



VIRGINIA TECHTM

Kevin T. Crofton Department of
Aerospace and Ocean Engineering

Fall 2017

College of Engineering
Undergraduate Major/Minor
Information Session

Aerospace Engineering
&
Ocean Engineering

Let's Go!

GREETINGS AND WELCOME



Dr. Gary Seidel
Associate Professor &
Assistant Dept. Head,
Academic Affairs



Dr. Christine Gilbert
Assistant Professor



Ms. Madhu Kapania
Academic and Career
Advisor

What is AEROSPACE ENGINEERING?

Aerospace = AERONAUTICS + ASTRONAUTICS



Aeronautics is the science and engineering involved with the analysis, design, and manufacturing of air-flight capable machines that operate within the atmosphere for exploration, recreation, transport, and defense.



Astronautics is the science and engineering involved with the design, and manufacturing of machines which operate beyond Earth's atmosphere for exploration, recreation (!?), transport, and defense.

What is OCEAN ENGINEERING?



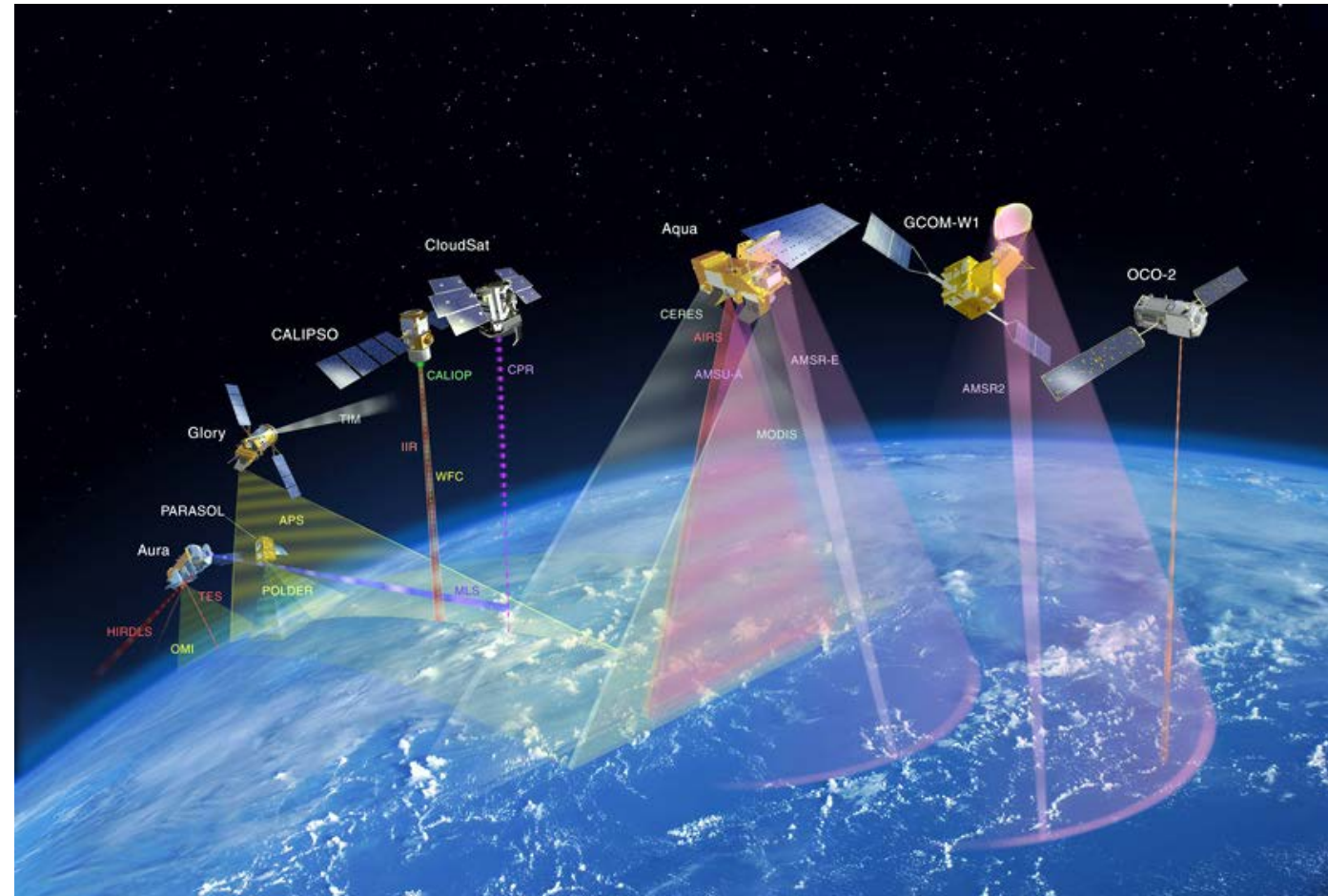
At Virginia Tech, **Ocean Engineering = HYDRONAUTICS**

Hydronautics is the science and engineering involved with the analysis, design, and manufacturing of marine craft and instruments for exploration, recreation, transport, and defense in ocean and fresh-water environments.

Many interesting careers at the *intersection* of AEROSPACE & OCEAN ENGINEERING!

OCEAN REMOTE SENSING.

Engineering and science of obtaining information about the ocean from a distance, typically from aircraft or satellites.



Many interesting careers at the *intersection* of
AEROSPACE & OCEAN ENGINEERING!

OFFSHORE WIND ENERGY

Design and operation of
renewable energy machines
that operate in the
atmosphere and ocean



Many interesting careers at the *intersection* of AEROSPACE & OCEAN ENGINEERING!

RACING YACHTS

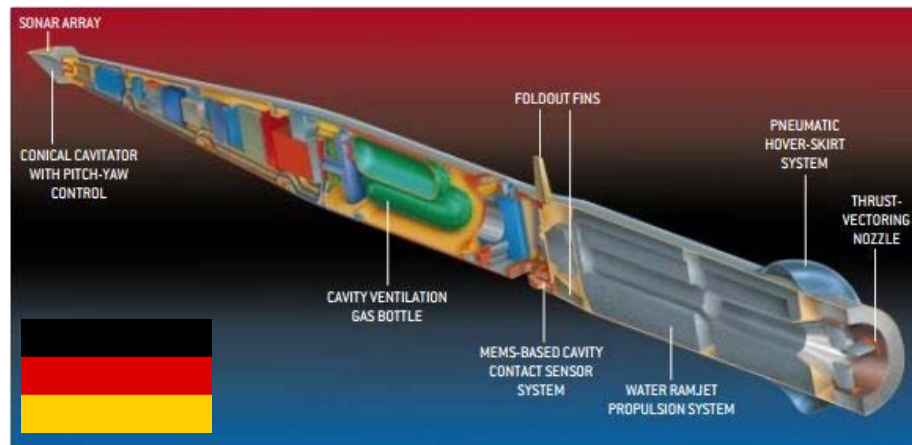
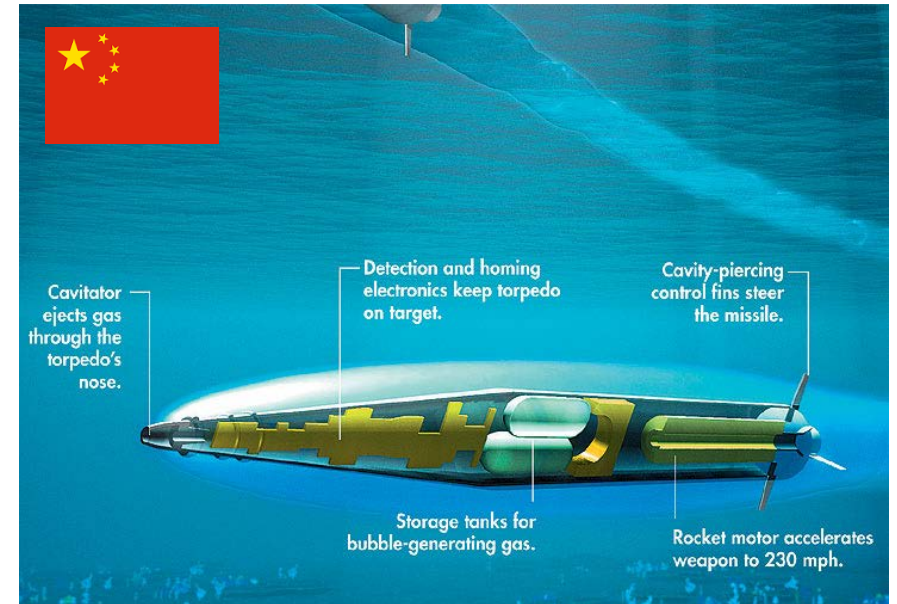
Design and operation of high-speed boats that harvest energy from the wind, and fly by generating hydrodynamic lift!



