C. Richard Cassady, PhD
University Professor of Industrial Engineering (INEG)
University of Arkansas (UofA)

Overview

Tenure-Stream Academic Appointments

University Professor (tenured), INEG, UofA, 2019-present
Professor (tenured), INEG, UofA 2008-2019
Associate Professor (tenured), INEG, UofA, 2004-2008
Assistant Professor, INEG, UofA, 2000-2004
Assistant Professor, Industrial Engineering (IE), Mississippi State University, 1996-2000

Current Activities of Note

Co-Director, UofA Wally Cordes Teaching and Faculty Support Center (2022-2025)
Chair, UofA College of Engineering Honors and Awards Committee (since 2021)
UofA INEG Capstone Experience Coordinator (since 2016)
Chair, UofA INEG Undergraduate Studies Committee (since 2014)
Regional Partner, FIRST Tech Challenge Arkansas (since 2018)
Regional Co-Partner, FIRST LEGO League Arkansas (since 2015)
Coach, FIRST Tech Challenge Team 9879 (since 2015)
Coach, FIRST LEGO League Team 404 (2011-2017, 2019-present)

Past Activities of Note

Chair, Board of Directors, Reliability and Maintainability Symposium (2011-2012)
General Chair, Reliability and Maintainability Symposium (2010-2011)
Management Committee, Reliability and Maintainability Symposium (1998-2010)
Member, Industrial and Systems Engineering Advisory Board, Virginia Tech (2016-2021)
Director, UofA First-Year Engineering Program (2006-2023)
Director, UofA College of Engineering Honors Program (2016-2018)
Tournament Director, FIRST LEGO League Razorback Open Invitational (2015-2023)
Coach, FIRST Global Challenge Team USA (2019)
Coach, Don Tyson School of Innovation FIRST LEGO League Teams (2017-2019)
Mentor, FIRST Robotics Competition Team 3612 (2013-2015)

Education

PhD, ISE, Virginia Tech, 1996
MS, ISE, Virginia Tech, 1993
BS summa cum laude, ISE, Virginia Tech, 1992

Awards and Honors

National/International

Academy of Distinguished Alumni, Grado Department of ISE, Virginia Tech, 2022
Holzman Distinguished Educator Award, Institute of Industrial and Systems Engineers (IISE), 2016
Fellow Award, IISE, elected in 2012
SRE Fellow, Society of Reliability Engineers, elected in 2010
Plait Tutorial Award, Reliability and Maintainability Symposium (RAMS), 2015, 2003
Evans-McElroy Best Paper Award, RAMS, 2013
Ofthsun RAMS Best Paper Award, Society of Reliability Engineers, 2017, 2013, 2006, 2001, 1999
Quality Control and Reliability Best Paper, Industrial Engineering Research Conference, 2004
Member of Tau Beta Pi and Alpha Pi Mu

State/Regional

Arkansas FIRST LEGO League Championship Adult Coach/Mentor Award, 2012
Oklahoma FIRST Tech Challenge Compass Award, 2018
School Partner of the Year, Springdale, Arkansas, Public Schools Education Foundation, 2015
Friend of Springdale Schools, Springdale, Arkansas, School District, 2012

University/College/Department

Charles and Nadine Baum Faculty Teaching Award, UofA, 2006
Distinguished Leadership Award, UofA Honors College, 2018
Faculty Gold Medal, UofA Office of Nationally Competitive Awards, 2019
Fellow, UofA Teaching Academy, elected in 2006
Dean's Award of Excellence, Outstanding Public Service Award, UofA College of Engineering, 2017
Imhoff Outstanding Teacher Award, UofA College of Engineering, 2005
Faculty Member of the Year, Arkansas Academy of Industrial Engineering, 2011, 2005
John L. Imhoff Chair, INEG, 2006-2007

Leadership of the First-Year Engineering Program

In 2006, I chaired the College of Engineering committee that proposed the creation of the Freshman Engineering Program, a common first-year experience for College of Engineering undergraduates at the University of Arkansas. After the college faculty approved the proposal, I was appointed by Dean Ashok Saxena to be the first Director of the Freshman Engineering Program. In 2018, the program was renamed to be the First-Year Engineering Program (FEP). My service as Director continued until 2023.

