

# Gary K. Nave, Jr.

*Ph.D. Candidate in Engineering Mechanics  
Virginia Tech*

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## Research Interests

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My research focuses on problems involving motion through fluids such as air and water, viewed through the lens of dynamical systems to understand global features. Through the use of simplified models, we can gain clear insights into the full complexity of these problems. In my graduate work, I have focused on flow induced vibration of tandem cylinders and the dynamics of simple gliders. I have conducted this research through an interdisciplinary research program, which has exposed me to natural examples and biologists working in similar areas.

## Teaching Interests

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I am interested in teaching a broad range of classes, particularly in the areas of dynamics and fluid mechanics. I would be excited to incorporate current research into higher level classes, in addition to helping students early in their careers build a strong foundation. I am very passionate about the fundamentals of mechanics, and my teaching interests reflect this as well. I want the courses I teach to be welcoming and engaging environments where students are excited to try new ideas and aren't afraid of failure. I like to teach through examples and involve students in trying techniques for themselves.

## Education

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2018 **Ph.D. Engineering Mechanics**, *Virginia Tech*, Blacksburg, VA.

Advisors: Mark Stremmer and Shane Ross

Graduate Certificate: Preparing the Future Professoriate

2012 **B.S. Engineering Science and Mechanics**, *Virginia Tech*, Blacksburg, VA.

Senior Design: Dispersed sensing through chaotic motion

Minor: Mathematics

## Professional Development

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June 2016 **Global Perspectives Program**, *Switzerland, France, and Italy*.

The global perspectives program is a selective program run by Dean DePauw of the graduate school at Virginia Tech. The program consists of two weeks of visiting higher education institutions primarily in Switzerland. Our group visited a total of 8 universities of varying size and emphasis and had a number of conversations with students, staff, and faculty about the future of higher education in Europe and around the world.

2014 **VTKnowledgeWorks Tech Transfer Challenge**, *Finalist*.

In 2014, I led a team that was a finalist in the Tech Transfer Challenge, an entrepreneurial pitch competition for technology transfer from the research lab to the market. Our team name was "Hydrokinetic Energy Systems"

2014 **ACC Clean Energy Challenge**, *Semi-finalist*.

The ACC Clean Energy Challenge was a competition for 12 schools in the Southeast United States. One team from each school with a technology based on clean energy was chosen as a semi-finalist. Our project was entitled “enVIV: Energy from Vortex Induced Vibration”

## Awards & Recognition

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2016-2017 VT BioTrans IGEP Fellowship

2014-2016 NSF MultiSTEPS IGERT Traineeship

Interdisciplinary research assistantship focused on material transport at the boundary between biologists and engineers. In the first year of the program, students conduct research projects with 3 different advisors in different fields to grow as interdisciplinary researchers. My research rotations were with Tess Thompson (Biological Systems Engineering), Shane Ross (Engineering Mechanics), and Jake Socha (Engineering Mechanics).

2014 Manuel Stein Scholarship

2014 Virginia Tech College of Engineering Outstanding M.S. Student

2010 Ken and Loretta Reifsneider Scholarship

## Publications and Presentations

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### Articles

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Chang, Brian, **Gary Nave**, and Sunghwan Jung (2012). “Drop formation from a wettable nozzle”. In: *Communications in Nonlinear Science and Numerical Simulation* 17.5, pp. 2045–2051.

**Nave, Gary K.** and Mark A. Stremler. “Flow-induced vibration of tandem, tethered cylinders”. In preparation.

### Conference Proceedings

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**Nave, Gary**, Mark Stremler, and Shane D. Ross (2016). “Wake stiffness and its application: oscillating cylinders and flying snakes”. In: *Proceedings of the 24th International Congress on Theoretical and Applied Mechanics (ICTAM)*. Montreal, Canada.

Yeaton, Isaac J., Grant A. Baumgardner, Talia M. Weiss, **Gary Nave**, Shane D. Ross, and John J. Socha (2016). *Snakes in a Cube: high-resolution kinematics of gliding in flying snakes*. Presented at the Society for Integrative and Comparative Biology. Portland, OR.

**Nave, Gary** and Mark Stremler (2015). *Regimes of flow induced vibration for tandem, tethered cylinders*. Presented at the 68th Annual American Physical Society Division of Fluid Dynamics Meeting. Boston, MA.

Yeaton, Isaac J., Grant A. Baumgardner, Talia M. Weiss, **Gary Nave**, Shane D. Ross, and John J. Socha (2015). *What’s its wave? A 3D analysis of flying snake locomotion*. Presented at the 68th Annual American Physical Society Division of Fluid Dynamics Meeting. Boston, MA.

**Nave, Gary**, Tyler Michael, Pavlos Vlachos, and Mark Stremler (2014). *Flow-induced oscillations of tandem tethered cylinders in a channel flow*. Presented at the 67th Annual American Physical Society Division of Fluid Dynamics Meeting. San Francisco, CA.

## Teaching

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Taught guest lectures in the following courses:

- ESM 6314, Advanced Dynamics
- ESM 2304, Dynamics
- ENGE 1216, Fundamentals of Engineering

## Service

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- 2016-Pres **Mentor**, Virginia Tech Early Engineering Mentoring Program
- 2016-Pres **Funding Programs Chair**, Graduate Student Assembly (GSA)
- 2016-Pres **Founder and President**, Graduate Engineering Mechanics Society
- 2015-Pres **Member**, GSA Committee on Graduate Inclusion and Diversity Policies
- 2014-Pres **Delegate**, Graduate Student Assembly
  - 2015 **Mentor**, Graduate Undergraduate Mentoring Program
  - 2015 **Member**, Virginia Tech Graduate Student of the Year Selection Committee
- 2014-15 **Advisor**, undergraduate Senior Design team
- 2012-16 **Mentor**, Student Transition to Engineering Program

## Professional Experience

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- 2012-2014 **Director of Undergraduate Recruiting**, *Virginia Tech College of Engineering*, Blacksburg, VA.  
Responsibilities: Coordinated all recruiting activities for the College of Engineering. Led the Dean's Team, a group of 38 undergraduate students who aid in recruiting activities. Planned and coordinated annual Engineering Open House.
- 2011 **Project Manager**, *Project SPY*, Christiansburg, VA.  
Responsibilities: Coordinated volunteer construction projects with middle/high school students. Inspected homes. Prepared Documentation for projects. Oversaw/trained students and adult leaders. Total of 43 projects in 7 weeks.