Many interesting careers at the *intersection* of AEROSPACE & OCEAN ENGINEERING!

INTELLIGENCE ANALYST

Evaluation of international technology and threats to national security, example: supercavitating 200+ knot rocket-torpedo



Where do our alumni end up?



Aerospace industry



Ship building industry



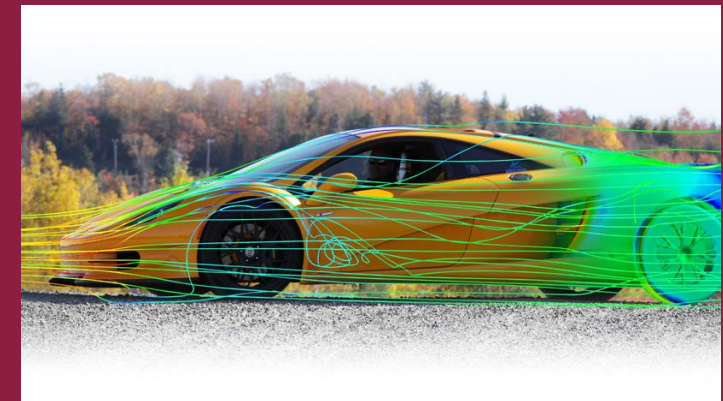
Federal Government
Agencies



Renewable energy
industry

Employers range from large, multinational corporations to small consulting firms.

Some of our alumni choose to go into related fields such as automotive engineering, structural engineering, environmental engineering, or into professions such as law or medicine.



Recent surveys* of AOE graduates indicate:

74% *expected full-time employment*

13% *furthered their studies in graduate school*

10% *went into the military or volunteer service*

* conducted by the Virginia Tech Provost Assessment Office and the Office of Career and Professional Development.

In 2014-15, AOE graduates median salary was **\$62,000**, and of those employed, **91%** had jobs related to their major.

About the AOE Department

A FOUNDATION IN VERSATILITY



Kevin T. Crofton Department of Aerospace and Ocean Engineering offers an unique approach to understanding and exploiting the similarities between two seemingly disparate fields.

Our most valuable asset is **our commitment and proven ability to teach students how to tackle complex systems.**

About the AOE Department



Ready for the future

Through research, coursework, extra-curricular opportunities, and department culture, our students are equipped to answer technical challenges they will face in a future of many possibilities.



Going beyond

It is the ability to wrangle with and confront complex systems that disrupts the status quo in aerospace and ocean engineering, thrusts our engineers into higher gear, and pushes the limits of where people and our machines can travel and explore.

Mission of the AOE Department



EDUCATE FUTURE GENERATIONS of engineers through innovative, vibrant, diverse programs that are built upon technically rigorous engineering, hands-on experience, and a broad systems perspective.



INSPIRE OUR STUDENTS to become critical thinkers, innovators, and leaders with the curiosity and drive to solve real-world problems.

Mission of the AOE Department



CONDUCT RESEARCH that generates new technologies to address aerospace and ocean engineering challenges and attracts outstanding graduate students, distinguished researchers, and international recognition.



PROVIDE LEADERSHIP to Virginia Tech, the Commonwealth of Virginia, the United States, and the world on the engineering of vehicles and systems that operate in the ocean, the atmosphere, and space.

PEERS

RANKINGS

Global Quantitative Rankings

■ CENTER FOR WORLD
UNIVERSITY 2017
RANKINGS

#5 AEROSPACE
ENGINEERING

■ 2017 SHANGHAI
GLOBAL RANKINGS

#10 AEROSPACE
ENGINEERING

USA Rankings

■ 2016 Best Value Schools

#2 Best Value for
AEROSPACE
ENGINEERING

■ 2017 U.S. News and World
Report

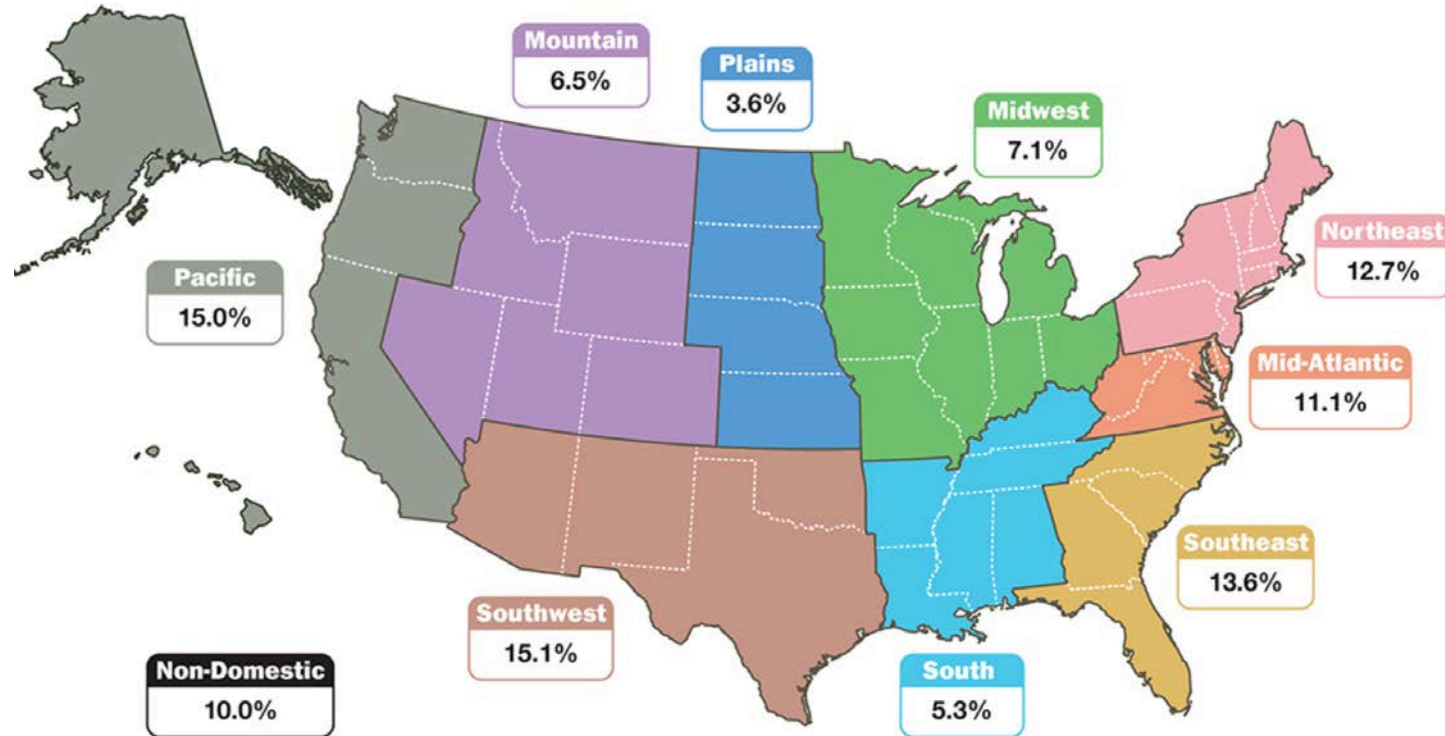
#12 AEROSPACE
ENGINEERING
Graduate
Program

■ 2017 U.S. News and World
Report

#15 AEROSPACE
ENGINEERING
Undergraduate
Program

Aviation Week's October 2017 U.S. Workforce Study

Hiring Forecast 2017



Source: Aviation Week 2017 Workforce Study

Where are the Aerospace and Defense (includes Ocean Eng.) jobs?

