

**University at Buffalo  
Engineering for Ecosystem Restoration  
Summer Workshop Series  
June 2010 Agenda**

***Description***

The summer workshop series in Engineering for Ecosystem Restoration at the University at Buffalo comprises three 3-day field-intensive workshops focusing on engineering and ecological aspects of restoration of streams, lakes, and their surrounding watersheds. Each workshop is paired with a 2-day training module on tools and techniques related to stream and ecosystem restoration. Each workshop and module has a different topical approach and is team-taught by guest lecturers who are experts in their fields. Workshops and training modules are priced individually, and participants may register for any combination of workshop and training module.

***Academic and PE Education Credits***

Participants are eligible to receive 27 contact instructional hours (2.7 CEUs) for each workshop, or 18 contact instructional hours (1.8 CEUs) for each training module, towards continuing education requirements for Professional Engineers' or Certified Professionals' in Soil and Erosion control registration renewal. Alternatively, one may take all three workshop/training module combinations for 3 academic graduate credits. 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).

***Schedule for June 2010***

The workshops series is scheduled for three weeks in June (June 7-25, 2010). Each week is divided into a 3-day workshop and a 2-day training module (see calendar). Participants may register for any combination of workshop or training module. The anticipated schedule for the June 2010 workshop series is as follows:

**Workshops**

Workshops are 3-day field-intensive sessions focusing on engineering and ecological aspects of restoration of streams, lakes, and their surrounding watersheds. Each workshop has a different topical approach and is team-taught by guest lecturers who are experts in their fields.

***Workshop 1: River Processes, Fluvial Geomorphology and Channel Processes***

**Dates:** June 9-11, 2010

**Instructors:** Dr. Sean Bennett (Department of Geography, University at Buffalo)  
Dr. Kelly Frothingham (Department of Geography and Planning, Buffalo State College)  
Dr. Andrew Simon (USDA Agricultural Research Station, National Sedimentation Lab)

**Topics:**

- Fluvial geomorphology, hydraulics, sediment transport and vegetation;
- Application of fluvial geomorphic methods to natural restoration design;
- Field and analytical techniques for streambank stability and erosion;
- Rapid assessment of stream function and state;
- Watershed management;
- Field measurements: channel & bank characterization, stream flow, bank stability.

***Workshop 2: Stream Restoration, Hydraulic Structure, Biological Assessment and Bioengineering Design***

**Dates:** June 14-16, 2010

**Instructors:** David Derrick (Restoration Specialist & Vice President, River Research and Design, Inc.)  
Paul Fuhrmann (Ecology and Environment, Inc.)

**Topics:**

- Overview of biological parameters of riverine ecosystems;
- Field biological assessments, characterizations and statistical analysis;
- Philosophy of restoration, function-based design, project planning, monitoring;
- How streams dissipate energy, channel evolution model;
- General stream evaluation, introduction and overview of methods;
- Stream restoration design based on form and function of stream ecosystems;
- Bioengineering techniques and riparian management;
- Field trips for case studies of western NY stream and riparian restoration projects.

***Workshop 3: Ecology and Hydrology for the Lower Great Lakes***

**Dates:** June 21-23, 2010

**Instructors:** Helen Domske (New York Sea Grant, University at Buffalo)  
Dr. Randal Snyder (Biology Department, Buffalo State College)  
Dr. William Edwards (Biology Department, Niagara University)

**Topics:**

- Hydrological overview for Great Lakes region
- Great Lakes ecological networks
- Ecosystem stressors and management issues
- Fisheries science and management (field sampling practicum)
- Stream benthic macroinvertebrate identification practicum

**Training Modules**

Each training module is a 2-day session focusing on equipment, tools and techniques related to stream and ecosystem restoration.

***Training Module 1: Distributed Temperature Sensing for Stream Hyporheic Exchange***

**Dates:** June 7 and 8, 2010

**Instructor:** Dr. Chris Lowry (Department of Geology, University at Buffalo)

**Topics:**

- Introduction to theory and operation of DTS systems;
- Overview of instrument and fiber selection and maintenance;
- Field deployment and data acquisition to identify and quantify locations of hyporheic exchange using the DTS;
- Manipulation and analysis of high temporal and spatial resolution temperature data.

***Training Module 2: Water Quality and Stream Flow Sensing***

**Dates:** June 17 and 18, 2010

**Instructors:** Personnel from YSI Inc. and Sontek Inc.

- Topics:**
- Water quality parameters (DO, nutrient, pH)
  - Water flow characterization using Sontek acoustic Doppler
  - Field deployment and data collection
  - Data manipulation and analysis

**Training Module 3: Modeling for Environmental and Ecological Problem-Solving**

**Dates:** June 24 and 25, 2010

**Instructors:** Joe Atkinson (Environmental Engineering Dept., University at Buffalo)  
David Blersch (Environmental Engineering Dept., University at Buffalo)

- Topics:**
- Systems modeling with STELLA and Microsoft Excel
  - Water quality and mass balance modeling
  - Modeling of ecological and general systems

**Calendar**

June 2010

<i>Sun</i>	<i>Mon</i>	<i>Tue</i>	<i>Wed</i>	<i>Thu</i>	<i>Fri</i>	<i>Sat</i>
30-May	31-May	1-Jun	2-Jun	3-Jun	4-Jun	5-Jun
6-Jun	Module 1: DTS		Workshop 1: Fluvial Geomorphology			12-Jun
13-Jun	Workshop 2: Stream Ecology and Restoration			Module 2: YSI/Sontek		19-Jun
20-Jun	Workshop 3: Great Lakes Ecology			Module 3: Ecological and Environmental Modeling		26-Jun
27-Jun	28-Jun	29-Jun	30-Jun	1-Jul	2-Jul	3-Jul

**Notes**

Participants may register for any one or combination of workshops and training modules. Registration costs for participants are \$600 per workshop and \$200 per module per person. Discounts may be available for multiple registrations. Registration costs cover instructor costs, educational materials, continental breakfast every day, and transportation and lunch on field days. Please note there is a \$50 processing fee for cancellations occurring after June 1<sup>st</sup>, 2010. Courses are sponsored by the University at Buffalo's ERIE Program ([www.erie.buffalo.edu](http://www.erie.buffalo.edu)), Great Lakes Program ([www.eng.buffalo.edu/glp/](http://www.eng.buffalo.edu/glp/)), Department of Civil, Structural and Environmental Engineering ([www.civil.buffalo.edu/](http://www.civil.buffalo.edu/)), and the School of Engineering and Applied Sciences ([www.eng.buffalo.edu/](http://www.eng.buffalo.edu/)). For further information, please contact David Blersch, Department of Civil, Structural and Environmental Engineering, University at Buffalo, Buffalo, NY 14260; phone (716) 645-4001, fax (716) 645-3667; email [dblersch@buffalo.edu](mailto:dblersch@buffalo.edu).

**Registration**

Fill out registration form and send to Jim Michalowski, School of Engineering and Applied Sciences, 416 Bonner Hall, Amherst, NY 14260 or contact at (716) 645-0956, (716) 645-2495 (fax), or email to [jrm9@buffalo.edu](mailto:jrm9@buffalo.edu).