Charles E. Taylor, Ph.D.

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Curriculum Vitae

Education

Virginia Commonwealth University (VCU), Richmond, VA
PhD in Biomedical Engineering - Graduated 2013

University of California, San Diego (UCSD) -Jacobs School of Engineering, La Jolla, CA
BS in Bioengineering – Graduated 2005

Fellowships and Appointments

August 2017 - Present	Mechanical Engineering Board of Regents Fellowship *University of Louisiana, Lafayette*
June 2016 - Present	Graduate Coordinator, Mechanical Engineering Department *University of Louisiana, Lafayette*
October 2013 - October 2014	Computing and Visualization Enterprise (CaVE) Fellowship *University of Louisiana, Lafayette (1 year appointment)*

Work Experience

August 2013 - Present	University of Louisiana at Lafayette Mechanical Engineering Department; *Assistant Professor (Tenure-Track)* Establishing biomedical engineering research at this institution in the area of artificial organs through investigations focused on cardiovascular system characterization and simulation (*in silico* and *in vitro*). The research mission is to innovate the development and safety assessment processes for cardiovascular medical devices by translating robust industrial tools to the field of artificial organs. Research projects have included prototyping novel blood pump hardware with biosignal triggering, additive manufactured TAVI stent fatigue analysis, semi-autonomous catheter robot evaluation, electrospinning heart valve structures using 3D printed targets, and investigating the decalcification of aortic valve root landing sites for TAVI preparation. Author of the Biomedical Engineering minor program being implemented in Fall 2019.
September 2009 - May 2013	VCU Biomedical Engineering Department, Richmond, VA; *Funded Doctoral Research Assistant Position (Full-Time)* Research focused on developing automated mock circulatory loop systems used in the evaluation of left ventricular assist devices and prosthetic heart valves. Implemented methods included *in silico* physical system modeling, *in vitro* system fabrication, and anatomical model construction. Development tools utilized: control logic design software, PCB fabrication, microcontroller programming (Microchip PIC18), controller assessment (HIL and PIL), real-time operating system development (Simulink xPC and LabView RT), anatomical modeling (image segmentation and prototype construction), user-interface programming, and hardware networking. Teaching support was provided bioinstrumentation, digital signal processing, and basic circuits.
July 2005 - May 2008	Kalypsys, Inc.: Pharmaceutical Sciences, San Diego, CA; *Senior Research Associate (Salary)* Responsible for the development and validation of automated ADME assays. Instrumental in the successful integration of work surrounding WO/2006/089103 patent; integration of a multichannel LC/MS system with an automated ADME workstation. Designed and constructed patent pending stability chamber integration with a liquid handling system. Co-creator of automated bioanalytical study management and sample preparation system. Managed company purity assay. Contributed to structure elucidation projects by performing accurate mass measurements using a time-of-flight mass spectrometer. Represented the department on therapeutic project teams.

Work Experience
(Continued)

June 2004 -   Stanford Medical Center: Biomedical Engineering, Palo Alto, CA;
August 2004   *Student Intern (Full-time)*
         Internship included rotating through all major departments of the Stanford Medical Center in order to provide training on the broad spectrum of devices and technology utilized by the facility. The training was centered around performing service and repair on various biomedical devices. Documentation on specific device certifications can be provided upon request.

July 2002 -   Charles River Laboratories: Transgenic Services, San Diego, CA;
January 2004   *Laboratory Technician (Part-time)*
         Duties performed included certifying isolation environments for reuse, ensuring product quality, managing daily operations for habitats that contained more than 750 animals. Special consideration was given to security of projects, condition of habitats and protocol of laboratory animal rights.

Patent Work

Walsh, John P., Charles Taylor, Qiner Yang, and Robyn Rourick. "BioAnalytical Manager System." World Intellectual Property Organization. *Patent Pending.*

Taylor, Charles E., John P. Walsh, and Robyn A. Rourick. "A Modular Chemical and Photo Stability Chamber." World Intellectual Property Organization. *Patent Pending.*

Taylor, Charles E. "Triggered Piston Pump." Non-Provisional Patent , USPTO (Application Number: 62567916)

Journal Publications (12)

King, J.M., and **Taylor, C.E.** "In Silico Investigation of a Pump Mimic Device for Replicating the Functionality of a Mechanical Circulatory Support Design." Medical Devices Evidence and Research, Under Review

Danh, V., Akinyemi, O.S., Taylor, C.E., Frank, J.T., Jiang, L. "Effect of injector swirl number on near-field spray characteristics of a novel twin-fluid injector." Exp Fluids (2019) 60: 80. https://doi.org/10.1007/s00348-019-2721-6

