

**AGEN 120**  
**Water Supply and Sanitation**  
**Spring 2011**

Second Examination Study Guide

Prepared By

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- List the two broad types of turbo-machines and understand the difference between them
- Know the primary two parts of pumps and the function of each
- Recognize the differences among radial-flow (centrifugal), mixed-flow, and axial flow pumps
- Know the basic characteristics of the common pumps covered in the class and laboratory
- Understand the effect of varying the size and the rotational speed of the impeller on the flow rate, discharge head, and power requirements of the pump
- Understand the concept of NPSH and how it affects the location of the pump in relation to the dynamic water surface
- Understand pump and system characteristics curves as well as the concept of designing a pump to operate near the point of “best operating efficiency”
- Understand the approach followed for establishing power requirements for pumping water given the flow rate (gpm) and the required total head (ft)
- Know the process followed in sizing pumps and pressure tanks
- Understand the differences among WHP, BHP, and actual power (electrical) to drive the motor of a pump and how to calculate each
- List the general types of flow measuring devices (those discussed in class) for closed pipes and open channels
- Understand the effect of varying the hydraulic parameters on water flow conditions in open channels
- Understand the basic concepts covered in class on groundwater
- Know the difference between a piezometric surface and groundwater table and where each exist
- Understand the difference between gravity and artesian wells and the variables that control the design rate of water flow into such wells
- Understand the underlying principles for estimating storm runoff
- Know the basic concepts of water quality and pollution covered in class, including those that pertain to surface, flowing, impounded, and ground waters