Curriculum Vita

Li Zhang

Department of Mathematical Sciences
The Citadel, Charleston, SC 29409
(843)953-5033 li.zhang@citadel.edu

EDUCATION:

Ph.D., Applied Mathematics and Computational Science, The University of Iowa, Iowa City, Iowa

MBA, The Citadel, Charleston

M.C.S., Computer Science, The University of Iowa, Iowa City, Iowa

M.S., Mathematics, University of Southwestern Louisiana (present name University of Louisiana at Lafayette), Lafayette, Louisiana

B.S., Engineering, Wuhan University of Technology (previous name Wuhan Jiaotong Keji University), Wuhan, China

APPOINTMENTS

Full professor, department of Mathematical Sciences (previous name Mathematics and Computer Science), The Citadel (since Fall 2016 - present), Charleston, SC.

Associate professor, department of Mathematics and Computer Science, The Citadel (Fall 2010 – Spring 2016), Charleston, SC.

Assistant professor, department of Mathematics and Computer Science, The Citadel (Fall 2004 – Spring 2010), Charleston, SC.

TEACHING EXPERIENCE:

Calculus I: Limits, derivatives, applications of the derivative, antiderivatives and definite integrals.

Calculus II: Applications of the integral, transcendental functions, techniques of integration, series and sequences of real numbers, Taylor series, and power series.

Calculus III: The analytical geometry of two and three dimensions, the differential and integral calculus of functions of two or more variables, and vector differential calculus.

Linear Algebra: Systems of linear equations, algebra of matrices, inverses, determinants, vector spaces with emphasis on Euclidean vector spaces, bases, subspaces, transformations, eigenvalues and eigenvectors.

Introduction to Discrete Structures: Set algebra including relations and functions, propositional and predicate logic, combinatorics, graphs, and applications of these to various areas of computer science.

Applied Engineering Mathematics I: An integrated course in linear algebra and differential equations. Topics include differential equations of the first order and degree, linear differential equations of higher order, systems of differential equations, the Laplace transform, vector spaces, bases, linear transformations, systems of linear equations, algebra of matrices, and determinants.

Applied Engineering Mathematics II: Advanced topics in differential equations and multi-dimensional calculus. Topics include power series solutions of differential equations, line and surface integrals, Fourier series, vector integral calculus, special functions, and an introduction to partial differential equations.

Deterministic Methods of Operations Research: The theory and applications of deterministic models of operations research. Topics include linear programming and the simplex algorithm, transportation and assignment problems, graphs and network flows, dynamic programming, and sensitivity analysis.

Probabilistic Methods of Operations Research: The theory and applications of probabilistic models of operations research. Topics include game theory, decision analysis, stochastic process, Markov chains, queuing models, birth and death processes, inventory theory, and simulation.

Applied Operations Research: An introduction to the application of quantitative techniques to the managerial decision-making process. The major mathematical models associated with operations research are presented. The course is applications oriented, and the model building process is emphasized. Excel spread sheet is used to solve most applications in optimization.

Mathematical Modeling: An introduction to the theory and practice of building and analyzing mathematical models for real world situations encountered in the social, biological, and environmental sciences.

Introduction to Probability and Statistics: An introduction to probability and statistical concepts. Topics include frequency distributions, measures of central tendency and dispersion, probability rules, probability distributions, sampling distributions, hypothesis testing, analysis of variance, correlation, and regression.

Probability and Statistics: This is a graduate course. Topics will include probability, random variables, important probability distributions, sampling distributions, point and interval estimation, hypothesis testing, regression, correlation, and analysis of variance. Emphasis will be given to applications in the fields of biology, business, agriculture, political science, and education.

Statistical Methods: An elementary treatment of probability and statistical concepts. Topics include data collection, descriptive statistics, measures of central tendency and dispersion, normal and binomial distributions and hypothesis testing.

