CONTENTS

Chapter One

Section 1. Sheaf theory, ringed spaces 1

Section 2. Local structure of analytic and algebraic sets 9

Section 3. $\mathbb{P}^n$ 19

Chapter Two

Section 1. Sheaves of modules 23

Section 2. Vector bundles 33

Section 3. Sheaf cohomology and computations on $\mathbb{P}^n$ 45

Chapter Three

Section 1. Maximum principle and Schwarz lemma on analytic spaces 56

Section 2. Siegel's theorem 61

Section 3. Chow's theorem 69

Chapter Four

Section 1. GAGA 73

Chapter Five

Section 1. Line bundles, divisors, and maps to $\mathbb{P}^n$ 83

Section 2. Grassmannians and vector bundles 94

Section 3. Chern classes and curvature 112

Section 4. Analytic cocycles 128

Chapter Six

Section 1. K-theory and Bott periodic&y 136

Section 2. K-theory as a generalized cohomology theory 144

Chapter Seven

Section 1. The Chern character and obstruction theory 154

Section 2. The Atiyah-Hirzebruch spectral sequence 164

Section 3. K-theory on algebraic varieties 183

Chapter Eight

Section 1. Stem manifold theory 196

Section 2. Holomorphic vector bundles on polydisks 203

Chapter Nine

Concluding remarks 215

Bibliography 217