All coursework was completed at Drexel University. If a course is in progress a projected grade is placed in parentheses (A-) for example.

Undergraduate Mathematics

Course Name/CRN	Description	Textbook	Grade	Instructor
Math 402: Elements of Modern Analysis II	Covers integration and differentation theory, Riemann integral, improper integrals, sequences and series, power series, and uniform convergence. Abbots Analysis, chapters 5-8.	Understanding Analysis, chapters 5-8	Planned	Matthew Ziemke
Math 401: Elements of Modern Analysis I	Covers the real number system, axiom of completeness, countable and uncountable sets, limits, monotone convergence and Balzano-Weierstrass theorems, Cauchy criterion, infinite series, elementary topology, cantor set, nested compact set property, functional limits, and continuity. Abbots Analysis, chapters 1-4.	Understanding Analysis, chpaters 1-4	(A)	Matthew Ziemke
Math 387: Linear Algebra II	Covers linear transformations, including kernel and range; eigenvalues and eigenvectors; diagonalization of symmetric matrices; Jordan Cononical Form, Inner Product, and Normed Spaces, Unitary matrices, QR, and Schur triangularization, Singular value decomposition.	Advanced Linear Algebra, Hugo Woerdeman, all chapters except 6.	A+	Jurij Volcic
Math 332: Abstract Algebra II	Covers theory of rings, fields, ideals, integral and euclidean domains, unique factorization domains, introduction to Galois Theory, Cyclotomic Extensions, and Algebraic Coding Theory.	Contemporary Abstract Algebra, Joeseph Gallian (10th Ed), chapters 12-20,29-31.	A+	Joel Pereira
Math 331: Abstract Algebra I	Covers theory of groups, homomorphism and isomorphism, Lagranges Thoerem, 1st Isomorphism Theorem, Fundamental Theorem of Finite Abelian Groups, Group Actions, Geometric Constructions.	Contemporary Abstract Algebra, Joeseph Gallian (10th Ed), Gallian chapters 1-11.	A	James Pascoe
Math 322: Complex Variables	Introduces functions of one complex variable. Basic properties of analytic functions, power series, integration, residues and poles, and conformal mapping with applications.	Complex Variables, Stephen Fisher, select sections from all chapters.	(A)	Eric Schmutz

jmp586@drexel.edu

Course Name/CRN	Description	Textbook	Grade	Instructor
Math 313: Probability and Statistics III	This course covers confidence intervals, minimum variance unbiased estimation, hypothesis testing, type I and type II errors, likelihood ratio tests, tests for means and variances. Chi-square goodness-of-fit tests, categorical data analysis, and analysis of variance.	Instructors lecture notes.	A+	Jason Aran
Math 312: Probability and Statistics II	This course covers joint & marginal distributions for continuous random variables, distributions of functions of random variables, moment-generating function technique, the central limit theorem. Estimation, consistency, unbiasedness, maximum likelihood, and simple linear regression.	Mathematical Statistics with Applications, Wackerly, chapters 5-9	A	Jefferey Lacomb
Math 311: Probability and Statistics I	Discrete and continuous probability distributions, conditional probabilities, expected value and variance, joint probability distributions, discrete marginal distributions.	(unknown), coverage equivalent to Wackerly chapters 1-4	A-	June Gordon
Math 301: Numerical Analysis II	This course focuses on time dependent problems. It includes numerical solution of ordinary differential equation, the heat and wave equations, and moving interfaces. The discussed techniques include implicit schemes or ODEs, finite differences, spectral methods and the level set method.	Numerical Analysis, Burden and Faires	Planned	Pavel Grinfeld
Math 300: Numerical Analysis I	The course covers root finding and fixed points, polynomial interpolation, splines, numerical integration and numerical differentiation. The course emphasizes computational solutions.	Numerical Analysis, Burden and Faires, chapters 1-4	(A)	Gideon Simpson
Math 235: Math Competition Problem Solving Seminar	Repeated twice for credit in 2023-24 Putnam prep. Topics include Induction, pigeon hole and extremal principles,lots of elementary number theory, invariants and monovariants, k-recurrent and periodic sequences, algebraic and polynomial tricks. Applications to problems from math competitions such as the Putnam exam.	Instructors lectures notes, 2023, 2024, all chapters.	A+, (A)	Darij Grinberg

