

# HAMPDEN- SYDNEY COLLEGE



## Tiger Tracks

Studies and career options  
for Hampden-Sydney students  
interested in a career  
in Engineering

*Hampden-Sydney offers  
a robust education  
that motivates students  
to think critically,  
respond to the world  
persuasively, and  
flourish personally.  
Hampden-Sydney  
graduates employ the  
intellectual competence  
acquired from their  
liberal arts education to  
excel in all areas within  
their chosen profession.*

YOU CAN DO ANYTHING  
WITH A DEGREE FROM  
HAMPDEN-SYDNEY COLLEGE

WWW.HSC.EDU

## PREPARING FOR A CAREER IN Engineering

### MINDSET

Engineering can be a largely self-selecting profession. To succeed as an engineer quantitative proficiency and an ability to solve complex problems are required. Although engineering professionals can find themselves working alone on quantitative problems, entire projects are very team-oriented, so it is important to be able to cooperate with other members of your team and maintain a strong professional network. There are many different specialty fields in engineering, so it is worth the time to explore the discipline fully.

### COURSES

Our Science and Mathematics curriculum will prepare you for opportunities in the engineering sector. Specifically, Physics, Chemistry, Biology, Math, or Computer Science will provide you with foundational skills required for more advanced study. An option provided at H-SC is our unique dual-degree program in engineering with the University of Virginia, in which the student obtains a BS degree from H-SC and an MS in Engineering from UVa. For more information, visit the academic catalogue online at [www.hsc.edu/Academics.html](http://www.hsc.edu/Academics.html), where you can select the link for Pre-Engineering.

### PROGRAMS AND EXTRACURRICULAR ACTIVITIES

Depending on which specific field of engineering is chosen, the student should major in a science most closely related to that field. For example, mechanical engineering is best associated with physics while biomedical engineering is best suited to either biology or chemistry. Regardless of your major, interested students can engage with engineering by joining the Society for Physics Students, attending frequent talks by recent graduates, and registering for Advanced Labs.

- Society for Physics Students: The Society of Physics Students (SPS) consists of students in all fields of science and other disciplines who share an interest in physics. The main mission behind SPS is to teach its members about leadership, personal interaction, and experience that will help in future work and job opportunities.
- Lecture Series: The Natural Sciences division (Biology, Chemistry, Math and Computer Science, and Physics and Astronomy) here at Hampden-Sydney College regularly sponsors lectures by distinguished alumni and guests. Visit the College Calendar to learn more, or keep an eye out on campus for event flyers.
- Advanced Labs: In the Physics and Astronomy department, advanced labs are individual projects in an area of research conducted by a faculty member. These projects are excellent examples of what will be expected of students if they decide to continue their education in graduate school either in engineering or physics, because they require the student to synthesize all of the information they have learned in their classes. Offered every semester as Physics 351 in the fall and Physics 352 in the spring, these courses offer varying levels of credit (1 to 3 hours) depending on the scope of the project. Research projects are typically advertised in the department by faculty primarily to juniors and seniors, but sophomores and freshmen are encouraged to discuss research opportunities with professors. Other departments in the Natural Sciences Division offer similar opportunities to their students.

### PREPARATION FOR EMPLOYMENT

In addition to technical knowledge, engineers benefit from the intangible skills that are taught at H-SC. Engineers must write and speak effectively, so that they can descriptively yet simply communicate their ideas to associates and clients. The H-SC rhetoric program provides a rigorous learning laboratory to develop your written and oral rhetorical skills. These skills are enhanced in the introductory and advanced lab sequences offered in the Physics and Astronomy department. The Career Education and Vocational Reflection Office can assist you with interview preparation, career research, and internship searching. H-SC men have frequently been selected for Research Experience for Undergraduates (REU) programs across the country. H-SC men can also pursue summer research projects through the Honors Program.

### GRADUATE STUDY

If you intend to go to graduate school, it is vital to prepare for the Graduate Record Exam (GRE). The Career Education and Vocational Reflection Office offers a number of preparation resources, as does the Bortz Library. GRE test dates are scheduled online and can be taken at a number of test centers nationwide. The types of graduate programs vary widely in emphasis, and even include some programs like Engineering Management, which might interest students with a passion for engineering and business. It is also vital to determine how pursuing a master's degree or Ph.D will impact your career goals. Beyond graduate school, many engineers also pursue certification through the rigorous Professional Engineer exam.

