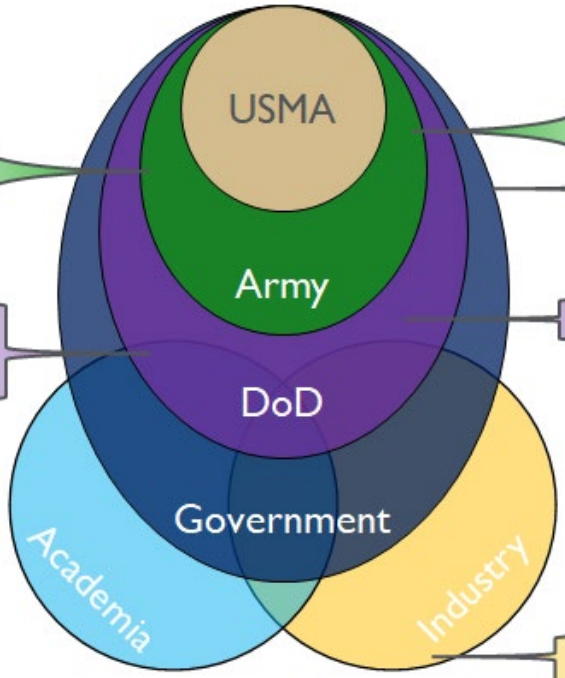
Modernization

FVL CFT MFOP
NGCV Analysis
ERDC Smart Base
GVSC Engine Assessment
TSOA System Assessment

Readiness

ASA(ALT) Cost Analysis
AC/RC Balance

Full Mobilization Modeling



People

AFRICOM Enlisted Development
AR/VR Aviation Branch Selection
SF Q-Course Modeling
USMA Housing Inventory

Veteran's Affairs Analysis

Readiness

APG Lean Six Sigma
ASD Readiness Assessment
Cyber and EM Simulation
TYAD Lean Six Sigma

Modernization

AFC Due Diligence Process
Aircraft Survivability Equipment
AR for Radio Frequency Visualization
Autonomous Cyber Decision Support
AvMC System Readiness
MITRE – Fires Support Next
LMCO – JADC2

AY 22 Research:

-6 Fully Funded ORCEN Projects
-3 Funded Faculty Research Projects
-28 Cadet Capstone Projects
-11 Independent Research Projects

The DSE research program supports Army priorities through **engaged scholarship**;
links theory and practices through **dedicated analytic capability** to solve complex problems;
enriches cadet education, encourages innovation, **develops faculty**, and integrates emerging technology into curriculum.

UNITED STATES MILITARY ACADEMY
WEST POINT

DSE Military Instructor Opportunities

Junior Military Faculty (MS)

- Post-KD CPTs & MAJs
- All Commissioning Sources and Branches
- STEM Undergraduate (Typically)
- 2-years in MS program
- 36-month USMA utilization
- All ILE options available
- Positions: Instructor, Course Director, Capstone Advisor, ORCEN Analyst, Primary Staff, Club OIC, Team Officer Representative (OR)
- Possible academic promotion to Senior Instructor

Senior Military Faculty (PhD)

- MAJs and LTCs
- All Commissioning Sources and Branches
- No prior USMA teaching experience required
- 3-years in PhD program
- 36-month USMA utilization (Senior Rotating Faculty)
- Possible 60-month USMA utilization (FA47)
- SSC opportunities
- Positions: Assistant Professor, Program Director, Capstone Advisor
- Possible academic promotion to Assistant or Associate Professor

Direct Hire (MS or PhD)

- CPT-LTC
- All Commissioning Sources and Branches
- Already possesses MS and/or PhD
- Positions are need-based; apply anytime
- 24-36-month USMA utilization (timeline-dependent)

Common MS, MBA, and PhD Programs

THE UNIVERSITY OF ARIZONA
CARNEGIE MELLON UNIVERSITY
NPS PRAESTANTIA PER SCIENTIAM
COLORADO SCHOOL OF MINES
Massachusetts Institute of Technology
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN
UNIVERSITY OF MICHIGAN
VIRGINIA TECH
GEORGIA TECH
Stanford University
Yale UNIVERSITY
HARVARD
STEVENS