Elementary Mathematical Modeling: A service course where students will use graphs, functions, and tables to describe data and use mathematical models to interpolate and extrapolate.

Applied Calculus I: An introduction to differential and integral calculus of polynomials, exponential, and logarithmic functions with an emphasis on applications to business and the life and social sciences.

Applied Calculus II: A continuation of the calculus introduced in MATH 106. Topics include techniques of integration, applications of integrals, improper integrals, partial derivatives and applications, and a brief introduction to double integrals.

Finite Mathematics: A service course where students learn mathematics of finance, counting methods, probability, and statistics

College Algebra: A service course where students study precalculus and trigonometry.

Microcomputer Applications: An introduction to computer systems and computer applications. Students learn to use software packages for word processing, database management, spreadsheets, and presentations, with applications to management and social sciences.

RESEARCH INTERESTS:

Network design problems in operations research

Operations research

Mathematical Modeling

Combinatorial design

PUBLICATIONS:

“Math Placement Exam: Implications for Math Readiness and Students' Success”, joint with M. Myrick. Submitted.

“Higher Education: Change or Perish”. Accepted. *The Proceedings of the 2026 SEINFORMS (Southeastern Chapter of Institute of Operations Research and Management Sciences) conference*, 2026.

“Social Connection and Mental Health Among Adults in the United States”, joint with K. Yagel. Accepted. *The Proceedings of the 2026 SEINFORMS (Southeastern Chapter of Institute of Operations Research and Management Sciences) conference*, 2026.

"State Pension Plan Versus State Optional Retirement Program". *The proceedings of the 2026 SEDSI (Southeast Decision Science Institute) conference*, pages 19–27, 2026. https://www.sedsi.org/_files/ugd/f590f6_f0b26d5c25cf43ac9923057462d604c0.pdf

"An Exploratory Approach for Teaching Systems of Linear ODEs with Real Repeated Eigenvalues", joint with B. Luo. *CODEE Journal*: Vol. 19, Article 7, 2026. https://scholarship.claremont.edu/codee/vol19/iss1/7 .

"Student Evaluations of Teaching Should Revert to Their Original Purpose". *The Proceedings of the 2025 SEINFORMS (Southeastern Chapter of Institute of Operations Research and Management Sciences) conference*, pages 656-663, 2026. https://www.seinforms.org/_files/ugd/6002b9_9b2819b5af2347ccb7d435ec611c0eb0.pdf

"GDDs with Two Groups of Unequal Sizes and Block Size Four", joint with D.G. Sarvate and Z. Girma. *Utilitas Mathematica*, volume 124, pages 115 – 127, 2025. www.combinatorialpress.com/um. DOI: 10.61091/um124-07.

"Using Modeling Activities to Engage Students in Learning". *The Proceedings of the ASEE-SE (American Society for Engineering Education Southeastern) 2025 Conference*, 2025. DOI: 10.18260/1-2—54199. https://peer.asee.org/54199

"Group Divisible Designs with Three Groups and Block Size Four", joint with D. G. Sarvate and D. M. Woldemariam. In: Heuss, S., Low, R., Wierman, J.C. (eds) Combinatorics, Graph Theory and Computing. SEICCGTC 2022. Springer Proceedings in Mathematics & Statistics, vol 462, pages 51-70. Springer, Cham. https://doi.org/10.1007/978-3-031-62166-6_4, 2024.

"What Software to Use in an Introduction to Operations Research Course?" Detailed Abstract. *The Proceedings of the 2024 SEINFORMS (Southeastern Chapter of Institute of Operations Research and Management Sciences)*, pages 363-363 2024. https://www.seinforms.org/_files/ugd/6002b9_175119bafef44e93b85f5f49dea60b5a.pdf

"Analyzing the Influence of Virtual Care Management on Patient Health Outcomes and Risk Stratifying Chronic Kidney Disease Patients for Stage Degeneration", joint with Y. Ashenafi, et al. Technical report. *MIIR* (*Mathematics in Industry Reports*), 2024. https://www.siam.org/media/r1pj5uqx/vironix_mpi2024.pdf

"On Constructions of GMGDs", joint with D. G. Sarvate and W. Somnuek. *Utilitas Mathematica*, Volume 119, pages 51 – 61, 2024. https://combinatorialpress.com/um-articles/vol-119/on-constructions-of-gmgds/; DOI: https://www.doi.org/10.61091/um119-06.

