Deborah Chun, Ph.D.

CONTACT INFORMATION	Department of Mathematics WVU Institute of Technology 410 Neville St Beckley, WV 25801	304-929-1248 `deborah.chun@mail.wvu.edu`

<small>RESEARCH INTERESTS</small>

Combinatorics, specifically matroid theory. Extending from this, I am interested in graph theory, polymatroids, and delta-matroids.

<small>EDUCATION</small>

Louisiana State University

> Ph.D. Mathematics, August 2011
> M.S. in Mathematics, 2010

Johns Hopkins University

> M.S. in Applied and Computational Mathematics, 2005

Harvey Mudd College

> Double Major B.S. in Math/Engineering, Minor in Creative Writing, May 2002

<small>EMPLOYMENT HISTORY</small>

2018–Present	**Associate Professor and Interim Chair**, Mathematics Department, West Virginia University Institute of Technology (WVU Tech), Beckley, WV.
2017–2018	**Associate Professor**, Mathematics Department, West Virginia University Institute of Technology (WVU Tech), Beckley, WV.
2011–2017	**Assistant Professor**, Mathematics Department, West Virginia University Institute of Technology (WVU Tech), Montgomery, WV.
2005–2011	**Graduate Fellow/Assistant**, Mathematics Department, Louisiana State University (LSU), Baton Rouge, LA.
2002-2005	**Signals Analyst**, National Security Agency, Fort Meade, MD.
Summer 2002	**Governor's School Counselor**, Rutgers University, New Brunswick, NJ.
Summer 2001	**Engineering Intern**, The Boeing Company in Anaheim, CA.
Summer 2000	**Actuarial Intern**, American Insurance Group, Wilmington, DE.
Summer 1999	**Engineering Assistant**, Harvey Mudd College, Claremont, CA.

<small>TEACHING EXPERIENCE AT WVU TECH</small>

For the following, I worked with a text book and topics list to design a syllabus. I composed and delivered lectures, offered office hours and appointments, assigned and graded homework, and wrote and graded scheduled assessments which I aligned with department standards. I have used MyMathLab, WeBWorK, and WebAssign.

- ❏ College Algebra (Remedial)
- ❏ Plane Trigonometry (Remedial)
- ❏ Calculus I (Freshman-level)
- ❏ Calculus II (Freshman-level)
- ❏ Multi-variable Calculus (Sophomore-level)
- ❏ Differential Equations (Sophomore-level)
- ❏ Discrete Mathematics (Junior-level)
- ❏ Probability and Statistics (Senior-level)
- ❏ Elementary Statistical Inference (Junior-level)

Before my promotion to chair, my department chair and college dean both rated my teaching as excellent. My college dean continues to rate my teaching as excellent.

TEACHING EXPERIENCE AT LSU	For the following freshman-level courses, I worked with a course coordinator and a set syllabus to ensure uniformity of instruction and assessment.

❑ MyMathLab based College Algebra   ❑ Calculus I

For two semesters, I worked with students in a mathematics education capstone course, mentoring them through running business calculus recitations. I met with the senior students two hours every week outside of the recitation classes.

PUBLICATIONS

1. N. Brettell, D. Chun, T. Fife, C. Semple, *Matroids with a cyclic arrangement of circuits and cocircuits*, (submitted).

2. N. Brettell, R. Campbell, D. Chun, K. Grace, G. Whittle, *On a generalisation of spikes*, **SIAM J. Discrete Mathematics, 33** (2019), 358–372.

3. C. Chun, D. Chun, T. Moss, S. Noble, *The e-Exchange basis graph and matroid connectedness*, **Discrete Mathematics** (2019), 723–725.

4. C. Chun, D. Chun, S. Noble, *Inductive tools for connected delta-matroids and multimatroids*, **European Journal of Combinatorics, 63** (2017), 59–69.

5. D. Chun, T. Moss, D. Slilaty, X. Zhou. *Bicircular matroids representable over $GF(4)$ and $GF(5)$*, **Discrete Mathematics, 339** (2016) 2239–2248.

6. C. Chun, D. Chun, D. Mayhew, and S. van Zwam, *Fan-extensions in fragile matroids*, **Electronic Journal of Combinatorics, 22** (2015) 52 pages.

7. D. Chun, T. Moss, D. Slilaty, X. Zhou, *Unavoidable minors of large 4-connected bicircular matroids*, **Annals of Combinatorics, 19** (2015) 95–105.

8. D. Chun, *Matroids with every two elements in a 4-circuit.* **Ars Combinatoria, 112** (2013), 189–191.

9. D. Chun and J. Oxley, *Capturing two elements in unavoidable minors of 3-connected binary matroids*, **Advances in Applied Mathematics, 50** (2013) 155–177.

10. D. Chun, J. Oxley, and G. Whittle, *Capturing matroid elements in unavoidable 3-connected minors*, **European Journal of Combinatorics, 33** (2012) 1100–1112.

