

# Vladislav BUKSHTYNOV

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Department of Mathematics & Systems Engineering, Florida Institute of Technology

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## PRIMARY RESEARCH INTERESTS

Applied & Computational Mathematics, Scientific Computing

Numerical Optimization, Control Theory

Mathematical Modeling for Industrial Applications

Inverse Problems

Modeling & Analysis of PDEs

Computational Fluid Dynamics

## EDUCATION

**PhD in Computational Engineering and Science**

Jan 2012

McMaster University, Ontario, Canada

**MS in Computer Science (with distinction)**

Feb 1999

Vitebsk State University, Belarus

**BS in Mathematics and Physics**

Jun 1997

Vitebsk State University, Belarus

## PROFESSIONAL EXPERIENCE

**Assistant Professor**

Aug 2015 – present

Department of Mathematics and Systems Engineering

Florida Institute of Technology, FL, US

**Visiting Assistant Professor**

Summer 2016, 2017, 2018

Department of Energy Resources Engineering

Stanford University, CA, US

**Postdoctoral Research Fellow**

Feb 2012 – Aug 2015

Department of Energy Resources Engineering

Stanford University, CA, US

Mentors: Khalid Aziz, Louis J. Durlofsky

**Research Assistant**

May 2008 – Jan 2012

Department of Mathematics & Statistics

School of Computational Engineering & Science

McMaster University, ON, Canada

Supervisor: Bartosz Protas

**Research Assistant**

Nov 1999 – May 2002

A.V. Luikov Heat and Mass Transfer Institute, Minsk, Belarus

Supervisors: Zinovii P. Shulman, Alexander Makhanev

## PUBLICATIONS

## Books &amp; Courseware

- Coleman M. P. and Bukshtynov V. *An Introduction to Partial Differential Equations with MATLAB*, 3<sup>rd</sup> edition, Chapman and Hall/CRC, ISBN (hardcover) 978-1032639383 (eBook) 978-1032650852 (in production, 2024), 511pp.
- Bukshtynov V. *Computational Optimization: Success in Practice*, Chapman and Hall/CRC, ISBN (hardcover) 978-1032229478 (eBook) 978-1003275169 (2023), 414pp.
- Bukshtynov V. and Polyak E. *Higher Mathematics*, Vitebsk State Medical University Textbook (Calculus with elements of Mathematical Statistics) for the 2<sup>nd</sup> year students of Pharmaceutical Dept, with instructions and assignment problems, 1<sup>st</sup> ed. (2002), 2<sup>nd</sup> ed. (2012), in Russian, available online at <https://elib.vsmu.by/handle/123/226>

