Automorphic forms for GL_2

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Abstract : The course will be devoted to automorphic forms for GL_2. The basic notions will be explained and the connection will be made with classical modular forms and other type of modular forms (Maass forms, Hilbert modular forms, Bianchi modular forms, etc).

An important role has been played in the theory of automorphic forms by the converse theorems, which characterize the Dirichlet series coming from automorphic forms in terms of certain functional equations. Such theorems have played directly or indirectly an important role in the progress accomplished on the Langlands program.

We will explain the sharp version, due to W.C. Winnie Li of the Hecke-Weil-Jacquet-Langlands converse theorem for GL_2.

The following notions will be used throughout the course :

— Classical modular forms (Chapter 7 of Serre's book, A Course in Arithmetic)

— Classical algebraic number theory, p-adic numbers, number fields.

— The adelic language, including Tate's thesis.