Advance your professional development with this 2-day intensive course!

**Modeling Regional Groundwater Flow with the Analytic Element Method:**
Source Water Assessment and GIS

**June 28-29, 2004**

**Benefits of Attending**
- Receive 16 contact hrs (1.6 CEUs) towards meeting continuing education requirements for Professional Engineers
- Learn how to develop and understand groundwater flow models using the analytic element method (AEM)
- Learn how to better develop source water assessment plans using state-of-the-art groundwater flow models
- Develop your intuition about groundwater flow processes by learning from leaders in the field of regional groundwater modeling

**Overview**

The analytic element method is an alternative to conventional finite difference models (e.g., MODFLOW) for simulating steady-state groundwater flow. It is well-equipped to simultaneously simulate regional-scale and local scale flow, making it a leading method for delineating capture zones, a component of effective source water protection. Researchers at UB have recently developed a suite of powerful GIS-based tools for developing, solving, calibrating, and understanding these models. These public domain software products represent the state-of-the-art in analytic element modeling. They are supplemented with multiple cutting-edge model development and analysis tools for both regional and local modeling. The authors of these programs will be on hand to teach the basics of groundwater flow, the analytic element method, model calibration, and GIS-based modeling. The focus of this course is on developing intelligent models based on sound science and proper understanding of groundwater aquifer systems.

**Objectives**
- To provide a fundamental understanding of the theory of groundwater flow and how it affects issues ranging from source water protection to subsurface contaminant transport.
- To introduce how and why the analytic element method works, with a focus on how the method can improve the intuition of modelers.
- To provide the opportunity to develop and apply AEM-based groundwater flow models to real world scenarios.

**Who Should Participate**
This course is intended for environmental engineers and hydrologists who seek to gain a better understanding of groundwater behavior and learn new state-of-the-art methods for simulating regional-scale and local-scale groundwater systems.

**Program Outline**

**June 28th, 2004**

**Introduction**
- Foundations of the analytic element method: Governing laws, Superposition, Mathematics
- Developing Groundwater Intuition
- Effects of hydrologic features on the flow field, limitations and strengths of AEM modeling
- Basic Groundwater Modeling
- Source Water Protection
- Capture Zone Simulation

**June 29th, 2004**

**Advanced Model Analysis**
- GIS and Groundwater Modeling
- Independent Model Development
- Model Calibration / Parameter Estimation
- Case Studies

**About the Instructors**

James R. Craig is the author of VISUAL BLUEBIRD, a powerful interface for analytic element modeling used internationally. He is a doctoral candidate at the University at Buffalo specializing in development of numerical methods for groundwater flow and contaminant transport. He has taught multiple courses at UB, including GIS for civil engineering and numerical methods.

Alan Rabideau, Ph.D., P.E., is an associate professor of Civil, Structural, and Environmental Engineering at the University at Buffalo with extensive experience as a consultant, researcher, and model developer.

Igor Janković, Ph.D., is an assistant professor of Civil, Structural, and Environmental Engineering at the University at Buffalo. He is the primary developer of the high-performance groundwater modeling software SPLIT and an expert in the analytic element method.

**PE Continuing Education**

The University at Buffalo School of Engineering and Applied Sciences is a recognized accredited educational organization for PE Continuing Education by the New York State Department of Education. See [www.eng.buffalo.edu/pece](http://www.eng.buffalo.edu/pece) for additional information.
PRESENTS:

Modeling Regional Groundwater Flow with the Analytic Element Method: Source Water Assessment and GIS

A Professional Development Course with 16 Continuing Education contact hours towards P.E. renewal requirements.

Sponsored By: School of Engineering and Applied Sciences and EngiNet™, the Graduate Distance Learning program

Offering is subject to sufficient enrollment.

June 28-29, 2004
Primary Location
200G Baldy Hall
UB North Campus
Amherst, NY

Satellite Locations (via EngiNet™ videoconference)
New York, NY (details TBA)
Albany, NY (details TBA)

REGISTRATION FORM

Name and title of attendee(s)

Company

Address

Phone: __________________ email: __________________

Registration Fee Options in US Dollars only:

Course Registration
☐ $695 Up to June 2, 2004
☐ $795 After June 2, 2004

Number Attending

Special arrangements available for full-time students. Please contact mhewlett@eng.buffalo.edu.

Full registration includes coffee/tea/soda breaks, lunch, a software CD, and presentation materials.

Payment Options: ☐ Check Enclosed

Total Amount: ________________

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416 Bonner Hall, Amherst, NY 14260 [mhewlett@eng.buffalo.edu]
(716) 645-2768x1106 Fax: (716) 645-2495 www.eng.buffalo.edu

Location 200G Baldy Hall is located on the North Campus of the University at Buffalo, in Amherst, New York; satellites NYC and Albany, NY

Course Times
Monday 6/28/04: 7:45 Registration; Class 8:00-5:00
Tuesday 6/29/04: Class 8:00-5:00
Lunch (provided on both days): 12:00-1:00

Directions and Parking Upon receipt of registration, participants will be sent parking permits and a detailed map.

Visitor Info/Accommodations Everything you need to know about visiting UB (hotels, directions, etc.) can be found at www.buffalo.edu. Just click on “Visiting UB.”