Mathematics course descriptions for Andrew Parrish, application to Mathematics PhD program

Course	*Instructor*	*Grade*	*School*	*Text and course topics*
Stat 400: Applied Probability and Statistics I	Abram Kagan	A	University of MD	Text: "Probability and Statistics" by Jay Devore Topics: Random variables, distributions, moments, law of large numbers and central limit theorem, estimation of parameters, hypothesis testing.
Math 403, Introduction to Abstract Algebra	Niranjan Ramachandran	A	University of MD	Text: "Contemporary Abstract Algebra" by Joseph Gallian Topics: Integers, groups, rings, integral domains, fields.
Math 405: Introduction to Linear Algebra	James Schafer	A	University of MD	Text: "Finite-Dimensional Vector Spaces" by Paul Halmos Topics: An abstract treatment of finite dimensional vector spaces, linear transformations and their invariants, inner product spaces
Math 406: Introduction to Number Theory	Justin Wyss-Gallifent	A+	University of MD	Text: "Elementary Number Theory" by Kenneth Rosen Topics: Integers, divisibility, prime numbers, unique factorization, congruences, quadratic reciprocity, Diophantine equations and arithmetic functions, cryptography, check-sums.
Math 410: Advanced Calculus I	Peter Wolfe	A+	University of MD	Text: "Advanced Calculus" by Patrick Fitzpatrick Topics: Sequences and series of numbers, continuity and differentiability of real, the Riemann integral, sequences of functions and power series.
Math 411: Advanced Calculus II	Matei Machedon	A	University of MD	Text: "Advanced Calculus" by Patrick Fitzpatrick Topics: Topology of R^n, functions of several variables, partial derivatives, multiple integrals. The implicit function theorem and inverse function theorem
Math 432: Introduction to Topology	James Schafer	A	University of MD	Text: "Topology" by James Munkres Topics: Metric spaces, topological spaces, connectedness, compactness , continuous maps, homeomorphisms, fundamental groups, homotopy, covering spaces, fundamental theorem of algebra
Math 446: Axiomatic Set Theory	Chris Laskowski	A	University of MD	Text: "The Joy of Sets" by Keith Devlin Topics: Russell's paradox, ZF axioms, axiom of choice, transfinite induction, ordinal/cardinal arithmetic, cofinality, large cardinals
Math 456: Cryptology	Lawrence Washington	A	University of MD	Text: "Introduction to Cryptography" by Trappe and Washington Topics: Classical and modern cryptography, RSA and DES encryption, elliptic curves, Diffie-Hellman key exchange, the birthday paradox

Course	*Instructor*	*Grade*	*School*	*Text and course topics*
AMSC/CMSC 466: Introduction to Numerical Analysis I	Georg Dolzmann	A	University of MD	Text: “An Introduction to Numerical Analysis” by Kendall Atkinson Topics: Floating point computations, direct methods for linear systems, interpolation, solution of nonlinear equations.
Math 498A: Selected Topics in Mathematics (Field Theory)	James Schafer	A	University of MD	Text: “Galois Theory” by Ian Stewart Topics: Field extensions, Galois theory, constructions with straight-edge and compass, solutions of equations of low degrees, insolubility of the quintic equation.
CMSC 390 & CMSC 499A: Independent Research	William Gasarch	A	University of MD	Topics: A survey of Ramsey Theory, with focus on Van der Waerden's theorem and the Hales-Jewett theorem, with polynomial generalizations. Culminated in an exposition paper.
Math 600: Abstract Algebra I	Thomas Haines	A+	University of MD	Text: “Abstract Algebra” by Dummit and Foote Topics: Groups, isomorphism theorems, normal series, Sylow theorems, free groups, Abelian groups, rings, integral domains, fields, modules.
Math 630: Real Analysis I	Patrick Fitzpatrick	A	University of MD	Text: “Real Analysis” by Royden and Fitzpatrick Topics: Lebesgue measure and integral, differentiability of functions of bounded variation, absolute continuity, fundamental theorem of calculus, Lp spaces on R, Riesz-Fischer theorem, bounded linear functionals on Lp
Math 315: Functional Analysis	Gábor Elek	B	Budapest University of Technology	Topics: Completeness, Banach/Hilbert spaces, dual spaces, Banach-Steinhaus theorem, Fredholm operators, spectral theory.
Math 340: Combinatorics	Ervin Győri	A+	Budapest University of Technology	Topics: Graph coloring, Ramsey theory, Lovász Local Lemma, proofs by linear algebra and probability, extremal set theory, Hall's theorem.
Math 346: Topics in Graph Theory 2	Gábor Simonyi	A	Budapest University of Technology	Text: “Graph Theory” by Reinhard Diestel Topics: Graphs, vertex/edge/list colorings, perfect graphs, Hamiltonian cycles, planarity, network flow, Shannon capacity, extremal graph theory.
Math 360: Topics in Geometry	Gábor Moussong	A	Budapest University of Technology	Text: “Notes on Geometry” by Elmer Rees Topics: Isometries of R^n, regular polyhedra, projective spaces, cross-ratios, comics, spherical geometry, hyperbolic geometry.
Math 390: Conjecture and Proof	György Elekes	A+	Budapest University of Technology	Text: “Conjecture and Proof” by Miklós Laczkovich Topics: Focus on problem-solving. Irrationality of pi and e, impossibility of angle-trisection, Hamel bases, Peano curves, Banach-Tarski paradox.