King, J.M., Bergeron, C.A. and **Taylor, C.E.** "Finite state machine implementation for left ventricle modeling and control." BioMedical Engineering Online, DOI: 10.1186/s12938-019-0628-3

Ritter, K., Morgan, A.M., **Taylor, C.E**., and Chambers, T.L. "Multilevel Performance Evaluation of Nvidia Grid VCA Using Iray and V-Ray Rendering Engines in 3DS Max Design.;" Internet of Things and Cloud Computing, Volume 6, Issue 2, June 2018, Pages: 36-48, DOI: 10.11648/j.iotcc.20180602.11

King, J.M., and **Taylor, C.E.** "Development of an adaptive pulmonary simulator for in vitro analysis of patient populations and patient-specific data." Computer Methods and Programs in Biomedicine, Volume 161, pp. 93-102, 2018, DOI: 10.1016/j.cmpb.2018.04.007

Johnston, R.P., **Taylor, C.E.,** and Massiha, G.H., "Implementing 3D Printer to Produce Parts in Medical Applications." IJRA. Vol. 6, No. 3, September 2017, pp. 190-201. DOI: 10.11591/ijra.v6i3.pp.190-201

Smith, T.S. and **Taylor, C.E.** " Monograph: Psychometric Protocols for Psychological, Educational, and Vocational Testing for Persons with Blindness and Visual Impairments." The Rehab Professional 25(2). 2017

Mahmood, F., Owais, K., **Taylor, C.,** Montealegre-Gallegos, M., Manning, W., Matyal, R., and Khabbaz, K. R., 2014, "Three-Dimensional Printing of Mitral Valve Using Echocardiographic Data," J Am Coll Cardiol Img, **8**(2), pp. 227–229. DOI:10.1016/j.jcmg.2014.06.020

Owais, K., **Taylor, C. E.,** Jiang, L., Khabbaz, K. R., Montealegre-Gallegos, M., Matyal, R., Gorman, J. H., Gorman, R. C., and Mahmood, F., 2014, "Tricuspid Annulus: A Three-Dimensional Deconstruction and Reconstruction," The Annals of Thoracic Surgery, **98**(5), pp. 1536–42. DOI: 10.1016/j.athoracsur.2014.07.005

Taylor, C.E. and Miller, G.E. "Implementation of an automated peripheral resistance device in a mock circulatory loop with characterization of performance values using Simulink™ Simscape® and Parameter Estimation™." Journal of Medical Devices, Vol. 6, No. 4, Article 045001. DOI: 10.1115/1.4007458

Taylor, C.E, Dziczkowski, Z.W. and Miller, G.E. "Automation of the Harvard Apparatus Pulsatile Blood Pump." Journal of Medical Devices, Vol. 6, No. 4, Article 045002. DOI: 10.1115/1.4007637

Taylor, C.E. and Miller, G.E. "Mock Circulatory Loop Compliance Chamber Employing a Novel Real-Time Control Process." Journal of Medical Devices, Vol. 6, No. 4, Article 045003. DOI: 10.1115/1.4007943

Charles E. Taylor, Ph.D.

Conference Papers (12)

V. Danh, L. Jiang, J.T. Frank, and **C.E. Taylor**, "Effect of Injector Swirl Number on Spray Characteristics of a Novel Swirl-Burst Injector." Proceedings of the 2018 Spring Technical Meeting of the Central States Section of The Combustion Institute, Minneapolis, MN, USA, 2019.

J. Primeaux, **C.E. Taylor**, J.M. King, and C.A. Bergeron, "Computational Fluid Dynamic Evaluation of an Aortic Bench-Top Model," *The Journal of the Mississippi Academy of Sciences, Vol 63, Issue 2,* Charlotte, NC, USA, 2016, pp. 216-222. ISSN 0076-9436. http://sbec18.org/wp-content/uploads/2018/03/MAS-Vol-63-no-2-supplemental.pdf

A. Seibi, M. Chaari, A. Temani, M. Mokhtari, and **C.E. Taylor**, "Design of a New Testing Fixture for Tangential Stress Measurements in Pipes," *Proceedings of the ASME 2017 International Mechanical Engineering Congress and Exposition*, Nov. 2017. DOI: 10.1115/IMECE2017-72490

J. Friedberg, M. Chavez, J. Young, J. Daigle and **C.E. Taylor**, "Liquid Property Control System for LVAD ISO 5198 Testing and Mock Circulatory Loop Simulations," *Proceedings of the 32nd Southern Biomedical Engineering Conference (SBEC)*, Shreveport, LA, USA, 2016, pp. 33-34. DOI: 10.1109/SBEC.2016.62