## Refereed Journals (\*graduate and \*\*undergraduate student coauthors)

- Arbic\* P. R. II, Bukshtynov V. *Efficient Gradient-based Optimization for Reconstructing Binary Images in Applications to Electrical Impedance Tomography* (accepted at Computational Optimization and Applications, available at arXiv:2304.02601v1)
- Chun\* M. M. F. M., Edwards\* B. L., and Bukshtynov V. *Multiscale Optimization via Enhanced Multilevel PCA-based Control Space Reduction for Electrical Impedance Tomography Imaging* (accepted at Computers and Mathematics with Applications, available at arXiv:2211.06227v1)
- Caner\* B., Edwards\* B. L., Huynh\* N., Bashur C., Bukshtynov V. *Optimal Tissue Vascularization in Bioprinted Grafts via Mathematical and Computational Modeling* (invitation from SIAM News Online, to be submitted in December 2023)
- Arbic\* P. R. II, Bukshtynov V. *On Reconstruction of Binary Images by Efficient Sample-based Parameterization in Applications for Electrical Impedance Tomography*, International Journal of Computer Mathematics 99(11) (2022), 2272-2289.
- Koolman\*\* P. M., Bukshtynov V. *A Multiscale Optimization Framework for Reconstructing Binary Images using Multilevel PCA-based Control Space Reduction*, Biomedical Physics & Engineering Express 7(2) (2021), 025005.
- Abdulla U. G., Bukshtynov V., Seif\* S. *Cancer Detection through Electrical Impedance Tomography and Optimal Control Theory: Theoretical and Computational Analysis*, Mathematical Biosciences and Engineering 18(4) (2021), 4834-4859.
- Abdulla U. G., Bukshtynov V., Hagverdiyev\* A. *Gradient Method in Hilbert-Besov Spaces for the Optimal Control of Parabolic Free Boundary Problems*, Journal of Computational and Applied Mathematics 346 (2019), 84-109.
- Volkov O., Bukshtynov V., Durlofsky L.J. and Aziz K. *Gradient-based Pareto Optimal History Matching for Noisy Data of Multiple Types*, Computational Geosciences 22(6) (2018), 1465-1485.
- Bukshtynov V., Volkov O., Durlofsky L.J. and Aziz K. *Comprehensive Framework for Gradient-based Optimization in Closed-Loop Reservoir Management*, Computational Geosciences 19(4) (2015), 877-897.
- Bukshtynov V., Protas B. *Optimal Reconstruction of Material Properties in Complex Multiphysics Phenomena*, Journal of Computational Physics 242 (2013), 889-914.
- Bukshtynov V., Volkov O., Protas B. *On Optimal Reconstruction of Constitutive Relations*, Physica D: Nonlinear Phenomena 240 (2011), 1228-1244.

- Bukshtynov V., Volkov O., Durlofsky L.J. and Aziz K. *A Data Assimilation Procedure for Calibrating Relative Permeability Using Data of Multiple Types* (in preparation)

### Proceedings for Conferences and Affiliate Meetings

- Huynh N., Edwards B., Bukshtynov V., and Bashur C. A. *Optimizing Vascularization in 3D Bio-printed Constructs with Computational Modeling*, Proceedings of the Society for Biomaterials SFB 2022 Annual Meeting, , Baltimore, MD, April 2022
- Volkov O., Ye T., Durlofsky L.J., Bukshtynov V., and Aziz K. *Optimization Techniques for Data Assimilation and Constrained Well Placement*, Proceedings of Smart Fields 14<sup>th</sup> Annual Affiliate Meeting, Stanford University, November 2019
- Volkov O., Bukshtynov V., Durlofsky L.J., and Aziz K. *Data Assimilation using Generalized Adjoint Gradients in AD-GPRS*, Proceedings of SUPRI-B 36<sup>th</sup> Annual Affiliate Meetings, Stanford University, May 2019
- Volkov O., Bukshtynov V., Durlofsky L.J., and Aziz K. *Multiobjective History Matching*, Proceedings of Smart Fields 13<sup>th</sup> Annual Affiliate Meeting, Stanford University, November 2018
- Bukshtynov V., Volkov O., Aziz K., and Durlofsky L.J. *Model Update and Calibration via Gradient-based Optimization Framework*, Proceedings of Smart Fields 11<sup>th</sup> Annual Affiliate Meeting, Stanford University, November 2016
- Volkov O., Padhye N., Bukshtynov V., Aziz K., and Durlofsky L.J. *Simulation-based Optimization and History Matching*, Proceedings of SUPRI-B 33<sup>rd</sup> Annual Affiliate Meetings, Stanford University, May 2016
- Bukshtynov V., Volkov O., Aziz K., and Durlofsky L.J. *Multiobjective History Matching for Noisy Data of Multiple Types*, Proceedings of Smart Fields 10<sup>th</sup> Annual Affiliate Meeting, Stanford University, November 2015
- Bukshtynov V., Volkov O., Aziz K., and Durlofsky L.J. *Gradient-based Optimization for Closed-Loop Modeling Using AD-GPRS*, SUPRI-B 32<sup>nd</sup> Annual Affiliate Meetings, Stanford University, May 2015
- Bukshtynov V., Volkov O., Aziz K., and Durlofsky L.J. *Gradient-based History Matching and Closed-Loop Modeling Using AD-GPRS*, Proceedings of Smart Fields 9<sup>th</sup> Annual Affiliate Meeting, Stanford University, November 2014
- Bukshtynov V., Volkov O., Aziz K., and Durlofsky L.J. *Gradient-based History Matching and Closed-Loop Modeling Using AD-GPRS: Updates*, Proceedings of SUPRI-B 31<sup>st</sup> Annual Affiliate Meetings, Stanford University, May 2014
- Bukshtynov V., Volkov O., Aziz K., and Durlofsky L.J. *New Developments in Gradient-based History Matching Using AD-GPRS*, Proceedings of Smart Fields 8<sup>th</sup> Annual Affiliate Meeting, Stanford University, November 2013
- Bukshtynov V., Volkov O., Aziz K., and Durlofsky L.J. *Gradient-based History Matching Using AD-GPRS*, Proceedings of SUPRI-B 30<sup>th</sup> Annual Affiliate Meetings, Stanford University, May 2013
- Protas B., Bukshtynov V., Noack B., Morzynski M. *On Optimal Model Identification in Hydrodynamics*, Proceedings of APS 65<sup>th</sup> Annual DFD Meeting, San Diego, CA, November 2012
- Bukshtynov V., Volkov O., Aziz K., and Durlofsky L.J. *Computational Framework for Performing History Matching Using AD-GPRS*, Proceedings of Smart Fields 7<sup>th</sup> Annual Affiliate Meeting, Stanford University, November 2012