"Blue Whale and Krill Populations Modeling". *CODEE* (Community of Ordinary Differential Equations Educators) *Journal*, Volume 17, Article 7, pages 1 – 16, 2024. https://scholarship.claremont.edu/codee/vol17/iss1/7/

"Combat Modeling Using Lanchester Equations". *International Journal of Mathematical Education in Science and Technology*, Volume 55, issue 2, pages 224 - 233, 2024. https://www.tandfonline.com/loi/tmes20

"An Open Problem in Embedding", joint with D. G. Sarvate. *JCMCC* (Journal of Combinatorial Mathematics and Combinatorial Computing), Volume 121, pages 53-57, 2024. http://www.combinatorialpress.com/jcmcc. DOI:10.61091/jcmcc121-05.

"Application of Overbooking Model to College Admission at The Citadel", joint with J. C. Pippins. *International Transactions in Operational Research* 28 (5), 2402 – 2413, https://doi.org/10.1111/itor.12948, 2021.

"3-GDD (n1, n2, 4; Λ1, Λ2)", joint with D. G. Sarvate. *JCMCC* (Journal of Combinatorial Mathematics and Combinatorial Computing), Volume 114, pages 341 – 352, 2020.

"GDD (n_1, n, n + 1, 4; λ_1, λ_2): n_1 = 1 or 2", joint with K. Namyalo and D. G. Sarvate. *JCMCC* (Journal of Combinatorial Mathematics and Combinatorial Computing), Volume 110, pages 19 – 37, 2019.

"A Mathematical Remodeling for Crop Portfolio Selection Under Limited Irrigation Resource", joint with T. Harper. *The Proceedings of the 2018 South Carolina Water Resources Conference*, Columbia, SC, 2019: *https://tigerprints.clemson.edu/scwrc/2018/2018infrastructure/*.

"Decompositions of a λK_n into LOE and OLE graphs", joint with D. G. Sarvate. *ARS Combinatoria*, Volume 133, pages 93 – 105, 2017.

"Group Divisible Designs of Three Groups and Block Size Five with Configuration (1, 2, 2)", joint with D. G. Sarvate. *Australasian Journal of Combinatorics*, Volume 66 (2), pages 333 – 343, 2016.

"Group Divisible Designs of Four Groups and Block Size Five with Configuration (1, 1, 1, 2)", joint with R. Mwesigwa and D. G. Sarvate. *Journal of Algebra Combinatorics Discrete Structures and Applications*, Volume 3, issue 3, pages 187 – 194, 2016.

"Decomposition of a $\lambda K_{m, n}$ into graphs of four vertices and five edges", joint with D. G. Sarvate and P. A. Winters. *JCMCC* (Journal of Combinatorial Mathematics and Combinatorial Computing), Volume 98, pages 139 – 150, 2016.

"A fundamental theorem of multi-graph decomposition of a $\lambda K_{m, n}$", joint with D. G. Sarvate and P. A. Winters. *JCMCC* (Journal of Combinatorial Mathematics and Combinatorial Computing), Volume 96, pages 201 – 216, 2016.

"Decomposition of a $2K_{10t+5}$ into H_3 graphs", joint with D. G. Sarvate. *JCMCC* (Journal of Combinatorial Mathematics and Combinatorial Computing), Volume 94, pages 53 – 59, 2015.

"Decomposition of a $2K_{10t}$ into H_3 graphs", joint with D. G. Sarvate. *ARS Combinatoria*, volume 121, pages 315-319, 2015.

