GREGORY P. DRESDEN
CURRICULUM VITAE

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EDUCATION

Ph.D., Mathematics, University of Texas at Austin.
Dissertation: "Spectra of Heights over Certain Finite Groups."
Thesis advisor: Jeffrey Vaaler.

M.A., Mathematics, University of Wisconsin at Madison.

B.S., Mathematics, Stanford University.

EMPLOYMENT (recent)

2011–2015, 2021	Chair, Department of Mathematics, Washington and Lee University.
1997–present	Professor, Washington and Lee University.
Jan–May 2009	Visiting Associate Professor, University of Georgia.
2014–present	Professor, Pioneer Academics.

TEACHING EXPERIENCE

Washington & Lee University

– Calculus, both standard and introductory.
– Multivariable Calculus, both individual and team-taught.
– Vector Calculus, with self-designed `Maple` and `Mathematica` computer labs.
– Introductory Statistics, with sections on the odds of casino gambling.
– Mathematical Statistics, with sections on classic probability problems.
– Introduction to Cryptography, with field trips to view ENIGMA machine.
– Linear Algebra, with student-created video hints available on-line.
– Introduction to Proofs, with student presentations on binomial coeffs. and Pascal's Triangle.
– Abstract Algebra, with section on ruler & compass constructions.
– Number Theory, with section on cryptography.
– Real Analysis, with a focus on unusual metric spaces.
– Ordinary Differential Equations, with `Mathematica` labs.
– Partial Differential Equations, with strobe-light demos of vibrating drumheads.
– History of Mathematics, with guest speakers from Classics & History.
– Actuarial Prep, covering calculus and statistics for actuary exams P and FM.
– Financial Mathematics, on the topic of financial derivatives.
– Mathematical Interest Theory, covering annuities, bonds, forward contracts, etc.
– The Art of Mathematics: Tilings and Patterns, on Fibonacci numbers.
– Logic Puzzles and Problem Solving, from Raymond Smullyan's books.

– Evening ESOL classes (volunteer) for local Spanish speakers.
– And, a total of thirty-six (voluntary unpaid overload) independent study classes with students.

Pioneer Academics
– Online courses for high school students from all around the world.
– Taught classes in number theory, cryptography, and visual proofs.
– Produced dozens of entries (with students) on the Online Encyclopedia of Integer Sequences (website https://oeis.org).

University of Georgia
– Mathematics for future elementary school teachers (required for Ed. degree).

University of Texas
– Calculus and Business Calculus (TA), with `Maple` labs.
– Emerging Scholars Program (AI) directed by Uri Treisman, for rural/minority students.
– Provisional Program (AI), college algebra for summer students.
– Preview Program (TA), pre-calculus for minority freshmen.
– Graduate Algebra (student grader), for graduate students in mathematics.
– Undergraduate Logic (student grader), for math majors.

University of Wisconsin
– Calculus and Multivariable Calculus (TA), for undergraduates.
– Differential Equations (TA), with `Mathematica` computer labs.

St. Stephen's Episcopal School, Austin, Texas
– Pre-Calculus, for high-school juniors and seniors.
– Honors Pre-Calculus, with sections on Fibonacci numbers, tangrams, etc.

Stanford University
– Introduction to the Macintosh (student instructor), once a week.
– Math Department student tutor and grader for calculus courses.

WORK AS DEPARTMENT CHAIR 2011-2015

Oversaw the turnover of about half the department in just two years:

– Lost three people to resignations and one to retirement.
– Received hundreds of applications over two years for five positions.
– Interviewed dozens of applicants in person or by Skype; 10 or so were on-campus visits.
– Hired five new tenure-track people in two years.
– Hired two temporary faculty.
– Guided four department members through promotion and tenure.

Brought back Cincinnati endowed chair to math department.

Hired a temporary administrative assistant and (a year later) a permanent assistant.

Oversaw remodelling of math department building (and the move out to temporary housing for a year).

Managed department budget.

Read every math student course evaluations (well over 500 a year), observed classroom teaching, and discussed strategies with faculty on how to improve their presentations.

