

Linear and quasilinear partial differential equations

The main part of the lecture is covered by Section 7 of Arnold's "Geometric methods...".
The main topics are:

First integrals of the ODE

Criterion for the first integrals

Functionally independent systems of the first integrals

General solution of a linear PDE of the first order

Cauchy problem for a linear PDE of the first order

Characteristic points. Existence and uniqueness theorem
for the Cauchy problem for a linear PDE of the first order