- Bukshtynov V. and Protas B. *Reconstruction of Temperature-Dependent Material Properties in Complex Thermo-Fluid Problems*, Proceedings of ECCOMAS Thematic Conference: CFD & OPTIMIZATION 2011, Antalya, Turkey, May 2011

### Research and Technical Reports

- Bukshtynov V. *Optimization Framework of EIT-OPT*. Department of Mathematical Sciences, Florida Institute of Technology (2020)
- Amezcua E., Bukshtynov V., Ellis S., Farnell E., Ryu H., Tymochko S., and Storey K. *Identifying Patterns in Genomic Tumor Data Using Mapper*, Report for a Collaborative Research Project completed at ICERM's workshop "Applied Mathematical Modeling with Topological Techniques", Brown University (2019)
- Bukshtynov V., Abdulla U.G. Breast Cancer Detection through Electrical Impedance Tomography: Variational Method through Optimal Control Theory, Report for a Collaborative Research Project with Dartmouth Center of Cancer Nanotechnology Excellence (2015)
- Bukshtynov V., Volkov O., Aziz K., and Durlofsky L.J. *Gradient-based Optimization and History Matching Using AD-GPRS*, Research Report for Meeting with Affiliate Members: Schlumberger (2014)
- Volkov O., Kourounis D., Bukshtynov V. *Optimization Module of AD-GPRS*. Department of Energy Reservoirs Engineering, SUPRI-B, Stanford University (2014)
- Voskov D., Zaydullin R., Garipov T., Iskhakov R., Zhou Y., Volkov O., Kourounis D., Semenova A., Bukshtynov V. *Reservoir Simulator AD-GPRS*. User Manual, version 1.0. Department of Energy Resources Engineering, SUPRI-B, Stanford University (2013)
- Bukshtynov V. *Computational Methods for the Optimal Reconstruction of Material Properties in Complex Multiphysics Systems*, PhD Dissertation, McMaster University, Open Access Dissertation and Theses. Paper 6795. <http://hdl.handle.net/11375/11859> (2012)
- Atena A., Yapalparvi R., Bukshtynov V., Protas B. *Optimization and Parameter Estimation in MIG Welding – Multi-Objective Framework and Modelling Mass Transfer with Effective Surfaces*, Report #4 for a Collaborative Research Project with GM (2011)
- Atena A., Yapalparvi R., Bukshtynov V., Volkov O., Protas B. *Optimization and Parameter Estimation in MIG Welding – Towards Multi-Objective Framework and Modelling Mass Transfer with Effective Surfaces*, Report #3 for a Collaborative Research Project with GM (2010)
- Volkov O., Yapalparvi R., Bukshtynov V., Protas B. *Modelling, Optimization and Estimation of the Systems Involving Interaction with Plasma Column*, Report #2 for a Collaborative Research Project with GM (2009)
- Volkov O., Bukshtynov V., Protas B. *A Unified Approach to Solving Free-Boundary and Inverse Problems for a Stationary Weld Pool, with Some Notes on the Related Problem of Parameter Estimation*, Report #1 for a Collaborative Research Project with GM (2008)