Virginia Tech listed as a “preferred supplier” of talent to the Aerospace & Defense industry, along with Georgia Tech, Purdue, Univ. Colorado-Boulder, & Cornell.

Ocean Engineering Peers

- Chalmers University of Technology (Sweden)
- Florida Atlantic University
- MIT
- Norwegian Univ. Science and Tech
- Osaka University (Japan)
- Seoul National University (S. Korea)
- University of Michigan
- University of Southampton (England)
- University of Strathclyde (Scotland)
- **Virginia Tech**
- Texas A&M

A few observations about OE

- Programs are smaller
- International peers
- Programs not ranked by USNWR

Aerospace Engineering Peers

- Georgia Tech (#1)
- University Michigan (#3)
- University of Colorado Boulder (#6)
- **Virginia Tech (#10)**
- University of Maryland (#12)
- Purdue (#15)
- Texas A&M (#21)
- Penn State (#23)
- NC State (NR)
- Notre Dame (NR)

*Rankings in parenthesis from
Shanghai Rankings 2017
Global Ranking of Academic
Subjects*

A few observations about AE

- Programs are larger
- Peers are all in the USA



Engineering
Accreditation
Commission

Educational objectives and goals

Program educational objectives

Graduates will combine their undergraduate education and post-graduation experience to:

- Be successful in entry-level professional positions or in graduate study in aerospace and ocean engineering
- Apply the theoretical, experimental and computational fundamentals of science and engineering to professional practice, advanced study and continuing professional development
- Apply their broad understanding of fluid dynamics, vehicle dynamics and control, propulsion and structures to design and synthesis of aerospace or ocean systems in a team environment
- Communicate their work effectively to both experts in their field and non-technical individuals

Program goals

As a result of their completion of the program curriculum, students will attain:

- An ability to apply knowledge of mathematics, science, and engineering
- An ability to design and conduct experiments, as well as to analyze and interpret data
- An ability to design a system, component, or process to meet desired needs within realistic constraint such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- An ability to function on multidisciplinary teams
- An ability to identify, formulate, and solve engineering problems
- An understanding of professional and ethical responsibility
- An ability to communicate effectively
- The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- A recognition of the need for, and an ability to engage in life-long learning
- A knowledge of contemporary issues
- An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Major in Aerospace Engineering

Aerospace engineering is the design, construction, and science of vehicles that fly through air and space. It is through the craft of aerospace engineering that humanity has revolutionized transportation on Earth, landed on the moon, and then reached beyond it to the stars.

AOE undergraduates who major in aerospace engineering have the flexibility to tailor their degrees to their interest. They have the ability to mix and match courses from seven concentrations:



AERO/HYDRODYNAMICS



STRUCTURES AND
MATERIALS

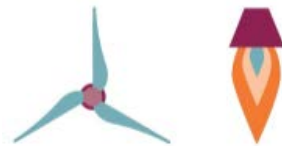


DYNAMICS, CONTROL, AND
ESTIMATION

128 CREDITS REQUIRED FOR GRADUATION



ENERGY AND THE
ENVIRONMENT



PROPULSION



VEHICLES AND
SYSTEM DESIGN



SPACE ENGINEERING

Aerospace Engineering Curriculum – year 2

SOPHOMORE FALL SEMESTER 2017		Credits	SOPHOMORE SPRING SEMESTER 2018		Credits
ESM 2214 Statics and Mechanics of Materials <i>Co: MATH 2204</i>	3		ESM 2304 Dynamics <i>Pre: ESM 2214, MATH 2204; Co: MATH 2214</i>	3	
MATH 2114 Introduction to Linear Algebra <i>Pre: MATH 1225 (min grade of B) or MATH 1226</i>	3		MATH 2214 Differential Equations <i>Pre: MATH 1226, MATH 2114</i>	3	
MATH 2204 Multivariable Calculus <i>Pre: MATH 1226</i>	3		PHYS 2306 Foundations of Physics I w/lab <i>Pre: MATH 1226, PHYS 2305</i>	4	
AOE 2054 Electronics for Aerospace and Ocean Systems	3 ^[F]		AOE 2024 Thin-Walled Structures <i>Pre: ESM 2214</i>	3 ^[S]	
AOE 2074 Computational Methods <i>Pre: ENGE 1216, MATH 2204</i>	2 ^[F,S,SII]		CLE (Area 3) ECON 2005 Principles of Economics	3	
AOE 2104 Intro to AOE <i>Pre: ENGE 1216, PHYS 2305</i>	3 ^[F,SII]		CLE (Area 6)	1	
TOTAL	17		TOTAL	17	

Checksheet for class of 2020

Aerospace Engineering Curriculum – year 3

JUNIOR FALL SEMESTER 2018		Credits	JUNIOR SPRING SEMESTER 2019		Credits
MATH 4564 Operational Methods <i>Pre: MATH 2214</i>	3		AOE 3054 AOE Experimental Methods <i>Pre: (2024 or 3024), 2054, 3014, and 3034</i>	3 ^[S]	
AOE 3014 Fluid Dynamics for Aerospace and Ocean Engineers <i>Pre: 2074, (2104 or 2204), ESM 2304, MATH 2214</i>	3 ^[F]		AOE 3114 Compressible Aerodynamics <i>Pre: 3014</i>	3 ^[S]	
AOE 3034 System Dynamics and Control <i>Pre: 2074, ESM 2304, MATH 2214</i>	3 ^[F]		AOE 3134 Air Vehicle Dynamics <i>Pre: 3034, or</i> AOE 3144 Space Vehicle Dynamics, <i>Pre: 3034</i>	3 ^[S]	
AOE 3124 Aerospace Structures <i>Pre: (2024_or 3024) and 2074</i>	3 ^[F]		AOE 3164 Thermodynamics and Aerospace Propulsion <i>Pre: 3014</i>	3 ^[S]	
AOE 3154 Astromechanics <i>Pre: ESM 2304</i>	3 ^[F]		Technical Elective	3	
	TOTAL	15		TOTAL	15

Checksheet for class of 2020

Major in Ocean Engineering

Ocean engineering is a field as diverse as the ocean itself. Our program provides a foundation on the physics of the ocean environment, and then focuses on the design and operation of ocean vehicles and systems, including ships, advanced marine vehicles, offshore platforms and submarines.