B.L. Delcambre, J.M. King and **C.E. Taylor**, "Design of Patient Testing Models for Cardiovascular Medical Device in Silico and In Vitro Assessment," *Proceedings of the 32nd Southern Biomedical Engineering Conference (SBEC)*, Shreveport, LA, USA, 2016, pp. 35-36. DOI: 10.1109/SBEC.2016.86

C.P. Lagarde, L.R. Molaison, C.A. Bergeron and **C.E. Taylor**, "Anatomical Model Generator Based on Published Clinical Data on Cardiovascular Anatomy," *Proceedings of the 32nd Southern Biomedical Engineering Conference (SBEC)*, Shreveport, LA, USA, 2016, pp. 37-38. DOI: 10.1109/SBEC.2016.87

J.M. King, R.W. Kisor, A.D. Morgan and **C.E. Taylor**, "Simulation of Left Atrial Pressure and Flow Dynamics Using an Adaptable Control Architecture in a Mock Circulatory Loop," *Proceedings of the 32nd Southern Biomedical Engineering Conference (SBEC)*, Shreveport, LA, USA, 2016, pp. 39-40. DOI: 10.1109/SBEC.2016.57

C.P. Lagarde, C.A. Bergeron and **C.E. Taylor**, "Aortic and Mitral Heart Valves for Computational and Experimental Analysis," *Proceedings of the 32nd Southern Biomedical Engineering Conference (SBEC)*, Shreveport, LA, USA, 2016, pp. 119-120. DOI: 10.1109/SBEC.2016.60

L.R. Molaison, O.A. Ojala, S.J. Warren, C. McIntyre and **C.E. Taylor**, "Characterization of a Shear Thinning Fluid System for Cardiovascular Medical Device Assessment," *Proceedings of the 32nd Southern Biomedical Engineering Conference (SBEC)*, Shreveport, LA, USA, 2016, pp. 122-123. DOI: 10.1109/SBEC.2016.89

J. Richard, R. Jeansonne, J. Hebert, G. Stoute, J.M. King and **C.E. Taylor**, "Thermal Management System for In Vitro Evalution of Circulatory Assist Devices at In Vivo Temperatures," *Proceedings of the 32nd Southern Biomedical Engineering Conference (SBEC)*, Shreveport, LA, USA, 2016, pp. 153-154. DOI: 10.1109/SBEC.2016.85

J.M. King, C.A. Bergeron, K.C. Manthripragada, and **C.E. Taylor**, "Simulated Lvad Pump Mimic Device For Analyzing Safety, Risk And Reliability Of Designs.*" Proceedings of the Fifteenth Annual Early Career Technical Conference*, Birmingham, AL, USA, Vol. 13, No. 3, pp. 82-88.

K. C. Manthripragada, C. P. Lagarde, and **C. E. Taylor**, "Developing a Physical Model of an Electromechanically Actuated Valve to Model Valve Disease In Vitro," *Proceedings of the ASME 2014 International Mechanical Engineering Congress and Exposition*, vol. 3, no. 1, p. V003T03A051, Nov. 2014. DOI: 10.1115/IMECE2014-40268

Funding

Funding
(Continued)

1/2015 – 6/2015.   Charles E. Taylor (PI), 100%. "Synthesis of Aortic Valve Models and Tracking of Heart Valve Leaflet Motion." Undergraduate Research Mini-Grant, Undergraduate Research Committee, $2,000

1/2015 – 6/2015.   Charles E. Taylor (PI), 100%. "Instrumentation and Electronics Lab Stations." FA15 STEP Grant, STEP Committee, $26,691.20

Invited Talks

Charles E. Taylor, "The Cajun Artificial Heart Laboratory." Poitiers University, Poitiers, France, 2018.

Charles E. Taylor, "Designing for Performance and Safety in Cardiovascular Medical Devices: Tools and Methods of the Cajun Artificial Heart Laboratory." Undergraduate Research Conference, Lafayette, LA 2016.

Charles E. Taylor, "Patient Population Screening and Event Testing Using Simscape Models and Programmable Mock Loop." Rotary Club of Lafayette, Lafayette, LA 2016.

Charles E. Taylor, "Looking to the future: safety, risk, and reliability of medical devices." Go RED for Women AHA Event, Lafayette, LA 2016.

Charles E. Taylor, "Patient Safety in Medical Devices." TedX Vermillion Street; Lafayette, LA 2015.

