

# Jeremy J. Becnel

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<https://www.faculty.sfasu.edu/becneljj/>

## Education

### **PH. D. | AUGUST 2006 | LOUISIANA STATE UNIVERSITY**

- Thesis: Extension of Shor's Period Finding Algorithm to Infinite Dimensional Hilbert Spaces  
Advisor: Dr. Ambar Sengupta
- Fields: Quantum Computing, Algorithm Analysis, Probability, Functional Analysis
- Related coursework: Quantum Computing, Mathematical Methods and Material Sciences, Numerical Analysis, Probability Theory

### **M.S. | DECEMBER 2002 | LOUISIANA STATE UNIVERSITY**

- Major: Mathematics

### **B.S. | MAY 2001 | NICHOLLS STATE UNIVERSITY | SUMMA CUM LAUDE**

- Major: Computer Science
- Second Major: Mathematics
- Related coursework: Discrete Structures, Data Structures, Theory of Computation, Windows and Internet Programming, Simulation Techniques, Computer Organization, Design and Analysis of Algorithms, Programming Languages, Numerical Analysis, Operating Systems, Software Engineering, Probability, Statistics, Computer Architecture, Networking and Telecommunications, Database Management and System Design, Linear Programming, Neural Networks Research

## Academic Positions

### **PROFESSOR | STEPHEN F. AUSTIN STATE UNIVERSITY | SEP. 2015 – PRESENT**

### **ASSOCIATE PROFESSOR | STEPHEN F. AUSTIN STATE UNIVERSITY | SEP. 2012 – AUG. 2015**

### **ASSISTANT PROFESSOR | STEPHEN F. AUSTIN STATE UNIVERSITY | JUNE 2006 – AUG. 2012**

- Teaching: Taught a variety of graduate and undergraduate courses in computer science, mathematics, and statistics; curriculum development
- Scholarly Activity: Maintained an active research program that included regular publications and attainment of internal and external funding; conducted research with undergraduate and graduate students
- Service: Served on or chaired a variety of committees at the departmental, college, and university levels; Participated in and coordinated assessment activities for ABET and Southern Association of Colleges and Schools Commission on Colleges (SACSCOC)

## Teaching Related Experience

### **DEPARTMENT OF COMPUTER SCIENCE AND DEPARTMENT OF MATHEMATICS AND STATISTICS |**

### **STEPHEN F. AUSTIN STATE UNIVERSITY | JUNE 2006 – PRESENT**

- Undergraduate Courses: Algorithm Design and Analysis, Discrete Structures, Computer Science Principles, Computer Programming Principles, VR and Game Development, Numerical Analysis, College

- Algebra, Plane Trigonometry, Plane Analytic Geometry, Finite Mathematics, Introduction to Probability and Statistics, Calculus I, Calculus II, Calculus III, Differential Equations, Linear Algebra
- Graduate Courses: Mathematical Modeling and Simulation, Real Analysis I, Real Analysis II, Linear Algebra, Mathematical Technology, and Communication
- Independent Study Courses: Mathematical Finance
- Graduate research and thesis course for Pushp Awasthi, Cheng Chang, and Daniel Riser-Espinoza

**NATIONAL SCIENCE FOUNDATION K-12 FELLOW | LOUISIANA STATE UNIVERSITY | JULY 2005-JUNE 2006**

- Taught Advanced Placement Calculus at Istrouma High School in Baton Rouge
- Developed course curriculum lectured, wrote tests, corrected tests, and held parent/teacher meetings

**GRADUATE STUDENT | DEPARTMENT OF MATHEMATICS AT LOUISIANA STATE UNIVERSITY | FALL 2004**

- Taught College Algebra (Mathematics 1021) as the teacher-of-record. Lectured, wrote tests, corrected tests, and maintained office hours

**GRADUATE ASSISTANT | RESEARCH EXPERIENCE FOR UNDERGRADUATES | LOUISIANA STATE UNIVERSITY | SUMMER 2002**

- Guided undergraduate students in research projects. Held problem sessions

**TEACHER/MENTOR | UPWARD BOUND PROGRAM | NICHOLLS STATE UNIVERSITY | JANUARY 2001-JULY 2001.**

- Taught and mentored underprivileged high school children in mathematics each Saturday
- Assisted with homework, created materials, and taught lessons

## **Research Interests**

- Virtual, Augument, and Mixed Reality (current research)
- Computer Science Education (current research)
- Quantum Computing (past research)
- Radon Transform and Computerized Tomography (past research)
- Infinite-Dimensional Distribution Theory, particularly White Noise Analysis (past research)

## **Research Experience**

**PROFESSOR | STEPHEN F. AUSTIN STATE UNIVERSITY | SEP. 2015 – PRESENT**

- Completed Radon Transform and Computerized Tomography research project.
- NSF funded project for multivariable calculus education in Virtual Reality, CalcVR App

**ASSISTANT / ASSOCIATE PROFESSOR | STEPHEN F. AUSTIN STATE UNIVERSITY | AUG. 2006 – AUG. 2015**

- Continued study of Quantum Computing Algorithms.
- NSA funded research projects involving the Radon Transform and Computerized Tomography

## **GRADUATE STUDENT | LOUISIANA STATE UNIVERSITY | AUG. 2001 – AUG. 2006**

- Explored different aspects of Functional Analysis and Probability. Applied concepts from these disciplines to algorithm development in Quantum Computing.