Course Name/CRN	Description	Textbook	Grade	Instructor
Math 222: Combinatorics	Select combinatorial topics such as recurrence relations, generating functions, inclusion-exclusion, and graph theory. Emphasis on techniques for writing mathematical arguments and proofs.	Various textbooks. See course website.	A-	Jonah Blasiak
Math 221: Discrete Mathematics	Elementary set theory, combinatorics, elementary number theory, graphs, and special topics chosen from formal language theory, graph algorithms, coding theory, and other applications.	Mathematical Structures for Computer Science, chapters 1-4, and 6	A+	Boris Kheyfets
Math 220: Introduction to Mathematical Reasoning	A transition course that develops the reasoning skills necessary for later courses. Emphasizes writing and presentation skills. Topics taken from set theory, logic, induction, relations, functions, and properties of the real number system.	Mathematical Proofs: A Transition to Advanced Mathematics, chapters 1-10	A	Andrew Klimas
Math 210: Differential Equations	Covers solution methods and properties for scalar and vector differential equations. Topics include linear and nonlinear equations, numerical methods, separation of variables, and transform methods.	Elementary Differential Equations and Boundary Value Problems (11th Ed), chapters 1-4, 6-7	A+	Cecilia Mondaini
Math 201: Linear Algebra	Systems of linear equations, matrix algebra, determinants, vector spaces, eigenvalues and eigenvectors, orthogonality, diagonalization, applications.	Linear Algebra and Its Applications, chapters 1-5	A+	Xiaoming Song
Math 200: Multivariate Calculus	Covers Vectors, curves, partial derivatives, gradient, constrained optimization, coordinate system, multiple integrals, and applications.	Calculus: Early Transcendentals (11th Ed)	B	Richard White
Math 123: Calculus III	Covers differential equations, Taylor's theorem, sequence and series, convergence, power series.	Calculus: Early Transcendentals (11th Ed)	B	Richard White
Math 122: Calculus II	Covers definite integrals, Fundamental Theorem of Calculus, integration techniques, applications of integration, numerical integration and differential equations.	Calculus: Early Transcendentals (11th Ed)	B+	Xioaming Song
Math 121: Calculus I	Covers functions, limits and continuity, derivatives, transcendental functions, and applications.	Calculus: Early Transcendentals (11th Ed)	B	Cecilia Mondaini

Graduate Mathematics

Course Name/CRN	Description	Textbook	Grade	Instructor
Math 701: Introduction to the symmetric group algebra	Covers the Symmetric group algebra, various families of its elements, its center, structure, representation theory, characters, Maschke and Jordan–Hölder theorems, Young and Specht Modules, Young basis.	Instructors lecture notes.	A+	Darij Grinberg
Math 531: Algebraic Combinatorics	An introduction to algebraic combinatorics. Covers generating functions, q-binomial coefficients, integer partitions, the symmetric group, and Young tableaux.	Instructors lecture notes.	A+	Darij Grinberg
Math 530: Graph Theory	Covers graphs and networks, with an emphasis on algorithms. Includes minimum spanning trees, shortest path problems, connectivity, network flows, matching theory, Eulerian and Hamiltonian tours, graph coloring, and random graphs.	Instructors lecture notes.	Planned	Darij Grinberg

Relevant Computer Science Coursework

Course Name/CRN	Description	Textbook	Grade	Instructor
CS303: Algorithmic Number Theory and Cryptography	Covers elementary number theory, modular arithmetic, quadratic reciprocity, chinese remainder theorem. Various algorithms and crypto systems are implemented and attacked to include, number field sieve, Pollards rho-1 factorization algorithm, ElGamal, RSA, collision algorithms for the discrete logarithm problem. Cryptosystems are implemented and methods of attack investigated.	An Introduction to Mathematical Cryptography, chapters 1-4	A	Jeremy Johnson
CS1499: Advanced Topics in Cryptography	Independent study on topics in cryptography. Elliptic curve and Lattice based cryptography, Lenstra's algorithm, Babai's algorithm, GGH and LLL cryptosystems. Also some homomorphic encryption CKKS.	An Introduction to Mathematical Cryptography, chapters 5-6	A	Jeremy Johnson

CS457: Data Structures and Agorithms I	Second course in algorithms. Covers techniques for analyzing algorithms, including: asymptotic analysis, recurrence relations, and probabilistic analysis; data structures such as hash tables and binary trees; algorithm design techniques such as dynamic programming, greedy methods, and divide & conquer, as well as graph algorithms for graph traversal, minimum spanning trees, and shortest paths.	Introduction to Algorithms (CLRS 3rd Ed), chapters 1-4,6	A	Emmanouil Pountourakis
CS458: Data Structures and Agorithms II	Continuation of CS457. Covers the amortized analysis of algorithms and data structures; Fibonacci heaps; graph algorithms for maximizing network flow and computing minimum all pairs shortest paths; string matching algorithms; NP-Completeness and approximation algorithms.	Introduction to Algorithms (CLRS 3rd Ed) 4,6 and lecture notes	A+	Vasilis Gkatzelis
CS440: Theory of Computation	Finite automata, regular sets, and regular expressions; pushdown automata, context-free languages, and normal forms for grammars; Turing machines and recursively enumerable sets; Chomsky hierarchy; computability theory.	(Unknown)	Planned	Colin Gordon
CS380: Artificial Intelligence	Explores the foundations of artificial intelligence: production systems, heuristic programming, knowledge representation, and search algorithms. Also covers programming in an AI language. Additional topics chosen from game theory, decision support systems, pattern matching and recognition, image understanding, natural language, fuzzy and non-monotonic logic, machine learning, theorem proving, and common sense reasoning.	Various Texts	A	Dario Salvucci
CS383: Machine Learning	This course covers the fundamentals of modern statistical machine learning. Lectures will cover the theoretical foundation and algorithmic details of representative topics including probabilities and decision theory, regression, classification, graphical models, mixture models, clustering, expectation maximization, hidden Markov models, and weak learning.	Various Texts	A	Matthew Burlick