Groundwater constitutes more than 95% of Earth’s unfrozen freshwater. In the U.S., groundwater makes up about 37% of the public water supply and 43% of the irrigation water we use, in rural areas it can be the sole source of potable water. Since groundwater is broadly distributed, frequently of good quality, and available at or near the point-of-use, it has become a major source of potable, irrigation, and industrial water use throughout the globe. Despite its importance it is frequently undervalued and many institutions have struggled to incorporate groundwater concepts into water use regulations and sustainable water management. Groundwater can be neglected because physical aquifer boundaries that define groundwater systems as water management units are typically not visible at the surface and usually don’t coincide with political boundaries. Failure to manage groundwater in a sustainable fashion can have severe consequences including public health hazards, water and food scarcity, damage to infrastructure, and economic losses. This course will provide an introduction to the principles of groundwater flow, development, and protection, with an emphasis on aquifer and groundwater evaluation and management. We will focus on characterizing recharge and discharge, hydrogeology, and management issues for select aquifer systems, evaluating groundwater importance relative to other water sources, and focus on approaches to convey groundwater information to the general public that can make this “invisible” resource visible. Topics covered will include: baseflow analyses; stream-groundwater interactions; aquifer and vadose zone characterization; groundwater flow; groundwater hydraulics and wells; recharge; field hydrogeological and geophysical characterization of aquifers and groundwater; groundwater modeling; groundwater quality; groundwater sustainability and management.