# Water Water Everywhere … Even in Statistics

Dr. John C. Nardo
Dr. J. Lynn Gieger
Oglethorpe University

SENCER

APPLYING THE SCIENCE OF LEARNING TO THE LEARNING OF SCIENCE

SCIENCE EDUCATION FOR NEW CIVIC ENGAGEMENTS AND RESPONSIBILITIES

# www.sencer.net

NATIONAL CENTER FOR SCIENCE & CIVIC ENGAGEMENT
NCSCE

NSF

HARRISBURG UNIVERSITY
OF SCIENCE AND TECHNOLOGY

# National SENCER Initiative

- SENCER robustly connects science and civic engagement by teaching “through” complex, contested, capacious, current, and unresolved public issues “to” basic science.

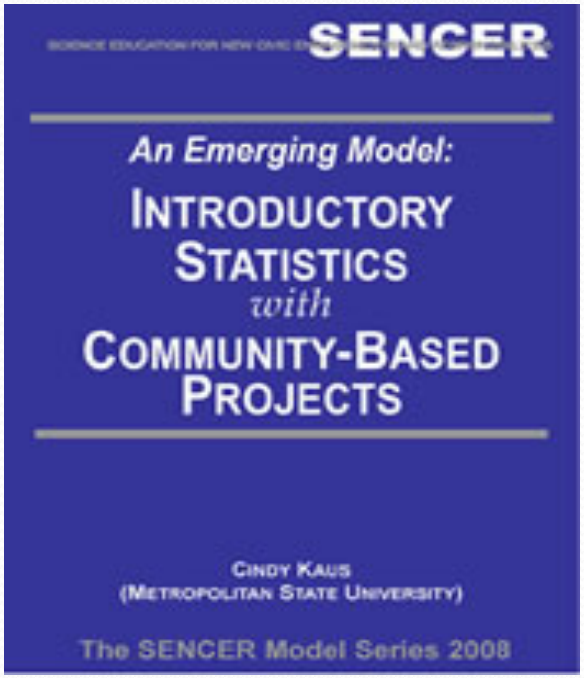
- SENCER, by focusing on contested issues, encourages student engagement with “multidisciplinary trouble” and with civic questions that require attention now.

# SENCER "Model" Courses

- Key SENCER Strategy: Picking and Distributing "Model" Courses
- Thirty Such Courses so Far
- Available Online for Download as PDFs
- Practical as well as Inspirational
- www.sencer.net (Resources Menu)

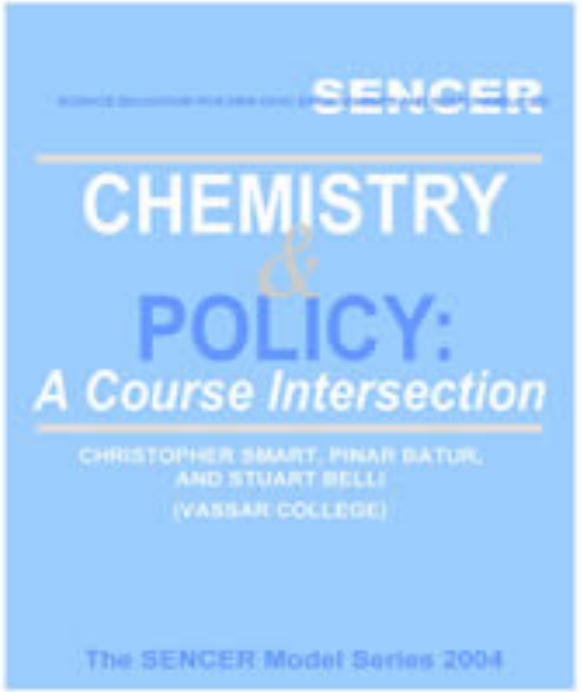
## Metropolitan State University

- Dr. Kaus (Mathematics)




## Vassar College

- Drs. Smart and Belli (Chemistry)
- Dr. Batur (Sociology)



# Our "Intersection" Course

Audience:

- Introductory Statistics
- General Chemistry Laboratory
- General Physics Laboratory

Capacious Societal Question:

- Two Urban Water Locations
- Effect of Run-Off and the Effect of Residential Development

# Curricular Concerns for our Traditional Statistics Students

- Sampling was more theoretically covered by discussing the different sampling techniques.
- Data sets in text too “neat” and “easy”
- Little to no practical experience actually collecting data

<u>Revised Course Objective to Remedy these Concerns</u>:

Introduce the methodology and inherent difficulties associated with collecting and analyzing a large (in both the temporal and spatial senses) sample set from the field

# SENCER-ized Statistics

- Project Completely Outside Class
- No Class Time “Lost”
- Kept Discussion of Sampling Techniques
- Group Project
- Multiple Data Collection for each Team as Part of a Semester-Long Project

# What did we learn?

- Students had unrealistic expectations about what the project could accomplish in one semester.
- Organizational challenges of making teams and guaranteeing coverage for three months of data collection
- Strengths and weaknesses of working as part of a team

# What did they learn?

- Sampling techniques no longer a “theoretical” skill but a practical one
- Calibration of Scientific Instruments
- Strengths and Weaknesses of Working as part of a Team

# Why Involve SENCER?

- Summer Institute
- Post-Institute Implementation Grant
- SALG
- Esprit de Corps as Valuable (but Often Neglected) Part of Faculty Development