

Course Guide Math 497: Special Topics: Manifold Theory: Spring 2024:

	Text	Topic
T: 1-16	Chapter 1: Smooth Manifolds	
TH: 1-18	Chapter 2: Smooth Maps	
T: 1-23	Chapter 3: Smooth Maps and Manifolds with Boundary	
TH: 1-25	Chapter 3: Tangent Space	Mission 1 due
T: 1-30	Chapter 3: Tangent Bundle	
TH: 2-1	Chapter 4: Submersions, Immersions, Embeddings	
T: 2-6	Chapter 5: Submanifolds	Mission 2 due
TH: 2-8	Chapter 5: Submanifolds	
T: 2-13	Chapter 7: Lie Groups	Mission 3 due
TH: 2-15	Chapter 7: Lie Groups	
T: 2-20	Chapter 8: Vector Fields	
TH: 2-22	Chapter 8: Vector Fields	
T: 2-27	Chapter 9 & 10: Integral Curves and Flows & Vector Bundles	
TH: 2-29	Chapter 11: The Cotangent Bundle	Mission 4 due
T: 3-5	Chapter 12: Tensors	
TH: 3-7	Chapter 12: Tensors	Mission 5 due
		SPRING BREAK 3-11 to 3-15
T: 3-19	Chapter 13: Riemannian Metrics	
TH: 3-21	Midterm (covers Chapters 1 – 11, Missions 1- 5)	
T: 3-26	Chapter 13: Riemannian Metrics	
TH: 3-28	Chapter 14: Differential Forms	
M: 4-1		EASTER MONDAY
T: 4-2	Chapter 14: Differential Forms	Mission 6 due (on tensors and metrics)
TH: 4-3	Chapter 19: Distributions and Foliations	
T: 4-9	Chapter 21: Quotient Manifolds	Mission 7 due (differential forms)
TH: 4-11	Frenet Serret Equations, Differential Geometry of Curves, Isometry of Euclidean Space	
T: 4-16	Covariant Derivative in R^3 and the Structure Equations of Cartan (DG7, DG8)	Mission 8 due (foliations and quotients)
TH: 4-18	Shape Operator, Gaussian and Mean Curvature (DG15, DG 16),	
T: 4-23	Adapted Frame Fields to Surface and Connection Equations (DG 18)	Mission 9 due (FSEqns, Cartan Eqns)
TH: 4-25	Intrinsic Calculus of Surfaces, Gauss' Awesome Theorem (DG 20, DG 23, DG 24)	
T: 4-30	Geodesic curvature, Gauss Bonnet Theorem & Applications (DG 26, DG 27, DG 28)	Mission 10 due (Curvature and Connections)
W: 5-1		Reading Day
M: 5-6	Final Monday, May 6, 6-8pm (let me know if you have conflict)	Takehome portion of Final Exam due at 6pm.

- Midterm = 250pts, Final Exam = 250pts, Missions = 500pts.