Performed yearly reviews of faculty, of students, and of the department.

Designed department schedule (50+ courses, spead our over three terms), assigned faculty to teach classes, etc.

Served as main point of contact for students, deans, parents, and families.

Interviewed and helped recruit high-school students.

PUBLICATIONS

Orbits of Algebraic Numbers with Low Heights. Math. Comp. **67** (April 1998), 815–820.

Two Irrational Numbers From the Last Non-Zero Digits of $n!$ and n^n. Math. Mag. **74** (October 2001), 316–320.

Sums of Heights of Algebraic Numbers. Math. Comp. **72** (2003), 1487–1499.

On the Middle Coefficient of the Cyclotomic Polynomial. MAA Monthly **111** (June-July 2004), 531–533.

There Are Only Nine Finite Groups of Linear Fractional Transforms with Integer Coefficients. Math. Mag. **77** (June 2004), 211–218.

Finding Factors of Factor Rings over the Gaussian Integers, with Wayne Dymacek. MAA Monthly, **112** (Aug-Sep 2005), 602-611.

A Combinatorial Proof of Vandermonde's Determinant, with Art Benjamin. MAA Monthly, **114** (April 2007), 338–341.

Three Transcendental Numbers From the Last Non-Zero Digits of n^n, F_n, and $n!$. Math. Mag. **81** (April 2008), 96–105.

Resultants of Cyclotomic Polynomials in $\mathbf{Z}[x]$. Rocky Mountain Journal of Mathematics. **42** No. 5 (2012), 1461–1469.

Binet-type formulas for r-generalized Fibonacci numbers, with Zhaohui Du. Journal of Integer Sequences, **17** No. 4 (2014), Article 14.4.7.

Finding cycles in the kth power digraphs over the integers modulo a prime, with Wenda Tu. Involve, **11** No. 2 (2018), 181–194.

When is $a^n + 1$ the sum of two squares?, with Kylie Hess, Saimon Islam, Jeremy Rouse, Aaron Schmitt, Emily Stamm, Terrin Warren, and Pan Yue. Involve, **12** No. 4 (2019), 585–605.

Cubic Polynomials, Linear Shifts, and Ramanujan Simple Cubics, with Prakriti Panthi, Anukriti Shrestha, and Eric Zhang. Math. Mag. **92** (December 2019), 374–381.

Finite Subgroups of the Extended Modular Group, with Prakriti Panthi, Anukriti Shrestha, and Eric Zhang. Rocky Mountain Journal of Mathematics. **49** No. 4 (2019), 1123–1127.

Polynomial Roots with Common Tails, with Saimon Islam, Prakriti Panthi, Anukriti Shrestha, and Eric Zhang. MAA Monthly, 127 (2020), no. 4, 316–329.

Fault-Free Tilings of the $3 \times n$ Rectangle With Squares and Dominos, with Oluwatobi Jemima Alabi. Journal of Integer Sequences, **24** No. 1 (2021), Article 21.1.2.

Chebyshev Polynomials, Sliding Columns, and the k-generalized Fibonacci Numbers, to appear, Mathematics Magazine.

Tetranacci Identities via Hexagonal Tilings, with Alexa Jin, to appear, Fibonacci Quarterly.

Weighted Sums Of Fibonacci And Lucas Numbers Through Colorful Tilings, with Yu Xiao, to appear, Fibonacci Quarterly.

Tilings of $2 \times n$ *boards with dominos and L-shaped trominos*, with Michael Tulskikh. Journal of Integer Sequences, **24** No. 4 (2021), Article 21.4.5.

Sums and Convolutions of k-Bonacci and k-Lucas Numbers, with Yichen Wang, INTEGERS, **21** (2021), article #A56.

A Universal Convolution Identity for Fibonacci-type and Lucas-type Sequences, with Yichen Wang, submitted to Mathematics Magazine (2021).

Convolutions of Sequences with Similar Linear Recurrence Formulas, with Michael Tulskikh, submitted to the Journal of Integer Sequences (2022).

