

# FOLIATIONS, C\*-ALGEBRAS AND INDEX THEORY

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Bott periodicity in its classical form and in its Banach algebra form will be discussed first. An outline of characteristic classes leading to the Atiyah-Singer formula will be presented next. The Atiyah-Singer formula will be proved as a corollary of Bott periodicity. If time permits, the equivariant Atiyah-Singer index theorem and the index theorem for families of elliptic operators will be developed. Finally, using the Connes C\* algebra of a foliation, the index theorem for foliated manifolds (which can be viewed as a remarkable generalization of the families theorem) will be considered.

**Prerequisites:** familiarity with basic concepts and techniques in differential geometry and topology, homological algebra, and operator algebras.