Transfers in porous media

Component
École Nationale Supérieure d'Électrotechnique d'Électronique

In brief

- **plugin.odf-inp:PLUGINS_ODF_COURSE_NBHOURS_TXT:** 15.75
- **Code ELP:** N7EM05B

Presentation

Objectives

The basics about porous media are presented.
The understanding of moisture displacements in porous media under the effect of gravity or capillarity is discussed. We will study the resolution of flow problems in a porous medium whether it is transient or permanent.
Ultimately, the student following this course will be able to model mass transport in porous media by having tackled the problem of upscaling. This teaching covers broad application areas: underground hydraulics, petroleum engineering, drying techniques, civil engineering, agriculture, etc.
It serves as a basis for 3rd year specialty courses in hydrology or multiphasic porous media.

Description

Description and characterization of the different physical structures most commonly encountered in porous media. Definition of parameters specific to their study.

Presentation of some methods for solving flows occurring in underground hydraulics (Darcy's law, free surface flows, non-permanent flows).

Mass transport in porous media: dispersion equation with illustration of solute transport, active or not, within a porous matrix.

Pre-requisites

Non-contractual information.
Last update on 18 December 2024

Basic knowledge in fluid mechanics

Non-contractual information.
Last update on 18 December 2024