Overview (revised, December 12):
Vector bundles, the J-homomorphism and the Adams conjecture
WS 2016-2017 (Weiss)

W1: Vector bundles (real and complex) and classifying spaces for vector bundles (Grassmannians). Whitney sums and tensor products.

W1: Bar construction for groups, topological groups and topol. monoids.

W2: Spherical fibrations and the classifying spaces for spherical fibrations: $B\mathrm{G}(n)$, $B\mathrm{G} = B\mathrm{G}(\infty)$ (using the bar construction).

W2,W3: $B\mathrm{G}$ and the stable homotopy groups of spheres, π_*^s.

W3: The abelian group $J(X)$ for a compact CW-space X.

W3,W4: The concept of a Poincaré duality space. Example of a stable spherical fibration: the Spivak normal bundle of a Poincaré duality space.

W5,W6: Bott periodicity in complex K-theory. (Follows Atiyah's article *Algebraic Topology and Operators in Hilbert space*. Some details omitted, some details added.)

W6: Some remarks on Bott periodicity in real K-theory.

W7: Remarks about infinite loop spaces and generalized cohomology.

W7: The Adams operations in real and complex K-theory.

W8: The Adams conjecture as a statement.

W9: Becker-Gottlieb transfer for bundles with smooth compact manifold fibers.

W10: Becker-Gottlieb transfer in the proof of the Adams conjecture.

W11,W12: Leftovers (localization theory, perhaps some form of representation theory).

W13,W14: What do we know about $J(X)$?