## **UNDERGRADUATE STUDENT | NICHOLLS STATE UNIVERSITY | AUG. 1998 – MAY 2001**

- Conducted research on many projects with members of the Mathematics, Computer Science, and Physics Departments
- Notable Projects
  - Placed 5th, Quest for Java Competition, developed and implemented algorithms for graphical manipulation of equipotential surfaces in the field of a point charge
  - Neural Network Classification Algorithms, developed and tested a classification algorithm designed to improve upon the MUpstart classification algorithm
  - Constructing Super Exponentials from Linear Functions

## **Scholarly Activity**

### **PAPERS AND PUBLICATIONS**

- *Student noticing within virtual reality modules for multivariable calculus*, with Steven Jones and Nicholas Long, Research in Mathematics Education, February 2022.
- *A Limiting Process to Invert the Gauss-Radon Transform*. Communications in Stochastic Analysis, Vol. 13: No 2, Article 4, September 2019
- *Recovering a Function from the Gauss Radon Transform*, with Daniel Riser-Espinoza, Asian Journal of Probability and Statistics, 3(1), 1-31, February 2019
- *Nuclear Space Facts: Plain and Strange*, with Ambar N. Sengupta, Mathematics, 4, no. 4:61, October 2016
- *The Schwartz Space: Tools for Quantum Mechanics and Infinite Dimensional Analysis*, with Ambar N. Sengupta, Mathematics: Special Issue, Mathematical Physics, 3(2), 527-562. June 2015
- *Probability Inequalities for the Sum of Random Variables when Sampling Without Replacement*, with Kent Riggs and Dean Young, International Journal of Statistics and Probability, Vol. 2, No. 4, Nov. 2013
- *Hidden Subspace Algorithm in White Noise Analysis*, Transactions of the American Mathematical Society, 364 (2012), No. 1, pages 5035-5055
- *A Support Theorem for the Radon Transform in Infinite Dimensions*, with Ambar Sengupta, Transactions of the American Mathematical Society, 364, (2012), pages 1281-1291
- *The Support Theorem for the Gauss-Radon Transform*, Infinite Dimensional Analysis, Quantum Probability, and Related Topics, Number 15, July 2012
- *Extending the Support Theorem to Infinite Dimensions*, arXiv article
- *The Gauss-Radon Transform*, with Cheng Chang, Pioneer Journal of Mathematics and Mathematical Sciences, Volume 5, Issue 1, (2012), pages 55-78
- *The Half-Plane Radon Transform and a Support Theorem for Cylinder Sets*, with Pushp Awasthi, Far East Journal of Mathematical Sciences (FJMS), Volume 40, Issue 1 (May 2010), Pages: 81-92
- *Countably-Normed Spaces, Their Dual, and the Gaussian Measure*, posted at <http://arxiv.org/abs/math.FA/0407200>
- *Equivalence of Topologies and Borel Fields for Countably-Hilbert Spaces*, Proceedings of the American Mathematical Society, 2, 134 (2006), pp. 581-590

- *The Schwartz Space: A Background to White Noise Analysis*, with Ambar Sengupta, posted at <http://www.math.lsu.edu/~preprint>, 2005
- *White Noise Analysis: Background and a Recent Application*, with Ambar Sengupta, Infinite Dimensional Stochastic Analysis: In Honor of Hui-Hsiung Kuo, World Scientific Publishing Company, February 2008
- *An Infinite Dimensional Integral Identity For the Segal-Bargmann Transform*, with Ambar Sengupta, Proceedings of the American Mathematical Society, 9, 135 (2007), pp. 2995-3003
- *On Range and Reflecting Functions About the Line  $y = mx$* , with Scott Beslin and Brian Heck, PRIMUS, 18:3, 247-256
- *Delta Function for an Affine Subspace*, Taiwanese Journal of Mathematics, December 2008