Student's Solutions Manual for Rogawski's Calculus, W. H. Freeman, New York, 2007, 1st edition, with Brian Bradie, and 2011, 2nd edition, with Jen Roche and Randy Paul.

Published problems:

1. College Mathematics Journal:
   - #758, on polar graphs, Sep 2003.
   - #1151, on matrix powers, May 2019.
   - #1186, on continued fractions, with high-school student ZhenShu Luan, Nov 2020.
   - # TBD, on polar coordinate areas, to appear, 2022.
2. Mathematics Magazine:
   - #2035, on decimal tails, with W&L students Prakriti Panthi, Anukriti Shrestha, and Jiahao Zhang, Dec 2017.
   - #2058, on Galois groups, with W&L students Saimon Islam and Jiahao Zhang, Dec 2018.
   - #2090, on star-shaped graphs, Feb 2020.
   - #2120, on normalizers, with W&L students Kathleen McNeill and Jackson Gazin, Apr 2021.

PRESENTATIONS

November 2019	"Continued Fractions and Common Tails," regional MAA meeting in Norfolk.
February 2019	"Non-Simple Continued Fractions," W&L's Lunch Cohort group.
September 2018	"Popcorn Functions, Continuity, and Number Theory," W&L's Lunch Cohort group.
February 2018	"Polynomials with Common Tails," W&L's Lunch Cohort group.
January 2018	"Finite subgroups of $PGL(2, \mathbf{Q})$," W&L's Lunch Cohort group.
September 2017	"Ramanujan Simple Cubics," W&L's Lunch Cohort group.

February 2017	"Using the IQ Center for teaching Partial Differential Equations," W&L's Lunch Cohort group.
December 2016	"Continued fractions, and roots of polynomials," W&L's "math munch" talk.
October 2016	"When is $a^n + 1$ the sum of two squares," Mid-Atlantic Seminar on Numbers at Towson University (and twice more at W&L).
March 2016	"You can't always tell by looking," Coastal Carolina University.
January 2016	"Cubic polynomials, and continued fractions," W&L's Wednesday Afternoon Lunch Cohort.
September 2015	"Fibonacci Numbers and Binomial Coefficients," W&L's "math munch" talk.
January 2012	"Finding closed knight's tours on annular chessboards," national AMS/MAA Joint Meeting, Boston.
November 2009	"Cyclotomic Polynomials, Their GCDs, and Their Resultants," W & L Colloquium.
April 2009	"Resultants of Cyclotomic Polynomials in $\mathbf{Z}[x]$," University of Georgia number theory seminar.
March 2009	"Resultants of Cyclotomic Polynomials in $\mathbf{Z}[x]$," University of South Carolina number theory seminar.
April 2008	"Little-known facts about the Fibonacci numbers," Davidson College mathematics club (invited talk).
December 2007	"Binet-type formulas for r-generalized Fibonacci numbers," PANTS conference at the University of South Carolina.
April 2007	"Look, there's more to say about Conway's Look-and-Say sequence," SERMON conference at Wake Forest (and earlier at JMU and EMU).
April 2006	"Three Transcendental Numbers from the Last Non-Zero Digits of n^n, F_n, and $n!$," regional MAA meeting at Loyola College in Baltimore.
April 2006	"On the Mahler Measure of $P(f/g)$," Mid-Atlantic Algebra Conference at JMU.
October 2005	"A Rational Approach to Transcendent Numbers," W&L Colloquium.
April 2005	"Transcendental Numbers from the Last Non-Zero Digits of $n!$ and F_n," SERMON conference at USC.
April 2005	"Rings of Gaussian Integers," regional MAA meeting at UVa.
March 2004	"Teaching in Public and Private Schools," (Panel member), for Washington & Lee's Education 401 class (also in December 2004).
October 2002	"Mahler Measure of Composition Polynomials," Washington & Lee Colloquium.
January 2002	"Using Both Video and Text on the Web in a Linear Algebra Course," national AMS/MAA Joint Meeting, San Diego.
October 2001	"The RSA Method," Hampden-Sydney College (invited talk).
May 2001	"Teaching Linear Algebra On-line," Washington & Lee (twice).
April 2001	"Linear Fractional Transforms with Integer Coefficients," regional MAA meeting and also at Hampden-Sydney College some months later.

