

Course Name	Code\No.	Number of Credits			
		Theo.	Lab.	Train.	Credit
Principles of Surface Water Hydrology	HWR 221	3	0	0	3
Pre-Requests	MATH 110 - PHYS 110				

Course Objectives:

This course aims to provide knowledge to the students about elements of hydrological cycle with concentration on rainfall and runoff and their relationship.

Course Contents:

1. Hydrology: Definition of Hydrologic Cycle, Units of Measurements, Water Budget.
2. Precipitation: Measurement of Precipitation, Precipitation-gage Network, Average precipitation over area (Arithmetic mean method, Thiessen polygons method, Isohyetal mean method), Double-Mass analysis, Estimation of missing precipitation, Rainfall intensity, Intensity-Duration-Frequency curves.
3. Hydrological Abstraction: Evaporation and transpiration, Evaporation measurement, Interception., Depression storage, Infiltration, factors affecting infiltration, Infiltration rate and infiltration capacity, Estimation of Infiltration, Horton's Method, Philip's Method, Infiltration Indexes.
4. Runoff: Runoff components, Runoff properties, Sources of Runoff, Factors affecting runoff generation and continuation, Runoff measurement, Runoff hydrographs, Hydrograph Separation, Introduction to rainfall-runoff relationship

Course outcomes:

It is expected that the student will get the following knowledge and experience:

1. Describe water distribution on the earth
2. Recognize the hydrological cycle and list its components.
3. Recognize method of rainfall measurements
4. Recognize Infiltration and list various method of estimating it and factors affecting it.
5. Recognize surface runoff process and list method of its measurements and factors affecting it.
6. Calculate mean rainfall over a basin
7. Estimate missing rainfall values.
8. Calculate infiltration rate and capacity.
9. Analyze runoff hydrograph and separate it to its components
10. Measure areas from paper maps using Planometer

Evaluation Method:

The evaluation is performed by periodic tests and assignments.

References:

- Introduction to Hydrology, Warren Viessman, John Knapp, Gary Lewis, Terence Harbaugh. Crowell, Harper and Row, 1977
- Applied Hydrology by Ven Te Chow, David Maidment, and Larry W. Mays. McGraw Hill, 1988.
- Hydrology, an Introduction to Hydrologic Science, Rafael L. Bras. Addison Wesley, 1990