### CONTRACTS AND GRANTS

REU Site: *Optimization Principles and Technologies in Applications (OPTA-REU)* 2024 – 2026  
NSF, PI (MPS, pending proposal #2345111, \$379,406)

Travel Award to attend 10<sup>th</sup> International Congress on Industrial and Applied Mathematics  
ICIAM 2023, Tokyo, Japan 2023  
NSF (grant DMS-2233032, \$1,750, SIAM)

- Enhanced Computational Framework for Early Stage Cancer Detection through Electrical Impedance Tomography (EIT)* 2021  
Florida Tech COES Institutional Research Incentive Program, PI \$18,959
- Topological Methods for Identifying Patterns in Lung Tumor Gene Expression Data* 2020  
NSF/NIMBioS: Short-term Visits Program, co-PI, 1-week paid visit awarded  
Approved for August 2020 (postponed due to COVID-19 pandemic)
- REU Site: Partial Differential Equations and Dynamical Systems* 2016  
NSF (DMS, award #1359074 2014-2016, \$258,567, PI U. Abdulla)  
Faculty Mentor/Senior Personnel (summer undergraduate research with 3 ISP groups)

## PATENTS, INVENTIONS, AND SOFTWARE DEVELOPMENT

- EIT-OPT** 2015 – present  
All-purpose open-structure multifaceted optimization framework for solving numerically inverse Electrical Impedance Tomography (EIT) problems in 2D
- ISP-OPT** 2016 – 2019  
Comprehensive multifaceted optimization framework for solving numerically inverse Stefan problems (ISP) in 1D

## CONFERENCE PRESENTATIONS AND TALKS

### Organizer

- Minisymposium “Recent development in modeling, control, theoretical and numerical analysis of complex systems with dynamic boundaries” at SIAM PD15 Conference on Analysis of Partial Differential Equations, AZ, US, December 2015

### Invited Presentations

- Minisymposium “Control and Estimation Problems in Fluid Mechanics and Related Fields”, 9<sup>th</sup> International Congress on Industrial and Applied Mathematics ICIAM 2019, Valencia, Spain, July 2019
- Mini-Tutorial “Computational Aspects of Numerical Optimization”, NSF-CBMS Conference/workshop “Computational Methods in Optimal Control”, Jackson State University, MS, July 2018
- SIAM Chapter Seminar, Dept. of Mathematical Sciences, Florida Institute of Technology, FL, April 2015
- Colloquium, Dept. of Scientific Computing, Florida State University, FL, February 2015
- 2012 Cecil Graham Doctoral Dissertation Prize Plenary Lecture, CAIMS 2013 Annual Meeting, Quebec City, Canada, June 2013
- SUPRI-B Group Seminar, Dept. of Energy Resources Engineering, Stanford University, CA, US, November 2011
- Optimization Group Seminar, School of Industrial Engineering, Purdue University, IN, US, October 2011

### Seminar and Contributed Talks

- 10<sup>th</sup> International Congress on Industrial and Applied Mathematics ICIAM 2023, Tokyo, Japan, August 2023