March 2001	"Heights of Algebraic Numbers over Finite Groups in $PGL(2, Q)$," regional AMS meeting in Columbia, SC (invited talk).
October 2000	"Finite Groups of Linear Fractional Transforms with Integer Coefficients," Washington & Lee Colloquium.
March 2000	"Numbers and Secret Codes," Parents' Council meeting at Washington & Lee.
July 1999	"Worlds Beyond: A Look into Astronomy," W&L Alumni College.
July 1999	"Not all Numbers are Perfect," Science Summer Seminar Series at W&L (with student Adam Henry).
April 1999	"Spectra of Heights over Finite Groups," SERMON conference at USC.
February 1998	"Cryptography and Number Theory," Washington & Lee Colloquium.
January 1997	"Variations on Lehmer's Conjecture," Project NExT/YMN poster session at national AMS/MAA Joint Meeting, San Diego.
January 1997	"Teaching pre-college mathematics" (Panel member, MAA/YMN Panel Discussion), AMS/MAA Joint Meeting, San Diego.
October 1996	"Limit points and density in the spectrum of the absolute Mahler Measure," UT-Austin Number Theory seminar.

STUDENT WORK SUPERVISED

Summer 2020	"Polynomials with Common Tails II", Kathleen McNeill and Jackson Gazin.
Summer 2018	"Polynomials with Common Tails", Saimon Islam and Eric Zhang.
2017-19	Two-Year Scholar program, "Polynomials, Number Theory, and Common Tails", Eric Zhang.
Summer 2017	"Polynomials with Roots with Common Tails", Prakriti Panthi, Anukriti Shrestha, and Eric Zhang.
Summer 2016	"When is $a^n + 1$ the sum of two squares?", Saimon Islam, Aaron Schmitt, and Pan Yue.
Summer 2015	"Finding genus-2 graphs in Cayley diagrans for the ring $\mathbb{Z}_{16}$", Gabriela Iwasaki and Luke Quigley.
2013-14	Honors thesis, "Digraphs and Gaussian Integers", Wenda Tu.
Summer 2013	"Goldbach Conjecture for Polynomials", Qiuchi Sun.
Summer 2012	"Zeckendorf's Theorem, Tiling Proofs, and the 3-bonacci Sequence", Ginny Huang & Cathy Wang.
2011-12	"Generalizations of Fibonacci Identities", Kuan Si.
2005-06	Honors thesis, "Finding Factors of Factor Rings", Liz Twentyman.
2002-03	Honors thesis, "Root Quantum Numbers," Elizabeth Townsend (with Wayne Dymacek).
Summer 1999	"Number Theory in the Gaussian Integers," Adam Henry.