As Director, I administered both sub-programs of FEP – the Academic Program and the Student Services Program. This responsibility included direct or indirect supervision of two associate directors (one faculty and one staff), four additional staff, four additional faculty, ten graduate teaching assistants, and approximately eighty peer mentors.

During my time as Director, the FEP Academic Program was a two-semester, 30-credit-hour program that included the two-semester Introduction to Engineering course sequence, and 28 credits of coursework in mathematics, science, English, the fine arts, the humanities, and the social sciences. The coursework offered by FEP faculty also included a four-credit engineering-based mathematics course for students who were not calculus-ready, an academic success strategies course for students who were at least two semesters behind in mathematics, and two-semester research and innovation experiences for Honors College students who entered the university with advanced placement in mathematics. The FEP Student Services Program provided proactive support to students through peer mentoring, academic coaching, academic advising, and professional development workshops.

Of the new first-year students who entered the College of Engineering during the nine years (1998-2006) prior to the implementation of FEP

- 61 percent returned to the College of Engineering for their sophomore year
- 17 percent graduated from the College of Engineering in four years
- 38 percent graduated from the College of Engineering in six years.

For the first fifteen (2007-2021) FEP cohorts

- 70 percent returned to the College of Engineering for their sophomore year
- 32 percent graduated from the College of Engineering in four years
- 49 percent graduated from the College of Engineering in six years.

Leadership in FIRST Robotics

My primary community service activities involve FIRST robotics education, mentoring, and leadership. FIRST (For Inspiration and Recognition of Science in Technology) is designed to inspire young people's interest in STEM thru three levels of robotics programs including FIRST LEGO League (FLL), FIRST Tech Challenge (FTC), and FIRST Robotics Competition (FRC). For several years, I have provided seminars, workshops, short courses, and summer camps involving LEGO robotics at local and regional events, as well as the University of Arkansas College of Engineering Summer Camp Program. These activities have reached dozens of coaches, reached hundreds of students in grades 2-7, and resulted in the creation of dozens of FLL teams.

In 2011, a colleague and I created our own FLL team, the YoungLings (team 404). The YoungLings are affiliated with Young Elementary School in Springdale, Arkansas, and won four consecutive FLL Arkansas championships during the 2011-2012 thru 2014-2015 seasons. The YoungLings "retired" after the 2016-2017 season, but my wife and I restarted team 404 in 2019. Our 2019-2020 team included students with autism spectrum disorder who are all clients at Cassady Children's Center, a pediatric speech, occupational, and physical therapy clinic in Springdale that my wife owns and operates. Beginning with the 2020-2021 season, the YoungLings returned to their original affiliation with Young Elementary.

In 2015, Dr. Chase Rainwater and I created our own FTC team, Root Negative One (team 9879), affiliated with the Don Tyson School of Innovation in Springdale. Root Negative One won the Oklahoma FTC championship in the 2015-2016 season, the Arkansas FTC championship in the 2017-2018 and 2019-2020 seasons, and the Alabama FTC Championship in the 2018-2019 and 2020-2021 seasons. In 2018-2019, Root Negative One won the FTC World Championship and were selected to be Team USA for the 2019 FIRST Global Challenge (FGC) in Dubai. FGC is an Olympics-style robotics tournament that includes one team from each of approximately 180 countries.

My experience in mentoring the YoungLings led to an opportunity to become involved in FLL leadership. Since 2012, I have been the Tournament Director for all FLL Arkansas Springdale Qualifying Tournaments. In 2014, I led the development of a proposal from the First-Year Engineering Program at the University of Arkansas to host an international, invitation-only, FLL tournament. The FLL Razorback Open Invitational was held seven times (2015-2019 and 2022-2023) and brought each year to the University of Arkansas campus 80 teams and more than 1,000 people, from about 30 of the United States and 10-15 other countries.

In 2015, I accepted the position of Regional Co-Partner of FLL Arkansas. In this role, I am responsible for developing new FLL teams, educating new FLL coaches, and directing the annual FLL Arkansas Championship Tournament that is held on and brings more than 500 people the University of Arkansas campus. In 2018, I took on the additional and similar role of Regional Partner for FTC Arkansas.

Publications (student authors are underlined)

Textbook

C.R. Cassady, J.A. Nachlas (2009). *Probability Models in Operations Research*. CRC Press, Boca Raton.