AOE undergraduates who major in ocean engineering have the flexibility to tailor their degrees to their interest. They have the ability to mix and match courses from seven concentrations:



AERO/HYDRODYNAMICS



STRUCTURES AND
MATERIALS



DYNAMICS, CONTROL, AND
ESTIMATION

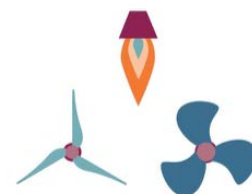
128 CREDITS REQUIRED FOR GRADUATION



ENERGY AND THE
ENVIRONMENT



NAVAL ENGINEERING



PROPULSION



VEHICLES AND
SYSTEM DESIGN

Ocean Engineering Curriculum – year 2

SOPHOMORE FALL SEMESTER 2017		Credits	SOPHOMORE SPRING SEMESTER 2018		Credits
ESM 2214 Statics and Mechanics of Materials <i>Co: MATH 2204</i>	3		ESM 2304 Dynamics <i>Pre: ESM 2214, MATH 2204; Co: MATH 2214</i>	3	
MATH 2114 Introduction to Linear Algebra <i>Pre: MATH 1225 (min grade of B) or MATH 1226</i>	3		MATH 2214 Differential Equations <i>Pre: MATH 1226, MATH 2114</i>	3	
MATH 2204 Multivariable Calculus <i>Pre: MATH 1226</i>	3		PHYS 2306 Foundations of Physics w/lab <i>Pre: MATH 1226, PHYS 2305</i>	4	
AOE 2054 Electronics for Aerospace and Ocean Systems	3 ^[F]		AOE 2024 Thin-Walled Structures <i>Pre: ESM 2214</i>	3 ^[S]	
AOE 2074 Computational Methods <i>Pre: ENGE 1216, MATH 2204</i>	2 ^[F,S,SII]		CLE (Area 3) ECON 2005 Principles of Economics	3	
AOE 2204 Intro to Ocean Engr <i>Pre: ENGE 1216, PHYS 2305; Co: MATH 2204</i>	3 ^[F,SII]		CLE (Area 6)	1	
TOTAL	17		TOTAL	17	

Checksheet for class of 2020

Ocean Engineering Curriculum – year 3

JUNIOR FALL SEMESTER 2018		Credits	JUNIOR SPRING SEMESTER 2019		Credits
MATH 4564 Operational Methods <i>Pre: MATH 2214</i>	3		GEOS 3034 Oceanography	3	
AOE 3014 Fluid Dynamics for Aerospace and Ocean Engineers <i>Pre: 2074, (2104 or 2204), ESM 2304, MATH 2214</i>	3 ^[F]		AOE 3054 AOE Experimental Methods <i>Pre: (2024 or 3024), 2054, 3014, and 3034</i>	3 ^[S]	
AOE 3034 System Dynamics and Control <i>Pre: 2074, ESM 2304, MATH 2214</i>	3 ^[F]		AOE 3224 Ocean Structures <i>Pre: (2024 or 3024) and 2074</i>	3 ^[S]	
AOE 3214 Ocean Wave Mechanics <i>Co: 3014, MATH 4564</i>	3 ^[F]		AOE 3234 Ocean Vehicle Dynamics <i>Pre: 3034</i>	3 ^[S]	
Technical Elective	3		AOE 3264 Thermodynamics and Marine Propulsion <i>Pre: 3014</i>	3 ^[S]	
	TOTAL	15		TOTAL	15

Checksheet for class of 2020

Ocean Engineering Curriculum – year 4

SENIOR FALL SEMESTER 2019		Credits	SENIOR SPRING SEMESTER 2020		Credits
AOE 4205 Experiments for Ocean Vehicle Design I <i>Pre: 3054; Co: 4265</i>	1 ^[F]		AOE 4206 Experiments for Ocean Vehicle Design II <i>Pre: 4205; Co: 4266</i>	1 ^[S]	
AOE 4265 Ocean Vehicle Design I <i>Pre: 2204, 3214, 3224, 3234, 3264; Co: 4205</i>	3 ^[F]		AOE 4266 Ocean Vehicle Design II <i>Pre: 4265; Co: 4206</i>	3 ^[S]	
STAT 4705 Probability & Stat for Engr <i>Pre: MATH 2204</i>	3		Technical Elective	3	
Technical Elective	3		Technical Elective	3	
Technical Elective	3		Technical Elective	3	
CLE (Area 2, 3, or 7)	3		CLE (Area 2, 3, or 7)	3	
	TOTAL	16		TOTAL	16

Checksheet for class of 2020

Total of 6 Technical Electives (18ch) selected from Concentrations

The 9 Concentrations

Technology areas

1. Structures and materials
2. Aero/hydrodynamics
3. Dynamics, control and estimation
4. Vehicle and system design
5. Foundational option

Application areas

6. Naval engineering
7. Space engineering
8. Propulsion
9. Energy and the environment

A concentration is a minimum of 3 Technical Electives (TE) in that area

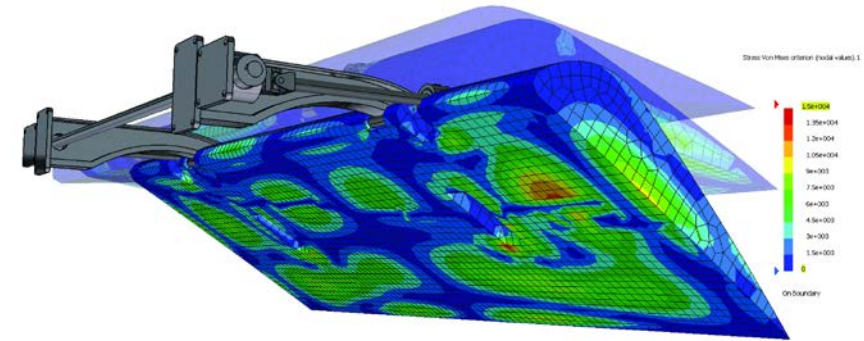
Students must choose at least 1 concentration (other 3 TE can be chosen as student desires)

With 6 TE in the curriculum, students can potentially earn two concentrations

Concentrations will appear on official university transcript

Concentration in Structures and Materials

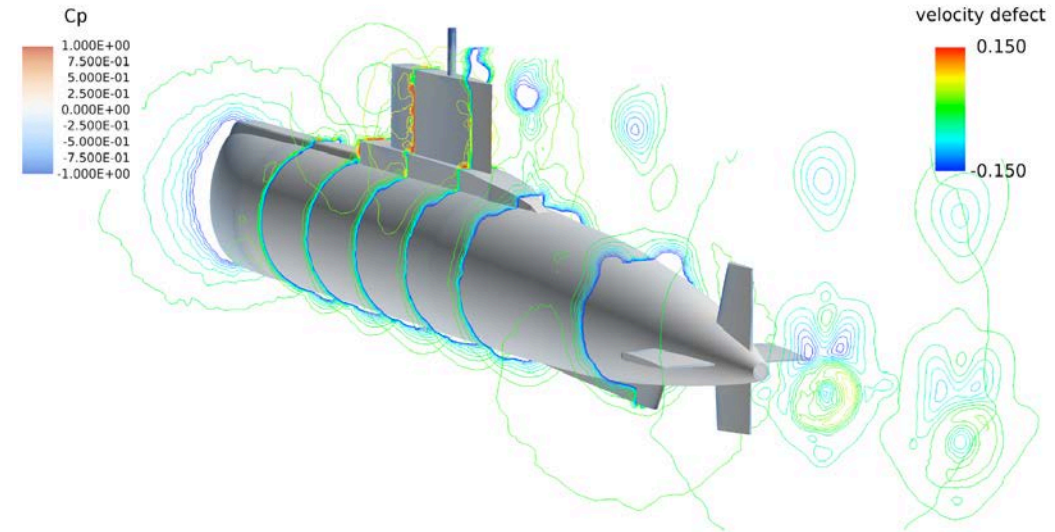
- **AOE 4324 Energy Methods for Structures (req)**
- AOE 4024 Intro to Finite Element Method
- AOE 4054 Stability of Structures
- AOE 4274 Computer Based Design of Ocean Structures
- MSE 2034 Materials
- MSE 4604: Composite Materials
- ME 4624: Finite Element Practice
- ESM 3054: Mech Behavior of Materials
- ESM 4024: Adv Mechanical Behavior Materials
- ESM 4044: Mechanics Composite Materials



