Jordan University of Science and Technology

Faculty of Agriculture

Natural Resources & Environment Department

NR741 Surface Water Hydrology
First Semester 2021-2022

Course Catalog
3 Credit Hours. The Course provides an up-to-date background on surface water hydrology with special emphasis on runoff modeling for water resources management, factual knowledge on terminology, and use of methods of surface water hydrology; learn how to apply course material to specific hydrology problems, introduce students to surface and groundwater hydrology with emphasis on applications, and introduce students to methods commonly used in surface water hydrology design and practice

Text Book	
Title	Introduction to hydrology
Author(s)	Warren Viessman Jr., Gary L. Lewis
Edition	5th Edition
Short Name	Ref#1
Other Information	Prentice Hall, Pearson Education, Inc., 2003.

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref# 2	Applied hydrology	Ven Te Chew, David R. Maidment, Larry W. Mays,	5th Edition	McGraw-Hill series in Water Resources and Environmental Engineering, 1988.

Instructor	
Name	**Prof. Osama Mohawesh**
Office Location	-
Office Hours	Sun : 08:30 - 10:00 Mon : 10:00 - 12:00 Tue : 12:00 - 13:00 Wed : 11:30 - 14:00
Email	oemohawesh@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Sun, Tue : 13:00 - 14:30 Room: U

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Week 1	Introduction - Unites of Measurements - Handout Physical Properties of Soil	
Week 1	Hydrologic Cycle, Budget - Meteorological Data - Weather, Climate, Temperature, Radiation and Wind, Water Vapor	
Weeks 2, 3	Precipitation - Forms, Characteristics of Raindrops - Classification of Storms - Measurements - Areal Calculation - Data Analysis (Intensity, Duration, And Frequency) - Hydrologic Frequency Analysis - Statistical Analysis - Point Rainfall Analysis	
Weeks 4, 5	Frequency Analysis - Introduction - Flow Frequency - Flood Probability - Precipitation Probability - Low Flow Analysis - Risk, Reliability, and Safety Factor	
Week 6	Infiltration - Factors Influencing Infiltration - Methods of Determining Infiltration Capacity - Darcy? s Equation	
Weeks 7, 8	Evaporation and Transpiration - Factors Affecting Evaporation and Trans. - Evaporation Form Water Surfaces - Evapotranspiration (ET) - Prediction of ET	
Weeks 9, 10	Runoff - Factors Affecting Runoff - Design of Runoff Rates - Rational Method - Soil Conservation Service Method (SCS) - Runoff Volume (SCS Method) - Runoff Hydrographs	
Weeks 11, 12	Basic Concepts of Stochastic Hydrology - Introduction - Time Series - Hydrological Time series analysis method - Time Series Analysis - Time Series Synthesis - Application of Time Series Analysis and Synthesis	
Weeks 13, 14, 15	Flood Routing & Reservoir - Introduction - Simple Non-Storage Routing - Storage Routing - Reservoir or level pool routing - Channel Routing - Hydrologic routing - Types & purposes of reservoirs - Reservoir capacity determination	
Weeks 15, 16	Presentation for local surface hydrological scenarios	

Relationship to Program Student Outcomes (Out of 100%)								
PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9

Date Printed: 2021-11-17