**Learning Outcomes (specific to learning module)**

Simplified list of three learning outcomes:

* Design a pipe system and choose an appropriately sized pump for the given fluid needs.
* Distinguish the difference between pipe component options and pump options to minimize fabrication and operational cost.
* Identify an alternate design (i.e., an opportunity) which will create higher value over traditional design.

Expanded Technical Learning Outcomes:

* Identify the components and functions of a large-scale potable water supply piping system.
* Make reasonable simplifying assumptions.
* Analyze the functions of various flow components (pumps, valves, etc.)
* Identify and determine major and minor losses in a flow system.
* Predict pressure and pipe size for series and/or parallel piping systems.
* Determine the required pumping power according to flow requirements.
* Choose an actual pump that meets the flow requirements.

Entrepreneurial Learning Outcomes:

* Explore a contrarian view of accepted (i.e., typical) solutions.
* Identify an unexpected opportunity for your design.
* Create extraordinary value for a customer or stakeholder.
* Integrate information from many sources to gain insight.
* Assess and manage risk (i.e., include contingency plans due to unforeseen design flaws).
* Persist through failure.
* Apply creative thinking to ambiguous problems.
* Apply systems thinking to complex problems.
* Evaluate economic drivers.
* Examine a customer’s or stakeholder’s needs.
* Understand the motivations and perspectives of others.
* Convey engineering solutions in economic terms.
* Substantiate claims with data and facts.
* Report the solution to a customer.
* Form and work in a team.