

Econ 395/595: Problem-based Learning: Health & Environment in Urban Nepal

(Analytical approach to problem solving through the blending of *natural sciences, social sciences, and humanities*)

Fall 2017, Instructor: Dr. Alok K. Bohara, Department of Economics (Bohara@unm.edu) T,Thr: 11:00AM-12:15PM, Room 1004 (Limited computer lab capacity.) Pre-requisite: Stat 145 (Contact Dr. Bohara for override requests.)

Interdisciplinary collaborating faculty mentors: Dr. Jennifer Thacher, Dr. Monica Kowal, Dr. Mark Stone, Dr. William Fleming & Christopher D. Lippitt. Graduate mentors and GA: TBD.

A New Experiential Learning Model

Developed by the [Sustainable Development Action Lab](#) of the Nepal Study Center, UNM:

- **Analyze:** Analyzing the real-world data from the ground using analytical tools and empirical modules.
- **Deliberate:** Collaboratively work with other students in an interdisciplinary fashion to discover *causal* linkages and offer practical solutions in one or more of the following areas: sustainable technologies, awareness curricular interventions, citizen science apparatus, riparian habitat conservation designs or evidence-based public policy prescriptions.
- **Implement:** If interested, help the student club/group in their effort to have it implemented on the ground in collaboration with our [international partners](#).

Course Outline

This course offers a problem-based learning (PBL) environment that brings real world problems (e.g., water quality, sanitation infrastructure & practices, public health outcome, attitude, and knowledge) into the classroom for analysis and deliberation.

That is, using the real-world from the ground, students will use statistical software and visualization tools to unravel potential linkages. In a group setting, students can also deliberate and think about solutions and develop conceptual framework

for intervention programs (e.g., environmental awareness, personal sanitation), encourage evidence-based decision making (e.g., riparian zoning), suggest and/or develop appropriate technology (e.g., water filtration), help develop scientific tools and protocols (e.g., data gathering techniques through school curriculum or citizen science –e.g., [BEMP](#)), for a possible implementation in the field –[DEM](#)P (e.g., through student club).

Approach

Group Collaboration

Student will work in groups to go through several **data analytical modules**. For each module, students will 1) READ relevant literature, 2) ANALYZE *baseline* data to understand the problem and potential linkages, and 3) WRITE a group mini research report, which includes a policy and/or intervention propositions.

Analytical Tools

Students will learn to use 1) survey data, 2) visualization tools in STATA software, 3) statistical methods, 4) GIS mapping tools, and 5) collaborative writing through Google doc.

Learning Outcomes

Students will be able to (1) use statistical software (STATA) to analyze the real-world data, 2) review existing literature across different disciplines to understand linkages between variables from different interdisciplinary angles, 3) learn to use Stata to perform visualization and statistical testing tools to unravel potential associations, (4) analyze and synthesize empirical work in a group setting for the purpose of recommending and/or designing policy prescriptions in specific contexts.

Assessment & Grading

- Empirical Modules (20%)
- Synthesizing Results: (Reading, Writing, & Analyzing) Research Notes, Presentation, & Participation (30%)
- In-class and/or Take-home exams (20%)
- Final Research Posters and Presentation (30%)

A Sustainable Development Action Lab Example

Taking the Classroom to the Field

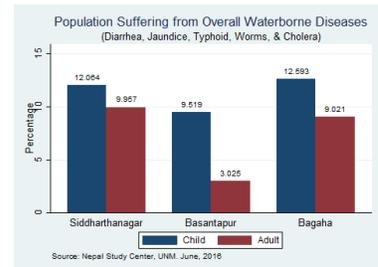
Urban Health and Wellbeing

Water, Air, and Riparian Ecology

Water-borne diseases are a pivotal issue in the combat against illness in the developing world, with an estimated 1.1 billion people around the world lacking access to improved drinking water supply. In Nepal specifically, water-borne diseases are noted as one of the major types of disease placing its population at risk, especially the children. Starting with the problem-driven research



questions about the river water quality (Danda River), urban sanitation and their human and bio health hazard implications ([Nepal Study Center](#) baseline survey 2016, Siddharthanagar, Nepal), this lab aims to come up with some potential solutions and/or interventions. Some examples include: 1) Long- term monitoring of water



quality along the Danda River –*Danda Ecological Monitoring Program (DEMP)* and the development of citizen science protocols to involve schools in data collection, 2) Health education on topics such as hand washing, disease prevention, and sanitation, 3) Environmental data visualization and dissemination platforms, and 4) Tracking bio-diversity along the riparian system to promote eco-system services (e.g., urban bio-park refuge).

Study Abroad Program (optional): An option exists to carry out the implementation part through a study abroad trip during the December intersession. <http://pnfoundation.org.np/lumbini-sustainability-circle-study-abroad-program/> Likewise, there is an opportunity for a student club like YOGDAN to engage and participate.

A pilot example:

<http://nepalstudycenter.unm.edu/SustainableResearchLab/Econ451FALL2016.html>