Frances E. Dean (Franny)

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EDUCATION

University of California, Berkeley • Berkeley, CA 2021 – Present
Mathematics PhD Student

University of Washington • Seattle, WA 2019 – 2021
Graduate Non-Matriculated, Global Health

Williams College • Williamstown, MA 2015 – 2019
BA in Mathematics • *Cum laude*

RELEVANT COURSEWORK

WILLIAMS COLLEGE:

Science: Biology 101: The Cell, Biology 102: The Organism, Neuroscience, Introduction to Psychology, Social Psychology, Introduction to Mechanics and Waves, Philosophy and Modern Physics, Principles of Modern Chemistry, Introduction to Computer Science, Data Structures & Advanced Programming

Mathematics: Multivariable Calculus, Linear Algebra, Abstract Algebra, Protecting Information: Applications of Abstract Algebra and Quantum Physics, Algebraic Number Theory, Applied Real Analysis, Introduction to Statistical Modeling, Introduction to Python Programming, Galois Theory, Differential Equations, Dance of the Primes, Topology, Probability, Algebraic Combinatorics

UNIVERSITY OF WASHINGTON:

Applied Mathematics: Applied Biostatistics I and II, Mathematical Modeling of Cancer, Physical Applications of Group Theory

Global Health: Methods, Tools, and Data for Global Health, Measuring the Global Burden of Disease of TB and HIV/AIDS, Problems in Global Health, Analytic Skills for Public Health, Social Determinants of Health

WORK EXPERIENCE

University of California, Berkeley, Graduate Student Instructor 2021 – Present
Lead two discussion sections of Linear Algebra and Differential Equations
Grade student work and aide lead professor in running lecture and course

Institute for Health Metrics and Evaluation, Post Bachelor Fellow 2019 – 2021
Contributed to the landmark Global Burden of Disease study modeling the morbidity and mortality of neoplasms
Assisted in data formatting and processing and utilize and write statistical software to create estimates
Designed methods to improve estimation of mortality to incidence ratios, survival curves, and model new diseases

Williams College Mathematics, Teaching Assistant 2017 – 2019
Hosted sessions answering student questions and tutoring undergraduates in Linear Algebra, Abstract Algebra
Managed the entering of student grades, updated homework solutions, and graded problem sets with a team of T.A.'s

SMALL REU in Mathematics, Undergraduate Researcher 2018
Investigated and created tools for computing the gonality of combinatorial graphs as defined via tropical algebraic curves

ACTIVITIES

Math Matters Seattle, Test Prep Instructor 2020 – 2021
Tutored and mentored students from low-income backgrounds in Seattle weekly to set them up for collegiate success

Student Advisory Board of Math & Statistics, Vice President 2018 – 2019
Facilitated informational, mentorship, and social events and encouraged engagement by producing department stickers
Assisted in the hiring of new mathematics and statistics faculty at Williams College

Williams College Varsity Swim Team, Member 2015 – 2019
Qualified for NCAA Division III Championship: 2016

CSCAA Scholar All-American: 2016, Honorable Mention: 2017
NESCAC All-Academic Honoree: 2016, 2017, 2018, 2019

Lehman Community Engagement, President 2016 – 2019
Organized, participated, and oversaw service trips and outings to engage the members of the greater Williams community
As President (2018-19): led weekly board meetings, oversaw communications, and facilitated group projects and structure
As Secretary (2017): took meeting minutes and sent out engaging weekly emails promoting events

PRESENTATIONS

Cancer Survival Estimation in the GBD Study, *IHME Science Seminar Series* September 9, 2020
Graphs of Gonality Three, *Joint Mathematics Meetings* January 19, 2019
Chip Firing Games & Gonality, *Williams College* October 1, 2018
Computing Graph Gonality with Brambles, *MAA MathFest* August 2, 2018

PREPRINTS

Multiplicity Free Gonality, F. Dean et. al July 2021
https://arxiv.org/abs/2107.12955

PUBLICATIONS

Gonality sequences of graphs, I. Aidun et. al April 2021
SIAM J. Discrete Math., Vol 35 (2), p 814–839. DOI: 10.1137/20M1323072
Global Burden of Disease Study 2019 October 2020
The Lancet, Vol 396 (10258), DOI: 10.1016/S0140-6736(20)30925-9
Treewidth and gonality of glued grid graphs, I. Aidun et. al May 2020
Discrete Applied Mathematics, Vol 279, DOI: 10.1016/j.dam.2019.10.024
Tired: A Reflection on Asceticism and the Value of Quantitative Assessment January 2020
Journal of Humanistic Mathematics, DOI: 10.5642/jhummath.202001.19
Graphs of gonality 3, I. Aidun et. al December 2019
Journal of Algebraic Combinatorics, Vol 2 (2019), DOI: 10.5802/alco.80

ADDITIONAL SKILLS & CERTIFICATES

Computer
Proficient in R, LaTex, Beamer, Python, Stata, SQL

Teaching
Instruction Support Program Training in Teaching, IHME 2020

SCHOLARSHIPS & AWARDS

Williams College Department of Mathematics Beaver Award 2019
Given to a senior to recognize their contributions to the mathematical community
Lola G. Duff and William H. Duff, II Scholarship 2015 –2019
A merit scholarship for full-time pursuit of a bachelor's degree to students of Allegheny County of Protestant faith
Brown Book Award, *Thinking the Twentieth Century* by Tony Judt and Timothy Snyder 2014
Awarded to high school students who demonstrates excellent communication skills by the Brown Alumni Association

PERSONAL

I enjoy competitive swimming, sailing, yoga, biking, running, hiking, tennis, and golf.