UNITED STATES MILITARY ACADEMY
WEST POINT

CY23 Selection Board Application Requirements & Process

TEACH Platform: https://teach.westpoint.edu/teach/login

***Copy & Paste (do not click) this link to access instructor application portal.*

TEACH Application Requirements

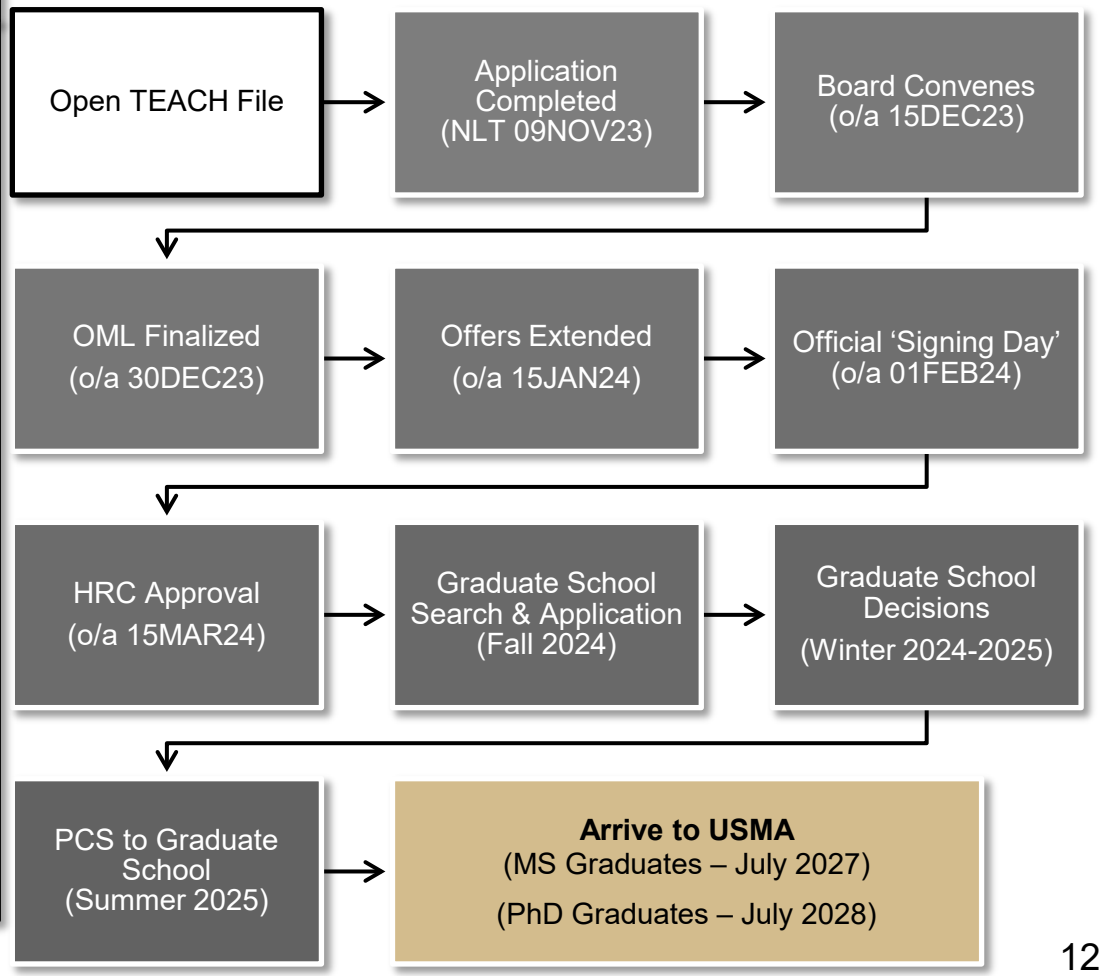
1. West Point TEACH Application Materials

a. Basic Biographical Data
b. Contact Information
c. Assignment History
d. Desired Position
e. Timeline Considerations
f. CFD Intentions (if applicable)
g. Career Satisfaction Program Information (if applicable)
h. Degrees Completed and Transcripts
i. GRE/GMAT Scores and Report
j. Publications (if applicable)
k. Officer Evaluation Reports (OERs)
l. Letters of Recommendation (LORs)
m. Officer Record Brief (ORB)
n. Special Considerations (MACP, EFMP, etc.)

2. DSE-specific TEACH Application Materials

a. Department Essay Questions (3x)
b. CV or Resume (optional)
c. APFT/ACFT Scores (optional)
d. Desired Board Year

Application and Approval Process



Planning Timelines
Junior Military Faculty

CY2023 Selection Board Target Year Groups:

YG2017, 2018, and 2019

	YG2016	YG2017	YG2018	YG2019	YG2020
PZ MAJ BOARD	April ’25	April ’26	April ’27	April ’28	April ’29
6 YEAR PLAN* – USMA BNRs IN	April ’22	April ’23	April ’24	April ’25	April ’26
NLT USMA TOUR COMPLETE (RES ILE)	June ’28	June ’29	June ’30	June ’31	June ’32
NLT USMA TOUR COMPLETE (NON-RES ILE, PCS TO KD)	June ’29	June ’30	June ’31	June ’32	June ’33
This timeline provides each departing officer 30 months for their MAJ KD assignment before their LTC PZ Board					
LTC PZ Board	Jan ’30	Jan ’31	Jan ’32	Jan ’33	Jan ’34

***NOTE:** Deviations are considered on a case-by-case basis

Department POCs & Important Websites

Point of Contact – DSE Personnel Office

MAJ Madison Oliver, madison.oliver@westpoint.edu, 845-938-5206

MAJ Nick Coronato, nicholas.coronato@westpoint.edu, 845-938-2510

Department Home Page: https://www.westpoint.edu/academics/academic-departments/systems-engineering

Prospective Faculty: https://www.westpoint.edu/academics/academic-departments/systems-engineering/faculty/prospective-faculty

Current Faculty: https://www.westpoint.edu/academics/academic-departments/systems-engineering/staff-and-faculty

TEACH Platform: https://teach.westpoint.edu/teach/login

***Copy & Paste (do not click) this link to access instructor application portal.*