

Advanced Reservoir Analysis with HEC-ResSim

Objectives

The objective of the course is to enable the participants to perform complex reservoir operation studies using HEC-ResSim.

Topics will include: System Operations for High and Low Flow Constraints; System Hydropower and Pump-back Storage; If-then-else logic in Operating Plan; Scripting – State Variables, User Defined Rules, Plotting, and Run Management; Watershed Management and Cleanup; Watershed Integration – CWMS & WAT

Prerequisites

Prior attendance in Reservoir System Analysis with HEC-ResSim.

A basic level of understanding is required in hydrology, hydraulics, and reservoir regulation. Three or more years of professional work experience in hydraulics and hydrology or in water resources planning with emphasis in hydrologic and hydraulic studies, meets this level of understanding. In addition, it is required that course participants be in positions where they will be involved in reservoir system studies within the next year or two.

Recommended:
Computer programming experience – any language.

Homework

Students will not be assigned homework during the week of the workshop. However, because a significant volume of material will be presented, the following **pre-course reading** is advised:

A handout on **Jython Programming** should have been supplied with your training packet. If this document is not with your materials – please download it from the HEC website:

www.hec.usace.army.mil/Jython/handout.pdf

If you have not previously received the current HEC-ResSim manuals, they can also be downloaded from the HEC website: www.hec.usace.army.mil Simply follow the ResSim 2.0 link on the left hand side of the home page.

System Operations for Flood Control

8:00 – 8:45 a.m.		INTRODUCTION
9:00 – 10:00 a.m.	Lecture 1	ResSim Overview What is ResSim; How it makes decisions; What's New.
10:00 – 10:30 a.m.	Lecture 2	ResSim Output - Plotting and Reports Default and User Plots; Report Builder; Release Decision Report; HEC-DSSVue. The list of output variables
10:30 – 12:00 p.m.	Workshop 1	Lets see what you can do – Build your working watershed...
12:00 -1:00 p.m.		LUNCH
1:00 -1:45 p.m.	Lecture 3	Parallel and Tandem System Operations
1:45 – 2:45 p.m.	Workshop 2	System Operations
3:00 - 4:00 p.m.	Lecture 4	Emergency Operations - Induced Surcharge Outlet Outages
3:30 – 5:00 p.m.	Workshop 3	Induced Surcharge

System Operations for Conservation Demands

8:00 - 9:00 a.m.	Lecture 5	At-Site and System HydroPower Demands Release Allocation
9:15 – 10:00 a.m.	Lecture 6	Pumpback Storage Operation
10:00 – 11:45 a.m.	Workshop 4	System Hydropower and Pumping
11:45 – 12:00 p.m.		Class Photo
12:00 -1:00 p.m.		LUNCH
1:30 - 2:30 p.m.	Lecture 7	Diversions and Diverted Outlets
2:45 - 3:45 p.m.	Lecture 8	Local and Downstream “Demands”
3:45 – 5:00 p.m.	Workshop 5	Modeling Diversions and Demands

	Scripting	
8:00 – 8:30 a.m.	Lecture 9	Scripting Overview
8:30 - 9:30 a.m.	Lecture 10	The Jython Scripting Language - Fundamentals
9:45 – 11:00 a.m.	Workshop 6	WORKSHOP – BASIC SCRIPTING
11:00 – 12:00 p.m.	Lecture 11	The Jython Scripting Language – Conditional and Looping Structures
12:00 - 1:00 p.m.	LUNCH	
1:00 - 2:15 p.m.	Workshop 7	WORKSHOP – Scripting II
2:30 – 3:30 p.m.	Lecture 12	ResSim User-Defined State Variables and If-then-else.
3:30 - 5:00 p.m.	Workshop 8	State Variables Workshop
	Scripting – Runs and Output	
8:00 – 9:00 a.m.	Lecture 13	ResSim User-Defined Rules
9:00 – 10:30 a.m.	Workshop 9	User-Defined Rules
10:30 – 11:00 a.m.	Review	
11:00-12:00 p.m.	Lecture 14	Scripted Plots
12:00 –1:00 p.m.	LUNCH	
1:00 – 2:00 p.m.	Lecture 15	Using Scripting to manage multiple simulations, and other
2:00 -4:00 p.m.	Workshop 10	Scripted Output Development, Scripted Runs
4:00 – 4:30	Review	
8:00 – 9:00 a.m.	Lecture 16	Watershed Management Behind the Scenes info on Files, Cleanup, and Archiving
9:00 – 10:40 a.m.	Workshop 11	Combining Multiple Constraints, Alternative Analysis
10:45 -11:15 a.m.		POST-COURSE ASSESSMENT
11:15 –11:45 a.m.		ORAL CRITIQUE AND COURSE COMPLETION