Journal Articles

1. M. Madadi, L.M. Maillart, M. Heydari, S. Zhang, C.R. Cassady. "Erlang Loss Systems with Shortest Idle Server First Service Discipline: Maintenance Considerations." *IISE Transactions* (accepted for publication).
2. S. Alaswad, C.R. Cassady, E.A. Pohl, X. Li (2017). "A Model of System Limiting Availability under Imperfect Maintenance," *Journal of Quality in Maintenance Engineering*, 23(4), 415-436.
3. K. Schneider, C.R. Cassady (2015). "Evaluation and Comparison of Alternative Fleet-Level Selective Maintenance Models," *Reliability Engineering & System Safety*, 134, 178-187.
4. Y. Xiang, C.R. Cassady, T. Jin, C.W. Zhang (2014). "Joint Production and Maintenance Planning with Machine Deterioration and Random Yield," *International Journal of Production Research*, 52(6), 1644-1657.
5. Y. Xiang, C.R. Cassady, E.A. Pohl (2012). "Optimal Maintenance Policies for a System Subject to a Markovian Operating Environment," *Computers and Industrial Engineering*, 62(1), 190-197.
6. B. McClure, C.R. Cassady, C. Rainwater, J.R. Chimka (2012). "Optimizing the Sunday Singles Lineup for a Ryder Cup Captain," *Interfaces*, 42(2), 180-190.
7. F. Tovia, R.M. Brooks, C.R. Cassady, M.D. Rossetti (2011). "Modeling and Analysis of Service Parts Logistics Systems," *The International Journal of Operations Research*, 10(1), 60-81.
8. L.M. Maillart, C.R. Cassady, C. Rainwater, K. Schneider (2009). "Selective Maintenance Decision-Making over Extended Planning Horizons," *IEEE Transactions on Reliability*, 58(3), 462-469.
9. L.M. Maillart, C.R. Cassady, J. Honeycutt (2008). "A Binomial Approximation of Lot Yield under Markov Modulated Bernoulli Item Yield," *IIE Transactions*, 40(4), 459-467.
10. T.G. Yeung, C.R. Cassady, K. Schneider (2008). "Simultaneous Optimization of $\bar{X}$ Control Charts and Age-Based Preventive Maintenance Policies under an Economic Objective," *IIE Transactions*, 40(2), 147-159.
11. S. Salman, C.R. Cassady, E.A. Pohl, S.W. Ormon (2007). "Evaluating the Impact of Cannibalization on Fleet Performance," *Quality and Reliability Engineering International*, 23(4), 445-457.
12. T.G. Yeung, C.R. Cassady, E.A. Pohl (2007). "Allocating and Deploying Maintenance Resources for a Set of Multi-State Systems," *Military Operations Research*, 12(1), 19-34.
13. N. Sortrakul, C.R. Cassady (2007). "Genetic Algorithms for Total Weighted Expected Tardiness Integrated Preventive Maintenance Planning and Production Scheduling for a Single Machine," *Journal of Quality in Maintenance Engineering*, 13(1), 49-61.
14. E. Cakici, J. Jia, S.J. Mason, C.R. Cassady, L. Pohl, A.J. Lachowsky (2006). "Cellar Tank Piping Network Analysis at E. & J. Gallo Winery," *Journal of Wine Research*, 17(3), 145-160.
15. C.R. Cassady, J.A. Nachlas (2006). "Evaluating and Implementing 3-Level Control Charts," *Quality Engineering*, 18(3), 285-292.
16. M.A. Waller, C.R. Cassady, J. Ozment (2006). "Impact of Cross Docking on Inventory in a Decentralized Retail Supply Chain," *Transportation Research, Part E*, 42(5), 359-382.

