



Class of 2017

Academic Program Brief

Associate Dean for Academic Affairs

Jennifer K. Waters, Ph.D., P.E.

jwaters@usna.edu

410-293-1581

Associate Dean for Academic Affairs (ADAA)

Jennifer K. Waters, Ph.D., P.E.



A quick mathematics lesson ...

Prime integers are positive integers greater than 1 that are exactly divisible only by themselves and 1.

- Examples: 2, 3, 5, 7, 11, ..., 37, ..., 73, ...
- Integers factor uniquely into primes.
- Examples: $60 = 2 \cdot 2 \cdot 3 \cdot 5$
 $2013 = 3 \cdot 11 \cdot 61$

More examples of prime factoring

- $2014 = 2 \cdot 19 \cdot 53$
- $2015 = 5 \cdot 403$
- $2016 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot 7 = 2^5 \cdot 3^2 \cdot 7$

As integers get larger, primes become
more scarce ...

Here are the only prime class numbers that have
been at the Naval Academy:

1847, 1861, 1867, 1871, 1873, 1877,
1879, 1889, 1901, 1907, 1913, 1931,
1933, 1949, 1951, 1973, 1979, 1987,
1993, 1997, 1999, 2003, 2011, **2017**.



Outline of this briefing

- Academic Organization
 - Chain of Command
 - Divisions and Departments
 - Majors and Minors
 - Faculty
- Graduation Requirements
 - Commission and Degree
 - Academic Requirements
 - Grades and Credits

Outline of this briefing (cont'd)

- Academic Calendar
 - A Tour from I-Day → Classes → Beyond
- And More ...
 - Computer & Calculator(s)
 - The Academic Adventure Ahead
- Questions and Answers

Naval Academy Mission

To develop Midshipmen
morally, mentally and physically
and to imbue them with
the highest ideals of duty, honor and loyalty
in order to graduate leaders
who are dedicated to a career of naval service and
have potential for future development in mind and
character to assume the highest responsibilities of
command, citizenship and government.

Naval Academy Vision

To be the premier educational

institution for developing future
naval officers from across
the Nation to serve and
lead in an increasingly
interdependent and
volatile world.



Naval Academy Leadership



Vice Admiral Michael H. Miller, USN
Superintendent



Captain William D. Byrne, Jr., USN
Commandant of Midshipmen



Dr. Andrew Phillips
Academic Dean and Provost



Mr. Chet Gladchuk
Athletic Director



DCM Jon Taylor, USN
Command Master Chief

Academic Organization Overview

Superintendent

VADM Michael H. Miller, USN
USNA, '74

Academic Dean and Provost

Dr. Andrew T. Phillips
Penn State U., B.S. CompSci, '84
U. Minnesota, Ph.D., CompSci, '88