To earn concentration, choose a minimum of 3

Concentration in Aero/Hydrodynamics

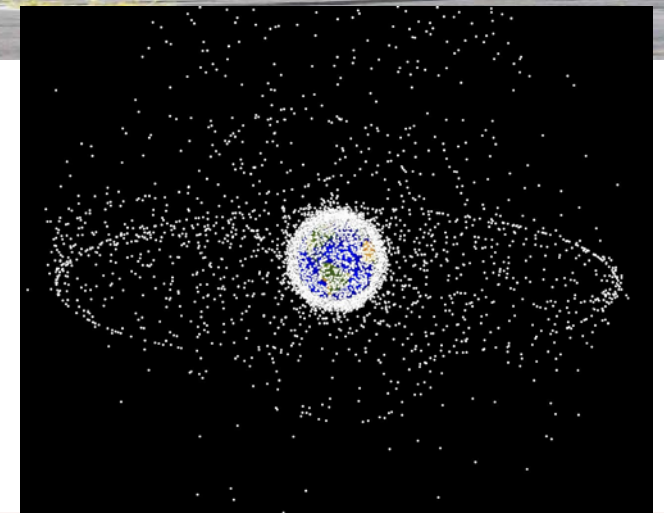
- **AOE 3044 Boundary Layer Theory (req)**
- AOE 4064 Fluid Flows in Nature
- AOE 4114 Applied Computational Aerodynamics
- AOE 4124 Configuration Aerodynamics
- AOE 4434 Introduction to CFD
- AOE 4174 Spacecraft Propulsion
- AOE 4474 Propellers and Turbines
- ME 3124 Thermodynamics
- STAT 4714 Probability/Statistics for Engineers



To earn concentration, choose a minimum of 3

Concentration in **Dynamics, control and estimation**

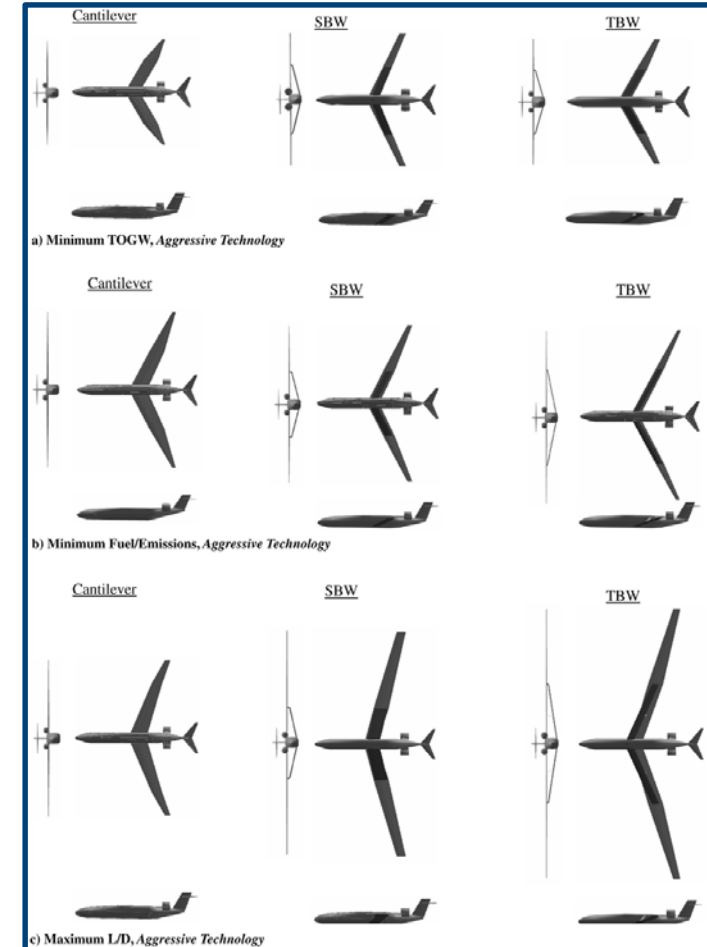
- **AOE 4004 State-Space Control (req)**
- AOE 3134/3144/3234 {Air, Space, Ocean} Vehicle Dynamics
- AOE 4344 Dynamics of High-Speed Marine Craft
- AOE 4804 Special Topics in DC&E
- AOE 4814 Spacecraft PNT/Orbit Determination
- ECE 4194 Engineering Principles of Remote Sensing
- ECE 4405-4406 Control Systems
- ECE 4624 Digital Signal Processing and Filter Design
- ESM 4114 Nonlinear Dynamics and Chaos
- ME 4534 Land Vehicle Dynamics
- STAT 4714 Probability/Statistics for Engineers



To earn concentration, choose a minimum of 3

Concentration in **Vehicle and system design**

- **AOE 4084 Engineering Design Optimization (req)**
- AOE 4114 Applied Computational Aerodynamics
- AOE 4124 Configuration Aerodynamics
- AOE 4174 Spacecraft Propulsion
- AOE 4234 Aerospace Propulsion Systems
- AOE 4244 Naval and Marine Engineering System Design
- AOE 4264 Principles of Naval Engineering
- AOE 4414 Computer-Aided Space Mission Planning
- ME 4644 Intro to Rapid Prototyping
- PHIL 4324 Business and Professional Ethics
- MGT 3304 Management Theory and Leadership
- STAT 4714 Probability/Statistics for Engineers



**To earn concentration,
choose a minimum of 3**

Foundational concentration

For students who want a broad foundational education, they can choose to take 3 of the required courses from the Technology Area Concentrations

- AOE 3044 Boundary Layer Theory
- AOE 4004 State-Space Control
- AOE 4084 Engineering Design Optimization
- AOE 4324 Energy Methods for Structures

To earn concentration, choose a minimum of 3

Concentration in Naval engineering

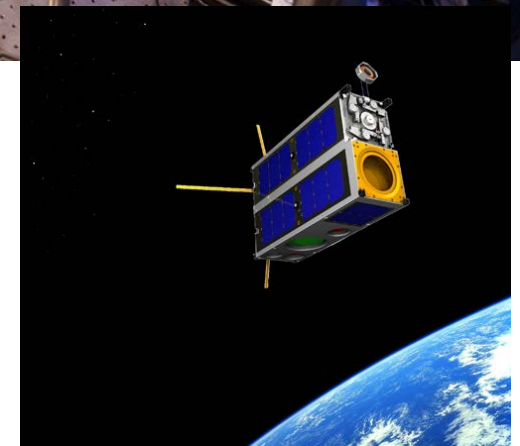
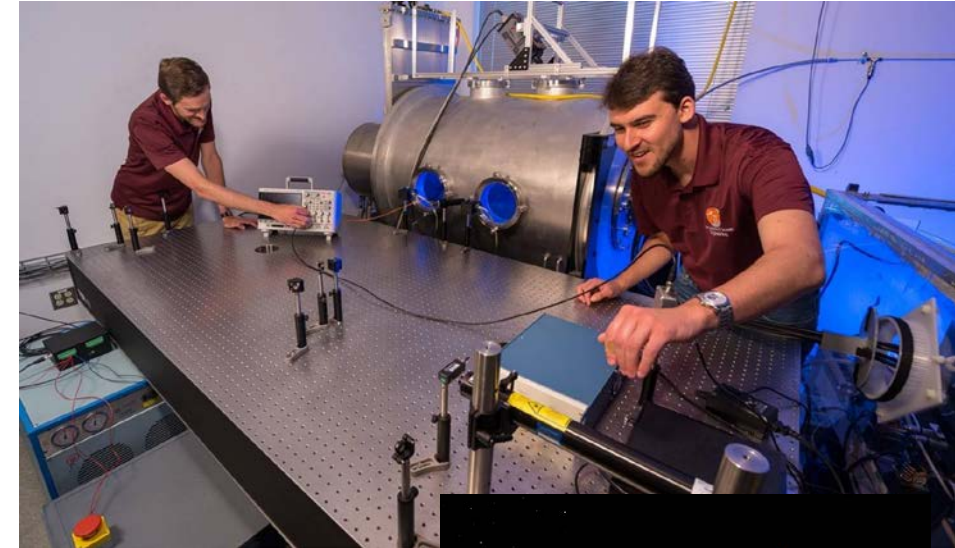
- **AOE 4264 Principles of Naval Engineering (req)**
- AOE 4244 Naval and Marine Engineering System Design
- AOE 4274 Computer Based Design of Ocean Structures
- AOE 4344 Dynamics of High-Speed Marine Craft
- AOE 4464 Global Navigation Satellite Systems
- AOE 4474 Propellers and Turbines
- ME 3124 Thermodynamics
- ECE 4194 Engineering Principles of Remote Sensing
- ECE 4364 Alternate Energy Systems
- STAT 4714 Probability/Statistics for Engineers



