**John D. Sangster, Ph.D., PE**

(current as of 12/2023)

**Section 1 Education and Employment History**

**Section 1.1 Education history**

Ph.D. in Civil Engineering, Virginia Polytechnic and State University, 2015

MS in Civil Engineering, Virginia Polytechnic and State University, 2011

BS in Civil Engineering, Illinois Institute of Technology, 2004

BS in Architectural Engineering, Illinois Institute of Technology, 2002

**Section 1.2 Employment history**

University of Vermont, Sr. Lecturer, August 2023 to present

Northeastern University, Assistant Teaching Professor, Aug. 2018 to July 2023

University of Nebraska – Lincoln, Assistant Professor, Aug. 2015 to July 2018

Virginia Tech, Graduate Research Assistant, August 2010 to July 2015

Leidos, Transportation Engineer, May 2013 to December 2013

Stantec Consulting Inc., Transportation Engineer, July 2005 to July 2010

Alvord, Burdick & Howson LLC, Junior Engineer, February 2003 to May 2005

**Section 2 Scholarship / Research / Creative Activity**

**Section 2.1 Publication record – peer reviewed**

**Section 2.1.1 Peer reviewed journal publications in print**

1. **Sangster, J.**, & Rakha, H. (2014). Enhancing and Calibrating the Rakha-Pasumarthy-Adjerid Car-Following Model using Naturalistic Driving Data. International Journal of Transportation Science and Technology, 3(3), 229–248. 95% contribution.
2. **Sangster, J.**, Rakha, H., & Du, J. (2013). Application of Naturalistic Driving Data to Modeling of Driver Car-Following Behavior. Transportation Research Record: Journal of the Transportation Research Board, 2390, 20–33. 95% contribution.
3. Du, J., Rakha, H., & **Sangster, J.** (2013). Can Electricity Powered Vehicles Serve Traveler Needs? International Journal of Transportation Science and Technology, 2(2), 123–140. 2% contribution.

