MATH 664-ALGEBRAIC TOPOLOGY II- SPRING 2024- A.FREIRE
Ayres G-003, Tu+Th 12:55PM—2:10PM
Office hours: please see me after class or make an email appointment—W after 1PM is best.
Office: Ayres 325, email: afreire@utk.edu

Course outline: five parts

0. Poincare duality
1. Basic homotopy theory, connections with cohomology
2. Homotopy groups of spheres: framed cobordism, Hopf invariant, suspension
3. Obstruction theory (time permitting: intro to Steenrod squares)
4. Characteristic classes, including spin structures

Possible additional topics, time permitting: persistent homology, intro to Morse homology

REFERENCES:

Part 0: Hatcher 3.3, Massey ch. IX, Bott-Tu Ch. 1 (*Differential Forms in Alg. Top.)*
Part 1: Hatcher ch. 4, Fomenko-Fuchs (*Homotopical Topology*, Springer), Steenrod (*Topology of Fibre Bundles)*
Part 2: ch. 1, Part I of *Topological Library* (Novikov, Taimanov, eds.)
Part 3: Steenrod, Fomenko-Fuchs, Hatcher 4.3
Part 4: Milnor-Stasheff, Husemoller (*Fibre Bundles*), Bott-Tu Ch. 4

GRADING: Based on class attendance and written solutions to exercises: 1 problem for each of parts 1—4, possibly including a class presentation of the solution.