Charles E. Taylor, "Redefining Safety Assessment in Cardiovascular Medical Devices." International Society of Automation Lafayette Section Meeting; Lafayette, LA 2015.

Charles E. Taylor, "Cajun Artificial Heart Laboratory: Safety Assessment in Cardiovascular Medical Devices." Rotary Club of Abbeville; Abbeville, LA 2015

Presentations (54 Total)

N. Deshotel, J.T. Frank, and **C.E. Taylor**, "Micro-machining of injector heads for dual-phase blurring applications." Poster at the Lamar University STEM Conference, Beaumont, TX 2018.

J.Comeaux, B. Albarado, T. Graves, J.T. Frank, and **C.E. Taylor**. "Modular DLP SLA system with modular UV light source and tall build volume." Poster at the Lamar University STEM Conference, Beaumont, TX 2018.

M. Neill, S. Judice, G. Maurin, and **C.E. Taylor**. "Electrospinning chamber for cardiovascular tissue testing." Poster at the Lamar University STEM Conference, Beaumont, TX 2018.

C.E. Taylor, C.A. Bergeron, J.M. King, and Y. Qudsi. "Parametric Anatomical Models for Cardiovascular Device Evaluation." Podium presentation at the Virtual Physiological Human Conference, Zaragoza, Spain 2018.

C.E. Taylor, J.M. King. "Patient Profiles and Clinical Event Simulations in a Left Heart Simulator." Poster presentation at the Virtual Physiological Human Conference, Zaragoza, Spain 2018.

J. Primeaux, **C.E. Taylor**, J.M. King, and C.A. Bergeron, "Computational Fluid Dynamic Evaluation of an Aortic Bench-Top Model," Podium presentation at the 34th Southern Biomedical Engineering Conference; Charlotte, NC, USA, 2018.

J.M. King and **C.E. Taylor**, "Development of a Pulmonary Simulator Utilizing Windkessel Modeling Techniques for Simulating Various Patient Populations within a Mock Circulatory System." 10th Anniversary Multiscale Modeling Consortium Meeting, Washington D.C. 2017

C.A. Bergeron and **C.E. Taylor**, "Parametric Anatomical CAD Model Generation with Silicone Phantom Fabrication Tools for Validation Studies." 10th Anniversary Multiscale Modeling Consortium Meeting, Washington D.C. 2017

J. Richard, R. Jeansonne, J. Hebert, G. Stout, J.M. King and **C.E. Taylor**, "Thermal management system for in vitro evaluation of circulatory assist devices at in vivo temperatures." Podium presentation at the 32nd Southern Biomedical Engineering Conference; Shreveport, LA 2016.

F. Fazal-ur-Rehman, J. Wolf, R.W. Kisor and **C.E. Taylor**, "Spin coating of 3D printed cardiovascular anatomical models; controlling material properties on complex shapes." Poster presentation at the 32nd Southern Biomedical Engineering Conference; Shreveport, LA 2016. p. 84. DOI: 10.1109/SBEC.2016.50

J. Thibodeaux, R.W. Kisor, J.M. King and **C.E. Taylor**, "Flow control device for branching arteries of the aortic arch in a mock circulatory loop." Poster presentation at the 32nd Southern Biomedical Engineering Conference; Shreveport, LA 2016. p. 128. DOI: 10.1109/SBEC.2016.51

B. Delcambre and **C.E. Taylor**, "Design of patient testing models for cardiovascular medical device in silico and in vitro assessment." Podium presentation at the 32nd Southern Biomedical Engineering Conference; Shreveport, LA 2016.

J.M. King, R.W. Kisor, A. Morgan and **C.E. Taylor**, "Simulation of left atrial pressure and flow dynamics using an adaptable control architecture in a mock circulatory loop." Podium presentation at the 32nd Southern Biomedical Engineering Conference; Shreveport, LA 2016.

C. Lagarde, L. Molaison, C. Bergeron and **C.E. Taylor**, "Anatomical model generator based on published clinical data on cardiovascular anatomy." Podium presentation at the 32nd Southern Biomedical Engineering Conference; Shreveport, LA 2016.

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L. Molaison, O. Ojala, S. Warren, C. McIntyre and **C.E. Taylor**, "Characterization of a shear thinning fluid system for cardiovascular medical device assessment." Poster presentation at the 32nd Southern Biomedical Engineering Conference; Shreveport, LA 2016.

J. Friedberg, M. Chavez, J. Young, J. Daigle and **C.E. Taylor**, "Liquid property control system for LVAD ISO 5198 testing and mock circulatory loop simulations." Podium presentation at the 32nd Southern Biomedical Engineering Conference; Shreveport, LA 2016.