**Section 2.1.2 Conference proceedings: peer reviewed abstract and/or peer reviewed paper**

1. **Sangster, J.**, Gillen, A., Huang-Saad, A.(2023)Lessons Learned: Building Our Capacity to Engage in Engineering Education Research. American Society of Engineering Education, Proceedings of the Annual Meeting of the. July, 2023. 4 pages.
2. **Sangster, J.** (2021)Classroom Talking Points. American Society of Engineering Education, Proceedings of the Annual Meeting of the. July, 2021. 16 pages.
3. **Sangster, J.,** Adams, T. (2021) Rural Perspectives on Road Diets: A Nebraska Case Study. In Transportation Research Board, 100th Annual Meeting of the. January 2021. 17 pages.
4. Hertz, J., Mukasa, C., Whalen, R., **Sangster, J.** (2020) 4th Time Around: Do Classes Get Better with Instructor Repetition? American Society of Engineering Education, Proceedings of the Annual Meeting of the. June, 2020.
5. Davis, D., O’Connell, B., **Sangster, J.**, Mukasa, C., Schulte-Grahame, K., Quinn, L., Smith, A. (2020) Evaluating Student Success in a Pre-College General Engineering Program. American Society of Engineering Education, Proceedings of the Annual Meeting of the. June, 2020.
6. **Sangster, J.** (2019) Work in Progress: Privilege and Diversity as Determiners of Engineering Identity and Success. In American Society for Engineering Education, Annual Conference of the. June 2019. Tampa, FL. 15 pages.
7. Adams, T., **Sangster, J.** (2019). Economic Assessment of J-turns and Roundabouts as an Alternative to Two-Way Stop-Controlled Intersections on Rural Highways. In Transportation Research Board, 98th Annual Meeting of the. January 2019. Washington, D.C. 14 pages.
8. Morello, V., **Sangster, J.** (2018). Evaluation of the Restricted Crossing U-turn Design as an Alternative to Grade Separated Interchanges on Rural Highways. In Transportation Research Board, 97th Annual Meeting of the. January 2018. Washington, D.C. 18 pages.
9. Ahmed, A., **Sangster, J.** (2017). Driver Simulation State of the Practice and Next Steps. Urban Streets Symposium, 5th International. May 2017. Raleigh, NC.
10. Buasali, A., **Sangster, J.** (2017). Assessing Robustness of Planning Level Tools for Predicting Roundabout Behavior. Urban Streets Symposium, 5th International. May 2017. Raleigh, NC.
11. Murphy, S., **Sangster, J.** (2017). Traffic Simulation Software Performance with Complex Scenarios. Urban Streets Symposium, 5th International. May 2017. Raleigh, NC.
12. **Sangster, J.**, Rakha, H. (2016). New Perspectives on Delay and Level of Service at Intersections and Interchanges. In Transportation Research Board, 95th Annual Meeting of the. January 2016. Washington, D.C. 15 pages.
13. **Sangster, J.**, Rakha, H., & Al-Kaisy, A. (2015). Comparative Analysis of the Through-about, Roundabout, and Conventional Signalized Intersection Designs. In Transportation Research Board, 94th Annual Meeting of the. January 2015. Washington, D.C. 18 pages.
14. **Sangster, J.**, & Rakha, H. (2015). Capacity-based Predictions and Delay-based Results: CAP-X Limitations and Suggestions for Improvement. In Transportation Research Board, 94th Annual Meeting of the. January 2015. Washington, D.C. 18 pages.
15. **Sangster, J.** (2015). Intersection and Interchange Design with Capacity Analysis: A Curriculum Development. In Transportation Research Board, 94th Annual Meeting of the. January 2015. Washington, D.C. 19 pages.
16. **Sangster, J.**, & Rakha, H. (2014). Implications of CAP-X: Operational Limitations of Alternative Intersections. In Transportation Research Board, 93rd Annual Meeting of the. January 2014. Washington D.C. 22 pages.
17. **Sangster, J.**, & Rakha, H. (2013). Application of Naturalistic Driving Data to the Agent Based Modeling of Driver Car-Following Behavior. In Conference on Agent-Based Modeling in Transportation Planning and Operations. October 2013. Blacksburg, VA. 11 pages.
18. **Sangster, J.**, Rakha, H., & Du, J. (2013). Application of Naturalistic Driving Data to the Modeling of Driver Car-following Behavior. Transportation Research Board, 92nd Annual Meeting of the. January 2013. Washington D.C. 24 pages.
19. **Sangster, J.**, & Rakha, H. (2013). Enhancing and Calibrating the Rakha-Pasumarthy-Adjerid Car-Following Model using Naturalistic Driving Data. In Transportation Research Board, 92nd Annual Meeting of the. January 2013. Washington, D.C. 20 pages.
20. Du, J., Rakha, H., & **Sangster, J.** (2012). Can Electricity Powered Vehicles Serve Traveler Needs? In Transportation Research Board, 91st Annual Meeting of the. January 2012. Washington, D.C. 17 pages.
21. **Sangster, J.**, & Rakha, H. (2012). Critique of the Critical Sum Method: A Case Study on the Quadrant Roadway Design. In Transportation Research Board, 91st Annual Meeting of the. January 2012. Washington, D.C. 23 pages.
22. **Sangster, J.**, & Hummer, J. (2010). Barriers to Innovation in Highway Design: Unconventional Intersections. In Institute of Transportation Engineers - District 1 Annual Meeting. May 2010. Portland, Maine. 16 pages.
23. **Sangster, J.** (2010). Adaptive Traffic Control Systems: North American State of Practice. In Institute of Transportation Engineers - District 1 Annual Meeting. May 2010. Portland, Maine. 14 pages.

