

IPRO 323: Low-Cost Water Pump Design/Testing to Serve Rural Villages

Ethics Code

Overarching Principle

To design an affordable, sustainable, and reliable system to access potable ground water for communities in developing countries.

Law and Regulation

Pressure:	Design a product quickly.
Risk:	Violate water extraction regulations of Mexico.
Risk:	Create an unsafe product to operate.
Pressure:	Produce a physical deliverable quickly.
Risk:	Not evaluating placement of the well system, violating ground water regulations.
Risk:	Dangerous environmental conditions to system and site.
Pressure:	Language barrier.
Risk:	Misinterpreting laws.
Canon:	Design a product in observation of regulations both in the US and in Mexico.
Measure:	Observation of regulations will be done by consulting those knowledgeable in US regulations and in Mexico regulations. An absence of legal actions by the government will maintain the compliance of the group to regulations.

Contracts

Pressure:	Design an affordable product.
Risk:	Failure to fulfill contract obligations to vendors (i.e. pay them)
Risk:	Providing a product with a short life span to minimize costs.
Pressure:	Design a reliable system.
Risk:	Providing a system with smaller outputs below the needs of the community and its possible expansions.
Pressure:	Communicate across a language barrier.
Risk:	Misinterpretation of contractual obligations.
Canon:	While designing a product maintain all contractual obligations with vendors and the consumer.
Measure:	Fulfillment of billing practices by maintaining all invoices and monitoring in project expense reports. A lack of legal actions by vendors and the consumer will show a compliance with the canon.

Professional Codes

Pressure:	Design a product on time.
Risk:	Lowering the quality of testing to meet required expectations.
Risk:	Tempering with results to achieve expected results.

Pressure: Creating an affordable product.
Risk: Purchasing sub standard products to meet the requirements.
Risk: Purchasing complicated products making maintenance a costly endeavor.

Canon: Truthfully reporting all tests and designing a product with a long life expectancy.
Measure: Usage of cost-life expectancy analysis and the absence of lawsuits for unprofessional conduct.

Industry Standards

Pressure: Developing a product that is affordable
Risk: Use materials that do not create a safe product

Pressure: Release the proposed pump design quickly
Risk: Installing a pump which has not been fully tested
Risk: Using a pump/solar panel that does not meet its design intent

Canon: **Provide a product that is safe and reliable as well as effective in fulfilling its design intent.**
Measure: Monitoring safety as an utmost concern during testing of the systems. An absence of lawsuits for failure to comply with safety standards established by the industry will be test of the observation of the canon.

Community

Pressure: Choosing and designing a system.
Risk: Failure to ask and consider the needs of the target community, creating a product that will fail requirements.
Risk: Creating an expensive system beyond the means of the community.
Risk: Ignoring cultural or societal implications of technology.

Canon: Creation of a product that will observe the multi-faceted surroundings.
Measure: Consultation with individuals familiar with the area during the design process and querying individuals in the community.

Personal Relations

Pressure: Fulfilling sponsorship requirements.
Risk: Improper allocation of resources in order to complete tasks that are irrelevant to the main goal.
Risk: Disappointing sponsors and target communities.

Pressure: Time constraints.
Risk: Not providing visibility to sponsors in order to receive proper feedback.

Canon: Maintain an open channel of communication with sponsors and advisors on the project.
Measure: Reports of lack of communication by the sponsor would be the measurement of compliance while weekly documentation such as meeting minutes will establish a

source of communication.

Moral Values

Pressure: Determining water needs.
Risk: Undervaluing the amount of water needed by the community.

Pressure: Meet expectations.
Risk: Changing and tempering test data to meet desired results.

Pressure: Time constraints.
Risk: Creation of a less than desired product to meet deadlines.
Risk: Slowing down of project due to lack of work hours.

Canon: Strive to create a product of high standards as efficiently as possible.
Measure: Proper planning of the project and requesting for another semester if more time is necessary.