Commandant of Midshipmen

CAPT William D. Byrne, Jr., USN
USNA, B.S., PoliSci, '87

**Academic Dean
and Provost**
Dr. Andrew T. Phillips

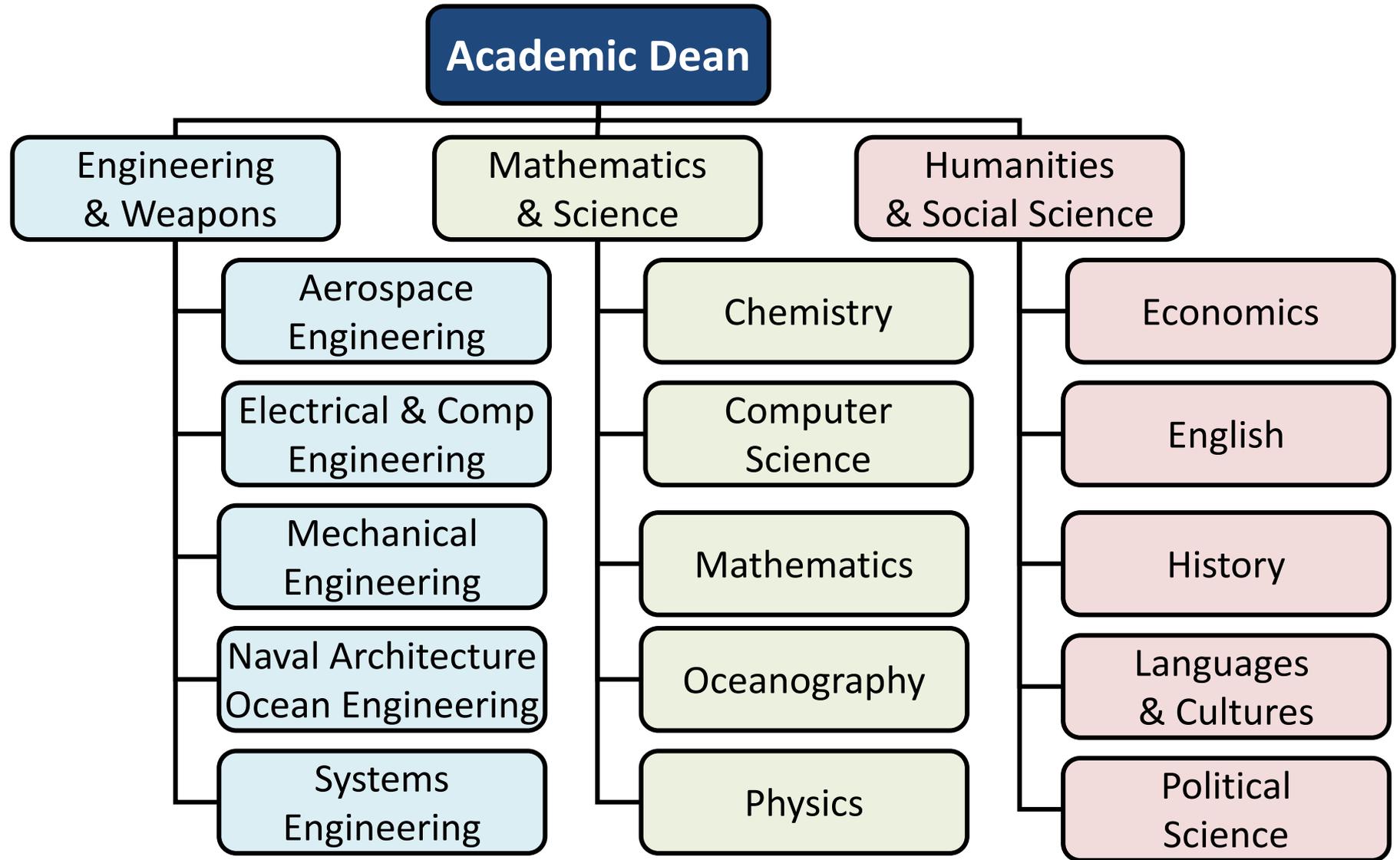
Vice Academic Dean
Dr. Boyd A. Waite

**Associate Dean
Academic Affairs**
Dr. Jennifer K. Waters

**Associate Dean
Finance & Mil Affairs**
CAPT Peter Nardi, USN (Ret)

**Assistant Dean
Planning & Assessment**
Dr. Katherine Cermak

Academic Divisions and Departments



Additional Academic Divisions and Departments

Commandant

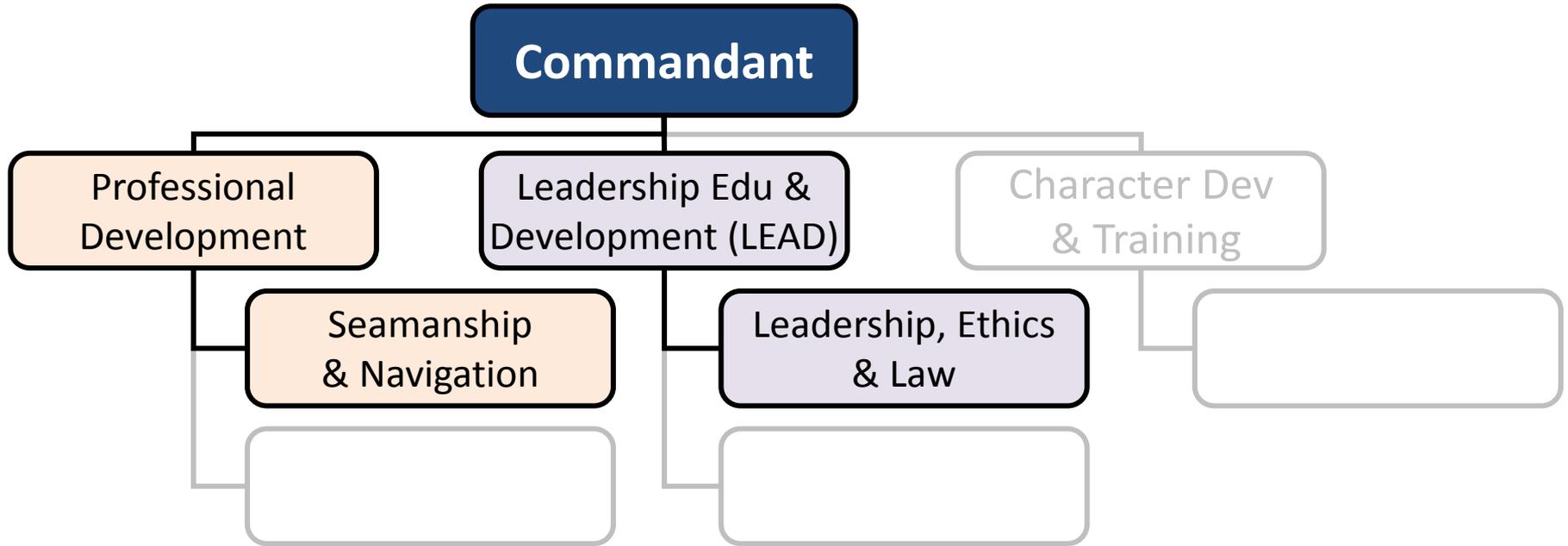
Professional Development

Seamanship & Navigation

Leadership Edu & Development (LEAD)