**Section 2.2 Publication record – non-peer reviewed**

**Section 2.2.1 Books and book chapters**

1. Freeman, S., Whalen, R., Schulte Grahame, K., Davis, D., Hertz, J., Keyvani Someh, L., Love, J., Maheswaren, B., Mukasa, C., O’Connell, B., and **Sangster, J.** “Cornerstone of Engineering 2nd Ed.” Toronto, ON: Top Hat Monocle. 2019.
2. Freeman, S., Whalen, R., Schulte Grahame, K., Davis, D., Hertz, J., Keyvani Someh, L., Love, J., Maheswaren, B., Mukasa, C., O’Connell, B., and **Sangster, J.** “Programming for Engineering.” Toronto, ON: Top Hat Monocle. 2019.
3. Freeman, S., Whalen, R., Schulte Grahame, K., Davis, D., Hertz, J., Keyvani Someh, L., Love, J., Maheswaren, B., Mukasa, C., O’Connell, B., and **Sangster, J.** “Graphics for Engineering.” Toronto, ON: Top Hat Monocle. 2019.

**Section 2.2.2 Other professional publications**

1. **Sangster, J.**, Purintun, B. “Road Diet Feasibility Analysis for Nebraska.” Report published by Nebraska Department of Transportation. June, 2020. 130 pages.
2. **Sangster, J.**, Adams, T. “Restricted Crossings on Rural Highways.” Report published by Nebraska Department of Transportation. June, 2019. 108 pages.
3. Haque, MM, **Sangster, J.** “Best Practices for Modeling Light Rail at Intersections.” Report published by US Federal Highway Administration. August, 2018. 43 pages.

**Section 2.2.3 Conference presentations (not included in conference proceedings)**

1. **Sangster, J.** (2018). Partial Signalization of Roundabouts. Missouri Valley Section of the Institute of Transportation Engineers (MOVITE) Spring Meeting. April 2018. Omaha, NE.
2. **Sangster, J.** (2018). Scaffolding Content, Discussion, and Feedback – the “Talking Points” Document. University of Nebraska at Lincoln Spring Teaching and Learning Symposium. February 2018. Lincoln, NE.
3. Atkinson, J., Jarchow, M., **Sangster, J.**, and Bartelt-Hunt, S. (2017). Using Sustainability-Themed Undergraduate Research Programs to Enhance Student Engagement in Research. Association for the Advancement of Sustainability in Higher Education (AASHE) Annual Meeting. October 2017. San Antonio, TX.
4. **Sangster, J.** (2017). Impact of Driveway Density on Operations with Road Diets. Urban Streets Symposium, 5th International. May 2017. Raleigh, NC.
5. **Sangster, J.** (2016). Active Engagement with Group Formation and Management. At Southern Plains Transportation Workshop and Symposium. July 2016. Louisiana Tech University, Ruston, LA.
6. **Sangster, J.** (2014). Operational Limitations of Alternative Intersections: Implications of CAP-X Software. At Alternative Intersections and Interchanges Symposium. July 2014. Salt Lake City, Utah.
7. **Sangster J.** (2013). Alternative Intersections – Benefits, Issues, Etc. At TranspoCamp. January 2013. Washington D.C.
8. **Sangster J.** (2012). Can We Live With Traffic? TEDx Virginia Tech. November 2012. Blacksburg, VA. <https://www.youtube.com/watch?v=jCWXLz6e_9o>
9. **Sangster J.** (2012). Expanding Our Geometric Toolbox for Intersection Design. At Institute of Transportation Engineers, Virginia Section Fall Meeting. October 2012. Wintergreen, VA.

