

MATHEMATICS 232B

Riemannian and Kähler Geometry

Text: *Complex Differential Geometry*, by Fangyang Zheng

Instructor: Zhuang-dan Daniel Guan

Times: TTh 2.10PM–3.30PM INTS 2132

Office hours: 2–3PM Friday in surge 237

First Class: Jan. 6, Tuesday

This is a course of introduction to Complex Geometry. Topics covered in this course including the theory of manifolds, Riemannian metrics, Kähler Geometry, connections, curvatures, etc..

TOPICS	SUGGESTED NO. OF 80 MIN. CLASSES
Introduction to Riemannian Manifolds 4 (Ch. 1, 1.6; Ch 2; Ch 3, 3.5, 3.6)	
Introduction to Riemannian Manifolds, Lie Groups, Homogeneous and Symmetric Spaces, Hodge Theorem.	
Introduction to Complex Manifolds 4 (Ch. 4, 4.1–4.4)	
Holomorphic Functions, Complex Manifolds, Almost Complex Structures.	
Introduction to Kähler Geometry 4 (Ch. 7)	
Hermitian and Kähler Metrics, Hermitian and Riemannian Connection, Curvatures.	
Compact Kähler Manifolds 8 (Ch. 8, 8.1, 8.5, 8.6; Ch 9, 9.1–9.3)	
Hodge Theorem and Hodge Decomposition, Hermitian Symmetric Spaces and Kähler C-Spaces, Manifolds with Positive Bisectional curvatures, Kähler-Einstein Metrics, Invariant Metrics, and possibly More.	

No homework problems and no final. We will count the attendance that no student will miss or be late for 5 classes which is a quarter of this class.