## BOOK

- *Tools for Infinite Dimensional Analysis*, CRC Press, 2021

## GRANTS

- 2023-2025, NSF Infrastructure, Subject: Texas Coding and Research Initiative (in preparation)
- 2023-2025, NSF IUSE Grant, Subject: Lumberjack Rewards (in preparation)
- 2022-2027, NSF S-STEM Grant, Subject: Tech. Scholars (not funded)
- 2022, MAA, Subject: PIC Interdisciplinary Data Science Workshop (not funded)
- 2022, Unity, Subject: Create with VR Training Grant **(funded)**
- 2022, Sumer Undergraduate Research Experience, Subject: Mixed Reality Subtitle System **(funded)**
- 2022, Unity Grant, Subject: Create with VR Headset Grant (not funded)
- 2022, Unity and Meta Higher Education Grant, VR Instruction in Engineering (not funded)
- 2022, NSF IUSE Grant, Subject CalcVR Phase 2, (not funded)
- 2021-2023, NSF Broadening Participation in Computer Science, Subject: Piney Woods Computer Science Initiative (not funded)
- 2021 ICERM MAA & TRIPODS Advanced Workshop in Data Science, Subject: Travel grant to attend the workshop (funded)
- 2021 Comprehensive Research Funding, Subject: HoloLen Augmented Reality Prototype **(funded)**
- 2021 Project Support Award, Subject: Expanding Hardware of CalcVR **(funded)**
- 2019-2020 SFA Research and Creative Activities App, Subject: Probabilistic Generalization of the Radon Transform **(funded)**
- 2018-2021 NSF-DUE Grant, Subject: Multivariable Calculus in Virtual Reality, with Nicholas Long **(funded)**
- 2017-2018 Provost Development Grant, Subject: Multivariable Calculus in Virtual Reality, with Nicholas Long **(funded)**
- 2016 NSF Research Grant. Subject: Recovery and Approximation of Functions in Infinite Dimensions (not funded)
- 2015 REU in Mathematics at SFA, with Nicholas Long and Matthew Beaguard (not funded)
- 2014 REU in Mathematics at SFA, with Nicholas Long and Jane Long (not funded)
- 2014 NSF Research Grant in Analysis, Subject: Recovering Functions from the Gauss Radon Transform (not funded)
- 2013 Faculty Development Leave, Subject: Topological Vector Spaces **(funded)**
- 2012 NSF Research Grant, Subject: Gauss Radon Transform and Applications (not funded)

- 2011-2012 Faculty Research Grant, Subject: Reconstruction of Random Variables from Conditional Expectations **(funded)**
- 2011 Provost Minigrant for Undergraduate Research **(funded)**
- 2011 ORSP Minigrant for SMASH Camp **(funded)**
- National Science Foundation GK-12 Grant with Jane Long (grant program canceled)
- 2011 CURM Grant for Undergraduate Research (postponed - lack of funding)
- 2010 CURM Grant for Undergraduate Research (not funded)
- 2010-2012 Norman Hackerman Advanced Research Program (NHARP) with Clint Richardson, Subject: Generalization of the Newton Method of Finding Roots (not funded)
- 2009-2011 NSA Young Investigators Grants, Subject: The Radon Transform in White Noise Analysis **(funded)**
- 2009-2010 Faculty Research Grant, Stephen F. Austin State University, Subject: Quantum Hidden Subspace Algorithm **(funded)**
- 2009 Minigrant, Stephen F. Austin State University, Subject: The Radon Transform and Support Theorem for Cylinders in Finite Dimensions **(funded)**
- 2007 NSA Young Investigators Grants, Subject: The Radon Transform in Infinite Dimensions, Submitted (not funded)
- 2007-2008 Faculty Research Grant, Stephen F. Austin State University, Subject: Radon Transform in Infinite Dimensions **(funded)**
- 2008 Minigrant, Stephen F. Austin State University, Subject: Cooperative Learning in Calculus **(funded)**

## PAPERS REFEREED

- *An evaluation formula for Radon-Nikodym derivatives similar to conditional expectations over paths*, Author: Dong Hyun Chor, Bulletin of Malaysian Mathematical Sciences Society
- *p-regularity and p-regular modification in T-convergence spaces*, Authors: Qiu Jin and Lingqiang Li
- *Properties of the fractional (exponential) Radon transform*, Author: Moon
- *Portfolio Optimization Under Partial Information with Expert Opinions*, Authors: Rey, Gabih, and Wunderlich
- *Spaces of Test and Generalized Function of Arcsine White Noise*, Authors: Abdessatar, Burhoumi, Riahi, and Ouerdiane
- *Complex White Noise and Infinite Dimensional Unitary Group*, Author: T. Hida

## SOFTWARE PRODUCTS

- MRS (Mixed Reality Substitute System), Microsoft HoloLens 2.
- *CalcVR*, Oculus Labs, <https://www.oculus.com/experiences/quest/6150858738287710/>
- *CalcVR*, Andriod, <https://play.google.com/store/apps/details?id=com.sfasu.cardboard.calculus&hl=en>
- *CalcVR*, Apple, <https://apps.apple.com/us/app/calculus-in-virtual-reality/id1271725691>

