# Alex Creiner

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## Education

**Doctor of Philosophy, Mathematics** at University of North Texas 2015-2022
Dissertation can be found **here**.
**Bachelor of Science, Mathematics** at Northern Arizona University 2010-2015

## Summary, Interests and Expertise

Mathematician and computer scientist with a wide breadth of knowledge across many disciplines. An expert in computational complexity theory, with extensive experience in the fields of logic and descriptive set theory, real and complex analysis, topology, probability, statistics, and information theory. Antidisciplinary, always seeking to break through academic boundaries and communicate across disciplines towards working on real problems of significance. Additional research interests have included economics, systems theory, sociology, psychoanalysis, history, technological sovereignty and information theory. Through my particular mathematical lens I have confidence that I can provide a novel and valuable perspective on whatever I'm looking at. These pursuits have often culminated in educational videos, which can be found here.

## Publications

A. Creiner, S. Jackson, Borel Complexity and Ramsey Largeness of Sets of Oracles Separating Complexity Classes, Mathematical Logic Quarterly Vol.69(3) p.269-286, 2023

## Teaching Experience

**Boston College** 2023-Present
Visiting Assistant Professor
- CSCI 1101 Computer Science I - Instructor of Record (3 sections)
- CSCI 2243 Logic and Computation - Instructor of Record (3 sections)
- CSCI 3383 Algorithms - Instructor of Record (2 sections)

**University of North Texas** 2015-2023
Teaching Fellow
- Math 1680 Elementary Probability and Statistics - Instructor of Record (2 sections)
- Math 1720 Calculus II - Instructor of Record (1 section)
- Math 1780 Probability Models - Recitation Instructor (5 sections)
- Math 2700 Linear Algebra and Vector Geometry - Instructor of Record (1 section)

Adjunct Faculty
- Math 1580 Survey of Mathematics - Instructor of Record (2 sections)
- Math 1710 Calculus I - Instructor of Record (1 section)
- Math 1190 Business Calculus - Instructor of Record (3 sections)

Teaching Assistant
- Math 1680 Elementary Probability and Statistics - Recitation Instructor (1 section)
- Math 1710 Calculus I - Recitation Instructor (6 sections over 4 semesters)
- Math 1720 Calculus II - Recitation Instructor (4 sections over 2 semesters)

Graduate Services Assistant

Tutor in the math lab (various semesters)
Math 2000 Discrete Mathematics - Grader (1 section)
Math 2700 Linear Algebra and Vector Geometry - Grader (1 section)
Math 3350 Introduction to Numerical Analysis - Grader (1 section)
Math 3410 Differential Equations I - Grader (4 sections)
Math 3420 Differential Equations II - Grader (1 section)
Math 3610 Real Analysis II - Grader (1 section)
Math 4060 Foundations of Geometry - Grader (1 section)
Math 4430 Introduction to Graph Theory - Grader (1 section)

**Coconino Community College** Spring 2015

Part Time Faculty

Math 082 Arithmetic Review - Instructor of Record
Math 086 Pre-Algebra - Instructor of Record

**Northern Arizona University** 2012-2015

Math Achievement Program - Peer Math Assistant

Tutor for calculus II

## Work Experience

**Dhisco, Inc** Summer 2017

Software Engineer Intern

## Talks and Seminars I've Given/Hosted

SEALS 2023 Conference: *On the Ramsey Largeness of Sets of Oracle Separating Complexity Classes*

Graduate Logic Group Talks:

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| *The Lightface Hierarchy and Computability on Arbitrary Polish Spaces* | Spring 2022 |
| *The Church-Turing Thesis and Gödel's First Incompleteness Theorem* | Fall 2021 |
| *The Church-Turing Thesis and the Halting Problem* | Fall 2021 |
| *Philosophical Motivations for The Turing Model* | Fall 2021 |
| *The Recursive Functions Part 2: Equivalence to the Turing Model* | Spring 2019 |
| *The Recursive Functions Part 1: Basic Definitions* | Spring 2019 |
| *The Polynomial Hierarchy by Way of the Travelling Salesman Problem* | Fall 2019 |
| *An Introduction to Complexity Theory* | Fall 2019 |

Seminar on Political Economy Spring 2022

Organized and held weekly meetings in which I presented my research on various formalization of Marx's critique of political economy in the volumes of Capital, including that found in *Marx's Economics* (Morishima) and in *Laws of Chaos* (Farjoun and Machover).

Seminar on Computational Complexity Theory Fall 2019

Organized an held weekly meetings in which we presented material to one another with the intent of eventually pursuing mutual research. Topics included introductory material leading up to the Cook-Levin theorem and exploration of alternative complexity measures.

## Awards and Honors

Academic Excellence Award — Spring 2022
UNT Department of Mathematics

Best Technological/Analytic Approach, 2nd place — Spring 2017
UNT 2017 Big Data Challenge