- Florida Undergraduate Research Conference FURC 2023, Miami, FL, US, February 2023 [3 posters presented by undergraduate students]
- SIAM Annual Meeting AN22, Pittsburgh, PA, US, July 2022
- 2022 Society for Biomaterials Annual Meeting, Baltimore, MD, April 2022
- The Joint Mathematics Meeting JMM 2022, Seattle, WA, US, April 2022 [online]
- The Joint Mathematics Meeting JMM 2021, Washington, DC, US, January 2021 [online]
- ICERM Topical Workshop “Applied Mathematical Modeling with Topological Techniques”, Brown University, Providence, RI, US, August 2019
- SIAM Conference on Mathematical and Computational Issues in the Geosciences GS19, Houston, TX, US, March 2019
- Topical workshop “Celebrating 75 Years of Mathematics of Computation”, ICERM, Brown University, Providence, RI, US, November 2018
- Advances in Mathematical Optimization, IWR School, Heidelberg University, Germany, October 2018
- SIAM Annual Meeting AN18, Portland, OR, US, July 2018
- SIAM Conference on Mathematical and Computational Issues in the Geosciences GS17, Erlangen, Germany, September 2017
- Mathematical Congress of the Americas MCA 2017, Montreal QC, Canada, July 2017
- SIAM Conference on Computational Sciences and Engineering CSE17, Atlanta, CA, US, March 2017
- Smart Fields 11<sup>th</sup>, 10<sup>th</sup>, 9<sup>th</sup>, 8<sup>th</sup>, 7<sup>th</sup> Annual Affiliate Meetings, Stanford University, CA, US, November 2016, 2015, 2014, 2013, 2012
- Minisymposium Talk at SIAM PD15 Conference on Analysis of Partial Differential Equations, AZ, US, December 2015
- SUPRI-B 32<sup>nd</sup>, 31<sup>st</sup>, 30<sup>th</sup> Annual Affiliate Meetings, Stanford University, CA, US, May 2015, 2014, 2013
- SIAM Conference on Mathematical and Computational Issues in the Geosciences GS13, Padua, Italy, June 2013
- 65<sup>th</sup> Annual American Physical Society Meeting (Division of Fluid Dynamics), San Diego, CA, US, November 2012
- Smart Fields Group Seminar, Department of Energy Resources Engineering, Stanford University, CA, US, October 2012
- 7<sup>th</sup> International Congress on Industrial and Applied Mathematics ICIAM 2011, Vancouver BC, Canada, July 2011
- Applied Mathematics Perspectives AMP 2011: Complex Fluids and Flows in Industry and Nature, UBC, Vancouver BC, Canada, July 2011
- Challenges in Applied Control and Optimal Designs, Basque Center for Applied Mathematics BCAM, Bilbao, Spain, July 2011
- 2<sup>nd</sup> New York Conference on Applied Mathematics NYCAM 2011, University at Buffalo, SUNY, Buffalo NY, US, April 2011

- First North American Meeting on Industrial and Applied Mathematics NAMIAM 2010, Universidad del Mar, Huatulco, Oaxaca, Mexico, December 2010
- Applied, Industrial and Financial Mathematics AIMS/Phimac Seminar, McMaster University, November 2010
- Advanced Optimization Laboratory AdvOL Seminar, McMaster University, November 2010
- School of CES Student Symposium Day, McMaster University, November 2010
- Southern Ontario Numerical Analysis Day SONAD, Waterloo ON, Canada, May 2010
- School of CES Student Symposium Day, McMaster University, October 2009
- Southern Ontario Numerical Analysis Day SONAD, London ON, Canada, May 2009
- 2<sup>nd</sup> Annual Pure and Applied Maths Graduate Student Conference, McMaster University, October 2008