**Section 2.2.4 Invited talks and keynote speeches**

1. **Sangster, J.** (2021). Impact of Prior Experience on Student Success in Undifferentiated Introductory Coursework. CATLR’s 2021 Conference for Advancing Evidence-Based Learning. Northeastern University. May 4, 2021.
2. **Sangster, J.** (2021). Conversations with Scholars. CATLR’s 2021 Conference for Advancing Evidence-Based Learning. Northeastern University. May 4, 2021.
3. **Sangster, J.** (2017). Small Teaching by James Lang. UNL Discipline Based Education Researchers (DBER) speaker series. October 19, 2017.
4. **Sangster, J.** (2017). Creating and Managing Successful Students Groups for Class Work. UNL Discipline Based Education Researchers (DBER) speaker series. March 30, 2017.
5. **Sangster, J.** (2017). Managing Group Work in the Classroom. UNL Civil Engineering Brown Bag speaker series. January 27, 2017.

**Section 2.3 Grantsmanship record**

**Section 2.3.1 Externally funded research grants**

1. Traffic Calming and Speed Reduction on Rural Highways in Population Centers, Nebraska Department of Transportation, 7/1/18-12/31/19, John Sangster (PI), $86,667 total value, 100% attributable. Cancelled, August 2018.
2. Best Practices for Highway Construction Contracting Methods, Nebraska Department of Transportation, 7/1/18-12/31/19, John Sangster (PI), $53,137 total value, 100% attributable. Cancelled, August 2018.
3. Restricted Crossings on Rural Highways, Nebraska Department of Roads, 7/1/17-12/31/18, John Sangster (PI), Dan Piatkowski (Co-PI), $78,729 total value, 60% attributable.
4. REU Site: Sustainability of Civil Networks in Rural Areas (94731), National Science Foundation, Shannon Bartelt-Hunt (PI), Elizabeth Jones (participating faculty), Yong Rak Kim (participating faculty), Yusong Li (participating faculty), Xu Li (participating faculty), Daniel Linzell (participating faculty), Joshua Steelman (participating faculty), John Sangster (participating faculty), $352,698 total value, 9% attributable.
5. Best Practices for Modeling Light Rail at Intersections, University Transportation Center for Railway Safety, 10/17/16-6/30/18, John Sangster (PI), $72,234 total value, 100% attributable.
6. Offset Right-Turn Lanes on State Highway Systems, Nebraska Department of Roads, 7/1/16-12/31/17, Aemal Khattak (PI) and John Sangster (Co-PI), $128,350 total value, 10% attributable.
7. Road Diets in Nebraska, Nebraska Department of Roads, 7/1/16-12/31/17, John Sangster (PI), $85,286 total value, 100% attributable.

**Section 2.3.2 Externally funded research grants under review**

**Section 2.3.3 Externally funded research grants submitted and not funded**

1. Roundabout Driver Behavior, Nebraska Department of Roads, 7/1/17-12/31/18, John Sangster (PI), Dan Piatkowski (Co-PI), $91,539 total value, 41% attributable.
2. Guidance to Improve Pedestrian and Bicycle Safety at Intersections, National Cooperative Highway Research Program, Gilbert Chlewicki (PI), John Sangster (Co-PI), $500,000 total value, $136,490 UNL value, 100% attributable.
3. Preliminary Engineering Tools for Intersection Alternatives, Nebraska Department of Roads, John Sangster (PI), $92,707 total value, 100% attributable.
4. Sustainability of Civil Infrastructure in Rural Environments (88979), National Science Foundation, Shannon Bartelt-Hunt (PI), Elizabeth Jones (participating faculty), Yong Rak Kim (participating faculty), Yusong Li (participating faculty), Xu Li (participating faculty), Daniel Linzell (participating faculty), Joshua Steelman (participating faculty), John Sangster (participating faculty), and Laurence Rilett (participating faculty), $359,645 total value, 7% attributable.

**Section 2.3.4 Internally funded research and development grants**

1. Full-Time Faculty Professional Development Fund, Northeastern University, Provost’s Office, 7/1/21-6/30/22, John Sangster (PI), $2,000 total value, 100% attributable.

