Agenda

Presented by Gregory H. Nail, PhD, PE

Introductions and Exploring Open Channel Hydraulics
- Introduction and overview
- Exploring open channel hydraulics

Steady One-Dimensional Open Channel Hydraulics Background and Theory
- Conservation of energy: steady one-dimensional
- Conservation of momentum
- Conservation of energy: energy losses
- Conservation of energy: computational enhancements
- Bernoulli's Equation
- Computer-based analysis and computations

HEC-RAS and Water Surface Profiling
- Required data and boundary conditions
- Backwater and forewater calculations
- Bridge and culvert modeling

History and Development of HEC-RAS

Demonstration 1 – Building a HEC-RAS Model without GIS
- HEC-RAS user interface
- Building a hydraulic model without geo-referenced data
- Steady flow computational simulation
- Viewing of results
- Trapezoidal channel example

Demonstration 2 - GIS Basics
- Introduction and overview
- Geographic versus projected coordinate systems
- Raster versus vector files
- ArcMap versus ArcCatalog
- ArcMap interface basics
- Digital elevation model
- Other files

Demonstration 3 – Building a HEC-RAS Model with GIS
- RASMapper interface and the projection file
- Digital elevation models and geometry creation
- Building a hydraulic model with geo-referenced data
- Steady flow computational simulation
- Display and interpretation of results

Demonstration 4 – Typical HEC-RAS River Reach and Mixed Flow
- Subcritical flow
- Mixed flow

Demonstration 5 – Typical HEC-RAS Bridge Model
- Cross section locations
- Expansion and contraction coefficients
- Implementing the bridge
- Steady flow simulation
- Viewing and interpreting results

Demonstration 6 – Typical HEC-RAS Culvert Model
- Cross section locations
- Implementing the culvert
- Steady flow simulation
- Viewing and interpreting results

Demonstration 7 – Typical HEC-RAS Encroachment Model
- Encroachment methods
- Steady flow simulation
- Viewing and interpreting results

HEC-RAS Modeling Basics
Tuesday, October 17, 2023

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Learning Objectives

You'll be able to:

Learn about working with HEC-RAS and the HEC-RAS user interface.

Assemble necessary information for creating a HEC-RAS model.

Use HEC-RAS to calculate steady flow water surface profiles.

Discuss file management, displays, mapping animations and reporting.

Set geometry and boundary conditions.

Learn about adding a bridge and a culvert to the model.

HalfMoon Education Live Webcast

HEC-RAS Modeling Basics

Tuesday, October 17, 2023

Learn what the HEC-RAS program does, and what it does not do

Work with the HEC-RAS user interface

Explore a project case study and collect information for modeling

Calculate a steady flow water surface profile

Model for standard stream flow

Add a bridge and culvert to a model

Continuing Education Credits

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Webcast Information

Registration/Log in
8:00 - 8:30 am CDT

Lunch (on your own)
12:00 - 1:00 pm CDT

Morning Session
8:30 am - 12:00 pm CDT

Afternoon Session
1:00 - 5:00 pm CDT

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Faculty

Gregory H. Nail, PhD, PE
Associate Professor, University of Tennessee at Martin

Dr. Gregory H. Nail is an associate professor in the Engineering Department at the University of Tennessee at Martin where he teaches a variety of courses including fluid mechanics, hydraulics and hydrology, and hydraulic and hydrologic modeling. He holds a professional engineer's license based on having passed both the Civil and Mechanical discipline-specific exams. Prior to coming to UT-Martin in 2002 he worked as a research hydraulic engineer for the United States Army Corp of Engineers for 11 years. He is a former member of the Executive Committee of the Tennessee American Water Resources Association, and he has lectured on various HEC-RAS modeling topics at the Annual Tennessee Water Resources Symposium and at other venues. Dr. Nail earned his B.M.E. degree from Auburn University and his M.S. and Ph.D. degrees from Texas A&M University.

Credit Information

This seminar and concurrent webcast are open to the public and are designed to qualify for 7.0 PDHs for professional engineers, 7.0 HSW continuing education hours for licensed architects, and 7.0 HSW continuing education hours for landscape architects in Tennessee. Professionals seeking continuing education credits in other states may be able to claim the hours earned at this event; please refer to specific state rules to determine eligibility.

The American Institute of Architects Continuing Education System has approved this course for 7.0 HSW LUs (Sponsor No. J885). Only full participation is reportable to the AIA/CES.

The Landscape Architecture Continuing Education System has approved this course for 7.0 HSW PDHs. Only full participation is reportable to the LA CES.

This Association of State Floodplain Managers has approved this course for 7.0 CECs for floodplain managers.

Attendance will be monitored, and attendance certificates will be available after the webinar for those who attend the entire course and score a minimum 80% on the quiz that follows the course (multiple attempts allowed).

On-Demand Credits

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7.0 HSW LUs (AIA), 7.0 HSW PDHs (LA CES)

Additional Learning

Practical Approach to Green Roof Design and Construction
- Thursday, September 14, 2023 | 8:30 am - 3:30 pm CDT

Handling Ethical Issues in Construction Contracting
- Wednesday, September 20, 2023 | 9:00 - 10:00 am CDT

The Urban Forest: Challenges and Opportunities
- Friday, September 22, 2023 | 9:00 am - 4:30 pm CDT

Rooftop Deck Design and Construction
- Wednesday, September 27, 2023 | 9:00 am - 4:00 pm CDT

Wildfire and the Built Environment: Landscape and Construction Issues
- Wednesday, September 27, 2023 | 10:30 am - 6:00 pm CDT

Drones in Construction
- Tuesday, October 3, 2023 | 9:00 am - 4:20 pm CDT

Masonry Design and Construction
- Wednesday, October 4, 2023 | 8:30 am - 4:00 pm CDT

Designing High Performing Traffic Bearing Surfaces
- Wednesday, October 4, 2023 | 9:00 am - 12:15 pm CDT

Proctor Compaction Tests in Construction
- Wednesday, October 4, 2023 | 10:00 am - 12:00 pm CDT

Wood Frame and Cold-Formed Steel Frame Design and Construction
- Thursday, October 5, 2023 | 9:00 am - 4:30 pm CDT

How to Design and Construct a Diaphragm Wall
- Friday, October 13, 2023 | 9:00 am - 12:00 pm CDT

Stormwater Best Management Practices
- Monday, October 16, 2023 | 8:30 am - 4:30 pm CDT

Introduction to HEC-RAS Modeling
- Tuesday, October 17, 2023 | 8:30 am - 5:00 pm CDT

Construction Scheduling and Cost Control
- Tuesday, October 17, 2023 | 9:30 am - 2:00 pm CDT
- Wednesday, October 18, 2023 | 9:30 am - 2:00 pm CDT

Sustainable Asphalt Pavement
- Tuesday, October 17, 2023 | 1:00 - 3:00 pm CDT

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