## HONORS AND AWARDS

NSF/SIAM Travel Award to attend ICIAM 2023, Tokyo, Japan	2023
NSF Grant DMS-2233032 [USD 1,750]	
NSF Travel Award to attend Broadening Participation: 2023 MPS Workshop for New Investigators, Alexandria VA, US	2023
National Science Foundation [USD 1,245]	
NSF/ICERM Travel Award to attend 2019 ICERM Topical Workshop, Brown University, US	2019
Institute for Computational and Experimental Research in Mathematics [USD 760]	
NSF/ICERM Travel Award to attend 2018 ICERM Topical Workshop, Brown University, US	2018
Institute for Computational and Experimental Research in Mathematics [USD 678]	
Mobility Program Award to attend 2018 IWR School, Heidelberg University, Germany	2018
Interdisciplinary Center for Scientific Computing (IWR) [EUR 1,150]	
NSF/CBMS Travel Award to attend 2018 NSF-CBMS, Jackson State University, US	2018
Conference Board of the Mathematical Sciences [USD 850]	
NSF/SIAM Early Career Travel Award to attend SIAM GS17, Erlangen, Germany	2017
Society for Industrial and Applied Mathematics [USD 950]	
NSF/AMS Travel Award to attend MCA 2017, Montreal QC, Canada	2017
American Mathematical Society [USD 1,350]	
IMA Scholarship to attend New Directions Short Course Topics in Control Theory	2014
Institute for Mathematics and its Applications, University of Minnesota, US [USD 2,867]	
The 2012 Cecil Graham Doctoral Dissertation Award	2013
Canadian Applied and Industrial Mathematics Society [CAD 1,000]	
Postdoctoral Research Fellowship, Stanford University, US	2012 – 2015
Smart Fields Consortium, Energy Resources Engineering Dept. [USD 207,000]	
Ontario Graduate Scholarship, Canada (declined with early graduation)	2011
Ministry of Training, Colleges and Universities [CAD 15,000]	
Scholarship to attend RISM 2011 Summer School, Verbania, Italy	2011
Riemann International School of Mathematics [EUR 940]	
MITACS Travel Award to attend ICIAM 2011, Vancouver BC, Canada	2011
Mathematics of Information Technology and Complex Systems [CAD 550]	

2 <sup>nd</sup> Prize - Applied Mathematics Perspectives (AMP 2011) Poster Competition, Canada Canadian Applied and Industrial Mathematics Society [CAD 100]	2011
PIMS Travel Award to attend AMP 2011, Vancouver BC, Canada Pacific Institute for the Mathematical Sciences [CAD 265]	2011
BCAM Scholarship to attend OPTPDE 2011 Summer School, Bilbao, Spain Basque Center for Applied Mathematics [EUR 1,300]	2011
Ontario Graduate Scholarship, Canada Ministry of Training, Colleges and Universities [CAD 15,000]	2010
PIMS Travel Award to attend NAMIAM 2010, Huatulco OA, Mexico Pacific Institute for the Mathematical Sciences [CAD 900]	2010
Travel Award to attend NAMIAM 2010, Huatulco OA, Mexico McMaster University Graduate Students Association [CAD 500]	2010
Scholarship to attend INdAM 2010 Summer School, Catania, Italy Istituto Nazionale di Alta Matematica Francesco Severi (INdAM) [EUR 600]	2010
Graduate Scholarship, McMaster University, Canada School of Graduate Studies [CAD 19,151]	2008 – 2012

## STUDENT/POSTDOC/VISITOR ADVISING

### Dept. of Mathematics & Systems Engineering, Florida Institute of Technology

- Advisor, graduate research: Briana Edwards (PhD Applied Math, 2020-2022), Maria Chun (MS Operations Research, 2021-2022), Paul Arbic (MS Operations research, 2019-2020)
- Advisor, MS non-thesis: James Williams (MS Applied Math, 2020-), Fan Xia (MS Operations research, 2018-2019)
- Advisor, undergraduate research: Nico Braukman (2022-2023), Amanda Elliott (2022-2023), Junfu Cheng (2022-2023), Briana Edwards (2019-2020), Priscilla Koolman (2019-2020)
- Mentor, visiting researchers: Dr. Amit Sharma (2023, Dept. of Mathematics, Dr. Yashwant Singh Parmar University of Horticulture and Forestry, India)
- Co-advisor, graduate research: Saleheh Seif (PhD, 2016-2019), Ali Haqverdiev (PhD, 2016-2019); Robert Feldges (PhD, 2015-2016)
- Co-advisor, undergraduate research: Greta Polo (2016)
- Academic advisor for undergraduate students (Applied Mathematics & Mathematical Sciences majors, Computational Mathematics minor)
- Academic advisor for graduate students (MS & PhD in Applied Mathematics & Operations Research)
- REU-2016 summer research mentoring: Rajendra Beekie (University of Minnesota), Nadab Wubshet (Augustana University), Carlos Seda (University of Puerto Rico), Taylor Spino (North Central College)