**Section 3 Teaching Courses**

**Section 3.1 Courses taught in current position**

2024 Spring:

ENGR1020 – Graphical Communication, 40 students.

ENGR2120 – Building Information Modeling, 10 students.

ENGR2140 – Advanced 3D Drafting, 40 students.

2023 Fall:

ENGR1020 – Graphical Communication, 286 students.

**Section 3.2 Courses taught at previous institutions**

Northeastern University

2023 Spring:

GE1501-04 – Cornerstone of Engineering 2, 12 students.

GE1501-17 – Cornerstone of Engineering 2, 18 students.

GE1501-06(HON) – Cornerstone of Engineering 2, 33 students.

GE1501-15(HON) – Cornerstone of Engineering 2, 33 students.

2022 Fall:

GE1501-04 – Cornerstone of Engineering 1, 15 students.

GE1501-07(HON) – Cornerstone of Engineering 1, 33 students.

GE1501-15(HON) – Cornerstone of Engineering 1, 33 students.

2022 Spring:

GE1501-04 – Cornerstone of Engineering 2, 29 students.

GE1501-17 – Cornerstone of Engineering 2, 35 students.

GE1501-06(HON) – Cornerstone of Engineering 2, 33 students.

GE1501-15(HON) – Cornerstone of Engineering 2, 36 students.

2021 Fall:

GE1501-04 – Cornerstone of Engineering 1, 33 students.

GE1501-07 – Cornerstone of Engineering 1, 34 students.

GE1501-15(HON) – Cornerstone of Engineering 1, 37 students.

GE1501-16(HON) – Cornerstone of Engineering 1, 35 students.

2021 Summer:

GE1502-01 – Cornerstone of Engineering 2, 12 students.

2021 Spring:

GE1502-04 – Cornerstone of Engineering 2, 34 students.

GE1502-06(HON) – Cornerstone of Engineering 2, 25 students.

GE1502-17 – Cornerstone of Engineering 2, 34 students.

GE2500-01 – Design Analysis and Innovation, 1 student.

2020 Fall:

GE1110-02 – Engineering Design, 31 students.

 GE1501-04 – Cornerstone of Engineering 1, 34 students.

GE1501-07 – Cornerstone of Engineering 1, 32 students.

GE1501-16(HON) – Cornerstone of Engineering 1, 32 students.

2020 Spring:

GE1111-02 – Engineering Problem Solving and Computation, 24 students.

GE1111-03 – Engineering Problem Solving and Computation, 10 students.

GE1502-04 – Cornerstone of Engineering 2, 28 students.

GE1502-06(HON) – Cornerstone of Engineering 2, 25 students.

2019 Fall:

GE1110-02 – Engineering Design, 30 students.

GE1501-04 – Cornerstone of Engineering 1, 29 students.

GE1501-16(HON) – Cornerstone of Engineering 1, 24 students.

2019 Spring:

GE1502-01 – Cornerstone of Engineering 2, 25 students.

GE1502-23 – Cornerstone of Engineering 2, 26 students.

GE1502-25 – Cornerstone of Engineering 2, 25 students.

2018 Fall:

GE1501-01 – Cornerstone of Engineering 1, 29 students.

GE1501-03 – Cornerstone of Engineering 1, 31 students.

GE1501-23 – Cornerstone of Engineering 1, 27 students.

University of Nebraska

2018 Spring – CIVE866 – Transportation Characteristics, 8 students.

2017 Fall – CIVE462/862 – Highway Design, 26 students.

2017 Spring – CIVE463/863 – Traffic Engineering, 26 students.

(Split course on both Lincoln and Omaha campuses).