To earn concentration, choose a minimum of 3

Concentration in **Space engineering**

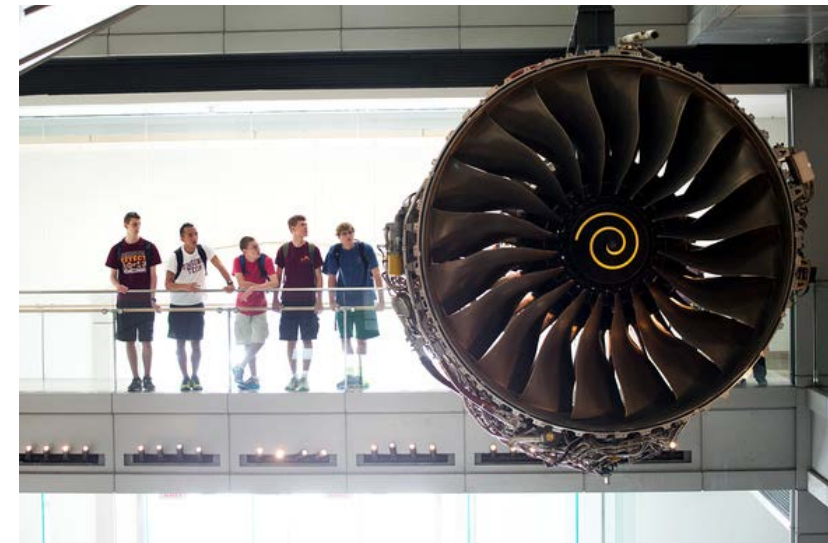
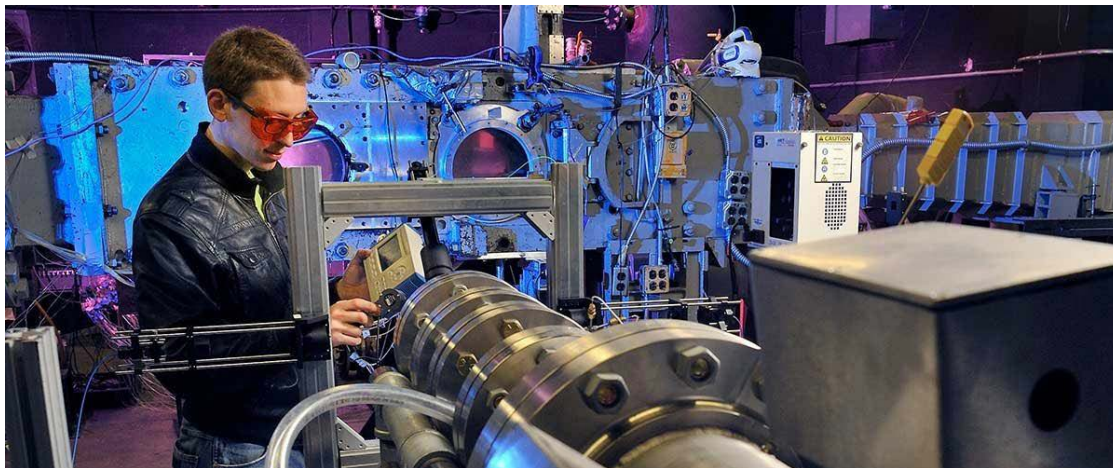
- AOE 2664/ECE 2164 Space Environment
- AOE 3744 Aerospace Electronics
- AOE 4174 Spacecraft Propulsion
- AOE 4814 Spacecraft PNT/Orbit Determination
- AOE 4984/ECE 4154 Introduction to Space
- Weather
- ECE 3104 Introduction to Space Systems and Technology
- ECE 3154 Space Systems Laboratory
- ECE 4164 Global Navigation Satellite Systems
- ECE 4194 Engineering Principles of Remote Sensing
- PHYS 3655/3656: Introduction to Astrophysics
- STAT 4714 Probability/Statistics for Engineers



**To earn concentration,
choose a minimum of 3**

Concentration in Propulsion

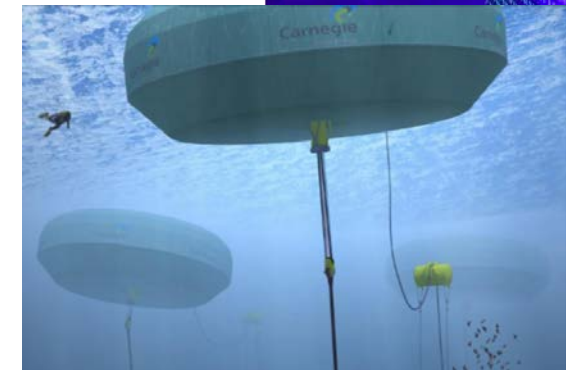
- AOE 4174 Spacecraft Propulsion
- AOE 4234 Aerospace Propulsion Systems
- AOE 4474 Propellers and Turbines
- AOE 4864 Special Topics in Propulsion
- ME 4204 Internal Combustion Engines
- ME 3124 Thermodynamics



To earn concentration, choose a minimum of 3

Concentration in **Energy and the environment**

- AOE 4064 Fluid Flows in Nature
- AOE 4474 Propellers and Turbines
- AOE 4264 Foundations of Aero/HydroAcoustics
- AOE 4634 Wind Turbine Technology & Aerodynamics
- AOE 4824 Special Topics in Energy & the Env.
- ECE 4364 Alternate Energy Systems
- ME 4194 Sustainable Energy Solution
- ENGR 3124 Green Engineering
- ME 3124: Thermodynamics



**To earn concentration,
choose a minimum of 3**

Double major

- Single majors
 - B.S. in Aerospace and Ocean Engineering, Major in Ocean Engineering
 - B.S. in Aerospace and Ocean Engineering, Major in Aerospace Engineering
- **Double major**
 - B.S. in Aerospace and Ocean Engineering, Major in Aerospace Engineering, Major in Ocean Engineering
 - Exact details with new curriculum are being finalized by AOE faculty

Undergraduate Research

- Many students register for **AOE 4994 UG Research** every semester, including the summers
- Some students are paid as UG Research Assistants
- Great **hands-on** experience with advanced concepts and technology
- Talk to your professors about opportunities!