Leadership, Ethics & Law

Character Dev & Training



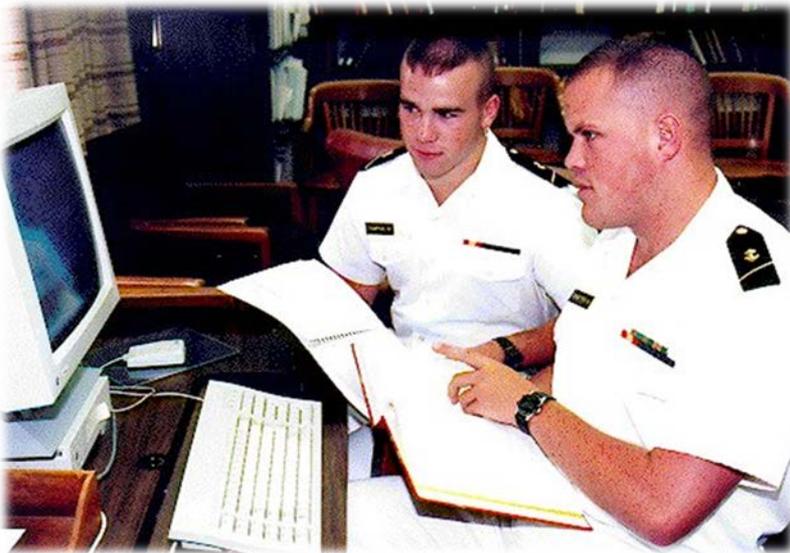
I. Division of Engineering and Weapons



I. Division of Engineering & Weapons

- **Aerospace Engineering**
 - EAS – Aeronautical Engineering
 - EASA – Astronautical Engineering
 - **Electrical & Computer Engineering**
 - ECE – Computer Engineering
 - EEE – Electrical Engineering
 - **Mechanical Engineering**
 - EGE – General Engineering
 - EME – Mechanical Engineering
 - **Naval Architecture & Ocean Engineering**
 - ENA – Naval Architecture*
 - EOE – Ocean Engineering*
 - **Weapons & Systems Engineering**
 - ESE – Systems (Controls) Engineering*
- 
- The diagram consists of a blue arrow pointing left towards the word 'Department'. Below the arrow is a blue curly bracket that spans the width of the text 'Major(s)'. This indicates that the listed departments are grouped under the 'Major(s)' category.

II. Division of Mathematics and Science



II. Division of Mathematics & Science

- **Chemistry**
 - SCH – Chemistry
- **Computer Science**
 - SCS – Computer Science
 - SIT – Information Technology
- **Mathematics**
 - SGS – General Science
 - SMA – Mathematics*
 - SMP – Applied Mathematics*
 - SMO – Operations Research
 - SQE – Quantitative Economics
- **Oceanography**
 - SOC – Oceanography*
- **Physics**
 - SPA – Applied Physics
 - SPAA – Astrophysics
 - SPH – Physics
- **Interdisciplinary**
 - SCY – Cyber Operations

III. Division of Humanities and Social Sciences



III. Division of Humanities and Social Sciences

- **Languages & Cultures**

- FLA – Arabic
- FLC – Chinese

- **Economics**

- FEC – Economics*

- **Political Science**

- FPS – Political Science*
- FPSA – American Politics
- FPSC – Comparative Politics
- FPSI – International Relations

- **English**

- HEG – English*

- **History**

- HHS – History*

Minors in Language & Cultures

- FA -Arabic
- FC - Chinese
- FJ - Japanese
- FR - Russian
- FF - French
- FG - German
- FS - Spanish

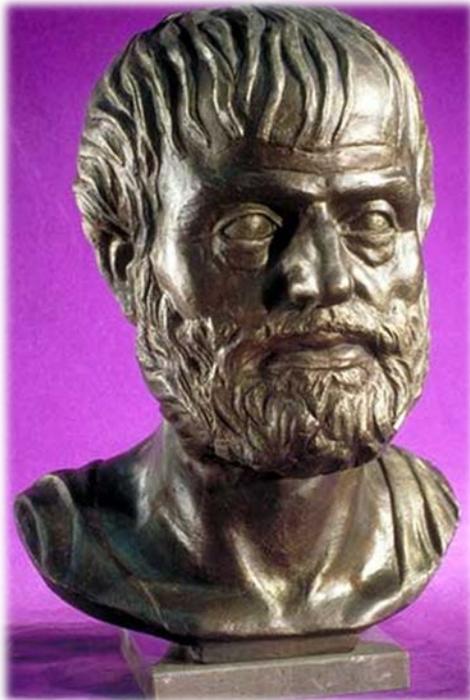
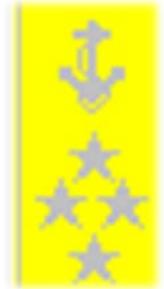
IV. Division of Professional Development



IV. Division of Professional Development

- **Seamanship and Navigation**
 - (No Majors)

V. Division of Leadership Education & Development (LEAD)



V. Division of Leadership Education & Development (LEAD)

- **Leadership, Ethics and Law**

- ... and Philosophy, Psychology, Sociology, Anthropology

- (No Majors)

Academic Majors

Engineering & Weapons	Mathematics & Science	Humanities & Social Sciences
<p>EAS – Aeronautical Engineering EASA – Astronautical Engineering ECE – Computer Engineering EEE – Electrical Engineering EGE – General Engineering EME – Mechanical Engineering ENA – Naval Architecture* EOE – Ocean Engineering* ESE – Systems (Controls) Engineering*</p>	<p>SCH – Chemistry SCY – Cyber Operations SCS – Computer Science SIT – Information Technology SGS – General Science SMA – Mathematics* SMP – Applied Mathematics* SMO – Operations Research SOC – Oceanography* SPA – Applied Physics SPAA – Astrophysics SPH – Physics SQE – Quantitative Economics</p>	<p>FLA - Arabic FLC - Chinese FEC - Economics* FPSA – American Politics FPSC – Comparative Politics FPSI – International Relations FPS – Political Science* HEG – English* HHS – History*</p> <p>Language Minors FA - Arabic, FC - Chinese, FJ - Japanese, FR - Russian FF - French, FG - German, FS - Spanish</p>

* = honors program offered

Accreditation

- **Institutional Accreditation:**

Middle States

Commission on Higher Education



- **Specific Majors:**

- Each Engineering Major:

**Engineering Accreditation Commission (EAC) of
ABET, Inc. www.abet.org**



- Computer Science & IT:

**Computing Accreditation Commission (CAC) of
ABET, Inc. www.abet.org**



- Chemistry:

American Chemical Society (ACS)