"Some construction techniques for $H_2(8t, 3)s$", joint with D. G. Sarvate. *JCMCC* (Journal of Combinatorial Mathematics and Combinatorial Computing), Volume 90, pages 11 – 19, 2014.

"Two Combinatorial Questions", joint with D. G. Sarvate. *Bulletin of the ICA*, Volume 70, pages 45 – 56, 2014.

"Decomposition of a $3K_{8t}$ into H_2 graphs", joint with D. G. Sarvate. *ARS Combinatoria*, Volume 110, pages 23 – 32, 2013.

"Decomposition of a λK_v into equal number of K_3s and P_3s", joint with D. G. Sarvate, *The Bulletin of the ICA*, Volume 67, pages 43 – 48, January, 2013.

"Special case studies of the stochastic p-hub center single allocation problem with service constraints". *The Proceedings of the 12th INFORMS Computing Society Conference*, pages 120 – 129, Monterey, CA, 2011.

"A Combination Model and Application for the Water Quality Evaluation", joint with Z. G. Zhu and S. Y. Wei. *WSEAS (World Science and Engineering Academy and Society) Transactions on Systems*, Issue 5, Volume 8, pages 628 – 637, 2009.

"The Three-Hub Center Allocation Problem". *The Proceedings of the 47th ACM Southeast Conference*, Clemson, South Carolina, March, 2009.

"The p-Hub Center Allocation Problem", joint with A. Campbell and T. Lowe, *European Journal of Operational Research*, 176, pages 819 – 835, 2007.

"Upgrading Arcs to Minimize the Maximum Travel Time in a Network", joint with A. Campbell and T. Lowe, *Networks*, pages 72 – 80, 2006.

"The Capacitated p-Hub Center Multiple Allocation Problem". *The Proceedings of the 5th Hawaii International Conference on Statistics*, Mathematics and Related Fields, pages 1728 – 1737, Honolulu, Hawaii, 2006.

"Upgrading Arc Problem with Budget Constraint". *The Proceedings of the 43rd ACMSE*, pages 150 – 152, volume 1, Kennesaw, Georgia, 2005.

PRESENTATIONS:

"Higher Education: Change or Perish". The 2026 SEINFORMS (Southeastern Chapter of Institute of Operations Research and Management Sciences), Myrtle Beach, October 15, 2026.

"Social Connection and Mental Health Among Adults in the United States". The 2026 SEINFORMS (Southeastern Chapter of Institute of Operations Research and Management Sciences), Myrtle Beach, October 15, 2026.

"State Pension Plan Versus State Optional Retirement Program". The 2026 SEDSI (Southeast Decision Science Institute) conference, Jacksonville, FL. February 20, 2026.

"Student Evaluations of Teaching Should Revert to Their Original Purpose". The 2025 SEINFORMS (Southeastern Chapter of Institute of Operations Research and Management Sciences), Myrtle Beach, October 10, 2025.

"Using Modeling Activities to Engage Students in Learning". The ASEE-SE (American Society for Engineering Education Southeastern) 2025 Conference, Mississippi State, MS, March 10, 2025.

"Software Usage in an Introduction to Operations Research Course". The 2024 SEINFORMS (Southeastern Chapter of Institute of Operations Research and Management Sciences), Myrtle Beach, October 3, 2024.

"Mathematical Problems in Industry Workshop: Vironix". Group presentation at the 2024 MPI (Mathematical Problems in Industry) Workshop sponsored by SIAM (Society for Industrial and Applied Mathematics), June 29, 2024.

"Promoting Technology in a Mathematical Modeling Class". Joint Mathematics Meetings, San Francisco, CA, January 4, 2024.

"The Challenging Task of Teaching Undergraduate Differential Equations". Joint Mathematics Meetings, San Francisco, CA, January 4, 2024.

"Simulation and Modeling Warfare Blue Whale and Krill Population". Virtual SIMIODE EXPO 2023, February 12, 2023.

