Apurva Nakade

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Experience

Assistant Teaching Professor, Johns Hopkins University	2026-Present
Senior Lecturer, Johns Hopkins University	2023-2026
Postdoctoral Lecturer, Northwestern University	2021-2023
Instructor, Causeway Postbaccalaureate Program, Northwestern University	2022
Postdoctoral Fellow, University of Western Ontario	2019-2021
Academic Coordinator, Canada/USA Mathcamp	2018
Mentor, Canada/USA Mathcamp	2017-2020
Organizer and Mentor, Directed Reading Program, UWO and JHU	2017-2021
Exotic Derivatives Trader, Nomura Capital India Pvt Ltd	2010

Education

Ph.D. in Mathematics, Johns Hopkins University	2019
M.Sc. in Mathematics, Chennai Mathematical Institute	2013
B.Tech. in Computer Science & Engineering, IIT Kanpur	2010

Teaching

Teaching Evaluations

Instructor, JHU AMS

Spring 2026

- Intro to Computational Math, Spring 2026
- Discrete Math, Spring 2026
- Monte Carlo Methods, Spring 2026

Fall 2025

- Monte Carlo Methods, Fall 2025
- Discrete Math, Fall 2025

Summer 2025

- Mathematical Foundations of AI, Summer 2025
- Intermediate Probability and Statistics, Summer 2025
- Honors Algebra II, Summer 2025

Spring 2025

- Discrete Math, Spring 2025
- Monte Carlo Methods, Spring 2025
- Honors Algebra II, Spring 2025
- Intermediate Probability and Statistics, Spring 2025

Fall 2024

- Discrete Math, Fall 2024
- Monte Carlo Methods, Fall 2024
- Honors Algebra II, Fall 2024

Summer 2024

· Exploring Engineering Innovation, Summer 2024

Spring 2024

· Graph theory, Spring 2024
· Linear Algebra and Differential Equations, Spring 2024
· Honors Algebra II, Spring 2024

Fall 2023

· Discrete Math, Fall 2023

Instructor, Northwestern

· Elementary Differential Equations, Spring 2023
· MENU Linear Algebra and Multivariable Calculus, (Coordinator) 2022-23
· Introduction to Optimization, Winter, Spring 2022
· Single Variable Calculus, Fall 2021
· MENU Linear Algebra and Multivariable Calculus, 2021-22
· Foundations of Mathematics, Winter 2023
· Elementary Differential Equations, Spring 2023

Instructor, UWO

· Algebraic Topology (graduate level), Winter 2021
· Topology Bootcamp, Fall 2020
· Discrete Structures for Engineering, Fall 2020
· Calculus II for Mathematical and Physical Sciences, Winter 2020
· Calculus I for Mathematical and Physical Sciences, Fall 2019
· Topics in Category Theory, Fall 2019

Instructor, JHU

· Honors Single Variable Calculus, Fall 2018, 2017
· Symmetries & Polynomials, Intersession 2018
· Hitchhikers Guide to Algebraic Topology, Intersession 2017
· Differential Equations with Applications, Summer 2017, 2015
· Online Linear Algebra, Summer 2014

Academic Co-coordinator, Canada/USA Mathcamp

· Planned the five week academic schedule
· Part of the mentor hiring committee
· Invited visiting speakers

Mentor/Staff, Canada/USA Mathcamp

· Designed and taught a variety of undergraduate-level courses
· Was residential and academic advisor at camp
· Part of the mentor hiring committee - Taught a course at Mathcamp 2020
· Contributed to Lean's surreal numbers math library
· Contributed to Lean's convex optimization math library

Papers

String structures, 2-group bundles, and a categorification of the Freed-Quinn line bundle, Daniel Berwick-Evans, Emily Cliff, Laura Murray, Apurva Nakade, Emma Phillips, Quantum Symmetries, Contemporary Mathematics, vol. 813, Amer. Math. Soc., Providence, RI, pp. 257-301 — 2025

Manifold Calculus and the h-principle, The Journal of Homotopy and Related Structures — 2019

Effect of increasing the energy gap between the two lowest energy states on the mixing time of the Metropolis algorithm (with Somenath Biswas), Information Processing Letters, IPL4801 (2012.08.012) — 2012

Projects

Course Design: Discrete Mathematics, JHU

- Modernized the course using evidence-driven pedagogical techniques
- Adapted an online textbook to better match current student mindsets
- Introduced homework resubmissions to reinforce student learning
- Introduced online assessments to improve feedback
- Restructured exams to better gauge student learning

Open Educational Resources Textbook for Linear Algebra, NU

- Added WeBWorK problems to a Linear Algebra PreTeXt OER textbook

Course Design: Introduction to Optimization, UWO

- Restructured the course to include applications and modeling
- Created course notes in RMarkdown
- Created Excel worksheet assignments for modeling scenarios

Course Design: Discrete Structures for Engineering, UWO

- Adapted the course for online asynchronous delivery
- Helped code (in a team) hundreds of problems on WeBWork
- Made short weekly video lectures to support the course text
- Maintained an active discussion forum on Piazza
- Gave a talk about the course design at a conference on E-Assessment in Mathematical Sciences

Course Design: Honors Single Variable Course (IBL), JHU

- Designed and taught a semester long course structured in a flipped classroom format for two semesters

Course Design: Intersession courses, JHU

- Designed and taught a 2-week course titled Symmetries & Polynomials introducing Galois theory to non-math majors
- Designed and taught a 2-week course Hitchhiker's Guide to Algebraic Topology introducing algebraic topology to non-math majors

Course Design: Canada/USA Mathcamp courses

- Designed and taught several week-long math courses to advanced highschool students
- Course topics: Theorem proving in Lean, Visualizing 3-manifolds, Riemann surfaces, Crash Course on Linear Algebra, Covering Spaces, Cohomology etc.