College Rankings



Academic Majors

Engineering & Weapons	Mathematics & Science	Humanities & Social Sciences
<p>EAS – Aeronautical Engineering EASA – Astronautical Engineering ECE – Computer Engineering EEE – Electrical Engineering EGE – General Engineering EME – Mechanical Engineering ENA – Naval Architecture* EOE – Ocean Engineering* ESE – Systems (Controls) Engineering*</p>	<p>SCH – Chemistry SCY – Cyber Operations SCS – Computer Science SIT – Information Technology SGS – General Science SMA – Mathematics* SMP – Applied Mathematics* SMO – Operations Research SOC – Oceanography* SPA – Applied Physics SPAA – Astrophysics SPH – Physics SQE – Quantitative Economics</p>	<p>FLA - Arabic FLC - Chinese FEC - Economics* FPSA – American Politics FPSC – Comparative Politics FPSI – International Relations FPS – Political Science* HEG – English* HHS – History*</p> <p>Language Minors FA - Arabic, FC - Chinese, FJ - Japanese, FR - Russian FF - French, FG - German, FS - Spanish</p>

* = honors program offered

Majors

- Of those USNA graduates commissioned into the US Navy, 65% shall be from majors in Science, Technology, Engineering or Mathematics (STEM).
- Needs of the Naval Service and resource constraints at the Naval Academy may constrain midshipman choices of major.

Languages, Regional Expertise and Cultural Awareness

- It is a Department of Defense priority to increase the education and skills of the officer corps in foreign languages, regional knowledge and cultural awareness.
- The Naval Academy offers a wide array of opportunities within its regular and summer academic programs for enhancement of these skills and knowledge areas.

Cyber Warfare

- The rapidly growing importance of cyber security to the Department of Defense and the Department of the Navy, has given rise to the introduction of two new courses in the core curriculum of the Naval Academy. The Class of 2016 is the second to which this new curriculum applies.

Computer & Calculator



Dell Latitude E6430



TI Inspire

Naval Academy Faculty



- Military and civilian
- Scholars and experts in their disciplines
- Connect classroom with operational experience in Fleet and Marine Corps
- Diverse
- Dedicated to enabling midshipmen learning and their preparing midshipmen for service

Faculty

Since 1845 about 1/2 officer, 1/2 civilian



Officer faculty:

- Masters or doctoral degree
- Military role model
- Recent operational experience
- Mentors

Civilian faculty:

- Doctoral degree
- Academic expertise
- Program continuity
- Mentors

Requirements:

Degree and Commission

- Academic
 - Complete core courses.
 - Complete required courses in a major.
 - Achieve an overall GPA of 2.00.
 - Achieve a 2.00 in major to earn *designated* degree.
- Physical education
 - Complete all PE courses and PRTs.

- Achieve standards in summer training each year.
- Achieve standards in
 - Military performance,
 - Honor, and
 - Conduct.
- Accept a commission, if offered.



meet these requirements and
you will get to do this ...



on Friday, 26 May 2017

and you, too, may lead and serve ...



Academic Requirements

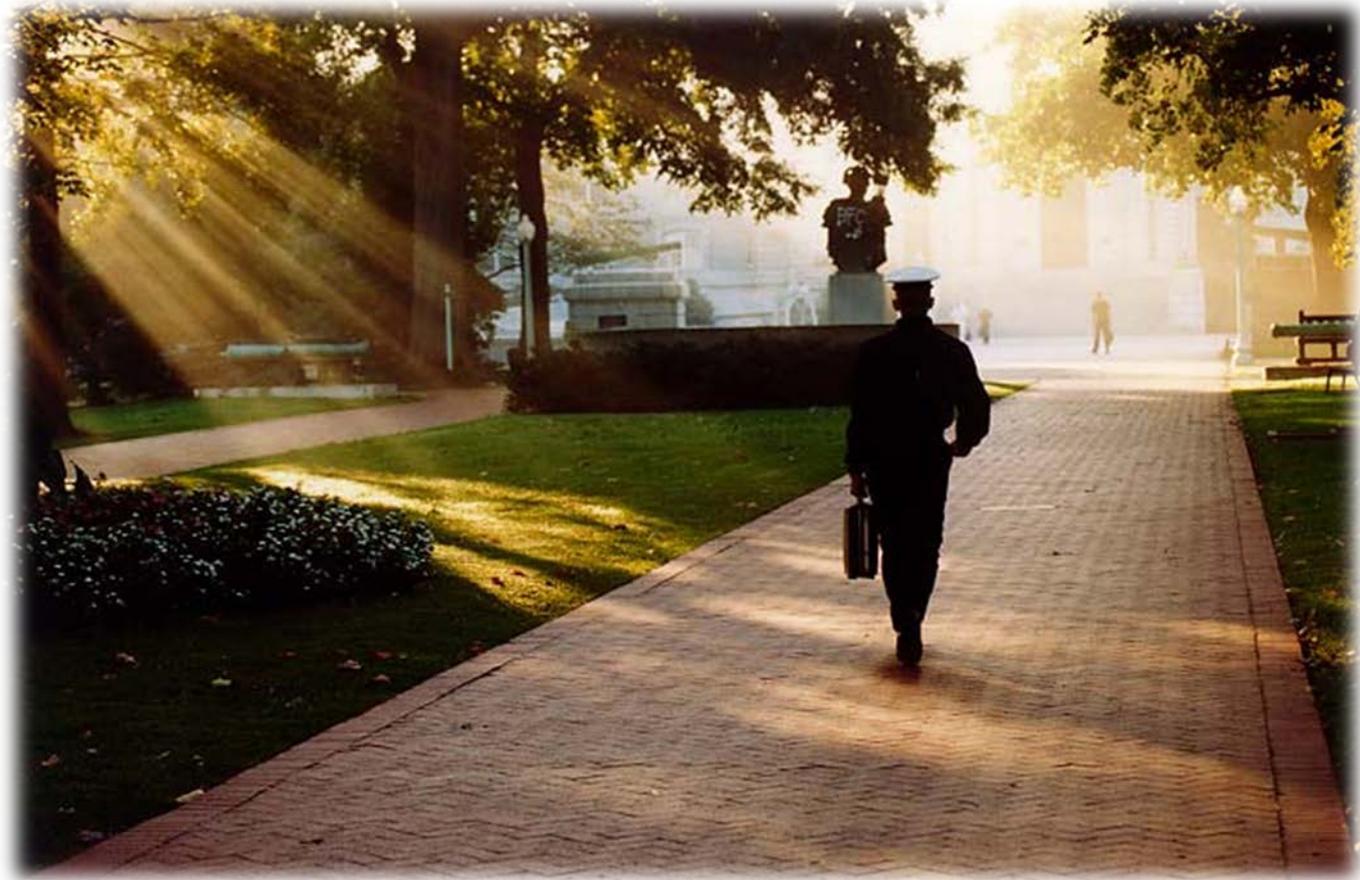
- Core courses
 - Plebe year
 - Upper class years
- Majors program



