

MATH 6230 Differential Geometry 1
Course Projects

Spring 2022

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1. Lie algebras in differential geometry (Teddy)
2. Lie group actions on manifolds, slice theorem
3. Orbifolds (Dominick)
4. Poisson manifolds (Dion)
5. Milnor's 7-sphere
6. Synthetic differential geometry (Ben)
7. The category of pro-manifolds
8. Foliations (Robi)
9. Lie groupoids (Nick)
10. Classification of surfaces
11. Morse theory (Emily)
12. Gauß-Bonnet Theorem
13. The Poincaré-Hopf theorem and vector fields on spheres
14. Thom's transversality theorem (Jackson)
15. Yang-Mills theory
16. Kähler manifolds and Calabi-Yau manifolds
17. Cobordism theory
18. Homogeneous manifolds
19. The isomorphism between sheaf cohomology, Čech cohomology and de Rham cohomology over manifolds (Daniel)