17. R. Rajagopalan, C.R. Cassady (2006). "An Improved Selective Maintenance Solution Approach," *Journal of Quality in Maintenance Engineering*, 12(2), 172-185.
18. I.M. Iyoob, C.R. Cassady, E.A. Pohl (2006). "Establishing Maintenance Resource Levels using Selective Maintenance," *The Engineering Economist*, 51(2), 99-114.
19. A.K. Shee, C.R. Cassady (2006). "Assessing the Economic Performance of Continuous Sampling Plans," *Quality Technology and Quantitative Management*, 3(1), 43-52.
20. C.R. Cassady, L.M. Maillart, S. Salman (2005). "Ranking Sports Teams: A Customizable Quadratic Assignment Approach," *Interfaces*, 35(6), 497-510.
21. C.R. Cassady, I.M. Iyoob, K. Schneider, E.A. Pohl (2005). "A Generic Model of Equipment Availability under Imperfect Maintenance," *IEEE Transactions on Reliability*, 54(4), 564-571.
22. C.R. Cassady, E. Kutanoglu (2005). "Integrating Preventive Maintenance Planning and Production Scheduling for a Single Machine," *IEEE Transactions on Reliability*, 54(2), 304-309.
23. N. Sortrakul, H.L. Nachtmann, C.R. Cassady (2005). "Genetic Algorithms for Integrated Preventive Maintenance Planning and Production Scheduling for a Single Machine," *Computers in Industry*, 56(2), 161-168.
24. C.R. Cassady, E.A. Pohl, S. Jin (2004). "Managing Availability Improvement Efforts with Importance Measures and Optimization," *IMA Journal on Management Mathematics*, 15(2), 161-174.
25. C.R. Cassady, I.G. Takahashi, E.A. Pohl (2003). "Reliability Analysis of Intermittently-Used Products," *International Journal of Modelling and Simulation*, 23(4), 234-239.
26. C.R. Cassady, E. Kutanoglu (2003). "Minimizing Job Tardiness using Integrated Preventive Maintenance Planning and Production Scheduling," *IIE Transactions*, 35(6), 505-513.
27. C.R. Cassady, J.A. Nachlas (2003). "Evaluating and Implementing 3-Level Acceptance Sampling Plans," *Quality Engineering*, 15(3), 359-367.
28. C.R. Cassady (2003). "Judges' Commentary: The Outstanding Airport Screening Papers," *The UAMP Journal*, 24(2), 185-188.
29. S.W. Ormon, C.R. Cassady, A.G. Greenwood (2002). "Reliability Prediction Models to Support Conceptual Design," *IEEE Transactions on Reliability*, 51(2), 151-157.
30. C.R. Cassady, E.A. Pohl, W.P. Murdock (2001). "Selective Maintenance Modeling for Industrial Systems," *Journal of Quality in Maintenance Engineering*, 7(2), 104-117.
31. C.R. Cassady, W.P. Murdock, E.A. Pohl (2001). "Selective Maintenance for Support Equipment Involving Multiple Maintenance Actions," *European Journal of Operational Research*, 129(2), 252-258.
32. D.W. Graham, C.R. Cassady, R.O. Bowden, S.A. LeMay (2000). "Modeling Intermodal Transportation Systems: Establishing a Common Language," *Transportation Law Journal*, 27(3), 353-366.
33. W.B. Jones, C.R. Cassady, R.O. Bowden (2000). "Developing a Standard Definition of Intermodal Transportation," *Transportation Law Journal*, 27(3), 345-352.
34. C.R. Cassady, R.O. Bowden, L. Liew, E.A. Pohl (2000). "Combining Preventive Maintenance and Statistical Process Control: A Preliminary Investigation," *IIE Transactions*, 32(6), 471-478.
35. C.R. Cassady, L.M. Maillart, I.J. Rehmert, J.A. Nachlas (2000). "Demonstrating Deming's *kp* Rule using an Economic Model of the CSP-1," *Quality Engineering*, 12(3), 327-334.

36. J.A. Nachlas, C.R. Cassady (1999). "Preventive Maintenance Study: A Key Component in Engineering Education to Enhance Industrial Productivity and Competitiveness," *European Journal of Engineering Education*, 24(3), 301-311.
37. C.R. Cassady, J.E. Kobza (1998). "A Probabilistic Approach to Evaluate Strategies for Selecting a Parking Space," *Transportation Science*, 32(1), 30-42.

Selected Conference Papers (presenter marked with an asterisk)