“Standard” Plebe Year Courses

Fall	Spring
Calculus I	Calculus II
Chemistry I	Chemistry II
English I	English II
Naval History	Government
Seamanship	Cyber Security
Leadership I	

A “Typical” Daily Schedule



Daily Periods

Pd	Duration	Pd	Duration
1	0755-0845	8	0755-0910
2	0855-0945		
3	0955-1045	9	0955-1110
4	1055-1145		
5	1330-1420	10	1330-1445
6	1430-1520		
7	<i>1530-1620</i>	periods: 50 or 75 min	

	Mon	Tue	Wed	Thu	Fri
1	Chem		Chem	Chem	Chem
2	Gov't	PE	Gov't	Chem	Gov't
3				Smnshp	
4	English		English	Smnshp	English
5	Ldrshp		Ldrshp		
6	Calc	Calc	Calc		Calc

An Engineering Major

Third Class		Second Class		First Class	
Fall	Spring	Fall	Spring	Fall	Spring
Nav I	Ethics	Nav II	Leadership	Law	JO Practic
Calculus	Diff Eqns	EE	Cyber II	Wpns	Control Sys
Physics	Physics				
W Civiliz	W Civiliz		H&SS Elec		H&SS Elec
Major	Major	Major	Major	Major	Major
	Major	Major	Major	Major	Major
		Major	Major	Major	Major
				Major	

A Mathematics-Science Major

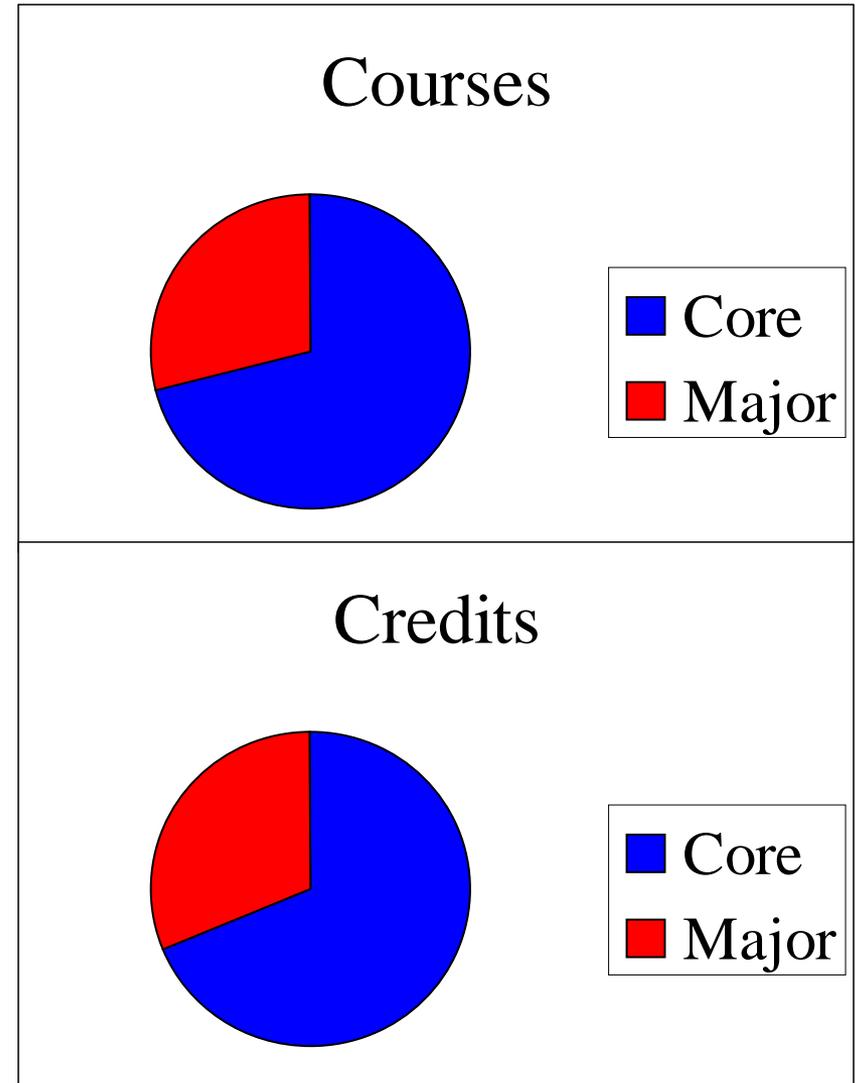
Third Class		Second Class		First Class	
Fall	Spring	Fall	Spring	Fall	Spring
Nav I	Ethics	Nav II	Leadership	Law	JO Practic
Calculus	Diff Eqns	EE	Cyber II	Wpns	Control Sys
Physics	Physics				
W Civiliz	W Civiliz		H&SS Elec		H&SS Elec
			Ship Propul	Warfare E	
Major	Major	Major	Major	Major	Major
	Major	Major	Major	Major	Major
		Major		Major	Major

