Mathematics Ph.D.

Mathematics underlies the technological advances that drive society. It's also a source of aesthetic inspiration for scientists who discover deep structures in the universe. At UC Santa Cruz, mathematicians study the field's fundamental questions while ensuring that students develop the expertise needed to pursue advanced degrees. They also reach out to teachers in the community, invigorating their instruction with new insights into the foundations of mathematics.

Tell us what a first-year student can expect in the Mathematics Graduate Program.
First year students in the Mathematics Graduate Program typically take full year introductory courses in Algebra, Analysis and Geometry to prepare them for the required Preliminary Exam.

Do you have any fellowships or other opportunities specific to your program for minority students?
Newly admitted students are nominated by the faculty admissions committee for several competitive fellowships: Cota Robles Fellowship; Tuition Fellowships; Regents Fellowships; Chancellor's Fellowships.

What salary (on top of tuition and fees) do first-year Graduate Students in your program earn?
The department supports admitted first-year Ph.D. students with Teaching Assistantships (TA) or fellowships, or a combination. Continuing Ph.D. students are supported through Teaching Assistanships or Graduate Student Researchships (GSR), depending on the availability of each and student academic progress. These positions pay a salary and fees.

When are graduate applications due for your program?
January 8

Who can I contact for more information?
- Robert Boltje, Vice Chair of Graduate Studies
(831) 459-5001, boltje@ucsc.edu
- Kyle Blocker, Graduate Program Coordinator
(831) 459-5461, kblocker@ucsc.edu

http://www.math.ucsc.edu/graduate/

Mathematics Faculty

Professor Robert Boltje's research centers around the theory of finite groups, their representations, and applications to algebraic number theory.

Professor Bruce Cooperstein's research covers several areas related to groups of Lie type, finite group theory, Galois geometry and, more generally, incidence geometry.

Assistant Professor Samit Dasgupta's research focuses on number theory and arithmetic algebraic geometry. Specifically, he studies the connections between special values of L-functions, algebraic points on Abelian varieties, and units in number fields.

Professor Chongying Dong researches Vertex operator algebras are a new and fundamental class of algebraic structure which has recently arisen in mathematics and physics.

Associate Professor Torsten Ehrhardt's research interests range from functional analysis (in particular, operator theory and the theory of Banach algebras), over harmonic analysis and Wiener-Hopf factorization theory to complex analysis. His research is both motivated by applications in such areas as statistical physics and random matrix theory, as well as by questions arising in different areas of "pure'' mathematics.

Professor Viktor Ginzburg's research interest has been in various areas of global analysis. These areas are symplectic topology and Hamiltonian dynamics, Poisson Lie groups and Poisson manifolds, and Hamiltonian actions of Lie groups.

Professor Debra Lewis' research focuses on geometric mechanics, particularly Hamiltonian and Lagrangian systems with symmetry. Inviscid fluids, hyperelastic materials, and systems of coupled rigid bodies are a few important examples of Hamiltonian and Lagrangian systems. Fundamental properties of these systems, e.g. conservation of total energy and momentum, or a variational formulation, facilitate the analysis of crucial features of the dynamics.

Professor Geoffrey Mason's present research interests lie in the broadly conceived area of physical mathematics called conformal field theory.

Professor Richard Montgomery's work has been primarily in two areas: (I) the N-body problem and (II) the geometry of distributions.

Professor Jie Qing is interested in nonlinear analysis, harmonic analysis, and partial differential equations (systems) with applications to differential geometry, complex geometry and mathematical physics. Most recently, Professor Qing has continued his research on the study of singular behavior of harmonic maps and the heat flow for harmonic maps.

Professor Hirotaka Tamanoi primarily works in (algebraic) topology. His latest interest is in string topology, studying topological aspects of strings moving in space.

Professor Anthony Tromba's research interests are in the applications of global nonlinear analysis to various problems in partial differential equations. His main research during the last several years has been directed toward various questions concerning properties of minimal surfaces, in space and in Riemannian manifolds. In particular, he is interested in the question of isolatedness of solutions.

Assistant Professor Marty Weissman's research involves the interaction between representation theory, geometry, and number theory. Specifically, he works on automorphic forms and representations, and what is generally known as the Langlands program. Within the Langlands program, he is interested in modular forms on exceptional groups, representations of p-adic groups, and L-functions.

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