### Dept. of Energy Resources Engineering, Stanford University

- Graduate student informal advising: Yimin Liu (MS, 2014-2015), Larry Zhaoyang Jin (MS, 2015), Sumeet Trehan (PhD, 2013-2014), Hai Xuan Vo (PhD, 2012-2015), Wenye Sun (MS, 2012-2013), Mehrdad Gharib Shirangi (PhD, 2012-2013)



**TEACHING EXPERIENCE****Dept. of Mathematics & Systems Engineering, Florida Institute of Technology**

- MTH 6300 Topics in Num/Comp Mathematics: Numerical Optimization, Fall 2021
- ORP 6095 Candidacy Preparation OR, Fall 2016
- MTH 5335 Nonlinear Optimization Models and Methods, Spring 2023
- MTH 5225 Linear Optimization Models and Methods, Fall 2022
- MTH 5051 Applied Discrete Mathematics, Summer 2022, Spring 2022, Spring 2020, Summer 2019
- MTH 5050 Special Topics in Mathematics, Fall 2019, Spring 2016
- MTH 5107 Optimization Models and Methods, Spring 2021, Spring 2019, Spring 2016
- MTH 5007 Introduction to Optimization, Fall 2018, Fall 2015
- MTH 4990 Undergraduate Research, Spring 2023, Fall 2022, Spring 2020, Fall 2019
- MTH 3210 Introduction to PDEs and Applications, Summer 2023, Summer 2022, Summer 2021, Summer 2020, Spring 2019, Fall 2017
- MTH 3200 Honors Differential Equation, Spring 2023, Fall 2021, Spring 2021
- MTH 3107 Optimization, Fall 2023, Fall 2019
- MTH 2201 Differential Equations, Fall 2019, Spring 2019, Fall 2018, Spring 2017, Fall 2016, Spring 2016, Fall 2015
- MTH 2001 Calculus 3, Fall 2023, Fall 2022, Spring 2018, Fall 2017, Spring 2017, Fall 2016

**NEW COURSE DEVELOPMENT****Dept. of Mathematics & Systems Engineering, Florida Institute of Technology**

- MTH 6300 Topics in Num/Comp Mathematics: Numerical Optimization, Spring 2018
- MTH 5225 Linear Optimization Models and Methods, 2021
- MTH 5335 Nonlinear Optimization Models and Methods, 2021
- MTH 3220 Honors Partial Differential Equations, Spring 2022
- MTH 3200 Honors Differential Equations, Spring 2020

**SERVICE FOR UNIVERSITY, COLLEGE, AND DEPARTMENT****Florida Institute of Technology**

- Undergraduate Curriculum Committee UGCC (since fall 2021)
- Graduate Council (alternate member since fall 2020)
- Computational Research at Florida Tech (CRAFT) Center Collaborator (since spring 2023)
- COVID-19 COES Task Force (summer & fall 2020)
- Undergraduate Mathematical Sciences Program Coordinator (since fall 2022)
- Faculty Hiring Committee (since spring 2021)
- PhD Admission Committee, Operations Research Program (since 2019)
- PhD Admission Committee, Applied Mathematics Program (since 2020)
- MS Admission Committee, Operations Research Program (2019-2022)
- PhD & MS Applied Mathematics and Operations Research Programs Committee (since 2019)
- PhD & MS Committee Member: Anthony Stefan (PhD, 2023-; MS, 2021), Bindi Nagda (PhD, 2022-2023), Jiri Kaprilek (MS, 2021), Hissah Albaqami (PhD, 2020-; MS 2020), Nandini Rakala (PhD, 2018-2020), Ali Haqverdiyev (PhD, 2016-2020), Saleheh Seif (PhD, 2016-2020), Fan Xia (MS, 2019), Roby Poteau (PhD, 2016-2019), Justin Blackman (MS, 2016-2017)

