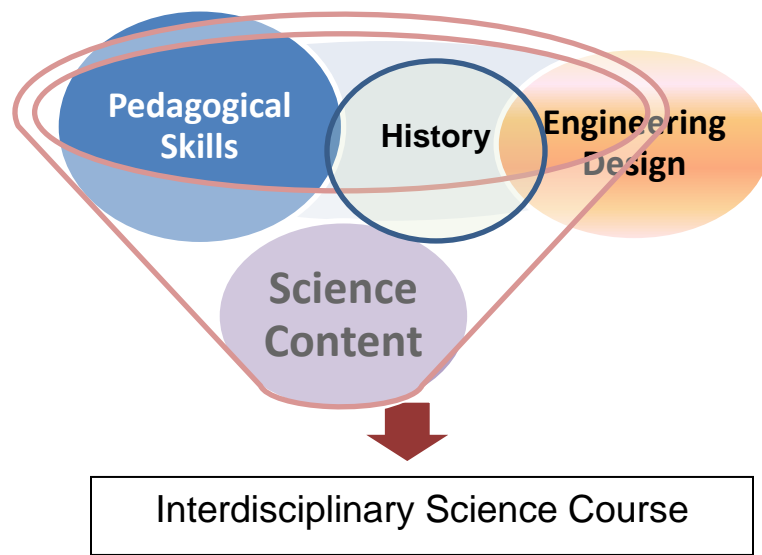


Course Design:

Objective:

Demonstrate that you can blend engineering design concepts, pedagogical skills and history as part of science classes for students. Have engineering learning as a supplement in teacher college curriculum. Show teacher colleges the power of integrating engineering into their curriculum for teachers.



- Force and motion
- Density
- Refrigeration
- Properties of Water
- Air flow
- Weather
- Life Science
- Electricity

Example:

Science Content	Engineering Project	Pedagogical Learning
<i>Weather/ History of instruments</i>	<i>Design a hydrometer</i>	<i>Bloom Taxonomy... Data collection & analysis</i>

Engineering Content	Pedagogical Elements
<ul style="list-style-type: none"> • Creative problem solving • Design process • Decision making • Predictive analysis • System thinking 	<ul style="list-style-type: none"> • Project learning • Thinking skills • Developing lesson plans • Know the student; learning styles
History	
History of the instrument	People
Time frame	

Ponds to Particles

Science Content	Engineering Project
Weather	<ul style="list-style-type: none">• Design a hydrometer;• Create an algorithm for predicting weather based on pressure, temperature, wind changes• Understand the global conveyor belt
Water hydrological cycle	Create a simulation of the cycle using 2 liter soda bottles, plants, water
Water properties	Density, surface tension, capillary action, bubbles showing minimum surface area, buoyancy forces
Solar still	Creating fresh water from salt water
Ecosystems	Design a "system" model of a lake's water level
Water supply issues	Designing a green waste treatment plant
Water quality	Testing for PH, DO(dissolved oxygen), nitrates(NO_3), Ammonia (NH_3)
Semester project:	Pond health, Student foot-print, Drinking water quality, Ground water run-off
Community design project	Your community has just raised \$50K to create a project that incorporates water as part of the theme.....
Map making exercise	Using a compass, create a map based on the coordinates and physical landscape.
Electricity	Instruments to show charges created by static electricity

