

The basic notions in several complex variables will be given a detailed presentation: holomorphic functions of several variables, Cauchy formula, the Analytic Continuation Theorem and Montel's Theorem.

The Hartog's phenomena will be explained and the notion of domains of holomorphy will be given as well as their characterization in terms of holomorphic convexity.

Then the notion of plurisubharmonic function and pseudconvexity will be introduced and the Levi problem stated. The Levi problem will be solved using Hörmander's L^2 methods for solving the Cauchy-Rieman equations with L^2 estimates will be presented.

Then the Oshawa-Takegoshi extention theorem will be proved and some of its applications will be sketched. Demailly's approximation theorem for plurisubharmonic functions, Siu's analyticity theorem, and the solution by Q. Guan and X. Zhou to the openness conjecture of Demailly and Kollar.

This course is intended to serve as a basis for virtually all the other courses, both introductory and advanced, that will form part of this school. For this reason, we do not pair it with any particular advanced course.