Homotopy Type Theory

Homotopy type theory is a new branch of mathematics that combines aspects of several
different fields in a surprising way. It is based on a recently discovered connection
between homotopy theory and type theory. Homotopy theory is an outgrowth of algebraic
topology and homological algebra, with relationships to higher category theory; while type
theory is a branch of mathematical logic and theoretical computer science.
Homotopy type theory also brings new ideas into the very foundation of mathematics. For
example, there is Voevodsky's subtle and beautiful Univalence Axiom. The univalence axiom
implies, in particular, that isomorphic structures can be identified, a principle that
mathematicians have been happily using on workdays, despite its incompatibility with the
"official" doctrines of conventional foundations.

In the seminar we will focus on type theory for formalizing mathematics
and work through (parts of) the HoTT book, freely available from:

http://uf-ias-2012.wikispaces.com/The+book