

Geomorphic and Ecological Fundamentals for River and Stream Restoration

Sagehen Creek Field Station, Truckee, California 11-15 August 2008

<http://sagehen.ucnrs.org/courses/geomorph.htm>

A 5-day shortcourse emphasizing understanding of geomorphic and ecological processes as a basis for sustainable river restoration, incorporating insights from recent research in fluvial geomorphology/ecology and lessons learned from analyses of built restoration projects.

River restoration can be more effective when approached with an understanding of processes and the larger context, when it benefits from systematic learning from previous built projects, and when it is based on predictive connections between objectives and actions. This course emphasizes understanding geomorphic process as a sound basis for planning and designing river restoration projects and programs, covering general principles and case studies from a wide range of environments. The course emphasizes understanding geomorphic and ecological processes in rivers, approaching restoration from a watershed-scale and longer-time scale context, incorporating insights from recent research in fluvial geomorphology and ecology, developing predictive connections between objectives and actions, learning from built restoration projects, and developing restoration strategies and innovative management approaches based on understanding of underlying causes of channel or ecosystem change, rather than prescriptive approaches.

The course is ideal for those responsible for managing and restoring rivers and streams, including those who have previously taken shortcourses in the field, as this course offers insights and approaches unlike those typically taken in many restoration projects today, including innovative approaches being implemented overseas. Practitioners and agency staff responsible for reviewing restoration proposals will benefit from the high caliber of instruction and direct link to current research. Managers responsible for supervising restoration programs and projects, provide insights into the broad range of potential restoration goals and strategies and how to match those with the specific river's situation, while the subsequent three days provide more specifics and field-based instruction. This course is a good choice for those seeking an understanding of process-based river restoration in contrast to the form-based projects commonly implemented. And this course is unique in offering the opportunity to learn from such an extensive and growing data set of post-project appraisals of restoration projects, and to learn how to conduct effective post-project monitoring. The number of participants is limited to provide many opportunities for one-on-one instruction.

Course format:

The course consists of organized lectures, backed by lecture notes, a reference text on measurement and analysis methods in fluvial geomorphology, spreadsheets, and other relevant reading, field trips, exercises, and discussions. The course includes field trips to streams in the Raritan River Basin, and workshops on stream restoration problems

faced by participants, who briefly present the problem for discussion by instructors and colleagues in a workshop format, for discussion and ideas on analytical approaches and resources.

Course Venue:

The course is held at Sagehen Creek Field Station, north of Lake Tahoe. The station combines a beautiful natural setting with excellent research and teaching facilities, including an glass-walled stream viewing chamber, an extensive array of groundwater monitoring wells and stream gauges, a long history of geomorphic and ecological field research on the creek, sophisticated GIS tools, and high-speed internet access. The Lake Tahoe region is one of spectacular scenic beauty, and a high concentration of stream restoration projects in tributaries to the Lake. On the Truckee River downstream of Tahoe, flow releases have been modified as part of an effort to restore ecological processes along the once highly degraded river, and a recreation-oriented stream restoration project in downtown Reno now attracts thousands of users each summer. The course includes two long field trips (to the Truckee River and to various stream restoration projects on tributaries to Lake Tahoe) and involves exercises on Sagehen Creek to collect and analyze field data relevant to planning stream restoration. Sagehen is a 45-minute drive from Reno, Nevada airport, and a 2-h drive from Sacramento, California. Participants can stay in dorm-style cabins and/or pitch a tent (\$20/night) or commute (15 minutes) from hotels in Truckee.

Course Instructors:

Principal instructors are Matt Kondolf, Mary Power (both University of California Berkeley), Peter Wilcock (Johns Hopkins University), Jack Schmidt (Utah State University), Tom Taylor (Entrix), Mitch Swanson (Swanson Hydrology), and Scott McBain (McBain & Trush). Other instructors and field trip leaders include Ken Adams (Desert Research Institute), Shannah Anderson (Jones & Stokes), Mark Tompkins (CH2MHill), Steve Gough (Little River Research and Design), Matt Kiese (River-Run), Jim Litchfield (Fluid Concepts), Chad Gourley and Tyler Allred (Otis Bay Consultants).

Course Text:

Students receive a set of printed lecture notes, a CD with spreadsheets to analyze field data and make transport/channel dimension calculations, along with a compilation of relevant scientific papers, and a copy of the text *Tools in Fluvial Geomorphology* (Kondolf and Piégay, John Wiley & Sons, 2003).

Registration:

The course fee of \$1,950 includes tuition, continuing education credits through UC Riverside Extension, field trip transportation, and course materials, including printed copies of lecture notes, CD with PDF files of additional papers and spreadsheets, and a copy of the reference work *Tools in Fluvial Geomorphology*. The course fee also includes three meals per day for five days, beginning Sunday dinner through Friday lunch, 10-15

August. Participants can make their own lodging arrangements among a choice of hotels in Truckee (about 10 mi south of Sagehen) or can take advantage of comfortable, very inexpensive dormitory accommodations at the research station. To register, download the registration form from the course webpage and send it to Jeff Brown, Station Manager, Sagehen Field Station, POB 939, 11616 Sagehen Road, Truckee CA 96160. Fax 530.582.4031. Registration fees can be paid by check, credit card, bank transfer, or government purchase order; consult with Jeff Brown sagehen@berkeley.edu regarding the best method for your situation.

For More Information:

For questions about course content, please email river.restoration.shortcourse@gmail.com.

For questions about registration and lodging, please email sagehen@berkeley.edu, or consult the course webpage <http://sagehen.ucnrs.org/courses/geomorph.htm>

Other Related Shortcourses offered in 2008:

Ecological and Geomorphic Principles in Stream Restoration, Cromwell Valley Park, Baltimore, Maryland, 9-13 June 2008.
<http://www.palmerlab.umd.edu/>

River Restoration: Fluvial-Geomorphic and Ecological Processes, Beaumont du Ventoux, Provence, France, 23-27 June 2008.
<http://institutbeaumont.com/>

Principles and Practice of Stream Restoration, Part I, Utah State University, Logan, Utah, 14-18 July 2008.
<http://uwrl.usu.edu/streamrestoration/default.htm>

Geomorphic and Ecological Fundamentals for River and Stream Restoration, Sagehen Ck Field Station, Truckee, Calif, 11-15 August 2008
<http://sagehen.ucnrs.org/courses/geomorph.htm>

Principles and Practice of Stream Restoration, Part II (Design Problem), Utah State University, Logan, Utah, 18-22 August 2008.
<http://uwrl.usu.edu/streamrestoration/default.htm>