

CS 101-2. Interactive Theorem Proving. 9 units (3-4-2); third term.
Prerequisite: CS 4 or instructor's permission. Limit 20 students.

This course introduces students to the modern practice of interactive tactic-based theorem proving using the Coq theorem prover. Topics will be drawn from logic, programming languages and the theory of computation. Topics will include: proof by induction, lists, higher-order functions, polymorphism, dependently-typed functional programming, constructive logic, the Curry-Howard correspondence, modeling imperative programs, and other topics if time permits.

Students will be graded partially on attendance and will be expected to participate in proving theorems in class. Students will also be expected to help develop new problems and solutions based on the material. There will be no exams, but there will be a final project where students will apply Coq to a mathematical/computational domain of their choice.

Instructor: Vanier.