J.T. Frank, W. Frank and **C.E. Taylor**, "Strategies for creating cardiovascular models with digital light projection stereolithography." Poster presentation at the 32nd Southern Biomedical Engineering Conference; Shreveport, LA 2016. p. 121. DOI: 10.1109/SBEC.2016.53

C. Lagarde and **C.E. Taylor**, "Aortic and Mitral Heart Valves for Computational and Experimental Analysis." Poster presentation at the 32nd Southern Biomedical Engineering Conference; Shreveport, LA 2016.

K. Farmer, L. Molaison, K. Leblanc, C. Bergeron, and **C.E. Taylor**, "Development of a parametric aortic valve CAD model, fabrication of testing samples, and strategy for in vitro measurement." Poster presentation at the 32nd Southern Biomedical Engineering Conference; Shreveport, LA 2016. p. 117. DOI: 10.1109/SBEC.2016.56

J.M. King, C.A. Bergeron, K.C. Manthripragada, and **C.E. Taylor**, "Simulated Lvad Pump Mimic Device For Analyzing Safety, Risk And Reliability Of Designs." Podium presentation at the ASME Early Career Technical Conference (ECTC); Birmingham, AL 2015.

C.E. Taylor, J.M. King, B.A. Landry, and L.M. Molaison. "Patient Population Screening And Event Testing Using Simscape™ Models And Programmable Mock Loop." Podium presentation at the Biomedical Engineering Society (BMES)/Food and Drug Administration (FDA) Frontiers in Medical Devices Conference; Washington D.C. 2015.

J.M. King, C.P. Lagarde, A.D. Morgan and **C.E. Taylor**, "Simscape™ Models and xPC Target HIL testing: A V&V Workflow For Developing A LVAD Controller." Poster presentation at the Biomedical Engineering Society (BMES)/Food and Drug Administration (FDA) Frontiers in Medical Devices Conference; Washington D.C. 2015.

J.M. King and **C.E. Taylor**, " Using Simulink® Simscape™ To Model LVADs And Develop A *In Vitro* Pump Mimic Device For V&V Robustness." Poster presentation at the Biomedical Engineering Society (BMES)/Food and Drug Administration (FDA) Frontiers in Medical Devices Conference; Washington D.C. 2015.

C.E. Taylor, M.A. Allain, and N.X. Falcon, "Cardiovascular Anatomical Model Generator for Robust Design Modeling." Poster presentation at the Biomedical Engineering Society (BMES)/Food and Drug Administration (FDA) Frontiers in Medical Devices Conference; Washington D.C. 2015.

M.A. Allain, M. Le Saout, and **C.E Taylor.** "Parametric Anatomical Models: Rapid Prototyping Methods and Approaches." Poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting; San Antonio, TX 2014.

K. C. Manthripragada, C. P. Lagarde, and **C. E. Taylor**, "Developing a Physical Model of an Electromechanically Actuated Valve to Model Valve Disease In Vitro." Podium presentation at the American Society of Mechanical Engineers (ASME) International Mechanical Engineering Conference and Exposition (IMECE); Montreal, QB 2014.

F.N. Anifowose and **C.E. Taylor.** "Mimicking LVAD Pump Performance Curves In An Experimental System Through The Use Of Simulink Simscape And Control Optimization." Podium presentation at the American Society of Mechanical Engineers (ASME) International Mechanical Engineering Conference and Exposition (IMECE); Montreal, QB 2014.

Taylor, Charles E. Stephen J. Warren, and Gerald E. Miller. "Simulation of Pulmonary Return to the Left Atrium with a Numerical Model Governed Hydraulic System." Podium presentation at the American Society of Mechanical Engineers (ASME) International Mechanical Engineering Conference and Exposition (IMECE); San Diego, CA 2013.

Taylor, Charles E. and Gerald E. Miller. "Development Of A Computational Model Using The Simulink® Simscape™ Toolbox For Flow Through Anatomical Sections Connected To An Automated Mock Circulatory Loop." Podium presentation at the American Society of Mechanical Engineers (ASME) International Mechanical Engineering Conference and Exposition (IMECE); Houston, TX 2012.

Taylor, Charles E., Graham S. Kelly, Nitin S. Panwar, Stephen J. Warren, and Gerald E. Miller. "In vitro simulation of PhysioBank pathological conditions accomplished using a Simulink Simscape model, Parameter Estimation Toolbox, and a fully automated mock circulatory loop." Poster presentation at the Biomedical Engineering Society (BMES) Annual Meeting; Atlanta, GA 2012.

