This thesis is devoted to the linear and nonlinear stability analysis of fluid flows with particular emphasis on obtaining general analytical results for the stability of various fluid flows.

In Chapter 1, the problem of hydrodynamic stability is introduced; the various methods of analysis are discussed and a brief discussion of the contributions of the thesis is presented.

In Chapter 2, some general stability results are obtained for the well-known Kuo's problem of geophysical fluid dynamics.

In Chapter 3, some of the results of Chapter 2 are extended to the barotropic-baroclinic instability problem of geophysical fluid dynamics.

In Chapter 4, general stability and instability conditions are obtained for non-parallel stratified shear flows of an inviscid, incompressible fluid.
In Chapter 5, normal mode stability and instability results are obtained for inviscid compressible shear flows with variable temperature distribution.

In Chapter 6, the problem of Chapter 5 is extended to include the buoyancy force term.

In Chapter 7, the stability of various swirling flows of an inviscid, incompressible homogeneous fluid confined between two concentric cylinders is proved to two-dimensional disturbances.

In Chapter 8, Arnol'd's second method is used to study the nonlinear stability of steady solutions of the equivalent barotropic model.

In Chapter 9, nonlinear stability of steady solutions of the deep quasi-geostrophic model is studied by the use of Arnol'd's second method.