## BOOKS REVIEWED AND EDITED

- *Introduction to Stochastic Integration*, Author: Dr. Hui-Hsiung Kuo, 2006-2007

## PRESENTATIONS

- *Parking Lot Car Detection using Statistical Inference*, Poster Presentation, SFASU College of Science and Mathematics, November 2022

- *Mixed Reality Subtitle System*, Poster Presentation, SFASU College of Science and Mathematics, November 2022
- *Mixed Reality Color Enhancement System*, Poster Presentation, SFASU College of Science and Mathematics, November 2022
- *Mixed Reality Subtitle System*, Poster Presentation, SFASU College of Science and Mathematics, August 2022
- *XR in Society and Education*, SFASU College of Science and Mathematics, July 2022
- *Early Access Identification System Based on Tweet Sentiment Analysis*, Brown University, July 2021
- *CalcVR*, Joint Mathematics Meeting Poster Session, January 2021
- *Quantum Computing for the Uninitiated*, SFA Department of Mathematics, September 2020
- *A Gentle Introduction to Quantum Computing*, SFA Department of Computer Science, February 2020
- *CalcVR*, Joint Mathematics Meeting Poster Session, January 2020
- *CalcVR*, Joint Mathematics Meeting Poster Session, January 2019
- *Candy Sharing*, East Texas Mathematics Teachers Circle, December 2018
- *The Infinite Dimensional Radon Transform*, Joint Mathematics Meeting, January 2018
- *The Gauss-Radon Transform in Infinite Dimensions*, University of Northern Colorado, January 2018
- *Multivariable Calculus in Virtual Reality*, Joint Mathematics Meeting, January 2018
- *Optimizing Algorithms*, East Texas Mathematics Teachers Circle, November 2017
- *Matching Problems and Stable Marriages*, East Texas Mathematics Teachers Circle, January 2017
- *Candy Sharing*, East Texas Mathematics Teachers Circle, January 2016
- *Farkle Nation*, MAA Texas Sectional Meeting, April 2016
- *Algorithms Analysis*, East Texas Mathematics Teachers Circle, January 2015
- *An Introduction to Tensors*, Physics Research Group, SFA STEM Center, March 2015
- *The Gauss Radon Transform*, American Mathematical Society National Meeting, January 2013
- *Recovering a Function from the Gauss Radon Transform in White Noise Analysis*, American Mathematical Society National Meeting, Boston, January 2012
- *Another Million Dollar Problem: P vs. NP*, R. W. Yeagy Colloquim, Stephen F. Austin State University, Spring 2011
- *A Support Theorem for a Gaussian Radon Transform in Infinite Dimensions*, Joint AMS-MAA National Meeting, New Orleans, LA, January 2011
- *A Support Theorem for White Noise Analysis*, Workshop in Analysis, Baton Rouge, LA, January 2011
- *Operations on n-forms*, Stephen F. Austin State University, October 2010
- *Introduction to n-forms*, Stephen F. Austin State University, October 2010
- *Quantum Hidden Subspace Algorithm in White Noise Analysis*, Path Integrals Conference 2010, Howard University, July 2010
- *Support Theorem in Infinite Dimensions*, Gulf Coast Probability and Statistics Conference, University of South Florida, February 2010
- *Support Theorem in White Noise Analysis*, Probability Seminar, Louisiana State University, April 2009
- *Preliminary Results for the Radon Transform in White Noise Analysis*, Regional Conference in Probability, Statistics, and Related Areas, Lamar University, February 2009
- *Quantum Hidden Subspace Algorithm*, AMS-MAA Joint Meetings, San Diego, CA, January 2008
- *An Introduction to Hilbert Spaces*, Hydrogen Atom Research Group, SFA, April 2008
- *Delta Function for an Affine Subspace*, Joint Mathematics Meeting, New Orleans, LA, January 2007
- *CAT Scans in Infinite Dimensions*, MAA Texas Section Meeting, April 2007

