

Classic Books

For Graduate Students Interested in Geometry/Topology

After the first year graduate sequence, graduate students would ideally take second year courses or topics courses in foundational areas. Since many graduate programs do not have the resources to offer these courses, students might consider independent readings. Here are a few suggested topics and books for those students. I intentionally left out the most basic topics: differential topology, Riemannian geometry, algebraic topology, group theory, Galois theory...

1. Representation theory: Fulton and Harris
2. Characteristic classes: Milnor
3. Morse theory: Milnor
4. Group cohomology: Brown
5. Fiber bundles: Husemoller
6. Algebraic geometry: Gathmann
7. Lie groups: Chevalley
8. 3-manifolds: Thurston
9. Complex dynamics: Milnor
10. Spectral sequences: Fomenko and Fuchs
11. Geometric group theory: Löh
12. Mapping class groups: ?