This introductory course presents the ecological and geomorphologic foundations of stream restoration, emphasizing their application in restoration practice. The course focuses on understanding and measuring ecological and geomorphic processes and their application within an integrated approach to stream restoration. The course is designed for engineers, geologists, biologists, planners, land managers, landscape architects, government officials - anyone who deals with rivers and streams and who can benefit from a more in-depth understanding of how they work. The number of participants is limited to 22 to provide ample opportunities for one-on-one instruction.

Primary Course Instructors and Coordinators:

Margaret Palmer  
University of Maryland

Jack Schmidt  
Utah State University

Peter Wilcock  
Johns Hopkins University

Sean Smith  
MD Dept of Natural Resources

Venue. Cromwell Valley Park is located in the scenic Maryland Piedmont immediately outside the Baltimore Beltway (http://www.bcpl.net/~cvpark/index.html). The park centers on Minebank Run and includes pasture, cultivated gardens, hedgerows, orchards and wooded hills. Classes will be held in Sherwood House, an English manor style mansion built in 1935. A unique feature of the park is that 7,000 ft of Minebank Run are in the process of restoration. Extensive pre- and post-restoration monitoring is being conducted by the USGS, EPA, and Baltimore County DEPRM, providing an opportunity to develop an in-depth understanding of the stream outside the door.

Fee. $1,650 includes tuition, field trip transportation, breakfast and lunch for five days, evening reception, and course materials, including printed copies of lecture notes, and a CD with pdf files of additional papers and spreadsheets.

Registration. Early registration is recommended as this course fills up fast every year. To see a sample syllabus go to www.palmerlab.umd.edu/. Fill out the attached form and fax it with credit card information or post it snail mail with a check. Your registration will be confirmed via email. If you have questions about the course, contact Margaret Palmer  email: mpalmer@umd.edu  Phone: 410 326-7241
**Course Organization.** The course consists of organized lectures, backed by lecture notes, spreadsheets, readings, field trips, exercises, and discussion. The course includes daily field exercises at streams in the Baltimore region, including streams with recent or on-going restoration projects. Participants will collect field data using a variety of techniques, analyze the data, reach conclusions, and propose management recommendations based on the results. The participants will also analyze restoration projects in their geomorphic and ecological context. The course also includes workshops on geomorphic river restoration problems faced by participants, who will have the opportunity to briefly present the problem for discussion by instructors and colleagues in workshop format.

**Course topics:**
- Essential channel hydraulics; stream gauging, & flow records
- Sampling river bed material and sediment transport
- Sediment transport mechanisms, estimating transport rate
- Controls on stream ecosystem structure and function
- Assessing and restoring habitat and biotic diversity
- Measuring key ecological processes (e.g., nutrient uptake)
- Flow/channel dynamics & habitat, geomorphic-ecological linkages
- Channel form and process, effects of land-use change
- Channel response to human interventions
- Role of riparian vegetation in channel & ecological dynamics
- Physical & biological approaches to restoration design
- Incorporating uncertainty in restoration design
- Geomorphic channel classification in river restoration
- Incorporating aquatic & riparian ecosystem needs into design
- Learning from restoration projects, adaptive management

This course serves as a prerequisite for “Geomorphology and Sediment Transport in Channel Design”, a 5-day course taught at Utah State University August 10-14, 2009. That course presents a more detailed quantitative treatment of sediment transport and applies geomorphology, sediment transport, and ecology in a channel design exercise. [http://uwrl.usu.edu/streamrestoration/](http://uwrl.usu.edu/streamrestoration/)

**DIRECTIONS.** The course will meet at the Sherwood House in Cromwell Valley Park (2002 Cromwell Bridge Road, Baltimore, MD 21234). Take Baltimore Beltway I-695 to Exit 29
Turn left at the first light onto Cromwell Bridge Road. After ~1 mile turn left at the park entrance at 2002 Cromwell Bridge Road. (There is a stone wall and white fence—pay attention the entrance is easy to miss!) Go across the bridge, follow road to right and over the rise. Sherwood House is ahead of you on the left-hand side, park in the gravel parking lot.

**ACCOMMODATIONS:** For those of you traveling from out of town, there are a number of hotels nearby that you could contact including: the Ramada Inn-Towson, 8712 Loch Raven Dr., Baltimore, MD  21286 (410 823-8750); and the Holiday-Inn Cromwell, 1100 Cromwell Bridge Rd, Baltimore, MD  20286 (410 823-4410)
REGISTRATION FORM
FAX (301 314-9290) or MAIL to: Stream Restoration, c/o Dept of Entomology, PLS Bldg, University of Maryland, College Park, MD 20742

ECOLOGICAL AND GEOMORPHIC PRINCIPLES OF STREAM RESTORATION
1 – 5 June 2009
Taught at Cromwell Valley Park (Sherwood House), Baltimore, MD

Name:

Full Mailing Address:

Business Address:

Phone: Fax:

Email (required for confirmation purposes):

Describe past experience and/or interest in stream restoration:

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Registration Information: The course fee is $1,650 and includes course materials, including printed materials of lecture notes, access to a course website with additional papers and spreadsheets; field trip transportation, breakfast and lunch for five days, and an evening reception.

Payment Information: ___ Enclosed is my check made payable to University of Maryland
___ My (circle one): ___VISA ___MasterCard ___American Express ___Discover

_________________________________  ________________________________
Credit Card Number           Expiration Date

_________________________________  ________________________________
Name of Card Holder        Signature of Card Holder