- *Introduction to Distribution Theory in Infinite Dimensions*, R. W. Yeagy Colloquium Series, Stephen F. Austin State University, Fall 2006
- *Introduction to Functional Analysis and Shor's Algorithm*, R. W. Yeagy Colloquium Series, Stephen F. Austin State University, Fall 2006.
- *Quantum Computing and Shor's Algorithm*, R. W. Yeagy Colloquium Series, Stephen F. Austin State University, Fall 2006.
- *Quantum Computing in a Nutshell*, Guest Speaker, University of West Florida, Spring 2006
- *Quantum Computing in a Nutshell*, Guest Speaker, Auburn University at Montgomery, Spring 2006
- *An Infinite Dimensional Integral Identity For the Segal-Bargmann Transform*, AMS Sectional Meeting, Notre Dame University, April 2006
- *An Infinite Dimensional Integral Identity For the Segal-Bargmann Transform*, Sam Houston State University, Guest Speaker, April 2006
- *An Infinite Dimensional Integral Identity For the Segal-Bargmann Transform*, Joint Mathematics Meeting, San Antonio, Texas, January 2006
- *An Analog of a Fourier Type Identity in Infinite Dimensions*, Probability Seminar, Louisiana State University, October 2005
- *Extension of White Noise Delta Functions*, Probability Seminar, Louisiana State University, October 2005
- *Windows 2020: Introduction to Quantum Computing*, Guest Speaker, Nicholls State University, LA, Fall 2002
- *Graphical Representations of Equipotential Surfaces*, Louisiana Academy of Science and Fine Arts at Northwestern State University of Louisiana, Natchitoches, LA, April 1999

## CONFERENCES AND SEMINARS

- Leadership SFA, SFASU, Fall 2022 and Spring 2023
- App Development with Kotlin, Google, Summer 2022.
- Create with VR for Educators Workshop, Unity and Meta, Fall 2022
- Organizer of STEM Fall Research Conference, Stephen F. Austin State University, Fall 2013
- Organizer of Special Session: White Noise Distribution Theory and Orthogonal Polynomials, AMS Southeastern Meeting, Louisiana State University, Spring 2008
- Texas NEXT Fellow, MAA Meeting of the Texas Section, Spring 2008
  - Seminar: Cooperative Learning in Undergraduate Mathematics Classes
  - Seminar: Connecting Students to Mathematics
- Texas NEXT Fellow, Texas Undergraduate Mathematics Conference, Fall 2007
  - Seminar: Making Math Fun
  - Seminar: Undergraduate Research
  - Seminar: Using Inquiry-Based Learning Teaching Techniques

## Directed Student Learning and Research Projects

### GRADUATE STUDENTS

- Megan Simison, Thesis Subject: On the Structure of Nuclear Spaces, *in progress*.
- Daniel Riser-Espinoza, Thesis Subject: Algorithm for Reconstructing Radon Variables from Conditional Expectations, Spring 2013

- Cheng Chang, Thesis Subject: Extensions of the Radon Transform and Support Theorem to the Gaussian Measure, Spring 2010
- Pushp Awasthi, Thesis Subject: Half Plane Radon Transform and Support Theorem for Cylinder Sets, Spring 2009
- Member of Thesis Defense Committee: Jackson Faires, My Nguyen, Aaron Baker, Ryan Melton, Bryn Brakefield, Chris Turner, Kyle Ares, Jodi Hi
- Chair of Oral Exam Committee: Spencer Habluetzel, John Sullivan, Brian Su, Jacob Smith.
- Member of Oral Exam Committee: Tarcia Jones, Marc Moore, Kristi Kelly, Austin O'Reilly, Rebecca Woods
- Mentor of Graduate Students: Cheng Change, Pushp Awasthi, Robin Keng, John Sullivan, Meagan Siminson

## UNDERGRADUATE STUDENTS

- Carly Hawley, Adam Nixon, Zach Burgess, Zach Rottman, and James Braden, *Mixed Reality Color Enhancement System*, Fall 2022
- Madison Kelsey and Jesse Glenn, *Parking Lot Car Detection Using Statistical Inference*, Fall 2022
- Madison Kelsey, *Mixed Reality Subtitle System*, Summer 2022
- William Lister, *Strategy for Rectangular Dots and Boxes*, Fall 2021
- Gianna Grosso, *Knights and Politicians*, Fall 2021
- Rachel Rucker, *Optimal Change Making and Refund Algorithm*, Spring 2021
- James Hassell, *Algorithm for Detecting Arbitrages*, Spring 2021
- Rachel Rucker and Zane Corbiere, *Dots and Boxes Strategy*, Fall 2020
- Morgen Huether, *Survey of Turing Machines*, Fall 2020
- Mackenzie Berryman, *Sylvester's Problem*, Fall 2019
- Josh Harris, *Surfaces of Revolution in Virtual Reality*, SFA Undergraduate Research Conference, Spring 2019
- Thomas Harrison, *Kepler's Laws of Motion*, Fall 2018
- Randal Robin, *Marching Cubes in Virtual Reality*, Fall 2018
- Rachel Ballback, *Statistical Study of Recreational Center Usage*, Summer 2018
- Tristan Sims, *Modeling Orbital Paths*, Spring 2018
- Ryan Thompson, *Randomized Algorithms*, Fall 2017
- Dillon Jager-Kujawa, *Developing a Program to Automate Theorem Proving*, Spring 2017
- Brett Wilson, *Using PROLOG to Win at Clue*, Spring 2017
- John Yarbrough, *Generalizations of Newton's Method*, Fall 2016
- Chris Janusa, Kevin Roux, and Savannah Walker, *Optimal Farkle Strategy*, Texas MAA Section Meeting, April 2017
- Lawerance Jian, *Line of Site Based on Node Configuration*, Bright Ideas Conference, Spring 2013
- Tiffany Lundy, *A Multiplicative "Conic"*, Undergraduate Research Conference, Spring 2012
- Cory Robinson, *Volumes of Solids formed by Function Rotations*, Bright Ideas Conference and Undergraduate Research Conference (poster presentation), Spring 2012
- Cory Robinson, *Volumes of Solids formed by Function Rotations*, Texas Undergraduate Mathematics Conference (oral presentation), Fall 2012
- Kerron Joseph and Jay Walder, *Probabilities of Communication*, Bright Ideas Conference, Spring 2010
- Ken Lambdin, *Tension Added to Rope Due to Wind Pressure*, Report to Irving Fire Station, Fall 2010



