Shihan Kanungo

Transcript of Mathematics & Programming Coursework

☎ (650) 643 7971
✉ shihankanungo@gmail.com
725 Chimalus Dr. Palo Alto, CA 94306
US citizen

▬ Analysis and Geometry

'21Sp **Analysis**, Euler Circle.
Set theory, formal constructions of the real numbers, limits, continuity, and infinite series.

A+ **MATH 131A**, *Introduction to Analysis*, SJSU '24Sp.
Kenneth Ross, *Elementary Analysis: The Theory of Calculus*. UTM, Springer NY 2013.

A+ **MATH 131B**, *Introduction to Real Variables*, SJSU '24F.
Tim Hsu, *Fourier Series, Fourier Transforms, and Function Spaces*. AMS/MAA 2020

A+ **MATH 138**, *Complex Variables*, SJSU '23F.
Dennis G. Zill et al, *A First Course in Complex Analysis with Applications*. Jones & Bartlett 2006.

A+ **MATH 231A**, *Real Analysis*, (Graduate), SJSU '24F.
E.M.Stein & R.Shakarchi, *Complex Analysis*, Chs. 1–4. Princeton University Press 2003.

IP **MATH 231B**, *Functional Analysis*, (Graduate), SJSU '25Sp.
L Debnath & P Mikusinski. *Introduction to Hilbert Spaces with Applications*. Academic Press 2005.

IP **MATH 233A**, *Applied Mathematics I*, (Graduate), SJSU '25Sp.
Initial and boundary value problems for hyperbolic, parabolic and elliptic equations. Fourier series and transforms. Nonlinear partial differential equations.

A+ **MATH 234**, *Advanced Dynamical Systems*, (Graduate), SJSU '24Sp.
Continuous and discrete systems; stability of equilibria and closed orbits, structural stability.

IP **MATH 285A**, *Stochastic Methods in Scientific Computing*, (Graduate), SJSU '25Sp.
Monte Carlo methods, Metropolis-Hastings algorithm, random-number generation.

'24W **Ergodic Theory**, Euler Circle.
Poincarè recurrence theorem, invariant measures, multiple recurrence, Szemeredi's theorem.

'22Sp **Differential Geometry**, Euler Circle.
Curves, surfaces, curvature, Gauss' Theorema Egregium, Gauss-Bonnet Theorem.

'20F **Markov Chains**, Euler Circle.
D.A. Levin et al, *Markov chains and mixing times*. American Mathematical Society 2006

▬ Algebra and Number Theory

A+ **Group Theory**, AoPS '23S.
Building groups from other groups, symmetries of geometric objects, constructing fields.

'20Sp **Abstract Algebra**, Euler Circle.
Group theory, Sylow theorems, fields and extensions, number fields, Galois correspondence.

IP **MATH 128B**, *Abstract Algebra II*, SJSU '25Sp.
Emphasis on rings, integral domains, fields, field extensions, Galois theory.

A+   **MATH 226**, *Theory of Numbers*, (Graduate), SJSU '24Sp.
Primes in arithmetic progressions, partitions, modular group, and the Dedekind eta function.

'19F   **Number Theory**, (Intermediate) Euler Circle.
Modular arithmetic, Fermat's little theorem, sums of two squares, p-adic numbers

'23F   **Number Theory**, Euler Circle.
Reciprocity theorems, quadratic forms, elliptic curves, modular curves.

'24Sp   **Analytic Number Theory**, Euler Circle.
Dirichlet's Theorem, The Prime Number Theorem, Brun's theorem, smooth numbers.

▬ Linear Algebra and Matrix Theory

A   **MATH 129A/39**, *Linear Algebra I*, '23F.
Matrices, systems of linear equations, eigenvectors and eigenvalues, inner product spaces.

A+   **MATH 129B**, *Linear Algebra II*, '24Sp.
Linear Algebra 2nd ed., S.H.Friedberg, et al. Prentice Hall 1989.

A+   **MATH 229**, *Advanced Matrix Theory*, '24F.
Matrix Analysis, R. Horn & C. Johnson, Cambridge University Press 2012.

IP   **MATH 285M**, *Nonnegative matrices and Perron-Frobenius Theory*, '25Sp.
Monte Carlo methods, Metropolis-Hastings algorithm, random-number generation.

▬ Combinatorics and Graph Theory

'20W   **Combinatorics**.
Binomial coefficients, double-counting; Stirling numbers; counting labeled trees

A+   **MATH 179**, *Introduction to Graph Theory*, '24F.
Introduction to Graph Theory. R.J.Wilson, Prentice Hall 2010

A+   **MATH 279A**, *Graph Theory*, '24F.
Introduction to Graph Theory, Douglas B. West, Prentice Hall 1996.

'24F   **Combinatorial Game Theory**.
Nim, Hackenbush, surreal numbers, impartial games, Sprague-Grundy theory.

'21F   **Generating Functions**.
Ordinary, exponential & multivariate GFs, growth rate and asymptotic analysis.

▬ Programming

A   **FOOP (H), Functional Object Oriented Programming**, '22–'23.

A+   **Intermediate Programming with Python**, '23Sp.
Recursion, object-oriented programming, graphical user interfaces, event-driven programming