CIVE-610
Special Topic in Hydraulics - Analysis of River Systems

This is a new three credits new graduate course specifically focusing on the analysis of river systems. The course CIVE-610 integrates subjects of management of river systems, river engineering, and channel morphology and stream restoration.

This course will discuss integrated river basin management concepts and will provide discussion on the management of large river systems. Several case studies will be presented to discuss the role and responsibilities of different Federal Agencies including the U.S. Bureau of Reclamation, the U.S. Army Corps of Engineers and other Federal and State Agencies. The course will include a discussion of the impact of the Endangered Species Act on the management of river systems, and on the recent development of fish-friendly structures and turbines.

Several international case studies on sediment management in China, Pakistan, and Taiwan will also be used to illustrate how the inter-related knowledge in river morphology, engineering, and restoration can be applied to solve river system engineering and management problems. Case studies include river stabilization, river restoration, reservoir operation and management, dam removal, and environmental studies. The course will add a management perspective to concepts learned in other courses including fluvial morphology, erosion and sedimentation, river mechanics and stream rehabilitation and design.

The students will also learn to use the computer model GSTARS developed at the USBR. The Bureau of Reclamation's GSTARS computer model series are based on unit stream power and minimum stream power theories. The minimum energy dissipation rate theory or its simplified theories of minimum stream power and minimum unit stream power have been applied to river morphology, engineering and restoration studies.

The course will be offered in Spring 2009 by Prof. C. T. Yang (491-8160). The course is scheduled on Tuesday and Thursday from 11:00 – 12:15, Wager Rm. 107B. The text book will be **Sediment Transport Theory and Practice** (McGraw-Hill 1996, reprint by Kriegger Publishing Company 2003). Computer model manuals and codes and other reference materials will be given to students to supplement the text book.