- Harvey Marquis, *Volumes of Solids Formed by Functions Rotations*, Bright Ideas Conference, Spring 2008
- Kate Thompson, *The Binomial Model in Finance*, 2008

## Professional Memberships

- Association for Computing Machinery, 2021-Present
- Upsilon Pi Epsilon, 2018-Present
- American Mathematical Society, 2006-2020
- Mathematical Association of American, 2006-2018
- Texas Next Fellow, 2006-2008

## Professional Development

- Create with VR Educators Workshop, Summer 2022
- App Development in Kotlin, Self-Study published by Google, Summer 2022
- Leadership SFA Year-Long Training, 2021-2022
- Data Science Education Group, multi-university bi-weekly meeting to discuss education in data science, 2021-2022
- ICERM Data Science and Machine Learning Workshop, 2021
- Standards-Based Grading Seminar, 2021
- Diversity and Inclusion Program, On-Campus Accommodations for Students with Disabilities seminar, 2021
- Diversity and Inclusion Program, Know Your Rainbow: An Introduction to the LGBTQIA+ Community, 2021
- Diversity and Inclusion Program, The Gen-Z Frenzy: Teaching and Learning in the post-Millennial Generation seminar, 2021
- Diversity and Inclusion Program, Helping Our Students Survive College seminar, 2021
- Science of Effective Teaching and Learning, 2021
- Workshop on Principle of Small Teaching, 2021
- MAA & TRIPODS Advanced Workshop in Data Science, 2021
- Helping Our Students Survive College, Workshop, 2021
- Data Science: Inference and Modeling, HarvardX, 2020
- Diversity and Inclusion Certification Program Foundational Workshop, 2020
- Know Your Rainbow: An Introduction to the LGBTQIA+ Community, 2020
- Teaching Generation Z, Workshop at SFA, March 2020
- Smalling Teaching (Author: James Lang), Book Study, 2020
- Classroom Visitation, 2006-Present
- Quality Enhance Program in Undergraduate Research, High Impact Practices, 2011-2012
- Online Instructor Certification, Office of Instructional Technology, 2010-2011
- Differential Geometry Study Group, 2010-2011
- Fuzzy Logic Study Group, 2009-2010
- Quantum Mechanics Study Group, 2008-2009
- Inquiry-Based Learning New User Workshop, Educational Advancement Foundation, 2008
- Mathematical Finance Study Group, 2007-2008
- Teaching Circle, Teaching Excellence Center, Stephen F. Austin State University, Fall 2006-2008

## Service

### COURSES CREATED/REDESIGNED

- Data Science for Everyone, Undergraduate Course
- VR and Game Development, Undergraduate Course (upcoming!)
- Computer Science Principles, Undergraduate Course
- Mathematical Technology and Communication, Graduate Course
- Mathematical Modeling and Simulation, Graduate Course

### OUTREACH

- iMAS Academy, Computer Science Representative, Summer 2023
- SFA Distinguished High School Liaison, Computer Science Representative, 2021-Present
- SFA STEM Academy, Computer Science Representative, 2020-Present
- Blueridge High School, Virginia, Consult for Research Project, Spring 20202
- Middle School Mathematics Circle, Mike Moses Middle School, Fall 2016
- STAAR WARS (Standardized Test Preparation), McMichael Middle School, Spring 2015
- Middle School Mathematics Circle, McMichael Middle School, Spring 2015
- Girl Scout STEM Day, Organizer, January 2011-2014
- College Committee for Outreach Activities, STEM Center, Spring 2011-Spring 2014, Subcommittee for SMASH Camp, Spring 2011-Spring 2013
- Organized Judges for Fredonia Hill Baptist Academy Science Fair, Spring 2009-Spring 2011
- Outreach Presentation at Fredonia Hill Baptist Academy, Binary Arithmetic and Bisection, Spring 2009
- Math Blitz Participant (recruitment at local middle schools), January 2009-Present
- Volunteered at High School Mathematics competitions held at Louisiana State University in 2002
- Judge for high school science fair held at Nicholls State University in 2000
- Made presentations at local high schools throughout undergraduate and graduate

