HEC-RAS Computer Workshop

Purpose and Background

This intensive, hands-on, three day seminar and computer workshop will prepare the engineer and water resource professional to use the HEC-RAS computer program in real world situations. Led by experts with experience in hydraulic modeling, participants learn how to conduct water surface profiles, bridge hydraulics, and flood plain information studies using the steady flow capabilities of HEC-RAS. Unsteady flow capabilities are taught in a separate companion class HEC-RAS Computer Workshop for Unsteady Flow Applications.

The HEC-RAS modeling system was developed as part of the Hydrologic Engineering Center’s Next Generation software and replaces several existing Corps of Engineers programs, including the HEC-2 water surface profile program. HEC-RAS incorporates various aspects of hydraulic modeling, including water surface profile computations and bridge hydraulics.

HEC-RAS advances in open channel hydraulic analysis include:

- Automatic analysis of sub-critical and super-critical flow regimes in a single analysis
- Availability of all widely used methods for bridge and culvert hydraulic analysis
- Ability to perform bridge scour analysis including pier contraction and abutment scour
- Many other capabilities developed from years of experience with HEC-2 and other major hydraulic analysis computer programs

While offering these advanced capabilities, HEC-RAS remains compatible with HEC-2 and will import almost any correctly-assembled HEC-2 input data file, perform hydraulic analysis, and will yield essentially the same results as HEC-2 for the same input data. All major HEC-2 program features and options have been incorporated in HEC-RAS, including bridge and culvert analysis, and floodway computations.

HEC-RAS is user friendly, computationally efficient, and runs within, and fully supports, the Microsoft Windows environment. It uses the latest graphical user interface (GUI) technology for data entry, graphics, and display of program results. Complete context-sensitive help screens are available for every program feature and option. Software includes the following functions: file management, data entry and editing, hydraulic analyses, tabulation and graphical displays of input and output data, reporting facilities, and on-line help.

HEC-RAS is one of the most extensively-tested civil engineering computer programs ever developed. In addition to extensive in-house testing at the Corps of Engineers Hydrologic Engineering Center offices, the program has been through two full beta releases, during which the program was tested by thousands of engineers in the private and public sectors.

To register your group, call John Wyrick at 703.295.6184
Seminar Instructors

Martin J. Teal, P.E., P.H., D.WRE, F.ASCE, has worked with hydraulic models for more than 20 years and is currently a Vice President with WEST Consultants. His experience includes working as a hydraulic engineer for the U.S. Army Corps of Engineers and as a civil engineer for a large multinational firm in Chile. As a private consultant with WEST, he has dealt with complex hydraulic, hydrologic, and sedimentation problems. He has used computational models, such as HEC-RAS and HEC-6, as a principal tool to deal with these problems for clients in both the public and private sectors throughout the United States and internationally. His sedimentation modeling experience includes reservoir sedimentation studies of main stem dams on the Missouri River, investigation of effects of in-stream sand and gravel mining, and other studies for rivers and washes from coast to coast.

Mr. Teal earned his BS in Civil Engineering from the University of California, Berkeley, and his MS in Civil and Environmental Engineering (Hydraulics) from the University of Iowa. He has taught HEC-RAS courses since 1997 throughout the U.S. and Latin America.

Raymond Walton, Ph.D., P.E., D.WRE, F.ASCE, is Vice President, Bellevue, Washington Office Manager for West Consultants and former Region 8 Governor. Dr. Walton has over 35 years of experience directing water resources studies throughout the US and abroad. He is a nationally-recognized expert in multi-dimensional modeling of surface water, groundwater and water quality systems. Prior to joining WEST, he worked at the Hydraulics Research Station in the UK, taught at North Carolina State University, and spent 15 years with large nationwide consulting engineering firms.

Dr. Walton has written over 50 professional papers in the fields of hydraulics, environmental engineering, groundwater and surface water hydrology, and instructs HEC-RAS nationwide. He has worked with ASCE and ASTM committees on Environmental Software and wetlands monitoring developments, and reviews technical papers for several ASCE journals. Dr. Walton chaired ASCE’s International Water Resources Conference in Seattle in August 1999, was the Technical Chair for the 2005 ASCE/EWRI conference in Anchorage, and will chair the 2014 ASCE/EWRI Congress in Portland, Oregon.

ASCE seminars are available for On-Site Training. For details regarding On-Site Training and/or needs-based training opportunities, please contact:

John Wyrick, Senior Manager
On-Site Training Worldwide
ASCE Continuing Education
1801 Alexander Bell Drive
Reston, VA 20191-4400
Tel.: 703-295-6184
Email: jwyrick@asce.org
**Seminar Benefits**

- Learn how to use the U.S. Army Corps of Engineers HEC-RAS (River Analysis System) computer program
- Gain hands-on HEC-RAS experience by participating in practical computer workshops
- Get an overview of hydraulic principles for rivers, waterway bridges, and culverts
- Optimize the effectiveness of your next flood control or drainage projects
- Obtain valuable insights in model development and floodway optimization for FEMA flood insurance studies

**Who Should Attend?**

- Consulting engineers
- Water resource planners
- Engineers employed by local, state, or federal government agencies
- Participants should have some experience in flood plain hydrology and/or hydraulics in addition to familiarity with the Windows operating system

**Publications and Software**

Workshop participants receive the following publications and software:

- HEC-RAS Course Notes and Workshop Problems
- HEC-RAS User Manual (digital copy)
- HEC-RAS Hydraulic Reference Manual (digital copy)
- HEC-RAS Application Guide (digital copy)
- HEC-RAS Example Problems (digital copy)

---

**CEUs/PDHs: ASCE has been approved as an Authorized Provider by the International Association for Continuing Education and Training (IACET), 1760 Old Meadow Road, Suite 500, McLean, VA 22102. In addition, ASCE follows NCEES guidelines on continuing professional competency. Since continuing education requirements for P.E. license renewal vary from state to state, ASCE strongly recommends that individuals regularly check with their state registration board(s) on their specific continuing education requirements that affect P.E. licensure and the ability to renew licensure. For details on your state’s requirements, please go to: http://www.ncees.org/licensure/licensing_boards/.

---

**Summary Outline**

**DAY 1**

- Overview of HEC-RAS Capabilities
- Basic Hydraulic Model Development
- Computer Workshop on Basic Model Development
- Modeling Tributary Junctions
- Computer Workshop on Modeling Tributaries and Junctions

**DAY 2**

- Modeling Ineffective Flow Areas and Levees
- Basic Hydraulic Theory
- Modeling Bridges
- Computer Workshop on Modeling Bridges
- Modeling Culverts

**DAY 3**

- Modeling Multiple Openings
- Computer Workshop on Multiple Openings
- FEMA Floodway Determination
- Computer Workshop on Floodway Determination
- Computer Workshop on Output Analysis

---

**ASCE seminars are available for On-Site Training. For details regarding On-Site Training and/or needs-based training opportunities, please contact:**

John Wyrick, Senior Manager
On-Site Training Worldwide
ASCE Continuing Education
1801 Alexander Bell Drive
Reston, VA 20191-4400
Tel.: 703-295-6184
Email: jwyrick@asce.org