Civil Engineering

1. Add the following courses [Effective: Summer 2014]

**CE 554 Environmental Hydrodynamics (3 cr)**

The course analyzes solute transport and mixing in rivers. It provides the derivation and analysis of the equations governing solute mixing and transport and shows the connection between mixing and flow field. It presents molecular and turbulent diffusion, dispersion, vertical, lateral, and longitudinal mixing, and the effects of river irregularities and curved channels. The course includes individual projects.

Prereq: CE 428 or permission

Rationale: This course has been offered three times at UI Boise as CE 504 – Environmental Hydrodynamics and will be offered again in Fall 2013. It does not change the workload of the faculty teaching this course. It serves a need in the university and the local Boise consulting firms/federal agencies on solute transport and mixing in streams. There is no other equivalent course taught in Idaho and pollutant and nutrients transport in surface waters is increasingly becoming an important issue in the Treasure Valley. The course fills the gap between river mechanics and river water quality. This course fits within the courses offered by the Civil Engineering Department in hydraulics and water resources, but which do not cover solute mixing in streams. It responds to the needs of the university to prepare graduate students to work in river restoration and water quality. By capitalizing on the hydraulics background, this course will study the relationship between solute transport and flow fields. The course offers the theoretical basis to understand the mechanisms and it presents the derivation of the governing equations and their application. The course also covers different subjects and is complementary to courses offered by other departments such as the courses BAE 450 Environmental Hydrology and BAE ID&WS 452/552 Environmental water quality.