### COMMITTEE

- Faculty Senate Professional Welfare Committee, Fall 2022-Spring 2023
- AARC Power Hour/SI Coordinator, Fall 2022
- Computer Science Registration Drive, Fall 2021
- Chair of Department Head Search Committee, Fall 2021-Spring 2022
- Hiring Committee, Fall 2021-Spring 2022
- Faculty Senate Strategic Plan Subcommittee, Fall 2021-Spring 2022
- Faculty Senate Ad Hoc Subcommittee, Fall 2021-Spring 2022
- President's Innovation Grant Panel, Spring 2021
- Faculty Senate, Spring 2021-Spring 2024
- Unit Assessment Committee, Spring 2021
- College of Science and Mathematics Think Tanks, Fall 2020
- Computer Science Major Mapping Project, Fall 2020
- College Tenure and Promotion Committee, College of Science and Mathematics, Member, Fall 2020-Present
- Pretenure Review, College of Science and Mathematics, Member, Spring 2020-Present
- Pretenure Review Committee, Department of Computer Science, Member, Spring 2020-Present
- Post-tenure Review Committee, Depart of Mathematics, Member, Fall 2012-Spring 2020

- Pretenure Review Committee, Department of Mathematics, Member, Fall 2012-Spring 2020
- SFA Mobile App Exploration Committee, Co-chair, Fall 2019-Present
- Precalculus A and B Committee, Member, Spring 2019
- Employee Wellness Soccer Club, Chairperson, Fall 2017-Present
- Professor Emeritus Evaluation Committee, Member, Fall 2017-Spring 2018
- Virtual Reality Committee, Member, Fall 2017-Spring 2018
- Mathematics Major Pathways Committee, Member, Fall 2017-Spring 2018
- College Council, Member, Fall 2017-Spring 2018
- Full Professor Evaluation Committee, Chair, Fall 2017-Present
- Virtual Reality Development Committee, Fall 2017-Present
- Mathematics Major Revision Committee, Fall 2017-Spring 2018
- Senior Professor/Post-Tenure Review, Fall 2016-Present
- College Council, Fall 2017-Spring 2018
- Seminar in Mathematics, Course Development, Fall 2017
- College of Science and Mathematics, Undergraduate Research Committee, Spring 2017
- ABET Assessment Committee, Fall 2016-Fall 2017
- SACS Assessment Committee, Fall 2016-Fall 2017
- Committee on Core Assessment Core Objective for Calculus, Chairperson, Spring 2016
- Faculty Development Leave Committee, 2015-2017
- Calculus Lab Review Committee, Fall 2015
- Math 540 M.S. Assessment Team, Chair, September 2009-2015
- Mathematical Technology and Communication, Online Course Development, Fall 2014
- STEM Faculty Research Enhancement Grant Committee, Spring 2013-2014
- STEM Summer Research Funds, Summer 2013
- STEM Conference Planning, Fall 2013
- Tenure and Promotion Evaluation Committee, Member, Fall 2012-Present
- Undergraduate Research Council, September 2011-2014.
- University Research Council, September 2011-2014
- Program Consolidation Committee, Spring 2011-2012
- Library and AARC Committee, Member, September 2008 - September 2010
- College Academic Council, Member, September 2008 - September 2010
- Calculus Textbook Committee, Spring 2010
- Math Room 305 Redesign Committee, Spring 2010
- Math 505 M.S. Assessment Team, Member, September 2009-2013
- Proposal for Undergraduate Curriculum Change, January 2010-May 2010
- Math 143 Course Assessment, Chair, September 2007 - September 2010
- Math 133 Course Assessment, Chair, September 2007 - 2011
- Math 539 Syllabus Committee, Chair, Fall 2007
- Math 540 Syllabus Committee, Chair, Fall 2007
- Math 138 Syllabus Committee, Member, January 2007 - September 2009
- Math 138 Course Assessment, Member, August 2006- August 2008
- Math 139 Course Assessment, Member, September 2006 - Present
- Advisory Council/Hiring Committee, Department of Mathematics, September 2007-May 2008
- Math 317 Review Committee, April 2008