2016 Fall – CIVE462/862 – Highway Design, 26 students.

2016 Spring – CIVE463/863 – Traffic Engineering, 20 students.

2015 Fall – CIVE462/862 – Highway Design, 32 students.

Virginia Polytechnic and State University

2014 Spring – CEE 4654 – Geometric Design of Highways, 32 students.

**Section 4 Teaching accomplishments (other than classroom instruction)**

**Section 4.1 Ph.D. students**

**Section 4.2 MS students**

1. Adams, Tim. Funded by Faculty, NDOT project. Thesis: Restricted Crossings on Rural Highways. March 2019.
2. Purinton, Brandon. Funded by faculty, NDOT project. Thesis: Road Diet Feasibility Analysis for Nebraska. May 2018.
3. Buasali, Ahmed. Funded by external, Fulbright Scholar. Thesis: Broadening Understanding of Roundabout Operation Analysis: Planning-Level Tools and Signal Application. July 2017.

**Section 4.3 Undergraduate students**

**Section 4.3.1 Undergraduate students supervised in research**

1. Wohlever, Samuel. 2021-2022, provost faculty development fund.
2. Noriega, John Mart. 2018, summer REU.
3. Chen, Emily. 2017, summer REU.
4. Lopez, Samantha. 2017, summer REU.
5. Morello, Vincent. 2017, summer REU.
6. Olsson, Jack. 2016, summer REU.

**Section 5 Service accomplishments**

**Section 5.1 Professional service**

**Section 5.1.1 International and national organization leadership positions**

1. Transportation Research Board (TRB)
	1. Standing Committee on Conduct of Research (ABG10), 2011 to 2018, Member.
		1. Committee Research Coordinator, 2016 to 2018.
	2. Committee Research Coordinator Council, 2016 to 2018, Member.
	3. Highway Capacity and Quality of Service Committee (AHB40)
		1. Subcommittee on User Liaison, 2016 to 2018, Secretary.

**Section 5.1.2 Regional and local organization leadership positions**

1. Institute of Transportation Engineers
	1. Lincoln-Omaha-Council Bluffs Association of Transportation Engineers, 2016 to 2018, Director of Education.
	2. Virginia Tech Student Section, 2012-2013 and 2014-2015, President.
	3. Virginia Tech Student Section, 2011-2012 and 2013-2014, Officer.

**Section 5.1.3 Memberships in professional organizations**

1. American Society of Engineering Education (ASEE), 2011 to 2023.
2. Transportation Research Board (TRB), 2011 to 2018.
3. Institute of Transportation Engineers (ITE), 2006 to 2018.

**Section 5.2 University service**

**Section 5.2.1 University committee leadership positions**

**Section 5.2.2 University committee membership positions**

**Section 5.3 College service**

**Section 5.3.1 College committee leadership positions**

**Section 5.3.2 College committee membership positions**

1. Non-Tenure-Track Faculty Merit Review committee, vice-chair, 2021.
2. Honors College Living Learning Community coordinator, 2020 to 2022.
3. College of Engineering Awards committee, representative from First-Year Engineering Program, 2020 to 2023.
4. Northeastern Engineers Week committee, representative from First-Year Engineering Program, 2019 to 2023.

**Section 5.4 Department service**

**Section 5.4.1 Department committee leadership positions**

1. Friends and Family Weekend coordinator for FYE, 2019 to 2023.
2. (UNL) Institute of Transportation Engineers (student chapter), Advisor. 2016 to 2018.
3. (UNL) Chi Epsilon, Co-advisor. 2015 to 2017.
4. (UNL) CEE Library Committee, Chair. 2015 to 2016.

**Section 5.4.2 Department committee membership positions**

1. Engineering Minor Planning Committee, 2019 to 2023.
2. Engineering Innovation and Design (EID) Bootcamp Committee, 2019 to 2023.
3. (UNL) CEE Continuous Improvement Committee, 2017 to 2018.
4. (UNL) CEE Social Committee, 2016 to 2017.

**Section 6 Other accomplishments**

**Section 6.1 Professional certifications**

1. Professional Engineer, New Hampshire license no. 12545, 2008 to present.
2. Professional Traffic Operations Engineer, 2014 to 2017.