

Deborah Chun, Ph.D.

CONTACT INFORMATION

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EDUCATION

Louisiana State University

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

Johns Hopkins University

M.S. in Applied and Computational Mathematics, 2005

Harvey Mudd College

Dual Degree B.S. in Math/Engineering, Concentration in Creative Writing, 2002

EMPLOYMENT HISTORY

2022–present	Full Professor , Department of Mathematics, West Virginia University Institute of Technology (WVU Tech), Beckley, WV.
2018–2024	Department Chair , Dept. of Math., WVU Tech, Beckley, WV.
2017–2022	Associate Professor , Dept. of Math., WVU Tech, Beckley, WV.
2011–2017	Assistant Professor , Dept. of Math., WVU Tech, Montgomery, WV.
2005–2011	Graduate Fellow/Assistant , Dept. of Math., 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.

ADMINISTRATIVE POSITION:

West Virginia University Institute of Technology (WVU Tech)
located on the **West Virginia University (WVU) Beckley Campus**
Leonard C. Nelson College of Engineering and Sciences (LCNCES)
Department of Mathematics Chair

I received the majority vote from the department members, support from the chair who was stepping down, and the LCNCES Dean’s support to become the chair of the WVU Tech Dept. of Mathematics in 2018, and the department voted to renew my position as chair for a second term. In the summer of 2024, academic transformation eliminated all department chair positions. In my two terms (six years) of leading the department, I focused on communication, collaboration, and consensus building.

The routine work of this administrative position was wide reaching. I acted as point of contact for any issue relating to mathematics and statistics courses on WVU Beckley campus, and I communicated with a variety of students, parents, faculty members, administrators, and Beckley community members. I participated in college leadership, including the LCNCES College Council, led by the LCNCES Dean. I set the schedule for math and statistics classes (approximately 30 per semester taught by approximately 10 faculty members) in coordination with fellow LCNCES department chairs, the WVU School of Nursing Beckley Division Chairperson, and the WVU Tech Student Success Center Director. I mentored faculty members in my department and ensure WVU

Tech Math personnel are heard and valued. I held bi-weekly department meetings, spearheaded administrative tasks such as producing reports and collecting data in support of accreditation review of other departments, and advised math majors and minors – explaining details of our program, expounding on the world of careers that can follow a math degree, and connecting students to specialists in my professional network.

ADMINISTRATIVE
POSITION
MAJOR
ACCOMPLISHMENTS

1. Spearheaded moving the majority of our classes to use Open Educational Resources (OER) and later to qualify for the “No Cost” course catalog designation.
2. Standardized work expectation document (Annual Work Plan) within the department. Brought the department into consensus through transparency, discussion, and collaboration. Produced clear, standardized requirements to earn different levels (Excellent, Good, Satisfactory, Unsatisfactory) of evaluation with buy-in from all math faculty members.
3. Initiated a culture of course assessment in the mathematics department and developed documentation procedures.
4. During COVID, I developed and successfully implemented a plan of action for in-seat instruction with social distancing for all math/stat classes in collaboration/discussion with a variety of parties, including the Campus President and our campus IT support.
5. Scheduled and supported approx. 30 classes per semester (approx. 500 students).
6. Managed and supported 10 faculty members (including two remote instructors), meeting individually and mentoring as necessary.
7. Supported engineering and computer science department chairs for ABET accreditation process by coordinating mathematics/statistics class data collection.
8. Wrote reports for math department stake holders, eg. wrote the 2021 five-year WVU Tech Math Major review report for our Board of Governors.

CURRENT
POSITION

Full Professor at the WVU Tech - Dept. of Mathematics

Hired in August of 2011 as an Assistant Professor, I was promoted twice and tenured and further recognized by being named chair. The components of my work are teaching, service, and research. I have been named the top researcher on my campus, and at each level of promotion, I was recognized for the strength of my research program. My most import role in service was leading the department for six years. My primary focus is teaching, and my favorite classes are the calculus sequence and probability and statistics. I teach three in-seat, undergraduate courses per semester.

TEACHING
EXPERIENCE AT
WVU TECH

My teaching is annually evaluated as excellent by my academic Dean and a Faculty Evaluation Committee comprised of math and science faculty.

College Algebra (100-level)	Plane Trigonometry (100-level)
Calculus I (100-level)	Calculus II (100-level)
Multi-variable Calc. (200-level)	Differential Equations (200-level)
Discrete Mathematics (300-level)	Probability and Statistics (400-level)
Elementary Stat'l Inference (200-level)	Mathematics Capstone (400-level)

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.

College Algebra recitation (100-level) Calculus I (100-level)
Calculus Internship Capstone (400-level for Mathematics Education Majors)

NON ACADEMIC EMPLOYMENT

Analyzed energy and signal waveforms to extract raw signal intelligence using demodulation and decoding software. Analyzed signal intelligence to create knowledge as needed by the NSA, US Space Command, and the Air Force to support national security. Directly supported Air Force special access programs. Directed some specialized collection and analysis efforts at fixed and mobile sites worldwide. Coordinated results with national-level intelligence agencies and operational field sites. Developed specialized reports and custom tasking requirements. Clearance TS/TK granted 2002.

Worked closely with three engineers to understand a digital resolver on the Minuteman missile. Independently researched design specifications and physical characteristics. Utilized specific physics and mathematical skills including rotational dynamics, differential equations, and Fourier and Z transforms to model the resolver. Created a diagnostic model of the resolver with variable inputs using Excel and MatLab/SimuLink.

Created an improved model to predict incurred but not reported claims using Microsoft Excel. Worked with an actuary to determine objectives and review previous models. Also helped to create an electronic database to replace paper records.

Designed and built lab stations to simulate low-flow water fountains. Worked with engineering profs. to deduce specifications. Translated qualitative instructions into quantitative goals. Led team from design to implementation, managing time and money.

PUBLICATIONS

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 articles in A* and A level math journals (https://www.austms.org.au/Rankings/AustMS_final_ranked.html) and have written book reviews of *The Joy of SET* and of *Closing the Gap* for the London Mathematical Society Newsletter.

OTHER PUBLICATIONS (POEMS)

1. “Leaving Maine.” Plain Spoke May 2010: 4.1 (p. 20).
2. “Bloom.” Zaum 2009: 13 (p. 91).
3. “Mothering.” Zaum 2009: 13 (p. 48).
4. “Slow Years.” The Re-View Spring 2001 (p. 13).

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 seven times at various conferences. I have given 12 invited conference section talks, 2 contributed conference talks, 14 seminar talks, and 6 talks for High School or Middle School students. A few are listed below. Additionally, I have attended 18 mathematics conferences/workshops without presenting.

SET It Up! WVU Tech Open House’s Mathematics interactive presentation using SET cards (25 minutes given to 3 high school groups) in Beckley WV (April 11, 2019).

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).

Pairs of elements in unavoidable minors of 3-connected binary matroids. Second Workshop on the Structure of Graphs and Matroids in Maastricht, the Netherlands (August 2010).

HONORS AND AWARDS

August 2022	Promotion to Full Professor.
May 2019	Promotion to WVU Tech Department of Mathematics Chair.
August 2018	Promotion to WVU Tech Department of Mathematics Interim 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.
1998–2002	Harvey Mudd Scholar Award (\$5000 each year of college).
1998	R.W. Johnson Pharmaceutical Research Institute Math/Science Award.