Grants & Awards

Open Educational Resources Faculty Grant (joint with Dhruv Azad), JHU — 2026
- $5000 to develop interactive visualization apps for computational math courses

Open Educational Resources Faculty Grant (joint with Aaron Greicius), NU — 2022

William Kelso Morrill Award for Excellence in Mathematics, JHU — 2019

Finalist for the KSAS Excellence in Teaching Awards, JHU — 2019

Prof. Joel Dean Award for Excellence in Teaching in Mathematics, JHU — 2016

AMS Graduate Student Travel Grant — 2019

Service

Member of DS Masters admissions committee in JHU AMS department — 2025-2026

Helped connect undergraduate students with research mentors in JHU AMS department — 2024-2025

Judge for poster presentations at JHU Matrix Conference — 2025

Judge for poster presentations at MAA MD-DC-VA Section Meeting — Fall 2024

Supplementary Instructor for the Causeway Postbaccalaureate Program, NU — 2022

Directed Reading Program, UWO, JHU — 2017-2021
- Started DRP at UWO in Fall 2019
- Organizer and mentor for DRP at JHU and UWO Professional Development

Professional Development

Faculty Forward Fellowship, JHU — 2025

Introduction to Education Research Workshop, JHU — 2023

MAA Section NExT Fellow, 2023 cohort — 2023-25

Mathematical Association of America Fellow — 2020-Present

MAA Project NExT Fellow, Brown'20 cohort — 2020

Teaching Academy Certification, JHU — 2019

Participated in several workshops by the Center of Teaching & Learning at UWO — 2019-2020

Participated in the MSRI Critical Issues in Mathematics Education Workshop — 2022

Participated in the MAA Modeling Inspiration for Differential Equations Workshop — 2022

Participated in online Mastery Grading Workshop — 2019

Attended the Science of Learning Symposium, JHU — 2014-2018

Talks

Discrete Chern–Simons via 2-group bundles on elliptic curves, CMS Session on Homotopy Theory — 2020

What is a Spectrum?, University of Western Ontario, Basic Notions Seminar — 2020

Manifold calculus and the h-principle — 2017-2019

- University of Regina, Geometry & Topology Seminar, 2019
- University of Western Ontario, Geometry & Topology Seminar, 2019
- University of Rochester, Topology Seminar, 2019
- Workshop on Functor Calculus, Ohio State University, 2019
- Spaces of Embeddings, BIRS, Banff, 2019
- AMS Special Session in Homotopy Theory, UC Riverside, 2017

Weiss fibration sequence, MIT Talbot Workshop — 2019

Constructing a Homotopy Type for Triply-Graded Link Homology, AMS Sectional Meeting, University of Hawaii — 2019

Homotopy colimits and limits, European Autumn School in Topology — 2017

Conferences Attended

MAA MD-DC-VA Section Meeting	Spring 2024
MAA MD-DC-VA Section Meeting	Fall 2023
United States Conference on Teaching Statistics	2023
MSRI CIME Workshop	2022
Project NExT at MAA Mathfest, Online	2021
Lean for the curious mathematician	2020
Spaces of Embeddings, BIRS, Banff	2019
MSRI Summer School, Cortona, Italy	2019
MRC Workshop, Providence RI	2019
MIT Talbot Workshop, Austin TX	2019
Workshop on Functor Calculus, Ohio State University	2019
AMS Sectional Meeting, University of Hawaii	2019
Arizona Winter School, Arizona State University	2019
Joint Mathematical Meetings, Baltimore	2019
Symplectic Geometry and Homotopy Theory, UCLA	2018
MSRI Summer School, Fields Institute, Toronto	2018
Graduate Student Conference, Temple University	2018
AMS Sectional Meeting, UC Riverside	2017
European Autumn School in Topology, Netherlands	2017
Topology Festival, Cornell University	2017
Georgia International Topology Conference, University of Georgia	2017
Alpine Algebraic & Applied Topology Conference, Switzerland	2016
WCATSS, University of Oregon, Eugene	2016
GSTSC, Indiana University, Bloomington	2016
Mid-Atlantic Topology Conference, Johns Hopkins University	2016
Midwest Topology Seminar, Northwestern University	2016
Geometry and Topology Conference, Lehigh University	2015
Mid-Atlantic Topology Conference, University of Virginia	2015

Midwest Topology Seminar, University of Illinois Chicago	2015
Midwest Topology Seminar, Northwestern University	2015
Modular invariants in Topology and Analysis, Regensburg	2015
WCATSS on Field theories, UBC	2015
Introductory Workshop on Algebraic Topology, MSRI	2015
Joint Mathematical Meetings, Baltimore	2015
Classification of Manifolds, NEHU	2013
H-principle, Chennai Mathematical Institute	2012
Groups and geometries, ISI, Bangalore	2012
String Topology, Vivekananda University	2012
Kervaire Invariant One, ISI, Kolkata	2012
Number Theory workshop, Tezpur University	2011
Lie algebras and their representations, CMI	2011
Nurture camp, Institute of Mathematical Sciences	2007
IMO, Slovenia	2006
IMOTC, HBCSC	2003-2006
Kishore Vaigyanik Protsahan Yojana (KVPY)	2005

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