1. Z. Zhu*, Y. Xiang, S. Alaswad, C.R. Cassady (2017). "A Sequential Inspection and Replacement Policy for Degradation-Based Systems," *Proceedings of the Annual Reliability and Maintainability Symposium*. Note: This paper received the Stan Ofthsun Award for Best RAMS Paper from the Society of Reliability Engineers.
2. T. Jin*, Y. Xiang, R. Cassady (2013). "Understanding Operational Availability in Performance-Based Logistics and Maintenance Services," *Proceedings of the Annual Reliability and Maintainability Symposium*. Note: This paper received the Ralph A. Evans-P.K. McElroy Best Paper Award for RAMS and the Stan Ofthsun Award for Best RAMS Paper from the Society of Reliability Engineers.
3. D. St. John*, C.R. Cassady (2010). "Analysis of Customized Warranty Policies for Heterogeneous Populations," *Proceedings of the Annual Reliability and Maintainability Symposium*. Note: This paper received 2nd place in the RAMS student paper competition.
4. M. Carrasco*, C.R. Cassady (2006). "A Study of the Impact of Prognostic Errors on System Performance," *Proceedings of the Annual Reliability and Maintainability Symposium*. Note: This paper received the Stan Ofthsun Award for Best RAMS Paper from the Society of Reliability Engineers.
5. C. Rainwater*, J. Honeycutt, C.R. Cassady and S.J. Mason (2004). "Solving Selective Maintenance Problems for Fleets of Systems," *IIE Annual Conference and Exhibition 2004 Proceedings*. Note: This paper received the conference's Quality Control and Reliability Best Paper award.
6. S.W. Ormon*, C.R. Cassady, A.G. Greenwood (2001). "A Simulation-Based Reliability Prediction Model for Conceptual Design," *Proceedings of the Annual Reliability and Maintainability Symposium*, 433-436. Note: This paper received the Stan Ofthsun Award for Best RAMS Paper from the Society of Reliability Engineers.
7. W.F. Rice, C.R. Cassady*, T.R. Wise (1999). "Simplifying the Solution of Redundancy Allocation Problems," *Proceedings of the Annual Reliability and Maintainability Symposium*, 190-194. Note: This paper received the Stan Ofthsun Award for Best RAMS Paper from the Society of Reliability Engineers.

Student Mentoring and Teaching

Selected Students Supervised

1. Suzan Alaswad, MS (2005) and PhD (2012), currently Associate Professor of Operations Management and Chair of Management, Zayed University
2. Sinan Salman, PhD (2007), currently Assistant Professor and Assistant Chair of Information Systems and Technology, Zayed University
3. Kellie Schneider, MS (2006), currently Associate Professor of Engineering Management, Systems and Technology, University of Dayton
4. Kelly Sullivan, BS (2006) and MS (2008), currently Associate Professor of Industrial Engineering, University of Arkansas
5. Fernando Tovia, PhD (2004), currently Associate Professor of Engineering, Thomas Jefferson University
6. Yisha Xiang, MS (2006) and PhD (2009), currently Associate Professor of Industrial Engineering, University of Houston

Courses Taught at the U. of Arkansas (course development roles are noted)

GNEG 1111/1121 Intro to Engineering I/II (co-developer with K. Schneider)
GNEG 1311H/1321H Honors Research Experience I/II (developer)
GNEG 1514 Engineering Applications of Mathematics (co-developer with K. Schneider)
INEG 2103 Introduction to Industrial Engineering (developer)
INEG 2323 Probability and Stochastic Processes for Industrial Engineers (developer)
INEG 2812H/3812H/4812H IE Honors Research Experience I/II/III (co-developer with K. Sullivan)
INEG 3313 Engineering Statistics
INEG 4323 Quality Engineering and Management
INEG 4913/4924 Industrial Engineering Capstone Experience I/II (developer)
INEG 5143 Dynamic Programming (developer)
INEG 5143 Repairable Systems Modeling (developer)
INEG 5313 Engineering Applications of Probability (developer)
INEG 5323 Engineering Applications of Stochastic Processes (developer)
INEG 6613 Operations Research Applications
OMGT 4873 Principles of Operations Research

Courses Taught at Mississippi State U.

IE 4613/6613 Engineering Statistics I
IE 4653/6653 Industrial Quality Control I
IE 4673/6673 Reliability Engineering
IE/MA 4733/6733 Linear Programming I
IE 8743 Nonlinear Programming I

Courses Taught at Virginia Tech

ISE 3204 Systems Analysis through Simulation
ISE 3406 Operations Research II

ISE 3414 Probabilistic Operations Research
ISE 3424 Discrete-Event Computer Simulation
ISE 4404 Statistical Quality Control
ISE 4414 Industrial Quality Control

Certifications

Micro-Credential, "Creating an Inclusive and Supportive Learning Environment," ACUE, 2022.
Micro-Credential, "Promoting Active Learning," ACUE, 2022.
Micro-Credential, “Inspiring Inquiry and Preparing Lifelong Learners,” ACUE 2023.