

# Summer School on Surgery and the Classification of Manifolds

7/18/2016–7/22/2016

All lectures take place in Science B Room 142. Exercise sessions take place in multiple locations in the Mathematics and Statistics Building.

## **Monday:**

9:00-10:00 Introduction to surgery  
10:00-10:30 Coffee break  
10:30-11:00 Handlebody theory  
11:00-11:30 Morse theory  
11:45-12:45 s/h-cobordism theorem  
12:45-2:00 Lunch  
2:00-3:00 Normal maps and the Pontrjagin-Thom construction  
3:00-3:30 Coffee break  
3:30-4:30 Topological manifolds  
4:45-5:45 Exercise session  
6:45- Reception: Cassio AB room, MacEwan Hall. Light food & drinks.

## **Tuesday:**

9:00-10:00 Spherical fibrations  
10:00-10:30 Coffee break  
10:30-11:00 Microbundles and classifying spaces of tangent bundles  
11:00-11:30 Poincaré duality and local coefficients  
11:45-12:45 Surgery below the middle dimension  
12:45-2:00 Lunch  
2:00-3:00  $L$ -groups  
3:00-3:30 Coffee break  
3:30-4:30 Surgery in the middle dimension  
4:45-5:45 Exercise session

**Wednesday:**

9:00-10:00	The surgery exact sequence
10:00-10:30	Coffee break
10:30-11:00	Signature and the signature theorem
11:00-11:30	Milnor's paper on exotic spheres
11:45-12:45	Exotic spheres
12:45-2:00	Lunch
2:00-3:00	The homotopy type of $G/TOP$
3:00-3:30	Coffee break
3:30-4:30	The rational homotopy type of simply-connected manifolds
4:45-5:45	Exercise session

**Thursday:**

9:00-10:00	Existence of manifold structures
10:00-10:30	Coffee break
10:30-11:00	Arf invariant
11:00-11:30	Smoothing theory
11:45-12:45	The Borel and Novikov conjectures
12:45-2:00	Lunch
2:00-3:00	Assembly I
3:00-3:30	Coffee break
3:30-4:30	Assembly II
4:45-5:45	Exercise session

**Friday:**

9:00-10:00	Higher index theory and the analytic assembly map
10:00-10:30	Coffee break
10:30-11:30	The Dirac operator and positive scalar curvature
11:45-12:45	The Novikov conjecture and rigidity of manifolds
12:45-2:00	Lunch