A Humanities-Social Science Major

Third Class		Second Class		First Class	
Fall	Spring	Fall	Spring	Fall	Spring
Nav I	Ethics	Nav II	Leadership	Law	JO Practic
Calculus	Diff Eqns	EE	Cyber II	Wpns	Control Sys
Physics	Physics				
W Civiliz	W Civiliz		H&SS Elec		H&SS Elec
			Ship Propul	Warfare E	
Language	Language	Language	Language		
Major	Major	Major	Major	Major	Major
		Major	Major	Major	Major

Academic Requirements

- Core courses
 - Plebe year
 - Upper class years
- Majors program



Common or “Core” Courses

(~2/3 of Academic Program)

Calculus [3]	English [2]	Leadership [2]
Mathematics-4 [1]	Gov't [1]	Ethics [1]
Cyber Warfare [2] *	History [3]	Law [1]
Chemistry [2] *	Electives [2]	Seamanship [1] *
Physics [2] *		Navigation [2] *
Electrical E [1] *	Language [4]	JO Practicum [1] *
Wpns Syst E [1] *		
Warfare E [1] *		Physical Ed [8]
Ship Propuls E [1] *		

* with lab

Grades and Credits

Grade	Value or meaning
<i>A</i>	4.0
<i>B</i>	3.0
<i>C</i>	2.0
<i>D</i>	1.0
<i>F</i>	0.0
<i>I</i>	Incomplete
<i>V</i>	Validated

Credits

R	Recitation, lecture, discussion class hours/week
L	Laboratory class hours/week
C	Credits

Generally, $C = R + L / 2$

Chemistry I has three (3 hours) recitations per week plus a single double-period (2 hour) laboratory.

So,

Chemistry I carries
 $3 + 2/2 = 4$ credits.

English I has three (3 hours) recitations per week.

So,

English I carries
 $3 + 0/2 = 3$ credits.

Plebe Course Credits

Course	R	L	C
Calculus I or II	4	0	4
Chemistry I or II	3	2	4
Cyber Security	2	2	3
English I or II	3	0	3
US Gov't and Constitution	3	0	3
Leadership I	2	0	2
Seamanship	1	2	2
Physical Education I	0	1	0

Quality Point Ratio (QPR)

Known elsewhere as the Grade Point Average (GPA)

$$\text{QPR} = \frac{G_1 C_1 + \dots + G_N C_N}{C_1 + \dots + C_N}$$

where

- G_i = grade value earned in the course
- C_i = # credits pf the course

Academic Calendar

A plebe's eye-view from
Induction Day
to the
Start of the Semester
and
beyond ...



Induction Day '17 – 27 June 2013



Mon	Tue	Wed	Thu	Fri	Sat
Jun 27 Induction Day 2017				28	29
Jul 01	02	03	04 Independence Day	05	06 Today
08	09	10	11	12	13
15 ACR	16 ACR	17 ACR	18 ACR	19 ACR	20
22 ACR	23	24	25	26	27
29	30	31 AcAdviser	Aug 01 AcAdviser	02 AcAdviser	03
05	06	07	08	09	10 Parents Weekend
12	13	14	15 Brigade Reform	16 End Plebe Summer	17

Academic Term 141 (Fall 2013) Academic Year 2013-2014

Mon	Tue	Wed	Thu	Fri	Sat
19-Aug-13 Fall term begins	20-Aug	21-Aug	22-Aug	23-Aug	24-Aug
26-Aug	27-Aug	28-Aug	29-Aug	30-Aug	31-Aug
2-Sep Labor Day	3-Sep Monday schedule Add course deadline	4-Sep	5-Sep	6-Sep	7-Sep FB @ Indiana
9-Sep	10-Sep	11-Sep	12-Sep	13-Sep Preregistration	14-Sep FB v Delaware
16-Sep Preregistration	17-Sep Preregistration	18-Sep Preregistration	19-Sep Preregistration	20-Sep Preregistration	21-Sep
23-Sep Academic Reserve	24-Sep Academic Reserve	25-Sep Academic Reserve	26-Sep Academic Reserve	27-Sep Academic Reserve	28-Sep FB @ W. Kentucky
30-Sep	1-Oct Grades due	2-Oct	3-Oct MAPRs due	4-Oct	5-Oct FB v Air Force
7-Oct	8-Oct	9-Oct	10-Oct	11-Oct	12-Oct FB @ Duke
14-Oct Columbus Day	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct FB @ Toledo
21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct FB v Pittsburgh
28-Oct Academic Reserve	29-Oct Academic Reserve	30-Oct Academic Reserve	31-Oct Academic Reserve	1-Nov Academic Reserve	2-Nov FB @ Notre Dame
4-Nov NASEC	5-Nov Grades due NASEC	6-Nov NASEC	7-Nov MAPRs due	8-Nov Drop course deadline	9-Nov FB v Hawaii
11-Nov Veterans Day	12-Nov	13-Nov Registration	14-Nov Registration	15-Nov Registration	16-Nov FB v South Alabama
18-Nov Registration	19-Nov Registration	20-Nov Registration	21-Nov Registration	22-Nov Registration	23-Nov FB @ San Jose State
25-Nov Registration	26-Nov Registration	27-Nov Registration Wed & Early Schedule	28-Nov Thanksgiving	29-Nov Thanksgiving	30-Nov
2-Dec Registration	3-Dec Registration	4-Dec Registration	5-Dec Fall term ends	6-Dec Review Day	7-Dec Exam Day 1
9-Dec Exam Day 2	10-Dec Exam Day 3	11-Dec Exam Day 4	12-Dec Exam Day 5 (AM only)	13-Dec	14-Dec FB v Army
16-Dec Exam Day 5 (PM only)	17-Dec Exam Day 6	18-Dec Exam Day 7 Late Graduation 2013	19-Dec	20-Dec	21-Dec
23-Dec Grades due AcBoard list posted	24-Dec	25-Dec Christmas Day	26-Dec	27-Dec MAPRs, CoMPRs due	28-Dec