GRANTS, FELLOWSHIPS, SCHOLARSHIPS, AWARDS

Summer 2021	Washington & Lee Lenfest Grant for summer research on continued fractions and Fibonacci numbers.
Summer 2020	Washington & Lee Lenfest Grant for summer research with Kathleen McNeill and Jackson Gazin.
Summer 2019	Washington & Lee Lenfest Grant for summer research on proability and polynomials.
Summer 2018	Washington & Lee Lenfest Grant for summer research with Saimon Islam and Jiahao Zhang.
Summer 2017	Washington & Lee Lenfest Grant for summer research with Prakriti Panthi, Anukriti Shrestha, and Jiahao Zhang.
Summer 2016	Washington & Lee Lenfest Grant for summer research with Saimon Islam, Aaron Schmitt, and Pan Yue.
January 2016	HHMI Curriculum Development Grant.
Summer 2015	Washington & Lee Lenfest Grant for summer research with Gabriela Iwasaki and Luke Quigley.
Summer 2013	Washington & Lee Lenfest Grant for summer research with Wenda Tu and Quichi Sun.
Summer 2012	Washington & Lee Lenfest Grant for summer research with Ginny Huang and Cathy Wang.
Winter 2009	Sabbatical appointment at the University of Georgia (funded by grants from W&L, UGa, and Associated Colleges of the South).
Summer 2008	Washington & Lee Glenn Grant for summer research on Sierpinski numbers.
Summer 2007	Washington & Lee Glenn Grant for summer research on Fibonacci numbers.
Spring 2005	Washington & Lee Sabbatical for research on transcendental numbers.
Spring 2004	Washington & Lee Sabbatical for research on Gaussian integers.
Summer 2002	Washington & Lee Glenn Grant for summer research and for installing the Math Department computer lab.
Fall 2001	Washington & Lee Pre-Tenure Sabbatical.
Winter 2001	Mellon Teaching and Technology Fellowship, for designing my web-based linear algebra class.
Summer 2000	Mednick Grant and Washington & Lee Glenn Grant for summer research at the University of British Columbia.
Summer 1999	Washington & Lee Glenn Grant and R. E. Lee Grant for summer research with Adam Henry.
Summer 1998	Washington & Lee Glenn Grant for summer research with Jeff Vaaler at UT-Austin.
1996–97	UT-Austin Continuing Fellowship (one of only two awarded to graduate students in math that year).

Fall 1996	UT-Austin Department of Mathematics Teaching Excellence Award (given to the best undergraduate teacher among all 110 TA's and AI's).
Spring 1996	John L. and Anne Crawford Endowed Presidential Scholarship.
Fall 1995	Dodd Teaching Excellence Award (given to top five math TA's at UT-Austin).
Summer 1995	UT-Austin Department Fellowship.
1993–94	UT-Austin University Fellowship.

SERVICE AND DEVELOPMENT

Chair, Department of Mathematics, W&L (2011-2015 and fall 2021).

Referee for Ars Combinatoria, Chaos Solitons and Fractals, College Math Journal, Fibonacci Quarterly, Integers, Involve, Journal of Integer Sequences, Korean Journal of Mathematics, Lithuanian Mathematical journal, MAA Monthly, Mathematics Magazine, Punjab University Journal of Mathematics, and the Rocky Mountain Journal of Mathematics.

Reviewer for the AMS MathSciNet service (35 math articles over the years).

Ran the two-day Mathematics Ethics Luncheon series (four years in a row).

Textbook Reviewer, "Calculus" (5th ed.) by James Stewart, "Calculus" (working title) by C. Lutzer and T. Goodwill, "Discovering Number Theory" (1st ed.) by Jeff Holt and John Jones, and "What Can Be Computed" (working title) by John MacCormick.

Editor, solution manual for "Calculus" (1st and 2nd editions) by Jon Rogawski.

Reader, ETS Advanced Placement Calculus Exams, summer 2001, 2003, 2005, 2006.

Member of Board of Editors, Young Mathematician's Network, 1996-2002.

Member, UT-Austin textbook selection committee for pre-calculus course.

Co-organizer of SERMON (SouthEast Regional Meeting On Numbers) conference held in Greensboro, March 2003; also attended other SERMON meetings in Columbia, Blacksburg, etc.

Participated in various service projects to the math department and to the university:

- Served at Midnight Breakfast.
- Interviewed Honor Scholarship candidates (over twelve years).
- Installed a computer lab for the math department (twice).
- Hosted international students.
- Invited speakers to talk in class and to the department.
- Ran the math "Problem of the Month" series.
- Arranged cryptography and astronomy field trips.
- Participated in W&L's fund-raising campaign video.
- Judged local/state science fairs.
- Reviewed math textbooks.
- Proctored SOA/CAS Actuarial exams at W&L.

Served on various committees at Washington & Lee:

- Financial Aid Committee.
- Courses and Degrees Committee.

– Automatic Rule and Readmission Committee.
– Teaching Program Advisory Group.
– Technology Task Force.
– Registration Working Committee.
– Mathematics Department Hiring Committees (many times).

What I'm most proud of:
– married,
– father of two,
– living kidney donor (I donated my left kidney in May of 2018).