"Simulation and Modeling Blue Whale and Krill Population in A Modeling Class Using Differential Equations". Joint Mathematics Meetings, Boston, MA, January 4, 2023.

"Group Divisible Designs with Three Groups and Block Size 4". The 53rd Southeastern International Conference on Combinatorics, Graph Theory and Computing (virtual) in March, 2022.

"Simulation and Modeling Warfare in a Differential Equations Class". Virtual SIMIODE EXPO 2022 in February, 2022.

"M&M Attrition Warfare". SIMIODE MINDE workshop on June 11, 2021.

"GDD (m, n, 3; λ_1, λ_2) and BIBD(mn + s, 3, max{λ_1, λ_2})". The 33rd MCCCC (Midwest Conference on Combinatorics and Combinatorial Computing), Rochester, NY, October, 2019.

"Modeling for Crop Portfolio Selection Under Limited Irrigation Resource and Uncertainty". The 2019 SEINFORMS (Southeastern Chapter of Institute of Operations Research and Management Sciences), Myrtle Beach, October, 2019.

"A Mathematical Remodeling for Crop Portfolio Selection Under Limited Irrigation Resource". The 2018 SCWRC (South Carolina Water Resource Conference), Columbia, SC, October, 2018.

"3-GDD(n1, n2, 4;Λ1, Λ2)". The 32nd MCCCC (Midwest Conference on Combinatorics and Combinatorial Computing), Duluth, MN, October, 2018.

"GDD (n_1, n, n + 1, 4; λ_1, λ_2) for n_1 = 1 or 2". The 31st MCCCC (Midwest Conference on Combinatorics and Combinatorial Computing), Carrollton, GA, October, 2017.

"Group Divisible Designs of Three Groups and Block Size Five with Configuration (1, 2, 2)". The 30th MCCCC (Midwest Conference on Combinatorics and Combinatorial Computing), Bloomington, IL, October, 2016.

"Group Divisible Designs of Four Groups and Block Size Five with Configuration (1, 1, 1, 2)". The 29th MCCCC (Midwest Conference on Combinatorics and Combinatorial Computing), Charleston, SC, October, 2015.

"Decomposition of a $\lambda K_{m,n}$ into graphs of four vertices and five edges". The 28th MCCCC (Midwest Conference on Combinatorics and Combinatorial Computing), Las Vegas, Nevada, October, 2014.

"Decomposition of a $2K_v$ into H_3 graphs". The 27th MCCCC (Midwest Conference on Combinatorics, Cryptography, and Computing), Georgetown, Texas, October, 2013.

"Decomposition of a λK_v into equal number of K_3s and P_3s". The 26th MCCCC (Midwest Conference on Combinatorics, Cryptography, and Computing), Cedar City, Utah, October, 2012.

"Special case studies of the stochastic p-hub center single allocation problem with service constraints". The 12th INFORMS Computing Society Conference, Monterey, CA, January, 2011.

"The Three-Hub Center Allocation Problem". The 47th ACM Southeast Conference, Clemson, South Carolina, March, 2009.

"The p-Hub Center Allocation Problem". The 11th INFORMS Computing Society Conference, Charleston, South Carolina, January, 2009.

"The Capacitated p-Hub Center Multiple Allocation Problem". The 5th Hawaii International Conference on Statistics, Mathematics and Related Fields, Honolulu, Hawaii, January, 2006.

"Upgrading Arc Problem with Budget Constraint." The 43rd ACMSE (Annual Association for computing machinery Southeast) conference, Kennesaw, GA, March 2005.

"The p-Hub Center Problems in the Allocation Phase." INFORMS (Institute for Operations Research and Management Science) conference, Atlanta, GA, October 2003.