More calendars at
www.usna.edu/Academics

Academic Calendar Overview

- Summer Term
 - 3 blocks of 4 weeks = 12 weeks
 - End of May to Middle of August
 - Professional Training, Summer School
- Fall Semester
 - 16 weeks
 - Middle of August to Christmas
 - Academic course work
- Spring Semester
 - 16 weeks
 - Beginning of January to early May
 - Academic course work

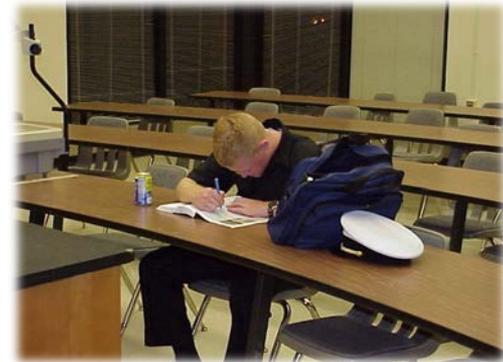
Annual Calendar Overview

Jan	Feb	Mar	Apr
May	Jun	Jul	Aug
Sep	Oct	Nov	Dec

The Academic Adventure Ahead ...

- **What would you like to learn about?**
 - ... astrophysics to anthropology ...
 - ... history to higher math ...
 - ... engineering design to economics ...
- **What kind of educational opportunities interest you?**
 - original research with a faculty mentor
 - attend graduate school in 1/C, finish Master's degree by December after USNA graduation
 - intern at the Maryland legislature
 - complete two or more majors
 - achieve a minor in a language
 - earn honors in a major
 - spend summer cruise aboard ship of an foreign ally
 - summer internship at a Navy or Defense Department laboratory
 - study in a foreign country during the summer
 - spend a semester abroad
 - prepare for Rhodes, Marshall, Gates, or Truman Scholarships

A View Into the Real Academic Experience...



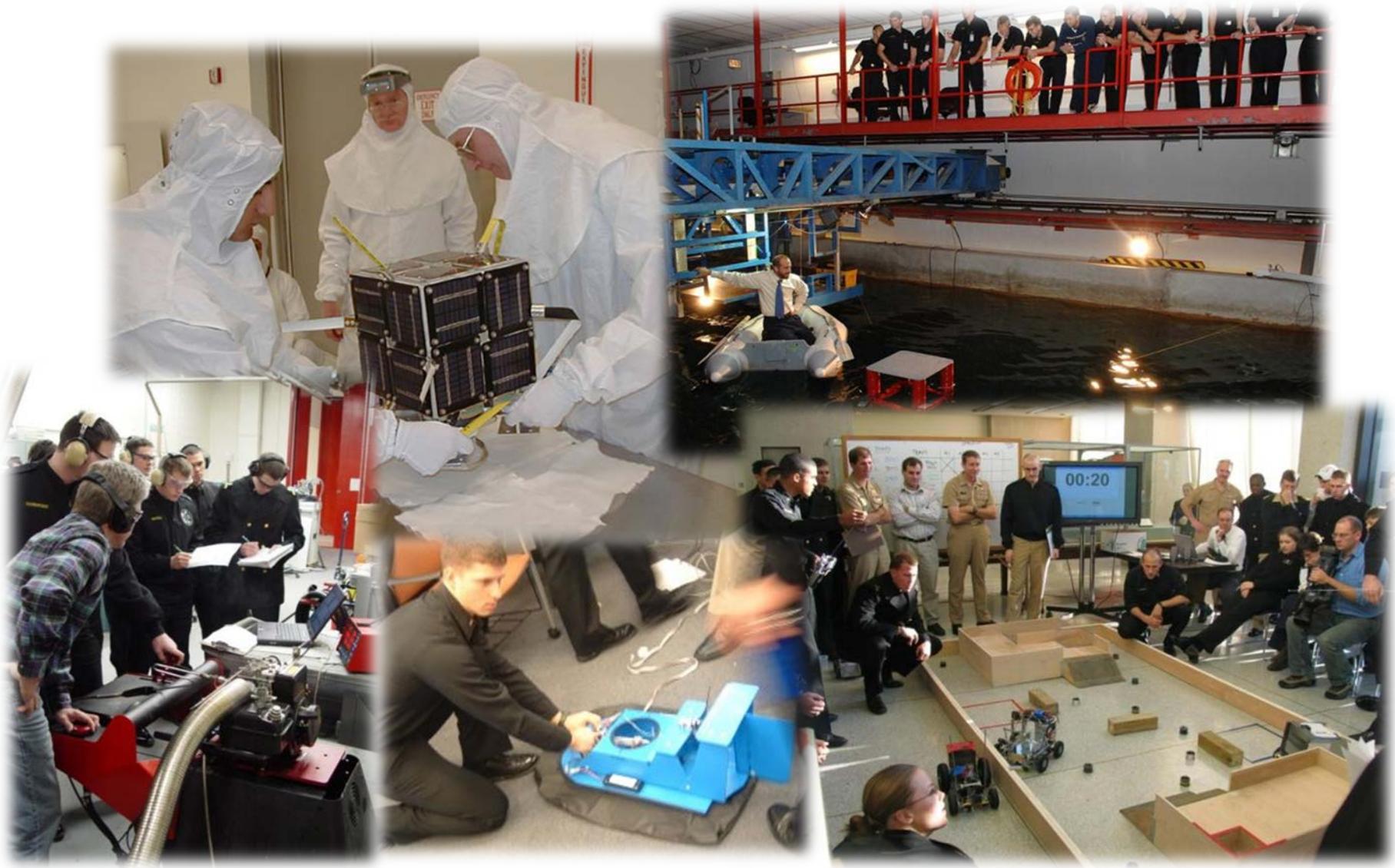
Challenge!