11. M. Bilinski, K. J. Choi, D. Chun, G. Ding, S. Dziobiak, R. Farnham, P. Iverson, S. Leu, L. Warshauer. *Bandwidth of trees of diameter at most four.* **Discrete Mathematics, 312** (2012) 1947–1951.

12. D. Chun, *Deletion-contraction to form a polymatroid.* **Discrete Mathematics, 309** (2009) 2592–2595.

13. D. Chun, M. Laviollette, M. Schubmehl, *A Multiple Regression Model to Predict Zebra Mussel Population Growth.* **The UMAP Journal, 22.4** (2001) 367–383.

I have peer-reviewed eight articles and have written book reviews of *The Joy of SET* and of *Closing the Gap* for the London Mathematical Society Newsletter.

TALKS

I co-chaired the Matroid session of the June 2016 SIAM Discrete Mathematics conference and of the April 2018 Southeastern Sectional Meeting of the AMS. I served as a session chair six times at various conferences. I have given 12 invited conference talks, 2 contributed conference talks, 14 seminar talks, and 6 talks for High School or Middle School students. A few are listed below.

e-Exchange Basis Graphs of a Matroid. AMS Spring Southeast Sectional Meeting at Auburn State University, AL (March 17, 2019).

Matroids from Graphs and Graphs from Matroids. Vanderbilt Combinatorics Seminar in Nashville, TN (April 16, 2018).

Matroids and Wilder Things: Polymatroids and Delta-matroids. WVU Mathematics Department Colloquium in Morgantown, WV (April 13, 2017).

Some Mathematics behind the Game SET. WVU Tech Open House's Mathematics interactive presentation in Montgomery WV (November 10, 2016).

Structural Matroid Theory and Some Results. WVU Tech Brown Bag Seminar (General Audience Talk) Montgomery WV (September 28, 2016).

Capturing Triangles in an Unavoidable Minor. 57th Midwest Graph Theory Conference at Wright State University in Dayton, OH (April 2016).

What is a Matroid? An Introduction and a Few Structural Results. Institute for Advanced Study School of Mathematics in Princeton, NJ. 2013 Program for Women and Mathematics (May 2013).

Deletion-contraction Polymatroids. The Second Workshop on Matroids and Computation in La Vacquerie, France (July 2011).

HONORS AND AWARDS	August 2018	Promotion to Interim Department Chair.
	F2017/S2018	Sabbatical awarded.
	May 2017	Tenure awarded.
	May 2017	Promotion to Associate Professor.
	August 2016	Golden Bear Scholar Award granted by WVU Tech (one course relief and $2500 travel grant).
	Multiple	WVU Tech faculty travel awards: March 2018, April 2018, December 2017, July 2016, June 2016, October 2015, July 2014, June 2014, May 2014, March 2013, August 2012, March 2012.
	April 2016	Travel/Accommodation Award from 57th Midwest Graph Theory Conference.
	May 2013	The West Virginia Higher Education Policy Commission's Division of Science and Research Research Proposal Mini-Grant ($5,000).
	May 2013	Travel/Accommodation Award from the Institute for Advanced Study School of Mathematics at Princeton, NJ for the 2013 Program for Women and Mathematics.
	Aug. 2012	International Travel Award from West Virginia University ($1900).
	May 2012	Wright State University Visiting Scholar Fund Allocation.

Multiple	(Graduate Student Travel Awards at LSU) VIGRE (9), AMS Grad Student Travel Grant (1), MSRI (1), University of Mississippi (1), Graduate Student Excellence Award (1), and Victoria University at Wellington, New Zealand (1).
Dec. 2010	2009 Pasquale Porcelli Research Excellence Certificate in recognition of outstanding research by a graduate student.
Aug. 2010	Louisiana State University Graduate School Dissertation Year Fellowship, Fall 2010, Spring 2011.
Aug. 2009	(Through an NSF grant to LSU) Vertical InteGration of Research & Education(VIGRE) Doctoral Dissertation Traineeships Fall 2009-Spring 2010.
2006–2009	Graduate Assistance in Areas of National Need Fellowship.
2005–2009	LSU $5000 Enhancement and LSU $3000 Supplement Awards.
2002	Annual College Mathematics Contest in Modeling (MCM) Meritorious Award.
2001	Annual College MCM Outstanding Award with distinction and cash prize from Informs.
2000	Annual College MCM Meritorious Award.

REFERENCES   **James Oxley**, Boyd Professor of Mathematics, Louisiana State University, (225)578-1577, `oxley@math.lsu.edu`

John Cavalier, Professor of Mathematics, West Virginia University Institute of Technology, (304)442-3197, `John.Cavalier@mail.wvu.edu`

Bing Yang, Emeritus Professor and former Chair of Mathematics, West Virginia University Institute of Technology, (304)442-3201, `Bing.Yang@mail.wvu.edu`