

Michelle E. Pede
email: mpede@syr.edu

Education

P.h.D. in Progress, Bioengineering, Syracuse University *2014 - Present*
GPA 4.0/4.0

Research Focus: Developing stimuli-responsive materials for tissue engineering applications

M.S., Mechanical Engineering, Clarkson University *2009 - 2012*
GPA 4.0/4.0

Thesis title: "Boluses formed by the shoaling of internal solitary waves"

B.S., Chemical Engineering, Clarkson University *2004 - 2008*
Concentration in Biomolecular Engineering
GPA 4.0/4.0

Research Experience

Graduate Researcher *2014-Present*
Syracuse University, Syracuse, NY
Advisor: Dr. James H. Henderson

- Working on a team designing a thermal-responsive, drug-releasing, biodegradable bone graft to reduce invasiveness of surgeries required to treat traumatic bone injuries
- Developing photo-sensitive polymers that can alter their shape in response to visible light and exploring possible tissue engineering applications
- Cultivating skills in polymer synthesis, drug and protein delivery/release, material properties analysis, cell culture, in-cell protein activity assays, and spectroscopy
- Presenting research during monthly group meetings, improving scientific reasoning and communication skills
- Managing and maintaining instruments including vacuum ovens and size-exclusion chromatography systems
- Acting as Henderson lab manager for the 2017-2018 year, ordering lab supplies and organizing meetings and workshops

Research Assistant *2009-2011*
Clarkson University, Potsdam, NY
Advisor: Dr. Daniel Valentine

- Studied the shoaling of internal solitary waves computationally by solving fluid transport equations
- Modified a finite volume, Fortran code that solved the incompressible, two-dimensional, Navier-Stokes equations to simulate the waves

Undergraduate Researcher *Summer 2008*
Clarkson University, Potsdam, NY
Advisor: Dr. Daniel Valentine

- Investigated the fluid mechanics of flagellated microorganisms implementing a high order finite element code that solves the incompressible Navier-Stokes equations

Teaching Experience - Instructor

Professional Lecturer - School of Engineering
University of Wyoming, Laramie, WY

August 2012 - December 2012

- Instructed a fall 2012 session (70 students) of Mechanics of Materials, ES2410, a sophomore level, core engineering course
- Prepared and gave lectures, held office hours, prepared student assessments, and managed teaching assistants

Adjunct Instructor - Mathematics Department
Laramie County Community College, LCCC - ACC, Laramie, WY

August 2012 - December 2012

- Instructed two sections (40 students) of Basics of Algebra, MATH921, through LCCC on the University of Wyoming campus
- Course was for University of Wyoming students that needed to meet mathematics pre-requisites before beginning higher level classes in their curriculum
- Responsibilities were similar to professional lecturer position listed above

Instructor - Department of Mechanical and Aeronautical Engineering
Clarkson University, Potsdam, NY

May 2011 - May 2012

- Instructed a summer 2011 session (10 students) and two fall 2011 sessions (110 students) of Fluid Mechanics, ES330, a junior level engineering course
- Instructed a spring 2012 session (20 students) of Strength of Materials, ES222, a sophomore level engineering course
- Obtained overall instructor evaluation scores above the university average
- Recognized for teaching excellence for the Fall 2011 semester
- Experiences were similar to those listed for instructing positions above

Teaching Experience - Teaching Assistant

Syracuse University Graduate Teaching Assistant
Syracuse University, Syracuse, NY

Fall 2015-Present

- Served as the teaching assistant for Introduction to Engineering and Computer Science (ECS101) (Fall 2015) and Tissue Engineering (BEN541) (Spring 2016)
- Assisted students in office hours, graded assignments, and periodically covered lectures
- Nominated for the Outstanding Teaching Assistant Award in 2016

Clarkson University Graduate Teaching Assistant
Clarkson University, Potsdam, NY

Spring 2010 - Spring 2011

- Served as the teaching assistant for Aerodynamics, ME425, (Spring 2010 and Spring 2011), Fluid Mechanics, ES330 (Fall 2010), and Thermodynamic Systems Engineering, ME310 (Spring 2011)
- Responsibilities similar to those listed for Syracuse University Graduate Teaching Assistant

Undergraduate Teaching Assistant
Clarkson University, Potsdam, NY

2006

- Led a Calculus 3 recitation that reinforced the material students learned in their regular lectures
- Graded weekly assignments for Thermodynamics (ES340) course and provided constructive feedback

Undergraduate Work Experience

Silicon Chemical Corporation

Summer 2007

Vancouver, WA

- Worked in Potsdam, NY with Clarkson University Professor Ross Taylor and Silicon Chemical Corporation in simulating the company's process of silicon manufacturing and purification
- Modeled the processes in COCO (A process flowsheeting program) and ChemSep (A distillation column modeling program)

Fuegel Engineering

Summer 2006

Syracuse, NY

- Held a summer internship position converting blueprints to AutoCAD drawings
- Became acquainted with the environment of engineering firms

Publications

Pede ME and Henderson JH. Use of photo-activatable materials for the study of cell biomechanics and mechanobiology. *Invited chapter in: Polymer and Photonic Materials Towards Medical Breakthroughs, Springer, 2018, edited by J. Van Hoorick, H. Ottevaere, H. Thienpont, P. Dubruel, and S. Van Vlierberghe.*

Conferences

Michelle E. Pede and D. T. Valentine "Boluses leading the run up of shoaling internal waves of elevation" 64th Annual Meeting of the Division of Fluid Dynamics of the American Physical Society, Baltimore, Maryland, November 2011.

Michelle E. Pede and D. T. Valentine "Vortex projectiles formed during the shoaling of internal solitary waves," Graduate Research Symposium, Clarkson University, Potsdam, NY, August 2011.

Services

Graduate Student Faculty Search Committee

2015 - 2017

Syracuse University, Syracuse, NY

- Participated on a student committee involved in hiring new faculty candidates for the Biomedical and Chemical Engineering Department

Graduate Research Symposium Organizing Committee

Summer 2011

Clarkson University, Potsdam, NY

Computer Skills

Microsoft Office, MATLAB, Adobe Illustrator, Fortran, Simulink, HYSYS, Chemsep, COCO, AutoCAD, Fluent, LaTeX