

## Introduction to Hydrology 206-13391 – 2 credits

Prof. Eilon Adar

### Syllabus

Aim: Understanding of the hydrological cycle in relation to structures, and to geological, mineralogical and pedological systems.

1. Introduction - the hydrological cycle: pathways, composition of precipitation, quality and quantity.
2. Precipitation: Distribution in space and time, measurement, instrumentation, magnitude of events.
3. Evaporation and evapotranspiration - methods of computation and measurement.
4. Absorption: Estimation of rates of absorption from precipitation and flood events.
5. Surface runoff: characteristics, initiation, flow rates, hydrographs and unit hydrography
6. Subsurface flow: Flow in the vadose and phreatic zones, rock/water relationships; Darcy's equations, hydraulic conductivity, movements and forming of reservoirs. Means of estimating physical parameters of aquifers.
7. Characteristics of aquifer flow
8. Well hydraulics
9. Water quality: Chemical composition, solutes, isotopes
10. Methods in water production - hydraulics of wells; methods of irrigation
11. Introduction to hydrogeology of Israel.

### Bibliography

1. Helmfelt, A.T.: Hydrology for Engineers and Planners; 4th ed. IOWA State University Press, 1975, 210 pp.
2. Fetter, C.W.: Applied Hydrogeology. Charles Merrill Publishing Company, Columbus, Ohio 1980, 488 pp.
3. Raghunath, H.M.: Groundwater. John Wiley & Sons, New-York 1968, 450 pp

### Course Requirements

2 hr lecture

Ungraded exercises handing in