GRANTS AND HONORS:

Presentation Grant: The Citadel, October 15 - 16, 2026

Presentation Grant: The Citadel, February 18 – 20, 2026

Research Grant: The Citadel, July, 2025 – June, 2026

Presentation Grant: The Citadel, October 9 - 10, 2025

Presentation Grant: The Citadel, March 9 - 11, 2025

Presentation Grant: The Citadel, October 3 - 4, 2024

Research Grant: The Citadel, July, 2024 – June, 2025

MPI (Mathematical Problems in Industry) 2024 workshop: selected to attend as a problem solver and obtain travel support, University of Vermont, Burlington, VT, June 25 – June 29, 2024.

Research Grant: The Citadel, July, 2023 – June, 2024

Development Grant: The Citadel, April 13, 2024.

Presentation Grant: The Citadel, January 3 - 6, 2024

Presentation Grant: The Citadel, January 4 - 7, 2023

Research Grant: The Citadel, July, 2022 – June, 2023

Research Grant: The Citadel, July, 2021 – June, 2022

Development Grant: The Citadel, May, 2022 – June, 2022

Presentation Grant: The Citadel, February 10 - 12, 2022

Research Grant: The Citadel, July, 2020 – June, 2021

Research Grant: The Citadel, July, 2019 – June, 2020

Presentation Grant: The Citadel, October 11 - 13, 2019

Presentation Grant: The Citadel, October 3 - 4, 2019

ICERM (Institute for Computational and Experimental Research in Mathematics) “Encrypted Search” workshop: selected to attend and obtain travel support, Brown University, Providence, Rhode Island, June 10 - June 14, 2019.

Research Grant: The Citadel, July, 2018 – June, 2019

Presentation Grant: The Citadel, October 17 - 18, 2018

Presentation Grant: The Citadel, October 4 - 7, 2018

Developmental Grant: The Citadel, March, 2018

Presentation Grant: The Citadel, October, 2017

Research Grant: The Citadel, July, 2017 – June, 2018

Developmental Grant: The Citadel, March, 2017

Presentation Grant: The Citadel, October, 2016

Research Grant: The Citadel, July, 2016 – June, 2017

ICERM (Institute for Computational and Experimental Research in Mathematics) **REUF** (Research Experiences for Undergraduate Faculty) **workshop**: selected to attend and obtain travel support, Brown University, Providence, Rhode Island, June 26 - June 30, 2017.

Developmental Grant: The Citadel, March, 2016

Research Grant: The Citadel, July, 2015 – June, 2016

Presentation Grant: The Citadel, October, 2015

Developmental Grant: The Citadel, March, 2015

Presentation Grant: The Citadel, October, 2014

Research Grant: The Citadel, July, 2013 – June, 2014

Developmental Grant: The Citadel, March, 2014

Presentation Grant: The Citadel, October, 2013

Developmental Grant: The Citadel, March, 2013

Presentation Grant: The Citadel, October, 2012

Developmental Grant: The Citadel, July, 2012

Research Grant: The Citadel, July, 2011 – June, 2012

Developmental Grant: The Citadel, March, 2012

Developmental Grant: The Citadel, March, 2011

Presentation Grant: The Citadel, January, 2011

Presentation Grant: The Citadel, March, 2009

Presentation Grant: The Citadel, January, 2009

Research Grant: The Citadel, July, 2007 – June, 2008

Data Analysis on Homeland Security Workshop: Selected to attend and obtain travel support, Rutgers University, New Jersey, July 29 – August 4, 2007.

Presentation Grant: The Citadel, July, 2006

Developmental Grant: The Citadel, March, 2006

Presentation Grant: The Citadel, January, 2006

Presentation Grant: The Citadel, March, 2005

New Faculty Research Grant: The Citadel, October, 2004 – June, 2005

IMA Summer Program in Combinatorics and its Applications: Selected to attend IMA (Institute for Mathematics and its Application), Atlanta, GA, Summer, 2003.

PROFESSIONAL MEMBERSHIPS:

Institute for Operations Research and the Management Sciences