Frequent Interaction with Faculty



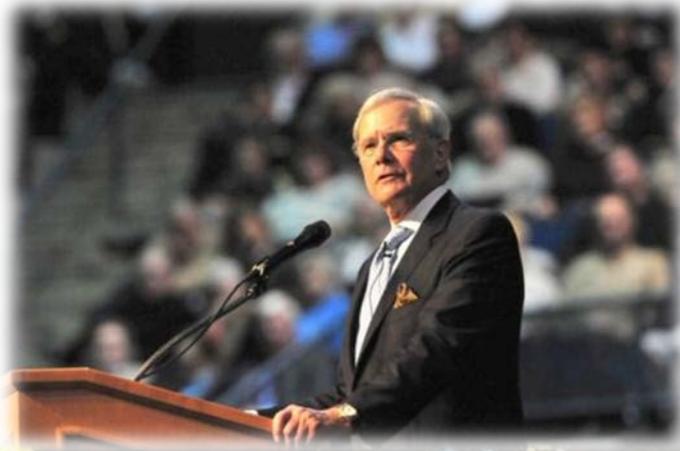
Active/Collaborative Learning



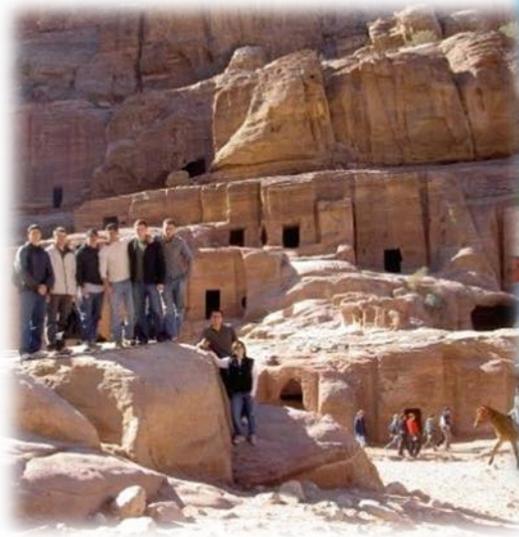
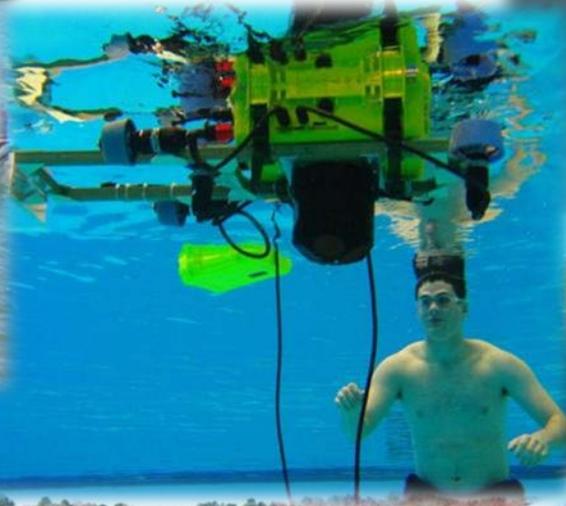
Learning Inside the Classroom



Learning Outside the Classroom



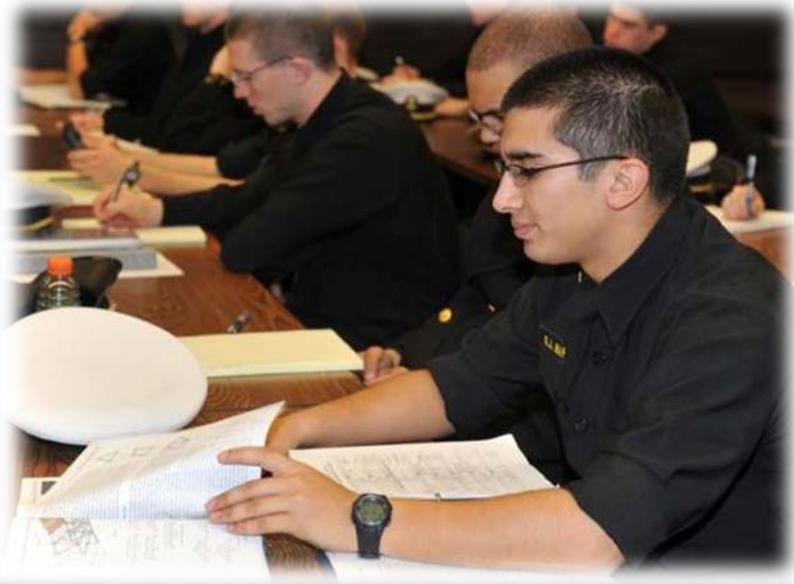
Learning REALLY Outside the Classroom



Campus Support



Success in College: What Matters Most?



- An abundance of educational opportunities and more are made available to you by an absolutely outstanding faculty committed to your academic success.
- Take advantage of these next four years.
- Let the adventure begin ...

Ex Scientia Tridens



From Knowledge, Sea Power

Questions ?



Class of 2017

Academic Program Brief

Associate Dean for Academic Affairs

Jennifer K. Waters, Ph.D., P.E.

jwaters@usna.edu

410-293-1581