The Hebrew University of Jerusalem

Syllabus

SOLUTE TRANSPORT IN SOILS - 71918

Last update 20-02-2023

HU Credits: 4

Degree/Cycle: 2nd degree (Master)

Responsible Department: Soil and Water Sciences

Academic year: 0

Semester: 2nd Semester

Teaching Languages: Hebrew

Campus: Rehovot

Course/Module Coordinator: Dr. Nimrod Schwartz

Coordinator Email: rony.wallach@mail.huji.ac.il

Coordinator Office Hours: by appointment

Teaching Staff:

Dr. Nimrod Schwartz

Course/Module description:
To introduce the physical and chemical processes that control chemicals transport in porous media in general, and porous soils in particular, that are related to agriculture and to the environment

Course/Module aims:
To introduce the physical and chemical principles of chemicals transport in porous media in general, and soils in partiucalr, by quantitative methods.

Learning outcomes - On successful completion of this module, students should be able to:
To characterize qualitatively and quantitatively phenomena of chemical transport in porous media in general and soils in particular. To express mathematically models and solve them, either by self knowledge or customized software.

Attendance requirements(%):
90

Teaching arrangement and method of instruction: Lectures, exercises, laboratory

Course/Module Content:
Molecular transport, balance equations, mass transport by convection, steady and non-steady diffusion equation and its solutions, hydrodynamic dispersion, the convection-dispersion equation, sorption-desorption isotherms and kinetics, preferential flow in porous media, the mobile-immobile model, breakthrough curves, estimation of transport parameters.
In the laboratory the students will measure breakthrough curves from soil columns and will use the CXTFIT software to estimate the soil parameters.

Required Reading:
Will be given during the semester.

Additional Reading Material:
Will be recommended during the semester.

Course/Module evaluation:

End of year written/oral examination 0 %
Presentation 0 %
Participation in Tutorials 0 %
Project work 30 %
Assignments 40 %
Reports 30 %
Research project 0 %
Quizzes 0 %
Other 0 %

Additional information:

none