## **OTHER**

- ABET Program Reviewer, 2022
- Course Coordinator: Computer Science Principles, Discrete Structures, Algorithms Analysis, 2020-Present
- Mentored Undergraduate Research Experiences Coordinator, 2020-Present
- ABET and SACSCOC Assessment Coordinator for CSCI 3333 and 3342, Fall 2020-Present
- Axe'cepted Event, Spring 2021
- Mathematics Department Open House, Spring 2019
- Showcase Saturday, Spring 2019
- Math 263 Faculty Mentor, Fall 2019
- Academic Advising, Undergraduate and Graduate, Fall 2006-Present
- Mathematics Seminar MTH 463, Project Reviewer, Fall 2016 – Present
- MAA Texas Section, Undergraduate Presentation Judge Organizer, Spring 2016
- Mathematical Technology and Communication, Course Development, Fall 2011
- Library Review and Holdings Modification, Fall 2009 - 2014
- Faculty Advisor for Phi Rho Tau, 2007-2011
- Faculty Advisor for Chess Club, 2008-2010
- Created SFA Theme for Beamer/LaTeX use, Summer 2010
- Create Undergraduate Research Poster Display, Summer 2010
- Created Scholarship Poster Display, Fall 2010
- Student Advising, August 2006 - Present
- Participant in the student organizations (MAA, UPE) including attending meetings and chaperone duties on trips, 2006-Present
- Showcase Saturday, Assisted in constructing display items for Showcase Saturday, November 2006
- Graduate Student Day, Participated and gave a tour to new students, August 2006

## **Distinctions**

- Bravo Award, SFA Academic Assistance and Resource Center, Fall 2022
- SFA Diversity Champion, 2022
- Diversity and Inclusion Certification, 2022
- SFA Leadership Nomination and Selection, 2021-2022
- Distinguished Research/Creative Activity Award, SFA - Research and Graduate Studies, Fall 2019
- SFA Distinguished Grant Award, 2015
- Promotion to Professor, July 2015
- SFA Outstanding Graduate Thesis Award, with Daniel Riser-Espinoza, 2014
- Tenure and Promotion to Associate Professor, July 2012
- Texas NExT fellow, 2006-2007
- National Science Foundation K-12 Fellow at Louisiana State University (GK-12), June 2005-June 2006
- Dissertation Year Fellowship, Louisiana State University, July 2005
- Board of Regents Fellow, Louisiana State University, August 2001-August 2005
- Honorable Mention for NSF Fellowship, National Science Foundation, Summer 2002
- National Computer Science Scholastic Achievement Award, Nicholls State University, May 2001

- Outstanding Computer Science Graduating Senior Award, Nicholls State University Computer Science Department, May 2001
- Larry Haw Memorial Award for excellence in mathematics, Nicholls State University Mathematics Department, May 2001
- University President's Medal of Honor, Nicholls State University, May 2001
- Inducted into Nicholls State University Hall of Fame, 2001

## **Work Experience (Non-Academic)**

### **SOFTWARE DEVELOPER | LAFOURCHE PARISH SHERIFF'S OFFICE | AUG. 2000 – AUG. 2001**

- Designed, implemented, and tested windows-based and web-based software using Visual Basic, SQL, and Java

### **SOFTWARE DEVELOPER | NICHOLLS STATE UNIVERSITY | AUG. 1999 – AUG. 2000**

- Designed, implemented, and tested windows-based and web-based software using Visual Basic, SQL, and Java

### **SIMULATION ANALYST | CACI | MAY 1999 – AUG. 1999**

- Designed, implemented, and tested simulation analysis software using Java. Used developed tools to test various network topologies for the DIMHRS project (Defense Integrated Military Human Resource System)

## **External Consulting and Public Service**

### **CONSULTANT | BEST PRACTICES IN MIXED REALITY USE FOR EDUCATION | SUMMER 2020**

- Consulted with Howard Winston, University of Connecticut
- Discussed best practices of using mixed reality in education

### **VICE PRESIDENT | NACOGDOCHES YOUTH SOCCER ASSOCIATION | 2012 – 2018**

- Organize all aspects of the soccer season including schedules, practices, coaches, teams, rosters, etc.
- Created field measurement tool that uses analytic geometry to line fields for play
- Created scheduling template and guide to facilitate season schedules

### **ADVISOR | NACOGDOCHES INDEPENDENT SCHOOL DISTRICT GIFTED AND TALENTED PROGRAM | 2014 – 2018**

- Advised school administrators on the identification of gifted and talented children
- Organized and created activities for children in the gifted and talented program

### **CONSULTING AND RECRUITMENT | MODERN SPORTS GROUP | 2017**

- Advised on matters regarding computer science
- Identified and recruited individuals for internship opportunities

### **ADVISOR | LOUISIANA CHARTER SCHOOL | 2013**

- Advised on creation of assessment tools and rubrics for mathematical lessons