NICHOLAS CECIL

(410) 804-3075
nscecil@uiowa.edu
nicholas-cecil.github.io

541 S Dubuque St
Iowa City, IA 52240

AREAS OF INTEREST

Category Theory, Higher Category Theory, Algebraic Topology, Homotopy Theory

EDUCATION

PhD (Expected)	University of Iowa Advisor: Dr. Benjamin Cooper	Spring 2026
Certificate in College Teaching (Expected)	University of Iowa	Spring 2026
Bachelor of Arts	Reed College, Mathematics Major Thesis: *Nets, Filters, and Convergence* Thesis Advisor: Dr. Lyudmila Korobenko Advisor: Dr. Kyle Ormsby	May 2021
	Budapest Semester Mathematics	Fall 2019

HONORS AND AWARDS

Post-Comprehensive Research Fellowship — Spring 2025

Research Training Group (RTG) Fellow — Spring 2022, Fall 2023, Fall 2024
NSF RTG DMS-2038103 grant

Erwin and Peggy Kleinfeld Scholar — 2023 – present

Qualifying Exams Passed with Distinction — Fall 2022
Algebra, Topology, Analysis

Phi Beta Kappa — Spring 2021

Summa cum Laude — Spring 2021

Teaching, University of Iowa

Primary Instructor
College Algebra — Fall 2025

Primary Instructor, Ungraded Course
Grad Student Algebra Prep — Fall 2024
Topology Qual Prep Course — Fall 2025

Directed Reading with Undergraduate

Introduction to Smooth Manifolds — Spring 2025
Non-standard introduction following Ramanan's Global Calculus

Teaching Assistant

Fundamentals of Spaces and Functions — Spring 2024
Introduction to Smooth Manifolds — Spring 2023, Spring 2024
Calculus II — Spring 2023
Calculus I — Fall 2022

Tutor

University of Iowa Math Platoon — Fall 2025
Drop-in math tutoring for military and military connected students
University of Iowa Math Lab — 2021 – present
Drop-in math tutoring covering all undergraduate mathematics course offerings

Administrative Experience

Member, University of Iowa Math Graduate Board — 2025
Co-Chair, Graduate and Undergraduate Student Seminar and Directed Reading Program

Organizer, Classical Homotopy Theory Student Seminar — Spring 2024

Organizer, Hochschild and Cyclic Homology Student Seminar — Fall 2024

Organizer, Model Categories Student Seminar — Fall 2023

Conference Presentations

Midwest Panorama of Geometry and Topology, ECS Session — Summer 2025
Title: *Duality for Categorical Wreath Products*

Talks

University of Iowa Topology Student Training Seminar — Fall 2022 – Present
Several talks each semester. Selected topics:
Categories fibred in groupoids and topological stacks
Mostow rigidity theorem

University of Iowa Graduate and Undergraduate Student Seminar — 2025
Adjoint functor theorems
Pasting theorem for 2-categories via computads
Weak functors of strict higher categories
Convergence spaces

Classical Homotopy Theory Student Seminar — Spring 2024
Stable tangential framings
Fibrations and cofibrations

Hochschild and Cyclic Homology Student Seminar Fall 2024

Cyclic objects and S^1 Spaces
Cyclic homology

Model Categories Student Seminar Fall 2023

Introduction to model categories
Small object argument and recognition of cofibrantly generated model categories
Quillen-Serre model structure on spaces
Derived functors and derived adjunctions

Research and Preprints

Berger-Joyal Duality and Traces I (arXiv: 2509.11423), **joint with Ben Cooper**

A generalization of the duality between Joyal's combinatorial disks and Berger's wreath product amenable to describing the duals of wreath products of crossed simplicial groups.

Berger-Joyal Duality and Traces II (in preparation), **joint with Ben Cooper**

Use of wreath products with the cyclic category to obtain traces of n-categories along n different axes.

A Homotopy Coherent Nerve for 3-Categories (in progress)

An approach to obtaining Ara-type (∞,3)-categories from strict 3-categories, a generalization of Alexander Campbell's work connected (∞,2)-categories and bicategories.

Work Experience

Grader, Reed College

Complex Analysis	Spring 2020
Introduction to Analysis	Spring 2019
Course: Real Analysis	Fall 2018

Tutor, Reed College

Drop-in Math Tutor	Fall 2020
Individual Tutor, Real Analysis	Fall 2020
Individual Tutor, Introduction to Analysis	Fall 2020