Taylor, Charles E., Graham S. Kelly, Stephen J. Warren, and Gerald E. Miller. "Aortic model developed from Visible Human Project data integrated with a fully automated mock circulatory loop." Poster presentation at the 34th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS); San Diego, CA 2012.

Presentations
(Continued)

Taylor, Charles E., Graham S. Kelly, Stephen J. Warren, and Gerald E. Miller. "Simulation of cardiovascular conditions and critical events in a fully automated mock circulatory loop." Poster presentation at the American Society of Artificial Internal Organs (ASAIO) Annual Meeting; San Francisco, CA 2012.

Taylor, Charles E., and Gerald E. Miller. "Application of Simulink Coder™ to a Computational Model of a Systemic Mock Circulatory Loop." Podium presentation at the Virginia Academy of Science 90th Annual Meeting; Norfolk, VA 2012.

Warren, Stephen J., Graham S. Kelly, **Charles E. Taylor** and Gerald E. Miller. "In vitro stereoscopic flow investigation of tilting disc valve at a model aortic root." Podium presentation at the Virginia Academy of Science 90th Annual Meeting; Norfolk, VA 2012.

Thompson, Robert B., **Charles E. Taylor** and Gerald E. Miller. "Real-time digital signal processing of mock circulatory loop pressure sensor data using an xPC target solution." Podium presentation at the Virginia Academy of Science 90th Annual Meeting; Norfolk, VA 2012.

Kelly, Graham S., **Charles E. Taylor** and Gerald E. Miller. "High-Level GPU Programming in MATLAB®: Two Case Studies of AccelerEyes Jacket in Biomedical Engineering Applications." Podium presentation at the Virginia Academy of Science 90th Annual Meeting; Norfolk, VA 2012.

Grover, Cameron J., Samantha L. Leach, Graham S. Kelly, Stephen J. Warren, **Charles E. Taylor** and Gerald E. Miller. "Variable Cracking Pressure Swing Check Valve." Podium presentation at the Virginia Academy of Science 90th Annual Meeting; Norfolk, VA 2012.

Panwar, Nitin S., Graham S. Kelly, **Charles E. Taylor** and Gerald E. Miller. "Search Engine of Physiological Conditions in the PhysioBank Database." Podium presentation at the Virginia Academy of Science 90th Annual Meeting; Norfolk, VA 2012.

Taylor, Charles E. and Gerald E. Miller. "The Construction Of An Automated Mock Circulatory Loop With Accompanying Computational Model Programmed With The Simulink® Simscape™ Toolbox." Podium presentation at the American Society of Mechanical Engineers (ASME) International Mechanical Engineering Conference and Exposition (IMECE); Denver, CO 2011.

Taylor, Charles E. and Gerald E. Miller. "A Fully Automated Mock Loop With Corresponding Simulink Simscape Model Connected to PhysioBank Data." Poster presented at the Biomedical Engineering Society (BMES) Annual Meeting; Hartford, CT 2011.

Warren, Stephen J., **Charles E. Taylor**, and Gerald E. Miller. "Development of a Novel Blood Analog with Physiological Shear-Thinning and Viscosity Characteristics." Poster presented at the Biomedical Engineering Society (BMES) Annual Meeting; Hartford, CT 2011.

Taylor, Charles E., Graham S. Kelly, and Gerald E. Miller. "A Novel Tracing Method Applied to Visible Human Project Cryo Slice Data to Build an Aortic Model." Poster presented at the Biomedical Engineering Society (BMES) Annual Meeting; Hartford, CT 2011.

Taylor, Charles E. and Gerald E. Miller. "Control Model and Performance of a Compliance Chamber for Simulating Arterial Systemic Compliance." Podium presentation at the Virginia Academy of Science 89th Annual Meeting; Richmond, VA 2011.

Warren, Stephen J., **Charles E. Taylor**, and Gerald E. Miller. "Development of a Novel Blood Analog with Physiological Shear-Thinning and Viscosity Characteristics." Podium presentation at the Virginia Academy of Science 89th Annual Meeting; Richmond, VA 2011.

Taylor, Charles E., Alexander Eljaiek, Solace Nerwal, Antonio Walker, and Gerald E. Miller. "Automated Mock Circulatory Loop Designed for Left Ventricular Assist Device Testing." Poster presented at the Southeastern Biomedical Engineering Career Conference; Washington, D.C. 2009.

Walsh, John P., **Charles E. Taylor**, Qiner Yang, and Robyn A. Rourick. "Improving Bioanalytical Communication, Sample Handling and Decision Making with a Custom Informatics Tool." Poster presented at the American Lab Automation (ALA) Conference; Palm Springs, CA 2008.