# HAMPDEN- SYDNEY COLLEGE

Forming good  
men and good citizens

*“Just because  
it’s science  
doesn’t mean  
it’s not  
engineering.  
Engineering is  
applied science.”*

H. O. “TREY” THURMAN III  
Associate Professor  
of Physics & Astronomy,  
Hampden-Sydney College

RECENT ENGINEERING SCHOOLS  
ATTENDED BY OUR GRADUATES



## BIKASH ACHARYA '09

University of Maryland School of Engineering, PhD, Expected Graduation: 2014

Bikash graduated *summa cum laude*, triple-majoring in physics, applied mathematics, and mathematical economics, with honors in physics. He received two mathematics awards in his junior year and physics and math awards in his senior year. Bikash served as the President of the International Club, the Society of Physics students, and was an active brother of Alpha Chi Sigma professional fraternity. At Maryland, he is studying heat transfer and fluid mechanics, researching the application of electro-hydrodynamics for particle separation.

## RYAN NEWCOMB '07

Engineer & General Projects Organization GoM, BP America

A Venable Scholar at Hampden-Sydney, Ryan studied physics and applied mathematics, graduating with honors in physics, *magna cum laude*. He did atomic optics research here and worked on microelectrical mechanical systems at Georgia Institute of Technology. Ryan played rugby, was a brother in Alpha Chi Sigma, and was elected to Phi Beta Kappa, Pi Mu Epsilon, and Chi Beta Phi. He has earned an M.S. in mechanical engineering, in combustion science, at UT-Austin. As a Topsides Project Engineer in BP's Global Projects, Ryan oversees major capital projects.



## MATT WELLS '07

Northrop Grumman

Matt graduated with a Bachelor of Science in Physics and significant coursework in Applied Mathematics. While at HSC he served as Vice President of the Society of Physics Students as well as the Fly-Fishing club. He went on to Old Dominion University where he obtained a Master of Science degree in Aerospace Engineering in 2010. His Master's thesis, "An Aerodynamic Analysis of an Urban Magnetic Levitation Vehicle," was presented at the American Institute of Aeronautic and Astronautic Aerospace Sciences conference in January 2010, and has been published in the journal Rail and Rapid Transit. After earning his M.S., he worked at StarChase where he developed life-saving technology to assist law enforcement and government agencies at home and abroad. Matt joined Northrop Grumman in 2011 as a Mechanical Systems Engineer at NASA Langley Research Center where he serves as the AIAA Hampton Roads Young Professional Committee chair. At NASA Langley he has designed Mechanical Ground Support Equipment for a Space Station bound instrument called SAGE III, and high temperature materials for hypersonic reentry of atmospheric planets and moons.

## JAMES MILLER '05

Fellow, Department of Energy, Washington, D.C.

James was a *summa cum laude* Phi Beta Kappa Physics major while at Hampden-Sydney, a brother of the Alpha Chi Sigma fraternity, and Society of 1791 member. He also served on the student court, presided as head resident adviser and orientation chairman, and traveled with Beyond the Hill on ten service trips. In 2013 James received his Ph.D. in nuclear engineering through Texas A&M University, where his doctoral research at Los Alamos National Laboratory developed advanced methodologies for uranium detection in biological matrices for nuclear forensics.



## SCOTT THOMPSON '04

Engineer, Air Force Research Lab, Dayton, OH

A brother in Alpha Chi Sigma, a member of the Society of Physics Students and Chi Beta Phi, Scott graduated *magna cum laude* with a degree in physics with honors. As a rising senior, Scott landed an internship in systems engineering. After graduating he went on to develop Bayesian Network algorithms for missile defense. In 2008, he graduated from George Mason University with a Master's in Computational Science, and was hired by EOIR Technologies to integrate video algorithms for surveillance and intelligence with cloud computing software. Scott is currently an engineer with the Air Force Research Lab employed directly by the Air Force as a civilian.

## PATRICK MARTIN '02

Assistant Professor of Electrical & Computer Engineering, York College

Patrick graduated *summa cum laude* with majors in physics and in applied mathematics. He was president of Alpha Chi Sigma and a member of Phi Beta Kappa and Omicron Delta Kappa. He earned an M.S. in Electrical Engineering at the University of Maryland. Following two years of work in the industry, he returned to school and received his Ph.D. in electrical and computer engineering at Georgia Institute of Technology. He is an assistant professor of electrical and computer engineering at York College of Pennsylvania, teaching courses in circuits, physics, control theory, and robotics.



IF YOU WOULD LIKE TO SPEAK WITH MEN LIKE THESE, PLEASE CONTACT THE CAREER EDUCATION AND VOCATIONAL REFLECTION OFFICE AT (434) 223-6105 OR VISIT [WWW.HSC.EDU/CAREER-EDUCATION.HTML](http://WWW.HSC.EDU/CAREER-EDUCATION.HTML) FOR MORE INFORMATION ON PRE-ENGINEERING, CONTACT DR. TREY THURMAN, [HTHURMAN@HSC.EDU](mailto:HTHURMAN@HSC.EDU)