- External Member: Vincent Povilaitis (MS Aerospace Engineering, 2023), David Busch (MS Mech. Engineering, 2023), Raymond Cromin (MS Mech. Engineering, 2023), Kevin Fernandez (MS Mech. Engineering, 2023), Nicholas Cordoba (MS Mech. Engineering, 2023), Ryan Piersa (MS Aerospace Engineering, 2022), Iwan Broodryk (MS Aerospace Engineering, 2020-2022), Yunpeng Han (MS Mech. Engineering, 2019), Christian Hernandez (PhD Math. Education, 2017), Jonathan Tiede (MS Aerospace Engineering, 2016)
- Tenure Exploration Faculty Senate Committee (2017-2018)
- SIAM Student Chapter Advisor (since 2019)

## OTHER ACTIVITIES FOR PROFESSIONAL DEVELOPMENT

NSF Broadening Participation: 2023 MPS Workshop for New Investigators National Science Foundation (NSF), Alexandria, VA, US	2023
ICERM Topical Workshop “Applied Mathematical Modeling with Topological Techniques” Institute for Computational and Experimental Research in Mathematics (ICERM), Brown University, Providence, RI, US	2019
ICERM Topical Workshop “Celebrating 75 Years of Mathematics of Computation” Institute for Computational and Experimental Research in Mathematics (ICERM), Brown University, Providence, RI, US	2018
IWR School “Advances in Mathematical Optimization” Interdisciplinary Center for Scientific Computing (IWR), Heidelberg University, Germany	2018
NSF-CBMS Conference/workshop “Computational Methods in Optimal Control” Conference Board of the Mathematical Sciences (CBMS), Jackson State University, MS, US	2018
IMA New Directions Short Course “Topics in Control Theory” Institute for Mathematics and its Applications (IMA), University of Minnesota, MN, US	2014
History Matching and Conditioning Reservoir Models to Dynamic Data Society of Petroleum Engineers (SPE) training course, The Woodlands, TX, US	2013
Fundamentals of Reservoir Simulation Summer Program in Energy Resources Engineering, Stanford University Petroleum Research Institute (SUPRI), Stanford, CA, US	2012
Multiphase and Multiphysics Problems Summer School, Riemann International School of Mathematics (RISM), Verbania, Italy	2011
Challenges in Applied Control and Optimal Designs OPTPDE Summer School, Basque Center for Applied Mathematics (BCAM), Bilbao, Spain	2011
High Performance and Technical Computing SHARCNET Summer School, Sheridan Institute of Technology and Advanced Learning, Oakville, Canada	2010
Analytical and Numerical Problems in Fluid Dynamics and Applications Intensive Period Summer School, Istituto Nazionale di Alta Matematica Francesco Severi (INdAM), Catania, Italy	2010

## REVIEWER

**Funding Agencies** DOE Office of Science – Advanced Scientific Computing Research Program

**Publishing Houses** Taylor & Francis/CRC Press, Wiley

**Professional Journals** Journal of Computational and Applied Mathematics, Computers and Mathematics with Applications (Elsevier); International Journal of Computer Mathematics (Taylor & Francis); Mathematical Geosciences, Computational Geosciences (Springer); Mathematical Biosciences and Engineering (AIMS Press); Applied Mathematics (Scientific Research Publishing)

**Conferences** International Congress on Industrial and Applied Mathematics (ICIAM 2023 Tokyo, Japan)

#### PROFESSIONAL MEMBERSHIP

Society for Industrial and Applied Mathematics (SIAM), American Mathematical Society (AMS)

#### REFERENCES

**Gnana Bhaskar Tenali** (gtenali@fit.edu), Florida Institute of Technology, US

**Munevver M. Subasi** (msubasi@fit.edu), Florida Institute of Technology, US

**Louis J. Durlofsky** (lou@stanford.edu), Stanford University, US

**Khalid Aziz** (aziz@stanford.edu), Stanford University, US

**Denis Voskov** (D.V.Voskov@tudelft.nl), Delft University of Technology, Netherlands

**Bartosz Protas** (bprotas@mcmaster.ca), McMaster University, Canada