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<td>Hamid Moradkhani</td>
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<td>Subsurface Hydrology (4)</td>
<td>Gwynn Johnson</td>
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<td>CE 566/666</td>
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**Civil & Environmental Engineering Elective & Graduate Courses**

- **CE 410/510: Surface Water Hydrology (4)**
  - This course is designed to convey the fundamentals concepts of hydroclimatology and surface water hydrology and how to apply these in hydro-environmental analysis and modeling. Topics include precipitation formation and estimation, spatial and temporal analysis of precipitation, infiltration, evapotranspiration. Also, runoff processes, overland flow, hydrograph analysis, river and reservoir routings are discussed in detail. Prerequisites: CE 362/Senior Standing.

- **CE 469/569: Subsurface Hydrology (4)**
  - Basic principles of aqueous flow in the subsurface, emphasizing the importance of groundwater as a resource. Hydrologic cycle, history of groundwater usage, aquifer classification and properties, Darcy's experiments and Law, hydraulic head and potential, porosity and permeability, transmissivity and storativity, heterogeneity and anisotropy, saturated vs. unsaturated subsurface flow, and hydraulics of pumping wells (drawdown, flow in confined and unconfined aquifers, steady-state vs. transient flow, slug tests, and aquifer-test design). Also offered for graduate-level credit as CE 569 and may be taken only once for credit.

- **CE 474/574: Unit Operations of Environmental Engineering (4)**
  - Unit operations of water and wastewater treatment; pretreatment; sedimentation, filtration, aeration, disinfection, sludge treatment and disposal, advanced waste-water treatment processes. Also offered for graduate-level credit as CE 574 and may be taken only once for credit. This is a required course for ENVE students, but can be taken as an elective for BSCE students.

- **CE 481/581: The Columbia River as a System (2)**
  - Explores the climate and hydrologic processes that shape the Columbia River basin ecosystem, and relates these processes to the basin’s management context. The geographic scope includes the watershed, the mainstem and its reservoirs, major tributaries, the tidal river below Bonneville Dam, the estuary, the Columbia plume, and coastal waters that interact with the plume. Lectures and outside speakers will present or discuss vital issues in contemporary Columbia Basin management, along with relevant background information. Also offered for graduate-level credit as CE 581 and may be taken only once for credit. Expected preparation: CE 361 and CE 371. Prerequisite: Junior Standing.

- **CE 510/610: Topic: WQM-Sediment Process (3)**

- **CE 566/666: Environmental Data Analysis (4)**
  - Application of probabilistic and statistical models to the description of environmental data with a focus on hydrology and water quality. Graphical and quantitative techniques of exploratory data analysis, selection and fitting of appropriate probability distributions, simple and multiple and multivariate regression and their applications to analysis and modeling, and detection of changes and trends in environmental time series. Also offered as CE 666 and may be taken only once for credit. This is the same course as ESM 566 and may be taken only once for credit. Prerequisite: graduate standing and Stat 243 and 244 or Stat 460.
When can I register?

5/9/16—Cont. Grads
5/11/2016—Cont. Srs
5/16/2016—Cont. PBs
5/18/2016—Cont. Jrs
5/23/2016—Cont. Sophs
5/25/2016—Cont. Fresh
5/31/2016—New Grads
6/20/2016—New Undergrads