Walsh, John P., **Charles E. Taylor**, Qiner Yang, and Robyn A. Rourick. "Improving Bioanalytical Communication, Sample Handling and Decision Making with a Custom Informatics Tool." Oral presentation delivered at the 11th Annual Symposium on Chemical and Pharmaceutical Structure Analysis (CPSA); Princeton, NJ 2008.

Taylor, Charles E., Robyn A. Rourick, and John P. Walsh. "High Throughput Solubility Analysis; a Tailored Approach to Supporting Drug Discovery Efforts." Poster presented at the American Association of Pharmaceutical Scientists (AAPS) Annual Meeting and Exposition; San Diego, CA. 2007.

Presentations
(Continued)

Taylor, Charles E., Robyn A. Rourick, and John P. Walsh. "A Modular Chemical and Photo-Stability Chamber Purpose-Built for an LC/MS-Enabled Liquid Handler." Poster presented at the American Association of Pharmaceutical Scientists (AAPS) Annual Meeting and Exposition; San Diego, CA. 2007.

Walsh, John P., **Charles E. Taylor**, Qiner Yang, Robert Beltran, and Robyn A. Rourick. "BioAnalytical Manager: A Workflow-Based Approach to BioAnalytical Informatics." Poster presented at the American Association of Pharmaceutical Scientists (AAPS) Annual Meeting and Exposition; San Diego, CA. 2007.

Taylor, Charles E., Qiner Yang, John P. Walsh, and Robyn A. Rourick. "An Automated Dynamic BioAnalytical Sample Preparation Routine for Integration with Liquid Handlers." Poster presented at the Chemical and Pharmaceutical Structure Analysis (CPSA) Conference; Langhorne, PA. 2007.

Walsh, John P., **Charles E. Taylor** and Robyn A. Rourick. "Automation and Informatics to Profile Degradation Products." Oral presentation delivered at the Pittcon Conference; Chicago, IL. 2007.

Walsh, John P., Robyn A. Rourick, **Charles E. Taylor**, Mark Bayliss and Vitaly Lashin. "What and How Much Information Can We Really Extract in an Automated Manner from LC/MS Data." Oral presentation delivered at the American Society for Mass Spectrometry (ASMS) Conference; Seattle, WA. 2006.

Taylor, Charles E., Chris Petersen, Qiner Yang, Robyn Rourick, and John P. Walsh. "Informatics Solutions to process and technology advancements made in Analytical Chemistry." Poster presented at the Chemical and Pharmaceutical Structure Analysis (CPSA) Conference; Princeton, NJ. 2006.

Courses Taught

The following courses were developed for the Mechanical Engineering Department at the University of Louisiana at Lafayette. Bold indicates new courses offered:

MCHE 301: Engineering Analysis	3rd Year, Undergrad
MCHE 303: Engineering Graphics and Solid Modeling	3rd Year, Undergrad
MCHE 470: Artificial Internal Organs	4th Year, Undergrad
MCHE 470: Advanced Modeling with SolidWorks	4th Year, Undergrad
MCHE 477(G): Advanced Computer-Aided Design	4th Year, Undergrad, Masters & Ph.D.
MCHE 478(G): Finite Element Analysis	4th Year, Undergrad, Masters & Ph.D.
MCHE 488(G): Biomechanics	4th Year, Undergrad, Masters & Ph.D.
MCHE 670: Advanced Control Systems	Masters & Ph.D.
MCHE 683: Computer-Aided Engineering	Masters & Ph.D.
MCHE 697: Artificial Organs	Masters & Ph.D.
MCHE 623: Continuum Mechanics	Masters & Ph.D.

The following courses were administered for the Biomedical Engineering Department at Virginia Commonwealth University as a teaching assistant:

EGRB 307: Bioinstrumentation	3rd Year, Undergrad
EGRB 308: Biomedical Signal Processing	3rd Year, Undergrad

Mentorship

Jacob King	Ph.D.	Expected Summer 2019
Clint Bergeron	Ph.D.	Expected Summer 2019
Angelique Oncale	M.S.	Expected Fall 2019
Roger Johnson	M.S.	May 2017
KrishnaChaitanya Manthripragada	M.S.	August 2015
Felix Anifowose	M.S.	December 2014
Undergraduate Research Assistants	62	*Since August 2013*
Senior Design Students	44	*Since August 2013*