AOE TWICE RECOGNIZED AS A

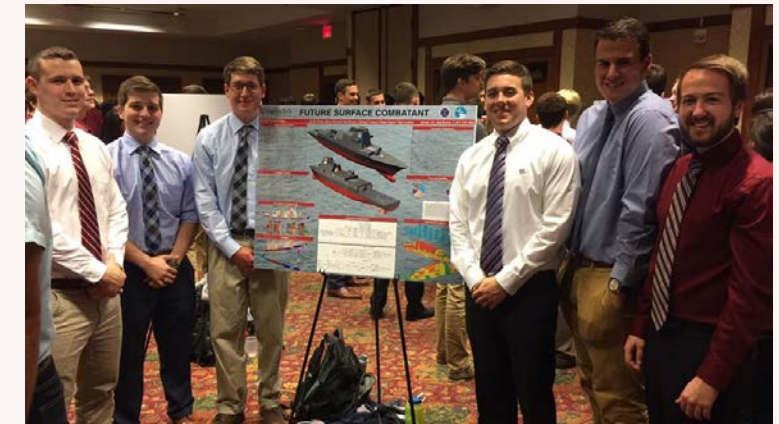
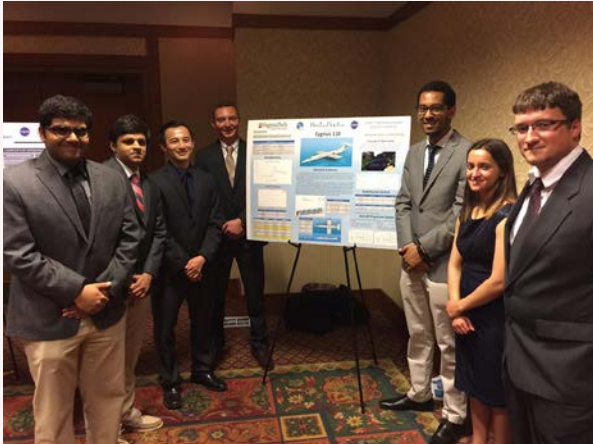
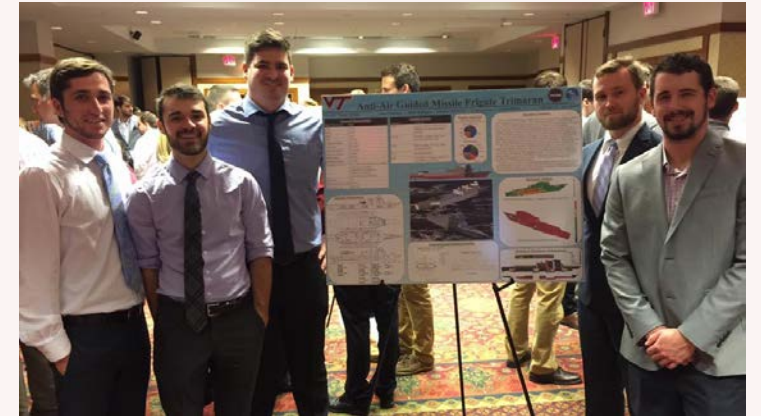
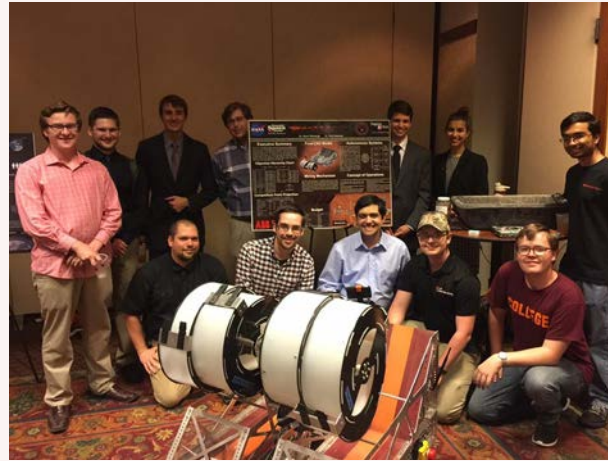
University Exemplary Department

in 2015 and 1999 for

*"effectively linking research and scholarship
with teaching, with particular concentration
on innovative programs."*

Design teams – capstone senior projects

2-semester aerospace- or ocean-vehicle/system design



AOE 4065/4066 Aircraft Design

AOE 4165/4166 Spacecraft Design

AOE 4265/4266 Ship Design

Design teams – extracurricular (Just a few examples)



Accelerated Undergraduate/Graduate Degree

- AOE seniors who have an overall GPA of at least 3.3 may be eligible for Undergraduate/Graduate Status during the final two semesters of their undergraduate degree program.

- **BS/MS (thesis or non-thesis option)**
- **BS/Direct-PhD**



Advising

The AOE department uses a professional advising system in which the AOE advisor is the contact for:

- Curriculum development
- Course substitution requests, withdrawals, and force-add
- Undergraduate research
- Co-op programs
- Study abroad
- Scholarships and internships
- Career and honors advising

AOE Advising Center

224-A Randolph Hall

Phone (540) 231-6699

Email: aoe-undergrad-advising-g@vt.edu

Office Hours

Monday-Friday

8:30 AM to 12:00 Noon

1:00 PM to 3:30 PM

An AOE **Faculty Advisor** is assigned to each student for technical and career advising



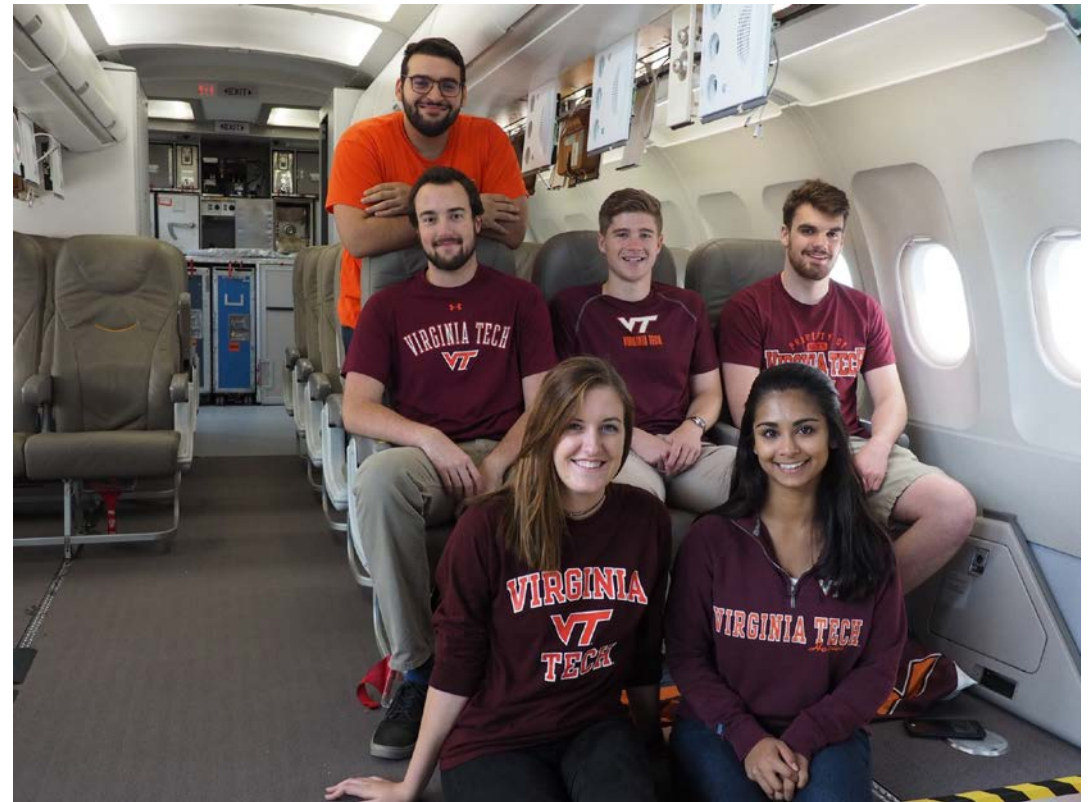
Study abroad in Germany

Hamburg University of Applied Sciences

(Hamburg, Germany) provides an excellent opportunity for study abroad in the discipline of Aeronautical Engineering.

The courses are taught in English and include modules in the university's particular fields of expertise—“Aircraft Design & Lightweight Structures” and “Aircraft Cabin/Cabin Systems.” Tech elective credit is awarded for successfully completed courses at the Hamburg University of Applied Sciences.

