

Course Title	Course Number	Institution and Year Taken	Textbook(s) Used	Course Description	Grade
Dynamical Systems	MST 792	Wake Forest 2022	<i>Differential Dynamical Systems</i> , J.D. Meiss	Introduction to modern theory of dynamical systems including: linear and nonlinear autonomous differential equations, invariant sets, closed orbits, Poincare maps, structural stability, center manifolds, normal forms, local bifurcations of equilibria, linear and non-linear maps, hyperbolic sets, attractors, symbolic representation, fractal dimensions, and Hamiltonian Dynamics	Currently Registered
Partial Differential Equations	MST 634	Wake Forest 2022	<i>Partial Differential Equations: An Introduction</i> , Strauss	Detailed study of partial differential equations, including the heat, wave, and Laplace equations, using methods such as separation of variables, characteristics, Green's functions, and the maximum principle.	Currently Registered
Abstract Algebra	MST 721	Wake Forest 2021	<i>Algebra: Chapter Zero</i> , Aluffi	The following were studied with a focus on categorical foundations: Groups, rings, fields, extensions, Euclidean domains, polynomials, vector spaces.	A
Complex Analysis	MST 617	Wake Forest 2021	<i>Fundamentals of Complex Analysis</i> , Saff	Topics Included: analytic functions, Cauchy's theorem and its consequences, power series, and residue calculus	A

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Real Analysis	MST 711	Wake Forest 2021	<i>A Second Course in Real Analysis</i> , Raynor and Robinson	<p>Elements of Functional Analysis including: Metric Spaces, The Contraction Mapping Theorem, Normed Linear Spaces, Completion of a Metric Space, Function Spaces, Compact Embeddings, Rellich-Kondrachov, Calculus on Normed Linear Spaces, Frechet Differentiability, and The Inverse and Implicit Function Theorems.</p> <p>Applications included: Weak Solutions to Boundary Value Problems, Fourier Series and The Fredholm Alternative, Sard's Theorem, and The Calculus of Variations.</p>	A
Thesis	MST 791/2	Wake Forest 2021-2022	<p>Chiefly:</p> <p><i>The Geometry of Physics</i>, Frankel</p> <p><i>Geometric Mechanics and Symmetry</i>, Holm</p> <p><i>Nonholonomic Mechanics and Control</i>, Bloch</p> <p><i>Mathematical Methods of Classical Mechanics</i>, Arnold</p>	<p>Topics included: manifolds and vector fields, tensors and exterior forms, integration of differential forms, the lie derivative, Foliations and leaves, the Frobenius theorem and distributions, Riemannian and Symplectic Geometry, Lagrangian and Hamilton mechanics, lie groups and lie algebras, symmetry reduction, optimal control, the Pontryagin maximum principle</p>	
Differential Geometry	MST 634	Wake Forest 2021	<i>Differential Geometry</i> , Shiffrin	<p>Introduction to the theory of curves and surfaces in two and three dimensional space, including such topics as curvature, geodesics, and minimal surfaces</p>	A

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Mathematical Biology	MST 752	Wake Forest 2021	<i>Mathematical Biology</i> , Murray	Continuous and Discrete Population Models, Models for Interaction Populations, Enzyme Kinetics, Biological Oscillators and Switches, Dynamics of Infectious Disease, Reaction Diffusion Equations, Chemotaxis and Nonlocal Mechanisms, Spatial Pattern Formation with Reaction Diffusion Equations, Neural Models of Pattern Formation	A
Topology	MST 731	Wake Forest 2020	<i>Introduction to Topological Manifolds</i> , Lee	Point-set topology including: topological spaces, continuity, connectedness, compactness, and metric spaces. Additional topics included the classification of surfaces, topological manifolds, and knot theory.	A
Math Modeling	MST 651	Wake Forest 2020	<i>Nonlinear Dynamics and Chaos</i> , Strogatz	Dimensional analysis, stability analysis, bifurcation theory, one-dimensional flows, phase plane analysis, index theory, limit cycles, chaotic dynamics, hyperbolic conservation laws and traveling waves	A

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Introductory Real Analysis	MST 611	Wake Forest 2020	<i>Understanding Analysis</i> , Abbott	Limits and continuity in metric spaces, sequences and series, differentiation and Riemann-Stieltjes integration, uniform convergence, power series and Fourier series, differentiation of vector functions, implicit and inverse function theorems	A
Differential Geometry	MATH 4250	University of Georgia 2019	<i>Elements of Differential Geometry</i> , Millman and Parker	The geometry of curves and surfaces in Euclidean space: Frenet formulas for curves, notions of curvature for surfaces; Gauss-Bonnet Theorem; discussion of non-Euclidean geometries	A
Sequences and Series	MATH 3100	University of Georgia 2018	<i>Understanding Analysis</i> , Abbott	Precise definitions of limit and convergence concepts; practical tests for convergence of infinite series; power series representations and numerical error estimates; applications to calculus and explicit summation formulae; trigonometric series	A
Probability	MATH 4600	University of Georgia 2018	<i>A First Course in Probability</i> , Ross	Discrete and continuous random variables, expectation, independence and conditional probability; binomial, Bernoulli, normal, and Poisson distributions; law of large numbers and central limit theorem.	A

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Number Theory	MATH 4400	University of Georgia 2018	<i>Number Theory: A Contemporary Introduction</i> , Pete Clarke	Pythagorean Triples, Quadratic Rings, Quadratic Reciprocity, The Pell Equation, Arithmetic Functions, The Primes: Infinitude, Density and Substance, Minkowski's Convex Body Theorem, The Chevalley-Waring Theorem	A
Group Theory in Physics	PHYS 8448 taken for mathematics credit Graduate Level	University of Georgia 2018	<i>Group Theory and Quantum Mechanics</i> , by Michael Tinkham	Representation Theory; Direct product theory; Molecular and crystallographic point groups; Space groups and applications to solid-state physics; Spatial-inversion and time-reversal symmetries; Fundamentals of Lie groups and Lie algebras	A
Modern Algebra and Geometry II	MATH 4010	University of Georgia 2018	<i>Abstract Algebra: A Geometric Approach</i> , by Theodore Shifrin.	Groups, symmetry, group actions, counting principles, symmetry groups of the regular polyhedra, Burnside's Theorem, isometries of \mathbb{R}^3 , Galois Theory, and affine and projective geometry	D

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Modern Algebra and Geometry I	MATH 4000	University of Georgia 2017	<i>Abstract Algebra: An Introduction</i> , by Thomas W. Hungerford	Beginning with a careful study of integers, modular arithmetic, and the Euclidean algorithm, the course moves on to fields, isometries of the complex plane, polynomials, splitting fields, rings, homomorphisms, field extensions, and compass and straightedge constructions	B-
Introduction to Higher Math	MATH 3200	University of Georgia 2015	<i>Mathematical Proofs: A Transition to Advanced Mathematics</i> , Chartrand	Topics include logic, integers and induction, sets and relations, equivalence relations, and functions	A-