Thesis Committee Service

Vu Dahn	M.S.	August 2018
Yasmeen Qudsi	M.S.	August 2016
Ayotunde Olayinka	M.S.	May 2016
Oladapo Akinyemi	M.S.	May 2015
Mohammadsazzadu Rahman	M.S.	May 2015
Dare Olaonipekun	M.S.	December 2014
Suchethan Mayur Srinath,	M.S.	December 2013
Farhan IbneIslam,	M.S.	May 2014

External Service

SBEC Session Chair	2016
ASME IMECE Session Chair	2013-2015
ASME IMECE Section Co-Chair	2015
ASEE GSW Session Chair	2014
ASME Fluids Conference Session Chair	2013
Journal of Systems Biology Reviewer	
Circulation Reviewer	
ASME IMECE Conference Reviewer	
ASME FEDSM Conference Reviewer	

University Service

Graduate Council
Strategic Planning Committee
    Co-chair of Research Subcommittee
Graduate Appeals Committee
Faculty Development Committee
UL Lafayette Materials Institute Member
Graduate Faculty Review Committee (Ex-Officio)
Mechanical Engineering Department Graduate Advisory Council
Mechanical Engineering Department ABET Preparation Committee (2013)
Mechanical Engineering Department Faculty Search Committee
BMES Student Chapter Advisor
    Founding Faculty Member
Supervisor of Research Machining Laboratory
    Co-founding Faculty Member
Concrete Canoe Faculty Advisor
College of Engineering Preview Day Presenter

Training Courses

Embedded Coder for Production Code Generation. The MathWorks. February 15-17, 2012.

Simulink Coder Fundamentals. The MathWorks. February 14, 2012.

Needham, Shane, and Roger Hayes. Method Development for LC/MS: Traditional Approaches and Emerging Trends.
    Milestone Development Services. October 17-19, 2006.

Wong, Rayman. Taking the Mystery Out of HPLC. The Training Masters. June 6-7, 2006.

Kochanowski, Brian. Fundamentals of LC/MS. Waters Corporation. April 19-21, 2006.

Charles E. Taylor, Ph.D.

Memberships

- American Heart Association
  - Member; 2013 to Present
- American Association of Pharmaceutical Scientists Member (AAPS)
  - Member; 2005 to 2008
- Biomedical Engineering Society Member (BMES)
  - Student Member; 2008 to present
- American Society of Mechanical Engineers Member (ASME)
  - Student Member; 2008 to present
- American Society of Artificial Internal Organs (ASAIO)
  - For Young Innovators (FYI) Member; 2010 to present
- Institute of Electrical and Electronics Engineers (IEEE)
  - Student Member; 2011 to present
  - Engineering in Medicine and Biology Society (EMBS) Member; 2011 to present
- Virginia Academy of Science (VAS)
  - Student Member; 2011 to 2013

Publicity

Watkins, W. "Lab Tests Heart Devices on 'Crash Test Dummies'." Podcast on WWNO. June 22, 2015.
http://wwno.org/post/lab-tests-heart-devices-crash-test-dummies

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Charles E. Taylor, Ph.D.

Systems and Software Utilized

- Solidworks®
    - Mastercam for Solidworks™
    - Simulation Premium™
    - Flow Simulation™
- Matlab® and Simulink®
    - Simulink Coder™
    - Embedded Coder™
    - Simscape™ Physical Modeling Toolboxes
    - Parameter Estimation™
    - Design Optimization™
    - xPC Target
- National Instruments LabVIEW 2011
    - Real-Time Module implementation on PXI hardware
- Microsoft® Professional Tools
    - SharePoint® Server 2010
    - Windows Server 2008 R2
    - Project Professional 2010
- Microchip® MPLAB™ IDE
    - dsPIC30F Series Microcontrollers
    - PIC18 Series Microcontrollers
    - Simulink™ Embedded Coder blocks for Microchip®
- T-Tech IsoPRO® v1.2 PCB Mill
- CadSoft Eagle PCB v6.2 Design Software
- ITK-SNAP v2.2 Software
- OMAX Maxiem 1515 Waterjet
    - Intelli-MAX Software

- Stratasys FDM 3D Printer
    - uPrint SE Plus
    - FDM-2000
- Rostock Max V2 3D Printer
    - MatterControl Software
- PocketNC 5-axis CNC
    - AutoDesk Fusion 360
    - LinuxCNC
- Haas CNC Systems
    - OM-2A Office Mill
    - ST-20 Lathe
- Miller® Welding Systems
    - GMAW (Mig)
    - GTAW (Tig)
- Tecan®
    - Freedom™ EVO 100 and 200
    - Evoware™ v1.4 and Gemini™ v4.1
- Waters®
    - Acquity™ UPLC
    - LCT Premier, with MUX Configuration
    - Masslynx™ v4