THE CHINESE UNVIERSITY OF HONG KONG
Department of Mathematics

MATH5070 Topology of Manifolds, First term 2022-2023

Schedule

Wk	Thursday (14:30-17:15)	Contents (Tentative)
1	Sep 8	Manifolds: Definition and Examples; Smooth Maps; Tangent Spaces; Differentials
2	Sep 15	Submersion; Immersion; Embedding and Submanifolds; Sard's Theorem
3	Sep 22	Partition of Unity; Whitney Embedding Theorem; Vector Fields; Integral Curves; Flows
4	Sep 29	Derivation; Lie Brackets; Lie Derivatives
5	Oct 6	Distributions and Frobenius Theorem
6	Oct 13	Lie Groups and Lie Algebras
7	Oct 20	Multi-linear Algebra; Vector Bundles
8	Oct 27	Differential Forms; Exterior Derivative; Orientations
9	Nov 3	Integration on Smooth Manifolds; Stokes' Theorem
10	Nov10	De Rham Cohomology: Definition, Homotopy Invariance and Mayer-Vietoris Sequence
11	Nov 17	Cohomology with Compact Support; Degree Theory; Poincare Duality
12	Nov 24 (no class)	
13	Dec 1	Poincare Duality; Sheaf Theory
14	Dec 8	Cech Cohomology