2017 Hokies in Hamburg - Virginia Tech students at Zero G



Student Chapters of Professional Societies/Institutes



American Institute of Aeronautics and Astronautics (AIAA) mission is to inspire and advance the future of aerospace for the benefit of humanity.

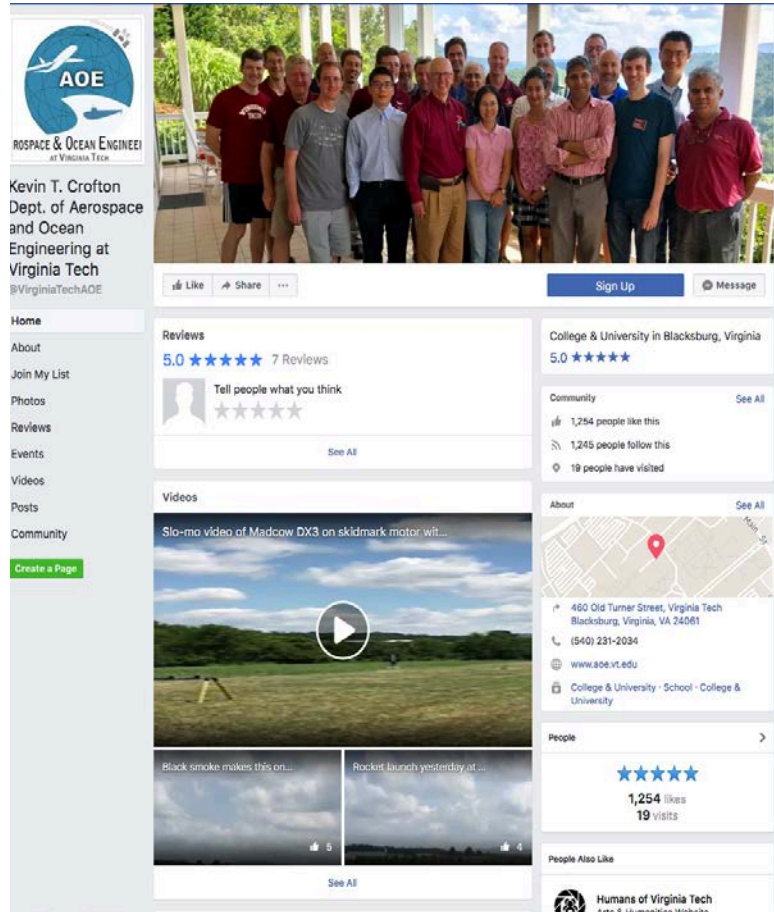


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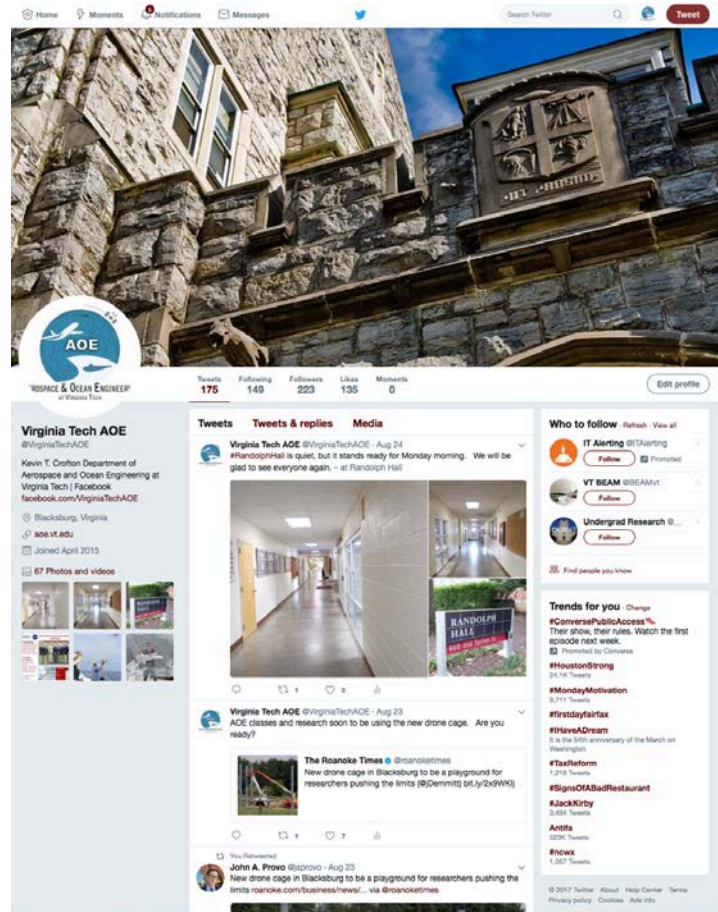
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#Randolphis quiet, but it stands ready for Monday morning. We will be glad to see everyone again. - at Randolph Hall

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Kevin T. Crofton Department of
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From the Department Head



Dear Friends of AOE,

Greetings from Blacksburg! It is the beginning of June, a time where the memories of a very busy and productive year are still fresh in our minds, but also a time where we are busy attending to research projects, freshening up laboratories, developing new courses, and hopefully taking some vacation to recharge for the next academic year.

You may have noticed, that we took a break from sending the AOE newsletter during the 2016-17 academic year. An incredible amount of change was sweeping through the department, and our lean operation was focused on important matters. As many of you know, the department received a very generous gift from Kevin Crofton (class of 1982) to support student scholarships, a faculty chair and faculty fellowships, and strategic investment in department initiatives. To recognize his gift, we officially named the department in Fall 2016, which puts Virginia Tech AOE in an elite group of Aerospace or Ocean Engineering programs that have this level of support. For that, we are truly grateful, and see a bright future.

We hired 5 new faculty last year, and they have brought an amazing level of enthusiasm and new ideas to our research portfolio and curriculum. Speaking of curriculum, the faculty recently finished a complete redesign of the undergraduate program, and we will begin rolling it out in Fall 2017 to the sophomore class. More news about that in future newsletters.

With 30 tenured and tenure-track faculty, the department continues to grow and we are on the trajectory towards 740 undergraduate and 125 graduate students (split 75%-25% between AE and OE).

Of course, there is much more news I could share, but for now, I encourage you to read the stories in this newsletter, and we will strive to keep you more up to date this fall. You can also follow our social media sites on Facebook and Twitter, and keep your eyes open for a brand new AOE website, which will be unveiled later this summer!

With best regards,

Eric Paterson

Faculty & Staff News

Mark Psiaki named American Institute of Aeronautics and Astronautics Fellow



Dr. Psiaki, who serves as the Kevin T. Crofton Faculty Chair of AOE, was recently selected as a Fellow of the American Institute of Aeronautics and Astronautics (AIAA), the world's largest aerospace professional society. The AIAA selected only 21 members worldwide as Fellows this year. In total, the organization boasts more than 30,000 individual members from 88 countries.

Congratulations to Dr. Psiaki! To read more about this honor, visit the VT News release at <http://vtnews.vt.edu/articles/2017/03/eng-MarkPsiakiAIAA.html>

Dr. Pat Artis Awarded Sporn Award



Dr. Pat Artis is the 2017 recipient of the University Sporn Award. The Sporn Award is a student-selected award for teaching excellence in introductory subjects, and is presented in memory of Dr. and Mrs. Philip J. Sporn.

Over the past two years, Dr. Artis has taught AOE 2104 Introduction to Aerospace Engineering, and assisted with AOE 4065/4066 Aircraft Design. In addition, he has served as faculty advisor for several design teams and clubs, including Hypertop and VT Rocketry. He is also an active participant with the Corps of Cadets and their activities. As winner, Dr. Artis has been inducted into the Virginia Tech Academy of Teaching Excellence. On behalf of the students, we thank you for your service and say congratulations!

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