Course Outline for Physics 116A

1. Infinite Series, Power Series and Asymptotic Series
2. Complex Numbers and complex functions
3. Special Functions defined by integrals
4. Matrices, Linear Algebra and Vector Spaces
5. Eigenvalue Problems and Matrix Diagonalization
6. Tensor Analysis

Course outline for Physics 116B

1. Fourier Series and Transforms
2. Ordinary Differential Equations
3. Calculus of Variations
4. Functions of a Complex Variable: Theory
5. Functions of a Complex Variable: Applications

Course outline for Physics 116C

1. Series solutions of differential equations
2. Legendre functions and Bessel functions
3. Orthogonal Polynomials and Sturm-Liouville Problems
4. Partial Differential Equations of Mathematical Physics
5. Green Function and Integral Transform Techniques
6. Probability Theory
7. Mathematical Statistics